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Don't talk too bad!

Stock market reactions to bank corporate governance news

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Abstract

This paper investigates the effect of media talk on bank stock returns in response to corporate governance news. Using Loughran and McDonald's (2011) dictionary, we create four categories of word lists that define the positive/negative tone and degree of certainty/uncertainty of news. We document three relevant findings. First, negative news significantly affects bank stock returns. Second, media coverage and the degree of certainty of the news are associated with more severe stock market losses. Third, bank capital and risk-adjusted performance mitigate the effect of negative news on stock prices. Overall, our study suggests that media talk on bank corporate governance events is an important determinant of abnormal stock returns.

Keywords: *Corporate governance, bank, news, event study, text analysis*

JEL classification: G14; G21; G34

1. Introduction

The failure of effective corporate governance in financial institutions was one of the causes of prolonged financial instability and excessive risk taking in the global financial crisis (GFC; see Fahlenbrach and Stulz, 2011; Beltratti and Stulz, 2012), which led to an increase of bank default rates and systemic risk (Berger et al., 2016; Battaglia and Gallo, 2017). In the financial sector, poor governance poses a serious concern for financial stability. Banks, compared to other industries, can unload the costs of excess risk taking onto creditors and taxpayers (Macey and O'Hara, 2003; Laeven and Levine, 2009; Mehran et al., 2011). Since the numerous corporate scandals that arose during the GFC, regulators around the world have begun to require banks to implement new standards of governance, but corporate control mechanisms in financial intermediaries ultimately remain ineffective. Indeed, the existence of safety nets and incentives to become “too big to fail” expose the financial system to the accumulation of excessive risks, given the high probability of public intervention in the case of a crisis (Anginer et al., 2018).

The rise of new bank corporate governance practices has fueled research on the relationship between corporate governance, default risk, and financial stability (e.g., De Andres and Vallelado, 2008; Aebi et al., 2012; Anginer et al., 2018; Cardillo et al., 2020). These papers look at how different governance structures influence individual bank risk and performance and systemic risk. However, the impact of poor bank corporate governance on shareholder value remains underinvestigated. More specifically, no one has provided extensive evidence of the impact of bank corporate governance news on financial markets. Surprisingly, not even the role that the media play in the transmission of such news to the market has been investigated in the literature, although this type of information could play a relevant role for financial stability.

In this paper, we provide empirical evidence about the size and timing distribution of stock market returns when the corporate governance news of banks is published by the media. In addition, we seek to analyze the role that the media play in communicating this news to the market.

The scarcity of empirical evidence on the relationship between governance news and financial markets is one of the main motivations of our paper. Past studies focus exclusively on nonfinancial firms and find that significant abnormal returns following the publication of corporate governance news depend on the kind of information and firm financial performance (Johnson et al., 2005; Carretta et al., 2011). In addition, our paper is motivated by the following considerations. First, the power of media in influencing stock markets through news coverage and communication tone (Tetlock, 2007; Engelberg and Parsons, 2011) can affect how investors perceive the risk, return, and reputation of an organization. According to Dyck et al. (2008), when the media talk about corporate governance issues, they can raise reputational costs—and market losses—in four ways: i) by increasing the probability of an action becoming public; ii) by using a negative slant in the communication and thus creating a sort of biased common knowledge; iii) by influencing the probability and type of legal intervention by the authorities; and iv) by affecting the extent of the penalty imposed by the public authorities. The broader the influence of the mass media and the stronger their legitimacy and credibility, the greater the reputational effect and market loss due to the news. Moreover, the media play both a passive role in making news a “mirror of reality,” and also an active role in fostering future corporate governance changes. By publishing bank corporate governance news, the media can influence the market’s perception of the risk of banks at the individual and systemic levels.

Second, the media is often biased in selecting and writing news. The media prefer to highlight poorly managed firms rather than well-managed ones (Core et al., 2008). Readers are generally more attracted by negative news, specifically sensationalism, displacement, and scandal (Darnton, 1975; Gibson and Zillman, 1994; Shoemaker and Reese, 1996), rather than positive news (Chan, 2003; Tetlock, 2007; Heston and Sinha, 2016). When the media dramatize content to draw attention to the news, they generate a distorted “wisdom of the crowd” and fuel inaccurate risk perceptions. In addition, mass media revenues depend on advertising rather than sales (Blasco and Sobbrío, 2012). Political connections, journalists’ and owners’ personal preferences, lobbying, and government influence can contribute to creating bias in news publications (Groseclose and Milyo, 2005;

Mullhainathan and Shleifer, 2005; Baron, 2006; Besley and Prat, 2006; Gentzkow and Shapiro, 2008). Therefore, the media can disseminate information that can potentially mislead investors in their financial decision making.

Following the literature on media sentiment, our goal is to provide evidence that the corporate governance news of banks has an impact on market returns. We also investigate whether the characteristics of news published by the media, as well as the characteristics of banks, can have a wide effect on market returns. We collect 3,125 corporate governance news items on US and European listed banks published by top-tier financial press sources from 2003 to 2013. We focus on press sources because, as suggested by Davis (2006), newspapers are the main source of information in the financial sector. Using the dictionary of Loughran and McDonald (2011, hereafter LM), we conduct content analysis to test whether the positive/negative tone and degree of certainty/uncertainty of the news influence stock market performance. Indeed, the measure of certainty of the news is one of the main novelties of our paper, which aims to capture the level of confidence or imprecision of information. More in detail, the certainty/uncertainty of news could provide information on the likelihood of subsequent economic outcomes (Loughran and McDonald, 2016). In other words, the certainty/uncertainty of news helps the market to discount the probability of an adverse corporate governance event in stock prices.

We then measure the impact of the publication of bank corporate governance news on stock markets and investigate whether the tone of the news affects market returns. Finally, we study whether abnormal returns are explained by media behavior, that is, media coverage and the degree of certainty of the news, the category of news, and the characteristics of banks.

As previous studies, our paper shows that media talk influences financial markets. We find evidence that stock markets react to negative corporate governance news, but not to positive or neutral news. In addition, our results show a greater impact of such news on the US stock market than on the European one. Furthermore, market losses due to negative news are mainly driven by the degree of certainty of the news, and moderated by the level of capitalization and risk-adjusted profitability.

This study makes three main contributions to the literature. First, to the best of our knowledge, this is a first attempt to study stock market reactions to bank corporate governance news. Since poor corporate governance affects the reputation of banks, media talk could play a role in fueling default and systemic risk. Second, we test whether stock markets are sensitive to an additional attribute of media talk, namely, the degree of certainty of the news. This provides new evidence on how stock markets react to the attributes of media slant, with a particular focus on certainty/uncertainty regarding a particular corporate event. Third, our analysis adopts a unique news dataset. Our sample consists of several categories of corporate governance news items published in the two largest financial markets over 11 years, including the GFC period. This offers new empirical evidence about market reactions to specific categories of news and contributes to the debate on the impact of media talk on stock markets. More generally, we also contribute to the literature on agency theory (Jensen and Meckling, 1976; Fama, 1980). Our research provides evidence on how stock markets discipline and penalize less virtuous banks in terms of their corporate control systems, processes, and practices.

The remainder of the paper is organized as follows. Section 2 describes the sample and research methods. Sections 3 and 4 present the results and robustness checks, respectively. Section 5 concludes the paper by summarizing the main evidence, explaining the implications of the study, and proposing ideas for future research.

2. Sample and methods

We conduct the analysis by employing three research methods. First, we investigate the characteristics of media talk on bank corporate governance by examining the positive/negative tone and degree of certainty/uncertainty of the news with content analysis. Second, we test the impact of the release of information on stock returns by conducting event studies. Third, we use linear regression analysis to investigate the relationship between cumulative abnormal returns (CARs), bank-specific variables, and the news attributes of media coverage, degree of certainty, and category.

2.1. Sample

Our initial sample consists of 891 US and European listed banks for which the Factiva database provides corporate governance news for the period 2003–2013. For each bank, we collect corporate governance news published by top-tier US and European financial news sources: Dow Jones Newswires, major news and publication outlets, Reuters newswires, *The Wall Street Journal*, *Financial Times*, and press release wires. We do not collect news from local media because market-relevant governance news about the publicly listed banks in our sample is immediately published by both national and international media. Top-tier news sources quote or use local news without being biased by the advertising interrelationships between firms and local media (Gurun and Butler, 2012). In the empirical application, we consider the information source by including news source fixed effects and the difference between non-independent and independent news items in a regression-based analysis.

We gather data on corporate governance news events that satisfy the following criteria: i) the news was not previously announced; ii) the news was published between January 1, 2003, and December 31, 2013; and iii) there were no obvious confounding events. Our final sample includes 3,125 corporate governance news items referring to 374 European and US listed banks.

We consider corporate governance news to include the following subcategories: boards of directors, executive pay, internal control, management moves, ownership changes, shareholder activism and female executives. We categorize each news event using Factiva's classification. When news could be classified into more than one category, we categorized it in a single category by reading the content and identifying the main issue.

Panel A of Table 1 shows the news classification according to the time horizon, geographic area, and type of event. The period 2003–2013 allows us to observe phenomena across the GFC. Panel A shows that the number of corporate governance news events involving banks increased from 2006 and continued to rise throughout the GFC. Although the number of news events concerning bank corporate governance is higher in the United States than in Europe, the most frequent topics are

the same in both areas, including boards of directors and the management moves of executive and non-executive directors. Panel B reports the news classification according to the newspaper publishing the news and the geographic area. It shows that about half of the news was published by Dow Jones Newswires. The *Financial Times* and *The Wall Street Journal* published fewer news items on bank corporate governance. Finally, Panel C reports the distribution of news according to the year, the number of banks, and other descriptive statistics. It shows that, during the GFC, both the number of corporate governance news items and the number of banks covered by the media increased. Stock price data are extracted from Datastream, and bank-specific variables from BankScope.

[Table 1 about here]

2.2. Content analysis

Content analysis is a relatively new and evolving technique commonly applied in computational linguistics research (Loughran and McDonald, 2016). We use the bag-of-words content analysis to measure the sentiment of news events. This method analyzes the meaning of text by assuming that the word order is irrelevant. Rather than focusing on word order, the bag-of-words method focuses on the number of words and word sentiment. The technique counts the number of words attributed to each word list (or dictionary), scaled by the total number of words in the document.

Researchers have used four main word lists to measure sentiment: Henry's (2008) glossary, the Harvard IV-4 dictionary, diction lists, and LM's business-specific glossary. We use LM's word lists, which are currently the most widely used in financial economics research (Kearney and Liu, 2014; Loughran and McDonald, 2016). Since its appearance in 2011, the LM list has largely replaced the Harvard IV-4 and diction lists in several areas of study, including stock market return prediction (Dougal et al., 2012; Garcia, 2013; Chen et al., 2014), mergers and acquisitions (Ahern and Sosyura, 2014), earnings conferences (Mayew and Venkatachalam, 2012), and initial public offerings (Ferris et al., 2013).

A growing stream of corporate governance studies tends to use the LM word lists as the sole reference for content analysis (Liu and McConnell, 2013; Liu et al., 2017). It is generally acknowledged that dictionaries that were not specifically designed for financial contexts sometimes misclassify business words (Li, 2010; Loughran and McDonald, 2015). For example, the Harvard IV-4 dictionary attributes negative connotations to words such as *board*, *vice*, *foreign*, *service*, and *charge*, but in the LM word lists, which were designed for financial contexts, these words are classified as neutral. Loughran and McDonald (2011) find that almost three-quarters of words classified as negative by Harvard IV-4 do not carry a negative connotation in finance. Loughran and McDonald (2015) show that many everyday words that are included in the lists of positive and negative words have neither a positive nor negative connotation in the financial context. Our paper therefore adopts only the LM word lists for the classification of words.

The LM word list captures diverse attributes of sentiment. We create word lists for the four following attributes: positive (354 words), negative (2,355), certain (203 words), and uncertain (297 words). Our lists of positive, negative, and uncertain words are the same as in the LM dictionary. Our list of certain words combines Loughran and McDonald's lists of "constraining" and "strong modal" words.

For each news item, we remove the headlines, dates, names, numbers, specific characters, punctuation, and website URLs. We define tone as the news' degree of positive or negative meaning. We measure an optimistic (or pessimistic) tone as $(P - N)/(TW)$, where P and N represent the numbers of positive and negative words, respectively, and TW represents the total number of words in the news item. Finally, we consider the news items to be neutral if the ratio is zero.

We define the degree of certainty or uncertainty of the news as $(C - U)/(TW)$, where C and U are the numbers of certain and uncertain words, respectively. We interpret the information as certain if this ratio is higher than zero, and uncertain if the ratio is lower than zero. In Appendix, we report an example of one news item for each word list used in the content analysis.

2.3. Event study

We investigate whether financial markets react to bank corporate governance news and whether such reactions vary according to the news items' positive/negative tone. We use the event study technique to measure the impact of corporate governance announcements on bank stock returns. This technique estimates abnormal returns following corporate governance news made available to the market on day t . The publication of corporate governance news explains changes in share prices. Abnormal returns are calculated as the difference between the real stock returns of bank i recorded on day t and the expected returns that the bank would have shown in the absence of the event. The expected returns are estimated using the three-factor model of Bekaert et al. (2014):

$$R_{i,t} = \alpha_i + \beta_i' F_t + \varepsilon_{i,t}, \quad (1)$$

where, for bank i on day t , $R_{i,t}$ is the stock return, α_i is the intercept, β_i is a three-dimensional vector of factor sensitivities, $F_t = [R_t^R, R_t^G, R_t^D]'$ is the factor vector composed by a regional (US or European) factor, a global factor, and a domestic factor, and $\varepsilon_{i,t}$ is the idiosyncratic component.

We adopt the model of Bekaert et al. (2014) for the estimation of the abnormal returns because banks have different business models - they can be more or less international - and, therefore, the systematic component of the returns is driven by all the components of the factor vector F_t .

The abnormal return ($AR_{i,t}$) due to the corporate governance announcement of bank i for day t is calculated as

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i' F_t). \quad (2)$$

The average abnormal return (\overline{AR}_t) on day t is measured as the average abnormal stock return for all n bank shares on day t :

$$\overline{AR}_t = \frac{1}{n} \sum_{i=1}^n AR_{i,t}. \quad (3)$$

We calculate the CAR for each stock i , $CAR_i(\tau_1, \tau_2)$, as the sum of the average abnormal returns for all days t in the event window:

$$CAR_i(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{i,t}. \quad (4)$$

Finally, we estimate the mean CARs in the event windows ($\overline{CAR}(\tau_1, \tau_2)$) by measuring the average CARs (τ_1, τ_2) for all n shares:

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{n} \sum_{i=1}^n CAR_i(\tau_1, \tau_2). \quad (5)$$

We test the statistical significance of the CARs. The first parametric test (T_1), as suggested by Campbell et al. (1997), tests the hypothesis that new information made available to the market does not affect the CARs:

$$T_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{[\hat{\sigma}^2(\tau_1, \tau_2)]^{\frac{1}{2}}} \approx N(0,1). \quad (6)$$

Harrington and Shrider (2007) demonstrate that T_1 can be biased in evaluating the statistical significance of CARs in the short term. To confirm the results obtained by T_1 , we conduct a nonparametric sign test (T_2), as suggested by Campbell et al. (1997) and MacKinlay (1997):

$$T_2 = \left[\frac{N^{(+/-)}}{N} - 0.5 \right] \frac{N^{\frac{1}{2}}}{0.5} \approx N(0,1), \quad (7)$$

where N is the number of events and $N^{(+/-)}$ is the number of events with a positive or negative CAR. The null hypothesis states that corporate governance announcements are not followed by statistically

significant CARs. Therefore, a significant number of positive/negative CARs leads to a rejection of the null hypothesis. We define a statistically significant CAR as one that passes both T_1 and T_2 .

2.4. Econometric model

To investigate the relationship between CARs following corporate governance news and news characteristics (media coverage, tone of communication, and category of news), we run block stepwise ordinary least squares (OLS) regressions with robust standard errors. Our equation takes the following form:

$$CAR_i = \alpha + \beta_1 X_i + \beta_2 \Omega_k + \beta_3 NEWSPAPER_FE_j + \beta_4 COUNTRY_FE_{i,j} + \beta_5 TIME_FE_{i,t} + \varepsilon_i$$

$$i = 1, \dots, N,$$
(8)

where i denotes the cross section of the news, t denotes the time, and j and k denote the country and bank, respectively. The dependent variable is the CAR that is derived from the event study results. We test three different models.

In Model 1, the term X is the vector of explanatory variables related to the following three news characteristics: i) media coverage (COVERAGE), that is, the number of positive and negative news items referring to the bank published in the previous 12 months; ii) the degree of certainty/uncertainty of the news (D_CERTAINTY); and iii) the category of information, proxied by seven dummy variables classified according to the list described in Section 2.1. Moreover, we investigate whether the relationship between media coverage and the degree of certainty of the news is nonlinear. Indeed, greater coverage and certainty related to a corporate governance event can lead stock markets to overreact in the short-term windows. In Model 2, we add the term Ω for bank-specific variables (i.e., size, capitalization, profitability, and efficiency). We measure bank size (SIZE) using the natural logarithm of total assets (Beccalli et al., 2006; Carretta et al., 2011; Birindelli and Ferretti, 2015). Bank capitalization and profitability are measured as equity over total assets (CAPITAL; see Avkiran and Morita, 2010) and the return on risk-weighted assets (RORWA),

respectively. We opt to use the return on risk-weighted assets rather than the more frequently used profitability ratio (e.g., return on average assets and return on average equity), because it reliably integrates profitability and risk into a single indicator (Agarwal and Taffler, 2008). Finally, we measure bank efficiency using the cost-to-income ratio (COST_INCOME) (Beccalli et al., 2006; Avkiran and Morita, 2010; Birindelli and Ferretti, 2015).

Finally, in Model 3, we consider newspaper source fixed effects and we add a press release dummy variable that takes the value of one if the news was written by an independent source of information, and zero otherwise. This helps us check whether the independence of the media contributes to influencing stock market reactions.

In all models, we include country and time fixed effects to control for the countries in which the banks are located and the period in which the news was published. All the dummy variables allow for capturing differences in time and country not explained by other variables. Table 2 summarizes the variables used in the empirical analysis.

[Table 2 about here]

3. Results

3.1. Event study results

To verify bank stock price reactions to corporate governance news, we carry out different analyses on the overall sample and on some subsamples. For the total sample, consisting of 3,125 corporate governance news items on 374 listed banks between 2003 and 2013, our evidence shows that all average CARs are negative in all the event windows. These results are not reported in a single table because none of them is statistically significant. This finding suggests that bank shareholders do not consider general corporate governance news in their investment assessments.

To investigate whether the tone of the news affects market reactions to bank corporate governance news, we subdivide our global sample into three subsamples: news characterized by a negative tone (1,034 items), a positive tone (1,272 items), and a neutral tone (819 items). For each

subsample, we conduct a Granger (1969) causality test. Our results do not show a statistically significant Granger causality link between stock returns and governance news.

[Table 3 about here]

Focusing on negative news (Table 3, Panel A), our results show negative and highly statistically significant mean CARs of -1.06%, -1.93%, and -1.35% in the event windows (-10, -1), (-5, -1), and (-3, -1), respectively. These findings cannot be explained by confounding events announced together with bank corporate governance news. As detailed in Section 2.1, such events were excluded from our database. Therefore, we interpret significant results before the event date as evidence that financial markets can anticipate corporate governance news characterized by a negative tone, as suggested by Carretta et al. (2011).

Furthermore, our results show that, when negative news is published, stock returns become more negative, since the mean CARs are equal to -1.25%, -0.88%, -1.77%, -2.81%, and -2.85% in the event windows (0, 10), (0, 5), (-3, 3), (-5, 5), and (-10, 10), respectively. Conversely, stock markets seem not to react to neutral and good corporate governance news, as demonstrated by the average CARs that are not statistically significant in all the event windows (Table 3, Panels B and C).

The results reported in Table 3 suggest that the tone of corporate governance news strongly impacts market returns: negative news seems to be informative, in contrast with positive and neutral news.

To investigate the potential impact of media tone, we create four different subsamples of news: very negative (517 words), slightly negative (517 words), very positive (636 words), and slightly positive (636 words). Positive/negative news is defined as slightly or very positive (negative) when the value of the tone ratio is below (above) the median of the same ratio.

[Table 4 about here]

Positive news is not statistically significant in any of the event windows (Table 4, Panels C and D). These results are consistent with the evidence shown in Table 3.

On the other hand, the impact of very negative news on bank stock returns appears to be relevant. Our evidence (Table 4, Panel A) shows negative and statistically significant results in the event windows both before and after Day 0. The event windows (0, 10), (0, 5), (-3, -1), and (-5, -1) show mean CARs equal to -1.90%, -1.99%, -2.02%, and -2.83%, respectively. Therefore, stock markets could anticipate bad corporate governance news, given that some CARs are statistically significant in the event windows before Day 0. The higher impact of very negative news on bank stock returns appears to be in the symmetric event windows (-10; 10), (-5; 5), and (-3; 3) that show statistically significant mean CARs equal to -5.04%, -4.82%, and -3.35%, respectively. Furthermore, slightly negative news (Table 4, Panel B) shows no statistically significant CARs in any of the event windows.

These findings confirm and strengthen previous results suggesting that the tone of corporate governance news strongly impacts stock market returns. Specifically, very negative news appears to be informative, whereas slightly negative news appears uninformative.

To investigate geographical differences within the sample, we subdivide negative-, positive-, and neutral-tone news referring to European and US banks. The information characterized by a positive or neutral tone does not show statistically significant coefficients (Table 5). However, there are large differences in the case of negative news. Focusing on European banks (Table 5, Panel B), our results show negative and statistically significant mean CARs of -1.58%, -0.89%, and -1.50% in the event windows (-5, -1), (-3, -1), and (-5, 5), respectively. Furthermore, US banks (Table 5, Panel A) show statistically significant abnormal returns in the event windows both before and after Day 0. The event windows (0, 10), (0, 5), (0, 3), (-5, -1), and (-10, -1) show mean CARs equal to -2.72%, -1.85%, -1.29%, -2.28%, and -1.14%, respectively. However, the higher significant results are registered in the symmetric event windows (-10, 10), (-5, 5), and (-3, 3), where the mean CARs are equal to -4.46%, -4.14%, and -3.10%, respectively.

These findings suggest that the financial market penalizes US banks for issuing negative corporate governance news more so than it does European banks. This could be because corporate

governance news received more attention in the United States than in Europe during the period under investigation.

[Table 5 about here]

3.2. Econometric results

3.2.1. Data description

To analyze stock market losses linked to negative corporate governance news, we use the CARs obtained from the event study analysis as dependent variables in regression models that refer to the symmetric event window (-5, 5) (Table 4, Panel A). We also use asymmetric event windows (-5, -1) and (0, +5). We focus our main analysis on the subsample of negative news (i.e., news with a negative tone) because, as reported in Panels C and D of Table 4, positive news never shows statistically significant CARs.

Table 6 reports the descriptive statistics. Our sample consists of banks showing sound capitalization, with an average ratio of equity over total assets equal to 6.66 and good bank efficiency, with an average cost-to-income ratio equal to 69.98%. In addition, most news appears certain. The average value of the risk-adjusted profitability ratio is positive (0.192); this result means that, during the period 2003–2013, the banks in our sample earned higher profits with the risk underwritten.

[Table 6 about here]

Table 7 reports the correlation matrix, which shows correlations between -0.007 and 0.475 among the explanatory variables. This means that the variables are suitable for further analysis.

[Table 7 about here]

3.2.2. Results

Table 8 reports the results of Models 1 to 3. Given that the degree of certainty of the news is unknown before its publication, we do not insert the corresponding variable in the regressions where the dependent variables are CARs observed in event windows prior to Day 0.

As far as news characteristics are concerned, Model 1 shows that the CARs in all three event windows under investigation are negatively affected by media coverage, and the effect is stronger and nonlinear as the number of news events published grows. Furthermore, the stock market reaction seems to be less negative in the case of news concerning executive pay. After the publication of a news event $(-5, 5; 0, 5)$, the degree of certainty shows a positive correlation with negative abnormal returns. Indeed, the effect on stock markets increases nonlinearly as the media use higher numbers of certain words in the news.

When we include bank characteristics (Model 2), media coverage does not show a significant relationship with CARs, while the degree of certainty maintains a significant nonlinear negative effect. This result suggests that the effect of more certain negative news on CARs is stronger as the certainty of the news increases. Both the *executive pay* and *management move* news categories show a positive and statistically significant relationship with CARs in the asymmetric event windows $(-5, -1)$ and $(0, 5)$. Looking at bank characteristics, we find evidence that capitalization moderates the negative effect on stock prices.

In addition to Model 2's explanatory variables, Model 3 includes newspapers fixed effects and press releases. The results confirm the previous evidence that the news in a bank's press release does not significantly affect its stock market return.

[Table 8 about here]

When we consider only news characteristics, the results show that the media's provision of firm-specific information could play a role in orienting stock markets. However, we find evidence that the effect is dispersed when we add bank characteristics, thereby supporting past research that argues that the media does not convey significant additional information to the market (e.g., Ahern and Sosyura, 2014). By contrast, we find strong evidence that, when the media use more words characterized by a higher degree of certainty when writing corporate governance news, the stock market absorbs more of the negative news. This effect increases proportionally according to the greater certainty of the news. Furthermore, we find that some news categories moderate the effect of

the market reaction, specifically regarding management moves or executive pay. By contrast, stock markets appear to be more sensitive to news about ownership change. News released directly by banks or the media does not influence stock markets. News spreads rapidly across different sources and markets, leading to nonsignificant differences among news providers.

As far as bank characteristics are concerned, bank capital reduces negative CARs in the case of negative news, confirming the importance of capital not only as an instrument of protection against losses, but also as a source of market value.

4. Robustness checks

To assess whether our findings are sensitive to the CAR calculation procedure, we compare our main estimation of CARs by using the Fama–French three-factor model. Data for US and European firms are extracted from the public database made available by French.¹ We focus the analysis on negative news, which appears to have a strong impact on bank stock returns. Our results are reported in Table 9.

[Table 9 about here]

The market returns using the Fama–French model support the previous results. Our findings show negative and highly statistically significant mean CARs of -1%, -1.2%, -0.8%, -3.7%, and -3.3% in the event windows (-10, -1), (-5, -1), (-3, -1), (-10, 10), and (-5, 5), respectively. This evidence is similar to that shown in Table 3, Panel A, and confirms that the tone of corporate governance news impacts stock market returns.

The analysis of very and slightly negative news (Table 9, Panels B and C, respectively) also strengthens our previous results. These findings, similar to those shown in Table 4, Panels A and B, respectively, suggest that very negative news appears to be informative and slightly negative news appears to be uninformative.

¹ See https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

We also test Model 3 on the subsample of very negative news (512 observations). The results are reported in Table 10. Our findings confirm that market returns are correlated to news and bank characteristics, especially with regard to the degree of certainty of the news.

[Table 10 about here]

We further test the robustness of our main model by running Models 1 to 3 using different estimations of CARs in the event windows (-10, 10), (-10, -1), and (0, 10). The results for negative news are reported in Table 11 and are consistent with our main findings.

[Table 11 about here]

With regard to news characteristics, we test our main model by introducing the interaction between the tone and certainty of the news, but the coefficients do not show any statistical significance. In addition, we include new categories, excluding press releases, and the results confirm our main findings.

For bank characteristics, we do not find any significant correlation with market returns when profitability is measured using a non-risk-adjusted ratio (return on average equity and return on average assets). By contrast, the total capital ratio and the tier 1 ratio confirm our findings with regard to capitalization.

According to the previous literature, the interaction between news and bank characteristics could affect market returns, since the tone of the news presented by the media could be correlated with the cross-sectional variance of banks in terms of their performance (Carretta et al., 2011). Moreover, we interact news characteristics (tone and degree of certainty, news categories) and bank performance but find no statistically significant correlation with market returns.

To check whether the geographic area influences our main findings, we first add the combined effect between news source and the geographic area the banks are from (Europe or the United States), but the results do not show any statistically significant relationship with market returns.² Second, we

² Results are available upon request.

introduce the differences among US and European countries, running an OLS regression on the total sample of 1,025 news items and on the subsample of very negative news, including the regulatory indicators proposed by Barth et al. (2013) and other variables aimed at explaining the financial system differences among the US and European macro areas. We include indicator variables for each country to account for differences across European Union countries in terms of their regulatory and financial system conditions (Barth et al., 2013).³ We do not find any significant correlation with market returns. The event study analysis suggests that, even if differences exist among countries, they are not explained by the regulatory indexes or financial system variables included in our analysis.

To control for a GFC effect, we include in Equation (8) a dummy variable (that equals one if the news was published after 2007, and zero otherwise), but it is not statistically significant.

Finally, the White/Koenker and Breusch–Pagan tests confirm that there is no heteroskedasticity in the residuals. Furthermore, we run a test of variance inflation factors (VIFs). In Model 3, explanatory variables related to newspaper sources show VIF values above 10. Thus, Model 2, which does not control for newspapers fixed effects, is preferable (Table 12).

[Table 12 about here]

5. Discussion and conclusions

What effect do media reports on corporate governance have on bank stock prices? What role does the media play in shaping stock market expectations for such corporate events? In this paper, we provide evidence of abnormal market returns. Further, we document that the way the media convey such information, through the specific tone and degree of certainty of the news, increases the strength of the stock market reaction.

³ We use several regulatory indexes. The Overall Financial Conglomerates Restrictiveness is a proxy for the retentiveness of domestic financial systems. The Capital Regulatory Index is a proxy for stringency, where higher values indicate greater stringency. The Private Monitoring Index measures whether there is an incentive/the ability for the private monitoring of firms, where higher values indicate greater private monitoring. With regard to financial system variables, we include the Z-score ratio as a proxy of the distance to default of the relative banking system, the stock market capitalization over the gross domestic product, and the Lerner index (which compares the output pricing to marginal costs) as a measure of the market power in the banking market.

Our findings support previous research showing that stock markets react significantly before, at the time of, and after the publication of negative news. By contrast, positive or neutral news is uninformative; although it could influence the perception of limited downside risk, such news does not provide any relevant information that should be immediately incorporated into stock prices. Further, we find evidence that financial markets react more to negative news in the United States than in Europe, but none of the institutional variables we test in our model specifications help to explain this difference across countries.

We find support for the prior literature showing that the media tend to focus mainly on badly managed firms (Core et al., 2008). Indeed, we verify that media coverage, the degree of certainty, and the specific category of news influence bank stock market performance in the case of negative market returns. Conversely, uncertain news appears not to have a significant effect on stock markets. Put differently, in the case of negative news, stock markets react to those news items that use more words related to attributes of certainty, but when the corporate governance event is related to management moves or executive pay and the content of the news is negative, the impact on stock prices is less severe.

With regard to the news source, we do not find evidence of a significant effect on negative market returns. We posit that, since news spreads so rapidly across markets, among top-tier sources, the origin of the news is irrelevant.

As acknowledged by previous research (Carretta et al., 2011), we also find that bank characteristics help to limit the effect of negative corporate governance news on stock prices. Specifically, bank capitalization and risk-adjusted performance are positively correlated with negative CARs. High capitalization and better performance help banks to be perceived as less risky by the market, incorporating limited downside risk in the stock price in the case of a negative corporate governance event.

Our results have several implications. First, stock market overreactions to negative and certain news imply that the market pays attention to sound and effective corporate governance mechanisms.

Banks are naturally opaque and subject to insiders' moral hazard, which seriously threatens their financial stability. Sound corporate governance practices, such as communication in the case of negative events, are essential to mitigate the impact on stock prices and reputational losses. In these terms, capital and performance can act as a defense against potential negative corporate events.

Second, banks should closely monitor media talk and use disclosure through press releases or social media to smooth any possible reputational risks linked to negative governance events. A disciplined governance disclosure policy would have two main benefits: i) it would enable investors to make more informed investment decisions and ii) the perception of greater transparency by market participants would lower the risk of financial instability.

Future research could explore which corporate governance structures and practices mitigate stock market reactions in the case of negative events. Considering country-specific institutional factors could also help achieve a better understanding of how stock markets price risk based on governance news in the case of banks.

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Appendix

Below, we report a sample of the news for each attribute of media-talk. “xxxx” signals the words being removed for text analysis purposes.

Positive news.

Source: Dow Jones. Date: 20/09/2013. Category of news: Management moves

“xxxx (the "Company") announced today that xxxx was elected to join its board of directors. Mr. xxxx is a senior level executive and business owner with more than xxxx years of experience creating, managing and leading companies. He is currently the CEO and owner of xxxx and vice president and owner of xxxx where he's had proven success growing revenues, exceeding financial goals and leading financial, operational and marketing initiatives. xxxx's finance and commercial banking experience and longstanding roots in xxxx made him a strategic eighth addition to xxxx established group of directors. "As we continue to propel xxxx forward, our strong leadership team has been key to our growth. We believe xxxx 's robust finance background and leadership skills make him a valuable addition to the bank's leadership team," said xxxx, president and CEO of the company. Mr. xxxx earned his executive masters of business administration at xxxx University and his bachelor of science in finance from University of xxxx. As the newest member of xxxx's board of directors, Mr. xxxx will join seven other seasoned board members currently overseeing the community bank's financial and operational success.”

Negative news.

Source: Dow Jones. Date: 14/11/2007. Category of news: Internal control

“A former xxxx registered representative is expected to enter a guilty plea to criminal charges in an insider-trading case revolving around trades made based on inside information about pending deals by xxxx clients, prosecutors said. In a letter publicly filed Tuesday, xxxx in xxxx said the government expects that xxxx, a former xxxx registered representative, "will be entering a guilty plea to criminal charges shortly." The letter, dated xxxx was filed in connection with a separate civil case brought by the xxxx. A lawyer for xxxx didn't immediately return a phone call seeking comment late Tuesday. A spokeswoman for the xxxx declined to comment further late Tuesday. xxxx is one of 13 people charged earlier this year in two separate schemes to use allegedly inside information to make improper trades ahead of the public announcements of upgrades or downgrades by xxxx analysts and ahead of news of pending mergers and acquisitions in which xxxx was acting as an advisor. He was charged with conspiracy, securities fraud and making false statements in xxxx.”

Certain news.

Source: Wall Street Journal. Date: 31/10/2008. Category of news: Board of directors

“xxxx announced the management team that will lead the new company once the acquisition of xxxx is approved, and appointed acting Chief Finance Director xxxx to the position. Chairman xxxx, and Chief Executive xxxx, whose roles had been announced previously, will head the new bank, which will operate in a similar structure to that of xxxx but with new wealth and international divisions. xxxx’s retains her executive directorship of xxxx retail banking, while xxxx, responsible for wholesale and international banking at xxxx, will become executive director of wholesale. Both will have board seats. xxxx, xxxx's insurance and investment director, will represent the board in xxxx and will be tapped group executive director of insurance. xxxx company secretary xxxx will take up the post for the combined company and have a seat on the board. In addition, the company will appoint xxxx as wealth and international director, xxxx as chief risk officer, xxxx as human resources director and xxxx as integration director. A director of information technology and operations will be announced later.”

Uncertain news.

Source: Wall Street Journal. Date: 31/10/2008. Category of news: Board of directors

“The board of xxxx is expected to shake up its risk policy committee in the wake of more than \$ xxxx billion in trading losses, said people familiar with the matter. Directors xxxx and xxxx, who joined the xxxx company's board over the past year and have backgrounds in risk and finance, are considered candidates to join the committee, these people said. At least one director is expected to join the risk panel at the board's next meeting, a person familiar with the bank said. The change was in the works before the company on xxxx disclosed losses tied to wagers on corporate-credit indexes placed by a unit called the Chief Investment Office, which included a trader who has been called the "xxxx whale" for his market-moving bets, the person said. The blowup at the nation's largest bank by assets has raised questions among shareholders about the strength of risk controls and the level of oversight at the board, and tarnished the risk-management reputation of Chairman and Chief Executive xxxx. Shares of xxxx have dropped xxxx since the losses were disclosed, wiping xxxx billion off the company's market value. They were down xxxx, or xxxx, at xxxx xxxx afternoon. The risk panel currently is chaired by XXXX, who is president of investment firm xxxx, and includes two other members: xxxx, the longtime president of the xxxx, and xxxx Chief Executive xxxx. None of the directors could be reached for comment. It isn't clear whether any of the current risk-committee members will leave the panel. The risk policy committee is responsible for "oversight of the CEO's and senior management's responsibilities to assess and manage the firm's credit risk, market rate risk, interest rate risk, investment risk, liquidity risk and reputational risk," according to regulatory filings. Mr. xxxx, who joined the board this month, is former chairman for accounting firm xxxx and former CEO of its xxxx unit. Mr. XXXX, who joined last xxxx, retired xxxx as chief financial officer for aerospace giant xxxx. Mr. XXXX could leave the audit committee as part of the shift, one of the people said”

List of Tables

Table 1. Distribution of news

Panel A) Composition of corporate governance news by year, geographic area and type of event

Characteristics	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	EU	US	Total
Board of directors	16	10	22	30	16	13	73	106	112	135	116	382	267	649

Executive management moves	46	49	69	73	87	106	113	97	53	62	110	405	460	865
Non-executive management moves	37	36	62	117	102	78	97	121	76	93	113	181	751	932
Executive pay	10	11	14	30	28	25	57	40	34	35	36	137	183	320
Internal control	0	0	2	5	4	6	8	3	1	2	2	15	18	33
Ownership changes	0	9	19	24	19	33	16	26	23	33	52	100	154	254
Shareholder activism	11	3	0	4	6	8	2	7	1	6	1	11	38	49
Women executives	1	1	2	1	1	0	1	1	5	5	5	3	20	23
Total	122	119	190	285	263	269	366	401	306	372	435	1,234	1,891	3,125

Note: The table shows the distribution of news according to the type of corporate governance event and geographic area of banks over the period 2003-2013.

Panel B) Composition of corporate governance news by newspapers and geographic area

Newspapers	EU	US	Total
Dow Jones Newswires	506	1,064	1,570
Financial Times	24	-	24
Major News and Publications	184	378	562
Press Release Wires	152	406	558
Reuter Newswires	321	37	358
Wall Street Journal	47	6	53
Total	1,234	1,891	3,125

Note: The table shows the distribution of news according to the newspaper and geographic area of banks over the period 2003-2013.

Panel C) Composition of corporate governance news by year, banks and descriptive statistics

Years	Number of news	Number of banks	Average of news	Min of news	Max of news	St. dev.
2003	122	63	1.937	1	10	1.571
2004	119	60	1.983	1	8	1.751
2005	190	85	2.235	1	12	2.328
2006	285	99	2.879	1	42	4.839
2007	263	101	2.604	1	23	3.234
2008	269	97	2.773	1	18	2.845

2009	366	119	3.076	1	31	4.306
2010	401	145	2.766	1	26	3.039
2011	306	106	2.887	1	15	3.271
2012	372	109	3.413	1	34	4.607
2013	435	189	2.302	1	14	2.393
Tot	3125	374	8.356	1	94	15.093

The table shows the distribution of news according to the year of publication over the period 2003-2013.

Table 2. Variables description

Variables	Symbol	Description
<i>Stock variables (dependent variables)</i>		
CAR around the event window (-5, 5)	CAR (-5, 5)	Cumulative abnormal return in the period from 5 days before to 5 days after news publication
CAR around the event window (-5, -1)	CAR (-5, -1)	Cumulative abnormal return in the period from 5 days before to 1 day before news publication
CAR around the event window (0, 5)	CAR (0, 5)	Cumulative abnormal return in the period from the day of news publication to 5 days after news publication
<i>News characteristics (independent variables)⁴</i>		
Media coverage	COVERAGE	The number of news items published in the previous 12 months on the same banks concerning corporate governance
Degree of certainty	D_CERTAINTY	The degree of certainty/uncertainty of the news is measured as $(C-U)/(TW)$, where C and U are the number of certain and uncertain words respectively, and TW is the number of words in the news item
Tone	TONE	Difference between positive and negative words over the total words
Board of directors	BoD	Dummy variable: 1 for news related to the board of directors, 0 otherwise
Executive management moves	EXECUTIVE_MOVE	Dummy variable: 1 for news related to management moves of executive directors, 0 otherwise
Non-executive management moves	NON_EXECUTIVE_MOVE	Dummy variable: 1 for news related to management moves of non-executive directors, 0 otherwise
Executive pay	EXECUTIVE_PAY	Dummy variable: 1 for news related to executive pay, 0 otherwise
Internal control	INTERNAL_CONTROL	Dummy variable: 1 for news related to internal control, 0 otherwise
Ownership changes	OWNERSHIP_CHANGE	Dummy variable: 1 for news related to ownership changes, 0 otherwise
Shareholder activism	SHAREHOLDER_ACTIVISM	Dummy variable: 1 for news related to shareholder activism, 0 otherwise
<i>Bank specific variables (independent variables)</i>		
Size	SIZE	Natural logarithm of total assets at the end of the year of news publication
Capitalization	CAPITAL	Equity over total assets
Profitability	RORWA	Return on risk weighted assets
Efficiency	COST_INCOME	Cost to income ratio
<i>Fixed effect controls (independent variable)</i>		
Newspaper fixed effect	NEWSPAPER_FE	Dummy variables: 1 for news published by a specific newspaper, 0 otherwise. One dummy for each newspaper is considered
Press release	PR	Dummy variable equal to 1 if the news is a press release, 0 otherwise.

Note: Table 2 describes the variables used to investigate the relationship between corporate governance news and stock returns.

⁴⁴ The categories ‘director dealings’ and ‘women executives’ are not included because of the low number of items.

Table 3. The impact of corporate governance news on bank stock returns: the role of the tone

Event window	<i>Panel A: 1,034 negative news</i>			<i>Panel B: 1,272 positive news</i>			<i>Panel C: 819 neutral news</i>		
	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂
(-10, 10)	-0.0285***	-4.321	5.342	0.0054	1.089	1.889	-0.0027	-0.435	4.166
(-5, 5)	-0.0281***	-6.000	4.383	0.0006	0.174	1.117	0.0039	0.896	2.768
(-3, 3)	-0.0177***	-4.758	2.458	0.0035	1.142	0.254	-0.0009	-0.266	2.030
(-10, -1)	-0.0106*	-2.519	1.539	0.0025	0.783	-1.993	0.0013	0.331	-1.637
(-5, -1)	-0.0193***	-6.171	3.311	-0.0009	-0.403	-3.963	0.0044	1.190	-3.262
(-3, -1)	-0.0135***	-5.586	2.908	0.0003	0.190	0.064	-0.0005	-0.217	0.780
(0, 10)	-0.0125***	-2.673	3.344	0.0035	0.996	0.948	-0.0038	-0.860	4.419
(0, 5)	-0.0088***	-2.573	2.576	0.0016	0.605	0.527	-0.0004	-0.135	3.225
(0, 3)	-0.0042	-1.499	0.733	0.0028	1.354	0.280	-0.0004	-0.167	2.010
(0,1)	-0.0008	-0.417	0.270	0.0008	0.526	-0.039	0.0009	0.496	0.686

Notes: Table 3 shows the evidence of event studies carried out on 3,125 corporate governance news items about listed banks between 2003 and 2013. News is defined as positive if the ratio between the difference of positive and negative words to the total words of the news is higher than zero, and defined as negative when the ratio is lower than zero. If the ratio is zero, the news is considered neutral. We measure the predicted normal bank returns using the market model. The CAR statistical significance is verified using two tests (T₁ and T₂), reported in Equations (6) and (7). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Table 4. The impact of corporate governance news on bank stock returns: the strength of the tone

Event window	<i>Negative news</i>						<i>Positive news</i>					
	<i>Panel A: 517 very negative news</i>			<i>Panel B: 517 slightly negative news</i>			<i>Panel C: 636 very positive news</i>			<i>Panel D: 636 slightly positive news</i>		
	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂
(-10; 10)	-0.0504***	-5.401	4.421	-0.0070	-0.751	3.174	0.0009	0.133	1.334	0.0098	1.420	1.252
(-5; 5)	-0.0482***	-7.264	3.469	-0.0089	-1.241	2.860	-0.0068	-1.256	1.508	0.0080	1.637	0.071
(-3; 3)	-0.0335**	-6.369	1.825	-0.0025	-0.476	1.741	-0.0004	-0.112	0.900	0.0068	1.747	-0.540
(-10; -1)	-0.0222	-3.716	-1.000	0.0015	0.256	-1.179	0.0016	-0.343	-1.398	0.0034	0.768	-1.420
(-5; -1)	-0.0283**	-6.388	2.297	-0.0105	-2.374	-2.376	-0.0017	-0.493	-2.734	-0.0002	-0.073	-2.870
(-3; -1)	-0.0202***	-5.906	2.892	-0.0067	-1.974	1.199	0.0001	0.021	0.917	0.0006	0.249	-0.825
(0; 10)	-0.0190**	-2.864	2.299	-0.0069	-1.036	2.506	-0.0003	0.055	0.598	0.0073	1.481	0.742
(0; 5)	-0.0199**	-4.101	1.768	0.0016	0.331	1.991	-0.0052	-1.403	0.681	0.0083	2.304	0.064
(0; 3)	-0.0133	-3.363	-0.090	0.0042	1.072	1.264	-0.0005	-0.168	0.397	0.0062	2.109	0.001
(0; 1)	-0.0055	-1.971	-0.191	0.0038	1.365	0.638	-0.0014	-0.677	1.348	0.0030	1.441	-1.404

Notes: Table 4 shows the results of event studies carried out on 3,125 corporate governance news items about listed banks between 2003 and 2013. News is defined as positive if the ratio between the difference of positive and negative words to the total words of the news is higher than zero, and defined as negative when the ratio is lower than zero. If the ratio is zero, the news is considered neutral. Positive/negative news is defined as “very” positive/negative and “slightly” positive/negative it is higher/lower than the median tone ratio. We measure the predicted bank normal returns using the market model. The CAR statistical significance is verified using three tests (T₁ and T₂), reported in Equations (6) and (7). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Table 5. Negative tone news: the effect on European and US banks

Event window	<i>Panel A: US banks</i>				<i>Panel B: European banks</i>			
	Mean CAR	Number of news	T ₁	T ₂	Mean CAR	Number of news	T ₁	T ₂
(-10, 10)	-0.0446***	539	-5.444	4.304	-0.0125	495	-1.213	4.634
(-5, 5)	-0.0414***	539	-7.104	2.959	-0.0150**	495	-2.043	2.848
(-3, 3)	-0.0310**	539	-6.729	1.837	0.0044	495	-0.757	1.122
(-10, -1)	-0.0114**	539	-2.171	-2.388	-0.0099	495	-1.497	-1.074
(-5, -1)	-0.0228***	539	-5.880	-4.829	-0.0158***	495	-3.225	-2.353
(-3, -1)	-0.0181	539	-6.037	0.775	-0.0089**	495	-2.357	2.130
(0, 10)	-0.0272***	539	-4.665	3.420	0.0020	495	0.269	3.255
(0, 5)	-0.0185***	539	-4.347	2.778	0.0008	495	0.148	1.396
(0, 3)	-0.0129**	539	-3.730	1.759	0.0045	495	1.031	-0.359
(0, 1)	-0.0044	539	-1.783	0.916	0.0027	495	0.873	-0.445

Notes: Table 5 shows the results of event studies carried out on 1,034 negative corporate governance news items about listed banks between 2003 and 2013. We measure the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests (T₁ and T₂), reported in Equations (6) and (7). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Table 6. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Car (0,5)	1,034	-0.014	0.160	-2.577	0.723
Car (-5,5)	1,034	-0.025	0.341	-7.174	1.478
Car (-5,-1)	1,034	-0.011	0.280	-5.685	0.951
COVERAGE	1,033	7.216	8.188	0.000	45.000
D_CERTAINTY	1,034	0.323	1.592	-6.667	8.333
BoD	1,034	0.242	0.428	0.000	1.000
EXECUTIVE_MOVE	1,034	0.178	0.383	0.000	1.000
NON_EXECUTIVE_MOVE	1,034	0.178	0.383	0.000	1.000
EXECUTIVE_PAY	1,034	0.196	0.397	0.000	1.000
INTERNAL_CONTROL	1,034	0.029	0.168	0.000	1.000
OWNERSHIP_CHANGE	1,034	0.103	0.303	0.000	1.000
SHAREHOLDER_ACTIVISM	1,034	0.029	0.168	0.000	1.000
SIZE	814	18.054	3.094	11.282	21.633
CAPITAL	901	6.660	4.043	-1.950	22.750
RORWA	765	0.192	2.251	-11.782	8.501
COST_INCOME	807	69.983	22.293	8.160	85.790

Note: The Table displays descriptive statistics for each variable inserted in the econometric model.

Table 7. Correlation matrix

	SIZE	CAPITAL	RORWA	COST_INC OME	COVERAG E	D_CERTAI NTY	BoD	EXECUTI VE_MOVE	NON_EXE CUTIVE_ MOVE	EXECUTI VE_PAY	INTERNA L_CONTR OL	OWNERSH IP_CHANG E	SHAREHO LDER_AC TIVISM
SIZE	1.000												
CAPITAL	-0.496	1.000											
RORWA	-0.096	0.299	1.000										
COST_INCOME	-0.105	-0.109	-0.434	1.000									
COVERAGE	0.475	-0.237	-0.158	0.135	1.000								
D_CERTAINTY	0.055	-0.014	0.021	0.024	-0.027	1.000							
BoD	0.232	-0.267	-0.154	0.116	0.349	0.027	1.000						
EXECUTIVE_MOVE	-0.151	0.238	0.046	-0.007	-0.069	0.050	-0.276	1.000					
NON_EXECUTIVE_MOVE	-0.151	0.238	0.046	-0.007	-0.069	0.050	-0.276	1.000	1.000				
EXECUTIVE_PAY	0.150	-0.039	0.010	-0.011	-0.013	0.044	-0.285	-0.221	-0.221	1.000			
INTERNAL_CONTROL	0.043	0.009	0.018	-0.089	-0.075	-0.070	-0.098	-0.077	-0.077	-0.079	1.000		
OWNERSHIP_CHANGE	-0.201	0.148	0.153	-0.041	-0.146	-0.049	-0.191	-0.148	-0.148	-0.153	-0.053	1.000	
SHAREHOLDER_ACTIVISM	-0.039	0.025	0.017	0.013	0.023	-0.023	-0.103	-0.080	-0.080	-0.083	-0.029	-0.056	1.000

Note: Table 7 shows the Pearson correlations between the variables used in the regression model.

COUNTRY_FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Obs.	1,033	1,033	1,033	753	753	753	753	753	753
Adjusted R-squared	0.022	0.070	0.051	0.072	0.080	0.107	0.090	0.082	0.116

Note: Table 8 shows results of Models 1, 2 and 3. Our dependent variables are estimated CARs in the event windows (-5, 5), (-5, -1) and (0, 5). In Model 1 independent variables are related to the news characteristics: COVERAGE is the number of news published in the twelve months before the news considered; COVERAGE2 is coverage squared; D_CERTAINTY is the degree of certainty of the news; D_CERTAINTY2 is the degree of certainty squared; BoD is the category of news referring to Board of Directors; EXECUTIVE_MOVE is the category of news referring to the management moves of executive directors; EXECUTIVE_PAY is the category of news referring to executive pay; INTERNAL_CONTROL is the category of news referring to internal control; OWNERSHIP_CHANGE is the category of news referring to ownership changes; SHAREHOLDER_ACTIVISM is the category of news referring to shareholder activism. Model 2 adds to Model 1 some bank-specific characteristics: SIZE is the natural logarithm of total assets; CAPITAL is the ratio of equity over total assets; RORWA is the return on risk-weighted assets; COST_INCOME is the cost/income ratio. Model 3 adds to Model 2 the newspaper fixed effect and the press release dummies: PR is a dummy variable equal to 1 if the news is a press release, 0 otherwise; NEWSPAPER_FE is a series of dummy variables that control for the newspaper in which the news is published. YES/NO in the Table indicates that the fixed effect control is/is not inserted in the regression. In all models the COUNTRY_FE and the TIME_FE denote the country fixed effect and the time fixed effect to control for differences among countries and along years. Finally, *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively. Standard errors are reported in parentheses.

Table 9. The impact of corporate governance news on bank stock returns using the Fama-French three-factor model: the role of the tone

Event window	<i>Panel A: 1,034 negative news</i>			<i>Panel B: 517 very negative news</i>			<i>Panel C: 517 slightly negative news</i>		
	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂	Mean CAR	T ₁	T ₂
(-10, 10)	-0.037**	-1.782	2.550	-0.070**	-1.748	2.771	-0.005	-0.381	0.836
(-5, 5)	-0.033**	-1.648	3.421	-0.059*	-1.482	2.683	-0.008	-1.161	2.155
(-3, 3)	-0.026	-1.336	0.995	-0.053*	-1.362	2.243	0.000	0.091	0.836
(-10, -1)	-0.010**	-1.733	2.799	-0.021***	-2.550	2.507	0.001	0.146	1.451
(-5, -1)	-0.012***	-2.638	3.607	-0.017**	-2.178	2.947	-0.004	-1.204	2.067
(-3, -1)	-0.008**	-2.081	1.990	-0.013**	-2.016	2.331	-0.003	-0.720	0.484
(0, 10)	-0.027	-1.368	1.244	-0.048	-1.263	1.715	-0.006	-0.583	0.308
(0, 5)	-0.021	-1.086	1.244	-0.042	-1.112	1.099	0.001	0.105	0.748
(0, 3)	-0.018	-0.956	0.684	-0.040	-1.059	1.187	0.004	0.757	0.220
(0, 1)	-0.015	-0.820	0.373	-0.032	-0.877	0.044	0.002	0.468	0.484

Notes: Table 9 shows the evidence of event studies carried out on 1,034 negative corporate governance news items about listed banks between 2003 and 2013. News is defined as negative if the ratio between the difference of positive and negative words to the total words of the news is lower than zero. Negative news is defined as “very” negative and “slightly” negative it is higher/lower than the median tone ratio. We measure the predicted normal bank returns using the Fama and French three factors model. The CAR statistical significance is verified using three tests (T₁ and T₂), reported in Equations (6) and (7). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

COUNTRY_FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Obs.	293	293	293	216	216	216	216	216	216
Adjusted R-squared	0.037	0.121	0.092	0.053	0.139	0.037	0.128	0.056	0.084

Note: Table 10 shows results on the very negative news. Our dependent variables are estimated CARs in the event windows (-5, 5), (-5, -1) and (0, 5). Independent variables are related to the news characteristics: COVERAGE is the number of news published in the twelve months before the news considered; D_CERTAINTY is the degree of certainty of the news; BoD is the category of news referring to Board of Directors; EXECUTIVE_MOVE is the category of news referring to the management moves of executive directors; EXECUTIVE_PAY is the category of news referring to executive pay; INTERNAL_CONTROL is the category of news referring to internal control; OWNERSHIP_CHANGE is the category of news referring to ownership changes; SHAREHOLDER_ACTIVISM is the category of news referring to shareholder activism. Bank-specific characteristics: SIZE is the natural logarithm of total assets; CAPITAL is the ratio of equity over total assets; RORWA is the return on risk-weighted assets; COST_INCOME is the cost/income ratio. The newspaper fixed effect and the press release dummies: PR is a dummy variable equal to 1 if the news is a press release, 0 otherwise; NEWSPAPER_FE is a series of dummy variables that control for the newspaper in which the news is published. YES/NO in the Table indicates that the fixed effect control is/is not inserted in the regression. TIME_FE is a series of dummy variables that control for the year in which the news is published; COUNTRY_FE is a series of dummy variables that control for the country in which the bank is located. Finally, *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively. Standard errors are reported in parentheses.

Table 11. Robustness test on Cars (-10, 10), (-10, -1) and (0, 10)

VARIABLES	Model 7			Model 8			Model 9		
	car(-10,-1)	car(-10,+10)	car(0,+10)	car(-10,-1)	car(-10,+10)	car(0,+10)	car(-10,-1)	car(-10,+10)	car(0,+10)
Constant	0.008 (0.01)	0.092*** (0.03)	0.074*** (0.02)	0.038 (0.04)	0.166** (0.07)	0.098* (0.05)	0.124 (0.13)	0.102 (0.14)	0.255 (0.19)
COVERAGE	-0.006*** (0.00)	-0.013*** (0.00)	-0.007*** (0.00)	-3.23e-05 (0.00)	0.001 (0.00)	0.001 (0.00)	0.001 (0.00)	0.001 (0.00)	0.002 (0.00)
COVERAGE2	-0.001*** (0.00)	0.001** (0.00)	0.001 (8.49e-05)	2.83e-05 (4.09e-05)	6.44e-06 (5.93e-05)	-1.65e-05 (4.45e-05)	1.84e-05 (4.09e-05)	-1.28e-05 (4.47e-05)	-1.89e-06 (5.97e-05)
D_CERTAINTY	-	-0.002 (0.01)	-0.012* (0.00)	-	-0.001 (0.00)	-0.005* (0.00)	-	-0.006* (0.00)	-0.026** (0.00)
D_CERTAINTY2	-	-0.009*** (0.00)	-0.005*** (0.001)	-	-0.001 (0.00)	-0.001** (0.00)	-	0.001 (0.00)	-0.017** (0.00)
BoD	0.017 (0.01)	0.039 (0.03)	0.019 (0.02)	-0.011 (0.01)	0.011 (0.02)	0.014 (0.01)	-0.015 (0.01)	0.016 (0.01)	0.007 (0.02)
EXECUTIVE_MOVE	0.008 (0.01)	0.036 (0.03)	0.026 (0.02)	0.009 (0.01)	0.027 (0.02)	0.006 (0.01)	0.007 (0.01)	0.008 (0.01)	0.027 (0.02)
EXECUTIVE_PAY	0.034* (0.01)	0.045 (0.03)	0.012 (0.02)	0.027** (0.01)	0.042** (0.02)	0.005 (0.01)	0.027** (0.01)	0.005 (0.01)	0.042** (0.02)
INTERNAL_CONTROL	0.048 (0.03)	0.083 (0.06)	0.025 (0.05)	0.046 (0.02)	0.088** (0.04)	0.032 (0.03)	0.053* (0.02)	0.026 (0.03)	0.090** (0.04)
OWNERSHIP_CHANGE	-0.020 (0.02)	-0.172*** (0.04)	-0.159*** (0.03)	0.009 (0.01)	-0.019 (0.02)	-0.028 (0.02)	0.011 (0.01)	-0.028 (0.01)	-0.017 (0.02)
SHAREHOLDER_ACTIVISM	0.041 (0.04)	0.253 (0.36)	0.353 (0.34)	0.056 (0.04)	0.202 (0.18)	0.144 (0.14)	0.055 (0.04)	0.196 (0.18)	0.146 (0.14)
SIZE	-	-	-	-0.002 (0.00)	-0.008** (0.00)	-0.005** (0.00)	-0.002 (0.00)	-0.005** (0.00)	-0.008*** (0.00)
CAPITAL	-	-	-	-0.002 (0.00)	-0.001 (0.00)	0.001 (0.00)	-0.001 (0.00)	0.001 (0.00)	-0.001 (0.00)
RORWA	-	-	-	0.006** (0.00)	0.004 (0.00)	-0.002 (0.00)	0.006** (0.00)	-0.002 (0.00)	0.004 (0.00)
COST_INCOME	-	-	-	-8.93e-05 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.0002 (0.00)	-0.002 (0.00)
PR	-	-	-	-	-	-	0.124 (0.13)	0.102 (0.14)	0.255 (0.19)
COUNTRY_FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR_FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
NEWSPAPER_FE	NO	NO	NO	NO	NO	NO	YES	YES	YES

Obs	1,033	1,033	1,033	753	753	753	753	753	753
Adjusted R-squared	0.019	0.075	0.060	0.026	0.027	0.023	0.045	0.036	0.034

Note: Table 11 shows the results of Models 1, 2 and 3. Our dependent variables are estimated CARs in the event windows (-10, 10), (-10, -1) and (0, 10). In Model 1 independent variables are related to the news characteristics: COVERAGE is the number of news published in the twelve months before the news considered; COVERAGE2 is coverage squared; D_CERTAINTY is the degree of certainty of the news; D_CERTAINTY2 is the degree of certainty squared; BoD is the category of news referring to Board of Directors; EXECUTIVE_MOVE is the category of news referring to the management moves of executive directors; EXECUTIVE_PAY is the category of news referring to executive pay; INTERNAL_CONTROL is the category of news referring to internal control; OWNERSHIP_CHANGE is the category of news referring to ownership changes; SHAREHOLDER_ACTIVISM is the category of news referring to shareholder activism. Model 2 adds to Model 1 some bank-specific characteristics: SIZE is the natural logarithm of total assets; CAPITAL is the ratio of equity over total assets; RORWA is the return on risk-weighted assets; COST_INCOME is the cost/income ratio. Model 3 adds to Model 2 the newspaper fixed effect and the press release dummies: PR is a dummy variable equal to 1 if the news is a press release, 0 otherwise; NEWSPAPER_FE is a series of dummy variables that control for the newspaper in which the news is published. YES/NO in the Table indicates that the fixed effect control is/is not inserted in the regression. TIME_FE is a series of dummy variables that control for the year in which the news is published; COUNTRY_FE is a series of dummy variables that control for the country in which the bank is located.. Finally, *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively. Standard errors are reported in parentheses.

Table 12. Robustness test: VIF test

Variable	VIF	1/VIF
COVERAGE	7.85	0.127373
COVERAGE2	6.56	0.152520
D_CERTAINTY	1.26	0.790733
D_CERTAINTY2	1.22	0.817231
BoD	1.78	0.562933
EXECUTIVE_MOVE	1.5	0.665677
EXECUTIVE_PAY	1.48	0.674077
INTERNAL_CONTROL	1.52	0.657389
OWNERSHIP_CHANGE	1.33	0.753285
SHAREHOLDER_ACTIVISM	1.48	0.677955
SIZE	2.26	0.443402
CAPITAL	1.97	0.507489
RORWA	1.46	0.685848
COST_INCOME	1.34	0.744309
PR	18.2	0.005342
DJ	85.89	0.00538
MN	96.25	0.01039
RN	76.05	0.013149
WS	58.39	0.017127
FT	33.65	0.029714
PN	12.16	0.082238

Note: Table 12 shows the VIF test results. This is the set of variables: COVERAGE is the number of news published in the twelve months before the news considered; COVERAGE2 is coverage squared; D_CERTAINTY is the degree of certainty of the news; D_CERTAINTY2 is the degree of certainty squared; BoD is the category of news referring to Board of Directors; EXECUTIVE_MOVE is the category of news relating to the management moves of executive directors; EXECUTIVE_PAY is the category of news relating to executive pay; INTERNAL_CONTROL is the category of news relating to internal control; OWNERSHIP_CHANGE is the category of news relating to ownership changes; SHAREHOLDER_ACTIVISM is the category of news relating to shareholder activism; SIZE is the natural logarithm of total assets; CAPITAL is the ratio of equity over total assets; RORWA is the return on risk weighted assets; COST_INCOME is the cost/income ratio; PR is a dummy variable equal to 1 if news is a press release, 0 otherwise; DJ is a dummy variable that controls for the publication in Dow Jones Newswires; MN is a dummy variable that controls for the publication in Major News and Publications; RN is a dummy variable that controls for the publication in Reuters Newswires; WS is a dummy variable that controls for the publication in the Wall Street Journal; FT is a dummy variable that controls for the publication in Financial Times; PN is a dummy variable that controls for the publication in Press news.