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Voluntary communications during M&A deals: Impacting upon information asymmetry and evaluative uncertainty

Abstract

In this study, we explore both the volume and content of voluntary communications activities during M&A deals, in order to assess their impact on acquirer stock performance. Stock performance during M&A deals is an important consideration, particularly in the case of equity deals where an acquirer's ability to increase their firm's share price will also increase their ability to buy the target company. We use two measures of stock performance – stock volatility and cumulative abnormal returns. Our dataset includes 548 large M&A deals between US acquirers and US targets (where both acquirer and target are publicly traded firms) completed over the period 2010 – 2016. We analyse more than 15,000 voluntary communications taking place between the announcements of the deals and their completion dates. Our results indicate that, in the short term, cumulative abnormal returns (CARs) are higher for acquirers that engage in more voluntary communications during M&A deals than for those firms that engage in fewer. In the longer term, we find a significant relationship between the strength of the sentiment expressed in voluntary communications and stock volatility. These results provide empirical support for the argument that managers can use voluntary communications to influence market perceptions of their acquisition strategies.

Introduction

Mergers and acquisitions have a long lineage, being traceable back to the Greeks and Romans, and remain big business around the world. According to Mergermarket¹, the number of deals in 2018 fell for the first time since 2010 to 19,232, after steadily rising for almost a decade. However, the transactions that were completed represented 3.5 trillion US dollars' worth of activity; this figure makes 2018 the third-largest year on record (since 2001) by value. Average deal size reached the second-highest total value on record at 384.8 million US dollars, just below the peak figure of 400.3 million US dollars reached in 2015.

Yet not all deals that are announced are completed successfully. According to analyst estimates in summer 2018², a total of roughly 541 billion dollars' worth of global M&A transactions had been withdrawn in the year to date, representing a 23% increase year-on-year. Moreover, a number of high-profile deals failed during 2018, such as Qualcomm's proposed acquisition of Dutch business NXP Semiconductors, a 44 billion dollar deal which was withdrawn in July 2018³. Hence, further research is needed to explore the management

¹ <https://www.mergermarket.com/info/mergermarket-releases-2018-global-ma-report>

² <https://pitchbook.com/news/articles/things-fall-apart-high-profile-ma-deals-fold-under-pressure>

³ <https://money.cnn.com/2018/07/26/technology/qualcomm-nxp-merger-china/index.html>

practices that can make a difference, and enhances the chances of a successful outcome, during the crucial period between deal announcement and deal completion.

An important management practice, worthy of further study, is the decision to make voluntary communications to the market – and if so, what messages to seek to communicate, and how to do so. During the process of M&A deals, some companies – acquirers or targets – choose to communicate a great deal, while others choose to remain silent. It is a legal requirement that all M&A deals are formally announced, so that the relevant markets are made aware that the deal is in progress. Such mandatory announcements, or non-voluntary communications, concerning M&A deals have been studied a great deal. However, voluntary communications – sometimes known as interim news events – have received much less attention. In this paper we aim to address this gap, by studying the period between deal announcement and deal completion, and whether firms choose to make – or not to make – statements about the impending deal over that period. We also explore the content of such communications (in particular, whether strong positive or negative sentiments are expressed), when they occur.

We suggest that both the volume and the content of voluntary communications may be significant in influencing stock performance during M&A deals. Voluntary communications are likely to be intended to influence the opinions of key stakeholders, such as analysts. Managers may decide that voluntary communications can play an important role in ‘selling’ the deal to analysts, who do not have access to all of the information, internal to the firm, that is available to managers. The existing literature suggests that the judgements of analysts are affected by both information asymmetry (e.g. Zhang, 2008) and evaluative uncertainty (e.g. Dutta and Trueman, 2002). If successful, the behaviour of managers, in making voluntary communications, may influence analysts by reducing information asymmetry and/or evaluative uncertainty. We ask whether key attributes of these voluntary communications, such as their volume and their content (e.g. expressions of strong sentiment) are important in influencing key measures such as acquirer stock performance – represented here by both cumulative abnormal returns and stock volatility. We suggest that, in the short term, the volume of voluntary communications can help to boost cumulative abnormal returns. In the longer term, our analysis indicates that the strength of sentiment expressed in the communications is important in impacting upon stock volatility.

Our research has implications for theory and practice, for instance in studying the under-researched period during deal announcement and completion, and the role of voluntary communications over that period. Managers should be aware that both the volume of such communications, and the content of the communications (such as strength of sentiment), appear to influence stock performance in terms of both cumulative abnormal returns and stock volatility.

The structure of our paper is as follows. First, we discuss the literatures on information asymmetry and evaluative uncertainty. We then go on to present our dataset, variables and chosen methodology. We summarise our empirical findings, and move on to discuss our results. We conclude with a brief discussion of the implications of our work for theory and practice, and we point to some limitations of our study which help to set an agenda for future research.

Literature Review

In the following section, we focus on two strands of literature of direct relevance to our research questions, and the context of voluntary communications during M&A deals. The first strand is around information asymmetry between managers and other stakeholders, such as analysts, and the second is around the evaluative uncertainty of analysts when faced with a forthcoming M&A deal.

A number of studies indicate that information asymmetry exists between stakeholders (investors) and managers (Shen and Cannella, 2003, Zhang, 2008, Kothari et al., 2009a). A rich and effective disclosure, by reducing information asymmetry, could improve capital market development and reduce firms' cost of capital (Kothari et al., 2009a). A body of empirical research has investigated the relationship between media news and financial market activity (Fang and Peress, 2009, Peress, 2014, Rogers et al., 2016). Fang and Peress (2009) find that stocks with no media coverage earn higher returns than stocks with media coverage, and suggest that the breadth of information dissemination affects stock returns. Peress (2014) finds that national newspaper strikes, resulting in media 'blackouts', reduce stock trading volume and the volatility of stock prices. Rogers et al. (2016) use the process through which insider trading filings are made public to investigate the dissemination role of the media, and suggest that the media plays a significant role in capital markets by disseminating news more widely.

In addition to information asymmetry, managers also face uncertainty as they struggle to anticipate how investors will interpret the information that they disclose (Dutta and Trueman, 2002). They therefore adopt a range of disclosure strategies. Managers tend to delay releasing bad news relative to good news (Kothari et al., 2009b). Previous empirical studies use textual analysis to quantify various qualitative dimensions (e.g. positive versus negative “tone”) of firm mandatory disclosures or filings, such as the 10-K/10-Q filings and earnings announcements (Kothari et al., 2009a, Loughran and McDonald, 2011, Henry and Leone, 2016, Bonsall et al., 2017). They find these “tone” measures have significant associations with other financial variables such as stock price (see e.g. Loughran and McDonald, 2011).

Nevertheless, the impact of voluntary communications - especially those communications that take place after the announcement of a deal and before the deal closure - on the outcome of mergers and acquisitions has been largely ignored by the above two strands of literature. Given the role of disclosure in mitigating information asymmetry and uncertainty evaluation, we suggest that the level of voluntary disclosures/communications is likely to bring value to mergers and acquisitions events. A few studies use conference calls as a proxy for voluntary communication, and investigate their impact on stock returns around mergers and acquisitions announcements (Kimbrough and Louis, 2011, Siougle et al., 2014). There are only two studies that analyse the effects of disclosures during mergers and acquisitions. First, Angwin et al. (2014) analyse interim news events, and suggest that such events help to reduce evaluative uncertainty. Second, Ahern and Sosyura (2014) find that media coverage influences stock price during mergers and acquisitions. In particular, studies suggest that when a new strategic initiative such as a forthcoming M&A deal is announced, there may be negative market reactions which can be explained by the existence of information asymmetry between managers of organisations and outside investors (Gilson, 2000). Specifically, depressed share prices may arise for a range of reasons including investors’ lack of understanding of the value of an acquirer’s strategy (Feldman et al., 2014), narrow specialisations by analysts (Zuckerman, 2004), and numerous cognitive limitations attached to covering diversified firms or firms with unique strategies (Feldman et al., 2014; Litov et al., 2012).

It is widely accepted that managing third-party perceptions is an important task for both sides in a merger or acquisition (e.g. Trautwein, 1990). In the context of M&A, an ‘open’ approach

to strategic communications can act as a force that both increases and reduces information asymmetry (Angwin et al., 2016). Communicating a shift in current strategy is likely to be important for managers; voluntary communications can help to reassure analysts and investors regarding the future plans associated with the upcoming merger or acquisition (Yakis-Douglas et al., 2016). Such additional information may help key stakeholders to evaluate the strategic prowess of the acquirer and the target firms in handling issues such as intended integration, restructuring and reorganization. It may also allow investors access to substantive new information such as employee retention plans. M&A processes often unfold in ways that prevent the financial press, analysts, and investors from having full access to information surrounding the new deal (Angwin et al., 2015). Due to these information failures, shareholders who are already highly sensitive to organisational changes are likely to be facing evaluative uncertainty regarding the M&A deal (Gomes et al., 2013). We therefore suggest that voluntary M&A announcements via interim news events may help reduce evaluative uncertainty.

We seek to address these gaps in the extant literature, by contributing to our understanding of the impact of voluntary communications during M&A deal. We explore how such interim news events, in reducing information asymmetry, can impact upon stock performance – potentially both enhancing cumulative abnormal returns and impacting upon evaluative uncertainty. It is possible that a fundamental difference in the pattern of present and future resource deployments is likely to act as a reason for financial analysts to publish unfavourable earnings forecasts - or not to cover the organization at all (Yakis-Douglas et al., 2016). Both of these scenarios could lead to negative share price reactions, and these negative reactions are likely to be heightened during periods of time when the process of a merger or acquisition is unfolding (Haleblian et al., 2009). Organisations are likely to be motivated by a desire to offset anticipated negative market reactions by opening their strategy externally, in an attempt to win the support of key stakeholders such as analysts and investors.

Sample, Variables and Methodology

Data

Our dataset covers mergers and acquisitions transactions involving U.S. acquirers and U.S. target companies on the Bloomberg M&A database that were announced between 01/01/2010 and 12/31/2016. A mergers and acquisitions deal is included in the sample if it satisfies the following criteria: (1) both acquirer and target are publicly traded firms on the NYSE or

NASDAQ; (2) the deal value (\geq \$50 million), the method of payment, and the M&A announcement date and completion date are available; (3) the transaction is for a majority of shares of the target firm (above 50%); (4) announcement date and completion date are not the same day. This selection process results in 548 completed deals.

Our analysis focuses on both the volume and the content of voluntary communications activity, in order to understand its impact on the acquirer stock performance in mergers and acquisitions deals. We collect daily communications, such as voluntary news items relating to the deal in question, that take place after the announcement and before the closure of the M&A deal. We obtain the communication news from the Dow Jones's Factiva database. Factiva assigns a unique identifier, known as the Intelligent Indexing Code, to each company; this enabled the researchers to identify the relevant news items. To collect news items for each M&A deal, we use both the acquirer's and the target's Intelligent Indexing Code. Our news sources include all English-language news covered by Factiva's top source categories: Dow Jones newswires, major news and business sources (e.g. *The New York Times*, *The Financial Times*, *USA Today*), press release wires, Reuters newswires and The Wall Street Journal. This resulted in a total 223,070 daily communication articles relating to acquirer and target firms for the above 548 completed M&A deals. Due to the very large number of news items identified, a software program was developed (in Python) to review the news items and impose some conditions to ensure that they are voluntary communications: (1) We retained articles tagged with the Factiva subject code: M&A; (2) We eliminated news items with a text length below 100 words; (3) we eliminated news items where the headline included the following key words⁴: "8K", "Market Talk", "Inst Holders", "Deals of the day", "Fiscal Q1", "Fiscal Q2", "Fiscal Q3" and "Fiscal Q4"; (4) We removed repeated news items with the same content. After these content and size verifications, we were left with a sample of 15,237 non-repeating voluntary communications.

Variables and Methodology

See Appendix A for a description of each variable used and an explanation of the data source.

⁴ Our aim was to identify voluntary news items that related specifically to the 548 M&A deals in our dataset. We excluded news items with headlines such as "8K", "Inst Holders", "Fiscal Q1", "Fiscal Q2", "Fiscal Q3" and "Fiscal Q4", as they were typically mandatory announcements or quarterly fiscal reports. News items with headlines including "Market Talk" and "Deals of the day" were also excluded, as they typically covered a broad range of market-related news, not specifically focused on a particular deal in our dataset.

Acquirer stock performance

We use two measures of acquirer stock performance: stock volatility and cumulative abnormal returns (CARs). The stock volatility is measured by the standard deviation of daily stock returns, from announcement date to completion date. It is a widely used equity risk measure; the greater standard deviation represents high market volatility and implies greater risk. The second stock performance variable is the cumulative abnormal returns (CARs) associated with voluntary M&A communications. The event study methodology is used to calculate CARs that examine short-term stock price reactions to voluntary communication events. As some of the M&A transactions in our sample have a number of news events on a single day, we group them by date; this results in 5957 daily voluntary communications for 548 M&A transactions.

We treat daily voluntary communications as events liable to generate CARs in financial markets (Mc Williams and Siegel, 1977). We use a market model to calculate abnormal returns, as described below. The market model to estimate abnormal returns is:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is its return for firm i on day t and $R_{m,t}$ is the corresponding return on the NYSE and NASDAQ equally weighted market index that represents price trend movements based on a broad cross-section of the market. The abnormal return for each day for each firm is then obtained as:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) \quad (2)$$

where α_i and β_i are estimated from equation (1) using data from the estimation window. Then, CARs are computed by summing average abnormal returns for the window of interest. We use the 260 trading days prior to the event window as the estimation window, and a 3-day short event window ($t = -1$ to $+1$) is used to measure immediate investor impressions. The length of the estimation window and the event window is consistent with previous management studies (e.g. Yakis-Douglas et al., 2016, McWilliams and Siegel, 1997).

Measuring Voluntary Communication

The volume and content of voluntary communication is measured by the number and sentiment of news items. To analyse sentiment, we use TextBlob, a popular Python library for processing textual data, following previous financial news sentiment analysis studies (e.g. Sohngir et al., 2018). TextBlob allows the user to undertake common natural language

processing (NLP) tasks such as part-of-speech tagging, noun phrase extraction and classification. In this instance, we use TextBlob to carry out sentiment analysis, by assigning a polarity score to each news item. The polarity scores range from -1 to +1 where 0 indicates neutral sentiment, +1 indicates very positive sentiment and -1 represents very negative sentiment. In addition, we then take the absolute value of polarity score; our final sentiment score ranges from 0 to 1, with scores close to 1 indicating strong sentiment (either positive or negative), and 0 indicating neutral sentiment. See Appendix B for a range of examples of quotations from voluntary communications, with their associated sentiment score from TextBlob.

Control variables

Following previous studies which analyse the impact of corporate disclosure on M&A performance (e.g. Kimbrough and Louis, 2011, Dutordoir et al., 2014, Ahern and Sosyura, 2014), we include deal size, payment method (cash/stock only dummy), length of the deal, industry relatedness between acquirer and target, and acquirer's market capitalisation. Descriptive statistics and pairwise correlations of all variables are reported in Tables 1 and 2.

Methodology

We use two models to estimate how voluntary communications influence acquirers' stock performance:

$$Vol_i = \delta + \theta X_i + \vartheta Control_i + \varepsilon_i \quad (3)$$

Where Vol_i represents stock price volatility for M&A deal i , X_i is the number of voluntary communications and $Control_i$ is a set of control variables

$$CARs_{i,t} = \rho + \omega CARs_{i,t-1} + \sigma X_{i,t} + \varphi Control_{i,t} + \mu_{i,t} \quad (4)$$

Where $CARs_{i,j}$ represents a 3-day window (-1, 0, +1) for acquirer i at event day t , M&A deal i , $X_{i,j}$ is the number of voluntary communications for M&A deal i at day t and $Control_{i,j}$ is a set of control variables.

One econometric issue that should be considered is the need to account for a dynamic relationship in equation (4). This need arises because of the persistence of abnormal returns which stem from the initial M&A announcement and some of inevitable overlapping event windows. In the presence of such effects, the resulting persistence of the CARs series means that a static model would inevitably produce biased estimates. This problem calls for an econometric approach capable of estimating a dynamic model specification, that is, a

specification that includes the lagged dependent variable as an additional regressor. The methodology we choose to apply is the system generalized methods-of-moments (SYS-GMM) proposed by Arellano and Bover (1995) and Blundell and Bond (1998), a well-known extension of the GMM estimation technique developed by Arellano and Bond (1991).

Empirical Results

Table 3 represents the results for short-term stock price reactions associated with voluntary M&A communications by using the SYS-GMM estimation technique. We use the Hansen J-test to explore the overall validity of the instruments, and the AR(2) test to check for second-order correlation. The AR(2) test rejects the presence of second-order autocorrelation and the Hansen test confirms the validity of the instruments in all estimations. Columns 1, 2 and 3 present the results based on Eq. (4) and show that we find a positive coefficient and statistical significance for the NUM_S variable. The results indicate that, in the short term (i.e. over the 3-day event window), the cumulative abnormal returns are higher for firms that engage in more voluntary communications than for those firms that engage in fewer (regression coefficient = 0.0029, significant at the 0.10 level). However, the variables representing the sentiment of the news items (SENTI_S and ABS_SENTI_S) appear to exert a statistically insignificant impact on CARs. In columns 4, 5 and 6 we also present a static model for Eq. (4), and we find that the results are consistent.

Table 4 reports the results with stock price volatility as the dependent variable; the time period for the analysis is longer, i.e. from deal announcement to deal completion (rather than a 3-day event window as discussed above). Columns 1, 3 and 5 present the results based on Eq. (3) estimated without control variables. We find a positive coefficient and statistical significance for the SENTI_L variable. In columns 2, 4, and 6, we add the control variables to exclude a potential alternative explanation for our findings; this substantially increases the Adj. R2 from 6.63% to 21.08%, 7.06% to 22.14%, and 6.53% to 21.64%. After controlling for the deal size, payment method and completion dummy, the results are consistent. In column 6, we find a negative coefficient and statistical significance for the ABS_SENTI_L variable. This result suggests that strong sentiment, in either a positive or negative direction, decreases the stock price volatility. However, it is also important to note that the estimated coefficient of SENTI_L, in Columns 3 and 4, is large and highly significant at the 1% level. This second result implies that, from announcement to completion, there is a statistically significant and positive association between the strength of sentiment (measured on a scale from -1 to +1,

using the TextBlob library) expressed in voluntary news items, and stock price volatility. We find that the number of news items (NUM_L), here, represents no impact on stock price volatility. Overall, the first of these results (using the ABS_SENTI_L variable) implies that, from announcement to completion, on average, voluntary news items containing strong sentiment (either positive or negative) tend to depress volatility. However the latter result (using the SENTI_L) appear to offer a more nuanced view: voluntary news items containing strong positive sentiment increase the stock price volatility, while strong negative sentiment appears to decrease volatility.

Discussion and Conclusions

Stock market analysts are important brokers of information; many investors give serious consideration to their views. The extant literature draws attention to the high level of information asymmetry that often exists between outside stakeholders and inside managers (Graffin et al., 2011; Shen and Cannella, 2003; Zajac, 1990; Zhang, 2008). M&A deals are associated with information asymmetry, because choices regarding an upcoming deal are typically opaque, and information about M&A choices is rarely shared (Gomes et al., 2012). M&A information is market sensitive and the process is characterized by secrecy (Boeh, 2011; Reuer et al., 2012). Analysts' uncertainty, when evaluating M&A deals that have been announced but are not yet complete, can have serious implications, such as higher deal costs for acquirers. Their opinions can potentially cause a deal to fail. In this study, we explore whether senior managers can successfully deploy voluntary communications, between the announcement of a deal and its completion, with the aim of positively influencing the judgements of analysts, and reducing their evaluative uncertainty; and whether the volume and content of such communications are important in influencing stock performance.

M&A announcements can both increase and reduce information asymmetry (Yakis-Douglas et al., 2016). Initial announcements of forthcoming M&A deals are events that typically introduce information asymmetry to markets. However, voluntary disclosures following the initial announcements have the potential to reduce information asymmetry. There may, of course, be unfavourable outcomes associated with voluntary M&A announcements, for example if a firm is deviating from its current strategy, or from the typical strategies of its competitors and other players in its industry; such a statement may be viewed by analysts as a cause for concern, increasing their evaluative uncertainty around the firm in question. In

order to seek to combat any negative responses from stakeholders, organisations may try to convey credibility to their investors and analysts regarding their M&A plans. A failure to do this may result in negative share price reactions. Firms may seek to get their message across by making multiple announcements, and by expressing strong sentiments in their announcements in an attempt to convince their audience.

Evaluating an organisation's strategy in the early stages of an M&A deal is difficult; for example, it involves attributing future organisational activities to possible performance outcomes (Haleblian and Rajagopalan, 2006). Moreover, strategic planning involves qualitative judgments, entailing a level of uncertainty; i.e. strategy evaluation is characterised by a lack of complete information and a degree of unpredictability around future events and outcomes. When qualitative judgments need to be made under conditions of uncertainty, certification by credible and legitimate third parties is likely to become an influential decision criterion (Wade et al., 2006). Financial analysts are likely to act as third-party certification providers for outside stakeholders; their judgements can serve to reduce the evaluative uncertainty associated with M&A deals. In the absence of a yardstick against which a firm can be judged (Graffin and Ward, 2010), analysts are likely to consider the voluntary disclosures of organisations as sources of information. Analysts' recommendations are likely to reduce the uncertainty that external parties face in evaluating deals. Outside investors are likely to pay attention to analysts' forecasts during M&A deals, due to the important role these actors play as independent and credible information intermediaries (Wiersema and Zhang, 2013). Firms are therefore likely to seek to influence such forecasts by making multiple voluntary statements, and by expressing strong sentiments in their announcements in order to get their message across to their audience in a powerful way.

Our results indicate that voluntary communications can be used to influence stock performance such as cumulative abnormal returns; communicating more can boost the stock performance, and this can be an important result for acquirers. We also find that voluntary communications – in particular their content, summarised here as strength of sentiment – can influence stock price volatility. Such communications may impact upon the evaluative uncertainty of analysts, when they consider M&A deals that have been announced and are not yet complete. We contend that voluntary communications can influence share price reactions; this may even increase the likelihood of deal closure, given an important relationship between the acquirer share price and the acquirer's ability to buy the target firm, in the case of equity

deals. Moreover, our findings suggest that the volume and content of the communications are important aspects of this activity. Our results indicate that in the short term (within a day of the deal), the volume of communications have a significant impact, boosting cumulative abnormal returns. However, over a longer time period (the time that elapses between the deal being announced and completed), the content of the communication – in terms of the strength of sentiment expressed – has a significant impact on the stock volatility. We noted first that strong sentiment, either positive or negative, appeared to depress volatility. However, via a second result, we presented a more nuanced view that is worthy of further investigation: that strong positive sentiment may increase volatility, while strong negative sentiment may decrease it. We propose further work to explore why this might be the case. For example, we suggest that while markets may be sensitive to positive sentiment, analysts and investors may find it hard to assess such news items as they can be viewed as containing hyperbolae, speculation and over-optimism, and this may increase volatility. On the other hand, news items containing negative sentiment may be viewed by analysts and investors as being closer to the ‘truth’, hence depressing stock price volatility.

In this study we make a number of contributions. Our research extends the literature on mergers and acquisitions by focusing on a critical part of the M&A process that is currently under-researched: the period between deal announcement and deal completion. Moreover, we turn our attention to voluntary communications, when much of the extant literature has focussed on the mandatory M&A communications required by law. Our findings also have practical implications for organisations engaging in mergers and acquisitions. Our results indicate that voluntary communications are typically positively received by markets, and key stakeholders such as analysts. Managers can also be aware of the relationship we reveal between voluntary communications that express strong sentiment and the volatility of the price of the stock in question.

We point to a number of limitations of this study, which can be addressed by further research. First, our dataset comprises M&A deals completed in the US market between 2010 and 2016. Future studies should explore other M&A markets, such as the UK, and over different time periods in order to compare different points in the economic cycle (such as ‘boom’ and ‘bust’ periods; before and after the financial crisis of 2008). Second, further work should be undertaken to look in greater depth inside voluntary communications and analyse the impact of their specific content on stock performance. In this study, we have used a popular library

(TextBlob) for analysing textual data, and summarised each news item using a polarity score which ranges from -1 (strong negative sentiment) to +1 (strong positive sentiment). Future research should go further in analysing the types of language used in voluntary communications, for example the use of ‘hard’ financial language or quantitative performance data, the use of ‘softer’ strategic language about the planned future direction of the organisation, and so forth.

Third, our study has not explored why some organisations choose to make voluntary communications during the period of an M&A deal, while others choose to remain silent. The underlying choices behind these behaviours are an important area for further investigation. The practice of making voluntary communications to engage stakeholders inside and outside the organisation can be viewed from the perspective of growing academic interest in ‘open strategy’ (e.g. Hautz et al., 2017), a more open and participatory mode of strategizing that allows for the possibility of a large number of people generating, discussing and evaluating strategic ideas. A shift towards external transparency, and a reduction in information asymmetry, implies a more active orientation to shaping investor perceptions, and positive set of choices about both whether and how to communicate (Yakis-Douglas et al., 2016). External forms of open strategy in the M&A context are in line with what Rindova and Fombrun (1999) have termed ‘strategic projections’, the various kinds of statements about intended strategy (i.e. published in corporate press releases and annual reports). Open strategy, therefore, contributes to how audiences evaluate a firm and allocate the resources they control. Similar to strategic projections, practices associated with external forms of open strategy not only offer information about strategic investments; they also have additional symbolic content in providing ready-made and desirable interpretations of strategic moves for key audiences (Whittington and Yakis-Douglas, 2012). Our research focus therefore is not on the compulsory, non-discretionary forms of communication required by law (i.e. mandatory M&A announcements). Instead we focus here on voluntary, discretionary communications of strategy (i.e. voluntary M&A announcements), and their volume and content in terms of strong sentiment. Existing research suggests that these voluntary announcements have symbolic and reputational value for analysts and investors, and that they are used widely by established organisations and entrepreneurs (Rindova et al., 2004; Vaara and Monin, 2010; Zott and Huy, 2007). We suggest that this argument should be taken beyond the symbolic value of voluntary communications, in order to assesses the market value associated with such news events (Yakis-Douglas et al., 2016). External transparency through acquisition

announcements, during the crucial period between deal announcement and deal completion, can help inform investor decisions which can support the successful progress and completion of M&A deals. With the exception of a few studies (for example, Loree et al., 2000), research into M&A has tended to overlook post-announcement voluntary corporate communications. These acquisition announcements are forms of openness in strategy that can increase transparency by reducing information asymmetry between outside investors and internal managers. Existing research on M&A deals, while considering the information asymmetry between these two parties, tends to focus on reactions of investors to acquisition announcements (e.g. Cuypers et al., 2017; Ragozzino and Reuer, 2007, 2009, 2011; Reuer et al., 2012) rather than announcements following the announcement of the deal. By shedding light on voluntary communications following the initial mandatory bid announcement, and exploring the volume and the content of such news events, we seek to address an important gap concerning how investors evaluate strategy talk (Whittington and Yakis-Douglas, 2012), as well as shedding light on an important practice which organisations can adopt to actively manage their M&A process.

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Table 1 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
VOL	548	0.018	0.009	0.007	0.119
NUM_L	548	26.474	38.500	0.000	358.000
SENTI_L	548	0.075	0.031	-0.046	0.240
ABS_SENTI_L	548	0.070	0.029	0.000	0.240
DEALVALUE	548	6.577	1.635	3.951	11.526
CASH	548	0.463	0.499	0.000	1.000
INNER	548	0.703	0.457	0.000	1.000
LENGTH	548	139.694	97.136	8.000	1162.000
LNMARCAP	548	15.206	1.927	10.518	20.085
CARs	5799	-0.003	0.077	-0.571	0.957
SENTI_S	5799	0.076	0.070	-0.800	0.700
ABS_SENTI_S	5799	0.085	0.056	0.000	0.800
NUM_S	5799	2.383	3.377	1.000	65.000

Note: The sample consists of 548 domestic US M&A deals and 5799 voluntary communication events from 2010 to 2016.

Table 2 Correlation Matrix

Panel A	VOL	NUM_L	SENTI_L	ABS_SENTI_L	DEALVALUE	CASH	STOCK	INNER	LENGTH	LNMARCAP
VOL	1									
NUM_L	-0.0606	1								
SENTI_L	0.0791	0.0870	1							
ABS_SENTI_L	0.0802	0.0881	0.9850	1						
DEALVALUE	-0.0113	0.4184	0.0692	0.0631	1					
CASH	-0.0983	0.0555	0.2647	0.2670	0.0278	1				
STOCK	0.0680	-0.1013	-0.1620	-0.1730	-0.0223	-0.4629	1			
INNER	-0.0424	-0.0234	-0.0762	-0.0107	0.0139	-0.1404	0.1025	1		
LENGTH	-0.0393	0.1804	-0.1935	-0.0677	0.1767	-0.4935	0.2536	0.1565	1	
LNMARCAP	-0.2692	0.2793	0.1927	-0.2070	0.5655	0.4733	-0.2660	-0.0443	-0.2048	1
Panel B	CARs	NUM_S	SENTI_S	ABS_SENTI_S	DEALVALUE	CASH	STOCK	INNER	LENGTH	LNMARCAP
CARs	1									
NUM_S	0.0052	1								
SENTI_S	0.0271	0.0497	1							
ABS_SENTI_S	0.0093	0.0008	0.5050	1						
DEALVALUE	0.0039	0.0170	0.1193	0.0228	1					
CASH	0.0100	0.0787	0.0559	0.1070	-0.0259	1				
STOCK	-0.0317	-0.0387	-0.0531	-0.0432	-0.1435	-0.4153	1			
INNER	0.0254	0.0623	0.1230	0.0783	0.6024	0.4187	-0.3197	1		
LENGTH	-0.0207	-0.0061	-0.0245	-0.0283	-0.0290	-0.1351	0.0184	-0.0503	1	
LNMARCAP	0.0146	-0.0596	-0.0536	-0.0694	0.3785	-0.3737	0.1381	-0.0163	0.1743	1

Note: this table report Pearson correlation statistics.

Table 3 Voluntary communications and cumulative abnormal returns (CARs)

	(1)	(2)	(3)	(4)	(5)	(6)
L.CARs	0.8556*** (0.1831)	0.8598*** (0.1692)	0.8376*** (0.1579)			
NUM_S	0.0029* (0.0017)			0.0007** (0.0003)		
SENTI_S		0.0937 (0.1738)			0.0053 (0.0122)	
ABS_SENTI_S			0.1171 (0.2167)			0.0101 (0.0158)
DEALVALUE	-0.0034*** (0.0012)	-0.0020** (0.0009)	-0.0023*** (0.0009)	-0.0019** (0.0009)	-0.0017* (0.0009)	-0.0022** (0.0010)
LNMARCAP	0.0021*** (0.0008)	0.0020** (0.0008)	0.0021** (0.0008)	0.0019** (0.0009)	0.0019** (0.0009)	0.0021** (0.0009)
INNER	-0.0001 (0.0027)	-0.0004 (0.0027)	-0.0004 (0.0026)	-0.0042* (0.0024)	-0.0042* (0.0024)	-0.0041* (0.0024)
CASH	-0.0047* (0.0026)	-0.0054* (0.0028)	-0.0061* (0.0032)	-0.0004 (0.0029)	-0.0004 (0.0029)	-0.0010 (0.0029)
LENGTH	0.0034 (0.0021)	0.0024 (0.0022)	0.0023 (0.0018)	0.0041** (0.0018)	0.0038** (0.0018)	0.0042** (0.0017)
CONSTANT	-0.0314** (0.0157)	-0.0337 (0.0220)	-0.0345 (0.0233)	-0.0375*** (0.0136)	-0.0367*** (0.0137)	-0.0390*** (0.0136)
N	1828	1828	1828	5799	5799	5799
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Instruments	11	11	11			
AR(2) p-value	0.9320	0.9940	0.9410			
Hansen p-value	0.7520	0.6530	0.5750			

Note: ***, **, *denote significance at the 0.01, 0.05, and 0.10 levels respectively using two-tailed tests. Heteroskedastic-robust standard errors in parentheses. This table examines the association between CARs (-1, +1) and the volume and content of voluntary communications, for the sample of 5957 voluntary communication events.

Table 4 Voluntary communications and stock price volatility

	(1)	(2)	(3)	(4)	(5)	(6)
NUM_L	-0.0000 (0.0000)	0.0000 (0.0000)				
SENTI_L			0.0223* (0.0120)	0.0340*** (0.0129)		
ABS_SENTI_L					-0.0115 (0.0664)	-0.1431* (0.0814)
DEALVALUE		0.0018*** (0.0003)		0.0018*** (0.0003)		0.0018*** (0.0003)
CASH		0.0008 (0.0011)		0.0004 (0.0011)		0.0009 (0.0011)
STOCK		0.0002 (0.0013)		0.0002 (0.0013)		0.0002 (0.0013)
INNER		-0.0005 (0.0008)		-0.0004 (0.0008)		-0.0005 (0.0008)
LENGTH		-0.0024** (0.0012)		-0.0022** (0.0011)		-0.0025** (0.0012)
LNMARCAP		-0.0026*** (0.0004)		-0.0026*** (0.0004)		-0.0026*** (0.0004)
CONSTANT	0.0173*** (0.0008)	0.0567*** (0.0095)	0.0154*** (0.0012)	0.0532*** (0.0083)	0.0173*** (0.0011)	0.0592*** (0.0101)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	548	548	548	548	548	548
r2	0.0663	0.2108	0.0706	0.2214	0.0653	0.2164

Note: ***, **, * denote significance at the 0.01, 0.05, and 0.10 levels respectively using two-tailed tests. Heteroskedastic-robust standard errors in parentheses. This table examines the association between stock price volatility and the volume and content of voluntary communication, for the sample of 548 domestic US M&A deals from 2010 to 2016.

Appendix A. Variable descriptions and data sources

Variables	Descriptions	Source
Stock price volatility (VOL)	The standard deviation of daily stock returns	Datastream
Number of news for long term (NUM_L)	Number of news items between announcement date and completion date	Factiva, and Authors' calculation
Sentiment of news items for long term (SENTI_L)	Sentiment of news items from announcement date to completion date	Factiva, and Authors' calculation
Absolute value of sentiment of news items for long term (ABS_SENTI_L)	Absolute value of sentiment of news items from announcement date to completion date	Factiva, and Authors' calculation
Deal size (DEALVALUE)	Log of deal value	Bloomberg
Payment method (CASH)	Payment method: cash = 1, stock = 0	Bloomberg
Same industry (INNER)	A dummy variable, =1 if both acquirer and target are in the same industry according to 2-digit SIC codes (0 otherwise)	Bloomberg
Length of deal (LENGTH)	Length of M&A deal (in days)	Bloomberg
Acquirer's market capitalisation (LNMARCAP)	Log of acquirer's market value of equity at the beginning of the fiscal year in which the M&A is announced	Datastream
Cumulative abnormal return (CARs)	Cumulative abnormal returns, 3-day window (-1, 0, +1) for acquirer	Datastream, and Authors' calculation
Sentiment of news items for short term (SENTI_S)	Sentiment of news items for one communications event	Factiva, and Authors' calculation
Absolute value of sentiment of news items for short term (ABS_SENTI_S)	Absolute value of sentiment of news items for one communications event	Factiva, and Authors' calculation
Number of news items for short term (NUM_S)	Number of news items for one communication event	Factiva, and Authors' calculation

Appendix B. Examples of quotations from voluntary communications, with sentiment score

Quotation from voluntary communications	Sentiment Score from TextBlob
Examples of positive sentiment (scoring above zero)	
"Company A has a history of buying the best property in a sector."	1.0
"We view this transaction as a merger creating a larger, more diversified operating platform that will be highly attractive to investors, customers, creditors and employees."	0.43
"The increased scale and footprint of the combined company positions Company K to build deeper customer relationships and secure and execute additional accretive growth opportunities, both organically or via bolt-on acquisitions."	0.40
"These are tremendously complementary businesses, and as a result, we expect the increased footprint and scale to create significant synergies and provide substantial organic growth opportunities that will continue to support our goal of increasing distributions and creating unitholder value."	0.35
"In addition, the acquisition provides Company D with an expanded talent base, allowing for more efficient collaboration and sharing of best practices across the business."	0.23
"The addition of Company B's asset base ...to Company C's existing footprint ...will create a diversified, high-growth midstream company with assets in many of the most economic, high-growth unconventional oil and gas plays..."	0.10
"The transaction ... will create a leading gas gathering and processing platform with a scaled presence across North America's premier high-growth unconventional oil and gas plays..."	0.08
"We believe that the size and scope of the combined enterprise will be highly beneficial to our unitholders, offering added diversification and critical mass which will provide the needed financial flexibility to fully execute and benefit from the significant portfolio of organic growth projects we have developed over the past three years..."	0.06
Examples of neutral sentiment (scoring zero)	
Following the closing, the name of the combined company will remain NameM with headquarters in CityN.	0.0
Examples of negative sentiment (scoring below zero)	
"Sales of (two medical) treatments X and Y fell 45% to \$X.X million because of generic competition and lower than expected generic pricing."	-0.03
"(Medical treatments) A declined X% as B fell Y% on a decrease in demand and lower average net selling prices."	-0.08
"The combination is expected to be slightly dilutive to 2014 DCF, but is not expected to affect anticipated cash distribution growth in 2014."	-0.08
"The acquisition is expected to reduce fiscal 2014 earnings by about X cents per share."	-0.10
"Company E on Wednesday lowered its outlook, saying sales of some drugs were weaker than expected."	-0.10
"Analysts again questioned the firm's acquisition strategy last month when Company F reported disappointing results, after rising costs sent it deeper into the red."	-0.20