The information value of M&A announcements

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This version: January 12, 2022

Abstract

How do managers comment on merger transactions? By analyzing M&A announcements between 1995-2020 and extracting the linguistic sentiment from acquirer and target management, we provide new evidence on information value of M&A disclosures. Our findings show that positive target sentiment leads to positive returns, while sentiment disagreement with the acquirer leads to lower returns on the target firm. We also find that disagreement between acquirer and target lowers the likelihood of a merger completion and leads to longer completion processes. We do not find a significant market reaction associated with acquirer sentiment. This result can be explained due to a manipulative component in the acquirers' sentiment and CEO overconfidence.

Keywords: M&A; Announcement effect; Textual analysis; Sentiment; Disagreement; CEO overconfidence

JEL classification: C8; G34; G14

1. Introduction

Mergers and acquisitions (M&As) are vital for a firm's strategic development and external growth. The purchase and the subsequent integration of other firms allow relatively easy economic resource reallocation but also create economic benefits due to synergies. The deal announcement is one of the key events in the M&A process as it is the first official information of the intended M&A to the public audience and therefore highly relevant for both investors, acquirer and target firm. The press announcement is either released by the acquirer, the target, or by a common statement from both parties.

Several studies already have examined the quantitative and financial information provided in the M&A press release and the associated the stock market reaction around the M&A announcement (see e.g., Cai & Sevilir, 2012; Deng et al., 2013; Masulis et al., 2007; Schmidt, 2015). These papers find strong evidence that M&A deal announcements are beneficial for the value of the target firm as they find that the target's stock price increases. Surprisingly, the deal announcement is less beneficial or even value-destroying on the acquirer side as, on average, the stock price of the bidding firm decreases. The qualitative information of M&A press releases is, however, less examined and not much is known yet how qualitative information in press releases affects the firm price but also the deal outcome in general.

In this paper, we investigate the sentiment of press releases which is one representative qualitative information of the press release. Managers are able to provide in press releases their (personal) statements and therefore the sentiment of those managerial statements may contain valuable information which is also relevant for the firm's investors. We contribute to the general area of behavioral finance and whether managerial sentiment provides relevant

information to market participants. To the best of our knowledge, we are the first to investigate the managerial sentiment in M&A press releases.[1]

We focus on the sentiment of M&A press releases and obtain the managerial sentiment from both acquirer and the target firm. This design has two main advantages. First, the heterogeneity of press releases and managerial statements in occurrence, format, and content facilitates our analysis. For example, some press releases contain managerial statements from both sides, while other reports only contain managerial statements of one firm. Another example is that some press releases contain aggressive or even offensive words[2], while other press releases use rather positive words. Second, our sentiment analysis can help us to find more in M&A analysis than just "investor sentiment". Investor sentiment has been widely studied and is based on news articles perceived by investors and ignores the perspective of the firm's management. As our sentiment is obtained from M&A press releases disclosed by the involved firms, our sentiment measure reveals the management's strategy, preferences, and attitudes towards transaction perspectives (Malmendier & Tate, 2008; Yan, 2015). We further compare investor sentiment which has been previously analyzed with our new measure for "managerial sentiment" which is obtained from first-hand sources.

The aim of this paper is to analyze whether sentiment of M&A press releases provide valuable information and if this is the case which are the motivating factors behind it. In order to explore the determinants of sentiment, we distinguish between sentiment from the target and acquirer firm and how aligned both sentiments are. We then focus on the stock market reaction

[1] Several papers in corporate finance have already analyzed the managerial sentiment in other management-related documents, such as conference calls transcripts (e.g., Mayew & Venkatachalam, 2012), earnings press releases (Arslan-Ayaydin et al., 2016) or 10-K annual reports (e.g., Feldman et al., 2009). The effect of sentiment has also been found in analyst reports (Twedt & Rees, 2012), credit rating reports (Agarwal et al., 2016) and news articles (Tetlock, 2007).

[2] A recent news report from the Wall Street Journal also highlights the negative sentiment in the M&A announcement when MNG acquired Gannett on January 13, 2019. https://www.wsj.com/articles/hostile-bid-for-gannett-rattles-some-in-the-newspaper-business-11547515298.

around the M&A announcement and analyze whether sentiment in M&A announcements provides valuable information to investors in explaining the cross-variation of acquirer and target returns. Since large parts of the cross-variation in M&A announcement returns are still unexplored (Golubov et al., 2015), our paper contributes to further explaining this cross-variation in M&A returns by finding further explaining factors that contribute to the market reaction around M&A announcement, management sentiment. Moreover, we examine whether this sentiment has some predictive power on the deal success and its completion duration. Finally, we investigate the reasons why positive or negative sentiment in M&A releases is applied and examine whether managers strategically use sentiment to promote the deal.

We construct a dataset consisting of 1,152 U.S. domestic M&A deals announced between 1995 and 2020 that are obtained from Platinum SDC and manually merge them with the corresponding press releases obtained from the EDGAR platform. In our sample, some frequent words, including 'believe' and 'excited', indicate the frequent use of emotional words in press releases. To extract the managerial sentiment of the acquirer and the target, we identify original quotes in the announcements conditional on whether the quote is stated from a manager of the acquirer or target side. We then split the press releases into three different parts: acquirer statement, target statement, and a neutral part. For each of the three parts, we measure the sentiment using the word lists suggested by Loughran and McDonald (2011). We count the positive and negative words and subsequently construct the net sentiment, defined as the difference of percentage of positive words and negative words. We finally run cross-sectional regression to examine the impact of managerial sentiment on the stock market reaction around the M&A announcement as well as the outcomes of the deal, completed or withdrawn.

Our paper provides several results. First, we find that the sentiment of the target does explain the stock market reaction to some extent but also predicts the deal success. The results show that one standard deviation increase of the target sentiment leads to an increase of

approximately 1.6% in the target stock returns. Interestingly, we do not find similar results for the sentiment of the acquirer. Second, our results show that whether the deal will be completed or later withdrawn can be anticipated by the sentiment of the target. In a similar vein, we find that the number of days to complete the deal is significantly reduced by around 2.7 days with an increase of a one standard deviation of the target sentiment. Again, we find that the acquirer sentiment does not have an impact on the stock market, nor on the probability whether the deal will be successful. We further analyze the disagreement between the sentiment of the acquirer and the target as it may reflect potential disputes among the two involved firms on the future collaboration. Our results reveal that the disagreement between the two firms does not have any significant impact as we find that the stock market reaction around M&A announcements cannot be explained by the disagreement in sentiment between acquirer and target.

Second, we argue and find that target sentiment has a high impact on the market and the deal because it only reflects M&A fundamentals, while the acquirer side has a stronger motivation to influence the investors. We argue that acquirers may manipulate the sentiment to actively reduce its information value, hide the actual M&A synergies and subsequently investors do not incorporate this sentiment into their trading decisions. Ahern and Sosyura (2014) suggest that acquirers strategically manipulate information around M&A deals. He et al. (2020) finds the acquirer manages the analyst expectation before announcements. Huang et al. (2014) indicates the tone management of earnings press releases. These findings of firm strategic behaviors in creating information may suggest the acquirer could also manage sentiment and the manipulated sentiment should not have an impact on stock returns during the announcement period. We therefore follow the approach of earlier studies and decompose acquirer sentiment into two parts: a manipulative and a fundamental component (see e.g., Baker and Wurgler, 2006; Lemmon and Portniaguina, 2006; Hribar et al., 2017). We calculate the manipulative part as the residual term from regressing the acquirer sentiment on deal, acquirer

firm, and target firm characteristics. Our decomposition is supported by the result that the manipulative part of the acquirer sentiment has no impact on stock market reactions.

We further rule out two other potential explanations why investors do not incorporate acquirer sentiment in their investment decisions. Firstly, we do not find evidence that investors anticipate acquirer sentiment before M&A announcement. Secondly, we do not find that the fundamental and the manipulative tone are setting each other off in their impact on stock returns. We additionally construct the fundamental sentiment disagreement between acquirer and target by removing the acquirer's manipulative sentiment. The results of our fundamental disagreement show a negative impact on stock returns and deal outcomes. This also suggests that the simple disagreement between acquirer and target has no effect due to the contamination of the manipulate sentiment component on the acquirer side.

Third, since the acquirer sentiment seem to have a manipulated component, we examine the motives of acquirer sentiment in M&A announcements. We do not find much evidence that the percentage of stock payments or the deal attitude can explain the use of sentiment in press releases. We also do not find evidence that acquirer manipulate the sentiment to turn negative media sentiment prior to the M&A announcement into a positive one in order to convince investors of the deal. We do not find evidence that media sentiment and management sentiment is correlated with each other. However, our empirical findings show that low CEO confidence leads to increased manipulated sentiment. If the acquirer CEO has low confidence and large ownership in the firm, the acquirer's sentiment is more positive. This suggests that these CEOs want to keep the stock price on a high level and therefore hedge the risk of the loss of their personal interest.

We contribute to the literature on corporate finance in several ways. First, we extend the findings on M&A announcements and show that sentiment in M&A press releases is a valuable

information as it is helping to explain the cross-variation of M&A announcement returns (e.g. Masulis et al., 2007; Phan, 2015; Golubov et al., 2015). We consider both the qualitative and quantitative information provided in M&A announcements and analyze the stock returns around the merger announcement. We find that M&A press releases reveal new information and investors reassess the stock prices of the involved firms (Wang, 2018).

Second, our study adds to the growing literature on textual analysis and the sentiment of corporate disclosures. Prior studies focus on sentiment in press releases (Mayew & Venkatachalam, 2012), conference calls (Jiang et al., 2019), and mandatory regulatory filings, such as 10-K or 10-Q reports (Feldman et al., 2009; Loughran & McDonald, 2011). We extend this literature by focusing on M&A press releases as a new type of corporate disclosure.

Thirdly, we extend the research on sentiment around M&A announcements. Several papers analyze investor sentiment around M&A announcements, mostly proxied by media coverage and its impact on the deal (e.g. Ahern & Sosyura, 2014; Liu & McConnell, 2013). We rather focus on the managerial sentiment in M&A press releases. In addition to investor sentiment, our sentiment variable contains unique and incremental information from the firms involved in the transaction (Jiang et al., 2019). To the best of our knowledge, we are the first one who split the M&A press releases into different components conditional on the manager who commented the deal, either acquirer or target management.

Lastly, since there are increased information asymmetries in the M&A process (Danbolt et al., 2015), our results show that acquirers tend to manipulate the sentiment for the managers' personal interest. This can be mainly observed by acquirer CEOs who have low confidence and large ownership. We therefore also contribute to the literature on strategic behaviors of acquirers in M&As (Ahern & Sosyura, 2014; He et al., 2020) and CEO overconfidence in managerial sentiment (Chen et al., 2021).

The closest studies to our paper are Hu et al. (2018) and Yan (2015). Our paper, however, differs in several points. First, Hu et al. (2018) use conference call scripts and SEC filings prior to the M&A announcement and continued by Dasgupta et al. (2020). Yan (2015) uses SEC filings before and after the M&A announcement. We rather focus on the M&A press release which is more frequent to observe[3] but also control for news articles before and after the M&A announcements. Second, we extend these two studies by not only examining the stock market reactions around the M&A announcement, but also by analyzing the impact of sentiment on the deal outcome. Third, different to Yan (2015) who focuses solely on the full-text document, we split the press release into several components, such as the acquirer and target statement, and investigate the influence separately. Finally, we find that the sentiment does not only contain information on fundamentals and manager attitudes but provides new evidence that the acquirer sentiment is manipulated to protect the manager's personal interest. We therefore extend the paper of Yan (2015) who shows the impact of manager attitude on M&A success.

The rest of the paper is organized as follows. Section 2 provides an overview of the related literature, particularly on M&A announcements and managerial sentiment. Section 3 explains the data collection process and defines the variables used in our analyses. The empirical results are provided in Section 4, while Section 5 discusses the potential explanations of our findings. Section 6 concludes the paper.

2. Literature review

This paper is related to two main financial research areas. First, our paper contributes to research on M&A, particularly on M&A announcement returns. Most prior studies examine stock returns around M&A announcements using quantitative information, e.g., deal size or

[3] In our paper, around 40% of M&A deals disclose press releases of M&A announcements. Nearly 20% of M&A deals organize the conference call (Hu et al., 2018; Dasgupta et al., 2020). Also, nearly 25% of bidders and 16% of targets have SEC filings before or after M&A announcements (Yan, 2015).

payment type (e.g. Masulis et al., 2007; Moeller et al., 2005; Travlos, 1987). Our study is, however, based rather on the qualitative information (or unstructured data) in the firms' official M&A press releases. In more detail, we link our results to earlier findings of M&A literature which focus on sentiment, the most representative qualitative information in financial research. Most of the prior studies analyze investor sentiment around M&A announcements. These studies mainly rely on third-party documents, such as newspaper articles, especially financial news articles, i.e., The Wall Street Journal or Dow Jones News Service (see Hillert et al., 2014).

Our paper differs from prior literature as we do not solely consider sentiment which is obtained from news articles, called *investor* sentiment as it measures the investor mood before the M&A deal, but also analyze *managerial* sentiment by using first-hand information provided directly by the managers involved in the transaction. Few papers use managerial information to analyze M&A decisions. One recent work which is related to ours is Berns et al. (2019) who find that the tone in the management discussion of annual reports can predict future M&A activity. Our paper contributes to this strand of literature by analyzing how manager sentiment in M&A press releases is perceived by investors; moreover, how this sentiment correlates with deal characteristics, such as deal success, payment type, time to completion, or friendliness of the deal.

Second, our paper is related to the still growing literature on sentiment analysis. Several studies examine investor sentiment and its function in forecasting stock prices (e.g., Baker & Wurgler, 2006; De Long et al., 1990). Investor sentiment can be measured through surveys (Bergman & Roychowdhury, 2008), financial variable proxies (Baker & Wurgler, 2006), or media coverage (Liu & McConnell, 2013). On the other side, only few papers focus on the managerial sentiment, which is obtained from management reports directly. Compared to investor sentiment, managerial sentiment contains unique and incremental information that helps to explain corporate events and firm decisions. Secondly, managerial sentiment can be a

better measure due to the insider information advantage of managers. Managerial sentiment might additionally provide firm-specific and idiosyncratic information (Jiang et al., 2019). Lastly, managerial sentiment is extracted from different sources than investor sentiment, such as press releases (Mayew & Venkatachalam, 2012), conference calls (Jiang et al., 2019), or annual reports (Feldman et al., 2009; Loughran & McDonald, 2011). Moreover, De Amicis et al. (2020) analyze manager overconfidence and managerial sentiment in earnings conference calls. Our study extends these studies examining managerial sentiment by exploring a relatively new area: M&A announcement reports while also considering the impact of manager overconfidence.

3. Data and descriptive statistics

3.1 Data

Our sample includes U.S. domestic mergers from January 1995 to December 2020 which have disclosed the corresponding press release in the United States Securities and Exchange Commission (SEC) EDGAR system. The starting year of 1995 has been chosen as the EDGAR system started in late 1994. We collect all deals involving U.S. public firms which are officially announced between 1995 and 2020 and completed before the end of 2020. The primary source for M&A data is Refinitiv/SDC. We firstly exclude firms from the financial industry (primary Standard Industry Classification (SIC) codes 6000-6999) and utilities (SIC codes 4900-4999) due to highly regulated environment. To avoid that the results are driven by smaller deals, we only keep deals with a transaction value above $1M (deflated in 2009). Moreover, we require that both acquirer and target must be public listed companies to conduct our event study analysis. To avoid takeovers that are motivated by a low stock price of the target, we further exclude inactive target firms which are defined as having one-month stock prices below $1 prior to the M&A announcement. In addition, we exclude all ‘rumor’ deals and solely consider majority acquisitions, i.e., acquisitions in which the acquirer held less than 50% of the target

prior to the announcement and obtained a controlling stake (above 50%) through the M&A transaction. To remove share buybacks, deals in which acquirer and target being the same company were also excluded from the analysis. We additionally eliminated confounding deals in which the acquirer announced more than one deal on a day. We end up with a final dataset that includes 1,152 M&A deals.

In the next step, we manually matched the official M&A press release of the announcement to the respective M&A deal. For each deal, we firstly obtain the CIK identifiers of acquirer and target firm from a CIK-CUSIP database and then match the corresponding M&A press release of the announcement[4]. We downloaded those M&A press releases on the announcement day, using Python web crawling the SDC EDGAR database. To control that the press release is indeed the corresponding one, we first only kept press releases containing M&A related keywords, such as "merge", "M&A", "letter", and "news release" etc. We also manually checked and confirmed each press release to ensure the validity. Finally, we additionally distinguished and marked the original statements in the full text conditional on whether the statement is issued by the target, the acquirer or whether it is a neutral statement.

In order to analyze the content of the M&A press release, we choose common sentiment analysis which has previously been applied in corporate finance research. We measure the sentiment of press releases by applying the Loughran and McDonald (2011)'s dictionary to each press release[5]. The word list of Loughran and McDonald (2011) is the most recognized dictionary for textual analysis in the area of finance and accounting (Loughran & McDonald, 2016). However, the parsing result of the whole document might mix the sentiment of acquirer and target together. To obtain the sentiment of both managements involved in the deal, acquirer

[4] The link before was kindly shared by Ekaterina Volkova.
[5] Although the computer-defined dictionary could be comprehensive and powerful (Huang et al., 2018), it brings some concerns as less general word lists might be caused by idiosyncratic information for each document (Loughran & McDonald, 2019).

and target, we split the full text into three parts: the statements of the acquirer (if existing), the statements of the target (if existing), and the remaining part. Then, we obtain four sentiment measures for each press release, corresponding to the entire press release, the statement of the acquirer, the statement of the target, and the remaining part. In quantifying the sentiment, we specify the sentiment as the net sentiment[6], which is the spread between the percentage of positive words and negative words (Huang et al., 2014). We consider both positive and negative words because both capture the managers' attitudes and assessments of acquisition. We also include the length of the press release as a control variable since longer press releases contain more information and therefore might reduce the information acquisition cost (Chircop & Tarsalewska, 2019). Table 1 shows the distribution of press releases and sentiment in M&A deals over our investigation period. Both acquirer and target are active in releasing the press announcement, except targets issue slightly fewer press releases in the beginning years of our sample. In terms of sentiment, acquirers are overall more positive than target firms. Overall, acquirers are more like to release the press release and use more positive sentiment, than target firms.

[Insert Table 1 here]

To generally illustrate the M&A press releases and the topics that are incorporated in the reports, we extract the most common keywords in M&A press releases (Huang et al., 2018). Figure 1 shows the most used words in M&A press releases in our sample as a word cloud. Some frequent topics, including 'believe' and 'excited', indicate the frequent use of emotional words in press releases.

[Insert Figure 1 here]

[6] In an unreported robustness check, we also use the negative sentiment, measured as the ratio of negative words to all words in press release, instead of the net sentiment (Loughran & McDonald, 2011; Tetlock, 2007). The results are similar to the ones we reported, indicating that the negative tone is more critical than the positive one.

We also add several other variables to control that our findings are not due to any other effects. We firstly include media coverage and media sentiment of news articles around the deal announcement. Media information is obtained from the Ravenpack News database (Hossain and Javakhadze, 2020)[7]. This control variable shows how managerial sentiment is associated with investor sentiment as most of the prior related works used investor sentiment for their analyses. We further control for deal characteristics, such as transaction value and percentage of stock payment. Finally, we include firm-level control variables for both acquirer and target firms, such as size, return on assets (ROA), cash ratio, market to book value, and leverage. This data is obtained from Compustat. Our variables are based on the most commonly used control variables in M&A research and textual analysis research (see e.g., Bonaime et al., 2018; Boyson et al., 2017; Jegadeesh & Wu, 2013). In addition, we also collect CEO and director related variables, such as CEO gender, age, ownership, fraction of independent directors, etc. The full list of variables and their definitions can be found in Appendix A.1. All continuous variables are winsorized at the 1% level for both tails to adjust for potential outliers.

3.2 Summary statistics

Table 2 provides the summary statistics of our variables. We use the cumulative abnormal returns (CAR) in the [-1, 1] event window around the M&A announcement as the dependent variable[8]. In computing the abnormal returns, we use the expected return minus the market return, where the market return is the CRSP market value weighted return. The expected return is estimated using the [-220, -21] estimation window and the Fama-French three factors model including market, SMB, and HML as factors. We use these settings for two main reasons: firstly, the Fama-French three factors model exhibits a larger standard deviation of CARs than

[7] In unreported table, the results are similar if we use alternative measures of media coverage and sentiment, i.e. media coverage: number of news 30 days prior to M&A announcement; sentiment of news: gross average of sentiment of news 30 days prior to M&A sentiment.

[8] We also used the five days ([-2, 2]), and seven days ([-3, 3]) window and in further robustness tests the market model to estimate CARs. All subsequent results are relatively similar, and our main conclusions still hold.

the market model in our sample, which helps to find the determinants of the market reaction; secondly, the magnitude of the CARs is smaller for the three-day event window and can avoid potential contamination from confounding events[9].

[Insert Table 2 here]

The descriptive results show that the average CAR of the acquirer is negative. In contrast, for targets, the mean CAR is positive. We also notice that target CARs have a larger standard deviation than acquirers, indicating a higher variation in the target reaction. These results show, on average, a loss of value for acquirer's shareholders but a gain in value for target's shareholders due to the M&A announcement, which is in line with previous research findings (e.g., among others, Deng et al., 2013; Masulis et al., 2007).

Our main variable of interest is the sentiment contained in the official press release. Firstly, we find that the wording of the press release is in general rather positive. The positive mean of the net sentiment is in line with the psychological sense that negative words are less used by humans than positive ones, especially in U.S. (Liebrecht et al., 2019). Another possible explanation is that managers like to use positive wording in their documents because they believe that M&A deals can create synergies and a positive net present value (NPV). The third possible explanation of having a rather positive wording might be that managers want to lower investor concerns and avoid a subsequent decrease in their firm's stock price. The average positive sentiment is persistent across the three parts of the press release. However, by splitting the press release into the different parts, we observe that the acquirer uses more positive sentiment than the target. In addition, acquirers use a more varied style in sentiment, proxied by a larger standard deviation compared to the target sentiment. The remaining part has a

[9] In unreported table, we checked the subsample hving no news articles published during the [-1,1] event window of acquirer CAR or target CAR. The results of acquirer and target are similar. The main story and findings do not change.

median close to zero but also the mean is comparably small. We therefore forego to include the remaining part which cannot be attributed to either the acquirer or the target into our regression analyses.

Not surprisingly, the size, market-to-book ratio, leverage, and ROA of target firms are all smaller than those of the acquirers. However, targets hold more cash than acquirers. Our financial variables and deal characteristics are in line with the M&A deal characteristics of Derrien et al. (2017). We also observe that they have a similar mean of media coverage, but targets have more positive media sentiment, while acquirers on average have negative media sentiment. The sign of media sentiment is therefore the same as average cumulative abnormal returns which represents the gain or loss in firm value. This is consistent with theories of media content as a proxy for new information about fundamental asset values (e.g., Hossain and Javakhadze, 2020). This already indicates that investor sentiment and managerial sentiment might be not comparable or even serve as substitutes. Moreover, compared to targets, acquirers show higher CEO ownership and more institutional investors as well as higher board independence. Acquirer CEOs also stay longer, take more often the dual role as chairman and show more overconfidence than target CEOs.

4. Empirical results

4.1 The existence of statements in M&A releases

In exploring more details on how announcements are being modified, we first begin to analyze its first dimension: is the extensive margin (i.e., whether acquirer or target choose to disclose or not) relevant for the stock market and/or the outcome of the M&A deal. The acquirer and target voluntarily disclose their comments and the impact of this voluntary action has not been previously examined. We therefore provide first evidence whether the voluntary action

of management disclosing provides valuable information for investors. We also analyze whether this action provides information on the outcome of the M&A deal, measured by whether the deal will be completed or not and how fast the deal will be closed, measured by the time between announcement and completion deal.

We start examining the stock market reaction around M&A announcements conditional on whether there is a dedicated management statement in the press release from key executives. The two dependent variables of the regressions are the three-day CARs ([-1,+1] event window) of the acquirer and the target firm, respectively. We choose several independent variables as our main variables of interest. First, we analyze whether the existence of press release matters. The binary variable *dummy_press* is defined as 1 if a press release exists, and 0 otherwise. We find that 1,152 (39.1%) M&A transactions in our sample contain press releases. In the following analyses, we focus on this subsample of 1,152 press releases, and check whether acquirer or target have statements contained in the press release. Specifically, if the press release has a section that is written by or quoting the acquirer managers, the binary variable *dummy_a* is defined as 1, and 0 otherwise. If the press release contains management statements from the target side, the binary variable *dummy_t* is defined as 1, and 0 otherwise, respectively. We also incorporate deal, acquirer firm and target firm characteristics control variables and include year and industry fixed effects (based on the first two SIC digits). Standard errors are clustered on the industry level. The results are provided in Table 3.

[Insert Table 3 here]

The results show that the stock market reaction of the acquirer is neither influenced by the existence of a M&A press release nor by the existence of management statements. In stark contrast, we observe that the stock market reaction of the target firm is significantly and positively influenced by the existence of press releases. The result indicates that target investors

collect valuable information from the press release. We also find that statements issued by the acquirer and the target both have a significant impact on the target's stock price. The results are not only statistically significant but also have an economic impact on the return. The results from columns 5 to 7 in Table 3 indicate that with an increase of one standard deviation in the existence of a statement, the target will experience an increase of stock return of around 1.6%. In an unreported table, we examine the effect on the combined firm by measuring the synergy CAR[10]. The results are similar to those of the target firm as the effect of the target is significantly positive and large while acquirers do not show any effect from press releases. We also apply the F-test of the difference between acquirer and target coefficients. In columns 4 and 8, there is no significant difference between the statement of the acquirer or the target on the stock market reaction. It might well be that if acquirer and target both provide statements, investors may regard their actions as equally important information. Overall, the results indicate that the existence of an M&A press release has a significant impact only on the target stock price, rather than on acquirer.

We further analyze whether the existence of a press release also predicts the M&A deal outcome. We examine two measures of deal outcome: first, whether the deal is successful or not[11] and second, the number of days to complete the deal if the deal is completed. The results for the deal outcome are provided in Table 4.

[Insert Table 4 here]

The results show that only the statements of the target are associated with a higher probability of deal success and fewer days to complete the deal, while acquirer statement lack significance. We do not find any impact of the acquirer statement on our deal outcome

[10] Synergy CAR is the value weighted CAR of acquirer and target in which the weights applied are the relative market values of the acquirer and target 60 days prior to the acquisition announcement.
[11] The completion ratio of M&A transactions is comparable to Yan (2015) and the SDC's universal ratio. In our sample, 1005 deals are successfully completed, while 147 deal announcements were later withdrawn.

measures. Measuring the economic magnitude, the results show that the existence of a target statement leads to a shorter completion period of 2.5 days, if all else being equal.

To summarize, we find that only the target statements in M&A press releases are valuable information for investors. The results show that the stock market reaction around M&A announcements is significantly influenced by the existence of a target statement. We also find that target statements allow investors to anticipate the outcome of the deal. In contrast, acquirer statements seem not relevant since these announcements have no impact on the stock market or in predicting the outcome of the deal.

4.2 The impact of sentiment in M&A releases on stock returns

We have already shown that the existence of M&A press releases, in particular the target statement, plays a significant role for investors but also helps to predict the outcome of the deal. In this section, we focus on the second dimension of how the press announcements are modified, the intensive margin (i.e., conditional on a firm having made a press announcement, how good or bad is the disclosed announcement). We then analyze the sentiment from the acquirer and target side provided in M&A statements. We therefore contribute and extend the findings of Mayew and Venkatachalam (2012), Jiang et al. (2019) and Feldman et al. (2009).

We first examine whether the sentiment in M&A press releases explains the cross-variation of acquirer or target announcement returns. We therefore use again the three-day cumulative abnormal returns as our dependent variable. We apply three sentiment measures: The first sentiment measure is the sentiment of the full press release (*net*), while the second and third measures, *net_ar* and *net_tr*, are the sentiment of the acquirer and target statements, respectively. The advantage of this approach is that we firstly can distinguish the source of the sentiment and measure the individual impact on the stock market; secondly, the acquirer and/or target statements may have a higher impact on investors than the other parts in the press release

which might be more generic and standardized. In other words, statements from the acquirer and target are first-hand materials and may provide additional information than other parts of the press release to investors. Investors then may weigh the sentiment of the managers' statements more than the other parts of the press release. As in our previous analysis, we also control for common deal and firm characteristics that may affect the stock market returns around the M&A announcements in a similar vein.

Table 5 reports the results of the M&A sentiment on the stock market reaction.[12] The results are in analogy to the findings reported in Table 3 and show that only the market reaction of the target is affected by the M&A press release. The results further show that the strongest impact on the target returns stems from the sentiment of the target statement itself. We find only a marginal impact of the acquirer sentiment on the target return at best. The results do not only show a statistical impact of the target sentiment, but also economic relevance. Column 10 indicates that a one standard deviation increase in the target sentiment leads to higher target stock market returns by approximately 3%. While we find that the target sentiment has a significant impact on the target's abnormal returns, we do not find any impact of sentiment in M&A press releases on acquirer returns.

[Insert Table 5 here]

Next, we construct a variable to measure the (dis-)agreement between the acquirer and the target sentiment. We therefore construct the variable *dis_net*, which is defined as the difference between the acquirer and the target sentiment to measure the disagreement effect[13]. Using the

[12] To avoid multicollinearity, we analyze the correlation between each variable. The correlation coefficients of key variables are less than 0.6 and the VIF is smaller than 4. We therefore can eliminate the concerns of multicollinearity. Regarding the model fit, because of other factors and multiple fixed effects in the model, the adjusted R square that only focuses on the within-group variation is small but comparable to findings of prior M&A research (Hu et al., 2018).

[13] We forego to use the cosine similarity for two reasons. First, the statements of the acquirer and target consist mostly less than 100 words. The cosine similarity is however more suitable for longer documents. Second, our disagreement measure follows a similar function as the cosine similarity but is more intuitive to compare the two sentiments. The cosine similarity compares at the character level and therefore may overestimates differences.

(dis-)agreement variable, we however do not find any effect on the acquirer returns nor on the target returns. One possible explanation is that large parts of this variable stem from the acquirer sentiment which already had previously no effect on returns.

4.3 Decomposing acquirer sentiment

The results so far show that investors do not incorporate the acquirer sentiment of the M&A press release. One possible explanation might be that investors do not trust the bidding firm as it may use the sentiment to actively manipulate the outcome of the deal. Ahern and Sosyura (2014) provide evidence that acquirers manipulate sentiment in corporate news. Based on that finding, we hypothesize that the acquirer may also manipulate the sentiment in press releases strategically in addition to "fundamental" or "honest" sentiment. The best strategy for investors is then to wait for other reliable information and not to incorporate acquirer sentiment into their trading decisions. Following the idea that acquirers may use a manipulative sentiment, we estimate the *fundamental* disagreement between the acquirer and the target by removing the *manipulative* sentiment from the acquirer. We measure the manipulative sentiment component of the acquirer as the residual term that is left after regressing the acquirer sentiment on deal, acquirer firm and target firm characteristics (see, among others, Baker and Wurgler, 2006):

$$net\_ar_{i,t} = \alpha + \beta * X_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *net_ar* is the acquirer sentiment and X contains deal, acquirer and target firm characteristics. We then treat the residual ε as our manipulation sentiment of the acquirer. We find that most values of this residual are not close to zero. This method of decomposing raw sentiment follows Baker and Wurgler (2006), Lemmon and Portniaguina (2006) and Hribar et al. (2017). The raw acquirer sentiment is then decomposed into two components: one can be explained by economic fundamentals and another, the regression residual, which is not explained by any economic fundamentals which could be related to manipulative motives. We

know that fundamentals of deal, acquirer firm and target firm undoubtedly affect the acquirer sentiment, but we are interested in finding the part of acquirer sentiment that reflects managers' beliefs or manipulation unjustified by available information of fundamentals.

We focus on the manipulative component of the acquirer but not on the target side. We argue that the target management has fewer incentives to manipulate the sentiment because the best way for target managers is to reflect M&A fundamentals in sentiment without manipulation. If the target firm manipulates the sentiment by being too positive, it may provide the market and the acquirer information that it cannot agree more on the deal and therefore the target might lose better bargaining conditions or higher deal premia. On the other hand, using a sentiment that is too negative will lead to lower deal acceptance and may lose the chance of benefiting from the M&A synergy or losing the support of the investors. We also test if the target manipulates sentiment and do the similar regression of decomposing sentiment as acquirer. However, the plot of residual from this regression shows mostly all residuals are very close to 0. This indicates that the target has nearly no manipulative component in its sentiment. We therefore conclude that the target sentiment reflects the true M&A fundamentals.

As further evidence that it is reasonable to decompose the acquirer sentiment, in an unreported table, we find evidence that the manipulative sentiment has no impact on acquirer stock reactions. This is reasonable since the manipulative sentiment should not relate to the fundamental asset value. To avoid our prior insignificant results of sentiment disagreement are driven by the manipulative sentiment of acquirer managers, we repeat the analysis of disagreement between acquirer and target after removing the manipulative sentiment of the acquirer. The results are reported in Table 5 and show that the target stock return is now negatively impacted by larger fundamental disagreement between acquirer and target firm. This is in line with our expectation as the disagreement between acquirer and target leads to conflicts and fewer synergies after combining the two firms.

So far, we argue and provide evidence that investors show no reaction to acquirer sentiment. We argue that this might well be due to the manipulative component in the acquirer sentiment. However, another possible explanation is that investors already anticipate acquirer sentiment and therefore we are not able to find any significant market reaction when the M&A is officially announced. In order to rule out this alternative explanation, we firstly regress the media coverage and media sentiment on acquirer sentiment because investors possibly rely on media reports prior to the official announcement to predict the acquirer sentiment. The variable lacks significance in our regression, indicating that acquirer sentiment cannot be anticipated prior to the M&A announcement. This further rejects another hypothesis that acquirers use positive sentiment to flip negative media sentiment before the merger announcement into a good sentiment using the press release. In addition, if investors anticipate acquirer sentiment and trade with their prediction, we should be able to observe a change in the acquirer returns prior to the announcement. Therefore, we focus on the acquirer's stock market reaction in the [-15,-3] event window prior to the M&A announcement. The abnormal returns in the pre-M&A window are not statistically significant and the average is close to zero (0.36%). Therefore, we do not find evidence that investors anticipate the acquirer sentiment in advance and react before the official announcement. The last potential explanation of why investors do not show any significant market reaction to acquirer sentiment is that investors may react negatively to the manipulative part but positively to the fundamental part of the acquirer sentiment. Those two opposite reactions may offset each other and therefore the overall market reaction is not significant. We can rule out this alternative explanation as neither the results of the manipulation part nor the fundamental part on acquirer returns is statistically significant.

However, our deal characteristics control variables have some explanatory power in the cross-variation of M&A announcement returns[14]. The results show that the percentage of stock payment is negative and significant for the acquirer announcement returns. This indicates that a higher percentage of stock payment leads to a reduced acquirer's firm value. This finding is in line with prior studies on stock overvaluation of acquirers in M&As (Fu et al., 2013). For the firm characteristics control variables, we find that higher ROAs are associated with decreased stock returns of the target firm. In terms of media control variables, we only find media sentiment covering the target firm has an impact on the target returns. The acquirer returns, however, are not associated with media coverage or media sentiment.

4.4 The impact of sentiment in M&A releases on the deal outcome

In this section, we focus on whether sentiment obtained from press releases allow to predict the outcome of the M&A deal. The results of sentiment on the deal outcome are provided in Table 6.

[Insert Table 6 here]

We find that a positive sentiment of the target management is associated with an increased likelihood that the deal will be completed. The positive target sentiment also helps in closing the deal more quickly as the target shows a higher motivation to close the deal. In terms of economic significance, an increase of one standard deviation in target sentiment leads to a faster completion as reducing around 2.7 days. We do not find that the acquirer sentiment has any predictive power, which might be due to our prior findings that acquiring firms manipulate its sentiment and therefore lack valuable information for the market. However, we find that the fundamental disagreement in the sentiment between the acquirer and the target has a significant impact on the outcome of the deal. The results show that larger fundamental disagreement leads

[14] For reasons of brevity, the results of control variables are not reported in the tables but are available upon request.

to a lower likelihood that the deal will be completed but also that the deal needs more days to be completed. This further indicates that the fundamental disagreement between the acquirer and the target reveals potential conflicts between the two firms and affects deal outcomes.

In an unreported robustness check, we use the dictionary of Henry (2008) as an alternative measure for sentiment. The results are similar to our results reported using the positive and negative word lists of Loughran and McDonald (2011). This indicates that our findings are robust to the sentiment measurement construction.

Overall, we find that target sentiment rather than acquirer sentiment in M&A press releases contains valuable information for investors. The results provide evidence that not only the stock market reaction depends on the sentiment of the target management but also the outcome of the deal largely depends on this sentiment. We further find that the fundamental sentiment disagreement between acquirer and target provides similar effects.

5. Why is sentiment used in press releases?

In this section, we analyze the mechanisms behind the sentiment in M&A press releases by questioning why managers are using sentiment in M&A announcements. As there is no regulation that requests statements from the management to evaluate the deal, this is a selected move by the management. We examine in this section several questions that are related to the use of sentiment. Firstly, we test whether deal characteristics can explain the sentiment use. In Table 7, we focus on the impact of percentage of the stock payment, but the results show that acquirer statements and their sentiment cannot be explained by the percentage of stock payment. In contrast, target statements and sentiment are significantly affected by this stock payment percentage.

[Insert Table 7 here]

Furthermore, we check whether the deal attitude, i.e., whether a deal is friendly or not, can explain the statements and sentiment. The results are provided in Table 8. We find that friendly deals can encourage more statements and more positive sentiment of both acquirer and target, compared to hostile deals. However, a large part of the variation in the acquirer sentiment stems from the subsample of friendly deals and the dummy of deal attitude cannot explain this within-group variation. We therefore conclude that these deal characteristics cannot fully explain the use of sentiment. We continue and focus on manager characteristics that may drive the use of sentiment. We choose as representative factors CEO overconfidence to find why managers, especially acquirer, use that sentiment since many studies already highlighted the role of CEO overconfidence in M&A (e.g., Roll, 1986).

[Insert Table 8 here]

We measure CEO overconfidence by using the approach of Malmendier and Tate (2005)[15]. Overconfident managers of acquiring firms may believe that they run the target company more efficiently after the merger. The beliefs to run the target firm in a better way could be reflected in more positive sentiment. On the other side, we argue and find that the target does not manipulate the sentiment because the best strategy of target managers is to reflect M&A fundamentals in sentiment without any manipulation. Therefore, the target CEO overconfidence should not associated with manipulating sentiment. The results are reported in columns 5-6 in Table 9 and generally support this argument.

[Insert Table 9 here]

In this table, we include firm, CEO, and director characteristics as control variables. We first examine whether overconfident CEOs use more frequent statements in M&A press

[15] Several studies analyze the impact of CEO overconfidence on M&A (e.g., Billet and Qian, 2008; Ferris et al., 2013).

releases. The results do not show that overconfident CEOs provide statements more often in M&A press articles. We neither find a statistical significance for the acquirer CEO (column 1), nor the target CEO (column 5). However, in column 2, the results indicate that if the M&A press release contains a statement of the acquirer, overconfident CEOs use a less positive sentiment. In unreported control variables, we also observe that CEOs owning more shares use more positive sentiment. Therefore, CEOs having low confidence, but large ownership might be motivated due to personal interests of owned shares during the acquisition. These CEOs may use more positive sentiment to reduce the concerns of investors and the target firm (Gamache et al., 2019). In this way, the CEO of the acquiring firm can hedge the risk of a falling stock price and protect her personal interest. If the CEO is, however, overconfident and believes in her ability to manage the target firm better (Roll, 1986), she may overestimate that the combined firm will be successful and is not too concerned about the potential drop in the acquirer's share price and therefore her personal interest. Overconfident CEOs might therefore be less interested in convincing investors and the target's management by using a positive sentiment. This empirical result does not support the alternative hypothesis that overconfident CEO uses more positive sentiment to convince target and investors that she can achieve a great deal for the acquirer's shareholders. Our finding is also consistent with prior literature analyzing other types of firm disclosures, such as earning conference calls, that show that overconfident CEOs use less positive sentiment (De Amicis et al., 2020).

We further hypothesize that CEO overconfidence should largely affect the manipulative sentiment of acquirer taken for granted, rather than fundamental sentiment which is hard to be affected. The coefficient of CEO overconfidence on the manipulative sentiment of acquirer in column 3 is -0.061, much larger and significant than its impact (-0.016) on fundamental sentiment in column 4. This supports our hypothesis that CEO overconfidence drives the acquirer sentiment, and the main effect is shown through the manipulative sentiment.

Moreover, we find that board independence and CEO duality lack significance on acquirer sentiment. We therefore have to reject the alternative explanation that inadequate monitoring by the board may result in inappropriate or inflated sentiment by the CEO.

Another possible explanation is that acquirer use positive sentiment in the announcements to flip negative media sentiment prior to the deal. To test this alternative explanation, we regress media coverage and media sentiment on acquirer sentiment. In an unreported table, the media variables lack significance which leads to rejecting the alternative explanation that acquirer uses positive sentiment after negative media sentiment.

Besides these main variables of interest, we analyze the impact of other variables which may further explain when firms use rather positive sentiment in M&A press releases. The coefficient of firm size is consistently significant across all columns. It may be possible that larger acquirers use less positive sentiment if they acquire smaller targets as there is less necessary to convince investors since the deal can be easily made[16].

Summarizing, we find that the acquirer sentiment is driven by CEO overconfidence. Acquirer CEOs having low confidence, in particular CEOs with large ownership, want to hedge the potential stock price decrease to protect the value of their stock ownerships. These CEOs are therefore encouraged to strategically use more positive sentiment to reduce investor concerns on the M&A deal. On the target side, we find that target sentiment provides M&A deal fundamentals without any manipulation.

6. Conclusion

In this paper, we provide new evidence on the qualitative information value of M&A press releases. Our results show that M&A press releases provide valuable information which can be

[16] In a further robustness test, we also control for the relative size between the acquirer and the target. We find similar results to the ones reported. The results are available upon request.

obtained from their sentiment. This paper complements the literature examining quantitative information of M&As (Masulis et al., 2007).

By analyzing the positive and negative words, we obtain the sentiment from the acquirer and the target side separately. This approach extends and complements prior literature on sentiment around M&A announcements (e.g., Masulis et al., 2007). Our results show that target sentiment has a positive impact on the target's stock returns around the announcement of the M&A. We also find that the fundamental disagreement between the acquirer and target sentiments predicts the success of the M&A deal and leads to faster completions of the deals.

We do not find evidence that the acquirer sentiment has an impact on stock returns. We argue that acquirers benefit from a manipulated sentiment which is particularly pronounced if the acquirer CEO has low confidence and large ownership. Investors therefore may neglect the acquirer sentiment. For targets, we provide the first evidence that target sentiment is without manipulation and reflects M&A fundamentals since it is the best strategy of target.

The findings provided in this paper are relevant for investors, managers, and directors. By showing that some parts in press announcements could be uninformative and biased, investors need to be cautious and smart in trading with these disclosures. However, the results are also of relevance for managers, especially in acquiring firms. Acquirer managers manipulate the sentiment with efforts in choosing positive words but do not receive the expected reactions from investors. Therefore, acquirer managers should learn from the investor reactions. On the last side of directors, how to give better advice on M&A, especially the disclosures to better inform investors needs more consideration.

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Appendix

Table A.1: Variable definitions

Variable (acquirer: acq; target: tgt)	Definition
CAR	Cumulative abnormal return between one day prior to the announcement and after the deal announcement. Fama-French three factors model is the estimation model and then subtracting market value weighted return, while the estimation window is [-220, -21].
Sentiment	
dummy_press	Equals to 1 if disclosing the press release at the announcement day and 0 otherwise
dummy_a	Equals to 1 if acquirer reveals sayings with quotes in the press release and 0 otherwise
dummy_t	Equals to 1 if target reveals sayings with quotes in the press release and 0 otherwise
net	Difference between positive and negative sentiment of press release
net_ar	Difference between positive and negative sentiment of acquirer saying in the press release
net_tr	Difference between positive and negative sentiment of target saying in the press release
net_l	Difference between positive and negative sentiment of other context in the press release, other than acquirer or target saying
dis_net	net_ar-net_tr
funda_dis_net	net_ar-res_net_ar-net_tr, res_net_ar is residual of regressing acquirer sentiment on deal, acquirer and target characteristics
length	Logarithm of number of words in the press release
Deal characteristics	
transact	Logarithm of the deal value
pct_stk	Percentage of stock payment in the deal/100
dummy_success	1 indicates deal completed before the end of 2020 and 0 otherwise
days_comple	Logarithm of days between M&A announcement and completion if the deal is successfully completed
deal_attitude	Equals to 1 as friendly acquisition and 0 otherwise
Firm characteristics	
m/b	Market value of assets / book value of assets
size	Logarithm of total assets
cash	Cash and equivalents / total assets
ROA	Return of assets ratio
leverage	Total debt / total assets
no_news	the log of one plus the total number of daily news articles about M&A published during the 30 days prior and post to the deal announcement date. Excluding M&A rumor and scheduled news.
senti_news	the average of the difference between number of positive and negative M&A news articles published during the 30 days prior to the deal announcement date. Excluding M&A rumor and scheduled news.
CEO and director characteristics	
CEO_own	CEO ownership
vested_opts	CEO vested options holdings
io	Institutional investors ownership
CEO_age	CEO age
CEO tenure	tenure of CEO
CEO_edu	CEO educational background, 1: no or college 2: bachelor 3: master 4: PhD
CEO_gender	CEO gender, 1 as female, 2 as male
dir_indep	fraction of independent director in the board
CEO_dual	Equals to 1 if CEO is also the chairman and 0 otherwise

Figure 1: Most frequent words in M&A press releases

Table 1: M&A press release and statements over time

	M&A deals	press release	acquirer statement	target statement	# positive net_ar	# positive net_tr	average net_ar	average net_tr
1995	178	3	1	0	1	0	0.0156	0
1996	203	12	11	6	11	6	0.0586	0.0227
1997	255	16	13	10	12	9	0.0353	0.0186
1998	275	16	15	11	14	11	0.0344	0.0187
1999	265	24	21	18	20	18	0.0485	0.0325
2000	236	113	103	97	97	91	0.1825	0.1170
2001	154	70	66	60	61	59	0.1512	0.1260
2002	81	44	41	39	40	34	0.1678	0.1478
2003	95	63	55	55	53	52	0.2073	0.1711
2004	97	56	48	44	47	42	0.1647	0.1300
2005	108	42	38	37	34	37	0.1301	0.1035
2006	106	43	38	39	35	35	0.1020	0.1133
2007	103	57	49	48	46	47	0.1673	0.1476
2008	76	49	39	38	38	36	0.1877	0.1522
2009	56	44	37	32	36	30	0.2084	0.1376
2010	75	62	54	50	50	45	0.2086	0.2062
2011	50	37	29	25	29	22	0.1644	0.1193
2012	58	46	41	35	36	33	0.2210	0.1392
2013	54	42	37	37	35	37	0.2117	0.1912
2014	64	48	44	40	41	38	0.2227	0.1688
2015	58	45	40	39	39	39	0.1815	0.1910
2016	79	58	49	51	46	50	0.1576	0.1551
2017	71	50	44	44	43	39	0.1570	0.1529
2018	66	47	44	43	43	43	0.1875	0.1613
2019	52	42	36	38	34	36	0.1874	0.2076
2020	29	23	21	22	19	22	0.1321	0.2009
Total	2944	1152	1014	958	960	911	0.1196	0.095

Table 2: Descriptive Statistics

This table shows the summary statistics of all variables. The definitions of variables are in Table A.1. All continuous variables are winsorized at 1% and 99% percentiles.

Variable	N	Mean	Std.Dev	Median	p5	p95
acquirer CAR	2798	-0.016	0.092	-0.009	-0.165	0.115
target CAR	2942	0.231	0.302	0.186	-0.084	0.687
Sentiment						
net	1152	0.659	0.829	0.653	-0.660	2.048
net_ar	1152	0.306	0.300	0.255	0	0.807
net_tr	1152	0.244	0.225	0.208	0	0.654
net_l	1152	0.112	0.677	0.064	-0.930	1.202
length	1152	7.296	0.496	7.335	6.420	8.002
Deal Characteristics						
transact	2879	6.156	1.766	6.077	3.375	9.255
pct_stk	2944	0.454	0.452	0.377	0	1
Acquirer Firm Characteristics						
m/b	2502	2.498	2.174	1.798	0.923	6.718
size	2801	7.362	2.142	7.358	3.811	10.904
cash	2801	0.181	0.201	0.099	0.005	0.630
ROA	2797	0.021	0.157	0.050	-0.233	0.171
leverage	2788	0.231	0.195	0.207	0	0.613
no_news	2944	1.389	1.728	0	0	4.736
senti_news	2944	-0.585	2.220	0	-3.500	0
Acquirer CEO and director Characteristics						
CEO_own	2944	1.041	3.964	0	0	5.700
vested_opts	2944	0.040	0.079	0.006	0	0.182
io	2944	57.694	30.966	63.788	0	99.549
CEO_age	1563	54.749	7.255	55	43	66
CEO_tenure	2944	2.634	4.745	0.303	0	11.597
CEO_edu	1446	2.840	0.778	3	2	4
CEO_confi	1887	0.409	0.492	0	0	1
dir_indep	2067	0.551	0.280	0.625	0.200	0.900
CEO_dual	2944	0.310	0.463	0	0	1
CEO_gender	1570	1.978	0.148	2	2	2
Target Firm Characteristics						
m/b	2747	2.127	1.830	1.518	0.786	5.677
size	2938	5.465	1.835	5.254	2.729	8.820
cash	2936	0.235	0.246	0.137	0.004	0.762
ROA	2938	-0.054	0.236	0.023	-0.558	0.148
leverage	2918	0.214	0.220	0.160	0	0.653
no_news	2944	1.131	1.710	0	0	4.585
senti_news	2944	0.243	1.274	0	0	1
Target CEO and director Characteristics						
CEO_own	2944	0.105	1.015	0	0	0.107
vested_opts	2944	0.006	0.033	0	0	0.033
io	2944	40.774	32.253	38.544	0	93.212
CEO_age	1027	55.284	7.663	55	43	68
CEO_tenure	2944	1.470	3.337	0	0	8.082
CEO_edu	932	2.754	0.694	3	2	4
CEO_confi	327	0.242	0.429	0	0	1
dir_indep	1510	0.262	0.172	0.200	0.200	0.750
CEO_dual	2944	0.053	0.225	0	0	1
CEO_gender	1030	1.964	0.186	2	2	2

Table 3: Existence of press releases and their impact on stock returns

For the independent variables, we set the dummy of press release (*dummy_press*) that 1 indicates disclosing the press release on the announcement day, and 0 otherwise. Furthermore, if there is a press release on the announcement day, we set up the dummy of acquirer (target) statement in the press release (*dummy_a*, *dummy_t*) that is equal to if 1 if acquirer (target) reveals a quote in the press release, and 0 otherwise.

For the dependent variables, *CAR [-1, 1] FF* is the cumulative abnormal returns in the [-1, 1] event window of acquirer (target) estimated by the Fama-French three factors model. We also control for deal characteristics, acquirer firm characteristics, and target firm characteristics. For fixed effects, we choose booth year and industry fixed effects. The standard error is clustered at the industry level. For the F-test, we show the F-value in this table. The standard errors are shown in the parenthesis, with ***, **, and * denoting 1%, 5%, and 10% significance levels respectively.

	Acquirer CAR [-1, 1] FF				Target CAR [-1, 1] FF			
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
dummy_press	-0.005				0.031***			
	(0.003)				(0.011)			
dummy_a		-0.009		-0.009		0.078**		0.063*
		(0.007)		(0.008)		(0.035)		(0.036)
dummy_t			-0.005	-0.001			0.053**	0.030
			(0.008)	(0.010)			(0.022)	(0.021)
F test: dummy_a-dummy_t				0.21				0.51
Deal, Acquirer and Target Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2280	909	909	909	2277	904	904	904
Adj. R^2	0.110	0.167	0.166	0.166	0.151	0.146	0.144	0.145

Table 4: Existence of press releases and their impact on deal characteristics

For the independent variables, we set the dummy of press release (*dummy_press*) that 1 indicates disclosing the press release on the announcement day, and 0 otherwise. Furthermore, if there is a press release on the announcement day, we set up the dummy of acquirer (target) statement in the press release (*dummy_a*, *dummy_t*) that is equal to if 1 if acquirer (target) reveals a quote in the press release, and 0 otherwise.

For the dependent variables, we use *dummy of deal success* as our dependent variable defined as 1 if the is deal completed before the end of 2020. *days of completion* is the logarithm of days between M&A announcement and completion if the deal is successfully completed. We also control for deal characteristics, acquirer characteristics, and target characteristics. For fixed effects, we choose booth year and industry fixed effects. The standard error is clustered at the industry level. For the F-test, we show the F-value in this table. The standard errors are shown in the parenthesis, with ***, **, and * denoting 1%, 5%, and 10% significance levels respectively.

	Deal success (Completed or withdrawn)				Days of completion			
Dependent variable	(1)	(2)	(3)	(4)	(9)	(10)	(11)	(12)
dummy_press	0.378*				-0.051			
	(0.203)				(0.033)			
dummy_a		0.696		-0.299		-0.129		-0.071
		(0.438)		(0.425)		(0.088)		(0.094)
dummy_t			1.506***	1.610***			-0.144***	-0.117**
			(0.296)	(0.293)			(0.052)	(0.049)
F test: dummy_a-dummy_t				11.09***				0.15
Deal, Acquirer and target Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2285	913	913	913	1914	782	782	782
Persudo/ Adj. R^2	0.149	0.256	0.289	0.289	0.296	0.371	0.374	0.374

Table 5: Effect of sentiment on stock market returns

For the independent variables, we use net sentiment of the entire press release (*net*), of acquirer statements (*net_ar*), and of target statements (*net_tr*). We also consider the disagreement between acquirer and target sentiment (*dis_net*) as *net_ar-net_tr*. We further obtain the residual of acquirer sentiment (*res_net_ar*) as the residual of regressing acquirer sentiment on deal, acquirer, and target characteristics. We then obtain the fundamental sentiment disagreement between acquirer and target (*funda_dis_net*) as acquirer sentiment minus the residual of acquirer sentiment minus target sentiment (*net_ar-res_net_ar-net_tr*). For the dependent variables, *CAR [-1, 1] FF* is the cumulative abnormal returns in the [-1, 1] event window of acquirer (target) estimated by the Fama-French three factors model. We also control for deal characteristics, acquirer firm characteristics, and target firm characteristics. For fixed effects, we choose both year and industry fixed effects. The standard error is clustered at the industry level. The standard errors are shown in parentheses, with ***, **, and * denoting 1%, 5%, and 10% significance levels, respectively.

	Acquirer CAR [-1, 1] FF						Target CAR [-1, 1] FF					
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
net	-0.000						0.041***					
	(0.004)						(0.011)					
net_ar		0.006		0.006				0.068*		0.055		
		(0.008)		(0.008)				(0.038)		(0.038)		
net_tr			0.005	0.004					0.144***	0.137***		
			(0.008)	(0.008)					(0.037)	(0.038)		
dis_net					0.002						-0.018	
					(0.005)						(0.031)	
funda_dis_net						-0.005						-0.145**
						(0.008)						(0.036)
Deal, Acquirer and target Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	909	909	909	909	909	909	904	904	904	904	904	901
Adj. R^2	0.166	0.166	0.166	0.151	0.166	0.166	0.148	0.144	0.149	0.149	0.142	0.151

Table 6: Effect of sentiment on Deal characteristics

For the independent variables, we use net sentiment of the entire press release (*net*), of acquirer statements (*net_ar*), and of target statements (*net_tr*). We also consider the disagreement between acquirer and target sentiment (*dis_net*) as *1- (net_tr/net_ar)*. We further obtain the residual of acquirer sentiment (*res_net_ar*) as the residual of regressing acquirer sentiment on deal, acquirer and target characteristics. We then obtain the fundamental sentiment disagreement between acquirer and target (*funda_dis_net*) as acquirer sentiment minus the residual of acquirer sentiment minus target sentiment (*net_ar-res_net_ar-net_tr*). For the dependent variables, we use *dummy of deal success* as our dependent variable defined as 1 if the is deal completed before the end of 2020 (1005 observations) and 0 otherwise (147 observations). *days of completion* is the logarithm of days between M&A announcement and completion date if the deal is successfully completed. We also control for deal characteristics, acquirer firm characteristics, and target firm characteristics. For fixed effects, we choose both year and industry fixed effects. The standard error is clustered at the industry level. The standard errors are shown in parentheses, with ***, **, and * denoting 1%, 5%, and 10% significance levels, respectively.

	Deal success (Completed or withdrawn)						Days to deal completion					
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
net	-0.066						-0.045***					
	(0.157)						(0.015)					
net_ar		0.391		0.189				-0.068		-0.055		
		(0.323)		(0.296)				(0.052)		(0.052)		
net_tr			1.771**	1.719**					-0.185**	-0.179**		
			(0.536)	(0.502)					(0.071)	(0.071)		
dis_net					-0.324						0.040	
					(0.262)						(0.041)	
funda_dis_net						-1.771**						0.185**
						(0.536)						(0.071)
Deal, Acquirer and target Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	913	913	913	913	913	909	782	782	782	782	782	782
Per/Adj. R^2	0.252	0.253	0.265	0.253	0.235	0.264	0.371	0.368	0.372	0.371	0.368	0.372

Table 7 The impact of percentage of stock payment on press releases and sentiment

For the independent variables, we set up the dummy of acquirer (target) statement in the press release (*dummy_a*, *dummy_t*) that is equal to if 1 if acquirer (target) reveals a quote in the press release, and 0 otherwise. We also use net sentiment of the entire press release (*net*), of acquirer statements (*net_ar*), and of target statements (*net_tr*). For dependent variable, we use the percentage of stock payment (*ptk_stk*). We control for deal characteristics, acquirer firm characteristics, and target firm characteristics. For fixed effects, we choose both year and industry fixed effects. The standard error is clustered at the industry level. The standard errors are shown in parentheses, with ***, **, and * denoting 1%, 5%, and 10% significance levels, respectively.

	dummy_a	dummy_t	net	net_ar	net_tr
	(1)	(2)	(3)	(4)	(5)
ptk_stk	0.026	0.151***	0.239**	-0.003	0.046***
	(0.037)	(0.022)	(0.092)	(0.019)	(0.015)
Deal, Acquirer and target Controls	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	909	909	909	909	909
Adj. R^2	0.123	0.116	0.143	0.221	0.037

Table 8 The impact of deal attitude on press releases and sentiment

For the independent variables, we set up the dummy of acquirer (target) statement in the press release (*dummy_a*, *dummy_t*) respectively that is equal to if 1 if acquirer (target) reveals a quote in the press release, and 0 otherwise. We also use net sentiment of the entire press release (*net*), of acquirer statements (*net_ar*), and of target statements (*net_tr*). For dependent variable, *deal attitude* equals 1 if the acquisition is friendly (1091 observations) and 0 otherwise (61 observations). We control for deal characteristics, acquirer firm characteristics, and target firm characteristics. For fixed effects, we choose both year and industry fixed effects. The standard error is clustered at the industry level. The standard errors are shown in parentheses, with ***, **, and * denoting 1%, 5%, and 10% significance levels, respectively.

	dummy_a	dummy_t	net	net_ar	net_tr
	(1)	(2)	(3)	(4)	(5)
deal_attitude	1.814***	4.729***	1.812**	1.843***	5.212***
	(0.744)	(0.576)	(0.750)	(0.487)	(0.720)
Deal, Acquirer and target Controls	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	913	913	913	913	913
Adj. R^2	0.336	0.346	0.315	0.270	0.336

Table 9: Explaining factors of the use of the sentiment

For the independent variables, we use the CEO overconfidence dummy variable as suggested by Malmendier and Tate (2005) for acquirer (*acq_ceo_confi*) and target (*tgt_ceo_confi*) CEOs. For the target, we use the *t-1* lagged year of target CEO overconfidence because most target CEOs won't receive the stock-options once being acquired in *t* year. *manp_ar* is the manipulative sentiment of sentiment as the residual of regression the acquirer sentiment (*net_ar*) on the deal, acquirer and target firm characteristics. *funda_ar* is the fundamental sentiment of acquirer as the difference between *net_ar* and *manp_ar*. We control for deal characteristics, firm, CEO and directors characteristics of acquirer and target. For fixed effects, we choose both year and industry fixed effects. The standard error is clustered at the industry level. The standard errors are shown in parentheses, with ***, **, and * denoting 1%, 5%, and 10% significance levels, respectively.

	dummy_a	net_ar	manp_ar	funda_ar	dummy_t	net_tr
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
Acq_ceo_overconfidence	0.751	-0.053*	-0.061***	-0.016*		
	(0.472)	(0.030)	(0.024)	(0.009)		
$Tgt\_ceo\_overconfidence_{t-1}$					-0.001	-0.065
					(0.005)	(0.041)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year and Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	433	422	416	416	360	203
Adj. R^2	0.466	0.276	0.077	0.807	0.887	0.132