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Ph.D Thesis

Strategic M&A Announcement Timing, Information Asymmetry and Behavioral Biases

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Mojoj porodici i mojoj zemlji

To my family and my homeland

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Summary introduction

Mergers and acquisitions (M&As) are among the largest and most important corporate events. Companies acquire other companies for a variety of reasons. The most quoted one is without any doubt the potential additional value from combining two firms, better known as *synergy*, while the most obscure and the most controversial one is probably the elimination of future competition. No matter what the main motive is, measuring M&A future benefits is not an easy task and is probably more art than exact science. To get a bottom line number, apart from future cash flows, investors also need to assess a number of qualitative aspects of a deal, such as the compatibility of corporate cultures of the transaction parties, managers' skill in M&A execution etc. With all these uncertainty levels piled up, information asymmetry makes it even harder for managers to clearly communicate the real value of a deal. What they do in such a situation and how investors respond is not obvious. In my thesis, I advocate that managers indeed put effort to overcome the issue of how to convey deal quality. Specifically, I investigate the following scenarios: managers select the best time to announce a deal and/or they effectively disclose deal quality in the announcement press releases.

The first alternative is also known as strategic announcement timing. It has attracted considerable attention in the literature on corporate earnings. However, it is relatively little known whether managers actually time acquisition announcements, what drives such behavior, and whether their strategic moves pay off.[1] I argue that managers indeed engage in the M&A announcement timing and that their main motive is to avoid potentially unfavorable outcomes. To test this conjecture, I exploit a sharp variation in the number of deals around weekends. The M&A distribution exhibits an unusually high number of deals on Monday (also known as *Merger Monday*) and a relatively low percentage of announcements on Fridays.

Combining theory with findings in the literature on earnings announcements, I suggest that there are at least two pitfalls of Friday that managers try to avoid: investor inattention and the adverse selection problem. The first argument suggests that managers facing an unfavorable market reaction to a deal by inattentive investors will try to avoid such an outcome. A similar finding is reported in deHaan et al. (2015). The authors document that managers prefer

[1] Here I stress on the term *announcement*, not the decision to acquire another company. The latter is extensively studied in the literature on *merger waves*.

high attention to low attention when they have to announce good news. Importantly, for the managers to act strategically it is enough that there is a positive probability of low attention. The ex-post realization of investor inattention on Friday is not crucial since it is not observable at the announcement time.

The second argument is more complex. Akerlof (1970) explains how information asymmetry creates uncertainty about quality, which in the end leads to a severe problem of adverse selection. I identify a very similar issue in the context of M&A announcements when investors have to understand whether a deal is a good one. Certification is not an impeccable solution as managers might be reluctant to disclose many details due to the threat of competition. I argue that the described problem is prevalent on Friday. I base the conjecture on the finding that investors appear to infer that earnings announcements scheduled for Friday tend to contain negative news (see deHaan et al., 2015). This result clearly shows that investors are indeed concerned about whether managers are actually trying to "hide" bad news by releasing them on Friday. However, it is very unlikely that managers will stay passive and do nothing. I argue that managers actively engage in the anticipation of investor reaction and strategically time announcements to avoid a potential negative reaction. In the aftermath of this recursive reasoning, managers find it advantageous not to risk that investors misinterpret Friday announcements, thus, they announce deals on Monday instead.[2]

I find evidence consistent with managers timing their M&A announcements in order to anticipate and avoid potential pitfalls, specifically, investor inattention and the possibility that Friday announcements are interpreted as bad news. I document significant gains when managers attempt to avoid Friday investor attention. However, the analysis reveals no similar effect when the decisive factor is the possibility that the market might interpret the announcement as bad news. I also test a number of alternative factors that could explain the day of the week pattern of M&A announcements (deal complexity, information leakage, and media coverage). Even though I find that some of them hold (deal complexity), the announcement timing hypothesis could not be invalidated.

The second part of the thesis studies what managers disclose in the M&A announce-

[2]In the cognition theory and mental modeling, this type of recursive reasoning is also referred to as the second-order model. "*A second-order model is characterized by the recognition that others also hold beliefs about the desires and beliefs of one's self, and therefore may act predictively for their own good. The predictions of oneself by others must be taken into account when predicting those others' behavior.*" – Hedden and Zhang (2002).

ment press releases. In the joint work with A.F. Wagner, we tackle this question by analyzing the information content related to intangible assets. We focus on this hard-to-value asset class for several reasons. Firstly, many mergers and acquisitions are motivated by the intention of creating extra value from intangible assets. Secondly, over the recent years, the importance of intangible assets has substantially increased in corporate value in general and in M&As specifically. Finally, this asset class is the most obscure and normally requires a detailed qualitative explanation.

For our analysis, we develop a novel word list of intangible-related words to capture what announcement releases say about this asset class. When inspecting announcements, we follow a common practice in the textual analysis literature, a "bag of words" approach. This approach is based on parsing announcement files into vectors of words and word counts. Our measure of the information content ("intangibles talk") is the frequency of words associated with intangible assets. We document that deals presented with more "intangibles talk" in acquisition announcements complete more quickly and more frequently.

We propose three different explanations of this finding: advantageous private information, agency problems, and overoptimism of managers. The strong negative market reaction to intangibles talk (also a decrease in post-acquisition operating performance) suggests that managers do not use intangibles words to disclose advantageous private information about the target. The agency explanation of the relation between intangibles talk and negative announcement returns receives no strong support in data. An analysis of insider trades reveals, by contrast, evidence of managerial overoptimism about deals they describe with intangibles talk.

The overall analysis shows evidence that managers do take actions to communicate deal quality to investors. They strategically time M&A announcements to avoid potential pitfalls and unfavorable outcomes. Specifically, they are concerned about Friday inattention and the adverse selection problem. On the other hand, they do not seem to utilize announcement releases to convey qualitative deal aspects, such as the extent of intangible assets. In contrast, the information content of announcements reveals managerial overoptimism.

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Strategic M&A Announcement Timing: Evidence from Merger Monday

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Abstract

Drawing on the day of the week pattern of mergers and acquisitions, I investigate whether managers engage in strategic announcement timing, and if so, whether such a decision pays off. The findings are consistent with managers timing M&A announcements as they seek to avoid the anticipated unfavorable market reaction. I document that this strategy is related to higher stock returns when managers attempt to avoid periods of low investor attention. However, the analysis reveals no evidence of significant gains when the managerial decisive factor is the possibility that the market might interpret the announcement as bad news. Furthermore, I find that strategic timing and negotiation complexity help explain the prevalence of merger announcements on Mondays (the *Merger Monday* phenomenon) and its flip side, a low percentage of M&A announcements on Friday.

JEL Classification: G34, G39, G41

Keywords: announcement timing, mergers and acquisitions, Merger Monday

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1 Introduction

Mergers and acquisition have been attracting researchers' attention for decades. Besides a variety of different motives for acquisitions, the reason why M&As are so intriguing probably lies in the fact that their announcements do not convey a sharp message about the deal quality and the prospect of future success. This makes M&As quite susceptible to judgment and misinterpretation that likely leads to the managerial strategic behavior.

One possible maneuver managers might make is the timing of announcements. To investigate whether they actually do that and with what objective, I exploit the prevalence of M&A announcements on Mondays (the *Merger Monday* phenomenon) and its less known flip side, a relatively low percentage of announcements on Fridays.[1] I argue that one of the main factors that contribute to the deal clustering on Monday is the strategic announcement timing itself. I rely on the documented pitfalls of Friday and pre-announcement variables that are likely correlated with the incentive to avoid the Friday drawbacks. The sharp variation in the number of deals around weekends provides an excellent setting for the investigation of how managers make decisions as a response to the anticipated investor reaction.

The question of strategic announcement timing has gained substantial attention in financial literature. While the topic is extensively studied in the context of corporate earnings, it is relatively unexplored in the area of mergers and acquisitions. Recent studies suggest that investor behavioral biases are one of the main reasons why managers engage in the earnings release timing (see, e.g. DellaVigna and Pollet, 2009; deHaan et al., 2015). The findings are consistent with managers reporting low earnings during periods of low attention as they attempt to "hide" bad news. A study with similar results has been conducted for M&A announcements (Louis and Sun, 2010), but a more recent publication reports evidence against the previous findings (Michaely et al., 2016). Given that there is no consensus, my study attempts to make further progress in our understanding of whether and with what objective managers engage in the strategic timing of the largest corporate events, i.e. mergers and acquisitions. In contrast to the previous studies, which correlate various ex-post measures of investor inattention and variation in the announcement signal (good vs. bad), I tackle the problem by linking ex-

[1] The term *merger* in the *Merger Monday* phrase is used as a synonym for any M&A deal. For simplicity, I will use mostly *M&A*.

ante observables and the managers' propensity to engage in the announcement timing. This approach enables me to directly investigate how managers respond to the anticipated market reaction.

The analysis confirms the strategic behavior conjecture. The findings are consistent with managers timing M&A announcements as they seek to avoid the anticipated unfavorable market reaction. I document that the decisive factors are investor behavioral biases (i.e. inattention) and the adverse selection problem (i.e. a concern that the market might interpret announcements as bad news).[2] Both explanatory factors predict a higher propensity that a deal is announced on Monday instead of Friday. However, I show that the managers' strategy yields significant gains only when the objective is to avoid investor inattention. To check whether my results are robust, I test a number of alternative stories that potentially explain the variation in the number of announcements around weekends. I identify the complexity of the negotiation process as an additional factor that explains the deal clustering on Monday. The strategic announcement timing hypothesis holds under all alternative specifications.

I examine M&A deals in the sample from 1990 to 2016 with a public bidder domiciled in the U.S. Firstly, I check whether two key implicit assumptions hold: (i) there is a day of the week M&A pattern with a significantly high (low) percentage of deals announced on Monday (Friday), and (ii) the company public status (i.e. the market reaction reflected in stock prices) induces managers to behave strategically. I confirm the validity of both assumptions and show that there exists a significant weekday announcement pattern in the sample. Monday accounts for more than 25% of deals while the share of Friday is only about 14%. Furthermore, there is a striking contrast between the day of the week distribution of public-to-public and private-to-private deals. While the former exhibits a large difference in the number of deals around weekends, the latter remains nearly flat across the week.

Next, I examine whether pre-announcement observable variables, which are likely correlated with unwanted market reaction, predict higher managers' propensity to act strategically. I examine two factors that might induce managers to avoid Friday and announce a deal on Monday instead: Friday investor inattention (DellaVigna and Pollet, 2009), and concern about negative market reaction to Friday announcements. The latter is based on the finding that in-

[2] deHaan et al. (2015) report that in the presence of uncertainty, investors respond negatively to the scheduled Friday announcements.

vestors infer that Friday earnings announcements tend to contain negative news (deHaan et al., 2015). As a measure of anticipated investor attention on Friday, I use the pre-announcement difference between relative trading volumes[3] on Friday and the other weekdays. To quantify the managers' concern that the market might interpret Friday announcements as bad news, I observe their past behavior in similar situations and construct a measure of managerial propensity to avoid announcing good news on Friday.[4] As an example of good news, I take earnings announcements that "beat" the forecast because they signal a clear positive message. The managers' concern that investors might interpret the scheduling of earnings release for Friday as a signal of forthcoming bad news is obviously reflected in the managers' propensity to avoid scheduling good earnings announcements (those that beat the forecast) for Friday.

I document that both factors predict higher probability that a deal is announced on Monday relative to Friday. To assess potential gains from such strategic decisions, I analyze the difference in bidder abnormal returns between Monday and Friday while keeping the level of examined pre-announcement factors constant. I do not find evidence of significant negative difference, meaning that the managers' actions are not suboptimal. However, higher abnormal stock returns are observed only when the managerial decision is based on the anticipated investor inattention.

Finally, to test the robustness of the main results, I examine several alternative explanations of the variation in the number of announcements around weekends. One possible story says that complex deals are typically finalized over weekends due to their structure that requires extra work and is related to complicated negotiations. Another explanation is that managers want to avoid stock price fluctuations caused by information leakage during the negotiation process. In this case, weekends are a natural choice for the deal closing. Finally, it is also possible that acquisitions get more media coverage if announced on Mondays. I find support for the deal complexity explanation, but not for the latter two. However, the strategic announcement hypothesis holds even when I check for the deal complexity in the analysis.

In conclusion, my evidence is consistent with managers timing their M&A announcements in order to anticipate and avoid potential pitfalls, specifically, investor inattention and

[3] Daily trading volume divided by the number of shares outstanding.

[4] More precisely, the measure is defined as: 1 – (*#quarterly EAs that beat the analyst consensus forecast and are announced on Friday over a 3-year period before the M&A announcement*) / (*#all quarterly EAs that beat the analyst consensus forecast and are announced over a 3-year period before the M&A announcement*).

the possibility that Friday announcements are interpreted as bad news. The possible benefits of Monday itself, such as more media coverage, might play only a secondary role, if any at all. Overall, when dealing with important and complex corporate events (e.g. M&As) that do not convey a sharp message, besides considering characteristics of the event itself, managers also actively engage in the anticipation of investor reaction and strategically time announcements to avoid unfavorable outcomes. This study helps to understand better how companies interact with market participants and how their maneuvers lead to seemingly surprising phenomena, like Merger Monday.

The rest of the paper is organized as follows. Section 2 summarizes previous literature and my contribution. Section 3 develops testable hypotheses. Section 4 introduces data sources and describes how I construct the sample. Section 5 presents the main analysis and empirical results. Robustness tests are shown in Section 6. Finally, Section 7 concludes.

2 Literature and contribution

The literature on the M&A market timing could be broadly split in two branches. The first and more developed branch studies the managers' decision to acquire another company. It is focused on deal clustering over rather long periods of time which are labeled as *merger waves* and typically span horizons of several years. In contrast, the second branch investigates the strategic timing of announcements and analyzes much shorter periods. The factors driving each type of strategic market timing are very different. Merger waves are normally driven by a break-through in technology, market and economic conditions, and regulatory changes (see Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004; Harford, 2005; Rhodes-Kropf et al., 2005; Maksimovic et al., 2013; Ahern and Harford, 2014). On the other hand, strategic behavior in the context of mergers and acquisitions is not extensively studied. There is evidence that investor behavioral biases are related to the decision of announcement time (Louis and Sun, 2010), but also against this relation (Michaely et al., 2016). The deal structure is mentioned as another factor in (Branch et al., 2001). Thus, the question of M&A strategic announcement timing and of its driving factors remains relevant. I contribute to this literature by providing evidence that managers indeed time acquisition announcements. I argue that their main objective is to avoid the unfavorable market reaction to announcements, which is a likely

consequence of investor inattention and adverse selection.

The paper also adds to the broad literature on bidder returns. I report evidence that, besides deal and company characteristics, the managers' strategic moves are another important explanatory factor of bidder abnormal returns around M&A announcements. The previous literature documents that bidder announcement returns are driven by the target public status, payment method, and bidder and target (deal) size. Private target deals yield positive bidder abnormal returns, while acquisitions of public targets yield negative abnormal returns (see Fuller et al., 2002; Moeller et al., 2004; Betton et al., 2008). Furthermore, Schneider and Spalt (2017) document a negative (positive) relationship between the deal (bidder) size and the bidder announcement returns for public target acquisitions. The relationship is opposite in the sample of private target deals. Stock payment is associated with negative bidder abnormal returns in the sample of public target deals, and with positive returns when the target is a private firm (Loughran and Vijh, 1997; Moeller et al., 2007; Betton et al., 2008; Savor and Lu, 2009).

Moreover, my analysis is also a part of the previous research on the *weekend effect*, also known as the *Monday effect*, the *day-of-the-week effect* or the *Monday seasonal*. This market phenomenon refers to the tendency of stocks to exhibit relatively low returns on Mondays compared to those on Fridays. I contribute to the literature by documenting that M&A announcements cluster on Monday and by analyzing the effect on bidder stock returns. Specifically, I find no significant difference in the event period returns between companies that announce deals on Monday and those that announce deals on the other days of the week. A study by French (1980), a seminal article on the subject[5], reported that the average return for Monday was significantly negative from 1953 through 1977 while positive for the other four days of the week. Lakonishok and Maberly (1990) find a relative increase in trading activity by individuals on Mondays who are more likely to sell on Monday rather than to buy. Damodaran (1989) studies the news weekly cycle and finds that a certain portion of negative Monday returns is explained by adverse news announced on Friday. Abraham and Ikenberry (1994) find Monday negative returns are a consequence of returns in prior trading sessions, i.e. Friday's return. Chang et al. (1998) suggest that information processing is different on Mondays than on other weekdays. However, the information processing asymmetry is limited to macroeconomic news. Chen and

[5]French (1980) is not the very first study reporting the existence of the weekend effect. Merrill (1966), Cross (1973) and Gibbons and Hess (1979) all document the phenomenon, but their studies provide less comprehensive analysis and discussion of the results.

Singal (2003) argue that speculative short sales contribute to the weekend effect as short sellers tend to close their speculative positions on Fridays and reestablish new short positions on Mondays. However, exploiting an exogenous short-selling prohibition of certain stocks on the Hong Kong Stock Exchange, Gao et al. (2015) find a strong weekend effect both before and after the prohibition for stocks that are allowed to be sold short as well as those that are not.[6] In the meantime, the Monday effect remains without a firm explanation as researchers have not reached a consensus yet.

The current literature suggests that the investor limited attention significantly affects stock prices. Hirshleifer et al. (2009) document that extraneous news distract investors leading to weaker market reactions to relevant news. They conclude that, apart from the post-earnings announcement drift, limited attention might be the source of underreaction to a variety of public corporate news events documented in the literature. DellaVigna and Pollet (2009) find that investors are less attentive to earnings announcements on Fridays. Similar conclusions are documented in Louis and Sun (2010) for mergers announced on Friday. However, Michaely et al. (2016) argue that the evidence of investor limited attention on Friday disappears when they check for the selection bias. While individual investors are more likely to suffer limited attention, evidence suggests that experts, such as analysts (Abarbanell and Bushee, 1997; Teoh and Wong, 2002), also fail to consider all relevant information. Moreover, Fang et al. (2014) document that professional investors are subject to limited attention as well. They find that mutual funds tend to buy stocks with media coverage more heavily than those without. The research results suggest that an increase in investor attention induces stronger buy pressure and generates higher stock prices. Barber and Odean (2007) document attention-driven buying and argue that individual investors are net buyers of attention-grabbing stocks, e.g., stocks appearing in the news, and stocks experiencing high abnormal trading volume. Hou et al. (2009) use trading volume as a proxy for attention and find that price momentum is stronger for high volume stocks and in up markets. Furthermore, the literature documents the importance of press coverage and shows that investors are more likely to process salient news and ignore non-salient news (Ho and Michaely, 1988; Klibanoff et al., 1998). Huberman and Regev (2001) provide a remarkable example of how enthusiastic public attention induced a permanent increase in share

[6]Recently, there are attempts to link the investors' mood with Monday effect (Abu Bakar et al., 2014). The link is based on the psychology studies documenting that mood tends to be lowest on Monday and highest on Friday and during the weekend. According to these studies, investors are more pessimistic early in the week and this supposedly explains the negative returns on Monday.

prices, even though no genuinely new information had been disclosed. Fang and Peress (2009) find that earnings announcements that are covered in news media generate a stronger price reaction and a less subsequent drift than those that are not. I add to this literature by showing that ex-ante measures of investor inattention play an important role in the decision making process of both managers and investors. While I do not strictly investigate whether investors are less attentive on Friday, I argue that the concern about this behavioral bias is one of the major components of the strategic announcement timing of M&A deals.

3 Institutional background and hypothesis development

3.1 Main hypotheses

The exact motivation for the choice of announcement day is unobservable. To examine whether managers engage in the strategic M&A announcement timing, I rely on the documented pitfalls of Friday and pre-announcement variables that are presumably correlated with the incentive to avoid Friday drawbacks. I formulate the following three main hypotheses to test the announcement timing conjecture.

I start by investigating the day of the week pattern of M&As. Exploiting the findings in the literature on earnings announcements, I conjecture that managers likely try to avoid the drawbacks of Friday (e.g. investor inattention). This would lead to a sharp drop in the number of Friday announcements and a surge of those on Monday. The other days are expected to exhibit a rather flat number of deals. I formulate the first hypothesis as follows:

Hypothesis 1: *M&A announcements are not uniformly distributed across the week. Monday exhibits the highest and Friday the lowest number of deals.*

The literature on earnings announcements reports two pitfalls of Friday: investor inattention and a negative reaction to the scheduled Friday announcements. These factors are very likely to have an important role in the context of acquisition announcements as well. Investor inattention on Friday has gained on importance in the recent financial literature. There is evidence that investors are less attentive on Friday (see e.g., DellaVigna and Pollet, 2009; Louis

and Sun, 2010), but also against it (Michaely et al., 2016). However, for the managers to act strategically it is enough that there is a positive probability of inattention. The key point is how they ex-ante perceive the cost of announcing a good deal during periods when low attention is likely.[7] I advocate that managers facing an unfavorable market reaction to a deal by inattentive investors will try to avoid such an outcome. In other words, they will likely avoid Friday and postpone their announcements to Monday.[8] This constitutes my second hypothesis:

Hypothesis 2 (*Investor Inattention*): *The anticipated investor inattention on Friday predicts a lower propensity that managers announce M&A deals on this day of the week.*

M&A announcements are unquestionably flooded with information asymmetry and quality uncertainty. As explained in Akerlof (1970), such situations lead to the problem of adverse selection. I argue that this issue is particularly acute on Fridays when managers might be tempted to announce "lemon" acquisitions in the attempt to hide them. The evidence that this a very realistic scenario and poses a real threat to investors can be found in the literature on earnings announcements. deHaan et al. (2015) document that investors infer that earnings announcements scheduled for Friday tend to contain adverse news. Authors report significantly negative returns when the market is notified of a forthcoming Friday announcement. This result clearly shows that investors are concerned about whether managers are actually trying to "hide" bad news by releasing them on Friday. Given the information asymmetry about the deal rationale, this argument is certainly a credible concern also in the context of mergers and acquisitions. However, it is very unlikely that managers will stay passive and do nothing to avoid this adverse selection problem. I argue that managers actively engage in the anticipation of investor reaction and strategically time announcements to avoid potential unfavorable outcomes. In the aftermath of this recursive reasoning, managers find it advantageous not to risk that investors misinterpret Friday announcements, thus, they announce deals on Monday instead.[9] This insight generates my third hypothesis:

Hypothesis 3 (*Adverse Selection*): *The managers' concern about the anticipated negative*

[7] I note that ex-post realizations might be different from managers' ex-ante perceptions of investor inattention.

[8] Monday is a natural choice as it is the first working day after Friday. I do not see any convincing reason why managers would wait more (until Tuesday, or later) and risk that the market starts speculating on information leakage while waiting for the official announcement.

[9] In the cognition theory and mental modeling, this type of recursive reasoning is also referred to as the second-order model. "*A second-order model is characterized by the recognition that others also hold beliefs about the desires and beliefs of one's self, and therefore may act predictively for their own good. The predictions of oneself by others must be taken into account when predicting those others' behavior.*" – Hedden and Zhang (2002).

market reaction to Friday announcements decreases the probability that they announce M&A deals on this day of the week.

3.2 Additional hypotheses

I also examine several alternative factors that potentially explain the day of the week pattern of M&A announcements and could invalidate the announcement timing hypothesis: deal complexity, information leakage, and media coverage.

The first story that might explain the M&A deal clustering on Monday attributes this phenomenon to deal complexity. I identify two channels of how deal complexity contributes to Merger Monday. Firstly, the overall transaction workload, which is correlated with deal complexity, increases the likelihood that the deal will be finalized over a weekend. Branch et al. (2001) propose that mergers involving large transactions may be more likely to be finalized over a weekend and announced on the following Monday.[10] Secondly, complex deals are intuitively related to costly and complicated negotiation between the transaction parties. Weekends allow for undisrupted negotiation and provide enough time for the process to get finalized. Branch et al. (2001) note that even assembling the members of the two firms' boards of directors along with their supporting casts (investment bankers, lawyers, accountants, etc.) is not a trivial task and often requires a weekend as these important people have busy schedules. Based on these observations, I formulate the following hypothesis:

Hypothesis 4 (*Deal Complexity*): *Complex deals are often finalized over weekends and announced on Monday.*

M&A deals are quite sensitive to information leakage. If unofficial news about the deal get to the market during negotiation, investors are likely to start speculating on that. Changes in stock prices might trigger a renegotiation of the deal terms and introduce unwanted delays in the whole process, or even lead to the deal termination. This is probably the least wanted scenario before the deal closing. Since information leakage is not easy to prevent, managers likely choose to finalize negotiation over a weekend. This insight generates the following

[10] Moreover, in its dictionary, the Financial Times suggest that one of the Merger Monday determinants is in fact the workload (*"last-minute preparations, public relations planning and other issues"*), which is in fact correlated with deal complexity (and the deal size), see http://lexicon.ft.com/Term?term=merger-Monday.

hypothesis:

Hypothesis 5 (*Information Leakage*): *To minimize the stock price impact of information leakage during negotiation, managers choose to finalize M&A deals over a weekend.*

The third explanation is based on the importance of media. While the spectrum of why managers crave media coverage is rather wide, there is little doubt that visibility is very important for corporations and the actions they take. The financial literature documents that stock prices do respond significantly to newspaper publications (Ho and Michaely, 1988). Extensive media coverage generates buying pressure that is driven by both individual (Barber and Odean, 2007) and professional (Fang et al., 2014) investors. These findings suggest that the managers' decision to announce a deal on Monday is potentially driven by media coverage that is higher on this day of the week. This conjecture is also cited in Louis and Sun (2010) – "*According to Howard Rubenstein, president of Rubenstein Associates Inc., a New York-based public relations firm, clients "generally want their transactions well publicized and that's often easier to achieve on a Monday"*". I formulate the last hypothesis as follows:

Hypothesis 6 (*Media Coverage*): *M&As announced on Monday get more media coverage than M&As announced on the other weekdays.*

4 Data

4.1 Sample selection

I collect M&A deals from the Securities Data Company's (SDC) database. I download all announced acquisitions with a U.S. bidder for the period 1990-2016. To construct the main sample, I keep only bidders that are public companies, and targets that are either a subsidiary, a public or private company.[11] The control sample consists of transactions with a private bidder. I collect transactions with at least a $1 million deal value, as in Moeller et al. (2004). Following Bargeron et al. (2008), I exclude deals that are labeled as recapitalizations, repurchases, self-tenders, or exchange offers. I download stock market data from CRSP and the most recent

[11] Bidders that are labeled as government, investor, joint venture, mutually owned, subsidiary, private, or have unknown public status are excluded from the sample.

annual report from COMPUSTAT that is filed no more than a year before the announcement. To link SDC to CRSP, I use 6-digit historical CUSIPs. Then, I link CRSP to COMPUSTAT using PERMNO identifiers. The resulting sample consists of 37,635 deals. I download quarterly earnings announcement data from I/B/E/S. As a source of news articles I use Factiva.

4.2 Attention measure

In contrast to the previous research that relies on the post-announcement proxies of investor attention (see DellaVigna and Pollet, 2009; Hirshleifer et al., 2009; Louis and Sun, 2010), I focus on ex-ante variables that are observable by managers. Specifically, I measure pre-announcement average relative trading volume on Friday and contrast it with those on the other days of the week. The day of the week averages are calculated over one year before the announcement. More formally, the ex-ante Friday inattention measure is defined as following:

$$FI_i = \frac{1}{4} \sum_{d=Mo}^{Th} \left(RV_{i,d}^m \right) - RV_{i,Fr}^m, \tag{1a}$$

$$RV_{i,d}^m = mean \left(RV_{i,j|j\sim d} \right), \tag{1b}$$

$$RV_{i,t} = \frac{SHT_{i,t}}{SHO_{i,t}}, \tag{1c}$$

where FI stands for Friday inattention, RV is the relative trading volume, m denotes the mean value, SHT and SHO are the numbers of traded and outstanding shares, respectively, i is the indicator of a deal, and t and j are the date indicators. The day of the week is denoted by d, while $j \sim d$ means that j is chosen to correspond to d. In the other words, I keep only RV on Mondays when I calculate the Monday mean relative volume ($RV_{i,Mo}^m$), and so on.

4.3 Friday adverse selection measure

To quantify the managers' concern that the market might interpret Friday announcements as bad news, I construct a measure that is equal to one minus the managers' propensity to announce good news on Friday. Perfect examples of good news are earnings announcements (EAs) that "beat" the analyst consensus forecast because they signal a clear positive message.

The managers' concern that investors might interpret the scheduling of EAs for Friday as a signal of forthcoming bad news is obviously reflected in the managers' propensity to actually schedule EAs that beat the forecast for Friday. The measure is formally defined as:

$$FAS_i = 1 - \frac{\#QEA^{Fr}_{i,beat}}{\#QEA_{i,beat}}, \tag{2}$$

where $\#QEA^{Fr}_{i,beat}$ is the number of quarterly EAs over a 3-year period before the M&A announcement that beat the analyst consensus forecast and are announced on Friday, and $\#QEA_{i,beat}$ is the number of all quarterly EAs over a 3-year period before the M&A announcement that beat the analyst consensus forecast.

4.4 Deal complexity measures

I use three different measures as a proxy for deal complexity. The first measure is deal size. Consistent with Grinstein and Hribar (2004), I expect that larger deals are more complex and thus require more effort. Deal size is correlated with both aspects of deal complexity that I introduced in Section 3, the overall complexity reflected in higher workload, and complicated negotiation. The other two measures are the number of target advisors and the target termination fee dummy. The intuition is that negotiation becomes more complicated if the target hires more deal advisors. A large number of advisors means more bargain power. It also signals that the target managers will try hard to negotiate the highest possible price and extract as many non-monetary benefits as they can. On the other hand, the bidder is expected to opt for the opposite, that is, to minimize the overall deal price. Given that the negotiation process is finalized successfully, the likelihood that the bidder will want to seal the agreement and prevent the target from walking away from the deal increases with the negotiation complexity and related costs. As a result, the bidder will likely require the target termination fee clause.

4.5 Media coverage measures

To analyze the impact of media coverage on the decision to announce an M&A deal on Monday, I hand collect news articles related to M&A announcements from Factiva, a global news

database and a research tool owned by Dow Jones & Company.[12] In order to facilitate the procedure and due to the large number of deals, I restrict the sample to large deals – those that are $5 billion or larger in size. The decision to analyze media coverage for large deals is justified by the fact that large deals exhibit the greatest degree of clustering on Monday.[13] Hence, the media coverage effect, if any, should be observable in this subsample. As a proxy of media coverage, I use the number of news articles on the announcement day. I also collect the number of news over the next 7 calendar days (the announcement day included) to capture the effect of the full business week following the announcement.

4.6 Sample characteristics

Table 1 presents summary statistics. All dollar amounts are expressed as CPI-adjusted December 2016 U.S. dollars. Continuous variables are winsorized at the 0.25^{th} and 99.75^{th} percentile in order to eliminate the effect of outliers.[14]

The sample has the average deal size of $450 million while the median is only $60 million. However, these values are not surprising as acquisitions of small firms are in general much more frequent than acquisitions of large corporations. The bidder size follows the same pattern – the average bidder has a market capitalization of $10 billion, that is about twelve times more than the median bidder market cap of $0.82 billion. The deal relative size, calculated as the deal size over bidder market capitalization, is on average 0.38. Bidders are profitable firms with the annual ROA (return on assets defined as EBITDA over total assets) of 8.6% and the market-to-book ratio of 3.5. In my sample, more than 21% of target firms are publicly listed companies, 47% are privately held firms and about 31% are subsidiaries. As a payment method, bidders use only cash in 29% of acquisitions. The attitude of the target management is friendly in 97% of deals while 3% of them employ a defensive tactic. The average target hires one firm to act as a financial or legal advisor. A total of 11% of targets are liable to pay a termination fee

[12] Apart from its extensive coverage (nearly 33,000 sources as of 2018), Factiva is a convenient tool since it provides a number of advanced search commands and field tags to refine and target results. For example, one can search for a specific phrase that appears in the predefined number of words at the beginning (or at the end) of the article, or for two phrases that are separated by no more than a predefined number of words, etc. It also supports wildcards, which are a very useful feature.

[13] I confirm this statement in unreported tests.

[14] All the results hold when the sample is winsorized at the 1^{st} and 99^{th} percentile. I use the symmetric 0.25% level to minimize modification of data.

to the bidder if they decide to withdraw from the acquisition agreement. About 18% of deals are cross-border acquisitions, while less than 2% of deals have more than one bidder.

On average, Monday and Friday bidders are nearly identical in size. However, Monday bidders are more profitable (about 1%) and acquire about $300 million bigger targets. They use the target termination fee provision more often and their targets hire more advisors. Also, Monday bidders face competition and defense tactics more frequently, but they complete their acquisitions more often than companies that announce deals on Friday.

I measure bidder announcement returns as CAR(-1,1), the 3-day cumulative abnormal returns for the bidder firm using the Carhart four-factor model, around the announcement. Model parameters are estimated over days [-280, -31].[15] I find that the sample has a positive 3-day bidder cumulative abnormal return of 1.1% on average (0.33% median CAR).[16] The average bidder CAR is not significantly different between Monday and Friday subsamples.

The ex-ante measure of Friday investor inattention (FI) is significantly higher for deals announced on Monday than for those announced on Friday. The same pattern is observed for the measure of adverse selection problem (FAS). These two findings are both consistent with the announcement timing hypothesis. In other words, managers facing a higher probability of unfavorable outcomes are more likely to act strategically. As a result, we observe the aforementioned pattern in FI and FAS variables.

The overall sample summary statistics are consistent with the values reported in the previous literature (see Moeller et al., 2004; Schneider and Spalt, 2017).

[Table 1 ABOUT HERE]

[15] I use the same interval to estimate the benchmark returns as Schneider and Spalt (2017). They use the market model instead of the Carhart four-factor model. I confirm that findings are not affected by the choice of the model.

[16] Consistent with the literature (e.g. Moeller et al., 2004; Schneider and Spalt, 2017) bidder CAR(-1,1) is negative for public target deals (-0.98%) and positive for non-public target deals: 2.09% when the target is a private firm and 2.34% when the target is a subsidiary.

5 Empirical results

5.1 Day of the week pattern

I start the analysis by checking the expected outcomes of the M&A announcement timing. If managers really make strategic decisions about announcement time and if there is a common factor that affects most of them, I would expect to observe a clear pattern in the M&A distribution. I argue that the important aspects that managers care about are investor inattention and possible misinterpretations of deal quality, which is followed by an adverse market reaction. Literature documents that both of these factors are related to Friday. Therefore, the number of M&As is expected to exhibit a spike on Monday, stay relatively stable over the following three days of the week, and sharply drop on Friday. This is precisely what I find when I plot the M&A deal frequency by the day of the week (Figure 1a). The Monday deal percentage (about 25%) indeed exceeds the percentage on Friday (about 14%), while the other days of the week stay close to 20%.

[Figure 1 ABOUT HERE]

Another expected pattern is related to the type of companies that are likely to act strategically. Intuitively, private bidders do not have any reason to act in such a way if a target is also private. Neither of the transaction parties can be directly affected by the stock market reaction.[17] On the other hand, public companies acquiring public targets are the category that is most likely to take actions that maximize stock price. Figure 1b confirms the previous conjecture. Public-to-public transactions exhibit a strong deal clustering on Monday and a low percentage of deals on Friday. In contrast, the distribution of private-to-private deals remains nearly flat across the week.

Table 2 presents detailed information on the day of week distribution of acquisition announcements. It also reports the results of the chi-square goodness-of-fit tests for the deal percentage against the uniform distribution across the week. The results are consistent with the graphical evidence. The test rejects the null hypothesis that M&A deals are uniformly

[17] I recognize that there still could exist indirect channels, such as the link between media coverage and cost of debt.

distributed across the week in the full sample as well as in the public-to-public subsample. This confirms the validity of the first hypothesis. However, the uniform distribution of deal announcements could not be rejected in the control subsample of private-to-private acquisitions. Moreover, the unreported chi-square test of independence performed on a set that combines the full sample and the control sample confirms that the announcement day and the bidder public status are not independent. Additionally, the chi-square goodness-of-fit test rejects the null hypothesis that the day of the week distributions of deals with a public bidder and of those with a private bidder are equal. In conclusion, it is likely that managers carefully analyze market reaction and take actions to maximize the announcement outcome. The following sections analyze this conjecture more formally.

[Table 2 ABOUT HERE]

5.2 Investor inattention

To test the *Investor Inattention Hypothesis*, I model the bidder propensity to announce a deal on Friday (Monday) using logistic regression. The hypothesis states that investor inattention (FI) induces managers to avoid Friday, which then increases their propensity to announce a deal on Monday. The results are reported in Table 3. In the first two specifications (with and without control variables), I explicitly model the probability of Friday announcements in the full sample. The FI coefficients are significant and negative. This means that the ex-ante measure of investor inattention on Friday predicts a lower propensity that investors announce a deal on Friday. To illustrate the effect, an increase of one standard deviation in investor inattention translates to a 4.1% decrease in the odds of announcing a deal on Friday relative to the other days of the week (Regression 2).[18]

In the following two specifications, I focus on the subsample of Monday and Friday announcements and analyze the choice between these two days. The regressions reveal that an increase in FI predicts a higher probability that managers choose Monday instead of Friday. An increase of one standard deviation in investor inattention causes a 5.7% increase in the odds of announcing a deal on Monday relative to Friday (Regression 4).

[18]The value is calculated as $e^{-0.207\times0.20} - 1 = -4.06\%$. The decrease is equivalent to a 49% probability of announcing a deal on Friday.

[Table 3 ABOUT HERE]

The analysis confirms that managers indeed consider investor attention when making a decision about the M&A announcement date. The ex-ante measure of investor inattention on Friday predicts both a lower probability that managers announce a deal on Friday and a higher probability that they do it on Monday.

5.3 Adverse selection

The *Adverse Selection Hypothesis* postulates that the managers' concern about the anticipated negative market reaction to Friday announcements decreases the probability that they will announce M&A deals on this day of the week. To test this, I construct a measure of the managers' concern (FAS) that is based on their propensity to avoid announcing good news on Friday (see Equation (2)).

To test the hypothesis, I conduct a similar analysis as in the previous section, but I take *FAS* as the main explanatory variable instead of *FI*. The logistic regression results are presented in Table 4. The FAS variable is significant in all regressions. It predicts a lower probability that managers announce a deal on Friday relative to the other days of the week. The effect is also economically significant. An increase of one standard deviation in the managers' concern about adverse selection on Friday predicts a 5.8% decrease in the odds of announcing a deal on Friday relative to the other days of the week (Regression 2).[19] Also, FAS predicts a higher probability that managers choose Monday instead of Friday (Regression 3 and 4). To quantify it, an increase of one standard deviation of FAS predicts an increase of 7.5% in the odds of announcing a deal on Monday instead of Friday (Regression 4).

[Table 4 ABOUT HERE]

In sum, I find evidence that the Adverse Selection Hypothesis holds. That is, managers are indeed concerned about the negative market reaction to Friday announcements. When they

[19] The value is calculated as $e^{-0.313\times 0.19} - 1 = -5.77\%$. The decrease is equivalent to 48.5% probability of announcing a deal on Friday.

make a decision about when to announce an M&A deal, besides other factors, they also take into account how investors might interpret such a choice.

5.4 Returns to announcement timing

Given the evidence that managers time M&A announcements to avoid the pitfalls of Friday, a natural question is whether their strategic maneuvers actually pay off, or at least do not cause stock price losses. To assess potential gains from such strategic decisions, I analyze the difference in the bidder abnormal returns between Monday and Friday while keeping the level of the examined pre-announcement explanatory variables (FI and FAS) constant. Simply put, I regress bidder cumulative abnormal returns on FI and FAS variables and their interaction terms with the Monday dummy. This method enables me to effectively keep the variable level constant while looking at the return that is a result of Monday itself. If managers are successful in the M&A announcement timing, we should observe a positive (or at least non-negative) impact on stock prices for the given level of FI or FAS. The results of the analysis are presented in Table 5.

[Table 5 ABOUT HERE]

The first regression shows that bidder stock returns are not different between Monday and Friday on average. However, this is not surprising because not all Monday announcements are strategically timed. To estimate the effect of announcement timing (i.e. shift from Friday to Monday), I look at the interaction between Monday and the incentive to engage in timing. Firstly, I interact the Monday dummy with the measure of ex-ante investor inattention on Friday (Regression 2). Then I look at the Monday interaction with the measure of managers' concern about the market adverse reaction to Friday announcements (Regression 3). Finally, I include both interactions in the same regression.

Regression 2 reveals that the stock price effect of announcement timing is positive and significant. Furthermore, it depends on the level of investor inattention, that is, the larger the potential inattention, the higher the benefits of announcement timing. This is an intuitive result. Specifically, managers that observe FI at the level of the 99^{th} percentile of the overall

distribution gain 1.16% by announcing a deal on Monday instead of Friday (Regression 2).[20] The gain is 0.54% for FI at the 95th percentile, 0.12% at the 75th percentile and 0.02% at the mean FI. I find no evidence of significant gains when the decisive factor to time announcements is the possibility that the market might interpret the announcement as bad news, see Regression 3. Importantly, such a decision does not lead to negative stock returns either. The overall results remain qualitatively unchanged when I include both announcement timing variables (and their interactions with the Monday dummy) in the same regression.

6 Robustness tests

I document that M&A announcement timing explains a variation in the number of deals around weekends. Nevertheless, there are several alternative factors that might explain the surge of M&A announcements on Monday and a symmetric decrease in the deal count on Friday: deal complexity, information leakage, and media coverage.

The *Deal Complexity Hypothesis* says that complex deals are typically finalized over a weekend and announced on Monday because of extra workload and/or complicated negotiation. To test it, I conduct a series of logistic regressions in which I model the managers' propensity to announce a deal on Monday. All three measures have positive and statistically significant coefficients when controlling for bidder and deal characteristics (year and industry fixed effects included), see Table 6. The effect is economically significant too. An increase of one standard deviation in deal size is related to a 17.8% increase in the odds of announcing a deal on Monday, calculated at the average deal size (Regression 2).[21] Similarly, an increase of one standard deviation in the number of target advisors is related to a 13% increase in the odds of announcing a deal on Monday (Regression 4). Regression 6 shows that the Monday announcement odds for deals with the target termination fee are 44.8% higher than the odds for deals without it – a strong effect indeed.[22] The deal complexity measures remain both statistically and economically significant even when I use all three of them in the same regres-

[20] It is calculated as 2.108×0.549, where the second number is the FI 99th percentile.

[21] The value is calculated as $e^{0.099 \times ln(\frac{2111.4+498.6}{498.6})} - 1 = 17.8\%$, that is equivalent to the probability of Monday announcement of 54.1%. Alternatively, a 100% increase in deals size is related to a 7.1% $[= e^{0.099 \times ln(2)} - 1]$ increase in the odds of announcing a deal on Monday, regardless of the value that deal size is held at.

[22] The calculation with the standard deviation instead of the binary change (No→Yes) in target termination fee yields 12.2%.

sion (specification 7). The coefficients decrease substantially. However, such a sharp decrease was expected because these three variables are correlated (e.g., correlation of deal size and the number of target advisors is about 60%).

[Table 6 ABOUT HERE]

Next, I check whether the complexity argument could invalidate the announcement timing conjecture. I combine the analyses from Table 3 and Table 4 with the complexity explanation. The results are shown in Table 7. Both ex-ante variables that explain the managers' strategic behavior (FI and FAS) remain significant in all specifications. Friday inattention (FI) and the managers' concern about the adverse market reaction to Friday announcements (FAS) predict a lower probability that deals are announced on Friday after controlling for either of the complexity measures (Regressions 1-6). Also, FI and FAS a predict higher probability that managers choose Monday instead of Friday in the subsample of Monday and Friday announcements regardless of deal complexity (Regressions 6-12). In sum, even though I find that complex deals are indeed finalized over weekends and announced on Monday, this explanations does not reject the announcement timing hypothesis.

[Table 7 ABOUT HERE]

Another explanation is that managers want to avoid stock price fluctuations caused by information leakage during the negotiation process. In this case, weekends are a natural choice for the deal closing. I use two variables as proxies for the sensitivity to information leakage: a dummy variable equal to one for bidders with high stock price volatility and a dummy equal to one when the target operates in the high-tech industry.[23]

The logistic regression results are presented in Table 8. I do not find evidence that information sensitivity proxies predict a higher probability of Monday M&A announcements. On the contrary, bidders that experienced a higher volatility of their stock price are more likely to announce deals on Friday and less likely to do it on Monday (Regression 1 and 3). This finding is inconsistent with the *Information Leakage Hypothesis*. However, it is consistent with

[23] I define high-tech industries as drugs (SIC codes 2833-2836), research and development services (8731-8734), programming (7371-7379), computers (3570-3577), or electronics (3600-3674), as in Baginski et al. (2004).

the conjecture that bidders with highly volatile shares actually prefer low attention periods to avoid high swings in stock prices. On the other hand, bidders that announce acquisitions of high-tech targets seem to avoid both Friday and Monday (Regression 2 and 4).

[Table 8 ABOUT HERE]

As expected, FI and FAS remain statistically significant predictors of lower probability that managers announce deals on Friday even after controlling for high-volatility bidders and high-tech targets (see Regressions 1-4, Table 9). Furthermore, FI and FAS predict a higher probability that managers choose Monday instead of Friday in the subsample of Monday and Friday announcements even in the presence of the additional two control variables (Regressions 5-8).

[Table 9 ABOUT HERE]

Additionally, in the unreported analysis I investigate whether media coverage of M&As is higher on Monday. Getting more space on the media might induce managers to favor this day of the week for deal announcements. I measure media coverage by the number of news articles. The analysis reveals no evidence that Monday offers any benefit.

Finally, I check whether the managerial optimistic (pessimistic) perception of a deal is correlated with Monday (Friday) announcements. The announcement timing conjecture predicts that managers that are optimistic about a deal are likely to avoid Friday pitfalls and announce it on the following Monday, while we should observe the opposite for less optimistic ones. In the unreported analysis I model the deal completion probability using the Monday and Friday dummies as the main explanatory variables. I also include the standard set of controls in the regressions. I find that the Monday (Friday) dummy indeed predicts a higher (lower) completion probability in the full sample. Also, Monday deals are more likely to get completed than those announced on Friday. This analysis confirms the conjecture that the managers' perception of deal quality determines their strategic decisions. In the other words, managers that are more optimistic about their deals avoid Friday pitfalls, while those less optimistic actually do the opposite – they try to exploit the Friday inattention.

7 Conclusion

In this paper, I have investigated whether managers time acquisition announcements, what drives such behavior, and whether their strategic moves pay off. To test this conjecture I exploited a sharp variation in the number of deals around weekends – an unusually high number of deals on Monday (also known as Merger Monday) and a relatively low percentage of announcements on Fridays. I have found evidence consistent with managers timing their M&A announcements in order to anticipate and avoid potential pitfalls, specifically, investor inattention and the possibility that Friday announcements are interpreted as bad news. I have also documented significant gains when managers attempted to avoid Friday investor attention. However, there was no similar effect when the decisive factor was the possibility that the market might interpret the announcement as bad news. I also tested a number of alternative factors that could explain the day of the week pattern of M&A announcements (deal complexity, information leakage, and media coverage). Even though I have found that some of them hold (deal complexity), the announcement timing hypothesis could not be invalidated.

Overall, the results of this study show that information asymmetry and uncertainty about deal quality are important concerns in the context of mergers and acquisitions. Managers do take action to address these issues and avoid misinterpretation of deal qualities. Specifically, when making a decision about the announcement time they take into account investor behavioral biases (e.g. inattention) and the severity of the adverse selection problem.

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Table 1: Summary statistics

This table reports the summary statistics for the variables used in the analysis. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. I require that deal and bidder data is available in SDC, CRSP and COMPUSTAT. I collect transactions with at least a $1 million deal value and are not labeled as recapitalizations, repurchases, self-tenders, or exchange offers. All dollar amounts are expressed as CPI-adjusted December 2016 U.S. dollars. Continuous variables are winsorized at the 0.25^{th} and 99.75^{th} percentile. CAR is the bidder cumulative abnormal return estimated using the Carhart four factor model over days -280 to -31 and CAV is the bidder cumulative abnormal trading volume. Cash indicates that the acquisition is financed with cash only. Competition, Completed and Cross-border are dummies indicating multiple bidders, completed acquisitions and foreign acquisitions, respectively. Deal size is the total value of the transaction as reported by SDC. Defense indicates that the target employs a defensive tactic to countervail a takeover attempt. FI is the pre-announcement proxy of Friday inattention. FAS is the pre-announcement proxy of the adverse selection problem. High volatility indicates bidders with above average stock price volatility, while High-tech indicates targets operating in the high-tech industries. Friendly is a dummy equal to one if the attitude of the target management is friendly. Market cap is the bidder firm market capitalization at the last fiscal year end before the acquisition announcement. Market-to-book is the bidder firm market to book ratio at the last fiscal year end before the acquisition announcement. Private and Public indicate a target that is a private or publicly traded firm, respectively. Relative size is the deal value to bidder market capitalization ratio. ROA is the bidder firm return on assets from the last fiscal year before the acquisition announcement. Same industry indicates that the bidder and the target are in the same 2-digit SIC industry. Subsidiary indicates a target that is a subsidiary. Target advisors is the number of firms acting as a financial or legal advisor to the target. Target term. fee indicates that the target is liable to pay a termination fee to the acquirer. Tender offer indicates a deal that is structured as a tender offer. The detailed description of the variables is provided in Table A.1.

				Monday & Friday		Monday	Friday	
	Mean	Median	St. Dev.	Mean	St. Dev.	Mean	Mean	Diff.
CAR(-1,1) [%]	1.10	0.33	8.73	1.07	8.52	1.06	1.10	-0.038
Cash	0.29	0	0.46	0.30	0.46	0.31	0.28	0.023***
Competition	0.016	0	0.13	0.020	0.14	0.023	0.016	0.0069***
Completed	0.89	1	0.32	0.89	0.31	0.90	0.88	0.021***
Cross-border	0.18	0	0.39	0.18	0.38	0.17	0.19	-0.013**
Deal size [$ m]	498.6	60.0	2111.4	588.3	2393.0	696.5	399.4	297.1***
Defense	0.028	0	0.17	0.032	0.18	0.034	0.028	0.0065**
FI	0.0084	0.0073	0.20	0.0075	0.19	0.010	0.0023	0.0081**
FAS	0.92	1	0.19	0.92	0.19	0.92	0.90	0.019***
Friendly	0.97	1	0.17	0.97	0.18	0.97	0.96	0.011***
High volatility	0.50	0	0.50	0.50	0.50	0.50	0.51	-0.016*
High-tech	0.26	0	0.44	0.25	0.43	0.26	0.23	0.032***
Market cap [$ m]	10007.7	823.4	35715.9	10287.2	35711.3	10284.1	10292.6	-8.50
Market-to-book	3.51	2.28	7.56	3.46	7.43	3.57	3.26	0.31**
Private	0.47	0	0.50	0.46	0.50	0.46	0.46	-0.0031
Public	0.21	0	0.41	0.22	0.42	0.23	0.22	0.011
Relative size	0.38	0.089	1.06	0.39	1.04	0.40	0.37	0.030*
ROA [%]	8.64	10.9	17.4	9.04	17.2	9.40	8.41	0.99***
Same industry	0.40	0	0.49	0.40	0.49	0.39	0.40	-0.015*
Subsidiary	0.31	0	0.46	0.32	0.47	0.31	0.32	-0.0077
Target advisors	0.93	0	1.31	0.98	1.36	1.08	0.81	0.27***
Target term. fee	0.11	0	0.31	0.12	0.32	0.13	0.085	0.049***
Tender offer	0.033	0	0.18	0.038	0.19	0.042	0.030	0.012***
Observations	37635			14821		9426	5395	14821

* $p < .1$, ** $p < .05$, *** $p < .01$

Table 2: M&A distribution by the day of the week

This table reports the frequency (*Count*) and percentage (*Observed [%]*) of M&A announcements by the day of the week. It also reports the results of the chi-square goodness-of-fit test for the deal percentage against the uniform distribution. The percentage is calculated as the weekday number of M&As relative to the total number of deals announced. The table reports statistics for the full sample and public-to-public versus private-to-private deals. Public-to-public deals are a subsample of the full sample, while private-to-private deals are extracted from the control sample. The full sample consists of acquisitions announced between January 1990 and December 2016 with a U.S. bidder that is a publicly traded company and a target that is either a subsidiary, a public or private company. The control sample contains deals with private U.S. bidders only.

		Full sample		Pub. bidder & Pub. target		Priv. bidder & Priv. target	
	Expected [%]	Count	Observed [%]	Count	Observed [%]	Count	Observed [%]
Monday	20	9,426	25.1	2,609	27.0	1,254	20.5
Tuesday	20	7,876	20.9	1,915	19.8	1,240	20.3
Wednesday	20	7,515	20.0	1,882	19.5	1,265	20.7
Thursday	20	7,423	19.7	1,861	19.2	1,193	19.5
Friday	20	5,395	14.3	1,410	14.6	1,156	18.9
Observations		37,635		9,677		6,108	
χ^2			1,100.6		373.4		6.9
p-value			0.000		0.000		0.141

Table 3: Friday investor inattention and Friday/Monday M&A announcements

The table reports the results of logistic regressions that estimate the propensity for bidders to announce a deal on Friday and Monday. The first two regressions estimate the propensity of Friday announcements in the full sample, while the latter two model the likelihood that managers announce deals on Monday instead of Friday. The main explanatory variable is the ex-ante measure of investor inattention. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variable (FI) and the continuous control variables (deal size, the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	All weekdays		Monday vs. Friday	
	(1) Friday	(2) Friday	(3) Monday	(4) Monday
FI	-0.213**	-0.207**	0.313***	0.294***
	(0.084)	(0.085)	(0.097)	(0.098)
ln(Deal size)		-0.084***		0.145***
		(0.012)		(0.014)
ln(Market cap)		0.029***		-0.037***
		(0.010)		(0.011)
Market-to-book		-0.004**		0.004*
		(0.002)		(0.002)
ROA [%]		-0.000		0.002*
		(0.001)		(0.001)
Cash		-0.019		0.052
		(0.034)		(0.042)
Public		0.029		-0.076
		(0.034)		(0.054)
Competition		0.025		0.189
		(0.138)		(0.200)
Cross-border		0.045		-0.122**
		(0.048)		(0.058)
Defense		-0.037		0.207
		(0.129)		(0.147)
Friendly		-0.247***		0.353***
		(0.073)		(0.098)
Same industry		0.005		-0.016
		(0.036)		(0.042)
Tender offer		-0.076		0.191
		(0.077)		(0.136)
Constant	-0.831**	-0.581	-0.347	-0.723
	(0.330)	(0.356)	(0.436)	(0.452)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.03
Observations	37624	37462	14813	14756

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 4: Concern about Friday adverse selection and Friday/Monday M&A announcements

The table reports the results of logistic regressions that estimate the propensity for bidders to announce a deal on Friday and Monday. The first two regressions estimate the propensity of Friday announcements in the full sample, while the latter two model the likelihood that managers announce deals on Monday instead of Friday. The main explanatory variable is the ex-ante measure of the anticipated adverse selection problem (FAS), i.e. the managers' concern that investors might misinterpret the deal quality. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variable (FAS) and the continuous control variables (deal size, the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	All weekdays		Monday vs. Friday	
	(1) Friday	(2) Friday	(3) Monday	(4) Monday
FAS	-0.301***	-0.313***	0.358***	0.382***
	(0.084)	(0.086)	(0.078)	(0.080)
ln(Deal size)		-0.084***		0.149***
		(0.011)		(0.015)
ln(Market cap)		0.043***		-0.052***
		(0.012)		(0.013)
Market-to-book		-0.006**		0.005
		(0.003)		(0.003)
ROA [%]		0.002		0.000
		(0.002)		(0.002)
Cash		0.002		0.014
		(0.036)		(0.042)
Public		0.034		-0.069
		(0.034)		(0.056)
Competition		0.074		0.170
		(0.144)		(0.202)
Cross-border		0.056		-0.116**
		(0.045)		(0.057)
Defense		-0.039		0.211
		(0.129)		(0.155)
Friendly		-0.246***		0.350***
		(0.074)		(0.096)
Same industry		-0.031		0.000
		(0.048)		(0.055)
Tender offer		-0.078		0.157
		(0.074)		(0.123)
Constant	-0.514	-0.337	-0.723	-1.040*
	(0.439)	(0.456)	(0.576)	(0.588)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.03
Observations	31021	30976	12213	12194

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 5: Announcement timing returns

This table reports the OLS regression results for the bidder 3-day event period abnormal stock returns (CAR). It is calculated using the Carhart four-factor model with the parameters estimated over days [-280, -31]. The main explanatory variables are the ex-ante measure of investor inattention (FI) and the ex-ante measure of the anticipated adverse selection problem (FAS), i.e. the managers' concern that investors might misinterpret the deal quality. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variables (FI and FAS) and the continuous control variables (deal size, the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	(1) CAR(-1,1) [%]	(2) CAR(-1,1) [%]	(3) CAR(-1,1) [%]	(4) CAR(-1,1) [%]
Monday	-0.033	-0.056	-0.565	-0.539
	(0.164)	(0.167)	(0.696)	(0.698)
FI		-0.190		-0.629
		(0.502)		(0.468)
Monday × FI		2.108***		1.651**
		(0.696)		(0.791)
FAS			-0.219	-0.195
			(0.706)	(0.707)
Monday × FAS			0.503	0.461
			(0.722)	(0.727)
Constant	2.897	2.907	0.567	0.570
	(2.274)	(2.260)	(2.795)	(2.794)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.04	0.04	0.04	0.04
Observations	14764	14764	12199	12199

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 6: Deal complexity

This table reports the results of logistic regressions that estimate the propensity for the bidder to announce an acquisition on Monday. The main explanatory variables, which are proxies for deal complexity, are deal size, the number of target advisors and the indicator equal to one when the target is liable to pay a termination fee to the acquirer. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variables and the continuous control variables (the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	(1) Monday	(2) Monday	(3) Monday	(4) Monday
ln(Deal size)	0.099***			0.081***
	(0.012)			(0.014)
Target advisors		0.093***		0.025*
		(0.012)		(0.013)
Target term. fee			0.370***	0.259***
			(0.050)	(0.054)
Constant	-1.534***	-1.451***	-1.439***	-1.413***
	(0.331)	(0.317)	(0.316)	(0.319)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.01
Observations	37459	37459	37459	37459

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 7: Deal complexity and announcement timing

The table reports the results of logistic regressions that estimate the propensity for bidders to announce a deal on Friday and Monday when controlling for deal complexity. The first six regressions estimate the propensity of Friday announcements in the full sample, while the latter six model the likelihood that managers announce deals on Monday instead of Friday. The main explanatory variables are the ex-ante measure of investor inattention (FI) and the ex-ante measure of the anticipated adverse selection problem (FAS), i.e. the managers' concern that investors might misinterpret the deal quality. The regressions also include deal complexity measures: deal size, the number of target advisors and the indicator equal to one when the target is liable to pay a termination fee to the acquirer. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variables and the continuous control variables (the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	All weekdays						Monday vs. Friday					
	(1) Friday	(2) Friday	(3) Friday	(4) Friday	(5) Friday	(6) Friday	(7) Monday	(8) Monday	(9) Monday	(10) Monday	(11) Monday	(12) Monday
FI	-0.207**	-0.210**	-0.214**				0.294***	0.298***	0.293***			
	(0.085)	(0.084)	(0.085)				(0.098)	(0.097)	(0.096)			
FAS				-0.313***	-0.311***	-0.304***				0.382***	0.366***	0.353***
				(0.086)	(0.084)	(0.083)				(0.080)	(0.080)	(0.079)
ln(Deal size)	-0.084***			-0.084***			0.145***			0.149***		
	(0.012)			(0.011)			(0.014)			(0.015)		
Target advisors		-0.085***			-0.089***			0.145***			0.148***	
		(0.016)			(0.016)			(0.017)			(0.017)	
Target term. fee			-0.292***			-0.329***			0.511***			0.545***
			(0.079)			(0.081)			(0.080)			(0.083)
Constant	-0.581	-0.650*	-0.630*	-0.337	-0.433	-0.411	-0.723	-0.618	-0.656	-1.040*	-0.894	-0.929*
	(0.356)	(0.353)	(0.358)	(0.456)	(0.450)	(0.452)	(0.452)	(0.429)	(0.423)	(0.588)	(0.558)	(0.550)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.02	0.02	0.03	0.02	0.02
Observations	37462	37462	37462	30976	30976	30976	14756	14756	14756	12194	12194	12194

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 8: Information leakage

This table reports the results of logistic regressions that estimate the propensity for the bidder to announce an acquisition on Monday and Friday. The main explanatory variables, which are proxies for the sensitivity to information leakage, are the indicator of bidders with above average stock price volatility and the indicator of targets that operate in the high-tech industries. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variables and the continuous control variables (deal size, the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	(1) Monday	(2) Monday	(3) Friday	(4) Friday
High volatility	-0.050*		0.068*	
	(0.029)		(0.037)	
High-tech		-0.080**		-0.125**
		(0.036)		(0.056)
Constant	-1.540***	-1.541***	-0.573	-0.589*
	(0.333)	(0.330)	(0.355)	(0.354)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.01
Observations	37459	37459	37462	37462

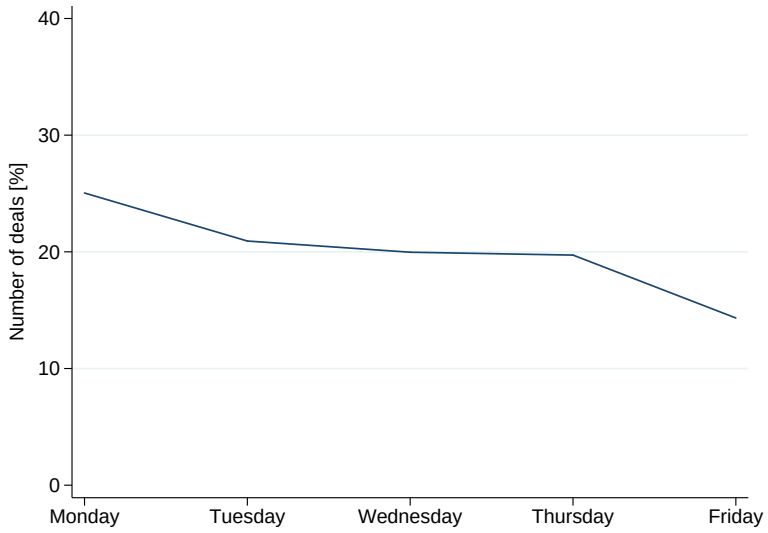
Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$

Table 9: Information leakage and announcement timing

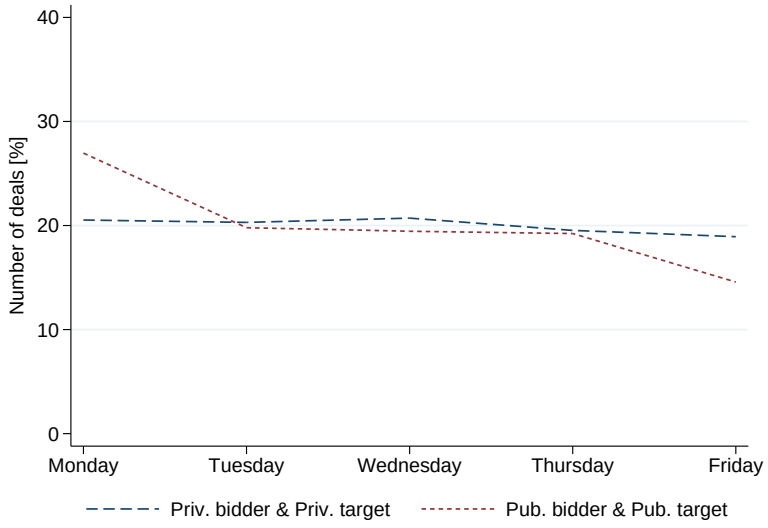
The table reports results of logistic regressions that estimate the propensity for bidders to announce a deal on Friday and Monday when controlling for information leakage. The first four regressions estimate the propensity of Friday announcements in the full sample, while the latter four model the likelihood that managers announce deals on Monday instead of Friday. The main explanatory variables are the ex-ante measure of investor inattention (FI) and the ex-ante measure of the anticipated adverse selection problem (FAS), i.e. the managers' concern that investors might misinterpret the deal quality. The regressions also include measures of sensitivity to information leakage: the indicator of bidders with above average stock price volatility and the indicator of targets that operate in the high-tech industries. The detailed description of the variables is provided in Table A.1. The sample consists of acquisitions between January 1990 and December 2016 with a bidder that is a U.S. public company and a target that is either a subsidiary, a public or private company. The main explanatory variables and the continuous control variables (deal size, the bidder market cap, market-to-book ratio, and ROA) are winsorized at the 0.25^{th} and 99.75^{th} percentile. The standard errors are clustered by the announcement year and are robust to heteroskedasticity.

	All weekdays				Monday vs. Friday			
	(1) Friday	(2) Friday	(3) Friday	(4) Friday	(5) Monday	(6) Monday	(7) Monday	(8) Monday
FI	-0.211**	-0.208**			0.302***	0.292***		
	(0.085)	(0.085)			(0.098)	(0.098)		
FAS			-0.314***	-0.306***			0.386***	0.378***
			(0.086)	(0.085)			(0.081)	(0.080)
High volatility	0.070*		0.061		-0.101**		-0.095*	
	(0.037)		(0.040)		(0.051)		(0.054)	
High-tech		-0.125**		-0.164***		0.061		0.098
		(0.056)		(0.055)		(0.064)		(0.061)
Constant	-0.575	-0.592*	-0.338	-0.360	-0.737	-0.718	-1.050*	-1.027*
	(0.356)	(0.355)	(0.459)	(0.454)	(0.456)	(0.451)	(0.595)	(0.587)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0.03
Observations	37462	37462	30976	30976	14756	14756	12194	12194

Standard errors in parentheses
* $p < .1$, ** $p < .05$, *** $p < .01$



(a) Full sample



(b) Priv-to-Priv vs. Pub-to-Pub

Figure 1: M&A distribution by the day of the week

This figure plots the percentage of M&A announcements by the day of the week. The percentage is calculated as the weekday number of M&As relative to the total number of deals announced. The figure plots the percentage for the full sample (Figure 1a) and public-to-public versus private-to-private deals (Figure 1b). Public-to-public deals are a subsample of the full sample, while private-to-private deals are extracted from the control sample. The full sample consists of acquisitions announced between January 1990 and December 2016 with a U.S. bidder that is a publicly traded company and a target that is either a subsidiary, a public or private company. The control sample contains only deals with a private U.S. bidder.

Appendix

A Variable definitions

Table A.1: Variable definitions and sources

This table defines variables used in the analysis. They are obtained directly from or constructed using Compustat, CRSP, I/B/E/S and SDC.

Variable	Definition	Source
CAR(-1,1)	Cumulative abnormal returns (in %) for the bidder firm from day -1 to day 1 calculated using the Carhart four-factor model. Model parameters are estimated over days [-280, -31].	CRSP
Cash	1 for deals financed with cash only.	SDC
Competition	1 when there is more than one bidder.	SDC
Completed	1 for completed acquisitions.	SDC
Cross-border	1 when the bidder and the target are not from the same country.	SDC
Deal size	Total value of the transaction (millions of US $).	SDC
Defense	1 if the target employs a defensive tactic to countervail a takeover attempt.	SDC
FAS	Pre-announcement proxy of the severity of adverse selection, i.e. the managers' concern that the market might interpret Friday announcements as bad news. It is defined as one minus the ratio of the number of quarterly EAs over a 3-year period before the M&A announcement that beat the analyst consensus forecast and are announced on Friday *and* the number of all quarterly EAs over a 3-year period before the M&A announcement that beat the analyst consensus forecast.	I/B/E/S
FI	Pre-announcement proxy of investor inattention on Friday. It is measured as a difference between the day of the week average relative trading volumes on Monday to Tuesday *and* the average relative trading volume on Friday. The day of the week average relative trading volumes are calculated over a one-year period before the announcement.	CRSP
Friday	1 when the acquisition is announced on Friday.	SDC
Friendly	1 if attitude of the target management is friendly.	SDC
High volatility	1 if the bidder stock price volatility is above the average.	CRSP
High-tech	1 when the target operates in the following industries: drugs (SIC codes 2833-2836), research and development services (8731-8734), programming (7371-7379), computers (3570-3577), and electronics (3600-3674), as in Baginski et al. (2004).	SDC
Market cap	Bidder market capitalization [=Share price (PRCC_F) $\times$ Number of shares outstanding (CSHO)] at the last fiscal year end before the acquisition announcement, in millions of US $.	Compustat
Market-to-book	Ratio of the bidder market capitalization to its book value of equity [=Total shareholders' equity (SEQ) + Deferred taxes and investment tax credits (TXDITC) - Preferred stock liquidating value (PSTKL)] at the last fiscal year end before the acquisition announcement.	Compustat
Monday	1 when the acquisition is announced on Monday.	SDC

Table A.1 – continued from previous page

Variable	Definition	Source
Private	1 when the target is a private company.	SDC
Public	1 when the target is a publicly listed company.	SDC
Relative size	Ratio of the deal size to the bidder market capitalization at the last fiscal year end before the acquisition announcement.	Compustat, SDC
ROA	Bidder firm return on assets [EBITDA / Book value of assets (AT)] at the last fiscal year end before the acquisition announcement, expressed in %.	Compustat
Same industry	1 when the bidder and the target are in the same 2-digit SIC industry.	SDC
Subsidiary	1 when the target is a subsidiary.	SDC
Target advisors	Number of firms acting as a financial or legal advisor to the target.	SDC
Target term. fee	1 if the target is liable to pay a termination fee to the acquirer.	SDC
Tender offer	1 when the deal is structured as a tender offer.	SDC

B News download

I use the Factiva database to download data on media coverage. I collect news in English with the region set to the United States, and I filter out identical duplicates. To rule out concerns about the potential impact of the search method, I collect news following two different procedures. Firstly, I require that the article contains both the exact name of the bidder and the exact name of the target, as provided by the SDC database.[24] Interestingly, SDC often abbreviates certain words in the long company names. For example, it uses *svcs* instead of *services*, *expl* instead of *exploration*, *intl* instead of *international*, and so on. When conducting the search, I manually replace these kinds of abbreviations with the full words. I call this procedure the *standard search*. In the alternative procedure, I repeat the search subtracting suffixes indicating the company type from company names, but at the same time I require that both the bidder name and the target name appear in the first 100 words of the article.[25] The subtracted suffixes are *Inc.*, *Corp.*, *Co.*, *LLC*, *LC* and *Ltd.*. This procedure addresses two possible issues: firstly, journalists might omit suffixes from company names, and secondly, if the transaction parties are not mentioned at the beginning of an article, then it is likely that the article itself does not talk about the M&A deal at all. I refer to this procedure as the *no-suffix search*. The analysis results are not affected by the choice of download procedure.

[24] This is fairly simple to perform in Factiva using double quotes together with the `and` operator, e.g. "*ABC Inc.*" `and` "*XYZ Corp.*".

[25] This is fairly simple to perform in Factiva using double quotes together with the `and` and `/F100/` operators, e.g. ("*ABC*" `and` "*XYZ*")`/F100/`.

The Intangibles Song in Takeover Announcements: Good Tempo, Hollow Tune

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Abstract

Mergers and acquisitions are often motivated by the intention of creating extra value from intangible assets. We develop a novel word list of intangibles and apply it to the takeover announcements from 2002 to 2016 with a U.S. domiciled bidder. Deals presented with more "intangibles talk" in takeover announcements complete more quickly (and more frequently). However, the value of these deals is questionable: One standard deviation more in intangibles talk results in 0.47 percentage points lower abnormal announcement returns of bidders. We find no support for agency problems driving these results. Instead, an analysis of insider trades suggests that intangibles talk reflects managerial overoptimism. Overall, takeover announcements can be an important source of information regarding the quality of deals.

JEL Classification: G14, G34, G41

Keywords: Corporate announcements, intangible assets, intangibles talk, mergers and acquisitions, takeovers, textual analysis

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1 Introduction

On July 20, 2011, Minnesota-based Ecolab Inc., a cleaning and sanitizing products producer, announced an acquisition of Nalco Holding Co., which makes chemicals used in industrial water treatment, energy and air applications. The transaction was valued at $8.1 billion, inclusive of $2.7 billion in Nalco net debt. As the key assets relevant for the deal, Ecolab's management listed, in the acquisition announcement, concepts such as *innovation, processes, customers, markets, technology know-how, team* and *corporate culture*. Ecolab's CEO is cited as stressing the importance of Nalco's *expertise, services, efficiency*, and *market*.[1] This storyline was also picked up by the business press.[2] In short, Ecolab tried hard to convince investors that Nalco is rich in intangible assets. However, investors were not convinced. The Ecolab stock price sharply fell and closed at $51.31 on the announcement day, a drop of 7.4% from the previous day's closing price. This is substantially larger than the median bidder price reaction to acquisitions of public chemicals companies over the 2002 to 2016 period, which was −1.3%. Ecolab's share price recovered mildly the following day, but then drifted down further to end the 10-day period after the announcement at $49.53, a fall of 10.6%. Despite the negative market reaction, the deal was completed and Ecolab acquired Nalco.

This paper studies whether this pattern – even if an extreme case – is typical, that is, whether a seemingly strong use of "intangibles talk" in a takeover announcement indeed usually goes hand-in-hand with a negative (abnormal) investor reaction to the announcement. We find that it does. Further tests reveal that this relation is likely due to managerial overconfidence about deal quality. Agency issues (such as private benefits of managing a larger company) seem to play a far less pronounced role. Overall, our paper provides new evidence of the role of corporate communication and managerial motivations in corporate transactions.

Our study is motivated by the great importance of takeovers and the rising relevance of intangible assets. Takeovers are major corporate actions; they significantly impact the fu-

[1] Douglas M. Baker, Jr., Ecolab's Chief Executive Officer commented on the target, saying *"Nalco is the global leader with deep expertise in programs and services to enhance water process efficiency, extend asset life, and improve their customers' end products. Nalco's water and oil and gas services end markets in particular represent excellent long term growth potential as the world deals with the quality, cost and availability of those key natural resources. Further, its geographic exposure to high-growth emerging markets offers terrific future potential for the combined companies."* – https://www.sec.gov/Archives/edgar/data/31462/000104746911006458/a2204877zex-99_1.htm

[2] *"We've long admired Nalco's capabilities, know-how and management team for years," said Ecolab Chief Executive Doug Baker in an interview.* – The Wall Street Journal, July 20, 2011.

ture of the acquiring company. Takeover announcements attract keen attention of investors and typically cause a considerable change in the current stock price. The literature documents a sizable variation in abnormal stock returns around the announcement date that ranges from rather negative to highly positive returns depending predictably on target and deal characteristics (see Moeller et al., 2004, 2007; Bargeron et al., 2008; Betton et al., 2008; Savor and Lu, 2009; Officer et al., 2009; Schneider and Spalt, 2017). While the positive market reaction causes no controversy, negative returns have triggered a wide debate. Two major explanations have evolved. The first explanation relies on the agency theory of Jensen and Meckling (1976) and attributes negative returns to distorted managerial objectives (see Jensen, 1986; Morck et al., 1990; Grinstein and Hribar, 2004), such as "empire building" and other private benefits. The second explanation draws on managerial behavioral biases, in particular overoptimism and overconfidence (see Roll, 1986; Malmendier and Tate, 2008; Ferris et al., 2013). Given the overall importance of takeovers and the scale of their impact on stock prices, it is crucial to understand whether takeover announcement content delivers valuable information to investors and whether it potentially discloses the genuine objective of the deal.

A successful acquisition requires a plausible valuation of the deal – but such valuations are arguably particularly challenging in the presence of intangible assets. Intriguingly, Lev (2012) documents a decline of 50% in the ability of accounting data to explain share price differences across companies over 1975-2006. Casual observation also suggests that acquirers often refer to intangible assets in takeover announcements. This paper analyzes what market participants can and do infer from this intangibles talk. Are frequent references to intangibles just inconsequential managerial guff? Or do such references indeed reveal something about the deal over and above other observables?

To enable a systematic analysis, we begin by developing a word list to measure the extent of intangibles talk on takeover announcements. Drawing on the strategy and business literature (Hall, 1992; Lev, 2005, 2012), we compile a dictionary of 213 words that indicate intangible assets. For example, each of the words highlighted in Ecolab's takeover announcement above is on that list. "Intangibles talk" then is the frequency of words associated with intangible assets.

Between 2002 and 2016, the median (average) U.S. takeover announcement contains about 2.3% (2.4%) words that are closely related to intangible assets, though there is substan-

tial variation in that frequency across announcements. That variability enables this analysis. Ecolab's announcement has 2.3%, what is considerably larger than the median of 1.3% for acquisitions of public targets that operate in the chemicals industry.

The main determinants of intangibles talk are the target industry, deal size, and public/private status. Strikingly, intangibles talk is not related to the actual size of target intangible capital (measured in different ways) in the subsample of publicly listed targets. Managerial skill and background are not systematically related to intangibles talk.

Next, we examine whether bidders that talk more about intangible assets are more likely to complete the deal. We find that they are: The propensity to complete the acquisition is larger for deals announced with more intangibles talk, and these deals complete more quickly. This result holds controlling for many deal characteristics. Thus, managers using intangibles talk in announcements seem particularly determined to see through the announced deal.

It is possible that managers refer more frequently to intangibles when they are disclosing advantageous private information regarding the target intangible capital, rather than merely repeating the visible. It would then be understandable that managers are keen to complete the deal. The data reject this idea. On average, the market reacts negatively to intangibles talk in the takeover announcements. One standard deviation more intangibles talk results in 0.47 percentage points lower abnormal announcement returns. There is no noticeable reversal of this effect; after 30 days, abnormal returns are 0.74 percentage points lower. Intangibles talk also (weakly) predicts a decrease in the operating performance measured by a change in return on assets over the next year. Additionally, analysts decrease bidder stock recommendations following takeover announcements rich in intangibles talk.

Why does the market react negatively to intangibles talk? We find no clear evidence that intangibles talk reflects an underlying agency problem between managers and shareholders: For example, the market responds similarly to intangibles talk whether or not the bidder executive team has strong incentives to increase the share price, or whether or not institutional investors own an important stake in the bidder. By contrast, we find more convincing evidence that intangibles talk is linked to overoptimism. Specifically, CEOs and top executives are more likely to purchase stock when they talk more about intangible assets in the takeover announcements.

The results are more pronounced in public firms and in deals involving non-high-tech targets. These results indicate that investors worry most about intangibles talk when intangible assets are less likely to play a major role in the acquisition rationale.

Overall, our results suggest that investors should be (and indeed are) careful when assessing an acquirer's proclamations of the intangible assets involved in a transaction. This is less so because of nefarious motives of self-interested managers who use managerial guff to push through value-destroying deals; rather, managers themselves often seem to believe in the value of deals they describe with intangibles talk.

This paper adds to the fast-growing literature that emphasizes the importance of qualitative aspects of corporate and media communication. In the context of takeovers, existing studies have mostly considered whether textual analysis of media coverage can help predict how likely a deal is to succeed. Liu and McConnell (2013) find that the probability of abandoning a deal after a negative stock price reaction at the announcement is related to the level and the tone of media attention to the proposed transaction; Buehlmaier and Zechner (2017) find that media information released on the announcement day contains information not captured by announcement day stock returns; and Ahern and Sosyura (2014) find that bidders manage media coverage during the private negotiation phase in stock acquisitions, generating a short-lived increase in the acquirer's stock price. Very little work is available on merger announcements. Kimbrough and Louis (2011) study merger-related disclosure in conference calls and merger announcements, showing that managers use conference calls to signal information to the market. They do not study intangibles.

The paper also adds to the literature on managerial backgrounds and behavioral biases in the context of takeovers, in particular overoptimism and overconfidence. In his seminal work, Roll (1986) offers an explanation of negative takeover announcement returns in the form of managerial overconfidence, the "hubris hypothesis." Malmendier and Tate (2008) find that the probability that a CEO undertakes an acquisition is higher if the CEO is classified as overconfident. Moreover, overconfident CEOs overpay for target companies and undertake value-destroying mergers. Ferris et al. (2013) study international M&As and find that CEO overconfidence helps to explain the number of offers made by a CEO, the frequencies of nondiversifying and diversifying acquisitions, and the use of cash to finance a merger deal. Custódio and Metzger (2013) show that when the acquirer's CEO has experience in the target industry,

the acquirer's abnormal announcement returns are higher. Aktas et al. (2016) study acquirer and target CEO narcissism. We add to this literature by providing further evidence that over-excited CEOs may engage in value-destroying acquisitions, and that this may be revealed in the wording of the announcement.

Our paper is also related to growing research emphasizing the importance of intangible assets in corporate value in general and in corporate takeovers specifically. On the general level, the perception of firm value has evolved over time from a mostly real asset driven to intangible based valuation. This is analyzed in particular in the comprehensive work by Lev (2000), Lev (2005), and Lev (2012), who attributes the rising importance of intangibles to two major factors: the sharp growth in business competition and the commoditization of physical assets. On the more specific level of takeovers and R%D, Phillips and Zhdanov (2013) show that an active acquisition market affects firm incentives to innovate and conduct R&D. Bena and Li (2014) find that patent portfolios and R&D expenses determine whether a firm will be an acquirer or a target. They conclude that synergies obtained from combining innovation capabilities are important drivers of acquisitions. Chen et al. (2018) show that a firm's propensity to acquire another firm increases after a competitor wins an innovation award. More broadly on the topic of intangibles, Lys and Yehuda (2015) find that private takeover targets have significantly more intangible assets than do public targets. John et al. (2015) and Tate and Yang (2016) study the role of labor mobility in acquisitions. Li et al. (2017) measure organization capital by capitalized selling, general, and administrative (SG&A) expenses and show that it predicts superior deal performance. Frésard et al. (2017) show that localized intangibles explain acquisitions of foreign targets. No work that we know of has examined bidder communication regarding intangibles in the deal, and the market reaction to such communication.

Finally, the paper adds to the literature that uses textual analysis to provide insight on otherwise difficult to capture issues. For example, some work has established textual measures of financial constraints (Buehlmaier and Whited, 2015; Bodnaruk et al., 2015; Hoberg and Maksimovic, 2015). Others have used 10-Ks to investigate product market competition (Hoberg and Phillips, 2010). Moreover, a vast literature has considered linguistic tone (which we control for); see Loughran and McDonald (2016) for a survey. Our analysis uses textual analysis to provide a new view on intangibles.

The paper proceeds as follows. Section 2 presents our sample selection and data. In

particular, it discusses the textual analysis methodology and introduces the intangibles words dictionary. Section 3 studies what explains intangibles talk. Section 4 presents empirical results for how intangibles talk predicts deal completion probability and speed, abnormal returns, and post-merger performance, and an analysis of which factors may contribute to the observed outcomes. It also offers a battery of robustness checks Section 5 concludes.

2 Data

2.1 Deals and takeover announcements

Our data set is composed of corporate takeover deals from 2002 to 2016, collected from SDC and matched to CRSP and COMPUSTAT data. We begin by downloading all announced acquisitions where the bidder is a public company domiciled in the United States, and where the target is a public or private company.[3] Following Moeller et al. (2004), we collect transactions with at least $1 million deal value and 1% relative size (deal value to bidder market capitalization ratio). We exclude deals that are labeled as recapitalizations, repurchases, self-tenders, or exchange offers, as in Bargeron et al. (2008). We require that the bidder owns at least 80% of the target after the purchase in case of completed deals, and not more than 15% before the announcement (Schneider and Spalt, 2017). Following standard practice in the literature, we exclude from the sample bidders that operate in regulated utilities (SIC code 4900-4999) or in the financial industry (SIC code 6000-6999) and bidders with negative book equity. We further require each bidder to match on the CRSP and COMPUSTAT databases. We require that annual financial data for the calculation of the control variables (see below) are available in COMPUSTAT for each bidder. We extract data for the most recent annual report that is filed not more than a year before the announcement. The sample that we get consists of 4,682 deals.

The corresponding takeover announcements, filed as 8-K forms, are then downloaded from the EDGAR platform, the Electronic Data Gathering, Analysis, and Retrieval system, which performs automated collection and distribution of data and public filings by companies

[3]Bidders that are labeled as government, investor, joint venture, mutually owned, subsidiary, private, or have unknown public status are excluded from the sample. The same list of restrictions applies to targets except for private status.

and others who are required by law to file forms with the SEC. Public companies must file an 8-K form with the SEC within four business days to announce material events that shareholders should know about. Form 8-K is a "current report." It is not filed in the regular time intervals, but is triggered by a significant event like a CEO departure or an M&A. Only 8-Ks filed no later than 4 business days after the announcement date of the deal are used in the analysis.[4] The final takeover sample consists of 2,414 deals.

We obtain additional data needed for hypothesis testing from several databases. Managerial incentives, computed as in Core and Guay (2002) and Coles et al. (2006) are from Lalitha Naveen's website. Institutional investor (13F) stock holdings are downloaded from Thomson Reuters. Insider trading data are from Thomson Reuters Insider Filings. Analyst stock buy-sell recommendations are from I/B/E/S (Recommendations - Summary Statistics section). Managerial skill data as in Demerjian et al. (2012) is from Peter Demerjian's website.[5]

2.2 Textual analysis of takeover announcements

2.2.1 8-K parsing

When analyzing the announcements we follow a common practice in the textual analysis literature, a "bag of words" approach. This approach is based on parsing announcement files into vectors of words and word counts. We exclude footers as they commonly contain template language that is not useful in measuring text variables of interest. As a footer starting point we take the forward-looking disclaimer. We split words by space and delete all leading and trailing non-alphabetical characters using regular expressions. This procedure automatically removes numbers. Finally, the parsed text is matched to dictionaries to obtain word frequencies.

[4]The download and announcement identification procedure is described in Supplementary Appendix Section C.1. EDGAR and SDC do not have a linking identifier. SDC, however, provides 6-digit CUSIPs that can be used to link SDC to CRSP to obtain PERMNOs, which in turn provide a link to COMPUSTAT, which gives us CIK codes. These CIK codes can be used to download 8-K filings that contain announcements from EDGAR. There are 62 deals with a missing CIK in the sample. We find the missing identifiers in EDGAR using the bidder name reported by SDC.

[5]We use the 2016 version of these data to maximize the coverage, but the results also hold with the prior vintage (which covers fewer years and uses a different method).

2.2.2 Intangibles talk dictionary

Our focus is to evaluate the effect of what bidder executives disclose about intangible assets in takeover announcements. We opt for a simple and replicable approach in this analysis, a word-counting approach, using a list of relevant words. The extant literature on textual analysis in finance stresses the importance of using word lists that reflect financial jargon.[6] To our knowledge, there is no such a list for intangibles talk measurement.

To develop our word list, we draw on a number of studies on the role of intangible assets and firm capabilities Hall (1992), Lev (2005) and Lev (2012). These works do not offer well-defined sets of intangibles words, but they are all rich in describing and listing various types of these assets. Hall (1992), for example, lists trade marks, patents, copyright, registered designs, contracts, trade secrets, reputation, networks, know-how, and culture as general intangible categories. He explains that the analysis of intangible assets should play a major role in the strategic management process and highlights the link between competitive advantage, capability differentials and intangible resources. Lev (2005) lists general categories and points out growing importance of intangibles assets. Lev (2012) puts an emphasis on voluntary disclosure about intangibles to address the shrinking relevance of accounting information.

The list we compile contains 213 words and phrases in total; Table 1. This list includes the words and phrases that identify or describe intangibles found in one of the above-cited works. Following Loughran and McDonald (2011), we add the plural form of nouns, the simple past tense, the past participle, gerund and the third person present tense for verbs.[7] For example, once we include word *patent*, we add *patents*, *patented* and *patenting* as well. Furthermore, we add words that are either synonyms or have a very similar meaning in the financial jargon as the words from the studies, for instance, we accompany word *networks* with *alliances*, *relations*, *relationships* and *connections*.

We did not reverse engineer or "optimize" the word list. Indeed, we will see below that while by and large our word list gives plausible results in a cross-industry comparison, there are also some weaknesses. Future work may profitably adjust the list. We also recognize

[6] See Loughran and McDonald (2016).

[7] Adverbs and adjectives are not included. However, we find qualitatively similar results even if we include them in the word list.

that more sophisticated methods, such as machine learning, may do a superior job at capturing intangibles talk.

[Table 1 ABOUT HERE]

Loughran and McDonald (2016) suggest to check word frequency when constructing a dictionary since words tend to follow a power law distribution – a distribution that features a small number of high–frequency words and a large number of low-frequency words. This phenomenon is known as Zipf's law and it raises concerns that certain words can potentially have a large impact on the results. The word frequencies in Figure 1 seem to be intuitive and show no signs of obvious misclassification. The 3 most frequent intangibles words (1% of words from our list), *services*, *solutions*, and *customers*, account for 17% of the intangibles word count across all acquisition announcements in the sample (21% when also counting their singulars). This is significantly smaller than the 44% that Loughran and McDonald (2016) find for the top 1% of negative words in the sample of 10-K/Q filings.

[Figure 1 ABOUT HERE]

We use the standard approach of proportional weighting, that is word list counts divided by the total number of words in the analyzed text. Accordingly, we define *% Intangibles talk* as the number of intangibles words divided by the total number of words in announcement i, expressed as a percentage:

$$\%Intangibles\ talk_i = \frac{Intangibles\ words_i}{Total\ words_i} \cdot 100. \tag{1}$$

2.2.3 Other textual variables

We expect announcements to be fairly positive and definitive overall, but there may still be informative variation across announcements. *% Uncertainty* and *% Strong modal* variables are the percentages of uncertain and strong modal words from the Loughran and McDonald (2016) word list, respectively. We also measure the linguistic tone of the announcement. Although

Loughran and McDonald (2016) caution against the use of positive words, we are here specifically interested in whether companies may "hype" a transaction by using a high number of positive words, and whether the market sees through them. Negative words may be interpreted as reflecting a degree of cautiousness. We thus define (net) *Negativity* of announcement i as:

$$Negativity_i = \frac{Negative\ words_i - Positive\ words_i}{Negative\ words_i + Positive\ words_i + 1}. \tag{2}$$

In the robustness checks, we also use positive and negative frequencies separately, with identical inferences. There, we also use other textual variables, such as sentence length.

2.3 Main deal and firm variables

Table 2 defines all variables. Our main dependent variables are an indicator for whether the acquisition was completed; the days to completion; the announcement return and the medium-term return; the change in operating performance of the combined entity one to three years after the transaction; analyst responses; and insider trades. These variables are standard (but we describe them in more detail below as we go through the analysis).

[Table 2 ABOUT HERE]

Our controls for bidder, target and deal characteristics are also standard. The set of bidder control variables include market-to-book ratio, market capitalization and return on assets (ROA). The main target control variables are its public status, deal relative size, defined as deal size over bidder market capitalization, and intangible assets. As deal characteristics we use payment method, tender offer, cross-industry, multiple bidder, cross-border, and friendly deal dummies. Cross-industry deals involve targets with a two-digit SIC code other than that of the bidder. When we analyze deal completion probability, we include two additional dummy variables, indicating the existence of target termination fees and acquirer termination fees. Additionally, we include year and industry fixed effects in all regression specifications to control for common time trends and unobservable industry heterogeneity. All continuous control variables (ROA, market-to-book ratio, market capitalization, relative size, deal size, intangible assets and their relative size) are winsorized at the 1st and 99th percentiles.

We will begin the analysis by testing whether bidder management talks more about intangibles when the target has more intangible assets. Measuring those assets directly is challenging, and we use three proxies (all of which are only available for public targets). For each of them, we use the log value as well as the ratio of target intangible assets to the book value of target total assets (*IA/AT*).

First, a basic measure is the book value of intangible assets (*Intan. assets*$_b$), which is available in COMPUSTAT. The book value of intangible assets does not fully reflect their real size as accounting systems generally do not keep track of internally generated intangible assets.[8] Second, we compute target intangible assets as deal size minus tangible assets, which in turn are calculated as total assets minus the book value of intangible assets. The constructed variable (*Intan. assets*$_{acq}$) essentially quantifies the bidder's estimate of the target intangible assets. The advantage of this measure is that it uses current information and captures internally generated intangibles, but it has the disadvantage that, apart from target intangible assets, it also captures synergies and possible over- or underpayment. The third measure of intangible assets (*Intan. assets*$_{PT}$) is the estimated replacement cost of the target's intangible capital introduced in Peters and Taylor (2017). These authors recognize that the major part of intangibles arise from expensed activities, for example, a firm's spending to develop knowledge, patents, and software, advertising to build brand capital or employee training to build human capital. They, therefore, define intangible assets as the sum of the firm's externally purchased and internally created intangible capital. Externally purchased intangible capital is measured as the book value of intangible assets. Internally created intangible capital is computed as the sum of the replacement cost of the firm's knowledge capital, which is the portion of intangible capital that comes from R&D, and the replacement cost of the firm's organization capital, the portion of intangible capital that comes from SG&A. The Peters and Taylor (2017) measure is available in WRDS.

[8] Under U.S. GAAP, ASC 350-20-25-3 states, "Costs of internally developing, maintaining, or restoring intangible assets (including goodwill) that are not specifically identifiable, that have indeterminate lives, or that are inherent in a continuing business and related to an entity as a whole, shall be recognized as an expense when incurred." – https://www.fasb.org/resources/ccurl/731/820/fas142.pdf

2.4 Summary statistics

Table 3 presents summary statistics. On average, 2.38% of takeover announcements' words are from the intangibles words list, with substantial variation across announcements. The distribution is not heavily skewed, as also seen in the the median value of 2.29%. (We study industry variation, time trends, and other determinants of intangibles talk below.)

Not surprisingly, the announcements are dominated by positive words (1.40%) relative to negative words (0.34%), resulting in average negativity of -0.55. Words that might carry a negative message, such as strong modal and uncertainty words, are not so frequent either, 0.19% and 0.42% respectively.[9]

[Table 3 ABOUT HERE]

The sample has a positive event period bidder cumulative abnormal return (CAR) of 0.39% on average (0.22% median CAR). As is usual, in public deals, bidders have significantly negative returns on average (-1.36%), in contrast to what happens in private deals (1.15%).[10] The target CAR is significantly larger, with a mean (median) value of 25.1% (20.8%). [11] In our sample, 93% of deals are completed, which is somewhat more than is typically the case.[12] The average (median) time from the announcement to the deal completion is about 54 (34) days. The average abnormal increase in operating performance (ΔROA) is 1.02% over one year and 0.81% over three years following the acquisition.

The size of target intangible assets varies substantially depending on the measure we use. The book value is the smallest, followed by the Peters and Taylor (2017) measure, and the

[9]These numbers can be compared to average negativity (as defined here), strong modal word usage, and uncertainty of -0.38, 0.63%, and 0.84%, respectively, on earnings conference calls (Druz et al., 2018).

[10]Moeller et al. (2004) report average bidder CARs of 1.496% for private deals and -1.022% for public deals. In a more recent study, Schneider and Spalt (2017) compute bidder CARs of 1.44% for non-public and -1.39% for private deals, respectively.

[11]Similarly, Bargeron et al. (2008) find that shareholders of firms acquired by public firms gain 29.5% on average over the 3 days around the announcement of the acquisition.

[12]For the 1979–2003 period, Officer (2007) reports that 95% of 2,829 offers in SDC for unlisted stand-alone targets for are successful versus 77% of 4,559 offers for publicly traded targets. This combines to an 84% overall completion rate. In our sample, 96% of 1,736 offers for private targets and 88% of 740 offers for publicly traded targets are completed. The difference between the full sample statistics can, therefore, be attributed to the relatively higher proportion of private targets and the higher completion rate of public target deals in our sample. The latter is likely due to relatively smaller number of hostile deals in our sample, which were more common during the "corporate raiders" era in the 1980s.

measure that proxies for the size of acquired intangibles using actual deal size.[13]

3 Which announcements feature intangibles talk?

We begin our analysis by analyzing intangibles talk over time, across industries, and across deals. Figure 2 plots the time series of intangibles talk in the full sample and for private and public target deal announcements separately. There is little discernible variation in intangibles talk over time, though there does appear to exist a modest downward trend over time, particularly among public deals (which exhibit significantly less intangibles talk, as detailed further below).

Next, Figure 3 shows, as expected, that how much the bidder management talks about intangibles depends on the industry sector in which the target operates in.[14] For example, the highest intangibles talk industries among the Fama-French 48 industries, *Business services*, *Computers*, and *Electrical equipment* are nearly three times richer in intangibles talk than the lowest three, *Precious metals*, *Restaurants, hotels, motels*, and *Petroleum and natural gas*. The later three indeed heavily rely on tangible assets in contrast to the ones at the top of the intangibles talk list which are technology intensive industries. As such, our classification captures plausible variation. We acknowledge that the classification is not perfect. For example, acquisition announcements in the *Pharma* industry use relatively few of our intangibles words, even though one might expect these deals to involve a high percentage of intangibles. Although more sophisticated and perhaps industry-specific classification methods could yield further insights here, we continue to use our classification to avoid concerns about data mining.

[Figure 2 ABOUT HERE]

[Figure 3 ABOUT HERE]

[13] Table SA.1 reports the correlation between the measures of target intangible assets. The correlation coefficients for the measures of absolute intangible asset size (Panel A) are all positive and significant. The smallest coefficient (56.3%) is the one between the book value and the estimate of acquired intangibles, and the largest one is between the book value and the PT measures (81.7%). However, the relative measures (Panel B) are not significantly correlated, with the exception of the correlation between the ratios using the estimate of acquired intangibles and the PT measures, which is statistically different from zero, but still small in magnitude (9.3%).

[14] A quite similar picture arises when using bidder industries.

Column (1) in Panel A of Table 4 shows that industry and year fixed effects together explain 21% of the variation in intangibles talk. Which target characteristics explain intangibles talk? The second regression reveals that deal size and the target public status dummy explain an additional 10% of the variation (31% in total). Both variables enter negatively and significantly. This is consistent with the intuition that private and small firms, such as start-ups, more heavily rely on intangible assets, for example innovation potential.[15] Conversely, these regressions suggest that when an announcement of an acquisition of a public target uses a high frequency of intangibles words, this is unusual.

In additional checks below, we also examine the role of bidder intangibles. It is possible that intangibles talk just reflects business model features of the bidder. As we will see, however, there is no clear pattern: The absolute level of bidder intangibles is related to intangibles talk, but the level relative to total assets is not. Further checks consider the role of managerial skill. The robustness section shows that these do not strongly correlate with intangible talk. Because adding either of these controls reduces the sample size, we do not include them in the main regressions, but repeat all analysis with them in the robustness analysis in Section 4.4. Neither controlling for bidder intangible talk nor controlling for managerial ability changes the results.

In additional, untabulated analysis, we also investigate whether deal characteristics correlate with intangibles talk. There is no specific reason why they should, and indeed we do not find much significant variation. In any case, we control for a range of deal variables in the further analysis. We also find that takeover announcements with more intangibles talk use more positive and fewer negative words, as well as more strong modal words. We control for these linguistic features in what follows.

[Table 4 ABOUT HERE]

In Panel B, we focus on public targets, which offer accounting information not available for private firms. Specifically, we consider three measures of target intangible assets: the book value, the estimate of the acquired intangibles, and the estimated replacement cost of target's intangibles (Peters and Taylor, 2017). For each measure we compute a natural logarithm of its

[15] Indeed, Lys and Yehuda (2015) find that private takeover targets have significantly more intangible assets than do public targets. Moreover, Phillips and Zhdanov (2013) present evidence of a negative relation between firm size and the innovation process.

value and ratio to the book value of target total assets. None of specifications yields significant coefficients.

Overall, these results suggest that while intangibles talk predictably varies with industry characteristics, on the specific deal-level, the size of target intangible assets do not explain the use of intangibles talk. This result begs several questions: Is intangibles talk just managerial guff? If it is, is it disregarded by investors? Or do these results mean that there is new and valuable information in the announcements? That is, do managers perhaps reveal insights into the value of a deal that would not be seen in observables? Do investors respond to it? Does the phrasing of announcements reveal something about management's eagerness to conclude the deal? We turn to these questions next.

4 What does intangibles talk reveal?

4.1 Eager bidders and intangibles talk

We begin our analysis of the predictive power of intangibles talk by looking at whether managerial communication in earnings announcements reveals something about the decisiveness with which management pursues the transaction. Specifically, we hypothesize that, holding the nature of the deal constant, a bidder management team that is more motivated to acquire the target talks more about its intangible, soft aspects in the takeover announcement. We call this the *Eager Bidder Hypothesis*. We expect to find a significant and positive relation between intangibles talk and variables that proxy for management motivation to acquire the target. The proxies that we propose are deal completion probability and the amount of time from the announcement till the completion date, given that the bidder acquires the target. The latter variable is a useful complement to the former because, after all, most deals do get completed.

[Figure 4 ABOUT HERE]

Figure 4 presents graphical evidence in favor of the hypothesis. The completion rate shows a strong, positive relation with the proportion of intangibles words: In the lowest quintile of intangibles talk, 86% of deals are completed, whereas in the highest quintile, 96% are

completed. The completion rate increases monotonically over the five quintiles. Strikingly, the completion time measured in days exhibits almost a linearly decreasing trend across intangibles talk quintiles: In the lowest quintile of intangibles talk, deals take around 100 days to complete. By contrast, when an announcement is in the highest quintile of intangibles talk, managers seem to be in a hurry: after less than 50 days, the average deal is completed. Overall, these patterns provide suggestive evidence that the managerial ambition to acquire the target is indeed reflected in the frequency of intangibles words.

Of course, it is possible that other factors come into play. For example, acquisitions of private targets involve more intangibles talk, but these acquisitions are expected to close substantially faster (given the smaller complexity). To formally test the Eager Bidder Hypothesis and to explore whether the observed patterns are driven by bidder, target, or deal characteristics, we estimate the following probit regression:

$$Pr(C_i = 1) \propto exp(\alpha + \beta_1 IT_i + \sum_n \beta_n TV_{i,n} + \sum_m \beta_m CV_{i,m} + Ind + Yr), \tag{3}$$

where C is a dummy equal to 1 for deals that are completed, IT is intangibles talk, TV are other textual variables, and CV are deal, bidder and target control variables for deal i.

The second test involves an OLS regression estimated for completed deals only:

$$DTC_i(C_i = 1) = \alpha + \beta_1 IT_i + \sum_n \beta_n TV_{i,n} + \sum_m \beta_m CV_{i,m} + Ind + Yr, \tag{4}$$

where DTC is the number of days between the announcement and completion date for deal i. The other variables remain as in the previous model.

In both models, we include 2-digit SIC bidder industry (Ind) and year (Yr) fixed effects. We cluster standard errors by the announcement year to capture the correlation between observations over time.[16]

[Table 5 ABOUT HERE]

[16] Alternatively, we cluster standard errors by 2-digit SIC industry. The results remain similar throughout the entire analysis. Yet alternatively, we use Fama-French 48 industries, with identical inferences. Finally, our results also remain robust when using industry-year fixed effects (which accounts for the possibility of industry-specific merger waves, for example).

Table 5 reports the regression results for the two models. They support the evidence suggested by Figure 4 above: Specifically, regressions (1) and (2) imply that, even controlling for a rich set of bidder, target, and deal characteristics, there is a statistically and economically significant association between the extent of intangibles talk and the completion rate of deals. A one percentage point difference in intangibles talk implies a 1.3 percentage point increase of the probability of completion. Similarly, specifications (3) and (4) show that the bidders who talk more about intangible assets in the announcements complete the deal in a significantly shorter time period, given that the target is acquired. One percentage point more in intangibles talk shortens the deal completion period by 4.5 days.

Other textual features of the announcement are also revealing: Even though on average announcements sound fairly positive, when they are somewhat less positive, this does indicate a lower completion probability and a more drawn-out process to completion. Uncertain words and strong modal words both portend a somewhat lower completion rate. The other control variables largely have signs in line with the existing literature.

Overall, the evidence provides strong support for the Eager Bidder Hypothesis.

4.2 Does intangibles talk describe better deals?

We have found that there is positive and significant relation between intangibles talk in the takeover announcements and the observed speed and likelihood of completion of the deal. We consider three potential explanations for this relation: (1) advantageous private information, (2) agency problems, and (3) overoptimism of bidders. The explanations are not mutually exclusive ex ante. To distinguish between explanation (1) and the other two, we exploit the market reaction to the takeover announcement and the actual ex-post performance of bidders. To distinguish between (2) and (3), we draw on cross-sectional variation in the market reactions as well as on insider trading choices.

4.2.1 Does intangibles talk convey advantageous information?

We investigate abnormal returns (around the announcement and in the medium run), operating performance, and analyst responses after takeover announcements.

Abnormal returns

Bidders emphasizing intangibles in takeover announcements may possess private beneficial information about the target firm potential. As such, their eagerness to acquire the target would be well-motivated, and they would be simply referring more frequently to intangible aspects as they try to communicate this information and their excitement to the shareholders. Thus, this *Advantageous Information Hypothesis* predicts more positive bidder announcement returns after more pronounced intangibles talk. By contrast, both the *Agency Hypothesis* and the *Overoptimism Hypotheses* predict a negative relation. Under the former, managers are exploiting their power to engage in value-destroying deals; under the letter, managerial hubris leads executives to embark on poor deals.

We measure bidder announcement returns as CAR(-1,1), the 3-day cumulative abnormal returns for the bidder firm using the Carhart four-factor model, around the announcement. Model parameters are estimated over days (-280, -31).[17]

[Figure 5 ABOUT HERE]

Strikingly, Figure 5 presents a clear, negative relation between bidder abnormal returns and the frequency of intangibles words. Recall that on average announcement returns are 0.39%. In the top quintile of intangibles talk, announcement returns are roughly 0%, whereas in the lowest quintile, they are about 1%, a sizable spread around the average returns.

To formally investigate the relation between bidder returns and intangibles talk, we estimate the following regression:

$$CAR_i(-1,1) = \alpha + \beta_1 IT_i + \sum_n \beta_n TV_{i,n} + \sum_m \beta_m CV_{i,m} + Ind + Yr, \tag{5}$$

[17] We use the same interval to estimate the benchmark returns as Schneider and Spalt (2017). They use the market model instead of the Carhart four-factor model.

where *CAR(-1,1)* is the bidder announcement CAR, *IT* is intangibles talk, *TV* are other textual variables, and *CV* are deal, bidder and target control variables for deal *i*. Again, we also include industry (*Ind*) and year (*Yr*) fixed effects, and we cluster standard errors by the announcement year. As before, the results are robust to the use of industry-year fixed effects and industry-year clustering.

[Table 6 ABOUT HERE]

Table 6 shows that intangibles talk enters negatively and significantly in both specifications. Consider regression (1), because the standard deviation of intangibles talk is one, the regression implies that a one standard deviation higher intangibles talk results in 0.47 percentage points lower abnormal returns, a sizable difference. This remains largely unchanged when we control for additional textual variables in column (2).

These effects do not revert. Of course, it gets harder to significantly explain returns over longer time horizons due to the increased noise. However, as column (3) shows, after 30 days, high-intangibles talks firms still experience a discount in abnormal returns of -0.74% on average. The point estimate is similar when including other textual variables in column (4).

The control variables have the usual signs. In addition, somewhat surprisingly perhaps, regression (2) shows that the market does not appear to respond to the linguistic tone, the uncertainty, and the extent of modal word usage in the takeover announcement.

Overall, these results show that investors respond more negatively to acquisition announcements with more intangibles talk.

Post-acquisition performance

To assess further whether intangibles talk is related to actual deal quality, we look at the post-acquisition combined entity performance. We consider Return on Assets (ROA), defined as EBITDA over assets. We allow for performance to accrue over time as it may take time to generate value from intangible assets. Therefore, we examine ROA changes from year 0 to year 1, and from year 0 to year 3, where year 0 is defined as the year of acquisition. We follow Frésard et al. (2017) and address underlying industry trends by contrasting acquirer's

performance to that of industry peers. For each acquirer, we construct a portfolio of peers that do not differ more than 50% in size from the acquirer, operate in the same 2-digit SIC industry, and are not involved in any acquisition during a six-year period surrounding the transaction. The benchmark is calculated as a mean performance of each portfolio and then subtracted from that of the acquirers.

[Table 7 ABOUT HERE]

Table 7 reports the results of cross-sectional regressions for the post-acquisition change in performance. The regression coefficients of intangibles talk are consistently negative for both 1-year and 3-year period. However, statistical significance is low (and decreases further when using industry-year fixed effects). Overall, the evidence is broadly consistent with the findings from the CAR analysis, that is, acquiring firms do not refer to intangibles to communicate advantageous private information about the target.

Analyst stock recommendations

Do financial analysts respond to the information in takeover announcements? To answer, we compute the change in the median analyst recommendation and regress it on intangibles talk. The change is defined as a difference between the earliest available median recommendation that is calculated within the 7-60 days period after the takeover announcement and the most recent median recommendation calculated within the 7-60 days period before the takeover announcement. Thomson Reuters calculates median recommendations by assigning to each contributing analyst's recommendation an integer based on the standardized Thomson Reuters recommendation scale and calculating a real number median. The (inversed) scale is as follows: 5. Strong Buy, 4. Buy, 3. Hold, 2. Underperform, 1. Sell. Table 8 reports the results of the test. We find that the intangibles talk coefficients in all specifications are negative and significant, meaning that takeover announcements rich in intangibles talk are related to the magnitude of stock recommendation downgrade. Finding even a small effect in such an analysis is impressive, given that on average analysts are known to be reluctant to downgrade their recommendations (Conrad et al., 2006; Michaely and Womack, 1999).

[Table 8 ABOUT HERE]

Summary

Overall, the evidence from each of these dependent variables – stock returns (both immediate and medium-term), operational performance changes, and analyst recommendation changes – suggests that the bidder management team does not refer to intangible assets to convey advantageous private information to the investors. Higher levels of intangibles talk in the takeover announcements are rather a sign of poor managerial decisions leading to the acquisition.

4.2.2 Agency or overoptimism?

The negative market response to the takeover announcements with relatively high level of intangibles talk suggest that the bidder managers are either conflicted and pursue their own objectives, or that they are overoptimistic about the deal.

Testing for agency problems

Under the *Agency Hypothesis*, conflicted managers who privately benefit (e.g., through an empire-building motive) even from value-destroying takeovers refer to intangible aspects in an attempt to justify the deal and bolster the returns. The hypothesis predicts that the effect of intangibles talk on deal completion and announcement abnormal returns is stronger for bidders that have a more pronounced agency problem. To proxy for the extent of the agency problem we use variables that measure the quality of corporate governance.

We present results for two measures.[18] Our first governance measure is executive incentives. Intuitively, executives whose wealth depends more on the share price are better aligned with shareholder welfare, which should lead them to seek out value-increasing takeovers and avoid value-destroying deals. A standard measure of executives incentives is "equity delta," the dollar change in executive wealth from stock and stock options per percent change of the share price. Lalitha Naveen provides data of these incentives on her website, computed following Core and Guay (2002) and Coles et al. (2006). We sum delta of all disclosed executives to get a measure of the total management team's incentives. The data cover firms in ExecuComp, which

[18] In unreported tests, we use a third measure, the entrenchment index (E-index) of Bebchuk et al. (2008), which we download from their website. The sample is reduced as their index stops before the end of the sample period. The inferences from this analysis are the same as those reported in this section.

cuts our sample approximately in half. The second measure is institutional stock ownership. The likelihood that managers will announce a low quality takeover decreases with institutional stock ownership as these investors' incentives to monitor the managers increase with the stake. We define a dummy equal to one for firms with below industry-median executive delta, and a dummy equal to one for firms with below median institutional ownership. Then, we interact these dummies with intangibles talk.

[Table 9 ABOUT HERE]

The regression results are in Table 9. Panel A presents results for bidder CAR regressions, and Panel B reports probit regressions for deal completion. The interaction coefficients are insignificant for both governance measures in the analysis of bidder abnormal returns. This suggests that the market does not assess the relevance of intangibles talk as being conditional on poor governance in the bidder firm. The results in Panel B suggest that intangibles talk is less informative about deal completion probability when managers have strong incentives, but the interaction with institutional ownership is not significant.

Overall, we find no strong evidence in favor of the *Agency Hypothesis*.

Do managers put their own money where their mouth is?

Next, we analyze the *Overoptimism Hypothesis*. This hypothesis states that intangibles talk in the takeover announcements is due to managerial overoptimism about the value of the deal. Both a higher likelihood of deal completion and the negative market reaction are consistent with this hypothesis. In order to test whether what managers disclose about intangibles reflects their own views and, therefore, their optimism about the takeover, we examine insider trading by CEOs and other top executives.[19] Under the *Overoptimism Hypothesis*, we expect to observe bidder executives to increase their stock holdings. We also analyze trading behavior of board members who do not hold an executive position. We expect CEOs and other executives to display more optimism in their actions than other board members, since in most cases it is the executives who initiate the takeover.

[19]The top executives group include following roles: CFO (Chief Financial Officer), COO (Chief Operating Officer), CIO (Chief Investment Officer) and CTO (Chief Technology Officer).

Following Chung et al. (2018), we construct a trading window for each announcement that begins 2 days after the announcement and ends 60 days after the announcement or the effective day if it comes first. We assign a positive sign to buy and negative to sell transactions, and then compute the total number of shares traded for each group. A group is labeled as a net buyer if the total number of shares traded over the analyzed window is positive, i.e., if the number of shares purchased exceeds the number of shares sold.

[Table 10 ABOUT HERE]

Table 10 reports the results of probit regressions that measure the propensity for the bidder CEO and other insiders to purchase the stock. Consistent with the hypothesis we find that bidder CEOs and other top executives are more likely to purchase stock when they talk more about intangible aspects in the takeover announcements. The average marginal effect on the probability of CEOs to buy stock associated with a one percentage point difference in intangibles talk is 1.9%. Similarly, the probability that other top executives buy shares increases by 1.7% with a one percentage point increase in intangibles talk. The relation is positive, but not significant for board members.

A possible explanation for why CEOs and top executives buy shares after a takeover announcement with much intangibles talk is that they just respond to the stock price decrease. This story predicts a significant negative relation between the bidder CAR and propensity to buy for each individual group, while the relation between buy dummies and intangibles talk should disappear once we control for the bidder CAR. Regressions (4)-(6) of Table 10 show that the intangibles talk coefficients are practically not affected by bidder abnormal returns when compared to the results from the first three specifications.

Summary

Overall, this evidence of post-announcement stock purchases by executives suggests that intangibles talk is indeed related to managerial overoptimism about the deal quality. By contrast, there is no strong evidence in favor of the agency-based explanation.

4.3 Target characteristics

As a final piece of evidence linking intangibles talk, eagerness of managers to complete a deal, and value of a deal, we consider two aspects of cross-sectional heterogeneity.

First, we consider the public-private dimension, an important theme in the M&A literature. To do so, we interact intangibles talk with the public target dummy. The results are reported Table 11. Columns (1) and (2) of Panel A show that the interaction coefficients in the bidder CAR regressions are significantly negative. In particular, the market reaction to intangibles talk is about -1.3% to -1.4% more negative for public than for private target deals. A separate analysis, in Supplementary Appendix Table SA.2, splits the sample and considers public deals separately. We find a large and significantly negative effect of intangibles talk on announcement returns among public deals. That analysis also provides an opportunity to analyze target and combined returns. We find that intangibles talk is positively, but insignificantly associated with target abnormal returns. The net effect in the form of combined returns is still negative.

In Panel B of Table 11, which studies deal completion, the interaction coefficients are positive and significant meaning that intangibles talk is more positively related to deal completion probability for takeover announcements of public than private firms.

[Table 11 ABOUT HERE]

Finally, we also conjecture that intangibles talk is (a) more negatively related to CAR, and (b) more positively related to deal completion probability, when the bidder announces the acquisition of a firm that is likely to have few intangible assets, i.e., a firm operating in a non-high-tech industry.[20] This conjecture is confirmed in columns (3) and (4) of Table 11's Panels A and B: When bidder management refers frequently to intangibles when the target firm presumably has very little intangible capital, this indicates eagerness on the part of bidder management, and shareholders on average are not fond of such deals.

[20] As in Baginski et al. (2004), we identify companies in high-tech industries as those whose primary industry is: drugs (SIC codes 2833-2836), research and development services (8731-8734), programming (7371-7379), computers (3570-3577), or electronics (3600-3674).

4.4 Robustness

Table 12 presents all main regressions with two additional, potentially important control variables: First, Panels A and B consider bidder intangible assets. It is conceivable that bidders talk more about intangibles when they themselves have more such assets. Panel A shows in Column (1) that when bidders have a higher absolute amount of intangible assets (according to Peters and Taylor (2017)), they use more intangibles talk. Also, consistent with Li et al. (2017), these bidders secure higher announcement returns. However, importantly, Columns (2) to (6) show that intangibles talk continues to be negatively associated with market responses and operating performance, and positively associated with insider trades. Panel B shows in Column (1) shows that intangibles talk is not explained by intangible assets relative to total assets, but again the remaining columns show that all our prior results continue to hold.

Next, it is conceivable that intangibles talk is used more by more or less competent managers, or managers with certain backgrounds. Demerjian et al. (2012) estimate managerial ability using data envelopment analysis: Firms that are more efficient in generating revenues than one would expect based on their characteristics are estimated to be run by more competent managers. A merit of this method is that can be applied to a wide range of firms. We use their percentile rank measure (from 0 to 1, by industry and year), though the results also hold with the cardinal score. Panel C shows that managerial ability is unrelated to intangibles talk. Moreover, controlling for managerial ability does not change our results regarding the role of intangibles talk in explaining merger performance and insider trading.[21] In untabulated results, we find (using data ranging until 2007 provided by Custódio et al. (2013)) that general ability, having an MBA, or having an Ivy league degree also do not correlate with intangibles talk. However, the number of observations drops to around 500 in this analysis.

[Table 12 ABOUT HERE]

The results are also robust if we control for positive and negative word frequencies separately. We have also experimented with controlling for other textual aspects of the takeover announcement. For example, we have controlled for its (textual) complexity by measuring sentence length. To parse for sentences, we follow Loughran and McDonald (2014) and first

[21] It is somewhat surprising that in our sample managerial ability is unrelated to announcement returns.

remove abbreviations and numbers, and then assume that the remaining periods are sentence terminations. The average of words per sentence is then the number of words in the document divided by the number of sentence terminations. The results remain robust controlling for this measure of complexity.

5 Conclusion

Intangible assets represent an important component of firm value. Indeed, their importance seems to be growing. For example, Lev (2012) documents a secular decline of the ability of accounting data to explain share price differences across companies. It is, therefore, of interest to know how managers communicate about intangibles. This paper presents the first study quantifying intangibles talk, defined as the frequency of words associated with intangible assets, in financial text. We construct a novel word list of intangible-related words to capture what a financial release about a merger says about this hard-to-value asset class. Intangibles are conceptually particularly important in the context of mergers and acquisitions. Therefore, we apply the list to corporate takeover announcements in the U.S. from 2002 to 2016. The analysis reveals considerable variation in the use of intangibles talk in the announcements. How much managers talk about intangible aspects significantly varies across industries and depends on some deal and target characteristics. Notably, however, at least in public deals, the intangible assets of the target do not explain much of the usage of intangible words in the takeover announcements.

Intangibles talk is not just inconsequential managerial guff. It is positively related to the deal completion probability – but negatively related to announcement returns. The strong negative market reaction to intangibles talk suggest that managers do not use intangibles words to disclose advantageous private information about the target. The agency explanation of the relation between intangibles talk and negative announcement returns receives no strong support in data. An analysis of insider trades reveals, by contrast, evidence of managerial overoptimism about deals they describe with intangibles talk. We speculate that this overoptimism partly arises because the importance of intangibles is a relatively new phenomenon. As such, business school teachings and prior managerial experience are not (yet) sufficiently helpful in assessing and communicating about deals along this dimension. Overall, these results suggest that it can

pay off for investors to carefully study the phraseology of takeover announcements.

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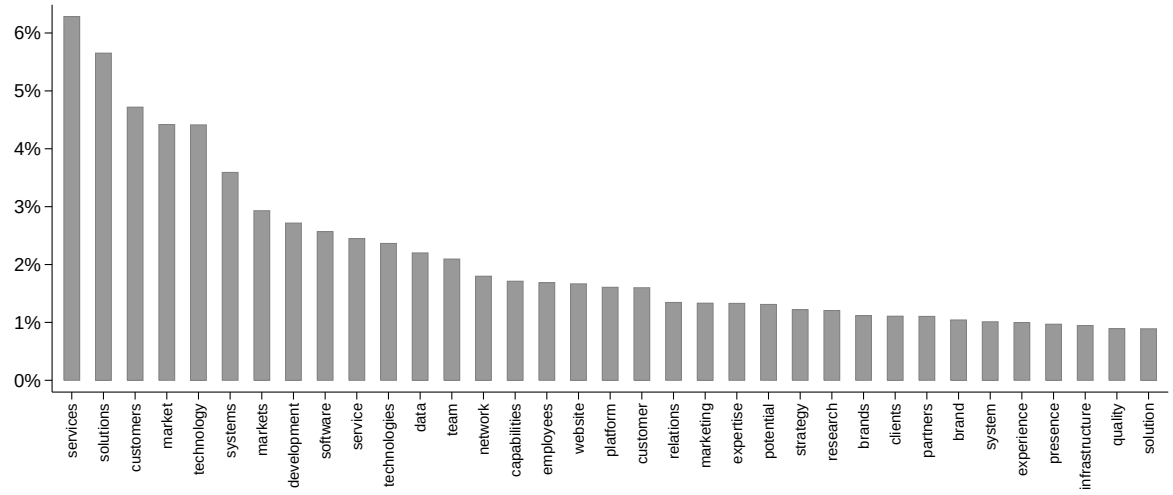

Figure 1: The most frequent intangibles words in takeover announcements

The figure presents the frequency of 35 most common intangibles words in takeover announcements. It is calculated as a ratio of each word count to the total count of all intangibles words (see 1) occurring in the announcements. The sample consists of 2414 takeover deals announced between January 2002 and December 2016 with a bidder that is a publicly traded company domiciled in the United States.

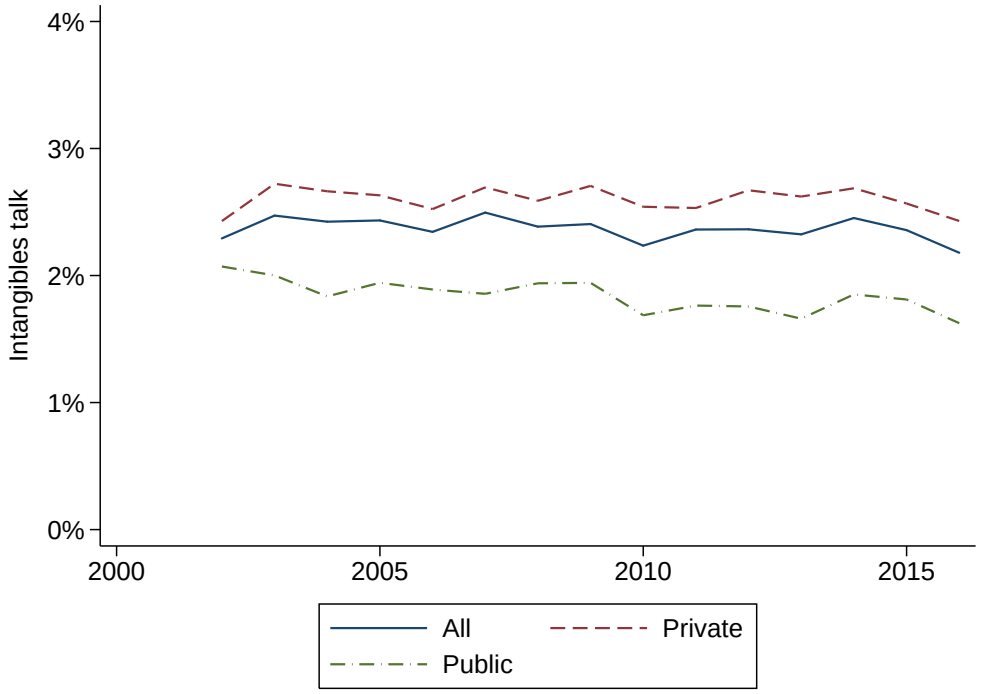

Figure 2: Intangibles talk over time

This figure plots the average frequency of intangibles words relative to the total word count in takeover announcements over time. The frequency is calculated for the whole sample (solid line) and separately for deals with private and public targets. The sample consists of 2414 takeover deals announced between January 2002 and December 2016 with a bidder that is a publicly traded company domiciled in the United States.

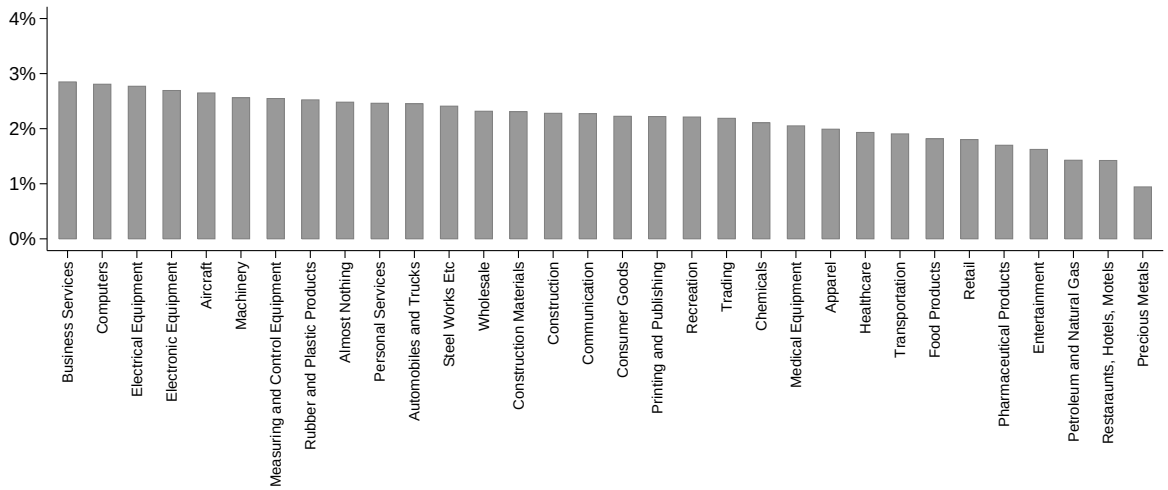

Figure 3: Intangibles words by target industry

This figure plots the average frequency of intangibles words relative to the total word count in takeover announcements by target Fama-French 48 industries. Industries that have fewer than ten deals are not shown. The sample consists of 2414 takeover deals announced between January 2002 and December 2016 with a bidder that is a publicly traded company domiciled in the United States.

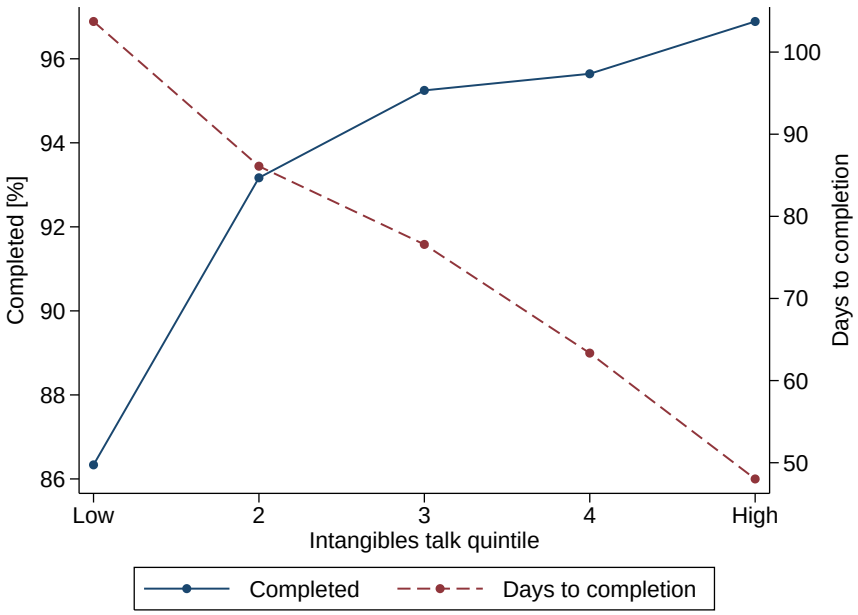

Figure 4: Eager bidders and intangibles talk

The relation between the completion rate and the frequency of intangibles words in the announcement text is shown on the left y-axis. The relation between time to completion and the frequency of intangibles words in the announcement text is shown on the right y-axis. Time to completion is measured by the number of days it takes to complete the deal following the announcement given that the bidder acquires the target. The sample is divided into quintiles of intangibles talk. The sample consists of 2414 takeover deals announced between January 2002 and December 2016 with a bidder that is a publicly traded company domiciled in the United States.

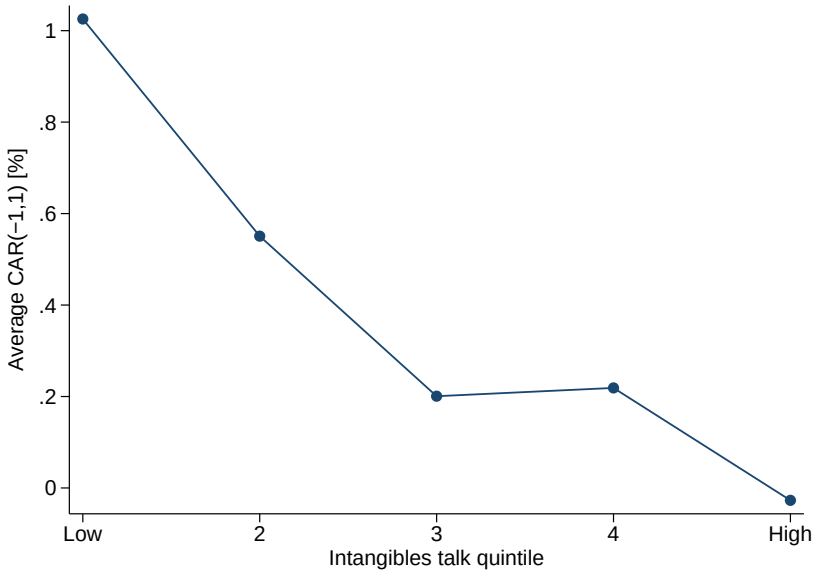

Figure 5: Bidder returns and intangibles talk

The figure shows the relation between the bidder announcement cumulative abnormal return (CAR) and the frequency of intangibles words in the announcement text. The sample is divided into quintiles of intangibles talk. The sample consists of 2414 takeover deals announced between January 2002 and December 2016 with a bidder that is a publicly traded company domiciled in the United States. The announcement abnormal return is the cumulative 3-day event period return minus the associated Carhart four-factor model return. Cumulative daily abnormal returns are winsorized at the 1st and 99th percentiles.

Table 1: Intangibles word list

This table shows our intangibles word list. The list includes words and phrases that identify intangibles based on Hall (1992), Lev (2005) and Lev (2012). Following Loughran and McDonald (2011), we add the plural form of nouns, the simple past tense, the past participle, gerund and the third person present tense for verbs. Additionally, we include appropriate synonyms and words with similar meaning.

Intangibles words				
Abilities	Customer relations	Invented	Program	Trade names
Ability	Customers	Inventing	Programs	Trade secret
Advertising	Data	Invention	Project	Trade secrets
Algorithm	Database	Inventions	Projects	Trademark
Algortihms	Databases	Invents	Protected design	Trademarks
Alliance	Design	Invest	Protected designs	Trade-secret
Alliances	Designs	Invested	Qualities	Trade-secrets
Authorship	Developed	Investing	Quality	Training
Authorships	Development	Investment	R&D	User
Brand	Developments	Investments	Registered design	Users
Branding	Discoveries	Invests	Registered designs	Website
Brands	Discovery	Joint venture	Relation	Websites
Business model	Efficiencies	Joint ventures	Relations	Workforce
Business models	Efficiency	Knowhow	Relationship	
Business process	Employee	Know-how	Relationships	
Business processes	Employees	Knowledge	Reputation	
Capabilities	Employee-training	Label	Research	
Capability	Experience	Labels	Researches	
Capacities	Expert	Licence	Rights	
Capacity	Expertise	Licences	Risk management	
Client	Experts	Logo	Service	
Client relations	Footprint	Loyalty	Service mark	
Clients	Footprints	Market	Service marks	
Collaborate	Formula	Market share	Services	
Collaborated	Formulae	Marketing	Site visits	
Collaborates	Franchise	Markets	Skill	
Collaborating	Franchises	Model	Skills	
Collaboration	Goodwill	Models	Software	
Competence	HR	Network	Solution	
Competences	Human capital	Networks	Solutions	
Competencies	Human resources	Order backlog	Strategies	
Competency	Incentive	Organization capital	Strategy	
Connections	Incentives	Organizational design	Structure	
Connectivity	Infrastructure	Organizational designs	Structures	
Consumer	Infrastructures	Partner	Supply chain	
Consumers	Innovate	Partners	Supply chains	
Contract	Innovated	Patent	System	
Contracts	Innovates	Patented	Systems	
Copyright	Innovating	Patents	Talent	
Copyrights	Innovation	Platform	Talents	
Cost savings	Innovations	Platforms	Team	
Coverage	Innovator	Potential	Teams	
Coverages	Innovators	Potentials	Teamwork	
Culture	Intangible assets	Presence	Technologies	
Customer	Intangibles	Private-label	Technology	
Customer base	Intellectual capital	Private-labels	Tool	
Customer bases	Intellectual property	Process	Tools	
Customer list	Internet activities	Processes	Trade mark	
Customer lists	Internet activity	Product pipeline	Trade marks	
Customer relation	Invent	Productivity	Trade name	

Table 2: Variable definitions and sources

This table defines variables used in the analysis. They are obtained directly from or constructed using Compustat, CRSP, EDGAR, ExecuComp, I/B/E/S (Recommendations - Summary Statistics section), SDC, Thomson Reuters institutional (13F) stock holdings and Thomson Reuters Insider Filings (IF) databases.

Variable	Definition	Source
Textual variables		
% Intangibles talk	Ratio of the number of intangibles words to the total number of words in the takeover announcement, expressed in %.	EDGAR
% Negative	Ratio of the number of negative words to the total number of words in the takeover announcement, expressed in %.	EDGAR
% Positive	Ratio of the number of positive words to the total number of words in the takeover announcement, expressed in %.	EDGAR
% Strong modal	Ratio of the number of strong modal words to the total number of words in the takeover announcement, expressed in %.	EDGAR
% Uncertainty	Ratio of the number of uncertainty words to the total number of words in the takeover announcement, expressed in %.	EDGAR
ln(Text length)	Natural logarithm of the number of words in the takeover announcement.	EDGAR
Negativity	Ratio of the difference between the number of negative and positive words in the takeover announcement to their sum.	EDGAR
Sentence length	Average sentence length in the takeover announcement.	EDGAR
Dependent variables		
CAR(-1,1)	Cumulative abnormal returns (in %) for the bidder firm from day -1 to day 1 calculated using the Carhart four-factor model. Model parameters are estimated over days (-280, -31).	CRSP
CAR(-1,30)	Cumulative abnormal returns (in %) for the bidder firm from day -1 to day 30 calculated using the Carhart four-factor model. Model parameters are estimated over days (-280, -31).	CRSP
CAR_t(-1,1)	3-day cumulative abnormal returns (in %) for the target firm calculated using the Carhart four-factor model. Model parameters are estimated over days (-280, -31).	CRSP
Completed	1 for completed acquisitions.	SDC
Days to completion	Number of days between the effective and announcement dates.	SDC
ΔROA(0,T)	Acquiring firm T-year post acquisition increase in return on assets benchmarked to the mean performance of a portfolio of 2-digit SIC industry peers that do not differ more than 50% in size from the acquirer, and are not involved in any acquisition during a six-year period surrounding the transaction. The variable is expressed in percentage points.	Compustat
V.w. comb. CAR(-1,1)	Value-weighted average of the bidder and target CAR(-1,1) where weights are calculated as day 0 market value of equity. The variable is expressed in %.	CRSP
ΔAnalyst recom.	Change in the analyst recommendation calculated as a difference between the earliest available median recommendation that is calculated within the 7-60 days period after the takeover announcement and the most recent median recommendation calculated within the 7-60 days period before the takeover announcement. Thomson Reuters calculates median recommendations by assigning to each contributing analyst's recommendation an integer based on the standardized Thomson Reuters recommendation scale and calculating a real number median. We construct and use the inversed scale as follows: 5. Strong Buy, 4. Buy, 3. Hold, 2. Underperform, 1. Sell.	I/B/E/S

Table 2 – continued from previous page

Variable	Definition	Source
CEO buys	1 if the number of shares a CEO purchases exceeds the number of shares he sells over a trading window that begins 2 days after the announcement and ends 60 days after the announcement or the effective day if it comes first.	TR IF
Directors buy	1 if the aggregate number of shares board members purchase exceeds the aggregate number of shares they sell over a trading window that begins 2 days after the announcement and ends 60 days after the announcement or the effective day if it comes first. Board members who hold an executive role (CEO, CFO, COO, CIO or CTO) are excluded.	TR IF
Top Execs buy	1 if the aggregate number of shares top executives (CFO, COO, CIO and CTO), aside from the CEO, purchase exceeds the aggregate number of shares they sell over a trading window that begins 2 days after the announcement and ends 60 days after the announcement or the effective day if it comes first.	TR IF
Price premium 1w	Premium of offer price (in %) to target closing stock price 1 week prior to the original announcement date.	SDC
Price premium 4w	Premium of offer price (in %) to target closing stock price 4 weeks prior to the original announcement date.	SDC
Measures of intangible assets		
ln(Intan. $assets_{acq}$)$_j$	Natural logarithm of *j*=[b(idder), t(arget)] intangible assets (in millions of US $) measured as deal size minus the book value of tangible assets of the target [Tangible assets = Total assets (AT) - Intangible assets (INTAN)].	Compustat, SDC
ln(Intan. $assets_{bv}$)$_j$	Natural logarithm of the book value of *j*=[b(idder), t(arget)] intangible assets (in millions of US $).	Compustat
ln(Intan. $assets_{PT}$)$_j$	Natural logarithm of *j*=[b(idder), t(arget)] intangible assets (in millions of US $) measured as in Peters and Taylor (2017). The measure, labeled as *K_int* and defined as the estimated replacement cost of the firm's intangible capital, is available thorough WRDS.	WRDS
(IT_{acq}/AT)$_j$	Ratio of *j*=[b(idder), t(arget)] intangible assets to the book value of target total assets. Intangible assets are measured as deal size minus the book value of tangible assets [Tangible assets = Total assets (AT) - Intangible assets (INTAN)].	Compustat, SDC
(IT_{bv}/AT)$_j$	Ratio of the book value of *j*=[b(idder), t(arget)] intangible assets to the book value of target total assets.	Compustat
(IT_{PT}/AT)$_j$	Ratio of *j*=[b(idder), t(arget)] intangible assets to the book value of target total assets. Intangible assets are measured as in Peters and Taylor (2017). The measure, labeled as *K_int* and defined as the estimated replacement cost of the firm's intangible capital, is available thorough WRDS.	Compustat, WRDS
Control variables		
Acquirer term. fee	1 if the acquirer is liable to pay a termination fee to the target.	SDC
Cash	1 for deals financed with cash only.	SDC
Cross-country	1 when the bidder and the target are not from the same country.	SDC
Cross-industry	1 when the bidder and the target are in a different 2-digit SIC code industry.	SDC
Deal size	Total value of the transaction (millions of US $).	SDC
Friendly	1 if attitude of the target management is friendly.	SDC
High-tech	1 when the target belong to the following industries: drugs (SIC codes 2833-2836), research and development services (8731-8734), programming (7371-7379), computers (3570-3577), and electronics (3600-3674), as in Baginski et al. (2004).	SDC

Table 2 – continued from previous page

Variable	Definition	Source
Low executive incentives	1 for bidders with below industry-median executive incentives to increase the share price (equity delta, as in Core and Guay (2002) and Coles et al. (2006)).	Lalitha Naveen
Low inst. stake	1 for bidders with below median stock ownership by institutional investors.	TR 13F
Market cap	Bidder market capitalization [=Share price (PRCC_F) $\times$ Number of shares outstanding (CSHO) (millions of US $)] at the last fiscal year end before the takeover announcement.	Compustat
Market-to-book	Ratio of the bidder market capitalization to its book value of equity [=Total shareholders' equity (SEQ) + Deferred taxes and investment tax credits (TXDITC) - Preferred stock liquidating value (PSTKL)] at the last fiscal year end before the takeover announcement.	Compustat
Mixed	1 for deals financed with a mix of cash and stock.	SDC
Multiple bidders	1 when there is more than one bidder.	SDC
Private	1 when the target is a private.	SDC
Public	1 when the target is a publicly listed company.	SDC
Relative size	Ratio of the deal size to the bidder market capitalization at the last fiscal year end before the takeover announcement.	Compustat, SDC
ROA	Bidder firm return on assets [EBITDA / Book value of assets (AT)] at the last fiscal year end before the takeover announcement, expressed in %.	Compustat
Shares	1 for deals financed with stock only.	SDC
Target term. fee	1 if the target is liable to pay a termination fee to the acquirer.	SDC
Tender offer	1 when the deal is structured as a tender offer	SDC

Table 3: Descriptive statistics

This table reports summary statistics for the variables used in our analysis. Panel A reports statistics for the announcement text variables. Panel B reports statistics for the dependent variables. Different measures of target intangible assets are presented in Panel C, followed by the control variables presented in Panel D. The sample consists of takeover deals announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. We require that deal and bidder data are available in SDC, CRSP and COMPUSTAT, and that the takeover announcement is accessible through EDGAR. We collect transactions with at least $1 million deal value and 1% relative size (deal value to bidder market capitalization ratio) and that are not labeled as as recapitalizations, repurchases, self-tenders, nor exchange offers. We require that the bidder owns at least 80% of the target after the purchase in case of completed deals, and not more than 15% before the announcement. Bidders that operate in regulated utilities (SIC code 4900-4999) or financial industry (SIC code 6000-6999) are excluded from the sample. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed in percent. The detailed description of the other variables is provided in Table 2.

	Mean	Median	St. Dev.	p25	p75
Panel A: Textual variables					
% Intangibles talk	2.38	2.29	1.00	1.64	3.03
% Negative	0.34	0.29	0.27	0.17	0.46
% Positive	1.41	1.35	0.58	1.00	1.78
% Strong modal	0.19	0.16	0.12	0.11	0.24
% Uncertainty	0.42	0.39	0.23	0.26	0.55
Negativity	-0.55	-0.59	0.26	-0.74	-0.42
Panel B: Dependent variables					
CAR(-1,1) [%]	0.39	0.22	8.33	-3.21	3.81
CAR(-1,30) [%]	-1.61	-0.87	18.6	-10.4	8.08
CAR_t(-1,1) [%]	25.1	20.8	22.0	10.3	36.2
Completed	0.93	1	0.25	1	1
Days to completion	54.3	34	65.6	0	81
ΔROA(0,1) [%]	1.02	0.94	8.03	-2.06	3.98
ΔROA(0,3) [%]	0.81	1.12	11.4	-3.64	5.29
V.w. comb. CAR(-1,1)	3.59	2.27	8.35	-0.63	7.75
CEO buys	0.13	0	0.34	0	0
Directors buy	0.16	0	0.36	0	0
Top Execs buy	0.078	0	0.27	0	0
Price premium 4w	44.4	34.5	44.9	20.8	56.1
Price premium 1w	40.3	31.9	39.6	19.2	49.3
Panel C: Target intangible assets (public targets only)					
(Intan. $assets_{bv}$)$_t$ [USDm]	320.0	30.6	798.6	1.76	210.6
(Intan. $assets_{acq}$)$_t$ [USDm]	1278.8	203.5	3147.5	30.0	1142.0
(Intan. $assets_{PT}$)$_t$ [USDm]	714.3	188.4	1655.6	71.4	558.7
$(IA_{bv}/AT)_t$	0.18	0.12	0.19	0.016	0.30
$(IA_{acq}/AT)_t$	1.55	0.84	2.30	0.18	1.76
$(IA_{PT}/AT)_t$	0.92	0.71	0.96	0.40	1.06
Panel D: Control variables					
Acquirer term. fee	0.097	0	0.30	0	0
Cash	0.57	1	0.49	0	1
Cross-country	0.15	0	0.36	0	0
Cross-industry	0.35	0	0.48	0	1
Deal size [USDm]	581.1	74.6	1781.3	21.8	300
Friendly	0.98	1	0.14	1	1
High-tech	0.43	0	0.50	0	1
Market cap [USDm]	4028.0	654.9	12588.1	188.5	2010.8
Market-to-book	3.37	2.40	3.21	1.59	3.88
Mixed	0.32	0	0.47	0	1
Multiple bidders	0.025	0	0.16	0	0
Private	0.70	1	0.46	0	1
Public	0.30	0	0.46	0	1
Relative size	0.30	0.13	0.47	0.050	0.32
ROA [%]	8.00	11.4	17.5	5.22	16.4
Shares	0.11	0	0.31	0	0
Target term. fee	0.24	0	0.43	0	0
Tender offer	0.062	0	0.24	0	0
Observations	2414				

Table 4: What explains intangibles talk?

This table reports OLS regression results. The dependent variable, *% Intangibles talk*, is defined as the number of intangibles words divided by the total number of words in the takeover announcement, expressed in percent. Panel A reports results for the full sample (2414 takeover announcements between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States), while panel B is limited to public target deals as financial data are not available for private targets. *Deal size* is the transaction volume in US$ million. *Public* is a dummy variable equal to one when the target is a publicly listed company. Panel B uses three measures of the target's intangible assets described in the text and in Table 2. The measures of the target's intangible assets are winsorized at the 1st and 99th percentiles. Each regression includes industry and year fixed effects. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

(a) Panel A: Full sample

	(1)	(2)
ln(Deal size)		-0.092***
		(0.011)
Public		-0.433***
		(0.035)
Constant	1.249***	1.756***
	(0.299)	(0.346)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Adjusted R^2	0.21	0.31
Observations	2414	2414

(b) Panel B: Public targets: The role of target intangible assets

	Book value IA measures				Acquired IA measures				PT(2017) IA measures			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
ln(Deal size)		-0.020		-0.017		-0.019		-0.018		-0.029		-0.021
		(0.023)		(0.023)		(0.024)		(0.024)		(0.027)		(0.027)
$\ln(\text{Intan. assets}_{bv})_t$	0.000	0.004										
	(0.006)	(0.004)										
$(IA_{bv}/AT)_t$			0.034	0.070								
			(0.142)	(0.138)								
$\ln(\text{Intan. assets}_{acq})_t$					-0.001	0.003						
					(0.006)	(0.006)						
$(IA_{acq}/AT)_t$							0.006	0.009				
							(0.013)	(0.013)				
$\ln(\text{Intan. assets}_{PT})_t$									-0.003	0.021		
									(0.027)	(0.031)		
$(IA_{PT}/AT)_t$											-0.007	-0.022
											(0.029)	(0.033)
Constant	1.505***	1.621***	1.469***	1.572***	1.468***	1.577***	1.462***	1.567***	1.520***	1.576***	1.468***	1.596***
	(0.055)	(0.153)	(0.050)	(0.152)	(0.054)	(0.161)	(0.054)	(0.160)	(0.146)	(0.165)	(0.053)	(0.178)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Observations	529	529	528	528	528	528	528	528	525	525	524	524

Table 5: Deal completion

This table reports the analysis of the relation between intangibles talk and deal completion. The first two specifications report results of probit regressions estimating the propensity for the bidder to complete the deal following the takeover announcement. The last two specifications report OLS regression results for the number of days it takes to complete the deal, given that the bidder acquires the target. The sample consists of takeover deals announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The continuous dependent variable (Days to completion) and continuous control variables (CAR, ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentile. The first two specifications report average marginal effects instead of estimated coefficients. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	Completion		Days to complete	
	(1)	(2)	(3)	(4)
% Intangibles talk	0.013***	0.010**	-4.514***	-4.087***
	(0.004)	(0.005)	(1.283)	(1.255)
Negativity		-0.039***		7.271*
		(0.009)		(3.630)
% Uncertainty		-0.044**		0.489
		(0.018)		(5.420)
% Strong modal		-0.075**		8.936
		(0.032)		(7.078)
Public	-0.072***	-0.073***	47.589***	47.927***
	(0.026)	(0.025)	(6.484)	(6.492)
Mixed	0.011	0.006	9.756**	10.132**
	(0.009)	(0.009)	(3.744)	(3.789)
Shares	-0.029	-0.044*	37.019***	37.423***
	(0.024)	(0.024)	(3.641)	(3.707)
CAR(-1,1) [%]	0.000	0.000	0.075	0.074
	(0.001)	(0.001)	(0.182)	(0.180)
Relative size	-0.019*	-0.021**	32.677***	33.097***
	(0.010)	(0.010)	(4.272)	(4.334)
Cross-industry	0.014	0.016	1.240	1.308
	(0.012)	(0.012)	(3.307)	(3.320)
Cross-country	-0.010	-0.014	3.704	3.947
	(0.011)	(0.011)	(3.196)	(3.186)
Tender offer	0.047***	0.046***	-30.426***	-30.517***
	(0.008)	(0.007)	(4.664)	(4.718)
Multiple bidders	-0.305***	-0.272***	16.893	16.216
	(0.086)	(0.084)	(16.042)	(16.248)
Friendly	0.349***	0.318***	3.730	3.552
	(0.081)	(0.076)	(13.111)	(12.927)
Target term. fee	0.057***	0.054***	7.422	7.569
	(0.010)	(0.009)	(5.276)	(5.311)
Acquirer term. fee	-0.023	-0.025	24.046***	24.093***
	(0.017)	(0.017)	(4.918)	(4.918)
ROA [%]	0.000*	0.000	-0.043	-0.031
	(0.000)	(0.000)	(0.130)	(0.131)
ln(Market cap)	0.005	0.004	5.302***	5.293***
	(0.003)	(0.003)	(0.907)	(0.910)
Market-to-book	-0.003***	-0.004***	0.192	0.213
	(0.001)	(0.001)	(0.420)	(0.422)
Constant			-11.223	-12.083
			(20.659)	(20.902)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Adjusted R^2			0.46	0.46
Pseudo R^2	0.31	0.33		
Observations	2414	2414	2256	2256

Table 6: Abnormal bidder returns

This table reports OLS regression results for the bidder's cumulative abnormal returns, CAR(-1,1) and CAR(-1,30), measured using Carhart four-factor model returns. The sample consists of takeover announcements between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The dependent variables (CAR(-1,1) and CAR(-1,30)) and continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentile. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	(1) CAR(-1,1) [%]	(2) CAR(-1,1) [%]	(3) CAR(-1,30) [%]	(4) CAR(-1,30) [%]
% Intangibles talk	-0.468**	-0.489***	-0.740*	-0.678*
	(0.172)	(0.162)	(0.393)	(0.378)
Negativity		-0.289		1.777
		(0.763)		(1.599)
% Uncertainty		1.205		-0.674
		(0.717)		(1.910)
% Strong modal		0.216		4.237
		(1.204)		(3.451)
Public	-2.948***	-2.933***	-3.020**	-2.915**
	(0.933)	(0.916)	(1.136)	(1.144)
Mixed	-0.864**	-0.823**	-1.120	-1.014
	(0.370)	(0.382)	(0.804)	(0.807)
Shares	-1.703**	-1.609*	-4.393***	-4.284***
	(0.726)	(0.773)	(1.430)	(1.412)
Relative size	0.978	0.967	0.519	0.672
	(0.678)	(0.698)	(1.283)	(1.295)
Cross-industry	-0.256	-0.242	-0.662	-0.654
	(0.383)	(0.389)	(1.022)	(1.029)
Cross-country	-0.166	-0.156	-0.328	-0.243
	(0.475)	(0.484)	(1.043)	(1.040)
Tender offer	1.907*	1.990*	1.277	1.264
	(0.945)	(0.968)	(1.280)	(1.280)
Multiple bidders	-1.169	-1.285	-0.541	-0.806
	(1.664)	(1.653)	(2.675)	(2.765)
Friendly	-0.607	-0.544	5.673	6.108
	(1.171)	(1.155)	(3.941)	(3.846)
ROA [%]	0.000	-0.000	0.078**	0.081**
	(0.017)	(0.018)	(0.033)	(0.032)
ln(Market cap)	-0.355**	-0.351**	-0.187	-0.185
	(0.122)	(0.125)	(0.295)	(0.297)
Market-to-book	0.102	0.103	-0.318	-0.316
	(0.075)	(0.075)	(0.220)	(0.220)
Constant	14.231***	14.243***	9.711	9.037
	(3.628)	(3.733)	(16.519)	(16.730)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.05	0.05	0.02	0.02
Observations	2414	2414	2414	2414

Table 7: Ex-post performance

The table reports OLS regression results for changes in the bidder performance (ΔROA) following the acquisition. The sample consists of completed takeover deals announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. The first specifications report results for changes in ROA from year 0 to year 1 while the last two specifications report results for a 3-year period, where year 0 is defined as the year of acquisition. We adjust bidder ROA changes by subtracting those of the bidder's industry peers. For each bidder, we construct a portfolio of peers that do not differ more than 50% in size from the bidder, operate in the same 2-digit SIC industry, and are not involved in any acquisition during a six-year period surrounding the transaction. The benchmark is calculated as a mean performance change of each portfolio. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The dependent variable (ΔROA), and continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	1 year		3 years	
	(1)	(2)	(3)	(4)
% Intangibles talk	-0.169	-0.423*	-0.293	-0.601
	(0.244)	(0.230)	(0.424)	(0.428)
Negativity		-2.621**		-2.819*
		(0.955)		(1.483)
% Uncertainty		0.910		-1.126
		(1.040)		(1.907)
% Strong modal		2.372		2.474
		(1.518)		(3.115)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.03	0.04	0.02	0.02
Observations	1862	1862	1348	1348

Table 8: Analyst stock recommendations

The table reports OLS regression results for analyst stock recommendation changes (ΔAnalyst recom.) following the takeover announcement. The sample consists of the takeovers announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. The change in the analyst recommendation is calculated as a difference between the earliest available median recommendation that is calculated within the 7-60 days period after the takeover announcement and the most recent median recommendation calculated within the 7-60 days period before the takeover announcement. Thomson Reuters calculates median recommendations by assigning to each contributing analyst's recommendation an integer based on the standardized Thomson Reuters recommendation scale and calculating a real number median. We construct and use the inversed scale as follows: 5. Strong Buy, 4. Buy, 3. Hold, 2. Underperform, 1. Sell. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	(1)	(2)	(3)
% Intangibles talk	-0.023***	-0.017**	-0.021**
	(0.007)	(0.007)	(0.008)
Negativity			-0.008
			(0.027)
% Uncertainty			-0.008
			(0.026)
% Strong modal			0.121*
			(0.061)
Controls	No	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Adjusted R^2	0.01	0.02	0.02
Observations	2146	2146	2146

Table 9: Corporate governance and intangibles talk

The table reports the effect of intangibles talk on bidder returns and deal completion conditional on the quality of corporate governance of the bidder. The sample consists of the takeovers announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. In Panel A, we summarize OLS regression results for bidder cumulative abnormal returns, CAR(-1,1), measured using Carhart four-factor model. In Panel B, we report the results from probit regressions in which the dependent variable is a dummy equal to one if the deal is completed and zero otherwise. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. We interact intangibles talk with measures of poor corporate governance, *Low executive incentives* and *Low institutional stake*.Additional variable descriptions are provided in Table 2. CAR and continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

(a) Panel A: Bidder CAR

	(1)	(2)	(3)	(4)
% Intangibles talk	-0.748**	-0.851**	-0.722***	-0.747***
	(0.329)	(0.349)	(0.215)	(0.216)
Low executive incentives	-1.397**	-1.399**		
	(0.470)	(0.471)		
Low executive incentives × % Intangibles talk	0.073	0.094		
	(0.342)	(0.347)		
Low inst. stake			0.237	0.232
			(0.429)	(0.428)
Low inst. stake × % Intangibles talk			0.470	0.461
			(0.336)	(0.343)
Textual variables	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.09	0.08	0.05	0.05
Observations	1130	1130	2403	2403

(b) Panel B: Deal completion

	(1)	(2)	(3)	(4)
% Intangibles talk	-0.215	-0.244*	0.078	0.028
	(0.159)	(0.148)	(0.068)	(0.061)
Low executive incentives	-0.607***	-0.628***		
	(0.196)	(0.208)		
Low executive incentives × % Intangibles talk	0.407**	0.396**		
	(0.201)	(0.188)		
Low inst. stake			-0.130	-0.139
			(0.165)	(0.168)
Low inst. stake × % Intangibles talk			0.125	0.151
			(0.131)	(0.128)
Textual variables	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Pseudo R^2	0.52	0.53	0.32	0.33
Observations	1130	1130	2403	2403

Table 10: Insider trading and intangibles talk

The table reports results of probit regressions that estimate the propensity for the acquirer CEO and other insiders to buy stock following the takeover announcement. The sample consists of the takeovers announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. We calculate the total number of shares traded by the CEO, Top Executives and Board members during the period 2-60 days after the takeover announcement. If the CEO or insider group has a positive total number of shares traded, we classify the trade as a buy. The first three specifications report results for each group while the last three specifications report results controlling for the bidder 3-day abnormal return. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The table reports average marginal effects instead of estimated coefficients. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	(1) CEO buys	(2) Top Execs buy	(3) Directors buy	(4) CEO buys	(5) Top Execs buy	(6) Directors buy
% Intangibles talk	0.019***	0.017***	0.012	0.019***	0.017***	0.012
	(0.007)	(0.005)	(0.008)	(0.006)	(0.005)	(0.008)
CAR(-1,1) [%]				-0.002**	0.000	-0.003**
				(0.001)	(0.000)	(0.001)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.06	0.09	0.06	0.06	0.09	0.06
Observations	2414	2414	2414	2414	2414	2414

Table 11: Target characteristics and intangibles talk

The table reports the effect of intangibles talk on bidder returns and deal completion when the target is classified as a low intangible assets firm. The sample consists of the takeovers announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. In Panel A, we report cross-sectional regression results for bidder cumulative abnormal returns, CAR(-1,1), measured using the Carhart four-factor model. In Panel B, we report the results from probit regressions in which the dependent variable is a dummy equal to one if the deal is completed and zero otherwise. We interact intangibles talk with measures of low intangible assets firms, *Public* and *Non-nigh-tech*. Public indicates a publicly listed target, and Non-high-tech denotes targets that operate in the industry that is not classified as High-tech, as in Baginski et al. (2004). *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. CAR and continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

(a) Panel A: Bidder CAR

	(1)	(2)	(3)	(4)	(5)	(6)
Deal size:	All	All	Small	Large	All	All
% Intangibles talk	-0.392*	-0.406*	-0.054	-1.192***	-0.203	-0.246
	(0.221)	(0.213)	(0.254)	(0.319)	(0.314)	(0.333)
Public	-3.097***	-3.099***	-4.663***	-2.647***	-3.071***	-3.053***
	(0.933)	(0.916)	(0.944)	(0.803)	(0.868)	(0.859)
Public × % Intangibles talk	-0.433	-0.482	-1.227**	0.378		
	(0.476)	(0.489)	(0.542)	(0.504)		
Non-high-tech					1.806***	1.746***
					(0.324)	(0.326)
Non-high-tech × % Intangibles talk					-0.650*	-0.642*
					(0.349)	(0.351)
Textual variables	No	Yes	Yes	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	No	No
Adjusted R^2	0.05	0.05	0.07	0.09	0.05	0.05
Observations	2414	2414	1211	1196	2414	2414

(b) Panel B: Deal completion

	(1)	(2)	(3)	(4)	(5)	(6)
% Intangibles talk	0.083	0.050	0.040	0.038	0.084	0.057
	(0.058)	(0.062)	(0.068)	(0.215)	(0.065)	(0.068)
Public	-0.700***	-0.719***	-0.265	-1.136***	-0.691***	-0.707***
	(0.246)	(0.230)	(0.218)	(0.369)	(0.204)	(0.199)
Public × % Intangibles talk	0.250*	0.266*	0.430**	0.220		
	(0.145)	(0.136)	(0.187)	(0.231)		
Non-high-tech					-0.122	-0.112
					(0.110)	(0.108)
Non-high-tech × % Intangibles talk					0.111	0.101
					(0.085)	(0.079)
Textual variables	No	Yes	Yes	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	No	No
Pseudo R^2	0.31	0.33	0.29	0.47	0.27	0.29
Observations	2277	2277	1084	1050	2414	2414

Table 12: Robustness: Bidder intangible assets and managerial ability

The table summarizes all main regressions in presence of additional control variables, the size of bidder intangible assets and bidder managerial ability. The sample consists of the takeovers announced between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. Column (1) reports results of OLS regressions for intangibles talk as the dependent variable. Column (2) presents probit regressions that estimate the propensity for the bidder to complete the deal following the takeover announcement. Column (3) reports OLS regression results for the number of days it takes to complete the deal, given that the bidder acquires the target. Column (4) reports OLS regression results for bidder cumulative abnormal returns, CAR(-1,1), measured using the Carhart four-factor model return. Column (5) reports OLS regression results for changes in ROA from year 0 to year 1, where year 0 is defined as the year of acquisition. We adjust bidder ROA changes by subtracting those of the bidder's industry peers. Finally, Column (6) reports results of probit regressions that estimate the propensity for the acquirer CEO to buy stock following the takeover announcement. For details, see the prior tables. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. ln(Intan. $\text{assets}_{PT})_b$ is the natural logarithm of bidder intangible assets. $(IT_{PT}/AT)_b$ is the ratio of bidder intangible assets to the book value of bidder total assets. For both variables, intangible assets are measured as in Peters and Taylor (2017). Managerial ability (in percentile ranks by industry and year) is from Demerjian et al. (2012). All regressions include industry and year fixed effects as well as the same firm-specific and deal-specific controls as before, as well as controls for negativity, uncertainty, and strong modal words in the announcement. Additional variable descriptions are provided in Table 2. The continuous dependent variables (Days to completion, CAR and ΔROA) and continuous control variables (ln(Intan. assets_{PT}), $(IT_{PT}/AT)_b$, ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. Regressions (2) and regression (6) report average marginal effects instead of estimated coefficients. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

(a) Panel A: Bidder intangibles (absolute)

	(1) Intangibles talk	(2) Completed	(3) Days to completion	(4) CAR(-1,1)	(5) ΔROA(0,1)	(6) CEO buys
% Intangibles talk		0.010**	-4.255***	-0.480***	-0.421*	0.015*
		(0.005)	(1.325)	(0.158)	(0.231)	(0.008)
ln(Intan. $\text{assets}_{PT})_b$	0.026**	0.003	-3.163*	0.463*	0.084	-0.033***
	(0.012)	(0.004)	(1.716)	(0.242)	(0.330)	(0.004)
Adjusted R^2	0.42		0.45	0.05	0.04	
Pseudo R^2		0.33				0.09
Observations	2397	2397	2240	2397	1860	2397

(b) Panel B: Bidder intangibles (relative)

	(1) Intangibles talk	(2) Completed	(3) Days to completion	(4) CAR(-1,1)	(5) ΔROA(0,1)	(6) CEO buys
% Intangibles talk		0.010**	-4.192***	-0.461**	-0.424*	0.020***
		(0.005)	(1.295)	(0.163)	(0.231)	(0.007)
$(IA_{PT}/AT)_b$	0.057	0.014**	-8.619***	-0.572	0.767	0.050***
	(0.041)	(0.007)	(2.663)	(0.482)	(0.911)	(0.018)
Adjusted R^2	0.42		0.45	0.05	0.04	
Pseudo R^2		0.33				0.07
Observations	2397	2397	2240	2397	1860	2397

(c) Panel C: Managerial ability

	(1) Intangibles talk	(2) Completed	(3) Days to completion	(4) CAR(-1,1)	(5) ΔROA(0,1)	(6) CEO buys
% Intangibles talk		0.010**	-3.435**	-0.493**	-0.419	0.018*
		(0.005)	(1.313)	(0.177)	(0.251)	(0.010)
Managerial ability	0.141	0.026	2.420	-0.832	-0.211	-0.205***
	(0.125)	(0.033)	(9.147)	(1.292)	(1.198)	(0.075)
Adjusted R^2	0.42		0.46	0.05	0.05	
Pseudo R^2		0.35				0.07
Observations	2267	2267	2129	2267	1796	2267

Supplementary Appendix

A Target intangible assets

Table SA.1: Correlation of the measures of target intangible assets

The table reports the correlation coefficients for three different measures of target intangible assets that are used in the analysis. Panel A reports the correlation between the measures of absolute size of target intangible assets while panel B presents the correlation between the ratios of intangible assets to target total assets size. *Intan. assets$_b$* is the book value of target intangible assets. *Intan. assets$_{acq}$* is the estimate of acquired target intangible assets calculated as the difference between deal size and the book value of target tangible assets. *Intan. assets$_{PT}$* is the estimated replacement cost of target's intangible capital (introduced in Peters and Taylor (2017) and available in WRDS). *IA/AT* is the ratio of target intangible assets (IA) to the book value of target total assets (AT).

(a) Panel A: Absolute size

	(Intan. assets$_{bv}$)$_t$	(Intan. assets$_{acq}$)$_t$	(Intan. assets$_{PT}$)$_t$
(Intan. assets$_{bv}$)$_t$	1		
(Intan. assets$_{acq}$)$_t$	0.563***	1	
(Intan. assets$_{PT}$)$_t$	0.817***	0.684***	1

(b) Panel A: Size relative to total assets

	(IA$_{bv}$/AT)$_t$	(IA$_{acq}$/AT)$_t$	(IA$_{PT}$/AT)$_t$
(IA$_{bv}$/AT)$_t$	1		
(IA$_{acq}$/AT)$_t$	-0.033	1	
(IA$_{PT}$/AT)$_t$	-0.0057	0.093**	1

B Combined announcement returns

Table SA.2: Combined announcement returns for public targets

The table reports regression results for bidder, target and combined cumulative abnormal returns, CAR(-1,1), measured using Carhart four-factor model return. Combined CAR is calculated as a value weighted average of the bidder and target CAR(-1,1) where weights are calculated as day 0 market value of equity. The sample consists of 740 public-target takeover announcements between January 2002 and December 2016 with the bidder that is a publicly traded company domiciled in the United States. *% Intangibles talk* is defined as the number of intangibles words divided by the total number of words in the announcement, expressed as a percent. Additional variable descriptions are provided in Table 2. The dependent variables (combined, bidder and target CAR), and continuous control variables (ROA, market-to-book ratio, bidder market capitalization, and the deal relative size) are winsorized at the 1st and 99th percentiles. The standard errors (reported in parentheses) are clustered by the announcement year and are robust to heteroskedasticity. Significance levels: : * - 10%, ** - 5%, *** - 1%

	Bidder CAR		Target CAR		Combined CAR	
	(1)	(2)	(3)	(4)	(5)	(6)
% Intangibles talk	-1.673***	-1.795***	0.779	0.204	-1.338**	-1.537**
	(0.394)	(0.382)	(2.399)	(2.568)	(0.611)	(0.712)
Negativity		-0.132		-5.928		-2.061
		(1.270)		(6.332)		(2.363)
% Uncertainty		3.004		0.895		1.784
		(1.921)		(6.200)		(2.156)
% Strong modal		4.463		9.703		2.726
		(3.549)		(10.358)		(3.866)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.16	0.16	0.10	0.10	0.21	0.21
Observations	725	725	497	497	497	497

C Data appendix

C.1 8-K download and identification

The download procedure starts with quarterly master index files from EDGAR. The indexes can be found at the following location: `https://www.sec.gov/Archives/edgar/full-index/[year]/QTR[1-4]/master.zip`, and have entries in this form: `CIK|CompanyName|FormType|DateFiled|Filename`.[22] The indexes contain the whole universe of filings. We loop through them and look for the CIK codes from our takeover sample that are associated with the 8-K form type, and are filed no later than 4 business days after the announcement date.[23] We allow for filings that are made one business day before the announcement date reported by SDC

[22] For example, the first quarter master index file in 2007 is located here:
`https://www.sec.gov/Archives/edgar/full-index/2007/QTR1/master.zip`
and one of its entries is:
`1004155|AGLRESOURCESINC|10-K|2007-02-07|edgar/data/1004155/0001004155-07-000038.txt`

[23] We construct a business day calendar by downloading the S&P 500 index from CRSP and keeping only trading dates from the set.

due to inconsistencies across EDGAR and SDC (see Section C.2). Some companies file multiple 8-Ks within 4-day period after the announcement, which requires additional verification checks.

When companies file with the SEC they rarely submit only one document. EDGAR takes all filing documents, processes them, and then bunches those together into a single text file. A typical 8-K filing has a SEC header and one or more documents that follow. There is no announcement date nor announcement time specified in the header. The acceptance time field is missing in some filings. Acquisition announcements are saved in one of the documents that follow the header. The documents can be either in *text*, *html* or *pdf* format. Each one starts with the `<DOCUMENT>` tag that is followed by a number of document header fields after which comes the actual content bounded by the `<TEXT>` and `</TEXT>` tags. The documents end with the `</DOCUMENT>` tag. The document header contains a type, a sequence number, filename and the document description. Press releases of acquisition announcements are saved in the documents that are labelled as `Exhibit 99`, `Exhibit 99.1`, `Exhibit 99.2`, etc. There is no document type or attachment number that uniquely identifies acquisition filings or acquisition announcement press releases. We parse all filings and identify the documents we need based on their content.

First, we split 8-K files into documents using document tags, `<DOCUMENT>` and `</DOCUMENT>`. The text files extracted from an 8-K filing are already in the format that can be used in the further analysis, while both html and pdf files need some additional processing before we can get any useful text from them. Html files have a lot of overhead in the form of html tags that carry no announcement information, but rather give structure to unstructured text. Pdf files have no overhead, but are in the binary format. We use Apache Tika to clean documents that are in the html or pdf format. This procedure works immediately with html documents. It fails when applied directly to pdf files extracted and saved in the form they are found in 8-K text files. The procedure does not work because pdf files are encoded using `uuencoding`, a form of binary-to-text encoding, before they are put into the 8-K text files. Therefore, we first decode pdf files, that is translate them from text to the binary format, and then we apply Tika methods on the decoded pdf files. This yields clean text that can be used for announcement detection and further textual analysis.

The next task is the most challenging one, the announcement identification itself. We read and analyze dozens of the documents that we have extracted from 8-K files. We then develop a procedure that aims to replicate our own reasoning behind the conclusion we make when facing a problem to identify announcements, and minimize the number of the documents wrongly labeled as potential announcements. We find that a typical announcement press release document has a title section that is followed by an announcement body. The title section can be very short and contain only the title itself, but there are cases when it is rather long with many bullet points and additional information. The announcement body typically starts with *Place* + *Date* + *Acquirer* + *Acquirer Ticker*, "the body start" hereafter. Yet there is some variation. For example, any of these 4 elements might be missing: date is referenced using "today", a year is missing, the date comes before the place, or the acquirer and its ticker might not be mentioned immediately after the date. Section C.3 provides an example.

We split the announcement identification procedure in 2 steps. The first and more restrictive step relies on the analysis of the beginning of the document only. The second step applies less restrictive requirements on the set of deals that have no announcement document

found after the first step. Put differently, the second step checks the deals with no announcement found and picks the related documents that did not meet more restrictive criteria checked in the first step.

The first step starts with requirements that a document:

- is an *Exhibit 99* document,
- is neither defined as a conference call nor financial results release in *the description field*,
- does not contain conference call speech words, e.g. good day, dear etc. (see Section C.4 for the full list), which are typically not used in acquisition announcements, and
- contains words that indicate purchase (acquire, purchase, merge etc., see Section C.4).

A document is *Exhibit 99* if its type field starts with *ex-99*, *ex99* or *ex 99*, case-insensitive (for example `<TYPE>EX-99.1`). We identify the body start in any of its possible forms mentioned earlier. We exploit regular expressions for that task. If the body start is not detected within the first 300 words, we disregard the document. If we find the body start, we then inspect text before it, which is in fact the title section. If the title section contains no purchase words nor the target name, but it contains the conference call (which are not the same as conference call speech words), financial results, or public or tender offer words, we disregard the document. Next, we check text that follows the body start. This is the point in text that usually clearly specifies what the document talks about. A topic is usually clearly stated in the first paragraph. We inspect 150 words that follow the body start and require that both purchase words and the target name is detected. If a document passes all these checks, we label it as a potential announcement. We say potential because there can be more than one document that passes all checks. The requirements listed do not necessarily uniquely identify documents that are acquisition announcements. For example, an 8-K filing may, despite not being an acquisition announcement, mention the target and meet the rest of criteria (e.g. quarterly earnings announcement, conference call transcripts, a presentation of the deal, etc.), or when an amendment (8-K/A) is issued following the announcement (8-K).[24] Even though we observe multiple documents, only one, in fact, is the announcement itself.

The second step helps identify deal announcements that the first step fails to find. A drawback is that it occasionally labels multiple documents as announcements what requires manual inspection. However, the number of such cases is rather small as the first step already did a good job for the major part of the deals. The second step is simpler than the first one. It does not distinguish between the title section and announcement body, but relies simply on the set of requirements that the full document has to meet in order to qualify as a potential acquisition announcement. In addition to the content-based filters listed below, we require that the minimum word count is more than 30 words and less than 5,000. in terms of content, we require that a document:

- is an *Exhibit 99* document,
- is neither indicated as a conference call nor a financial results release in the description field,
- mentions the target name,
- contains words that indicate purchase (acquire, purchase, merge etc.), as in Section C.4

[24] We have also found cases of a company filing the same announcement two times within the same day (e.g. CIK: 0000880460; "*December 23, 2011 – Perfumania Holdings, Inc. (NASDAQ:PERF) and Parlux Fragrances, Inc. (NASDAQ:PARL) announced today that they have signed a definitive merger agreement...*")

- contains announcement words either in the document description field or text (press release, acquisition announcement etc.), and
- contains a "forward-looking statement" disclosure.

SDC does not always record target names in the form they appear in the announcements: short names are used, words such as Inc., Corp., etc. might be omitted, subsidiaries are described if they do not have a name etc. For these reasons we use a fuzzy search procedure (Section C.4).[25] We require that the fuzzy match score is at least 70% in order to confirm that the target name is found in the document.Forward looking statement is something that we observe in all announcements checked, hence we include it in the list of requirements.

C.2 SDC and EDGAR inconsistencies

There are some inconsistencies regarding announcement dates between SDC and EDGAR. In order to include cases like the one shown below, we have to allow for announcements made 1 business day before the announcement date in SDC.

Example:

> SDC Deal Number: 2167136040
> SDC Announcement date: **2010/03/24**
>
> SEC Filing Date: **2010-03-23**
> SEC 8K announcement text:
> *"ROGERS, Conn.–(BUSINESS WIRE)–**March 23, 2010**–Rogers Corporation (NYSE: ROG) **announced today** that it has signed an agreement with SK Chemicals Co. Ltd. of South Korea, to acquire SK Utis Co., Ltd., its high performance polyurethane foam manufacturing unit located in Ansan, South Korea..."*

[25] Packages that implement fuzzy search algorithms are readily available in Java. We use FuzzyWuzzy library.

C.3 Typical acquisition Announcement structure

A typical announcement press release document has a title section that is followed by an announcement body. The title section can be very short and contain only the title, but there are cases when it is rather long with many bullet points and additional information. The announcement body typically starts with this structure: *Place + Date + Acquirer + Acquirer Ticker* (Figure SA.1). Yet there is some variation. For example, any of this 4 elements might be missing, the date may be referenced using "today", the year may be missing, the date may come before the place, or acquirer and its ticker might be mentioned not immediately after the date.

```
NEWS RELEASE




FOR IMMEDIATE RELEASE
```

Title section

```
Telephone and Data
Systems Agrees to Acquire BendBroadband



Supports Cable and
Broadband Growth Strategy
```

```
CHICAGO, Ill., (May 1, 2014) - Telephone and Data
Systems, Inc.  [NYSE: TDS], parent company to TDS
Telecom, today announced an agreement to acquire
substantially all of the assets of a group of
companies operating as BendBroadband, headquartered in
Bend, Oregon, for a purchase price of $261 million
...
```

Announcement body

Figure SA.1: Typical announcement press release

C.4 Target name detection (fuzzy matching)

Example:

1. SDC deal number: 2012952020
   SDC target name: **Pernod Ricard SA-Cruzan Rum**
   8K: 0001193125-08-189343
   8K announcement text:
   "Under the agreement, Pernod Ricard will pay Fortune Brands $230 million in pre-tax proceeds, and Fortune Brands will pay $100 million to ***Pernod*** *to acquire the premium* ***Cruzan Rum brand****..."*

2. SDC deal number: 1313490020

SDC target name: **Smurfit-Stone-Industrial Pkg**
8K: 0000950144-02-007750
8K announcement text:
*"Caraustar Industries, Inc. (NASDAQ-NMS Symbol: CSAR) today announced that it has entered into a definitive agreement with a **subsidiary** of Smurfit-Stone Container Corporation (NASDAQ:SSCC) to acquire substantially all the assets (excluding accounts receivable) of **Smurfit's Industrial Packaging Group business** for a purchase price of approximately $79.8 million..."*

3. SDC target name: **Frank's Tubular Intl Inc**
   8K announcement text:
   *"Dallas, TX, May 29, 2003—Lone Star Technologies, Inc. ("Lone Star") (NYSE:LSS) today announced that it has signed a definitive agreement to acquire the assets of **Frank's Tubular International** ("FTI"), a Houston-based provider of high-quality threading and inspection services, ..."*

C.5 Word lists used in the 8-K parsing

Purchase	Announcement	Financial Results	Public or Tender Offer	Conference Call	Completion	Acquisition	Months	ConfCall Speech
acquire	press release	quarter	public offer	conference call	close	acquisition	Jan.	good morning
acquires	news release	quarters	tender offer	transcript	closes	merger	Feb.	good day
acquiring	press announcement	full year	stock offer	script	closed	purchase	Mar.	good afternoon
acquired	news announcement	full-year	private placement		closing		Apr.	good evening
acquisition	acquisition announcement	fiscal year	offering		complete		Jun.	hello
acquisitions	merger announcement	results	issue		completes		Jul.	hi
purchase	purchase announcement	earnings	issues		completed		Aug.	dear
purchases	immediate release	net income	issuing		completing		Sep.	ladies and gentlemen
purchasing		revenue	issued		completion		Oct.	
purchased		revenues	issuance				Nov.	
buy		financial guidance					Dec.	
buys							January	
buying							February	
bought							March	
merge							April	
merges							May	
merging							June	
merged							July	
merger							August	
mergers							September	
definite agreement							October	
definite agreements							November	
expand							December	
expands								
expanding								
expanded								
expansion								