

Investors' Attention and Social Media: Evidence from Small and Medium Entities

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Abstract: We investigate the relevance and use of corporate social media, i.e., Twitter, in small and medium entities (SMEs) during the period around earnings announcements (EA). Given that investors' attention is limited, social media may increase the saliency of a firm during EA. Social media is particularly relevant to SMEs as they operate in an uncertain environment and are subject to limited media coverage. We show that firms sending more tweets containing financial information before EA exhibit higher investors' attention at EA. We then document that SMEs communicate strategically on social media, i.e. firms tend to send fewer tweets before disclosing bad news at EA. Cross-sectional analyses indicate that Twitter activity has an economically significant effect on investors' attention and may be used strategically by SMEs with low media coverage and with less analyst following. This paper contributes to the discussion on the use of new channels of communication by showing their relevance to SMEs. It has also implications with regards to the need for additional information on firms of smaller size.

Keywords: Investors' Attention; SMEs; Social Media; Earnings Announcement; AIM London.

1. Introduction

We examine the relevance and use of corporate social media in the period around earnings announcements (EA) for Small and Medium Entities (SMEs). Whereas SMEs represent 95% of total enterprises and account for around 60% of GDP in the OECD area (OECD 2016), prior literature shows that SMEs face difficulties overcoming the low interest shown in them and attracting investors' attention. Today, social media allow SMEs to provide information directly at low cost. Considering that EA are seasonal events and investors have to process competing information to make their investment decisions (Boulland and Dessaint 2017), we argue that the use of social media in the period before EA increases the visibility of SMEs. In addition, the limited presence of other sources of information on SMEs may encourage managers to exploit investors' limited attention in their communication strategy on social media. Our conjecture is that SMEs disclose strategically on social media before EA depending on the type of news communicated at EA.

We first investigate the relationship between the use of corporate social media (i.e. Twitter) in the three-day period before EA and investors' attention at EA. From a theoretical perspective, the Merton's Investor Recognition Hypothesis (Merton 1987) argues that broader dissemination of firms' disclosure increases its recognition among investors. We consider that activity on Twitter and the content of the tweets issued by SMEs in the period immediately before EA increase SMEs' visibility in proximity of their EA. Twitter activity may increase the visibility of SMEs among existing investors who are likely to obtain information from the profile that they follow/like, but also to potential new investors by use of the Twitter search function or the automatic Twitter alert that a user can set about a certain topic or account. We focus on Twitter because companies tend to release financial information on Twitter rather than on Facebook or other social media platforms (Zhou et al. 2014; Jung et al. forthcoming). Our data also shows that more companies have adopted Twitter than Facebook, despite the fact that Facebook has more users.

Secondly, we examine whether SMEs exploit investors' limited attention by communicating opportunistically on social media. Because dissemination of news by firms influences investor recognition of the firm itself and consequently the firm's value (Merton 1987), SMEs have the motivation and possibility to directly control the dissemination of news. Kothari et al. (2009b) document that managers, on average, delay the release of bad news to investors. Considering the limited presence of other sources of information, SMEs may remain silent on Twitter before disclosing bad news at EA, i.e., a significant decrease in the earnings per share (EPS) compared with the previous year, to avoid a decrease in the firm's value.

Our study extends Blankespoor et al. (2013) who finds that high-tech firms tweeting a hyperlink to an EA press release increase their visibility. Firstly, our study focuses on the period before EA. Prior literature (Drake et al. 2012; Boulland and Dessaint 2017) shows that investors search for information in the period before EA and not only at EA. Our study therefore explores whether the response by SMEs to investors' demand for information in the pre-EA period affects the level of attention at EA. Secondly, we investigate whether information other than hyperlinks to press releases about EA matters to investors. The objective is to determine whether investors process the content of tweets. Thirdly, we focus on SMEs to further investigate the impact of social media on firms with low visibility. Whereas Blankespoor et al. (2013) do not find evidence that high-tech firms opportunistically tweet about the press release of EA, our conjecture is that SMEs may exploit their poor information environment to disclose strategically on social media. Low media coverage and analyst following would reduce the potential penalties associated with such opportunistic behaviour. Finally, we examine changes in the context, such as the introduction of tweets within the Bloomberg Terminal database, to provide direct evidence that investors use information from social media.

Our analyses focus on SMEs¹ listed on the Alternative Investment Market (AIM) London stock exchange over the period 2008-2015. We look at the AIM London because it is dedicated to smaller growing companies (Gerakos et al. 2013). The AIM London represents an ideal setting since it requires all listed companies to have a website of which it regulates the content,² enhancing the role of social media as a source of voluntary disclosure to convey information to investors. Following prior literature (Boulland and Dessaint 2017; Drake et al. 2016), we use two measures to define investors' attention in a firm at EA, such as (1) abnormal trading volumes and, (2) absolute value of cumulative abnormal returns.

We first show that Twitter activity in the period before EA is positively associated with investors' attention at EA day. The effect is even larger for firms tweeting financial information. These results confirm the conjecture that social media activity helps to attract investors' attention at EA by increasing SMEs' visibility. The findings about the impact of financial information suggest that investors process the content of the messages released.

Next, we document that SMEs exploit investors' limited attention by opportunistically releasing information on social media. Firms tend to stay silent on social media and in particular about financial information on social media in the period before the disclosure of poor earnings (i.e., bad news). Firms releasing bad news at EA have 2% less probability of tweeting and 4% less probability of tweeting financial information than firms without bad news to announce at EA. Our results imply that SMEs understand the impact of social media activity on investors' attention. By sending fewer tweets before bad news, they intend to avoid unnecessary attention.

We corroborate our findings by examining firms with low external coverage, i.e., low traditional media coverage and analyst following. We document that SMEs with low external

¹ In our tests, we define an SME as firms having less than 250 employees. We also re-perform our analyses by defining SMEs as firms having less than €100 total assets. Untabulated tests show that the results are not sensitive to my measure of firm size.

² Rule 26, AIM Rules for Companies, London Stock Exchange, January 2016

coverage benefit more from social media activity than SMEs with high external coverage. These findings are consistent with our conjecture that social media allows SMEs to overcome the limits of low traditional external coverage by improving firms' visibility to investors. We also show that SMEs send fewer tweets before the release of bad news when the presence of other sources of information is limited. These results suggest that SMEs exploit the limited coverage by communicating opportunistically on Twitter.

We further show that SMEs' tweets containing financial information matter to investors by examining the impact of the dissemination of tweets through Bloomberg Terminal, an online database used by professionals interested in financial information. We argue that Bloomberg Terminal discloses information targeted towards investors, potentially enhancing the positive effect of Twitter activity on investors' attention. We document that after Bloomberg Terminal integrated Twitter in its newsfeeds in 2013, tweets containing financial information have become more effective in attracting investors' attention. SMEs also appear to have stronger incentives to strategically tweet about financial information when tweets are disseminated to an audience interested in financial information. Our results show that SMEs decrease the release of tweets containing financial information before the disclosure of bad news at EA after the integration of Twitter in Bloomberg Terminal. These results provide direct evidence as to the effects of social media disclosure on investors.

A potential limitation of our study is that firms may self-select to use Twitter and that such a decision may be influenced by factors which also drive investors' attention. We address this potential concern by using the determinants of the presence on Twitter in our propensity score matching analysis to compare SMEs active on Twitter to non-active ones. In additional tests, we compare the pre- and post- social media period for firms which adopt social media at a certain time in the period analysed. Our results confirm the conclusion that Twitter activity before EA leads to higher

investors' attention at EA. We then conduct a series of placebo tests in which we re-define the event date at 30 days before EA. We find no evidence that firms active on Twitter before EA constantly exhibit higher investor attention than other firms. Finally, we focus on innovative companies, which may be major players on social media and whose investors may be more familiar with social media information (Blankespoor et al. 2013). The main results across innovative, non-innovative and non-high-tech SMEs are very similar to our core findings and mitigate the concerns that results are driven by only a certain type of firm.

This study makes several contributions. Firstly, it contributes to the literature on voluntary disclosure by looking at the relationship between corporate social media and capital market (Blankespoor et al. 2013; Jung et al. forthcoming; Lee et al. 2015). This study helps to develop the burgeoning debate on the relevance of social media (Miller and Skinner 2015) by showing that their use in the pre-EA period triggers investors' attention at EA for SMEs. An important implication of our findings is that investors are attracted by firms' activity on social media and by the content of information provided, assigning particular emphasis to financial information. By documenting the impact of social media messages on stock market activity at EA and the impact of Twitter dissemination by Bloomberg Terminal, we support the idea that social media matters to investors and it is not only a marketing channel.

Secondly, our findings add to Investor Recognition Hypothesis research. We show that social media increases the recognition of SMEs that operate in a poor information environment, e.g., low traditional media coverage or analyst following. We show that disclosure on social media increases SMEs' visibility to investors. We demonstrate the impact of social media activity before EA, and not only at EA, on investors' attention. Our focus on firms of small and medium size operating in multiple industries contributes to generalize previous results on large firms in the high-tech industry (Blankespoor et al. 2013) about social media and investors' decisions.

Thirdly, we contribute to the literature on investors' limited attention by looking at SMEs' social media disclosure. Previous research provides mixed evidence on managers' strategies to manipulate investor attention (Hirshleifer and Teoh 2003; DellaVigna and Pollet 2009; Doyle and Magilke 2009). Differently from Blankespoor et al. (2013), we observe an opportunistic use of corporate social media. We document that SMEs tend to avoid attracting attention on social media before disclosing bad news at EA by remaining silent, especially in the absence of other sources of information covering their activities.

Finally, this study improves the understanding of the impact of SMEs' voluntary disclosure on social media.³ These results are useful to SMEs to improve their visibility on the stock market. We show that social media increases attention around SMEs, especially in the context of a poor information environment. Our results also offer useful insights for investors into SMEs' social media communication strategy around EA and the role of other sources of information in mitigating the risk of opportunistic Twitter disclosure.

The rest of the paper proceeds as follows. Section 2 reviews the literature concerning voluntary disclosure and investors' attention and develops our hypotheses. Section 3 describes the data and methodology. Section 4 presents our empirical findings. Section 5 and Section 6 describe additional and robustness tests respectively. The final Section discusses the results of this study and proposes potential avenues for future research.

2. Background literature and hypothesis development

Investors' attention on companies is broadly discussed in finance and accounting literature. This topic is particularly relevant for SMEs which are subject to limited media attention and

³ The current study does not include a full cost-benefit analysis on the Twitter activity. The use of social media may encourage disgruntled customers to complain about the company. Social media may also spin negative sentiment towards the company. In addition, Lee et al. (2015) document that the benefits of corporate social media activity vary with the level of control over social media content.

information asymmetry. In this section, we first discuss the challenges of influencing investors' attention, with a particular focus on the period before EA. Next, we introduce the role that social media plays in the relationship between SMEs' voluntary disclosure and investors' attention.

2.1. The challenge of attracting investors' attention

Literature on investors' attention generally considers attention a scarce resource because investors have limited time and resource to search and process information (Hirshleifer and Teoh 2003; DellaVigna and Pollet 2009; Hirshleifer et al. 2009). Indeed, companies compete to attract investors' attention, in particular around EAs when the majority of firms announce their earnings in a short period of time (Boulland and Dessaint 2017). Hirshleifer et al. (2009) test the so-called 'distraction' hypothesis and find that investors tend to react less to EA when there are several other announcements the same day.

Voluntary information can play a significant role in triggering investors' attention by increasing investors recognition (Boulland and Dessaint 2017; Bhagwat and Burch 2016). Barber and Odean (2008) show that individual investors are more likely to buy attention-grabbing stocks, whereas professional investors are less easily influenced. To supplement the limited availability of information, Blankespoor et al. (2013) find that the dissemination of press releases related to EAs through Twitter reduces information asymmetry, and increases market liquidity. Moreover, information disclosed before EA can influence investors' attention at EA day. Boulland and Dessaint (2017) show that investors are more attentive when firms disclose in advance the date and time of EA.

SMEs operate in conditions of uncertainty (Freel 2005) and their activities are usually poorly covered by external media (Miller 2006), leading to high information asymmetry. Past research shows that SMEs benefit from producing additional information and that investors value SMEs' efforts to improve their visibility. Allee and Yohn (2009) find that small private firms benefit from

voluntarily producing financial statements in terms of access to and cost of credit. Bushee and Miller (2012) document that the presence of large investor relation departments contributes to improving SMEs' visibility, resulting in more investors being attracted. However, this type of communication strategy is often costly. SMEs do not always have the resources to hire a sufficient number of people in their investor relation department and to support new communication activities.

2.2. The emergence of social media as a game changer

Given the limited presence of concurrent sources of information, the use of social media may increase SMEs' visibility and attract investors' attention. Prior literature shows that the channel through which information reaches investors is relevant when disseminating news to investors (Blankespoor et al. 2013; Drake et al. 2016). From the supply side, the press for a long time controlled dissemination of information through its discretionary power to decide what to report (Tetlock 2007; Kothari et al. 2009a; Cahan et al. 2015). Business press and analysts tend to cover firms of larger size given the potentially larger audience interested in this set of information, limiting investors' recognition of SMEs (McNichols and O'Brien 1997; Miller 2006). More recently however, the communication is no longer monopolized by a small group of actors consisting mainly of analysts and business press. Companies can directly convey information to investors through social media without the use of intermediaries (Kaplan and Haenlein 2010).

Anecdotal evidence shows that SMEs use Twitter to disseminate information relevant to investors. For instance, Metal Tiger PLC, a medium-sized listed company, describes itself on its Twitter account as "London AIM listed (LON:MTR) resource investor with high impact projects in Botswana, Spain & Thailand. Focused on precious & strategic metals. #MetalTiger". Abzena, another medium-sized company listed on the AIM London, tweets "#Abzena expects revenue flows as humanised antibodies enter clinical development - @AbzenaGroup tinyurl.com/l42eo2b via

@proactive_uk”⁴ Despite large use of social media and the potential implications of different communication strategies, there are still few insights into the use and the effects of corporate social media, especially for SMEs (Blankespoor et al. 2013; Lee et al. 2015; Miller and Skinner 2015; Jung et al. forthcoming).⁵

From a regulatory perspective, the increased use of social media poses new challenges. Regulators still face difficulties in defining the appropriate regulation for social media communication that will balance investor protection and disclosure costs for SMEs. In Europe, there is no specific regulation concerning corporate social media use. Companies mostly refer to rules about voluntary disclosure. In the U.S., the Security and Exchange Commission (SEC) allows firms to use social media to disclose relevant information. The SEC justified the decision to allow companies to firstly announce their earnings on social media rather than solely on corporate websites as follows, *‘An increasing number of public companies are using social media to communicate with their shareholders and the investing public. We appreciate the value and prevalence of social media channels in contemporary market communications, and the commission supports companies seeking new ways to communicate.’*⁶ However, in November 2015, the SEC alerted investors to the risk of fraud due to misleading information being disclosed on social media and immediately disseminated worldwide with the sole objective of manipulating share prices.⁷

The use of social media can benefit SMEs because they can independently disseminate information. Social media may offset the low presence of external coverage at a low cost. Prior studies show that users expand their analysis to additional sources and elements under conditions of uncertainty (Newcomb 1953; Francis and Schipper 1999; Hope 2003). SMEs could increase their visibility by releasing information relevant to investors looking for opportunities during the EA

⁴ Information retrieved on November, 11th 2017 at 3.50 pm.

⁵ See Appendix 1 for further examples of Tweets released by firms listed on the AIM London stock exchange prior to EA.

⁶ <http://online.wsj.com/news/articles/SB10001424127887323611604578398862292997352>

⁷ http://www.sec.gov/oiea/investor-alerts-bulletins/ia_rumors.html

season. Firms releasing information on Twitter may increase their visibility because investors would notice the tweet(s) in their newsfeed or during their search activity. In this light, Blankespoor et al. (2013) document that information dissemination at EA through Twitter is particularly significant for high-tech firms with low visibility. Finally, social media activity may also facilitate the dialogue between firms and investors, reducing investors' doubts about SMEs' business.

Nonetheless, corporate social media may not be effective in attracting investors' attention due to the potential overload of information to process. Unsophisticated investors, who are supposedly the main users of information released on corporate social media, are more sensitive to the costs of acquiring information (Bloomfield 2002). Investors may potentially follow multiple firms and may miss the tweet(s) certain firms release. In addition, if an investor does not follow the Twitter account of a specific firm or does not search for specific tweets of a company, he or she will have to single out the tweet(s) among the 500 million tweets issued daily.⁸ The large flow of information available may explain the lack of impact of corporate tweets on investors' attention. In addition, companies may release information not pertinent to the forthcoming EA. Tweets containing information about firms' products may not contribute to increase investors recognition. Information disclosed through social media may be considered not credible due to the limited presence of alternative sources, especially in the high-risk environment which characterizes SMEs. Investors value information which is considered credible, in particular in situations of uncertainty (Bushee and Leuz 2005). Several recent cases of misleading information on social media may have negatively affected how investors perceive the reliability of social media (Kaplan et al. 2010). Finally, investors may prefer to communicate with SMEs through private channels to gather better insights into their real performance rather than on social media where potentially millions of other investors can obtain the same information.

⁸ <http://www.internetlivestats.com/Twitter-statistics/> Accessed on March 19, 2017.

Overall, the net effect of the use of social media on investors' attention to SMEs is an empirical question. Considering the conflicting arguments, we state our hypothesis in the null form:

H1a. Corporate social media activity has no effect on investors' attention.

Next, we analyse the content of tweets in order to understand whether investors read the messages. Dietrich et al. (2001) show that more explicit disclosure of accounting information leads to higher market efficiency, mitigating information processing biases that may be caused by uninformed investors. We focus on tweets containing financial information because they may be meaningful in attracting potential investors. Investors may keep track of keywords disclosed on social media, in particular regarding financial information, or set defined Twitter search alerts around certain financial keywords. In addition, during EA season, investors may search on Twitter for specific financial-related key words with the objective of detecting new market opportunities. By releasing tweets containing financial information, companies can be in the spotlight of investors' newsfeed.

Nevertheless, investors may consider that searching and/or processing the content of the tweets is excessively costly. In addition, the lack of third-party assessment of corporate social media information may also call into question the reliability of certain tweets. Therefore, we test the following hypothesis in the null form:

H1b. Corporate tweets containing financial information have no effect on investors' attention.

2.3 Strategic disclosure on social media

SMEs can exploit investors' limited attention when they define their communication strategy on Twitter before EA. The release of news affects recognition of firms, and may influence firms' values (Merton 1987). The use of social media allows SMEs to directly control the level of

dissemination of news, especially in the absence of other sources of information, e.g., traditional media coverage and analyst following.

In a scenario of future bad news, SMEs may use social media strategically to manage the dissemination of news about the company. SMEs may remain silent in order to attenuate the attention on the company and reduce the risk of decreasing firms' values. SMEs may also be very active on social media and lead discussion away from their forthcoming EA. In this way, they may distract investors and prevent backlash on social media after releasing the bad news. Finally, SMEs may pre-empt the future bad news by talking intensively about financial-related topics. Alexander and Gentry (2014) argue that social media represent a unique opportunity to talk directly with shareholders and stakeholders. For instance, during an investor relations crisis, firms may want to manage items of information released and tackle the emerging problem in a timely fashion. Moreover, the direct costs of manipulating social media content are negligible. SMEs can thus preserve useful resources for their development.

Conversely, SMEs may decide not to communicate opportunistically on social media due to the risk of being penalized by investors. Opportunistic disclosure may increase the risk of damaging the trustworthiness and reputation of SMEs, which may adversely affect their future access to finance.

Overall, SMEs have contrasting motives which may influence their choices in terms of social media disclosure strategy if news is bad. We argue that the potential to influence firms' values through information dissemination induces SMEs to adapt their disclosure on social media before bad news. We specify our hypothesis in the alternative, but not directional, form:

H2. SMEs strategically convey information through social media.

3. Research Design

Our main set of analyses compares SMEs active on Twitter to non-active ones before EA. In this section, we describe the sample used, presenting the reasons for focusing on firms listed on the AIM London stock exchange. Next, we discuss the research design. We first present the tests on the impact of social media use, i.e., intensity and content, on investors' attention. We then discuss the tests on the relationship between type of news and Twitter use.

3.1. Data

Our sample includes SMEs listed on the AIM London stock exchange during the period 2008-2015. We chose this sample period because Twitter introduced major changes in its use, e.g., hashtags, in the year 2007, and significantly increased in popularity after the 2007 South by Southwest Interactive (SXSWi) conference (Meyers 2011). AIM London is a stock exchange especially designed for smaller firms which presents greater flexibility and lower listing costs than the main stock exchanges, e.g., NYSE or LSE Main Market (Gerakos et al. 2013). Gerakos et al. (2013) state that: "The goal [of AIM] is to provide investors with access to 'smaller growing companies', thereby increasing the pool of available capital."

Companies listed in the UK have to follow the Disclosure and Transparency Rules (DTR) which require firms to disclose inside information via a Regulatory Information Service prior to, or simultaneously with, disclosure on their website (DTR 2.3). In addition, companies have to respond to press speculation or market rumours, included those on social media (DTR 2.7). AIM London presents additional specific requirements concerning web disclosure. Companies must have a corporate website, and its content is strictly regulated (Rule 26), but no specific rule applies to social media. Given the lack of stringent rules, social media represents a more flexible channel than corporate websites for managers to communicate to investors.

To test our hypotheses, we investigate corporate social media use shortly before EA. Our approach follows Drake et al. (2012) who show that investors start searching for news in the days

just before EA. We obtain financial information and data about auditors and analysts from EIKON, EA dates from I/B/E/S, and business press articles from RavenPack. For social media data, we partially use collected data about SMEs' presence on Twitter and we developed an *ad hoc* Python script to retrieve tweets around EA.

Table 1 describes the sampling and data collection process. Following the Fama-French 12 industries classification, we exclude firms operating in industries with FF-code 11 (i.e., financial and insurance industry) because they adopt specific disclosure rules (DuCharme et al. 2001; Burgstahler et al. 2006; Ball and Shivakumar 2008). We also delete observations with negative equity. We define SMEs as firms that have less than 250 employees. Next, we exclude observations with unavailable data. The final sample is composed of 2,530 firm-year observations. All continuous variables are scaled by total assets and winsorized at a one per cent level to mitigate the influence of outliers.

[INSERT TABLE 1 ABOUT HERE]

3.2. *Research Design*

3.2.1 *Attracting investors' attention (H1)*

To test our first hypotheses, we look at the relationship between investors' attention (*INV_ATT*) and Twitter use, i.e., (1) firms' Twitter activity (*TWEETS*), and (2) the content of the tweets (*FINANCIAL_TW*).

Past research has used multiple proxies to define investors' attention, such as extreme returns, trading volume, news and headlines, advertising expense, Google searches and participation in conference calls (Gervais et al. 2001; Barber and Odean 2008; Hou et al. 2009; Da et al. 2011; Yuan 2015). Because there is no clear definition of investors' attention, we employ two widely used measures, i.e., abnormal trading volume, and absolute value of cumulative abnormal returns (Drake et al. 2016; Barber and Odean 2008; Boulland and Dessaint 2017).

By looking at the activity on Twitter, Eq. (1) is estimated using an ordinary least squares (OLS) method (standard errors are double-clustered at industry and year level):

$$\begin{aligned}
 INV_ATT_{i,t} = & \alpha_0 + \alpha_1 TWEETS_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 MTB_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 INTANG_{i,t} + \alpha_6 ADV_{i,t} \\
 & + \alpha_7 ANALYSTS_{i,t} + \alpha_8 BIG4_{i,t} + \alpha_9 LIT_RISK_{i,t} + \alpha_{10} BAD_NEWS_{i,t} + \alpha_{11} ROA_{i,t} + \alpha_{12} UE_{i,t} \\
 & + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \Omega_{i,t}
 \end{aligned} \tag{1}$$

where:

INV_ATT_t = investors' attention at EA, measured as one of the following variables:

TR_VOL_t = abnormal trading volume during the two days [0,1] around EA in year t (see Appendix B);

CAR_t = absolute value of cumulative abnormal returns during the two days [0,1] around EA in year t (see Appendix B);

$TWEETS_t$ = activity on Twitter, dummy variable equal to 1 if the firm releases at least one tweet during the three days [-3, -1] before EA in year t, and 0 otherwise (see Appendix B);

$SIZE_t$ = firm's size, measured as the natural logarithm of total revenues in year t;

MTB_t = Market-to-Book value in year t;

LEV_t = leverage, measured as total liabilities in year t divided by total assets in year t-1;

$INTANG_t$ = intangible assets, measured as total intangible assets in year t scaled by total assets in year t-1;

$ANALYSTS_t$ = analysts' coverage, measured as number of analyst following the firm in year t;

ADV_t = advertising expenses, measured as advertising expenses in year t scaled by total assets in year t-1;

LIT_RISK_t = litigation risk, dummy variable equal to 1 if a firm' industry is considered of high litigation risk (Ali and Kallapur 2001), and 0 otherwise;

BAD_NEWS_t = bad news, dummy variable equal to 1 if the change in Earnings per Share (EPS) from year t to year t-1 divided by lagged EPS is negative and smaller than -0.01, and 0 otherwise.

$BIG4_t$ = auditor, dummy variable equal to 1 if a firm's auditor is one of the Big-4 in year t, and 0 otherwise;

ROA_t = Return on Assets, measured as net income in year t scaled by total assets in year t-1;

UE_t = unexpected earnings, dummy variable equal to 1 if the absolute value of the change in net income from t-1 to t, scaled by net income in t-1 is above industry-year median, 0 otherwise.

Coefficient α_1 captures differences concerning investors' attention with regards to Twitter activity ($TWEETS$). A significantly positive coefficient on $TWEETS$ indicates that tweeting increases investors' attention at EA. The lack of significant results would indicate that social media activity is irrelevant to investors in SMEs.

We include different control variables which have been shown in past studies to be related to investors' attention (Gervais et al. 2001; Jung et al. forthcoming; Drake et al. 2016). We control for firms' size ($SIZE$), growth opportunities (MTB), firm-specific risk of bankruptcy (LEV), level of intangibles ($INTANG$), external monitoring by analysts ($ANALYSTS$), expenses in advertising (ADV), litigation risk (LIT_RISK), audit quality and audit scrutiny ($BIG4$), and operating performance (ROA). We include unexpected earnings to take into account investors' surprise (UE). Since year and industry could represent unobservable sources of heterogeneity across firms for my measures of investors' attention (INV_ATT), we include year and industry fixed effects.

We then turn our attention to the content of the tweets. Eq. (2) is estimated using an ordinary least squares (OLS) method (standard errors are double-clustered at industry and year level):

$$\begin{aligned}
 INV_ATT_{i,t} = & \alpha_0 + \alpha_1 FINANCIAL_TW_{i,t} + \alpha_2 NON_FINANCIAL_TW_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 MTB_{i,t} \\
 & + \alpha_5 LEV_{i,t} + \alpha_6 INTANG_{i,t} + \alpha_7 ADV_{i,t} + \alpha_8 ANALYSTS_{i,t} + \alpha_9 BIG4_{i,t} + \alpha_{10} LIT_RISK_{i,t} \\
 & + \alpha_{11} BAD_NEWS_{i,t} + \alpha_{12} ROA_{i,t} + \alpha_{13} UE_{i,t} + Industry\ Fixed\ Effects \\
 & + Year\ Fixed\ Effects + \Omega_{i,t}
 \end{aligned} \tag{2}$$

where:

$FINANCIAL_TW_t$ = financial tweet, dummy variable equal to 1 if the firm releases at least one tweet containing financial information during the three days [-3, -1] before EA in year t, and 0 otherwise (see Appendix B);

$NON_FINANCIAL_TW_t$ = Non-Financial tweet, 1 if the firm releases at least one tweet containing non-financial information when it releases tweets containing financial information during the three days [-3, -1] before EA in year t, and 0 otherwise (See Appendix B).

All other variables are consistent with the previous definition.

The coefficient of interest is α_1 and captures the impact of tweets containing financial information ($FINANCIAL_TWEETS$). A significantly positive coefficient indicates that releasing financial information on Twitter increases investors' attention at EA. We control for the simultaneous release of tweets containing financial and non-financial tweets over the three-day period before EA.

Our statistical tests are conducted on SMEs active on Twitter before EA (treatment group) and SMEs non-active on Twitter before EA (control group). Consistent with Jung et al. (forthcoming), we first run Eq. (1) and (2) for the whole sample of firm-year observations. We then re-perform my analyses on Twitter activity on the subsample of firms with a Twitter account. We motivate this decision because the analysis of the subsample of firms with a Twitter account may raise concerns in terms of control sample. Firstly, certain firms could use Twitter only as a marketing tool and not to communicate to investors. This type of firm is no more likely to use Twitter before EA than firms without a Twitter account. Secondly, firms without a Twitter account yet may open one in a very short time and with low set-up costs. They may consider using Twitter to communicate to their investors, and not only for marketing purposes. They would therefore represent a suitable control sample of firms (Jung et al. forthcoming).

3.2.2 Managers' strategies on social media (H2)

In our second hypothesis, we investigate whether SMEs exploit investors' limited attention when defining their social media communication strategy. We analyse corporate social media disclosure before the release of bad news at EA. We use the following probit model (standard errors are double-clustered at industry and year level):

$$\begin{aligned} SOC_MEDIA_USE_{i,t} = & \alpha_0 + \alpha_1 BAD_NEWS_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 MTB_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 INTANG_{i,t} \\ & + \alpha_6 ANALYSTS_{i,t} + \alpha_7 ADV_{i,t} + \alpha_8 LIT_RISK_{i,t} + \text{Industry Fixed Effects} \\ & + \text{Year Fixed Effects} + \Omega_{i,t} \end{aligned} \quad (3)$$

$SOC_MEDIA_USE_t$ = one of the following variables

$TWEETS_t$ = activity on Twitter, dummy variable equal to 1 if the firm releases at least one tweet during the three days [-3, -1] before EA in year t, and 0 otherwise (see Appendix B);

$FINANCIAL_TW_t$ = financial tweet, dummy variable equal to 1 if the firm releases at least one tweet containing financial information during the three days [-3, -1] before EA in year t, and 0 otherwise (see Appendix B);

All other variables are consistent with the previous definition.

To understand whether SMEs behave opportunistically before releasing bad news, we focus on the variable BAD_NEWS , and the examined dependent variable, i.e., SOC_MEDIA_USE . If SMEs attempt to avoid attracting attention to poor financial results, they will decrease their communication on social media. In this scenario, we expect to observe a negative and significant relationship between bad news and activity on social media.

Managers may also try to pre-empt future bad news and engage with their investors. They would exhibit higher level of communication on social media compared with firms releasing good news, especially concerning financial news. In this case, we would observe a positive and significant association between SOC_MEDIA_USE , in particular the variable $FINANCIAL_TW$, and the variable BAD_NEWS .

SMEs may also be very active on social media, but with the intent of distracting investors from the incoming EA. In this case, we would observe a positive and significant relationship between *BAD_NEWS* and *TWEETS*, and a negative or insignificant relationship between *BAD_NEWS* and *FINANCIAL_TW*. Finally, if SMEs do not undertake any specific disclosure strategy on social media with regards to bad news, we would observe no significant relationship between bad news and social media activity.

We control for factors which could affect firms' decisions to be active on Twitter. Control variables include firms size (*SIZE*), growth opportunities (*MTB*), firm-specific risk of bankruptcy (*LEV*), level of intangibles (*INTANG*), external analysts' monitoring (*ANALYSTS*), expenses in advertising (*ADV*), and litigation risk (*LIT_RISK*). Since year and industry could represent unobservable sources of heterogeneity across firms for my measures of investors' attention (*INV_ATT*), we include year and industry fixed effects.

4. Results

4.1. Descriptive statistics

Panel A of Table 2 presents the descriptive statistics for the main variables of the full sample. The mean presence on Twitter (*PRESENCE_TW*) is 50.5%. The mean of firms tweeting before EA (*TWEET*) is 28.5%. The mean of firms reporting lower EPS compared with the previous year (*BAD_NEWS*) is 54.1%. The median (mean) of leverage (*LEV*) is 26.6% (30.5%) of total assets. Similarly, Gerakos et al. (2013) document that the median (mean) leverage for firms listed on the AIM London is 25.1% (31.4%) of total assets. The median (mean) of *CAR* is 7.9% (6.42%). The median (mean) of intangible assets is 23.6% (30.8%), supporting the idea that this type of asset plays a major role in SMEs listed on the AIM London. The median (mean) of profitability, measured as

ROA, is -6.6% (-19.9%), with a standard deviation of 44.9%. It emerges that firms listed on the AIM London exhibit a large variability in terms of profitability.

Panel B of Table 2 shows the descriptive statistics of the sample conditional on the firms' presence on Twitter (*PRESENCE_TW*), along with t-tests for difference in means between groups. Firms with a social media account report less bad news (*BAD_NEWS*), exhibit higher investors attention (*TR_VOL*, and *CAR*), have higher leverage (*LEV*), report lower profitability (*ROA*), but have higher growth opportunities (*MTB*), and are less followed by analysts (*ANALYSTS*) compared with other firms. We do not observe significant differences between the two groups of firms in terms of operating in industries with high litigation risks (*LIT_RISK*), type of auditors (*BIG4*), and earnings surprise (*UE*).

[INSERT TABLE 2 ABOUT HERE]

Panel C of Table 2 presents the correlation matrix of the main variables used in this study. By looking at the correlation coefficients, investors' attention measures (*TR_VOL*, and *CAR*) are positively correlated with social media activity (*TWEET*, and *FINANCIAL_TW*). By examining the determinants of investors' attention, the variables *TR_VOL* and *CAR* are positively correlated with growth opportunities (*MTB*), advertising expenses (*ADV*), and unexpected earnings (*UE*), and negatively correlated with analyst following (*ANALYSTS*), and the release of bad news (*BAD_NEWS*). The latter is also negatively correlated with the variables indicating social media activity (*TWEET* and *FINANCIAL_TW*), suggesting that SMEs are less active on Twitter before announcing poor earnings.

4.3. Attracting investors' attention

Panel A of Table 3 presents estimation results of model (1), testing the association between Twitter activity (*TWEETS*) and investors' attention (*INV_ATT*). We show that tweeting before EA leads to higher investor attention, after controlling for factors which could affect the dependent

variable. The coefficient α_1 of the variable *TWEETS* is positive and significant, at less than 1% two-tailed, across the two measures of investors' attention (columns (1) – (2)). We further test this relationship only among the subsample of firms with a Twitter account (columns (3) – (4)). These tests contribute to rule out the possibility that the results are driven by an endogenous difference between firms adopting/non-adopting Twitter. The results confirm the positive association (significant, respectively, at less than 5% and 1%, two-tailed) between corporate social media activity and investors' attention.

The control variables indicate that larger firms (*SIZE*), with more growth opportunities (*MTB*), more innovative (*INTANG*), and with higher advertising expenses (*ADV*) attract more investors attention at EA. These results are consistent with the Investor Recognition Hypothesis (Merton 1987) which argues that investors focus on 'attention-grabbing' stocks. SMEs with a large analyst following (*ANALYST*) tend to be negatively associated with investors' reaction at EA. Analysts may pre-empt the content of future news, leading to lower attention at EA.

Overall, these findings are consistent with the conjecture that SMEs' disclosure on social media increases visibility and attracts investors' attention. Investors consider SMEs' social media information despite the costs associated with processing the large amount of information disclosed on social media.

[INSERT TABLE 3 ABOUT HERE]

Panel B Table 3 presents estimation results of model (2), testing the association between the content of the tweets (*FINANCIAL_TW*) and investors' attention (*INV_ATT*). We find that firms issuing tweets containing financial information before EA exhibit a higher level of investors' attention at EA than firms that do not. The estimated coefficients α_1 of the variable *FINANCIAL_TW* reported in columns (1) – (2) are positive and significant at less than 1%, two-tailed. Columns (3) – (4) report the results for the subsample of firms with a social media account. The coefficients α_1 are

still positive and significant at less than 1%, two-tailed. Overall, the results are similar to the findings reported in columns (1) – (2) relative to the full sample.

These analyses support the conjecture that tweets containing financial information attract investors' attention at EA. The activity of SMEs on social media is effective in increasing their visibility and the saliency of their stock. In addition, we test whether the simultaneous release of tweets containing non-financial information drive our results. The tests of differences in the coefficients between *FINANCIAL_TW* and *NON_FINANCIAL_TW* indicate that the coefficients are significantly different. Finally, we use a Chow test to compare the effect of *TWEETS* and *FINANCIAL_TW* on investors' attention. Untabulated results show that the use of tweets containing financial information leads to higher investors' attention at EA compared with general Twitter activity.

In summary, our study of the relation between corporate social media use and our two measures of investors' attention documents that social media information attracts investors' attention. We find that activity on Twitter and the financial content of tweets before EA positively contribute to increase SMEs' visibility and increase investors' attention at EA.

4.4 Managers' strategies on social media (H2)

Table 4 reports the results of regressing social media disclosure (i.e., *SOC_MEDIA_USE*) on the type of news (i.e., *BAD_NEWS*) and control variables using model (3). The results reported in column (1) document that SMEs are less likely to tweet before an EA when they are about to disclose bad news at EA. The estimated coefficient α_1 is -0.053, and significant at less than 1% level, two-tailed. The probability of tweeting (*TWEETS*) for SMEs about to disclose bad news at EA (*BAD_NEWS*) is 2% lower than for SMEs without bad news to announce at EA.

Column (2) shows that firms tend to avoid releasing tweets containing financial information when they are about to disclose bad news at EA. The coefficient α_1 of the variable *FINANCIAL_TW*

is negative ($\alpha_1 = -0.069$) and significant at less than 1% level, two-tailed. The probability of releasing tweets containing financial information (*FINANCIAL_TW*) for SMEs about to disclose bad news at EA (*BAD_NEWS*) is 4% lower than for SMEs without bad news to announce at EA.

These findings support the conjecture that SMEs exploit investors' limited attention by opportunistically disclosing information on social media. They avoid attracting investors' attention when they are about to release bad news by decreasing their activity on Twitter, especially about financial topics.

[INSERT TABLE 4 ABOUT HERE]

5. Additional tests on information environment

5.1. Information environment

We examine whether social media communication is more effective for SMEs with low external coverage. We analyze firms with low media coverage and with low analyst following. We expect that the impact of the Twitter activity on investors' attention is stronger for firms with limited coverage than other sources of information. Because of the limited presence of other sources of information and the low risk of being discovered and penalized, we expect that SMEs are more likely to opportunistically use Twitter when there is a shortage of information about their activities.

Firstly, we analyze media coverage by counting the number of business press articles mentioning the company in the three days before EA. We assume that a higher number of references to a firm in business press articles in the three-day window before EA reflects a richer information environment. We obtain data from RavenPack Full Edition, a database which includes information from Dow Jones Financial Wires, Wall Street Journal, Barron's, MarketWatch, business publishers, national and local news, and blog sites. We split my sample between firms covered and not covered by media press and we then re-perform my analyses (Eq. (1) – (3)).

[INSERT TABLE 5 ABOUT HERE]

Panel A of Table 5 reports the results of regressing social media activity (i.e., *SOC_MEDIA_USE*) on investors' attention, conditional to media coverage. Columns (1) and (3) show that SMEs not covered by traditional media benefit from social media activity in terms of investors' attention. The coefficient α_1 of the variable *TWEETS* is positive and significant at less than 1% level, two-tailed. Column (2) shows that the estimated coefficient α_1 for firms with high media coverage is negative ($\alpha_1 = -0.044$), and insignificant. The test of differences between coefficients show that SMEs with low media coverage exhibit significantly higher (at less than 5% level, two-tailed) investors' attention when they tweet before EA relative to SMEs with high media coverage.

Similarly, SMEs with low media coverage benefit from releasing tweets containing financial information in terms of investors' attention. The coefficient of the variable *FINANCIAL_TW* is positive and significant (at less than 1% level, two-tailed) when media coverage (*MEDIA*) is low (columns (5) and (7)). The tests of the differences across columns (5) - (6) and (7) - (8) indicate that the coefficients between SMEs with low and media coverage are significant different (at less than 10% level, two-tailed) for the dependent variable *TR_VOL*.

Secondly, we examine whether there are cross-sectional differences based on analyst following. We split the sample using the variable *COVERAGE*, which is equal to one if the number of analyst following is above the industry-year median level, and zero otherwise. We report the results in Panel B of Table 5. The variables *TWEETS* and *FINANCIAL_TW* are always significantly positive associated with investors' attention proxies (*TR_VOL* and *CAR*) for firms with low analyst following (columns (1), (3), (5), and (7)). The tests of the differences in the coefficients across groups of SMEs with low and high analyst following indicate that the coefficients are significantly different, with the exception of columns (7) – (8). Overall, the findings in Table 5 show that social

media activity offsets low external coverage, i.e., low media coverage and analyst following, by increasing SMEs' visibility around EA.

Finally, Panel C of Table 5 reports the results about communication strategy on Twitter, conditional to external coverage, i.e., traditional media coverage and analyst following. The variable *BAD_NEWS* is significant and negative for the variables *TWEETS* and *FINANCIAL_TW* for SMEs with low external coverage (columns (1), (3), (5), and (7)). Conversely, firms with high external coverage appear to be less likely to manage their communication strategy before bad news. The coefficient *BAD_NEWS* is significantly different between firms with low and high external coverage. This evidence supports our conjecture that SMEs exploit the limited presence of other sources of information to strategically disclose on Twitter.

5.2. Bloomberg Terminal and Twitter

To further test the hypotheses that SMEs increase their visibility among investors through social media and have incentives to strategically disclose information, we look at the impact of Bloomberg's decision to include tweets in its database. Bloomberg is an online database which provides current and historical financial quotes, business newswires, and descriptive information, research and statistics on over 52,000 companies worldwide.⁹ Bloomberg Terminal, used by over 325,000 subscribers, also reports "Up-to-the-minute access to the news that matters".¹⁰ Since 2013, it shows real-time tweets as part of its news feeds. Bloomberg Terminal classifies tweets by company, asset class, person and topic to support investors to keep track of updates by a specific portfolio of companies. It also allows users to create alerts about specific companies' tweets and topics.

We argue that the dissemination of companies' tweets through Bloomberg Terminal contributes to increase firms' visibility among investors. Tweets on Bloomberg Terminal are targeted to a specific audience which is interested in news on companies, especially financial information. We

⁹ <https://www.bloomberg.com/professional/>. Accessed on November 28, 2017.

¹⁰ <https://www.bloomberg.com/professional/solution/bloomberg-terminal/>. Accessed on November 28, 2017.

expect a positive effect on investors' attention from the dissemination of news through integration of tweets in Bloomberg Terminal. Furthermore, firms may have stronger incentives to strategically disclose on Twitter before bad news at EA due to larger effects on the investor community. We posit that SMEs have reduced their communication on Twitter prior to the disclosure of bad news since Bloomberg Terminal started disseminating tweets.

[INSERT TABLE 6 ABOUT HERE]

Table 6 provides the results pre- and post- tweets dissemination on Bloomberg Terminal. The results in columns (1) – (4) show that the variable *TWEETS* is positive and statistically significant (at less than 1%, two-tailed), but the coefficients are not significantly different in the pre- and post-tweets dissemination through Bloomberg Terminal (*BLOOM*). The results in columns (5) and (6) show that the variable *FINANCIAL_TW* is positive and significant (at less than 1%, two-tailed). In the period before the dissemination of tweets through Bloomberg Terminal, the coefficient α_1 is equal to 0.263 (significant at less than 5%, two-tailed), whereas in the post- period α_1 is equal to 0.363 (significant at less than 1%, two-tailed). The test of difference of the coefficients is significant (at less than 5%, two-tailed). These results suggest that the dissemination of tweets containing financial information by Bloomberg Terminal enhances Twitter's positive effect on firms' visibility.

With respect to disclosure on social media before bad news at EA, columns (1) – (2) show the results for the variable *TWEETS*, while columns (3) – (4) show results for the variable *FINANCIAL_TW*. The coefficient is negative and significant (at less than 10%, two-tailed) for the variable *TWEETS* in the period following the start of dissemination of tweets on Bloomberg Terminal. The test of differences between the coefficients is significant (at less than 5%, two-tailed), suggesting that firms release more strategically after the start of dissemination of their tweets on Bloomberg Terminal. Similarly, columns (3) and (4) show that the strategic dissemination of tweets containing financial information is significantly higher (at less than 1%, two-tailed) after Bloomberg

included Twitter in its newsfeeds. SMEs tend to disclose less on Twitter before bad news at EA since tweets started being disseminated through Bloomberg Terminal to investors.

Overall, these results provide supportive evidence that a larger and targeted dissemination of financial tweets contributes to increase SMEs' visibility. In addition, SMEs adjust their disclosure by being more opportunistic on Twitter after Bloomberg Terminal started disseminating tweets.

5.2. Innovation, Investors' Attention, and Social Media Use

We next consider whether the level of innovation affects the relation between Twitter activity and investors' attention. Blankespoor et al. (2013) show that high-tech firms tweeting a hyperlink to the EA reduces their information asymmetry. Our study includes both innovative and non-innovative firms. Because innovative firms are usually early adopters of technology (Blankespoor et al. 2013), investors in innovative firms may be more familiar with new technologies and more sensitive to information released on social media.

To test whether our results are driven by a particular type of firm, we re-perform our analyses according to the level of innovation. Specifically, we split my sample on firms with high (low) research and development expenses and with a high (low) level of intangibles assets to define innovative (non-innovative) SMEs. We also re-perform our analyses by excluding high-tech firms from our sample. Untabulated results are similar to our core findings. These findings support the conjecture that Twitter is effective in increasing SMEs' visibility, irrespective of the level of firms' innovation. In addition, SMEs with different levels of innovation have similar opportunistic disclosure strategies on Twitter before releasing bad news at EA. We therefore address the concerns of Blankespoor et al. (2013) that Twitter is effective only for firms operating in innovative and high technology industries.

6. Robustness Tests

6.1. Firms' Characteristics and Investors' Attention: An Endogenous Relationship?

The relationship between investors' attention and companies' activity on social media may be endogenous to firms' decisions to use and be active on social media. Certain firms' characteristics may lead SMEs to have the same level of investor attention, irrespective of their Twitter use. To address this potential endogeneity concern and corroborate our findings on the positive association between corporate social media use and investors' attention, we run three additional analyses.

First, we use a Propensity Matching Score procedure (PSM) based on a two-stage model. In the first stage, we calculate propensity score based on the predictive probability of being active on Twitter before EA. For each SMEs active on Twitter, we find a matched control company (no replacement) choosing among SMEs non-active on Twitter and that have closest propensity score 0.001 level. We match companies on firms' characteristics associated with media activity. Smaller size companies (*SIZE*) could decide to be more active on social media than large firms to compensate their limited alternative media coverage. However, social media may be more widespread among bigger companies given the larger availability of resources for communication departments. The market-to-book ratio (*MTB*) is representative of firm's growth. High-growth firms may want to increase their visibility by using social media to attract new investors and support their growth. Firms with higher leverage (*LEV*) may want to engage on social media in order to mitigate creditors' and stakeholders' concerns about their activities. High presence of intangible assets (*INTANG*) may indicate firms with more complex and uncertain activities. This type of firm would engage on social media to explain their business, and reduce the agency costs associated with information asymmetry. We then turn our attention to the information environment. Firms may compensate lower analyst following (*ANALYSTS*) with more intense use of social media. Firms operating in high litigation risk industries (*LIT_RISK*) may be more prudent in using social media to reduce their risk of potential lawsuits or class actions that may result from their social media communication. We include level of

advertising expenses to account for firms using Twitter for marketing purposes, e.g., retail firms. Finally, we include *BAD_NEWS* to account for the idea that companies adapt their social media communication to the content of EA.

In the second stage, we test the impact of social media activity on investors' attention by using the matched sample from the first stage. The results are reported in Panel A of Table 7 and are very similar to our core results. We thus mitigate concerns that the findings reflect firms' characteristics associated with the decision to use social media rather than the influence of SMEs' social media activity on investors' attention.

Secondly, we focus on the set of firms that adopt social media at a certain time in the period analyzed. In this way, we provide evidence at firm level of the incremental effect of social media on firms by comparing the period prior to adoption of social media with the period afterwards. We re-examine the association between the activity on Twitter before EA and investors' attention at EA.

The results are reported in Panel B of Table 7 and they are very similar to the findings previously reported in Tables 4. We find that activity on Twitter and tweets containing financial information before EA are positively associated with investors' attention at EA. These results are robust to the different measures of investors' attention.

Third, we conduct a placebo test in which we re-define the event date. We re-estimate Eq. (1) and (2) by computing investors' attention 30 days prior the EA for both the treatment firms, i.e., firms active on Twitter before EA, and the control firms, i.e., other firms. This analysis attempts to mitigate the concern that the treatment firms constantly have higher investors' attention compared with control firms due to firm characteristics.

Panel C of Table 7 shows no significant difference with regards to investors' attention between treatment and control firms in the new event date. Our findings indicate that the activity on social media before EA leads firms to increase their investors' attention at EA.

[INSERT TABLE 7 ABOUT HERE]

6.2. *Definition of SMEs*

To assess the sensitivity of our analysis to the definition of SMEs, we also use an alternative proxy to define small and medium firms. We re-perform Eq. (1) – (3) for firms with total assets lower than €100 million. Untabulated results are very similar to our main findings.

7. **Conclusion**

This study documents the relevance and use of corporate social media by SMEs around EA. SMEs are usually distinguished by high uncertainty low external media and analyst coverage. Social media allow SMEs to communicate directly to investors at a low cost, without intermediaries, and in real time. However, the use of Twitter may simply lead to information overload. SMEs' tweets may have little visibility due to the millions of tweets daily released.

We investigate SMEs listed on the AIM London during the period 2008-2015. We document the positive impact of Twitter use before EA on investors' attention towards SMEs. We find that the activity on Twitter and the financial content of the tweets before EA are positively associated with various measures of investors' attention at EA. We then show that managers exploit investors' limited attention by adopting opportunistic disclosure strategies on social media. SMEs appear to understand the benefits of being active on Twitter with regards to investors' recognition. They tend to remain silent on Twitter, especially about financial information, when they are about to disclose bad news, i.e., poor financial results, at EA.

We then document that SMEs with low external coverage, i.e., low traditional media coverage and analyst following, particularly benefit from Twitter use in terms of investor attention. They are also more likely to disclose opportunistically on Twitter before bad news compared with

SMEs with a higher external coverage. Finally, the dissemination of tweets on Bloomberg Terminal increases both firms' visibility and the incentives to SMEs to communicate strategically.

This paper is informative about the role of social media in broadcasting information to investors. Despite the large spread of these media and the advanced level of research in other fields (e.g., computer science and marketing), accounting research still lags behind (Miller and Skinner 2015). Our results provide insights into SMEs. They suggest that use of corporate social media in the period before EA contributes to increase SMEs' visibility, in particular in the presence of limited external coverage. They also indicate that investors are sensitive to both the quantity and the content of messages released on social media. Finally, our results are informative to investors in understanding SMEs' communication strategies on social media. We show that SMEs act strategically when they are about to disclose bad news by remaining silent, especially about financial information.

Future research could extend these results by looking at the adoption of other social media platforms, e.g., YouTube and Instagram. The use of videos and pictures could provide further insight into firms' potential to attract investors' attention. Future studies could also focus on the use of corporate social media around other corporate events, such as mergers and acquisitions, restatements or regulatory investigations. Social media may bring additional value to mergers and acquisitions that may not necessarily be reflected in the fundamentals.

Appendix A – Examples of Twitter messages disclosing material information

 **Abzena**
@AbzenaGroup  

#Abzena expects revenue flows as humanised antibodies enter clinical development -
[@AbzenaGroup](#) tinyurl.com/l42eo2b via
[@proactive_uk](#)

 Visualizza traduzione



Abzena expects revenue flows as proprietary antibodies enter clinical develo...
AIM listed life sciences technology company, Abzena (LON:ABZA), reports a series of positive developments for its composite human antibodies. CEO,...

proactiveinvestors.co.uk

 **Abzena**
@AbzenaGroup  

SHARE TIPS: Abzena bucks the biotech trend as it generates revenue daily.ai/1vSe0ie via
[@ThisIsMoney](#)

 Visualizza traduzione



SHARE TIPS: Abzena bucks the biotech trend as it generates revenue
Its technologies and pre-clinical services enable biopharmaceutical companies to produce better and hopefully more efficacious drug candidates.

thisismoney.co.uk

 **Brady Plc**
@Bradyplc



 Segui

Brady expects earnings to be up by 40% | 23
January 2013 | Stock Market Wire
shar.es/Ctul2 via [@sharethis](https://twitter.com/sharethis)

 Visualizza traduzione

04:10 - 24 gen 2013



 **Brady Plc**
@Bradyplc

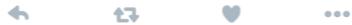


 Segui

Hwange earnings up, sees strong domestic
[#coal](https://twitter.com/#coal) demand <http://reut.rs/flu7Jq>

 Visualizza traduzione

04:45 - 31 mar 2011



 **Akers Biosciences**
@AkersBio

 Segui



We're holding a conference call at 10:30am
ET Mon 23 March to discuss 2014 earnings.
See bit.ly/1ExHAKu for dial-in info. **\$AKER**
\$AKR

 Traduci dalla lingua originale: inglese

07:22 - 19 mar 2015

1 Retweet 1 Mi piace



Appendix B – Variable Measurement

B.1. Measures of investors' attention

Abnormal trading volume is defined as the difference between the average log number of shares traded from [0,1] day following the EA and the log of the trading volume over the preceding [40, 15] days (Boulland and Dessaint 2017).

$$TR_VOL_{k,d} = [\sum_{(0,1)} \log(VOL_{k,d+1})]/2 - [\sum_{(40,15)} \log(VOL_{k,d-1})]/26 \quad (b1)$$

where:

TR_VOL_t = abnormal trading volume during the two days [0,1] around EA in year t;

$VOL_{k,d}$ = number of shares traded on day d for company k;

Our second measure of investors' attention, absolute values of abnormal returns, is based on stock price reaction at EA. We compute abnormal returns as the difference between the absolute market-adjusted return during the two days [0,1] around EA date and the mean absolute market-adjusted return in the estimation period, divided by the standard deviation of the mean absolute market-adjusted return in the estimation period (Cready and Hurtt 2002; Bushee et al. 2011; Jung et al. forthcoming). Our estimation period is based on 35 calendar days. It begins 60 days before EA date and it ends 16 days prior to that date. Higher absolute values of abnormal returns reflect high investors' attention.

B.2. Measures of corporate social media use

Consistent with Blankespoor et al. (2013), we focus on Twitter to analyze corporate social media activity and the content of the messages. Twitter is considered the channel most used by investor relation departments to release financial information. We consider that a firm is active on social media if it releases at least one tweet in the period just before EA. We then look at the content of the tweets, focusing on financial information. The latter has been defined adapting the vocabulary defined by Lerman (2016). A Tweet is classified as related to financial information if it contains at least one of the words reported Table B1.

TABLE B1: Accounting word list

Term	Word
Accounting	Accountant Accounting CPA
Accrue	Accrual Accrue
AFS	AFS Available for sale
Analysts	Analyst estimate Earnings estimate
Asset	Asset
Audit	Audit Auditor
Bad debt	Bad debt Doubtful account Loan loss Uncollectible
Book value	Book value Carrying value Historical cost
BS	Balance sheet Position statement
Buyback	Buyback Repurchase
cash	Cash
Cash flow	Cash flow Cash flow statement
CI	Comprehensive income OCI
COGS	COGS Cost of goods Costs of sales
Contingent	Contingent gain Contingent liability Contingent loss
Control	Board Corporate governance Error Fraud Internal control Weakness
Covenant	Covenant
Current	Current ratio Quick ratio Working capital

Current report	Conference call Current report EA Earnings release
Defer	Defer, deferred Deferral
Depreciate	Amortization Amortize Depreciate Depreciation
Discontinue	Discontinue operations
Dividend	Dividend
Earnings	Earnings
EBIT	EBIT EBITDA
EPS	Earnings per share EPS Income per share, profit per share
Equity	Owners/shareholders/stockholders equity Paid in capital
Expense	Expense Expensed
Fair value	Fair market value, fmv Fair value Market-to-market Market
Financial instrument	Derivative Financial instruments
GAAP	Accounting IAS IFRS GAAP
Going concern	Going concern
Goodwill	Goodwill
Guidance	Earnings per share guidance Forward guidance Manager guidance Negative guidance Period guidance Positive guidance Revenue guidance
HTM	Held to maturity HTM
Impair	Charge off Impair Impairment Write down

	Write off
Income	Income from continuing Gross income Net income Operating income
Intangible	Intangible
Inventory	Inventory
IS	Income statement Operations statement PL statement
Lease	Lease Leaseback Leasehold
Leverage	Capital ratio Debt assets Debt equity Deleverage Leverage
Liability	Liability
MT	MTB Market book Times book
Marketable securities	Marketable securities
MDA	Management discussion MD&A
Minority interest	Minority interest Non controlling interest
OBS	OBS SPE Special purpose Variable interest
PE	Earnings multiple PE Price earnings
Payable	Accounts payable Notes payable Taxes payable
Pension	Pension expense Pension liability Pension obligation
Periodic report	Annual report Financial report Financial results Financial statement Footnotes Periodic report Quarterly report

PPE	Fixed assets Long lived assets PPE Property
Pro forma	Non gaap Pro forma
Profit	Gross profit Net profit Operating profit Profit margin
RD	R&D Research and development
Receivable	Receivable
Restate	Restate Restatement
Return on	Return on assets Return on equity ROA ROE
Revenue	Revenue Sales Top line
Securitize	Securitize
SGA	Selling general SG&A
Stock option	Backdating ESO Stock option
Unusual	Extraordinary gains Non recurring One time gain/loss/charge/item Special charge/item

Appendix C – Variables definition

Variable	Definition	Source
<u>Investors' attention variables</u>		
VOL_d	Share trading, measured as number of shares traded on day d for company k.	EIKON
TR_VOL_t	Abnormal trading volume during the two days [0,1] around EA in year t (see Appendix B).	EIKON
CAR_t	Absolute value of cumulative abnormal returns during the two days [0,1] around EA in year t (see Appendix B).	EIKON
<u>Social media variables</u>		
$PRESENCE_TW_t$	Twitter presence, dummy variable equal to 1 if the firm has a Twitter account at least two weeks before EA in year t, and 0 otherwise.	Hand-collected
$TWEETS_t$	Activity on Twitter, 1 if the firm releases at least one tweet during the three days [-3, -1] before EA in year t, and 0 otherwise (see Appendix B).	Python script
$FINANCIAL_TW_t$	Financial tweet, 1 if the firm releases at least one tweet containing financial information during the three days [-3, -1] before EA in year t, and 0 otherwise (See Appendix B).	Python script
$NON_FINANCIAL_TW_t$	Non-Financial tweet, 1 if the firm releases at least one tweet containing non-financial information when it releases tweets containing financial information during the three days [-3, -1] before EA in year t, and 0 otherwise (See Appendix B).	Python script
<u>Firm characteristics variables</u>		
$SIZE_t$	Firm's size, measured as the natural logarithm of total revenues in year t.	EIKON
$ASSETS_t$	Total assets in year t (in thousand €).	EIKON
MTB_t	Market-to-book value in year t.	EIKON
ROA_t	Return on Assets, measured as net income in year t divided by total assets in year t-1.	
LEV_t	Leverage, measured by total liabilities in year t divided by total assets in year t-1.	EIKON
$R\&D_t$	Research and development expense, dummy variable equal to 1 if a firm's R&D expenses in year t scaled by total assets in year t-1 are above industry-year median, and 0 otherwise	EIKON
$INTANG_t$	Intangible assets, measured as total intangible assets in year t	EIKON

	scaled by total assets in year t-1.	
<i>ADV_t</i>	Advertising expenses, measured as total advertising expenses in year t scaled by total assets, and 0 otherwise.	EIKON
<i>LIT_RISK_t</i>	Litigation risk, dummy variable equal to 1 if a firm's industry is considered of high litigation risk (Ali and Kallapur 2001), and 0 otherwise.	EIKON
<i>ANALYSTS_t</i>	Analysts' coverage, measured as number of analyst following the firm in year t.	EIKON
<i>COVERAGE_t</i>	Analysts' coverage intensity, dummy variable equal to 1 if the number of analyst following the firm in year t is above industry-year median, and 0 otherwise in year t.	EIKON
<i>BIG4_t</i>	Audit, dummy variable equal to 1 if a firm's auditor is one of the Big-4 in year t, and 0 otherwise.	EIKON
<i>MEDIA_t</i>	Media press coverage, dummy variable equal to 1 if at least one business press article mentions a firm during the three days [-3, -1] before EA in year t, and 0 otherwise.	RavenPack
<i>BLOOM_t</i>	Bloomberg Terminal coverage, dummy variable equal to 1 if Bloomberg Terminal disseminate tweets in year t, and 0 otherwise.	
<i>BAD_NEWS_t</i>	Bad news, dummy variable equal to 1 if the change in Earnings Per Share (EPS) from year t to year t-1 divided by EPS in year t-1 is negative and smaller than -0.01, and 0 otherwise.	EIKON
<i>UE_t</i>	Unexpected earnings, dummy variable equal to 1 if the absolute value of the change in net income from year t-1 to year t, scaled by net income in year t-1 is above industry-year median, 0 otherwise.	EIKON

References

- Alexander, R. M., and J. K. Gentry. 2014. Using social media to report financial results. *Business horizons* 57 (2):161-167.
- Ali, A., and S. Kallapur. 2001. Securities price consequences of the Private Securities Litigation Reform Act of 1995 and related events. *The Accounting Review* 76 (3):431-460.
- Allee, K. D., and T. L. Yohn. 2009. The demand for financial statements in an unregulated environment: An examination of the production and use of financial statements by privately held small businesses. *The Accounting Review* 84 (1):1-25.
- Ball, R., and L. Shivakumar. 2008. Earnings quality at initial public offerings. *Journal of accounting and economics* 45 (2):324-349.
- Barber, B. M., and T. Odean. 2008. All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. *Review of financial studies* 21 (2):785-818.
- Bhagwat, V., and T. R. Burch. 2016. Pump it Up? Tweeting to Manage Investor Attention to Earnings News. *working paper*.
- Blankespoor, E., G. S. Miller, and H. D. White. 2013. The role of dissemination in market liquidity: Evidence from firms' use of Twitter™. *The Accounting Review* 89 (1):79-112.
- Bloomfield, R. J. 2002. The “incomplete revelation hypothesis” and financial reporting. *Accounting horizons* 16 (3):233-243.
- Boulland, R., and O. Dessaint. 2017. Announcing the announcement. *Journal of Banking & Finance* forthcoming.
- Burgstahler, D. C., L. Hail, and C. Leuz. 2006. The importance of reporting incentives: Earnings management in European private and public firms. *The Accounting Review* 81 (5):983-1016.
- Bushee, B. J., M. J. Jung, and G. S. Miller. 2011. Conference presentations and the disclosure milieu. *Journal of accounting research* 49 (5):1163-1192.
- Bushee, B. J., and C. Leuz. 2005. Economic consequences of SEC disclosure regulation: evidence from the OTC bulletin board. *Journal of accounting and economics* 39 (2):233-264.
- Bushee, B. J., and G. S. Miller. 2012. Investor relations, firm visibility, and investor following. *The Accounting Review* 87 (3):867-897.
- Cahan, R. H., S. F. Cahan, T. Lee, and N. H. Nguyen. 2015. Media Content, Accounting Quality, and Liquidity Volatility. *European Accounting Review*:1-25.
- Cready, W. M., and D. N. Hurtt. 2002. Assessing investor response to information events using return and volume metrics. *The Accounting Review* 77 (4):891-909.
- Da, Z., J. Engelberg, and P. Gao. 2011. In search of attention. *The Journal of Finance* 66 (5):1461-1499.
- DellaVigna, S., and J. M. Pollet. 2009. Investor inattention and Friday earnings announcements. *The Journal of Finance* 64 (2):709-749.
- Dietrich, J. R., S. J. Kachelmeier, D. N. Kleinmuntz, and T. J. Linsmeier. 2001. Market efficiency, bounded rationality, and supplemental business reporting disclosures. *Journal of accounting research* 39 (2):243-268.
- Doyle, J. T., and M. J. Magilke. 2009. The timing of earnings announcements: An examination of the strategic disclosure hypothesis. *The Accounting Review* 84 (1):157-182.
- Drake, M. S., J. Jennings, D. T. Roulstone, and J. R. Thornock. 2016. The comovement of investor attention. *Management Science* 63 (9):2847-2867.
- Drake, M. S., D. T. Roulstone, and J. R. Thornock. 2012. Investor information demand: Evidence from Google searches around earnings announcements. *Journal of Accounting Research* 50 (4):1001-1040.

- DuCharme, L. L., P. H. Malatesta, and S. E. Sefcik. 2001. Earnings management: IPO valuation and subsequent performance. *Journal of Accounting, Auditing & Finance* 16 (4):369-396.
- Francis, J., and K. Schipper. 1999. Have financial statements lost their relevance? *Journal of accounting research* 37 (2):319-352.
- Freel, M. S. 2005. Perceived Environmental Uncertainty and Innovation in Small Firms. *Small Business Economics* 25 (1):49-64.
- Gerakos, J., M. Lang, and M. Maffett. 2013. Post-listing performance and private sector regulation: The experience of London's Alternative Investment Market. *Journal of accounting and economics* 56 (2):189-215.
- Gervais, S., R. Kaniel, and D. H. Mingelgrin. 2001. The high-volume return premium. *Journal of Finance* 56 (3):877-919.
- Hirshleifer, D., S. S. Lim, and S. H. Teoh. 2009. Driven to distraction: Extraneous events and underreaction to earnings news. *The Journal of Finance* 64 (5):2289-2325.
- Hirshleifer, D., and S. H. Teoh. 2003. Limited attention, information disclosure, and financial reporting. *Journal of accounting and economics* 36 (1):337-386.
- Hope, O. K. 2003. Disclosure practices, enforcement of accounting standards, and analysts' forecast accuracy: An international study. *Journal of accounting research* 41 (2):235-272.
- Hou, K., W. Xiong, and L. Peng. 2009. A tale of two anomalies: The implications of investor attention for price and earnings momentum. *working paper*.
- Jung, M. J., J. P. Naughton, A. Tahoun, and C. Wang. forthcoming. Do Firms Strategically Disseminate? Evidence from Corporate Use of Social Media. *The Accounting Review*.
- Kaplan, A. M., and M. Haenlein. 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons* 53 (1):59-68.
- Kothari, S., X. Li, and J. E. Short. 2009a. The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. *The Accounting Review* 84 (5):1639-1670.
- Kothari, S. P., S. Shu, and P. D. Wysocki. 2009b. Do managers withhold bad news? *Journal of accounting research* 47 (1):241-276.
- Lee, L. F., A. P. Hutton, and S. Shu. 2015. The role of social media in the capital market: evidence from consumer product recalls. *Journal of accounting research* 53 (2):367-404.
- Lerman, A. 2016. Individual investors' attention to accounting information: Message board discussions. *working paper*.
- McNichols, M., and P. C. O'Brien. 1997. Self-Selection and Analyst Coverage. *Journal of accounting research* 35:167-199.
- Merton, R. C. 1987. A simple model of capital market equilibrium with incomplete information. *The Journal of Finance* 42 (3):483-510.
- Meyers, C. B. 2011. 5 years ago today Twitter launched to the public. *The Next Web*.
- Miller, G. S. 2006. The press as a watchdog for accounting fraud. *Journal of accounting research* 44 (5):1001-1033.
- Miller, G. S., and D. J. Skinner. 2015. The evolving disclosure landscape: How changes in technology, the media, and capital markets are affecting disclosure. *Journal of accounting research* 53 (2):221-239.
- Newcomb, T. M. 1953. An approach to the study of communicative acts. *Psychological review* 60 (6):393.
- OECD. 2016. Entrepreneurship at a Glance 2016. Paris.
- Tetlock, P. C. 2007. Giving content to investor sentiment: The role of media in the stock market. *The Journal of Finance* 62 (3):1139-1168.

- Yuan, Y. 2015. Market-wide attention, trading, and stock returns. *Journal of financial economics* 116 (3):548-564.
- Zhou, M., L. Lei, J. Wang, W. Fan, and A. G. Wang. 2014. Social media adoption and corporate disclosure. *Journal of Information Systems* 29 (2):23-50.

TABLE 1: Sample definition

Table 1 provides the sample definition. It shows the criteria used to define the final sample. The sample period is 2008-2015. We obtained data from EIKON, I/B/E/S, and RavenPack. We excluded financial institutions using the Fama-French 12 industries classification.

Firm-year observations on the AIM London market from 2008 to 2015	8,794
<i>Less</i> firm-year observations from the financial and insurance industry	(1,411)
<i>Less</i> firm-year observations with negative equity	(994)
<i>Less</i> firm-year observations with total assets more than 250 employees	(1,714)
<i>Less</i> firm-year observations with unavailable data	(1,845)
<i>Final total number of firm-year observations</i>	<i>2,530</i>

TABLE 2: Descriptive Statistics

This table displays the summary statistics for the main variables used in this study. The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix C. All continuous variables are winsorized at 1%.

Panel A: Full sample

Panel A provides the summary statistics for the full sample included in the main test.

<i>VARIABLES</i>	(1) N	(2) Mean	(3) P25	(4) Median	(5) P75	(6) StDev
<i>TR_VOL</i>	2,530	0.709	0.305	0.900	0.912	0.600
<i>CAR</i>	2,530	0.064	0.022	0.079	0.080	0.052
<i>TWEETS</i>	2,530	0.367	0	0	1	0.469
<i>FINANCIAL_TW</i>	2,530	0.285	0	0	1	0.451
<i>NON_FINANCIAL_TW</i>	2,530	0.051	0	0	0	0.228
<i>PRESENCE_TW</i>	2,530	0.505	0	1	1	0.500
<i>SIZE</i>	2,530	6.971	5.043	8.533	9.784	3.839
<i>MTB</i>	2,530	0.319	0.049	0.133	0.384	0.431
<i>LEV</i>	2,530	0.305	0.122	0.266	0.450	0.222
<i>INTANG</i>	2,530	0.308	0.023	0.236	0.542	0.293
<i>ANALYSTS</i>	2,530	0.744	0	0	1	0.982
<i>ADV</i>	2,530	0.033	0.003	0.020	0.047	0.042
<i>BAD_NEWS</i>	2,530	0.541	0	1	1	0.498
<i>LIT_RIS</i>	2,530	0.157	0	0	0	0.364
<i>BIG4</i>	2,530	0.170	0	0	0	0.376
<i>ROA</i>	2,530	-0.199	-0.272	-0.066	0.037	0.449
<i>UE</i>	2,530	1.446	0.256	0.646	1.491	2.075

Panel B - Comparison of variables split based on social media presence

Panel B provides the summary statistics for the sample split based on social media presence. The significance of the difference in means is based on two-sided t-tests and is indicated as follows: *** p-value<0.01; ** p-value<0.05; * p-value<0.1. See variable definitions in Appendix C.

Variables	<i>PRESENCE_TW=1</i>						<i>PRESENCE_TW=0</i>						(13) Diff in means (1-0)
	(1) N	(2) Mean	(3) P25	(4) Median	(5) P75	(6) StDev	(7) N	(8) Mean	(9) P25	(10) Median	(11) P75	(12) StDev	
<i>TR_VOL</i>	1,287	0.789	0.713	0.900	0.916	0.470	1,243	0.625	0.062	0.599	1.083	0.701	0.164***
<i>CAR</i>	1,287	0.070	0.045	0.080	0.086	0.045	1,243	0.057	0.013	0.043	0.080	0.058	0.013***
<i>SIZE</i>	1,287	6.894	4.920	8.383	9.698	3.815	1,243	7.052	5.165	8.603	9.887	3.864	-0.158
<i>MTB</i>	1,287	0.366	0.0612	0.168	0.456	0.461	1,243	0.269	0.041	0.104	0.319	0.391	0.097***
<i>LEV</i>	1,287	0.325	0.128	0.287	0.484	0.234	1,243	0.284	0.112	0.251	0.413	0.206	0.041***
<i>INTANG</i>	1,287	0.313	0.018	0.244	0.555	0.303	1,243	0.303	0.029	0.230	0.530	0.281	0.010
<i>ANALYSTS</i>	1,287	0.529	0	0	1	0.864	1,243	0.966	0	1	1	1.045	-0.437***
<i>ADV</i>	1,287	0.036	0.002	0.020	0.052	0.047	1,243	0.030	0.004	0.019	0.044	0.035	0.006***
<i>BAD_NEWS</i>	1,287	0.493	0	0	1	0.500	1,243	0.590	0	1	1	0.492	-0.127***
<i>LIT_RIS</i>	1,287	0.158	0	0	0	0.365	1,243	0.156	0	0	0	0.363	0.002
<i>BIG4</i>	1,287	0.164	0	0	0	0.370	1,243	0.176	0	0	0	0.381	-0.012
<i>ROA</i>	1,287	-0.224	-0.296	-0.082	0.033	0.493	1,243	-0.173	-0.250	-0.055	0.043	0.396	-0.051**
<i>UE</i>	1,287	1.468	0.265	0.675	1.546	2.045	1,243	1.423	0.242	0.614	1.410	2.105	0.045

Panel C: Correlation Matrix

Panel C reports Pearson's correlation coefficients for the full sample.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) <i>TR_VOL</i>	1															
(2) <i>CAR</i>	0.313	1														
(3) <i>TWEETS</i>	0.167	0.169	1													
(4) <i>FINANCIAL_TW</i>	0.184	0.178	0.844	1												
(5) <i>NON_FINANCIAL_TW</i>	-0.017	-0.011	0.347	-0.152	1											
(6) <i>SIZE</i>	0.108	-0.012	-0.118	-0.172	0.110	1										
(7) <i>MTB</i>	0.077	0.094	0.119	0.116	0.017	-0.096	1									
(8) <i>LEV</i>	0.111	0.045	0.024	-0.012	0.081	0.470	0.278	1								
(9) <i>INTANG</i>	0.010	-0.009	0.009	0.008	0.009	-0.094	-0.082	-0.042	1							
(10) <i>ANALYSTS</i>	-0.011	-0.120	-0.316	-0.365	0.064	0.191	-0.202	-0.009	0.003	1						
(11) <i>ADV</i>	0.141	0.052	-0.015	-0.055	0.079	0.090	0.312	0.165	-0.106	0.032	1					
(12) <i>BAD_NEWS</i>	-0.020	-0.027	-0.075	-0.079	-0.002	-0.011	0.016	0.006	0.015	-0.036	0.022	1				
(13) <i>LIT_RISK</i>	-0.003	-0.019	-0.032	-0.043	0.019	0.029	0.024	-0.081	-0.116	0.083	0.054	0.033	1			
(14) <i>BIG4</i>	-0.031	-0.027	-0.010	-0.031	0.033	0.068	-0.063	0.055	-0.035	0.055	-0.058	-0.007	-0.004	1		
(15) <i>ROA</i>	0.041	-0.089	-0.097	-0.124	0.052	0.329	-0.330	-0.006	0.087	0.147	-0.063	0.056	-0.046	-0.003	1	
(16) <i>UE</i>	0.011	0.008	-0.007	-0.003	-0.006	0.083	-0.036	0.078	-0.016	-0.000	-0.040	-0.147	-0.052	0.016	-0.087	1

TABLE 3: Social Media Disclosure and Investors' Attention

Table 3 reports the results of the test of the relation between social media use before EA (*TWEETS* and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA. Variables are defined in Appendix C. All continuous variables are winsorized at 1%. Models are estimated using a pooled regression specification over the period 2008-2015. The test is performed on the full sample. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively. Standard errors corrected for industry- and year-level clustering in parentheses.

Panel A – Social Media Use and Investors’ Attention

Panel A reports the results of the test of the relation between Twitter use before EA (*TWEETS*) and two measures of investors’ attention (*TR_VOL*, and *CAR*) measured at EA. We used model (1):

$$\begin{aligned}
 INV_ATT_{i,t} = & \alpha_0 + \alpha_1 TWEETS_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 MTB_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 INTANG_{i,t} + \alpha_6 ADV_{i,t} \\
 & + \alpha_7 ANALYSTS_{i,t} + \alpha_8 BIG4_{i,t} + \alpha_9 LIT_RISK_{i,t} + \alpha_{10} BAD_NEWS_{i,t} + \alpha_{11} ROA_{i,t} + \alpha_{12} UE_{i,t} \\
 & + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \Omega_{i,t}
 \end{aligned}
 \tag{1}$$

Variables	Full sample		Only firms on Twitter	
	(1) <i>TR_VOL</i>	(2) <i>CAR</i>	(3) <i>TR_VOL</i>	(4) <i>CAR</i>
<i>TWEETS</i>	0.246*** (0.063)	0.016*** (0.002)	0.215** (0.095)	0.014*** (0.003)
<i>SIZE</i>	0.013* (0.007)	0.000 (0.000)	0.004 (0.004)	0.000 (0.000)
<i>MTB</i>	0.041 (0.040)	0.004*** (0.001)	-0.008 (0.031)	0.003 (0.003)
<i>LEV</i>	0.080 (0.050)	0.000 (0.006)	-0.014 (0.001)	-0.001 (0.007)
<i>INTANG</i>	0.067** (0.033)	0.001 (0.004)	-0.013 (0.020)	-0.003 (0.004)
<i>ANALYSTS</i>	-0.006 (0.015)	-0.003*** (0.001)	0.003 (0.029)	-0.005** (0.002)
<i>ADV</i>	0.080*** (0.020)	0.005 (0.005)	0.043* (0.026)	0.002 (0.004)
<i>BAD_NEWS</i>	-0.022 (0.031)	-0.001 (0.003)	-0.020 (0.022)	-0.001 (0.002)
<i>LIT_RISK</i>	-0.030* (0.017)	-0.010*** (0.001)	-0.106*** (0.000)	-0.013*** (0.004)
<i>BIG4</i>	0.024 (0.046)	-0.003** (0.001)	-0.015 (0.024)	-0.003 (0.004)
<i>ROA</i>	0.041** (0.020)	-0.007** (0.004)	0.034 (0.026)	-0.003 (0.003)
<i>UE</i>	0.004 (0.006)	0.000 (0.001)	0.002 (0.005)	0.001 (0.001)
Constant	0.653 (0.001)	0.059 (0.002)	0.827*** (0.022)	0.079*** (0.007)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	2,530	2,530	1,287	1,287
Adj. R-squared	0.118	0.061	0.147	0.073

Panel B - Social Media Content and Investors' Attention

Panel B reports the results of the test of the relation between tweets containing financial information before EA (*FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA. We used model (2):

$$\begin{aligned}
 INV_ATT_{i,t} = & \alpha_0 + \alpha_1 FINANCIAL_TW_{i,t} + \alpha_2 NON_FINANCIAL_TW_{i,t} + \alpha_3 SIZE_{i,t} + \alpha_4 MTB_{i,t} + \alpha_5 LEV_{i,t} \\
 & + \alpha_6 INTANG_{i,t} + \alpha_7 ADV_{i,t} + \alpha_8 ANALYSTS_{i,t} + \alpha_9 BIG4_{i,t} + \alpha_{10} LIT_RISK_{i,t} + \alpha_{11} BAD_NEWS_{i,t} \\
 & + \alpha_{12} ROA_{i,t} + \alpha_{13} UE_{i,t} + Industry\ Fixed\ Effects + Year\ Fixed\ Effects + \Omega_{i,t} \quad (2)
 \end{aligned}$$

Variables	Full sample		Only firms on Twitter	
	(1) <i>TR_VOL</i>	(2) <i>CAR</i>	(3) <i>TR_VOL</i>	(4) <i>CAR</i>
<i>FINANCIAL_TW</i>	0.305*** (0.064)	0.018*** (0.002)	0.301*** (0.088)	0.018*** (0.003)
<i>NON_FINANCIAL_TW</i>	-0.014 (0.074)	0.002* (0.004)	-0.003 (0.067)	0.001 (0.005)
<i>SIZE</i>	0.014* (0.007)	0.000 (0.000)	0.006* (0.003)	0.001 (0.000)
<i>MTB</i>	0.042 (0.039)	0.004*** (0.001)	-0.004 (0.030)	0.003 (0.002)
<i>LEV</i>	0.082 (0.055)	0.000 (0.006)	-0.001 (0.043)	0.000 (0.008)
<i>INTANG</i>	0.071** (0.035)	0.001 (0.004)	-0.007 (0.026)	-0.003 (0.004)
<i>ANALYSTS</i>	0.007 (0.017)	-0.002*** (0.001)	0.037 (0.029)	-0.003 (0.002)
<i>ADV</i>	0.094*** (0.018)	0.006 (0.005)	0.063** (0.025)	0.003 (0.004)
<i>BAD_NEWS</i>	-0.016 (0.027)	-0.001 (0.003)	-0.009 (0.020)	-0.000 (0.002)
<i>LIT_RISK</i>	-0.019 (0.018)	-0.009*** (0.001)	-0.090 (0.021)	-0.012*** (0.003)
<i>BIG4</i>	0.030 (0.045)	-0.003** (0.001)	-0.002 (0.026)	-0.003 (0.004)
<i>ROA</i>	0.046** (0.019)	-0.007* (0.004)	0.039* (0.020)	-0.003 (0.003)
<i>UE</i>	0.004 (0.006)	0.000 (0.001)	0.002 (0.004)	0.001 (0.001)
Constant	0.654 (0.032)	0.060 (0.006)	0.750*** (0.014)	0.076*** (0.006)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	2,530	2,530	1,287	1,287
Adj. R-squared	0.130	0.064	0.178	0.080
F-test (<i>FINANCIAL_TW</i> – <i>NON_FINANCIAL_TW</i> =0)	0.319***	0.016***	0.304***	0.017***
f-statistics	(8.63)	(24.00)	(8.88)	(24.84)

TABLE 4: Social Media Disclosure Strategy

Table 4 reports the results of the test of the relation between social media use (*TWEETS* and *FINANCIAL_TW*) and bad news (*BAD_NEWS*). The sample selection procedures are summarized in Table 1, and the variables are defined in Appendix C. All continuous variables are winsorized at 1%. Models are estimated using a pooled regression specification over the period 2008-2015. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively. Standard errors corrected for industry- and year-level clustering in parentheses. We use model (3):

$$SOC_MEDIA_USE_{i,t} = \alpha_0 + \alpha_1 BAD_NEWS_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 MTB_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 INTANG_{i,t} + \alpha_6 ANALYSTS_{i,t} + \alpha_7 ADV_{i,t} + \alpha_8 LIT_RISK_{i,t} + \text{Industry Fixed Effects} + \text{Year Fixed Effects} + \Omega_{i,t} \quad (3)$$

<i>Variables</i>	(1) <i>TWEETS</i>	(2) <i>FINANCIAL_TW</i>	<i>Test of difference</i> [chi2]
<i>BAD_NEWS</i>	-0.053*** (0.016)	-0.069*** (0.019)	-0.016*** [18.12]
<i>SIZE</i>	-0.010*** (0.002)	-0.018*** (0.004)	
<i>MTB</i>	0.012* (0.009)	0.008 (0.005)	
<i>LEV</i>	-0.062 (0.091)	-0.086 (0.165)	
<i>INTANG</i>	-0.017 (0.016)	-0.031 (0.032)	
<i>ANALYSTS</i>	-0.188*** (0.018)	-0.247*** (0.013)	
<i>ADV</i>	-0.001 (0.001)	-0.001* (0.001)	
<i>LIT_RISK</i>	-0.021 (0.019)	-0.049 (0.040)	
<i>Constant</i>	1.076 (0.022)	1.180 (0.001)	
Industry FE	YES	YES	
Year FE	YES	YES	
Observations	1,287	1,287	
Pseudo R-squared	0.219	0.348	

TABLE 5: Information Environment, Social media content and Investors' Attention

Table 5 reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA, conditional to the information environment. It also includes the test of Twitter communication strategy (*TWEETS* and *FINANCIAL_TW*) before the announcement of a bad news (*BAD_NEWS*) at EA. Variables are defined in Appendix C. All continuous variables are winsorized at 1%. Models are estimated using a pooled regression specification over the period 2008-2015. The test is performed on the full sample. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively. Standard errors corrected for industry- and year-level clustering in parentheses. We used models (1) - (3).

Panel A – Media Coverage and Investors' Attention

Panel A reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA when firms are partitioned into media covered firms and not covered ones (*MEDIA*). We used models (1) and (2). We report p-values from χ^2 -test of the difference in the coefficients for *TWEETS* and *FINANCIAL_TW* across the two groups for each partitioning variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>TR_VOL</i>		<i>CAR</i>		<i>TR_VOL</i>		<i>CAR</i>	
	<i>MEDIA</i>		<i>MEDIA</i>		<i>MEDIA</i>		<i>MEDIA</i>	
	<i>Not Covered</i>	<i>Covered</i>						
<i>TWEETS</i>	0.255*** (0.062)	-0.044 (0.136)	0.019*** (0.002)	0.016** (0.007)				
<i>Not Covered = Covered</i> [p-value]	[0.004]		[0.023]					
<i>FINANCIAL_TW</i>					0.294*** (0.062)	0.172 (0.129)	0.019*** (0.002)	-0.009 (0.010)
<i>Low = High</i> [p-value]					[0.088]		[0.306]	
Constant	0.505*** (0.049)	0.057*** (0.005)	0.467*** (0.033)	0.055*** (0.005)	0.555 (0.023)	0.101*** (0.024)	0.570 (0.001)	0.092*** (0.024)
<i>Controls</i>	YES							
Industry FE	YES							
Year FE	YES							
Observations	2,029	501	2,029	501	2,029	501	2,029	501
Adj. R-squared	0.111	0.208	0.065	0.068	0.120	0.209	0.071	0.061

Panel B – Analysts’ Coverage and Investors’ Attention

Panel B reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors’ attention (*TR_VOL*, and *CAR*) measured at EA when firms are split between low and high analysts’ coverage (*COVERAGE*). We used models (1) – (2). We report p-values from χ^2 -test of the difference in the coefficients for *TWEETS* and *FINANCIAL_TW* across the two groups for each portioning variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>TR_VOL</i>	<i>TR_VOL</i>	<i>CAR</i>	<i>CAR</i>	<i>TR_VOL</i>	<i>TR_VOL</i>	<i>CAR</i>	<i>CAR</i>
	<i>COVERAGE</i>		<i>COVERAGE</i>		<i>COVERAGE</i>		<i>COVERAGE</i>	
	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
<i>TWEETS</i>	0.285*** (0.064)	0.062 (0.078)	0.019*** (0.002)	0.007 (0.005)				
<i>Low = High [p-value]</i>	[0.000]		[0.006]					
<i>FINANCIAL_TW</i>					0.324*** (0.066)	0.189*** (0.035)	0.019*** (0.001)	0.017*** (0.003)
<i>Low = High [p-value]</i>					[0.000]		[0.157]	
Constant	0.413*** (0.034)	0.045*** (0.003)	0.380*** (0.016)	0.041*** (0.004)	-0.253** (0.118)	0.023** (0.010)	-0.233*** (0.063)	0.054*** (0.016)
<i>Controls</i>	YES	YES						
Industry FE	YES	YES						
Year FE	YES	YES						
Observations	1,795	735	1,795	735	1,795	735	1,795	735
Adj. R-squared	0.142	0.123	0.060	0.072	0.156	0.127	0.059	0.077

Panel C – External Coverage and Social Media Strategy

Panel C reports the results of the test of the relationship between social media use (*TWEETS* and *FINANCIAL_TW*) and bad news (*BAD_NEWS*) when firms are split into media covered firms and not covered ones (*MEDIA*), and low and high analyst following (*COVERAGE*). We used model (3). We report p-values from χ^2 -test of the difference in the coefficients for *BAD_NEWS* across the two groups for each portioning variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>TWEETS</i>	<i>TWEETS</i>	<i>FINANCIAL_TW</i>	<i>FINANCIAL_TW</i>	<i>TWEETS</i>	<i>TWEETS</i>	<i>FINANCIAL_TW</i>	<i>FINANCIAL_TW</i>
	<i>MEDIA</i>		<i>MEDIA</i>		<i>COVERAGE</i>		<i>COVERAGE</i>	
	<i>Not Covered</i>	<i>Covered</i>	<i>Not Covered</i>	<i>Covered</i>	<i>Low</i>	<i>High</i>	<i>Low</i>	<i>High</i>
<i>BAD_NEWS</i>	-0.217** (0.096)	-0.022 (0.247)	-0.322*** (0.110)	-0.161 (0.259)	-0.415*** (0.175)	-0.107 (0.106)	-0.612*** (0.205)	-0.210** (0.103)
<i>Not Covered = Covered</i> [p-value]	[0.081]		[0.000]					
<i>Low = High</i> [p-value]					[0.035]		[0.000]	
Constant	1.275*** (0.203)	-0.330 (0.599)	1.306*** (0.146)	-2.455** (0.930)	0.079 (0.364)	1.240*** (0.198)	-0.372 (0.439)	1.211*** (0.192)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,109	165	1,109	165	359	928	359	928
Pseudo R-squared	0.154	0.175	0.246	0.140	0.071	0.106	0.136	0.134

TABLE 6: Information Dissemination, Social media content and Investors' Attention

Table 6 reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA, conditional to Bloomberg Terminal initial coverage of tweets (*BLOOM*). It also includes the test of Twitter communication strategy (*TWEETS* and *FINANCIAL_TW*) before the announcement of a bad news (*BAD_NEWS*) at EA. Variables are defined in Appendix C. All continuous variables are winsorized at 1%. Models are estimated using a pooled regression specification over the period 2008-2015. The test is performed on the full sample. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively. Standard errors corrected for industry- and year-level clustering in parentheses. We used models (1) - (3).

Panel A – Tweets Dissemination on Bloomberg Terminal and Investors' Attention

Panel A reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA when firms are split into before and after Bloomberg Terminal started including Tweets in their broadcast (*BLOOM*). We report p-values from χ^2 -test of the difference in the coefficients for *TWEETS* and *FINANCIAL_TW* before and after integration of tweets into Bloomberg Database.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>TR_VOL</i>	<i>TR_VOL</i>	<i>CAR</i>	<i>CAR</i>	<i>TR_VOL</i>	<i>TR_VOL</i>	<i>CAR</i>	<i>CAR</i>
	<i>BLOOM</i>		<i>BLOOM</i>		<i>BLOOM</i>		<i>BLOOM</i>	
	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>
<i>TWEETS</i>	0.242*** (0.049)	0.262*** (0.043)	0.018*** (0.004)	0.015*** (0.005)				
<i>Before = After [p-value]</i>	[0.623]		[0.582]					
<i>FINANCIAL_TW</i>					0.263*** (0.051)	0.363*** (0.037)	0.021*** (0.003)	0.016*** (0.004)
<i>Before = After [p-value]</i>					[0.040]		[0.224]	
Constant	0.419*** (0.119)	0.179 (0.240)	0.060*** (0.024)	0.067*** (0.026)	0.401*** (0.118)	0.156** (0.217)	0.058*** (0.024)	0.068*** (0.004)
<i>Controls</i>	YES							
Industry FE	YES							
Year FE	YES							
Observations	1,623	907	1,623	907	1,623	907	1,623	907
Adj. R-squared	0.077	0.167	0.051	0.050	0.081	0.200	0.054	0.074

Panel B – Tweets Dissemination on Bloomberg Terminal and Social Media Strategy

Panel B reports the results of the test of the relationship between social media use (*TWEETS* and *FINANCIAL_TW*) and bad news (*BAD_NEWS*) when firms are split into before and after Bloomberg Terminal started including Tweets in their broadcast (*BLOOM*). We used model (3). We report p-values from χ^2 -test of the difference in the coefficients for *BAD_NEWS* before and after integration of tweets into Bloomberg Database.

<i>Variables</i>	(1)	(2)	(3)	(4)
	<i>TWEETS</i>	<i>TWEETS</i>	<i>FINANCIAL_TW</i>	<i>FINANCIAL_TW</i>
	<i>BLOOM</i>	<i>BLOOM</i>	<i>BLOOM</i>	<i>BLOOM</i>
	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>
<i>BAD_NEWS</i>	-0.209 (0.131)	-0.116* (0.111)	-0.268** (0.099)	-0.297*** (0.097)
<i>Before = After</i> <i>[p-value]</i>		[0.065]		[0.000]
Constant	1.450*** (0.153)	1.066*** (0.086)	1.444 (0.088)	1.212 0.216
<i>Controls</i>	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	696	591	696	591
Pseudo R-squared	0.214	0.098	0.301	0.206

TABLE 7: Identification Analysis

Table 7 reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA. Variables are defined in Appendix C. All continuous variables are winsorized at 1%. Models are estimated using a pooled regression specification over the period 2008-2015. The test is performed on the full sample. ***, **, and * indicate significance level at the 1%, 5%, and 10% level, respectively. Standard errors corrected for industry- and year-level clustering in parentheses. We used models (1) and (2).

Panel A – Propensity Score Matching

Panel A reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA using a one-to-one matching sample based on firms' characteristics using the nearest neighbor algorithm without replacement of propensity score matching.

<i>Variables</i>	(1) <i>TR_VOL</i>	(2) <i>CAR</i>	(3) <i>TR_VOL</i>	(4) <i>CAR</i>
<i>TWEETS</i>	0.290*** (0.038)	0.017*** (0.002)		
<i>FINANCIAL_TW</i>			0.296*** (0.044)	0.017*** (0.003)
Constant	0.782*** (0.049)	0.047*** (0.004)	0.598*** (0.052)	0.047*** (0.007)
<i>Controls</i>	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	1,318	1,318	1,092	1,092
Adj. R-squared	0.171	0.091	0.187	0.092

Panel B – Pre- and Post- Social Media Adoption

Panel B reports the results of the test of the relation between Twitter use before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at EA for the sub-sample of firms opening a Twitter accounting during the period analyzed (2008-2015).

<i>Variables</i>	(1) <i>TR_VOL</i>	(2) <i>CAR</i>	(3) <i>TR_VOL</i>	(4) <i>CAR</i>
<i>TWEETS</i>	0.259*** (0.065)	0.017*** (0.003)		
<i>FINANCIAL_TW</i>			0.325*** (0.069)	0.020*** (0.003)
Constant	0.398 (0.001)	0.069*** (0.006)	0.398*** (0.001)	0.070*** (0.005)
<i>Controls</i>	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	1,703	1,703	1,703	1,703
Adj. R-squared	0.130	0.068	0.151	0.074

Panel C – Placebo Test

Panel C reports the results of the test of the relation between firms using Twitter before EA (*TWEETS*, and *FINANCIAL_TW*) and two measures of investors' attention (*TR_VOL*, and *CAR*) measured at 30 days before EA.

<i>Variables</i>	<i>Full Sample</i>				<i>Only firms on Twitter</i>			
	(1) <i>TR_VOL</i>	(2) <i>CAR</i>	(3) <i>TR_VOL</i>	(4) <i>CAR</i>	(5) <i>TR_VOL</i>	(6) <i>CAR</i>	(7) <i>TR_VOL</i>	(8) <i>CAR</i>
<i>TWEETS</i>	-0.004 (0.015)	0.002 (0.001)			0.017 (0.003)	0.002 (0.002)		
<i>FINANCIAL_TW</i>			0.017 (0.044)	0.002 (0.002)			0.052 (0.058)	0.004 (0.003)
Constant	0.148 (0.003)	0.041* (0.001)	-0.158 (0.012)	0.041*** (0.001)	-0.065 (0.113)	0.042 (0.002)	-0.098 (0.105)	0.040 (0.001)
<i>Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,530	2,530	2,530	2,530	1,287	1,287	1,287	1,287
Adj. R-squared	0.009	0.040	0.009	0.039	0.015	0.045	0.016	0.046