Media Deterrence and Illegal Insider Trading Prior to Merger Announcements

Mark Aleksanyan
University of Glasgow

Jo Danbolt
University of Edinburgh

Antonios Siganos
University of Glasgow

Betty Wu
University of Glasgow

Acknowledgement: We are grateful to James Clunie, Alexandros Kontonikas, Hong Liu, Catriona Paisey, George Panos, Evangelos Vagenas-Nanos, Patrick Verwijmeren and seminar participants at the Universities of Glasgow and Ljubljana for helpful comments on earlier drafts of this paper, and to Christopher Flanagan for his support during data collection. Jo Danbolt holds the Baillie Gifford Chair in Financial Markets, and his research is partially funded by a Baillie Gifford endowment held by the University of Edinburgh Business School. Baillie Gifford has no role in or influence over the research conducted.

Media Deterrence and Illegal Insider Trading Prior to Merger Announcements

Abstract

This study explores whether articles published in the Wall Street Journal referring to illegal insider trading in past mergers deters insiders from dealing prior to forthcoming merger announcements. We find that the publication of relevant articles is related negatively with next day's abnormal target stock returns prior to merger announcements. Insiders seem to impulsively reduce their buy transactions in shares of target firms in the day following the publication of relevant articles in fear of getting caught. These results emphasize the role of media as a short-term prevention mechanism of illegal transactions.

Keywords: Media coverage, deterrence, insider trading, target price run-ups.

1. Introduction

An important element of a fair market is that traders do not transact in shares based on their inside information. According to the Securities and Exchange Commission's (SEC) website, "Insider trading continues to be a high priority area for the SEC's enforcement program".[1] In this effort, SEC recently approved a plan to get access to a powerful computer system at a cost of approximately $4 billion that enables them to track transactions in all US stocks almost in real-time (Holzer, 2012). This study explores whether media deterrence is related with US illegal insider trading prior to merger announcements, where deterrence indicates the fear of the consequences when committing an act of crime (Wikstrom and Treiber, 2007). We explore articles published in the Wall Street Journal referring to illegal insider transactions to past merger announcements and test whether these articles deter insiders from using their private information to buy shares in forthcoming target firms.

We motivate our study theoretically based on the Classic Deterrence Theory (CDT) from the field of criminology (e.g., Zimring and Hawkins, 1973; Andenaes, 1974). According to CDT, humans seek pleasure while minimizing pain, and they therefore decide whether to undertake a crime based on expected pleasure and costs. The determination of expected risks may be the outcome of rational or/and irrational response to available information that may vary amongst individuals in line with their risk preferences as well as their ability to assimilate and understand information. Deterrence is indeed an established method in criminology to prevent crime through the perception of potential consequences of one's illegal transactions. In order for deterrence to be effective, individuals should be aware of their action being illegal; that individuals may get caught; and that the potential consequences of their illegal actions are severe. These conditions are met within the context of our study, since trading based on inside

[1] http://www.sec.gov/spotlight/insidertrading/cases.shtml (last accessed December 2015).

information is known to be illegal;[2] a number of insiders have been caught for their illegal transactions; and severe fines imposed with some insiders even ending up in prison.[3]

Comments by insiders who have been caught dealing prior to merger announcements offer further credence that insiders are aware of the consequences of their actions and clear evidence of their fear of getting caught. As an example, Stewart was an investment manager who passed inside information to his father who then passed this on to his friends. His fear is clear from the following transcription of his discussion: "After we met ... you'll probably laugh about this, but ... couple of the questions you asked me, uh, when we were at lunch ... I tried to give you a call back and I couldn't get you, I'm like, 'oh my god,' I wonder if, uh, there was something going on there, now I can't get X because they got X somewhere, where I can't talk to him and … for about two weeks, I didn't sleep at night ... I'm like, 'oh my god,' uh, you know, something's going on, something bad's going on, and all this stuff ....".[4] Insiders even remotely close to such a state of fear could change their share trading behavior in response to external factors such as media coverage.

We explore whether relevant articles published in the Wall Street Journal could deter insiders from transacting prior to merger announcements. A large number of studies in finance

[2] SEC has been responsible for insider trading since 1934 (1934 Act) and Rule 10b-5 is used to implement Section 10(b) of the 1934 Act to determine unlawful actions by insiders. There have been some changes in the interpretation of the definition for insider trading in line with individual court cases, such as following *Chiarella vs United States*, *United States vs Carpenter* and *Dirks vs SEC* in the 1980s which led the SEC to adopt the *misappropriation theory* according to which one commits a fraud "when he misappropriates confidential information for securities trading purposes" (Rule 10b5-1 and Rule 10b5-2).

[3] A recent example of imprisonment is that of Raj Rajaratnam in the Galleon case in 2011 who was sentenced to 11 years in prison.

[4] http://www.bloombergview.com/articles/2015-05-14/perfect-insider-traders-got-caught (last accessed December 2015).

(e.g., Tetlock, 2007; Fang and Peress, 2009; Loughran and McDonald, 2011) report that media coverage influences investor transactions in line with the percentage of positive and negative terms published. When more positive terms are published in a newspaper, the stock market gains, while more negative terms are linked with contemporaneous stock market losses. A number of recent studies have also highlighted the significance of media coverage beyond positive and negative terms used. Dutta et al. (undated) report that media coverage offers feedback to managers on potential stock price reaction to a merger announcement and find that negative media coverage decreases the probability of a firm undertaking a merger. Rogers et al. (2015) also explore the role of media in relation to corporate insider transactions and find that when media covers filings of insider trading, stock returns adjust rapidly to corporate insiders' dealings.

Our study takes this one step further by exploring whether media deterrence may act as an informal prevention mechanism of illegal transactions. A number of studies beyond the finance field (e.g., Entman, 2007; Couldry, 2003) highlight the power of media in influencing humans with regard to "when" and "what to think about". Brookfield (1986) offers, for example, a comprehensive review of the influence of media on "ideological detoxification", such as awareness of political consciousness. We therefore hypothesize that media would influence insiders' perception of the risk of transacting in shares based on their inside information. We suggest an article covering an illegal activity of insiders in a past merger may increase deterrence amongst insiders regarding buying shares of forthcoming target firms based in their private information. We expect that insiders would then hesitate and reduce their buying transactions. Examples of articles in our sample that could deter insiders from transacting on their private information include: "Keaton Sentenced For Insider Trades In 1981 Takeover" (2nd June 1987, Wall Street Journal), "SEC Has Accused 12 of Insider Trading In CoreStates

Deal" (17th July 1997, Wall Street Journal), "SEC Alleges Insider Trading Before Fleet Merger" (29th October 2003, Wall Street Journal).

The context of our study is ideal to explore whether media deterrence is related with insiders' transactions. A number of studies (e.g., Jarrell and Poulsen, 1989; Pound and Zeckhauser, 1990; King, 2009) attribute the target price run-ups pattern to insiders, showing that stock returns and trading volume of target firms in acquisitions increase significantly from 30 days prior to merger announcements. Studies typically use rumors published in newspapers as an indication that investors may have managed to predict the merger announcement. However, most studies in the field find that the strong upwards pattern in stock returns and trading volume is present for merger deals without rumors prior to merger announcements, and they typically attribute these increases to insiders' transactions. Meulbroek (1992) highlights the link between target price run ups and illegal insiders' transactions by reporting that almost half of the stock increases occur on days when insiders have ex-post been found to have been trading in the stocks of the firms. Sophisticated investors seem to manage to identify insiders' transactions, which they follow, generating the target price run-up pattern.[5] We hypothesize that as long as media deterrence influences insiders' transactions, a less prominent target price run-up pattern should emerge following a publication of a relevant article. When instead no articles are published that could deter insiders' transactions, insiders would be inclined to trade more freely on their inside information, with a prominent target price run-ups pattern being evident.

[5] A caught insider for example stated that "unbeknownst to me, for years several Bank Leu Executives had been making trades that mimicked mine, for their own accounts or for others" http://techsci.msun.edu/wilke/BGEN/BGEN%20468/Readings%20and%20Notes/Finance%20and%20Accountancy/Insider%20Trading/Inside%20Story/Inside%20Story.pdf (last accessed December 2015).

Our expectation is that media deterrence influences insiders' transactions prior to merger announcements with a delay. Insiders may "think-over" the published articles and adjust their transactions late in the afternoon, or even the following day, and therefore transactions may be executed the next day. This delay is especially true considering that most insiders in the context of our study are relatives, close-friends of staff working in the acquirer firm, in the target firm or even in the investment company which organizes the deal. Senior corporate insiders must report trades in their own firms' stocks to SEC (Section 16(b) of 1934 Act) and their transactions tend not to be related with coming merger announcements.[6] Ahern (2015) analyzes biographical information on captured insiders between 2009 and 2013, and find that 23 percent of them were family members, and 35 percent friends (35 percent business associates). Such insiders may have jobs beyond finance, may not frequently trade shares,[7] and may need time to read financial newspapers after work before adjusting their transactions the following day.

We use daily Wall Street Journal coverage between 1979 and 2014 to proxy media deterrence. The Wall Street Journal's circulation is the highest in the US, [8] and therefore a significant number of insiders may read the Wall Street Journal. In line with our developed hypothesis, we find that there is a negative relation between the publication of an article that

[6] Agrawal and Nasser (2012) indeed support that corporate insiders do not increase their firms' positions shortly prior to US merger announcements.

[7] Note that based on Gallup Survey data, a significant percentage (commonly over 50 percent) of US citizens invest in stocks (http://www.gallup.com/poll/147206/stock-market-investments-lowest-1999.aspx, last accessed December 2015). Therefore, a significant number of traders would not need to open a new stock trading account (which may take a considerable amount of time) in order to buy shares of forthcoming target firms based on their private information.

[8] https://en.wikipedia.org/wiki/List_of_newspapers_in_the_United_States_by_circulation (last accessed December 2015).

reports on an illegal transaction in a past merger and next day's abnormal stock returns/trading volume reaction in firms that end up becoming takeover targets within the next 30 days.[9] Although we do not use insiders' data in the study, we interpret this result as an indication that insiders reduce their buying transactions of shares in forthcoming target firms in fear of getting caught. We also find that the relation is more prominent for small rather than large capitalization target firms and with long rather than short articles. These results offer some credence that our relation is indeed driven by insiders' activity as their transactions may influence more small size firms, and that they respond differently depending on article characteristics. We also find no relation to be present between abnormal stock returns and longer than one-day lag of the number of articles, indicating that publication of relevant articles have a short-term impact on deterring insiders from transacting in shares of target firms.

Our main results explore the relation for mergers without any rumors prior to merger announcements, to ensure that we capture insiders' rather than general public's transactions who have managed to predict accurately merger deals based on public information. Insiders are expected to respond to media deterrence because their trades are based on illegal information, while the general public who base their trades on public information are not subject to the SEC's scrutiny for following public rumors. As a control test, we also explore the relation in deals with rumors, and find there to be none, in line with our hypothesis. We also estimate abnormal stock returns for matching firms of non-targets out of the non-rumored sample, based on firms with the same four-digit SIC code and similar total assets. Once again, we find no evidence of a relation between relevant articles and matching firms' abnormal stock returns. Results are also insignificant for articles that refer to illegal activity prior to foreign

[9] In untabulated results, we find that the relation between the number of articles and abnormal stock returns of target firms is insignificant with contemporaneous-day trading.

merger announcements, which have less relevance to US investors. These results offer credence that our relation is driven by US insiders' transactions rather than transactions of the general public, and that our results are not driven by targets' firm characteristics.

Our relation seems to indicate an impulsive response of insiders to published articles, since the probability of them getting captured does not change with the publication of an article referring to past illegal merger transactions. We also go a step further by broadening our search terms into 36 generic fear terms such as "fraud" or "prison" that could irrationally influence insiders' perception of risks from illegal insider trading prior to merger announcements.[10] As an example, an article stating that "RBS to Pay $612 Million Fine - CFTC Cites Conflicts of Interest in Latest Fallout From Rate-Rigging Scandal" (7th February 2013, Wall Street Journal) may not be closely related with insider transactions prior to merger announcements, nor should it affect the likelihood of getting caught if engaging in such trades. However if insiders' response to published articles is impulsive, insiders may well respond to any generic fear term. Even though the relation between articles with generic fear terms and next day's abnormal stock returns may be weaker in relation to results found for articles within the merger context only, we empirically support that there is a negative relation between generic fear terms and next day's abnormal stock returns. These results indicate that insiders seem to also respond to generic fear terms.

This study contributes to the literature in several ways. We first contribute to financial crime literature by showing that media deterrence seems to be negatively related to the pre-bid run-up in target share prices. Although no insiders' trading data are used in the study, our findings are consistent with insiders reducing their illegal transactions following articles that could have generated fear of getting captured. Second, we contribute to the media coverage

[10] For further details on the fear terms used, please study section 3.7.

literature. Prior studies (e.g., Tetlock, 2007; Fang and Peress, 2009; Loughran and McDonald, 2011) report how media coverage is related with investor sentiment, while we report the significance of media as an informal prevention mechanism of illegal transactions. Our developed list of 36 generic fear terms can arguably also be used to explore the relation of media deterrence within contexts beyond the field of mergers and acquisitions.

The remainder of the paper is structured as follows: Section 2 describes our data. Section 3 discusses the empirical results on the relation between media deterrence and insiders' transactions, and Section 4 concludes.

2. Data

2.1 Merger data and identification of merger rumors

We download from Thomson OneBanker US merger deals between January 1979 and June 2014. We restrict our sample to acquisitions of at least a 50% stake, to transactions where the target company size is at least 1% of the market value of bidder, and where sufficient target firm data is available from the Centre for Research in Security Prices (CRSP) database to allow us to undertake the event study analysis. CRSP offers access to stock returns and trading volume data for target firms. Trading volume is measured as a firm's daily volume divided by the number of outstanding shares.

We explore the relation between deterrence and price run-up for two different groups of mergers and acquisitions; for deals with rumor articles published prior to the merger announcement versus merger deals without rumors. To identify rumored merger deals, we download any article at source available from Factiva up to two months prior to each merger announcement that includes the name of the target firm plus any of the following terms: merg*, acqui*, target, takeover, rumour*, rumor*, buyout and bid*. * indicates any letter (if any)

ending after the asterisk. We study each individual article to ensure that the article refers to a potential merger of the particular target, and therefore the selection of relevant rumored articles is objective. We explore these terms within the full text of the article to ensure that we capture all rumors available to the general public. The identification of which deals had a rumor prior to merger announcements versus counterpart deals without rumors allows us to distinguish between price run-ups prior to bid announcements likely to be attributable to illegal insider trading (when no rumors are available) from those where the run-up is related to trading by the general public (when rumors are available). Panel A of Table 1 shows the number of rumored and non-rumored deals per five year sub-periods. We find that there is a peak of merging activity during the second-half of the 1990s, with some variation over the remaining sub-periods. 365 out of the total 3,062 mergers had at least one rumor prior to the merger announcement.

[please insert Table 1 around here]

We use Eventus to estimate abnormal stock returns. We estimate daily abnormal three-factor adjusted stock returns in excess of firms' size and book-to-market characteristics. In line with King (2009), we use the interval period between day -250 and -61 relative to the bid announcement date (day 0) to estimate each firm's size and book-to-market parameter coefficients, before estimating for each firm the abnormal stock returns run-up from day -30 to -2 prior to each merger announcement.[11] We require stock return data for at least 50 trading days during the parameter estimation window (from day -250 to -61) for the firm to be included in the analysis.

[11] In untabulated results, we explore abnormal stock returns based on alternative asset pricing models such as the Capital Asset Pricing Model, and the conclusions of the study remain unchanged.

Figure 1 shows cumulative abnormal stock returns prior to merger announcements for rumored and non-rumored merger deals. In line with the literature (e.g., King, 2009), we find that the target price run-ups is more prominent for rumored merger deals. Merger rumors reported in the media assist stock market participants to predict the mergers, leading them to buy shares of forthcoming target firms. Our main tests are therefore within non-rumored merger deals to ensure that we capture insiders' transactions rather than members of the general public trading on legal information, while we explore the relation within rumored merger deals as a control group within a particular test only. We expect that insiders would react to media deterrence given that they trade on illegal information, while other traders are not expected to respond to media deterrence since they are basing their transactions on public information that is not subject to SEC's scrutiny (from the users' perspective).

[please insert Figure 1 around here]

2.2 Identification of articles covering illegal transaction of insiders prior to merger announcements

We use Factiva to identify articles published in the Wall Street Journal referring to illegal transactions of insiders prior to merger announcements. The Wall Street Journal's circulation is the highest amongst US newspapers and therefore, it is more likely to be studied by insiders. In line with Factiva's coverage on the Wall Street Journal, our sample period is restricted from 1st January 1979 to 20th June 2014.

We first collect all articles available with the term "inside*" in the Wall Street Journal headline where once again * indicates any letter, if any, ending after the asterisk. 4,602 articles were identified in total. We then study each of the headlines and the lead paragraph to identify which of these articles refer to illegal insider transactions prior to US merger announcements.

Note that since the selection of articles is manual, the selection of relevant articles is objective, without any level of noise. In untabulated results, 209 of the articles were finally identified as relating to illegal activity prior to US merger announcements. Apart from three days when two relevant articles were published on the same day, each of the remaining 203 articles is published in a different day. A maximum of 8 articles were found to have been published during the 30 day period leading up to the bid announcement, with an average of 1.32 articles per non-rumored merger deal.

Panel A of Table 1 shows the number of mergers with articles of illegal activity prior to merger announcements. Note that one article could be related with more than one merger, for example an article may appear at -20 day prior to merger *i*, while at -5 day prior to merger *j*. Since more mergers took place at the end of 1990s, more merger deals are linked with an article during the second half of the 1990s. Panel B of Table 1 shows that there are overall 2,697 merger events without rumors, where in 1,292 of them there is at least one deterrence article during the pre-announcement period (-30,-2). We also find that there are no significant differences in the market capitalization of target firms with versus without an article with coverage of illegal insider activity prior to merger announcements (t-test is equal to 0.409, when comparing $705,103 versus $753,716). The average number of words used per article is 675. The cumulative abnormal returns in the pre-event period (-30,-2) are 5.84 percent in non-rumored merger deals without any article of prior illegal activity versus 6.63 percent in deals with at least one article. So overall, if any, over the duration of the pre-event period, abnormal returns are higher for firms with at least one deterrence article published, and therefore total target rice run-ups due to firm characteristics seem not to of the reason for the difference in stock returns between the two groups. Finally, we also explore on which days prior to merger announcements the articles with media coverage of illegal activity prior to mergers were

published. Figure 2 shows that there is a spread of these articles across the days in the pre-event period, without necessarily any clear pattern.

[please insert Figure 2 around here]

3. Empirical results

3.1 Initial results

As an initial test to explore whether an article referring to illegal insider transactions prior to merger announcements reduces insiders' transactions, we estimate cumulative abnormal stock returns prior to merger announcements for non-rumored merger deals over the following day when a deterrence article is published versus returns when no article is reported. We first estimate the average abnormal stock returns following the day of an article publication, and then add these average daily returns in the interval period between -30 and -2 to visualize easier whether there is a pattern present.[12]

Figure 3 shows that next day's abnormal stock returns following the publication of a relevant article is low in relation to abnormal returns on days without an article.[13] Interestingly, we find that target price run-ups is around zero for non-rumored merger deals following the publication of a fear article up to around five days prior to the merger announcement. Media deterrence seems therefore a significant determinant of target firm abnormal stock returns prior to the bid announcement. These results offer the first indication that media deterrence is related

[12] Note that the group of firms changes from day to day and therefore results are not applicable for investment purposes.

[13] In untabulated results, we find that the daily abnormal negative stock returns in the period between -30 and -15 prior to merger announcements are insignificant in statistical terms.

with next day's abnormal stock returns, indicating that news stories relating to insider trading seem to deter insiders from transacting based on their illegal information.

[please insert Figure 3 around here]

3.2 Main results

This section discusses the main results of the study. In line with the target price run-ups literature (e.g., King, 2009), we initiate our testing from 30 days prior to each merger announcement day (day 0) and explore the under-study relation when adding a day at a time ie (-30, -30), (-30,-29), (-30,-28) until (-30,-2). We finish at day -2 in order to ensure that the information of merger announcement is not widely available to market participants. Illegal activity probably does not take place on every single day during the run-up period, and we are not aware of the particular days that insiders trade within our extensive sample period. An insider may also not necessarily undertake a large buy transaction, but split it into a number of small buy transactions, or even undertaking a few sell transactions, in order to avoid SEC's scrutiny.[14] We therefore pool days to explore the overall effect during the pre-event period. Note that we do not test the relation only over the full -30 to -2 pre-event period, since insiders are expected on average to transact relatively early to maximize gains, and not to the same extent close to the merger announcement. We could therefore understate the strength of the relation by focusing only on the full pre-event period (-30,-2).

Our dependent variable is daily targets' abnormal stock returns and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We average the number of articles published between Friday to

[14] http://www.bloombergview.com/articles/2015-05-14/perfect-insider-traders-got-caught (last accessed December 2015).

Sunday to explore its relation with Monday's target abnormal stock returns. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27 (using base day -30). We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles; we only therefore report one parameter coefficient per regression.

Table 2 shows the results of our main empirical analysis. We find that the parameter coefficients on the number of relevant articles are significantly negative at most intervals between (-30,-26) and (-30,-7). In particular, we report that the relevant parameter coefficients in 18 of these regressions are significantly negative. For example, the parameter coefficient on the number of relevant articles in the interval period between (-30,-26) is -0.508, indicating that the change of one published article reduces on average next day's target price run-ups by -0.508 percent a day in relation to days without a relevant publication. As expected, the economical magnitude of the relation is relatively large based on the large price movements of target stock returns prior to merger announcements.

[please insert Table 2 around here]

We also find that the relation tends to weaken as we get closer to the merger announcement. This result is in line with our expectation that insiders would transact early in the pre-event period to maximize profits and therefore on average there is a higher probability an article to deter insiders early. Overall, our results indicate that insiders reduce their transactions based on their illegal information the day following the publication of an article regarding illegal activity in past mergers.

3.3 Robustness tests

We undertake a number of robustness tests to explore the strength of the relation between the number of articles with coverage of illegal transactions in past mergers and next day's abnormal stock returns. We first explore the robustness of our results within two sub-periods with a similar number of merger deals. We discussed earlier that a significant number of mergers took place during the second-half of 1990s and we therefore split the period between 1979-1998 and 1999-2014, and re-estimate the main regressions. Table 3 shows that the parameter coefficients of the number of articles tend to be significantly negative in a large number of interval periods during both sub-periods, with 12 of the parameter coefficients significantly negative during the first sub-period and 18 during the second. The results are thus not specific to a particular sub-period of our sample.

[please insert Table 3 around here]

We further explore results when controlling for one-day lagged target stock returns and when excluding targets with highly illiquid stocks from our sample. The control for prior stock performance intends to ensure that investors did not manage to predict merger deals or next period's stock returns based on past stock performance. We add one-day lagged target stock returns and re-estimate main regression, though we do not report the parameter coefficients of past stock returns due to space consideration. We also control for highly illiquid stocks, which we define as those with at least five consecutive zero raw stock, returns in order to ensure that our results are not driven by non-trading. Table 4 shows that our prior results hold. We find that a significant number of our parameter coefficients tend to remain significantly negative after relevant controls.

[please insert Table 4 around here]

In addition, we test the relation in rumored merger deals, in a matched sample of non-target firms, and looking at articles referring to insider trading in non-US markets. We expect that our relation is not present within these settings. Rumored deals are expected to capture transactions by the general public and our relation should not be evidenced, since SEC would not scrutinize investors who follow public information. We have previously also estimated three-factor model abnormal stock returns to control for the size and the book-to-market target characteristics. As a further test, we explore the parameter coefficients in matched non-rumor target firms using a one-to-one match based on firms' same four-digit SIC code and similar total assets at the same year. In order for target firms' characteristics not to drive our results, the parameter coefficients for the matching group should be insignificant. We also explore the relation between stock returns and lagged media coverage of international illegal trading activity prior to merger announcements. For example, an article is entitled as "London Stock Exchange Is Investigating Another Possible Case of Insider Trading" (20th November 1986, Wall Street Journal) is expected to deter to a lesser extent (if any) a US insider in comparison to an article that refers to a US merger used in prior tests. We identify that only 15 articles are for international mergers and we should therefore interpret these results with caution.

Table 5 shows the results for rumored merger deals, for the matched sample and for articles referring to international insider trading. We find that only one of the parameters is significantly negative for rumored deals, while none are significant for the matched sample or for the international media coverage sample. Our results suggest that transactions by the general public or targets' firm characteristics are not behind our main results. Also, insiders seem to respond only to the coverage of illegal activity in US mergers rather than in international mergers.

[please insert Table 5 around here]

We finally test whether our results hold when using an alternative proxy of insiders' activity prior to merger announcements; that of abnormal trading volume. A number of studies within the target price run-up literature (e.g., King, 2009) report that trading volume is also a good indicator to capture insiders' transactions in addition to abnormal stock returns.

In line with Bris (2005) and King (2009), we estimate daily abnormal trading volume (ATV) as follows:

$$ATV_{it}=TV_{it}-(\overline{TV}_i+2\sigma_{TVi}) \text{ if } \overline{TV}_i>2\sigma_{TVi} \text{ or 0 otherwise,}$$

where $\overline{TV}_i$ and σ_{TVi} are the mean and standard deviation of a firm's trading volume from -250 to -101 days prior each merger announcement. Abnormal trading volume is at minimum zero and takes positive values in target firms that experience at least two standard deviations higher volume than their normal trading. Once again a one-day lag is used between the number of articles and abnormal trading volume. Results are shown only for non-rumored merger deals. Table 6 shows that the number of articles is related negatively with abnormal trading volume. We find that 22 of the parameter coefficients are significantly negative, and our conclusions based on abnormal trading volume are thus similar to our earlier results based on stock returns. Whether we focus on share returns or trading volume, we find there to be a significant decline in suspicious trading behavior on days following the publication of articles relating to earlier insider trading cases.

[please insert Table 6 around here]

3.4 In which settings is our relation more pronounced?

In this section, we explore whether the strength of the relation varies with key firm and news characteristics. We first explore whether the results vary with firm size, and we report results

separately for small and large capitalization target firms. We hypothesize that the transactions of insiders, which are generally fairly small in magnitude, are likely to have a larger impact on the share returns of relatively small as compared to large capitalization target firms.

We determine small stocks with the lowest 25 percent market capitalization amongst the full target sample available, and large stocks with the highest 25 percent market capitalization. We then re-estimate the main regressions separately for the two groups. Apart from the significance of targets' size, we also explore whether the magnitude of our relation changes based on the length of the articles that refer to illegal activity prior to US mergers. We generate two equal size groups based on the median word count; long and short length articles. We then re-estimate the main regressions separately for the two groups. We expect that longer articles may have more of an impact and therefore that our relation will be more pronounced for long articles.

Table 7 shows the parameter coefficients for the impact of the number of relevant articles for small versus large capitalization target stocks, and long versus short length articles. As hypothesized, we find evidence that the relation is more pronounced for small capitalization stocks, and following publication of long articles. In particular, we find that 18 of the parameter coefficients are significantly negative when considering small size targets versus only one negative parameter coefficients for large size targets. Also, 19 of the parameter coefficients are significantly negative for long articles versus only three for short articles. These results offer credence that our testing captures insiders' transactions whose buying transactions has more of an impact on small size stocks and their response to articles is more pronounced for long articles.

[please insert Table 7 around here]

3.5 Additional untabulated results

We also explore whether the relation is present when using data even earlier than 30 day prior to merger announcements. Target price run-ups literature (e.g., King, 2009) that we follow commonly use day -30 day the starting point of illegal transactions by insiders. However, as a robustness test, we explore the under-study relation when pooling data starting from 40 day prior to merger announcements, adding one day at the time (e.g., day -39) to the regressions. We find that the relevant parameter coefficients are negative in the regressions between -40 and -31 days, though statistically insignificant. Our evidence therefore supports prior literature that illegal activity seems to begin from day -30 prior to merger announcements onwards.

We further explore an alternative explanation of the relation according to which the speed of information that spread across participants may influence whether the relation is occurring faster with the introduction of recent technology. As a proxy of new technology, we consider the introduction of the first iPhone in 2007 and the online coverage by the Wall Street Journal in 1993, and explore the relation between targets' abnormal stock returns and deterrence articles with either a one- day lag as in the main analysis or with no lag between the two variables. We find that the parameter coefficients are insignificant when no lag is used, indicating that the introduction of technology has not significantly affected the speed of information spreading across investors. As discussed earlier, our explanation of the one-day of a lag between our variables is related with the type of insiders who tend to deal prior to merger announcements. These insiders do not necessarily have access to financial news or time to read financial news while working in a non-finance environment.

3.6 Results for longer than one-day lagged number of articles

We further explore results when using more than one-day lagged number of articles. Commonly, behavioral studies (e.g., Danbolt et al., 2015) support a reversal to an initial reaction. However, this argument is not valid within the context of our study, since the reversal is commonly attributed to arbitrageurs who take advantage of irrationalities. Apart from insiders, nobody else are theoretically expected to have information of forthcoming merger announcements. On the one hand, insiders may buy shares of target firms after their initial hesitation with the publication of an article, and we cannot also overlook a potential slower than one-day initial reaction by some insiders. On the other hand, insiders may even sell some of the shares they have bought on the realization with media coverage of the potential severe consequences of insider trading. Mixed transactions by insiders may therefore take place on the days following an article's publication, potentially making it difficult to identify a clear pattern.

To test whether abnormal stock returns and more than one-day lagged number of articles are related, we estimate our regressions using two- and three-day lagged number of all articles. As shown in Table 8, we find that none of the parameter coefficients are significant. There is therefore no evidence to support that insiders buy shares of target firms the days following their initial reduction or that some insiders hesitate buying shares of target firms over the following days. In untabulated results, we further explore the relation when using four-day lags as well as pooling two- to four-day lags together. Due to the short horizon prior to merger announcement that we explore (30 days), with a number of articles published close to the merger announcement, we do not explore results with the use of additional lags. Once again, no evidence is found that insiders respond to article publications over the following two to four days, indicating that insiders do not buy shares of target firms after their initial hesitation in the next day after the articles' publication.

[please insert Table 8 around here]

In addition, we compare cumulative average abnormal returns for firms without any article for the duration of the pre-announcement period (-30,-2) versus the cumulative average abnormal returns on days following the first relevant published article until the end of the pre-announcement period (day -2). If an article is, for example, published for a particular merger event on day -22, we only include a firm's abnormal stock returns between days -21 and -2, while abnormal stock returns during -30 and -22 are excluded from this particular test. If news stories deter insiders from buying shares of target firms for a number of days after, or even cause them to sell shares they had previously bought based on inside information, less insider transactions would take place after the article publication. Therefore, lower abnormal stock returns are expected following the publication.

Figure 4 shows the cumulative average abnormal stock returns for the two groups; without any fear article during the whole pre-event duration versus those with at least one fear article, in which case only stock returns after the publication are included in the estimation. Also, since there may be more than one article published during the pre-event merger period; we show results separately when there is only one article versus when there are multiple articles. This test controls for the short term impact these multiple articles may have on next day's target stock returns to ensure that our results arrive from the medium-term relation.

As shown in the figure, we find that there is a difference in cumulative average abnormal stock returns for firms without any article in relation to the average abnormal stock returns following the publication of the first article per merger event and up until day -2. Results therefore suggest that media deterrence seems to reduce not only abnormal stock returns the following day, as shown in earlier sections, but also to have some impact for the duration of the pre-announcement period after the publication. This result supports the argument that the publication of an article with coverage of illegal trading activity prior to past merger

announcement seems to deter insiders from buying shares of target firms, or even selling prior buying transaction, for the remaining pre-event period.

[please insert Figure 4 around here]

3.7 Do insiders respond to generic fear terms?

The articles we have used so far to capture fear amongst insiders all refer to illegal insider trading within the particular merger context. The publication of these articles does not necessarily change the probability of insiders buying shares in forthcoming target firms of getting caught. It seems therefore that insiders impulsively reduce their buy transactions in forthcoming target firms. In this section, we go a step further by exploring whether insiders respond to more generic fear articles. We mainly explore whether any revelation of an illegal activity (e.g., the LIBOR-fixing scandal) or any term that may indicate punishment (such as "prison") would make insiders less likely to trade illegally prior to merger announcements. If that is the case, these results would offer further credence that insiders respond to published articles impulsively.

A difficulty is raised in how to identify generic fear terms that would make insiders think about potential consequences of their illegal activities.[15] We could not identify a ready-made list to capture fear terms appropriate in the context of our study and, as an example, we

[15] Media coverage studies in the field of finance commonly follow terms identified in a dictionary. However, dictionary lists face constraints. As an example, Loughran and McDonald (2011) criticize prior media studies in finance using Harvard's dictionary to identify positive and negative terms for proxying sentiment, since a significant number of terms are not applicable within the accounting and finance context. Da et al. (2014) also report that although "gold" is commonly considered as a positive term in dictionaries, within the context of their studies "gold" was a pessimism indicator since participants search in Google for "gold" during bad times.

consider unsuitable fear terms available in psychology dictionaries because they are mostly related with phobias. Instead, the selected terms[16] are identified by studying recent articles published covering scandals such as the 2012 LIBOR-fixing scandal that could potentially influence the risk that insiders perceive when dealing in shares based on inside information. We focus on terms published in the headline in line with the attention hypothesis developed by Barber and Odean (2008), according to which investors face time constraints and react more prominently to headline content. A number of other studies (e.g., Manela and Moreira, 2015) have used headlines to explore media relation with stock returns. Due to the practical difficulty of studying thousands of articles and the subjectivity required to categorize some articles, we accept a level of noise in our data in line with other media studies.[17]

Panel A of Table 9 shows the sum of all articles per fear term, which varies from seven articles related to "confidential information", to 9,952 articles with the term "court" in their headline. The median term is "sentenc*", mentioned in 1,077 articles. In untabulated results, we estimate Pearson correlations among our fear terms, and find that the average correlation is low at 0.018 (median 0.013), with the maximum correlation found between the "sentence*" and "prison*" terms (0.219), and the minimum correlation between "charg*" and "tip*" (-0.025). We estimate a total fear index as the natural logarithm of one plus the sum of all the above fear terms used in article headlines each day. In untabulated results, we find that apart from relatively low coverage of fear terms during the early 1980s, the magnitude of reported

[16] Appeal*, arrest*, charg*, confidential information, conspiracy, convict*, court, crackdown, crim*, enforc*, felony, fine*, fraud*, guilt*, illegal, illicit, imprison*, inside*, judg*, lawyer*, lawsuit, litigation, offense, penalt*, prison*, prosecut*, regulat*, restitution, scandal*, sentenc*, steal*, tip [in particular, tip, tips, tipped, tipping, tipper and tippee], trial, victim*, watchdog, wrongdoing. * indicates any letter (if any) ending after the asterisk.

[17] In untabulated results, we select random articles and find that around five percent are not clearly negative-toned within the headline.

articles has remained relatively stable over the remainder of the sample period, although there are some notable peaks and troughs.

[please insert Table 9 around here]

We then estimate the main regressions between one-day lagged abnormal stock returns of target firms and the one plus logarithmic number of articles with generic fear terms.[18] Panel B of Table 9 shows the results. We find that generic fear terms seem to deter insiders from transacting. We find that the parameter coefficients are significantly negative in two intervals, (-30,-29) and (-30,-27), and remain negative until the (-30,-10) interval period at which stage it turns positive. As expected, these results may be weaker in relation to those shown earlier for articles within the merger context only, but the support of the relation between generic fear terms and next day's abnormal stock returns offer further credence that insiders' reaction is impulsive.

We also test the strength of the relation between deterrence and insiders' transactions for each of the main fear terms. Due to the large number of terms in our fear index, we only tested results for the seven (out of a total of 36) terms that were present in at least 3,000 articles over our sample period. Here we report the parameter coefficients only for the "fraud*" term (*1+ln#ofFraud*).[19] This selection may be data driven, but it highlights the strength of the relation of a term, not necessarily close to the merger context, with next day's abnormal stock returns of forthcoming target firms. In particular, we find that 18 of the parameter coefficients

[18] In untabulated results, once again we find that abnormal stock returns are not related with more than one-day lagged articles.

[19] Note that the term "inside*" may seem the most relevant amongst our terms. However, "inside*" is probably the noisiest of our terms. Especially since 2000s, a large number of the selected articles are referring to corporate insiders' transactions, not necessarily to illegal transactions.

are significantly negative when measuring the association between the logarithmic number of articles that include "fraud*" in the headline and next day's abnormal stock returns.

Figure 5 further shows the cumulative average abnormal stock returns prior to merger announcements for non-rumored merger deals following days with at least one article published with the term "fraud*" versus other days. Once again we first estimate abnormal stock returns the day after the publication of a relevant article, and then cumulate these returns to see whether there is a clear pattern. As expected, we find that next day's stock returns are lower after the publication of "fraud*" articles in relation to cases with no publication of relevant articles.[20] Overall, these results show that insiders seem to respond to media coverage impulsively.

[please insert Figure 5 around here]

4. Conclusion

We motivate our study based on the Classic Deterrence Theory (CDT) (e.g., Zimring and Hawkins, 1973) from the field of criminology and explore whether deterrence is related with illegal transactions by insiders prior to merger announcements. According to CDT, humans react to the fear of the consequences if committing a crime. Media has earlier been reported to influence investor transactions, but to our awareness, this is the first study that explores the power of the media as an informal mechanism preventing illegal insider trading activities in the lead-up to merger announcements. Note that we do not use insiders' trading data directly

[20] Note that all merger deals have at least one fraud news in the pre-announcement period, and we cannot therefore compare abnormal stock returns when no articles with the term "fraud*" are published, with at least one "fraud*" article. We cannot therefore test whether the term "fraud*" deters insiders from buying shares of the target firms for the remaining of the pre-announcement merger period after the first publication.

to support empirically the relation between insiders' transactions and media coverage due to the extensive sample both in terms of companies and time period that we test, and since it is not really possible to be aware of all illegal transactions prior to merger announcements. We instead base our study on indirect evidence by proxying insiders' transactions with abnormal stock returns prior to merger announcements of non-rumored merger deals.

In line with CDT, we find evidence that media deterrence is related negatively with insiders' dealings prior to merger announcements. We find no evidence to suggest that insiders cover up for their initial hesitation to the reported articles by buying shares of target firms over the following few days, and therefore when an article is published, there is on average evidence of lower target abnormal returns for the remainder of the pre-announcement period. Insiders' response to articles seems impulsive, since the probability of an insider getting caught tends to remain unchanged from one day to another and irrespective of what news stories are published. Insiders also seem to respond to more generic fear terms such as "fraud", further highlighting the impulse nature of the reaction to the publication of 'fear' articles in the media.

Regulators may wish to take full advantage of our results in their attempt to limit illegal insider trading. Our study shows that media deterrence could deter insiders from transacting based on their illegal information, even without the introduction of a stricter regulatory framework. Without overlooking the significance of regulation, publicizing, amongst others, success stories of SEC's captures, stories of general scandals that come to light and efforts by the SEC to minimize illegal transactions can help deter insiders from trading. While our study is restricted to news stories published in the Wall Street Journal, one might expect social media, with the large number of participants in recent years, can also be targeted for reaching a wide audience.

References

Agrawal, A., and Nasser, T. 2012. Insider trading in takeover targets, Journal of Corporate Finance, 18, 598-625.

Ahern, K. 2015 Information networks: Evidence from illegal insider trading tips, working paper.

Andenaes, J. 1974. Punishment and deterrence. Ann Arbor: University of Michigan Press.

Barber, M. and Odean, T. 2008. All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. Review of Financial Studies, 21, 786-818.

Bris, A. 2005. Do insider trading laws work?" European Financial Management, 11, 267–312.

Brookfield, S. 1986. Media power and the development of media literacy: An adult educational interpretation, Harvard Educational Review, 56, 151-170.

Couldry, N. 2003. Media meta-capital: Extending the range of Bourdieu's field theory, Theory and Society, 32, 653-677.

Da, Z., Engelberg, J., & Gao, P. (2014). The sum of all fears: Investor sentiment and asset prices. Review of Financial Studies (forthcoming).

Danbolt, J., Siganos, A. and Vagenas-nanos, E. (2015) Investor sentiment and bidder announcement abnormal returns. Journal of Corporate Finance, 33, 164-179.

Dutta, S., John, K., Saadi, S. and Zhu, P. (undated) Fear feedback and disclosure: Different shades of media's governance in M&A decisions, working paper.

Entman, R. 2007. Framing bias: Media in the distribution of power, Journal of Communication, 57, 163-173.

Fang, L., and Peress, J. 2009. Media coverage and the cross section of stock returns, Journal of Finance, 64, 2023-2052.

Holzer, J. 13th July 2012. SEC arms itself to better track trades, Wall Street Journal.

Jarrell, G., and Poulsen, A. 1989. Stock trading before the announcement of tender offers: Insider trading or market anticipation, Journal of Law Economics and Organizations 5, 224-248.

King, M. 2009. Prebid run-ups ahead of Canadian takeovers: How big is the problem? Financial Management, 38, 699-726.

Loughran, T., and McDonald, B. 2011. When is a liability not a liability? Textual analysis, dictionaries and 10-Ks, Journal of Finance, 66, 35-65.

Manela, A., and Moreira, A. 2015. News implied volatility and disaster concerns, working paper.

Meulbroek, L. 1992. An empirical analysis of illegal insider trading. Journal of Finance, 47, 1661–1699.

Pound, J., and Zeckhauser, R. 1990. Clearly heard on the street: The effect of takeover rumors on stock prices, Journal of Business, 63, 291-308.

Rogers, J., Skinner, D., and Zechman, S. (2015) The role of the media in disseminating insider trading news, working paper.

Tetlock, P. 2007. Giving content to investor sentiment: The role of media in the stock market, Journal of Finance, 37, 1139-1168.

Wikstrom, P. and Treiber, K., 2007. The role of self-control in crime causation: Beyond Gottfredson and Hirschi's General Theory of crime. European Journal of Criminology, 4, 237-264.

Zimring, F., and Hawkins, G. 1973. Deterrence: The legal threat in crime control. Chicago: University of Chicago Press.

Table 1 Summary statistics

Panel A: Time-specific statistics

	Total	Number of non-rumored merger deals	Number of rumored merger deals	Number of articles with non-rumored mergers
1979-1984	55	53	2	18
1985-1989	185	159	26	212
1990-1994	312	280	32	297
1995-1999	1,075	998	77	1,099
2000-2004	706	610	96	191
2005-2009	448	382	66	108
2010-2014	281	215	66	82
Total	3,062	2,697	365	2,007

Panel B: Deal-specific statistics for non-rumored merger deals

	Total	Non-rumored merger deals with no articles (-30,-2)	Non-rumored merger deals with at least one article (-30,-2)
Market capitalization (in thousand $)	728,391	705,103	753,716
CAR (-30,-2)	6.22%	5.84%	6.63%
Mean number of articles (-30,-2)	0.63	n/a	1.32
Mean number of word count (-30,-2)	324	n/a	675
Number of merger deals	2,697	1,405	1,292

This table shows the summary statistics. Panel A shows time-specific statistics and Panel B deal-specific statistics for non-rumored merger deals only. At Panel A, statistics are shown for non-rumored and rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. At Panel B, statistics are shown for merger deals with and without articles that refer to illegal activity prior to the announcement of past mergers. CAR(-30,-2) is cumulative abnormal returns over the (-30,-2) interval period where 0 is the merger announcement day. The sample period is between January 1979 and June 2014.

Table 2 Number of articles and next day's target abnormal stock returns

	# of articles$_{t-1}$		# of articles$_{t-1}$		# of articles$_{t-1}$
-30,-30	-0.828	-30,-20	-0.316**	-30,-10	-0.220**
	(0.149)		(0.017)		(0.042)
-30,-29	-0.600	-30,-19	-0.256*	-30,-9	-0.180
	(0.217)		(0.065)		(0.105)
-30,-28	-0.517	-30,-18	-0.264**	-30,-8	-0.198*
	(0.354)		(0.031)		(0.065)
-30,-27	-0.460	-30,-17	-0.267**	-30,-7	-0.197*
	(0.256)		(0.022)		(0.062)
-30,-26	-0.508**	-30,-16	-0.237**	-30,-6	-0.162
	(0.032)		(0.045)		(0.123)
-30,-25	-0.564***	-30,-15	-0.242**	-30,-5	-0.151
	(0.006)		(0.036)		(0.144)
-30,-24	-0.456**	-30,-14	-0.235**	-30,-4	-0.122
	(0.012)		(0.023)		(0.241)
-30,-23	-0.478***	-30,-13	-0.247**	-30,-3	-0.102
	(0.007)		(0.014)		(0.307)
-30,-22	-0.461***	-30,-12	-0.200*	-30,-2	-0.128
	(0.003)		(0.056)		(0.196)
-30,-21	-0.351**	-30,-11	-0.245**		
	(0.03)		(0.024)		

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and next day's abnormal stock returns for forthcoming targets. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Table 3 Number of articles and next day's target abnormal stock returns: Sub-period results

	Before 1999	Since 1999		Before 1999	Since 1999		Before 1999	Since 1999
-30,-30	-0.885	-1.078	-30,-20	-0.296**	-0.374	-30,-10	-0.144	-0.479**
	(0.194)	(0.377)		(0.018)	(0.140)		(0.208)	(0.025)
-30,-29	-0.417	-1.421	-30,-19	-0.218	-0.372	-30,-9	-0.104	-0.441**
	(0.510)	(0.148)		(0.106)	(0.117)		(0.368)	(0.033)
-30,-28	-0.168	-1.800	-30,-18	-0.222**	-0.401*	-30,-8	-0.138	-0.407**
	(0.674)	(0.266)		(0.045)	(0.083)		(0.236)	(0.040)
-30,-27	-0.282	-1.123	-30,-17	-0.239**	-0.351	-30,-7	-0.134	-0.412**
	(0.442)	(0.179)		(0.027)	(0.117)		(0.245)	(0.028)
-30,-26	-0.336**	-1.184*	-30,-16	-0.200*	-0.357	-30,-6	-0.120	-0.304
	(0.036)	(0.058)		(0.076)	(0.112)		(0.277)	(0.137)
-30,-25	-0.445**	-1.036**	-30,-15	-0.188*	-0.422*	-30,-5	-0.093	-0.341*
	(0.012)	(0.045)		(0.092)	(0.058)		(0.408)	(0.092)
-30,-24	-0.364**	-0.833**	-30,-14	-0.164	-0.467**	-30,-4	-0.066	-0.316
	(0.038)	(0.041)		(0.109)	(0.029)		(0.558)	(0.107)
-30,-23	-0.408**	-0.778*	-30,-13	-0.160*	-0.531**	-30,-3	-0.029	-0.350*
	(0.011)	(0.053)		(0.094)	(0.021)		(0.797)	(0.062)
-30,-22	-0.422***	-0.591*	-30,-12	-0.115	-0.484**	-30,-2	-0.053	-0.381**
	(0.003)	(0.085)		(0.249)	(0.030)		(0.625)	(0.037)
-30,-21	-0.332**	-0.406	-30,-11	-0.180	-0.462**			
	(0.024)	(0.183)		(0.110)	(0.031)			

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and next day's abnormal stock returns for forthcoming targets into two sub-periods; before 1999 and since 1999. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Table 4 Number of articles and next day's target abnormal stock returns: Controlling for lagged stock returns and for illiquid target firms

	Add lagged stock returns	When excluding illiquid firms		Add lagged stock returns	When excluding illiquid firms		Add lagged stock returns	When excluding illiquid firms
-30,-30	-0.618	-0.953*	-30,-20	-0.248*	-0.360**	-30,-10	-0.196*	-0.240**
	(0.274)	(0.096)		(0.069)	(0.020)		(0.069)	(0.030)
-30,-29	-0.527	-0.680	-30,-19	-0.198	-0.314**	-30,-9	-0.152	-0.197*
	(0.136)	(0.231)		(0.135)	(0.038)		(0.166)	(0.086)
-30,-28	-0.395	-0.591	-30,-18	-0.222*	-0.320**	-30,-8	-0.163	-0.218*
	(0.149)	(0.402)		(0.080)	(0.017)		(0.126)	(0.052)
-30,-27	-0.382**	-0.544	-30,-17	-0.226*	-0.320**	-30,-7	-0.154	-0.217**
	(0.043)	(0.237)		(0.059)	(0.012)		(0.138)	(0.049)
-30,-26	-0.440**	-0.578**	-30,-16	-0.207*	-0.283**	-30,-6	-0.124	-0.178
	(0.013)	(0.035)		(0.067)	(0.026)		(0.234)	(0.105)
-30,-25	-0.466***	-0.657***	-30,-15	-0.232**	-0.297**	-30,-5	-0.113	-0.165
	(0.004)	(0.008)		(0.036)	(0.019)		(0.263)	(0.126)
-30,-24	-0.440***	-0.558***	-30,-14	-0.211**	-0.286**	-30,-4	-0.081	-0.134
	(0.002)	(0.007)		(0.044)	(0.013)		(0.427)	(0.217)
-30,-23	-0.431***	-0.561***	-30,-13	-0.225**	-0.293**	-30,-3	-0.053	-0.125
	(0.001)	(0.005)		(0.027)	(0.010)		(0.605)	(0.225)
-30,-22	-0.408***	-0.528***	-30,-12	-0.184*	-0.243**	-30,-2	-0.070	-0.141
	(0.000)	(0.002)		(0.076)	(0.036)		(0.479)	(0.155)
-30,-21	-0.317**	-0.397**	-30,-11	-0.225**	-0.266**			
	(0.020)	(0.033)		(0.039)	(0.017)			

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and next day's abnormal stock returns for forthcoming targets after controlling for one-day lagged stock returns and when excluding highly illiquid target firms, with at least five consecutive zero raw returns, from the sample. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Table 5 Results for rumored mergers, for matched non-merging firms and international merger articles

	Rumored	Matched	Non-US		Rumored	Matched	Non-US		Rumored	Matched	Non-US
-30,-30	1.020	-0.243	-0.834	-30,-20	-0.511	0.137	1.499	-30,-10	0.572	0.144	0.835
	(0.556)	(0.715)	(0.782)		(0.283)	(0.475)	(0.320)		(0.441)	(0.253)	(0.273)
-30,-29	-0.052	0.064	0.500	-30,-19	-0.650	0.065	1.372	-30,-9	0.528	0.114	0.863
	(0.969)	(0.859)	(0.832)		(0.143)	(0.699)	(0.292)		(0.456)	(0.338)	(0.238)
-30,-28	0.446	0.539	0.218	-30,-18	-0.612	0.099	1.485	-30,-8	0.501	0.166	0.835
	(0.846)	(0.253)	(0.764)		(0.114)	(0.553)	(0.263)		(0.465)	(0.199)	(0.241)
-30,-27	0.569	0.368	-0.658	-30,-17	-0.673*	0.125	1.113	-30,-7	0.686	0.171	0.850
	(0.634)	(0.306)	(0.522)		(0.051)	(0.432)	(0.338)		(0.311)	(0.173)	(0.234)
-30,-26	0.600	0.133	-0.715	-30,-16	-0.455	0.136	1.018	-30,-6	0.623	0.176	0.710
	(0.417)	(0.633)	(0.217)		(0.285)	(0.368)	(0.313)		(0.335)	(0.164)	(0.283)
-30,-25	0.312	0.264	-0.446	-30,-15	-0.388	0.159	1.087	-30,-5	0.556	0.172	0.721
	(0.323)	(0.315)	(0.375)		(0.347)	(0.280)	(0.236)		(0.37)	(0.158)	(0.258)
-30,-24	0.002	0.211	-0.376	-30,-14	-0.320	0.138	1.099	-30,-4	0.493	0.143	0.750
	(0.995)	(0.368)	(0.401)		(0.366)	(0.325)	(0.206)		(0.412)	(0.222)	(0.236)
-30,-23	0.116	0.085	-0.160	-30,-13	-0.157	0.093	1.024	-30,-3	0.502	0.172	0.723
	(0.736)	(0.740)	(0.703)		(0.641)	(0.501)	(0.200)		(0.387)	(0.152)	(0.236)
-30,-22	-0.261	0.192	-0.548	-30,-12	-0.059	0.102	0.950	-30,-2	0.409	0.152	0.589
	(0.534)	(0.433)	(0.292)		(0.854)	(0.43)	(0.227)		(0.476)	(0.184)	(0.310)
-30,-21	-0.267	0.195	0.062	-30,-11	0.667	0.130	0.966				
	(0.542)	(0.333)	(0.931)		(0.380)	(0.312)	(0.224)				

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past mergers and next day's abnormal stock returns for forthcoming targets into rumored merger deals, into matched sample non-target firms and into non-US articles. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. We identify rumored deals as identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. We identify matched non-rumored firms using a one-to-one match based on firms' same four-digit SIC code and similar total assets. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. * indicates statistical significance at the 10 percent level.

Table 6 Number of articles and next day's target abnormal trading volume

	# of articles$_{t-1}$		# of articles$_{t-1}$		# of articles$_{t-1}$
-30,-30	-0.196	-30,-20	-0.276**	-30,-10	-0.203**
	(0.749)		(0.022)		(0.018)
-30,-29	-0.136	-30,-19	-0.274**	-30,-9	-0.234**
	(0.247)		(0.012)		(0.01)
-30,-28	-0.411	-30,-18	-0.231**	-30,-8	-0.241***
	(0.547)		(0.023)		(0.006)
-30,-27	-0.272	-30,-17	-0.266**	-30,-7	-0.228***
	(0.384)		(0.016)		(0.008)
-30,-26	-0.098	-30,-16	-0.279***	-30,-6	-0.231***
	(0.696)		(0.006)		(0.005)
-30,-25	-0.148	-30,-15	-0.262***	-30,-5	-0.232***
	(0.479)		(0.006)		(0.004)
-30,-24	-0.194	-30,-14	-0.249***	-30,-4	-0.245***
	(0.175)		(0.005)		(0.002)
-30,-23	-0.241*	-30,-13	-0.258***	-30,-3	-0.225***
	(0.087)		(0.004)		(0.005)
-30,-22	-0.302**	-30,-12	-0.232***	-30,-2	-0.248***
	(0.02)		(0.009)		(0.003)
-30,-21	-0.320***	-30,-11	-0.239***		
	(0.003)		(0.005)		

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and next day's abnormal trading volume for forthcoming targets. Our dependent variable is daily targets' abnormal trading volume and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different trading volume. For example, when estimating the regression with trading volume in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Note that we estimate abnormal trading volume as follows: $ATV_{it}=TV_{it}-(\overline{TV}_i+2\sigma_{TVi})$ if $\overline{TV}_i>2\sigma_{TVi}$ or 0 otherwise, where $\overline{TV}_i$ and σ_{TVi} are the mean and standard deviation of a firm's trading volume from -250 to -101 days prior each merger announcement. Abnormal trading volume is at minimum zero and takes positive values in target firms that experience at least two standard deviations higher volume than their normal trading. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Table 7 The number of articles and next day's target abnormal stock returns: Small versus large capitalization targets and long versus short length articles

	Small targets	Large targets	Long length	Short length		Small targets	Large targets	Long length	Short length		Small targets	Large targets	Long length	Short length
-30,-30	-1.874	-0.100	-0.867	-0.334	-30,-20	-0.869**	-0.100	-0.352**	-0.163	-30,-10	-0.654**	0.067	-0.410***	0.038
	(0.220)	(0.864)	(0.247)	(0.664)		(0.047)	(0.729)	(0.031)	(0.388)		(0.048)	(0.677)	(0.009)	(0.812)
-30,-29	-2.349	-0.091*	-0.978*	0.0352	-30,-19	-0.600	-0.114	-0.338**	-0.063	-30,-9	-0.625*	0.039	-0.350**	0.039
	(0.139)	(0.089)	(0.071)	(0.940)		(0.203)	(0.655)	(0.038)	(0.742)		(0.050)	(0.803)	(0.026)	(0.800)
-30,-28	-2.075	0.131	-0.732	-0.192	-30,-18	-0.661	-0.096	-0.255	-0.176	-30,-8	-0.711**	0.064	-0.368**	0.024
	(0.143)	(0.899)	(0.282)	(0.486)		(0.115)	(0.670)	(0.110)	(0.398)		(0.026)	(0.665)	(0.015)	(0.871)
-30,-27	-1.920*	0.185	-0.365	-0.380	-30,-17	-0.541	-0.078	-0.300*	-0.140	-30,-7	-0.693**	0.054	-0.361**	0.010
	(0.072)	(0.811)	(0.469)	(0.285)		(0.185)	(0.705)	(0.060)	(0.481)		(0.025)	(0.709)	(0.014)	(0.944)
-30,-26	-1.755**	0.395	-0.396	-0.512*	-30,-16	-0.572	-0.031	-0.318**	-0.059	-30,-6	-0.584*	0.034	-0.298**	-0.002
	(0.01)	(0.357)	(0.298)	(0.066)		(0.144)	(0.874)	(0.043)	(0.772)		(0.060)	(0.808)	(0.048)	(0.984)
-30,-25	-1.780***	0.468	-0.500	-0.482**	-30,-15	-0.625	-0.069	-0.316**	-0.108	-30,-5	-0.510*	0.006	-0.283*	-0.016
	(0.003)	(0.232)	(0.102)	(0.041)		(0.109)	(0.71)	(0.037)	(0.579)		(0.098)	(0.964)	(0.051)	(0.905)
-30,-24	-1.380**	0.342	-0.426	-0.323	-30,-14	-0.667*	-0.057	-0.330**	-0.075	-30,-4	-0.386	0.002	-0.233	-0.017
	(0.019)	(0.263)	(0.108)	(0.213)		(0.07)	(0.734)	(0.019)	(0.675)		(0.217)	(0.989)	(0.110)	(0.897)
-30,-23	-1.499**	0.214	-0.408*	-0.399	-30,-13	-0.618*	-0.082	-0.391***	-0.047	-30,-3	-0.329	0.006	-0.224	-0.002
	(0.01)	(0.461)	(0.087)	(0.101)		(0.082)	(0.614)	(0.008)	(0.787)		(0.273)	(0.963)	(0.111)	(0.983)
-30,-22	-1.361***	0.135	-0.415*	-0.352*	-30,-12	-0.559*	0.0140	-0.332**	0.0009	-30,-2	-0.356	0.015	-0.246*	-0.021
	(0.007)	(0.609)	(0.053)	(0.094)		(0.099)	(0.937)	(0.022)	(0.995)		(0.211)	(0.901)	(0.070)	(0.867)
-30,-21	-1.045**	0.112	-0.395**	-0.177	-30,-11	-0.672*	0.0529	-0.403**	-0.005					
	(0.041)	(0.637)	(0.033)	(0.452)		(0.051)	(0.761)	(0.010)	(0.972)					

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and next day's abnormal stock returns for forthcoming targets when re-estimating main regression separately only for small (bottom 25%) targets, for large (top 25%) targets, for long and short articles. Note that long and short articles are determined as those above and below the median number of words used, respectively. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Table 8 Two- and three-day lagged number of articles and target abnormal stock returns

	2-day lags	3-day lags		2-day lags	3-day lags		2-day lags	3-day lags
-30,-30	0.235	0.419	-30,-20	0.174	-0.037	-30,-10	0.158	-0.061
	(0.733)	(0.527)		(0.320)	(0.785)		(0.202)	(0.594)
-30,-29	0.047	0.070	-30,-19	0.098	-0.064	-30,-9	0.114	-0.058
	(0.846)	(0.880)		(0.547)	(0.611)		(0.364)	(0.607)
-30,-28	0.379	-0.612	-30,-18	0.184	-0.081	-30,-8	0.105	-0.020
	(0.261)	(0.294)		(0.290)	(0.477)		(0.384)	(0.856)
-30,-27	-0.058	-0.255	-30,-17	0.238	-0.070	-30,-7	0.082	-0.060
	(0.894)	(0.533)		(0.183)	(0.488)		(0.483)	(0.62)
-30,-26	-0.104	-0.194	-30,-16	0.225	-0.047	-30,-6	0.093	-0.078
	(0.632)	(0.504)		(0.163)	(0.614)		(0.408)	(0.51)
-30,-25	0.014	-0.167	-30,-15	0.184	-0.114	-30,-5	0.082	-0.094
	(0.952)	(0.445)		(0.243)	(0.32)		(0.448)	(0.428)
-30,-24	0.205	0.007	-30,-14	0.203	-0.062	-30,-4	0.080	-0.094
	(0.473)	(0.978)		(0.176)	(0.591)		(0.445)	(0.414)
-30,-23	0.065	-0.069	-30,-13	0.157	-0.100	-30,-3	0.046	-0.113
	(0.813)	(0.770)		(0.277)	(0.375)		(0.654)	(0.32)
-30,-22	0.146	-0.100	-30,-12	0.175	-0.038	-30,-2	0.033	-0.080
	(0.553)	(0.611)		(0.200)	(0.753)		(0.744)	(0.476)
-30,-21	0.146	-0.071	-30,-11	0.170	-0.044			
	(0.481)	(0.655)		(0.190)	(0.702)			

This table shows whether there is a relation between the number of articles with illegal insiders' activity in past US mergers and abnormal stock returns within two- and three-day lags. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the two- and three-day lagged number of articles with cover of illegal activity by insiders in past mergers. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results are shown for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. P-values are shown in parenthesis. The sample period is between January 1979 and June 2014.

Table 9 Generic fear terms and next day's target abnormal stock returns

Panel A: Sum of all articles per fear term used

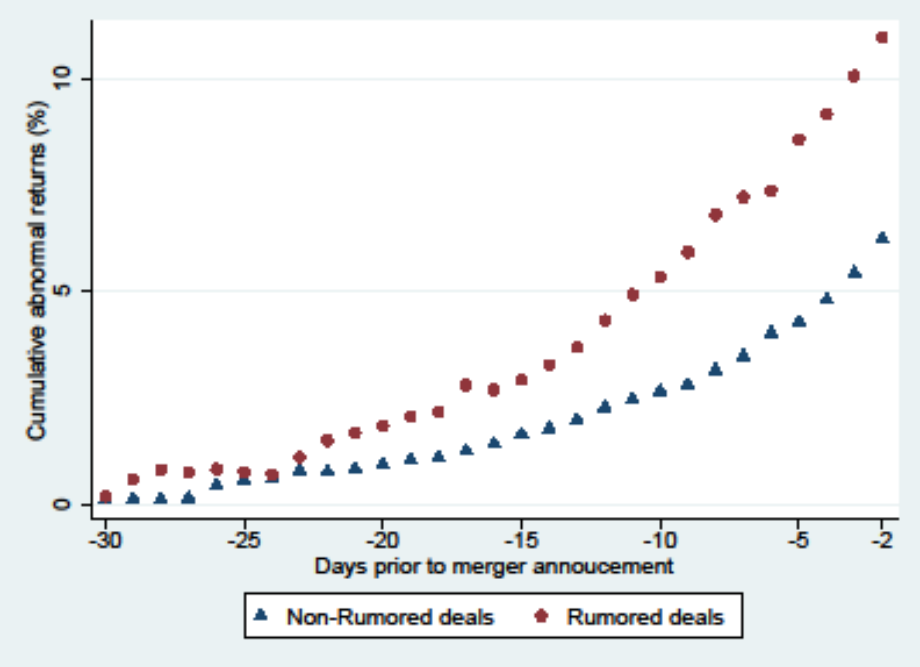
	Sum		Sum		Sum
Appeal*	2,764	Fraud*	3,917	Prison*	1,240
Arrest*	1,323	Guilt*	2,187	Prosecut*	1,379
Charg*	8,131	Illegal	791	Regulat*	5,633
Confidential information	7	Illicit	70	Restitution	71
Conspiracy	312	Imprison*	37	Scandal	1,887
Convict*	941	Inside*	4,602	Sentenc*	1,077
Court	9,952	Judg*	5,784	Steal*	483
Crackdown	608	Lawyer*	2,635	Tip#	900
Crim*	2,354	Lawsuit	2,707	Trial	3,321
Enforc*	546	Litigation	497	Victim*	1,207
Felony	74	Offense	88	Watchdog	335
Fine*	3,324	Penalt*	912	Wrongdoing	98

Panel B: Number of articles and next day's target abnormal stock returns

	All terms	Fraud*		All terms	Fraud*		All terms	Fraud*
-30,-30	-0.042	-0.099	-30,-20	-0.046	-0.084**	-30,-10	-0.005	-0.048
	(0.785)	(0.478)		(0.392)	(0.038)		(0.900)	(0.100)
-30,-29	-0.041***	-0.068	-30,-19	-0.055	-0.094**	-30,-9	0.002	-0.055*
	(0.006)	(0.27)		(0.250)	(0.018)		(0.970)	(0.059)
-30,-28	-0.054	-0.043	-30,-18	-0.049	-0.092**	-30,-8	0.012	-0.049*
	(0.145)	(0.615)		(0.293)	(0.014)		(0.782)	(0.088)
-30,-27	-0.102*	-0.024	-30,-17	-0.023	-0.091***	-30,-7	0.005	-0.050*
	(0.095)	(0.454)		(0.633)	(0.006)		(0.9)	(0.069)
-30,-26	-0.047	-0.043	-30,-16	-0.046	-0.096***	-30,-6	0.005	-0.037
	(0.494)	(0.266)		(0.371)	(0.001)		(0.91)	(0.193)
-30,-25	-0.043	-0.058*	-30,-15	-0.047	-0.096***	-30,-5	0.007	-0.031
	(0.452)	(0.059)		(0.328)	(0.001)		(0.853)	(0.255)
-30,-24	-0.003	-0.067***	-30,-14	-0.038	-0.088***	-30,-4	0.011	-0.023
	(0.962)	(0.007)		(0.398)	(0.001)		(0.783)	(0.413)
-30,-23	-0.053	-0.092***	-30,-13	-0.038	-0.071**	-30,-3	0.014	-0.025
	(0.476)	(0.009)		(0.372)	(0.014)		(0.709)	(0.352)
-30,-22	-0.073	-0.092***	-30,-12	-0.025	-0.075***	-30,-2	0.003	-0.031
	(0.275)	(0.001)		(0.542)	(0.007)		(0.927)	(0.240)
-30,-21	-0.062	-0.110***	-30,-11	-0.033	-0.063**			
	(0.294)	(0.002)		(0.395)	(0.023)			

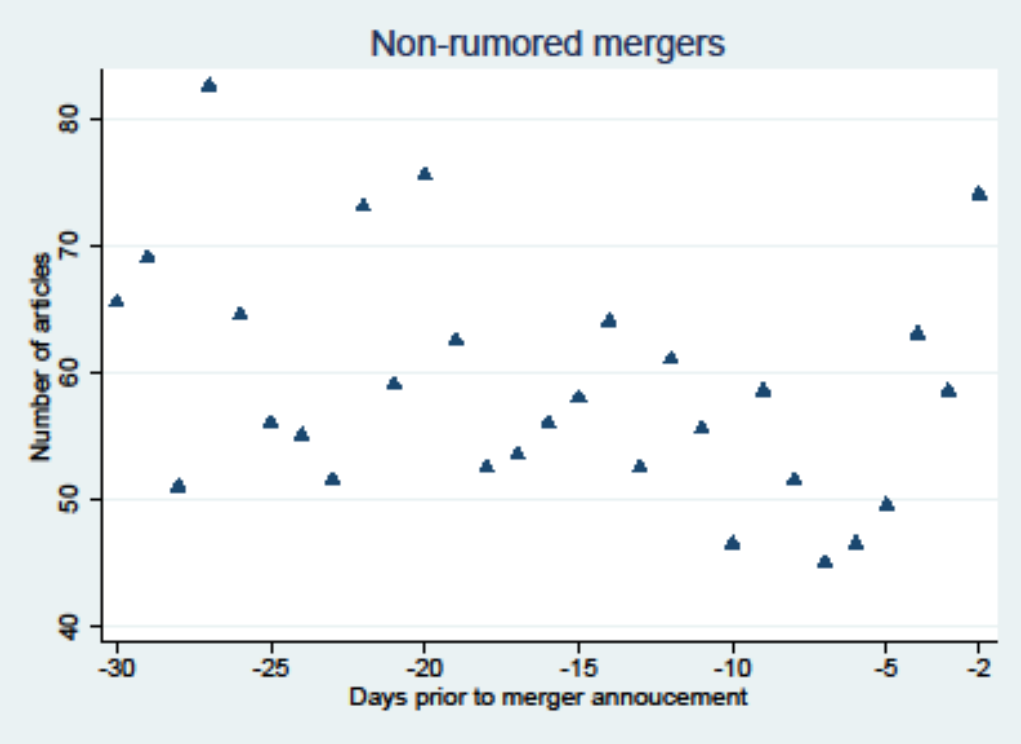
This table shows whether the publication of an article with a generic fear term in the headline is related with next day's abnormal stock returns. Panel A shows the generic terms used and the sum of all articles found per fear term. Panel B estimates multivariate regressions for all terms used; total fear index estimated as the natural logarithm of one plus the sum of all above fear terms used in article headlines each day, as well as for the number of articles for Fraud* term only. Our dependent variable is daily targets' abnormal stock returns (three-factor model adjusted) and the main independent variable is the one-day lagged articles. We add corresponding day dummies prior to each merger announcement to control for different stock return performance. For example, when estimating the regression with stock returns in the interval period between -30 and -27 days, the independent variables are the one-day lagged number of articles and day dummies for days -29, -28 and -27. We add deal fixed-effects, and cluster standard errors per day prior to merger announcements. For space consideration, we only report the parameter coefficient on the number of relevant articles, i.e., we only report one parameter coefficient per regression. Results shown are for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. # indicates any of the followings: "tip", "tips", "tipped", "tipping", "tipper" and "tippee". P-values are shown in parenthesis. The sample period is between January 1979 and June 2014. *, **, and *** indicate statistical significance at the 10, 5 and 1 percent level, respectively.

Figure 1 Cumulative abnormal stock returns for rumored and non-rumored mergers



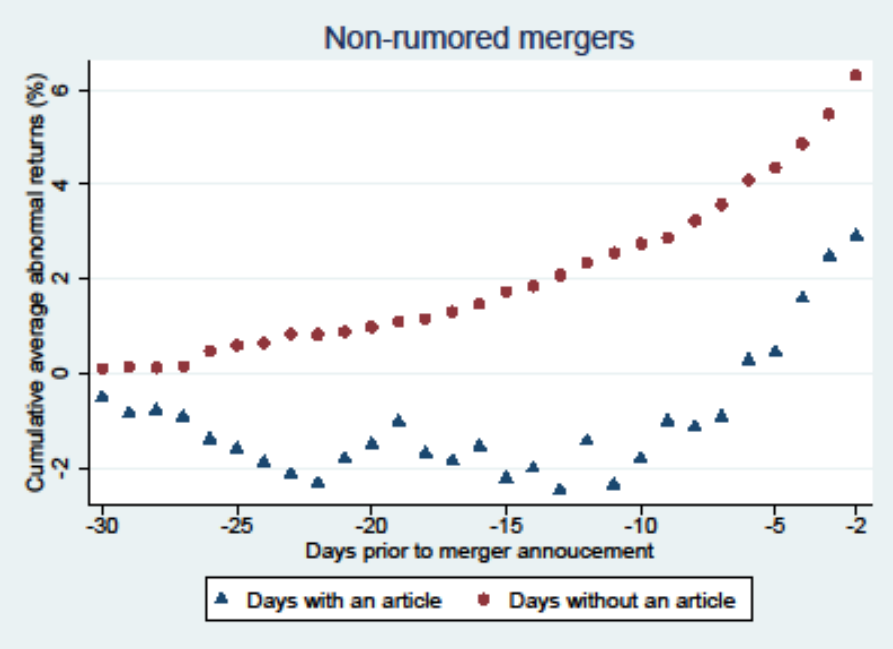
This figure shows targets' three-factor abnormal stock returns prior to merger announcements for non-rumored merger deals and for rumored merger deals separately. Rumored merger deals were identified using all available articles from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. The sample period is between January 1979 and June 2014.

Figure 2 Number of articles on days prior to merger announcements



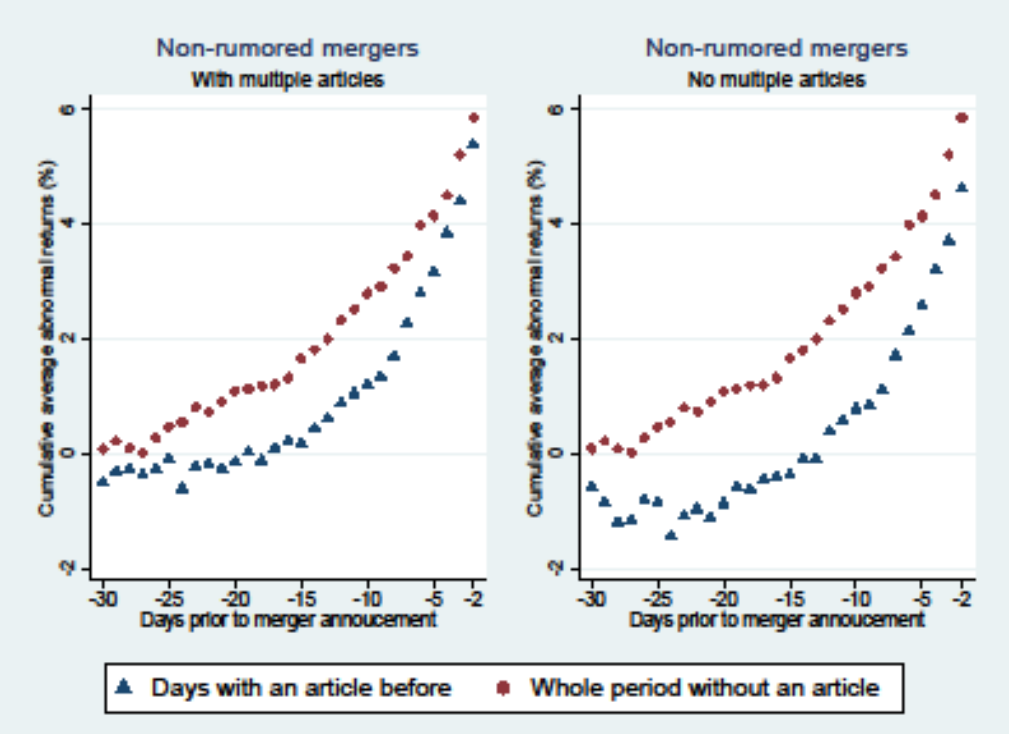
This figure shows the number of articles in the sample published on each of the days during the pre-merger period with coverage of illegal activity prior to US merger announcements for non-rumored merger deals. Rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. The sample period is between January 1979 and June 2014.

Figure 3 Next day's abnormal stock returns with and without a relevant article



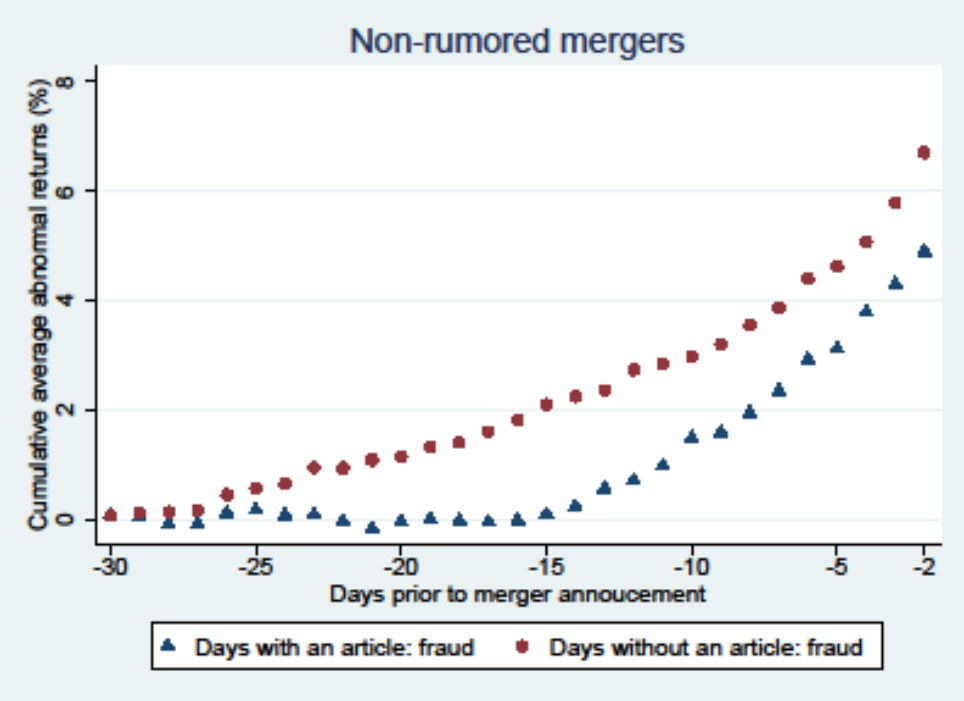
This figure shows the abnormal stock returns prior to US merger announcements, cumulated, for days following a day with an article of a prior illegal activity by insiders prior to merger announcements versus days without an article. Results shown are for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. The sample period is between January 1979 and June 2014.

Figure 4 Abnormal stock returns over the remaining pre-announcement period following the publication of relevant article versus days with no relevant articles published



This figure explores whether media coverage influences insiders following article publications for the duration of the pre-announcement period. We compare cumulative average abnormal returns for firms without any article during the pre-announcement period (-30,-2) versus the cumulative average abnormal returns in days following relevant publication and until the end of the pre-announcement period (day -2). If an article is, for example, published on day -22 for a particular merger event, we consider the firm's abnormal stock returns between -21 and -2 days only, while excluding abnormal stock returns for this test prior to -22 day. The two panels show the cumulative average abnormal returns for acquisitions with articles published on multiple days during the pre-announcement periods (-30, -2) and for mergers with only one relevant article during the pre-announcement period. Results shown are for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. The sample period is between January 1979 and June 2014.

Figure 5 Next day's abnormal stock returns for mergers with versus without an article with the term "fraud*"



This figure shows the cumulative abnormal stock returns prior to merger announcements following a day with an article with the term "fraud*" in the headline versus days without such article. Results shown are for non-rumored merger deals where rumors where identified from Factiva with at least one article available that include the name of the target firm plus any of the following terms: merg*, acuir*, target, takeover, rumour*, rumor*, buyout and bid*, where * indicates any letter (if any) ending after the asterisk. The sample period is between January 1979 and June 2014.