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Content, causes, and consequences of news about large corporations

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CHAPTER 3

COMPANY CHARACTERISTICS THAT AFFECT NEWS COVERAGE

This chapter is under review as: Jonkman, J. G. F., Trilling, D. C., Verhoeven, P., & Vliegthart, R. (2017). To pass or not to pass: How corporate characteristics affect corporate visibility and tone in company news coverage.

ABSTRACT

To pass or not to pass through the news gates? That is a key question with respect to the relationship between large commercial firms and the journalistic outlets that publish news regarding them. Whereas the previous research has considered how corporate communication affects media content, the focus of this study is on corporate characteristics (e.g., company size, age, location and ownership structure). Building on the gatekeeping approach, the study investigates the extent to which these characteristics affect corporate visibility in the news and tone of coverage. The characteristics of 100 large corporations in the Netherlands were combined with visibility and tone in Dutch online and print news throughout 2014 (N = 29,516). The results indicate that having more employees, being owned by the government and focusing on consumers add substantially to the explanation of corporate visibility. Furthermore, when applying a visibility-based measure on tone, our results indicate that government-owned companies tend to be portrayed more negatively than other company types.

INTRODUCTION

Large corporations, such as Google, Apple, Unilever, and Shell, are important actors in both business and mainstream news. For the general public, as well as for many specific organizational stakeholders (e.g., competitors, investors, political actors and activists), news is the most important source for information on corporations and their conduct (Carroll, 2011). However, unlike in other fields such as political communication and international news flow research, in which scholars compare news coverage across actors such as political parties (e.g., Tresch, 2008) and countries (e.g., Wu, 2000), company news research lacks studies that compare coverage across actors (see for exceptions, e.g., Capriotti, 2009; Moon & Hyun, 2014). However, several scholars have noted that cross-corporate differences exist and have indicated the need to examine what drives company news selection (e.g., Carroll & McCombs, 2003; Carroll & Deephouse, 2014).

With regard to explaining variation in company news characteristics, corporate visibility is perhaps the most fundamental and most addressed aspect of news coverage (Zhang, 2016). Research indicates that large corporations may vary significantly in terms of their visibility in the media (Moon & Hyun, 2014). While some firms are presented as being highly salient, others are barely given mention (Jonkman, Trilling, Verhoeven, & Vliegthart, 2016). In fact, a vast amount of large firms may even be *hidden* from media attention (Scott, 2015), while few are very media-prominent (Rindova, Pollock, & Hayward, 2006). News tone, or media favorability, is another key variable in the company news research (Zhang, 2016). Whereas company visibility in the news may alter corporate awareness about firms on the public and political agenda, tone may affect reputational attitudes (Carroll & McCombs, 2003).

However, how can variation across companies in the news be explained in terms of how much and how they are covered? To answer this question we first draw on gate-

keeping theory, which offers a framework to conceptualize how the selection of company news works and the factors that may influence cross-corporate differences (Carroll & Deephouse, 2014). Scholarly endeavors to explain news content on the basis of gatekeeping theory can be categorized along a multi level hierarchy of influences, which range from individual journalistic choices and stances to macro level impacts (Shoemaker & Reese, 2011).

In this paper, we pursue the line of interest that is most addressed in company news research, which focuses on so-called extra-media variables, or influences from outside media organizations (see, e.g., Carroll & Deephouse, 2014). Extra-media variables are objects and/or object-characteristics that affect the news selection process on the part of journalists (Rosengren, 1970). Examples of such objects are situations or events (e.g., crisis situations and pseudo-events), information-subsidies by sources (e.g., press releases and interviews) as well as issues and actors (Manning, 2001). Such objects and their characteristics play a role in how news content is produced and constructed (Shoemaker & Reese, 2011).

Against this background, and following the previous attempts to compare firms in the news (see, e.g. Capriotti, 2009; Meznar & Nigh, 1995; Moon & Hyun, 2014), we concentrate on the determining role of hard corporate characteristics. Such characteristics are the intrinsic features of firms that are related to organizational demographics (e.g., organizational age and location), ownership structures (e.g., government owned or stock listed), and business types (e.g., business-to-business or business-to-consumer).

The hard characteristics of companies have been considered to be important journalistic filters in the selection of corporate actors for news coverage (see, e.g., Carroll & McCombs, 2003), because these features may make companies intrinsically more or less newsworthy. In addition to visibility, these filters may also help to explain why some corporations are portrayed more negatively or positively in the news than others. For example, some corporate types may be scrutinized more critically by the media than others.

Overall, we seek to answer the following overarching research question: To what extent do corporate characteristics affect visibility and tone in company news?

The study aims to further advance the theory on the gatekeeping function of journalists in general and to apply this to company news in particular, thereby broadening the theoretical orientation of both journalism and corporate communication. A broad range and a large number of firms and media outlets are included and compared in this article, thereby improving on the previous studies that have examined company news content based on limited variation in firm and news types. To the best of our knowledge, this report describes the first empirical study to test the extent to which objective corporate characteristics can conjointly explain variation in news coverage across corporations.⁹

⁹ In the remainder of this article the terms “firm,” “company,” “corporation” and “corporate actor” will be used interchangeably. These terms refer to “large corporations” which is to say that this study compares large firms with other large firms, not with small- or medium-size firms. Company news refers to news about corporations in a broad sense (see Carroll & Deephouse, 2014). That is, it may refer to several news types, such as business, financial, and economic news, but also to, e.g., sports coverage and political news.

THEORETICAL BACKGROUND

Company news coverage: a focus on visibility and tone

Mainly inspired by agenda-setting theory, previous research has examined company news content by focusing on corporate visibility (e.g., Capriotti, 2009; Moon & Hyun, 2014); tone (e.g., Deephouse, 2000); both visibility and tone (e.g., Fombrun & Shanley, 1990); corporate attributes and the tone of such attributes (e.g., Kioussis, Popescu, & Mitrook, 2007), corporate associations with issues (e.g., Meijer & Kleinnijenhuis, 2006), and frames (e.g., Schultz, Kleinnijenhuis, Oegema, Utz, & Van Atteveldt, 2012), both as independent as well as dependent variables. However, corporate visibility and tone have been considered to be the most fundamental aspects of company news content (e.g., Zhang, 2016). This is in accordance with the research in the field of political communication, in which these characteristics are also often investigated (see, e.g., Hopmann, Vliegthart, De Vreese, & Albæk, 2010).

An actor's visibility in the news reflects the extent to which journalists consider that actor to be newsworthy (Harcup & O'Neill, 2001). The more an actor becomes visible in the news on a structural level, the more newsworthy that actor is in relation to comparable actors. Structural attention to news objects (e.g., certain organizations or persons) is generally related to regular attention patterns in the news; systematic journalistic orientations and routines; stabilized communicative relationships with sources; and the journalistic monitoring of issues and actors in a systematic fashion. The hard characteristics of potential news objects (e.g., issues, actors, and events) may play an important role in predicting the extent to which those objects will become salient in news coverage on a systematic level (Koopmans & Vliegthart, 2011). Additionally, object characteristics may not only drive visibility but also the way in which those objects are evaluated in terms of news tone.

Role of corporate characteristics in news selection

According to the studies that have been inspired by the gatekeeping theory and the agenda-building theory, the intrinsic properties of corporations may act as important filters that are used by journalists to determine the newsworthiness of corporate information (see, e.g., Carroll & McCombs, 2003; Moon & Hyun, 2014; Schafraad, Van Zoonen, & Verhoeven, 2016). Rosengren (1970) already advocated that research should focus on extra-media data, that is, observable and quantifiable indicators that can be used as a baseline to compare with media content, to explain variation in media content (see, e.g., Koopmans & Vliegthart, 2011). Hard corporate characteristics qualify for use as such real-world indicators.

Hypotheses and Research Questions

Authors from diverse academic fields (e.g., management, organizational communication, public relations, and mass communication and journalism) have paid attention to the relationship between corporate characteristics and news coverage. First, a number of studies indicate that organizational demographics, such as organizational size and age, can affect media content (e.g., Mezner & Nigh, 1995). In addition, the geographical location

of a firm's headquarters may play a role (see, e.g., Eliders, 2006). Furthermore, media coverage may be different across company *types*. Attention has been drawn to (stock-) listed firms (see, e.g., Scheufele, Haas, & Brosius, 2011) and to differences between government-owned and privately owned businesses (see e.g., Liu, Horsley, & Levenshus, 2010; Wonneberger & Jacobs, 2016). In addition, the research suggests that coverage is different for business-to-business (B2B) and business-to-consumer (B2C) companies (see, e.g., Capriotti, 2009). Hence, the current focus is on the following organizational demographics: (1) organizational size, age, and geographical location; and (2) variation across business types: government-owned and listed versus other company types, and B2Cs versus B2Bs.

The effect of corporate characteristics on visibility.

Research in the US indicates that larger businesses tend to attract more media coverage (e.g., Moon & Hyun, 2014; Meznar & Nigh, 1995). Compared to their smaller counterparts, larger firms have more impact on the economy and society as whole. Powerful social actors are in general more scrutinized and monitored by the news media (Bennett, 1990; Manning, 2001). Moreover, apart from media attention, larger companies are by definition more visible through the scope of their extensive stakeholder networks –, e.g., employees, investors, and consumers (Carroll & McCombs, 2003; Schultz, Mouritsen, & Gabrielsen, 2001). Moon and Hyun (2014) showed that across a population of large American firms, large organizations are still more visible in the news than smaller ones. Various indicators have been used to operationalize the size of a corporation. In communication research, the two most common indicators are financial resources (e.g., Moon & Hyun, 2014) and the amount of employees (e.g., Meznar & Nigh, 1995). This leads to the following hypotheses:

H1a: *The more financial resources a firm has, the more it will be visible in the news.*

H1b: *The more employees a firm has, the more it will be visible in the news.*

Organizational age may affect the visibility of companies in the news (Carroll & McCombs, 2003; Schultz et al., 2001). As a firm grows older, the chances increase that it will accrue a history of media visibility. In fact, research indicates that companies that are in the news tend to remain visible in the news (e.g., Mizuno, Takei, & Ohnishi, 2012; Verhoeven, 2016). Hence, the following is expected:

H2: *The older the company is, the more frequently it will be visible in the news.*

One may furthermore expect that events that occur closer to where a news outlet is located have a greater chance of being selected by that outlet for news coverage (e.g., Harcup & O'neill, 2001). With regard to an actor, one can assume that the closeness of an institutional actor to a news source positively affects the visibility of that actor in the news. Therefore, we expect the following:

H3: *Corporations that are located in the same region as a news outlet will be more visible in the news than corporations that are located in other regions.*

Media visibility in company news may depend on variation across business types. First, government-owned organizations tend to be more scrutinized by the media than private organizations (Liu, et al., 2010). Because government-owned firms are financed by public means, journalists are generally more focused on monitoring the con-

duct of such organizations (Thorbjørnsrud, Figenschou, & Ihlen, 2014). Members of the press commonly pressure government-related organizations to be transparent and open in terms of communication and information. Government-owned companies may adapt to this situation by being more communicatively oriented towards the news media than other company types (Wæraas & Byrkjeflot, 2012). This leads to the following hypothesis:

H4a: *Government-owned firms are more visible in the news than other types of firms.*

It has been argued that listed firms are intrinsically newsworthy because shareholders and investors are fundamentally dependent on the media for stock information (e.g., Scheufele et al., 2011). In addition, as with government-owned firms, listed companies are often pressured by their constituents to be transparent towards stakeholders regarding organizational policy decisions and financial information. Hence, the following hypothesis is stated:

H4b: *Listed companies are more visible in the news than non-stock listed firms.*

Company news content may also be differential for business-to-business (B2B) and business-to-consumer (B2C) firms. The research in corporate branding and marketing indicates fundamental differences between B2B and B2C firms: Whereas B2Cs are generally highly visible in the direct environment of news audiences – through direct contact with products, goods, and services – B2Bs are primarily focused on other professional organizations and non-consumer stakeholders, and thus not as much on the general public, including the lion's share of news audiences (see, e.g., Leek & Christodoulides, 2011). Because connecting with the existing knowledge and experiences of news audiences is one of the most important variables in the process of journalistic gatekeeping (Shoemaker & Reese, 2011), one might expect that B2C firms are much more frequently visible in the news in comparison to B2Bs. In a previous study on Spanish stock-listed firms, Capriotti (2009) indeed found that B2C firms are more salient in the news than their B2B counterparts. Therefore, we expect the following:

H5: *B2C firms will be more visible in the news than B2B firms.*

The effect of corporate characteristics on tone

In addition to visibility, corporate characteristics may also explain variation in the tone of company news coverage. In economic media coverage, the focus is generally on negative events and circumstances (Soroka, 2006). On one hand, one may expect that larger firms offer media more opportunity and motivation to report on negative events –, e.g., a greater focus on powerful actors; a more routinized journalistic orientation towards larger companies; and extensive stakeholder networks that offer more opportunities for journalists to encounter negative sources and negative events (e.g., Shoemaker & Reese, 2011). On the other hand, larger organizations have more resources at their disposal than smaller firms. This may give large firms a more advantageous position in affecting how issues that are related to the organization are framed towards the press (e.g., Verhoeven, 2016). Hence, the following research question is formulated:

RQ1: *How is the tone of coverage related to a company affected by company size?*

Moreover, negativity may motivate journalists to use past media coverage as a sort of 'memory database of negative events.' Others have argued that older firms have had more time to foster more favorable reputations among stakeholders (e.g., Schultz et al., 2001),

and they are therefore more inclined to receive positive press coverage. Hence, the following research question is proposed:

RQ2: *How is the tone of coverage related to a company affected by company age?*

Because media scrutiny is expected to be more intense and critical with government-owned organizations (e.g., Liu et al., 2010), it is expected that news coverage is not only more frequent but also more negative. This leads to the following expectation:

H6: *News coverage on government-owned firms is more negative than coverage on other types of firms.*

The coverage on B2Cs may also be more negative when compared to B2Bs. The research indicates that consumers are inclined to be more negative than positive when they communicate about products, goods, and services through channels such as social media (Éthier, Hadaya, Talbot, & Cadieux, 2006). This may fuel the flows of negative public information that can reach journalists. However, consumers often have positive attitudes about corporate products, goods, and services. This may stimulate journalists to select positive information on B2C firms. Hence, the following research question is stated:

RQ3: *To what extent does the tone in coverage on B2C firms differ from that of B2B firms?*

METHOD

To answer our research questions and to test our hypotheses, we analyze company news coverage from both online and offline newspapers in the Netherlands. In terms of its media landscape, the Netherlands can be viewed as a primary example of a democratic corporatist model (Hallin & Mancini, 2004) with a high level of professionalization of journalism and independent media. Hence, the Netherlands is considered to be a suitable context for this study. During the last decade, online news intake increased substantially; however, print media remains a dominant source of daily news consumption (Bakker & Scholten, 2014). In addition to daily ‘quality’ and ‘popular’ newspaper coverage, free dailies are an important form of news (Bakker, 2013). Daily financial and business news is offered by mainstream newspapers in financial and economic specialized sections as well as by the largest business news outlet, Het Financieele Dagblad.

News content data

With regard to news content, we use all of the online and offline articles that were published in 2014 by three of the four major daily Dutch newspapers: *de Volkskrant*, *NRC Handelsblad* (NRC), and *De Telegraaf*.¹⁰ Moreover, we use all of the online and offline news that was published in 2014 by the largest free daily (*Metro*), and all of the 2014 print articles that were published the largest business newspaper *Het Financieele Dagblad* (FD) were included in our initial dataset.¹¹ Table 1 provides an overview of the total amount of news articles that were used for the content analysis (N = 373,202).

10 Due to data availability issues, we were not able to include the print and online version of the fourth major Dutch newspaper, *Algemeen Dagblad* (AD), which is an outlet for ‘popular’ news.

11 Online news that was published by *Het Financieele Dagblad* was not available for 2014.

TABLE 1.

Description of the total population news articles 2014 (N= 373,202) and company news articles (N = 29,516)

News outlet	Description	All articles	Company news articles
Financieele Dagblad (print)	Financial/business newspaper	23943	6374
Telegraaf (print)	Popular newspaper (financial focus)	59503	5819
Telegraaf (online)	Popular newspaper (financial focus)	102377	6207
NRC (print)	Quality newspaper (economy focus)	39623	3061
NRC (online)	Quality newspaper (economy focus)	10275	815
Volkskrant (print)	Quality newspaper	34672	2752
Volkskrant (online)	Quality newspaper	51617	2420
Metro (print)	Free daily	19263	948
Metro (online)	Free daily	31929	1120

Note. Only the company news articles are included in the statistical analyses.

In line with the approach that is proposed by Trilling (2014), RSS feeds of the news sites (Telegraaf.nl, Vk.nl, Nrc.nl, and Metro.nl) were used to gather the online data. The online items were downloaded automatically by employing a Python program that was developed and explicated by Trilling, Tolochko, and Burscher (2016). The print articles (Telegraaf, NRC, Volkskrant, NRC, Metro, and FD) were retrieved from the *LexisNexis* database. In a final step, the news data were automatically preprocessed with a toolkit for automated content analysis (see for a similar approach Jonkman et al., 2016). The toolkit automatically separated the single news articles from the metadata such as section and publication date, after which it stored the parsed articles in a MongoDB database.¹² Subsequently, all of the lists and/or tables, such as overviews of stock prizes (i.e., all non-articles) were automatically removed from the data. All of the texts were converted to lowercase, and punctuation and stop words were removed from the data.

News content data

The company characteristics data were retrieved through *Bureau van Dijk's "Reach"* database for company information. We employed the part of the database that was used by *Bureau van Dijk* and *Elsevier* to construct the Elsevier 500 list. This list entails company information on the 500 largest corporations (based on yearly revenue) in the Netherlands. The Elsevier 500 is the Dutch equivalent of the American Fortune 500 list (see, e.g.,

¹² MongoDB is a so-called NoSQL database, which is a type of database that is suitable for storing large amounts of semi-structured data. This allows for the use of advanced filtering methods in an efficient way.

Moon & Hyun, 2014 for usage of the Fortune 500 list).^{13,14,15} The Elsevier 500 list has previously been used in academic research on company news in the Netherlands (see, e.g., Schaafraad et al., 2016).

In a following step, the list was reduced to the 100 largest companies excluding all foreign firms. The focus is on the top-100 Dutch companies, first because additional company data had to be retrieved manually (see the list of independent variables and control variables below) and, second, because in the process of automatically coding the media visibility it would not be possible to distinguish a Dutch ‘daughter company’ from its international ‘mother firm.’ For example, “BP Netherlands” was one of the companies in the original top-100. It would be unlikely for the Dutch news media to refer to “BP Netherlands” instead of “BP,” when communicating about BP Netherlands. Thus, this study focuses on Dutch organizations instead of all companies with headquarters that are *based* in the Netherlands.¹⁶ Ten other companies were subsequently removed from the list. Two firm names are also geographical names (Randstad and Oranjewoud); one firm name is a very common surname (Blokker); seven companies did not have online press releases for 2014 and/or online self-descriptions available due to either takeovers in 2014 or structural changes on corporate websites that year (Dura Vermeer, NXP, Detail Result, Hema, PON, Jacobs Douwe Egberts, and Menzis).¹⁷ The list was complemented with the next ten largest companies in the Elsevier 500 database, so that the total amount of companies on our final list was 100.

Dependent variables

Visibility. Media visibility was measured by an automated counting of news articles that mention a firm, whereby the minimum of one firm mention was considered as one company news article on that firm (see for a similar approach Jonkman et al., 2016).¹⁸ To

13 *Bureau van Dijk* is a professional research organization from the Netherlands that specializes in company data. Their databases are frequently used in the academic research and contain data about private and government-owned companies worldwide. The *Reach* database is focused on Dutch corporations only.

14 Elsevier is a Dutch weekly opinion magazine with a focus on the economy.

15 All of the information in the Elsevier list is, among other data, integrally available in the *Reach* database.

16 In addition, so-called “mailbox companies” – which had been excluded a priori from the Elsevier’s Top-500 list by Bureau van Dijk – are not part of the dataset. Mailbox firms are ‘virtual headquarters’ of (often multinational) corporations. Traditionally, the Netherlands has been known for attracting large numbers of mailbox firms because the Dutch authorities have been known to offer multinationals advantageous agreements on tax payments.

17 In the statistical models we include variables for which coding relies on organizational self-descriptions, and we control for the amount of press releases. However, for some corporate actors on our initial list, this information was not present. We therefore chose to remove these firms from our list.

18 As with media attention to other social actors, attention to companies may to a substantial extent be driven by specific events. The media coverage on corporate actors may therefore be intense and frequent for short periods of time and decline again. A relatively large mean visibility flanked by a large standard deviation may indicate a pattern of irregular high attention, instead of structural high media attention. For some companies, our data indeed reflects this situation. To prevent the distortion of

validly count the mentions, a replacement list was made and used to query the company names (see for a similar approach Jonkman et al., 2016). Our program for automated content analysis used regular expressions to replace company names on this list by one unique term if companies had synonyms, contained two or more words, or had multiple spellings. For example, “ABN Amro” as well as alternative spellings such as “ABN-Amro” were converted into “abnamro.” In addition, subsequent abbreviations such as “ABN” were automatically supplemented by the new name (“abnamro”) in case one of the spelling variants of the full name occurred in the same article. To control the extent to which the replacement list was accurate, we manually checked the visibility scores. We had to update and improve the replacement list a couple of times, until the calculations of the visibility scores were accurate.

Note that news articles that mention at least one of the 100 corporations on our list with large firms were deduced from the initial population of all news articles that were published by the nine outlets that are included in this study. This operation reduced the total number of articles that were used for the statistical analyses to $N = 29,516$ articles vis-à-vis the original set ($N = 373,202$; see Table 1 for an overview).

Tone in the news was measured with the SentiStrength algorithm (Thelwall, Buckley, & Paltoglou, 2010). The algorithm measures positivity and negativity in texts on a 5-point scale that ranges from -1 (not negative) to -5 (very negative) for negativity and 1 (not positive) to 5 (very positive) for positivity. This is done by searching for positive and negative words in the article, which are then weighted following an advanced scheme that also takes into account linguistic devices such as modal particles (very, slightly, completely), negations, or punctuation marks. It is important to realize that articles can score high or low on both positivity and negativity: For instance, an extremely neutral article can have values of -1 and 1, while a highly opinionated article might score -3 and +4 or even -5 and +5. This indeed is the case, as the correlation coefficient of .34 between the *absolute* values of negativity and positivity in the sample indicates. However, as the focus of this study is on the overall tendency of an article (Carroll, 2009), a single sentiment score per article was calculated by taking the sum of the positivity and negativity scores. Obviously, this sentiment score variable has a theoretical range from -4 (very negative) to +4 (very positive). Note that scores that are closer to zero signify overall neutrality; however, on the individual level these scores do not by definition mean that the article is neutral; high positivity scores and high negativity scores in one article may neutralize each other. Over the last years, the SentiStrength algorithm has been increasingly used in the communication research (see, e.g., Vargo, Guo, & McCombs, 2014), and it has been demonstrated that it performs well compared with other sentiment analysis approaches (Gonçalves, Araújo, & Benevenuto, 2013; González-Bailón & Paltoglou, 2015). Recently, the algorithm was used in a study that was specifically focused on Dutch news (Trilling et al., 2016) and in a study that concerned company news (Kroon & Van der Meer, in press).

We aggregated the data on a yearly level (2014 is the year under study). With

results, we log-transformed the visibility variable. The results that were obtained from running the negative binominal regression model with the log transformed visibility variable were comparable to the results that were obtained by using the original model with the original visibility variable. We therefore chose to use the original model for our analysis.

regard to this, it is important to note that scholars have used both visibility-based and non-visibility-based measures to operationalize tone in company news (see for an overview Zhang, 2016). The first measure is proportional to the amount of coverage that a company receives (see, e.g., Meijer & Kleinnijenhuis, 2006), while the latter seeks to isolate tone (see, e.g., Kiouisis, Popescu, & Mitrook, 2007). For example, assume that one collects three articles, two on firm A and one on firm B. Also assume that all three articles have a similar sentiment of -1 and are published on the same day. Using the 'mere tone measure' to aggregate the data to a daily level would demand that an average tone be identified in all of the articles and lead to the conclusion that the news on firm A and B has the same tone on that day – namely, -1. However, employing the visibility-based tone measure would lead to differential tone values for both firms because one would then sum the tone scores: -2 for firm A and -1 for firm B.

In the context of our overall research question, in which emphasis is placed on the gatekeeping process, we would primarily opt for the mere tone measure because we focus on how company characteristics may affect journalistic evaluations of companies in terms of tone on average. However, in addition, it may also be of interest to assess whether these company characteristics can explain the variation in the total amount of negative or positive company news that passes through the news gates. Therefore, we will conduct our analysis with the averaged tone measure as a dependent variable, and we will run another model with summed tone scores as the dependent variable.

Because economic news often has a negativity bias (Soroka, 2006), the aggregated variable could largely be a function of the number of articles published. As this may prevent testing effects on tone separately from effects on visibility, the tone measure was standardized, by creating a variable that ranges from -1 (most negative) to +1 (most positive). The following formula indicates this:

$$\text{Std Tone} = \frac{\sum(\text{pos}-1) + \sum(\text{neg}+1)}{\sum(\text{pos}-1 - \text{neg}+1)}$$

Where $-5 \leq \text{neg} \leq -1$ and $1 \leq \text{pos} \leq 5$

Notably, we subtract 1 from the positivity values, and we add 1 to the negativity values, so that the number 0 is included in the ranges of both variables, which indicates that an article may have no positivity and/or negativity. The standardized tone variable has a theoretical range from -1 to +1.

Independent variables

Firm size is operationalized in terms of an economic (*H1a*) as well as a socio-demographic (*H1b*) indicator (see also Mezner & Nigh, 1995). The economic indicator is measured as the logarithm with base 10 of annual revenue in millions of Euro. The log-transformation of variables is commonly performed in the economic and management research to account for the non-normal distribution of variables (e.g., Hollanders & Vliegenthart, 2011). The decadic logarithm instead of the also frequently used natural logarithm was chosen because it improves the interpretability of the results (see results section). The

socio-demographic indicator is measured as the decadic logarithm of the number of employees (e.g., Manolova, Manev, & Gyoshev, 2010). The data on the amount of employees and organizational size were retrieved from the *Van Dijk's Reach* database.

Organizational age (*H2* and *RQ2*) was measured by documenting the year in which a company's name was used for the first time. Most corporate websites yielded information on this. For firms without information on age available on their website, the company's *Wikipedia* page was used. A few companies had to be contacted (by email or phone) to retrieve the correct information on age.

For *geographical location* (*H3*) it was dummy coded as to whether a company's headquarters is located in "De Randstad." De Randstad is a conurbation in the west of the Netherlands, formed around the country's four largest cities. All of the national news media are also located in this region (see, e.g., Bakker & Scholten, 2014). Location data were available in the *Reach* database.

The variables that were related to ownership structure – "government-owned" (*H4a* and *H6*) or "stock-listed" (*H4b*) – are also dummies, and created on the basis of the data that were retrieved from the *Reach* database. Other types of ownership structures that are present in the *Reach* database were: "family business" and "other ownership structures." Four mutually exclusive dummy variables were thus included in the models, with "government-owned" as reference category.

To determine whether a firm is a *B2C* or a *B2B* (*H5* and *RQ3*), one of the authors performed a qualitative reading of the self-descriptions of all of the individual firms on the corporate websites. If a corporate brand name is explicitly and directly used in communication with consumers with regard to the selling of products, goods, or services, a corporation is considered to be a *B2C* company. If this is not the case, the company was coded as a *B2B* company.

Control variables

Although the theoretical expectations are centered on 'hardware' corporate characteristics, one could argue that it is important to control for strategic communication efforts from the corporations themselves. Accumulated research suggests that a large share of the daily news content originates indirectly from information subsidies by (corporate) public relations professionals (see, e.g., Macnamara, 2014). Large corporations invest large amounts of resources in media relations and the production of information subsidies. Following the approach by Moon & Hyun (2014) the *number of press releases* that were published by a company in 2014 on its corporate website were taken as a proxy for communicative pro-activeness. All of the press releases that were published in 2014 on the corporate websites of each individual firm under study were manually counted. As the data collection for this variable started in September 2015, it appeared that not all of the firms had press databases that date back to at least 1 January 2014. To solve this problem, the *Internet Archive Wayback Machine* (archive.org) was consulted to examine the amount of press releases that were published in 2014 for a total number of 26 firms that did not have a press releases database that dates back to 1 January 2014 available on their current website. Eleven companies on the list appeared to have published no press releases at all on their website, while sixteen companies published their press releases in

the English language. English and Dutch press releases were both considered to be relevant for the total amount of published items because the average level of English in the Netherlands is high, and professional communication in business as well as journalism is often in English.

Although no specific theoretical expectations were stated with regard to the variation across economic sectors to which the organizations are related, one could argue that it is important to control for *sector*. The research indicates that both media attention and tone may differ across sectors (see, e.g., Lunenburg, 2002). In accordance with the approach by (Jonkman et al., 2016) each corporation in the data set was allocated to an industry (sector) on the basis of the Global Industry Classification Standards (GICS) industry classification scheme. The following nine sectors were coded and used as overarching industries as follows: (1) Industrials; (2) Energy; (3) Telecommunication Services; (4) Materials; (5) Financials; (6) Consumer Discretionary; (7) Consumer Staples; (8) Information Technology; (9) Utilities. All of the sectors are included as dummies in the models, with Industrials (the largest sector in the sample) as a reference category.

Finally, company news may also vary among *news outlets* (Carroll & Deephouse, 2014). The sample incorporates a diverse set of outlets and news types that include newspapers from several ideological backgrounds (see Bakker & Scholten, 2014); online and offline news; business and mainstream news; paid dailies and a free daily. All of the newspapers in the dataset are included as dummy variables in the models, with the print version of *Financieele Dagblad* (the only business news outlet) as a reference category.

See Table 2 for an overview of the descriptive statistics of all of the variables in the data set.

Statistical models

The observations in the dataset are not independent. Rather, the dataset has a multilevel structure, with outlets nested in organizations. Multilevel modeling is a way to account for non-independence in nested groups (Hox, 2010). After running a multilevel mixed-effects negative binomial regression model for visibility, and a multilevel mixed-effects linear regression for tone, regular models were also performed; these did not control for the hierarchical structure of the data. However, the results of the multilevel and simple models were virtually identical. On the basis of this, the simpler and more easily interpretable models are presented in the results section.

Because the visibility variable follows a count distribution with overdispersion (i.e., the variance is considerably larger than the mean – see also Table 2), a negative binomial regression model is estimated, with standard errors clustered by organizations. Because our dataset contains 100 distinct companies and 9 distinct outlets, the yearly aggregated visibility scores are calculated for 900 cases. Both the summed and average tone variables are estimated with OLS regression, with standard errors clustered by organizations. Because we could not calculate tone values for cases with no visibility, the total amount of observations in the tone models is lower than that in the visibility models (N = 655, see Table 2).

RESULTS

This study is focused on the affective relationship between company characteristics and two distinct characteristics of company news coverage: visibility and tone. To give a first overview of the dataset, a brief description of the dependent variables will be presented.

The average amount of articles (visibility) in 2014 is 49.71 ($SD = 110.52$), with a minimum score of 0 and a maximum score of 1116 (which is the value of the ING Bank (a large Dutch bank) in FD, the business/financial newspaper). In fact, the variance in the visibility variable is huge: more than 50 percent of all company-outlet combinations has a visibility score of six or less, while 27 percent of those combinations yields no visibility at all. This already indicates that there is much variation in terms of visibility across companies and outlets.

The average for (average) tone is -0.25 ($SD = 0.24$), with a minimum score of -1.00 , and a maximum of 1.00 (see Table 2). The mean and the skewness indicate that the company news in our dataset tends to be skewed towards negativity. In other words, it indicates a negativity bias in company news. In the aggregated dataset, on a case level, the same pattern can be observed: Visibility correlates negatively with the average tone variable ($r = -0.59$, $p < 0.001$).

As described above, the statistical models that were used for the two dependent variables differ. The negative binominal regression model for visibility is to be understood on the basis of so-called incidence rate ratios (IRRs), which can be interpreted as follows: An increase with one unit on the part of the independent variable results in an expected value of IRR multiplied by the dependent variable. An IRR that is lower than 1 thus indicates a negative effect, while an IRR that is larger than 1 indicates a positive effect. In the OLS regression, the regression coefficient must be *added* to, instead of multiplied by, the dependent variable.

TABLE 2.

Descriptive Statistics of All Variables in the Data Set

Variables	Visibility	N	M	SD	Tone	N	M	SD
Dependent variables								
Visibility		900	49.71	110.52				
Tone summed						655	-16.18	32.13
Tone averaged						655	-0.25	0.24
Independent variables								
Employees (log10)		900	3.82	0.66		655	3.96	0.63
Revenue 2014 (log10)		900	3.54	0.54		655	3.63	0.56
Firm age (log10)		900	1.57	0.46		655	1.60	0.44
Randstad located		900	0.65	0.48		655	0.71	0.45
Listed		900	0.38	0.49		655	0.45	0.50
Government-owned		900	0.13	0.34		655	0.16	0.37
Other ownership		900	0.32	0.47		655	0.25	0.44
Family business		900	0.17	0.38		655	0.13	0.33
B2C (vs. B2B)		900	0.36	0.48		655	0.45	0.50
Control variables								
Number press releases (log10)		900	1.26	0.68		655	1.43	0.59
Industrials		900	0.33	0.47		655	0.35	0.48
Energy		900	0.06	0.24		655	0.06	0.23
Telecom		900	0.02	0.14		655	0.03	0.16
Materials		900	0.04	0.20		655	0.04	0.21
Financials		900	0.16	0.37		655	0.20	0.40
Consumer discretionary		900	0.10	0.30		655	0.09	0.29
Consumer staples		900	0.24	0.43		655	0.17	0.38
Technology hardware		900	0.01	0.10		655	0.01	0.12
Utilities		900	0.04	0.20		655	0.05	0.21

Note. $N = 900$ is based on the following aggregation: companies (100) x media outlets (9).

TABLE 3.

Negative Binominal Regressions Predicting Media Visibility of Large Corporations in News

	Model 1	Model 2
Expected predictors of visibility		
Number employees		2.666 (0.555)*** [1.773; 4.009]
Yearly revenue 2014		1.309 (0.375) [0.747; 2.295]
Firm age		1.161 (0.281) [0.722; 1.866]
Randstad located		1.389 (0.304) [0.904; 2.133]
Listed		0.254 (0.093)*** [0.124; 0.520]
Family business		0.109 (0.044)*** [0.049; 0.241]
Other ownership		0.162 (0.062)*** [0.076; 0.343]
B2C (vs. B2B)		3.318 (0.949)*** [1.895; 5.811]
Controls		
Press releases	5.761 (1.388)*** [3.593; 9.239]	2.722 (0.655)*** [1.699; 4.362]
Constant	8.925(4.052)***[3.666; 21.732]	
Log pseudolikelihood	-3452.8055	-3180.2717
Alpha	2.431 (0.283)	1.223 (0.170)
N	900	900

Note. Both models control for economic sectors and news outlets, but these variables are not included in the table. IRRs with confidence intervals in brackets. Values < 1 indicate a negative effect, values > 1 indicate a positive effect. IRRs = incidence rate ratios. *p < .05. **p < .01. *** p < .001.

Turning to the substantive interpretation of the model, it can be observed that the number of employees positively affects visibility (see Table 3). As the logarithm with base 10 of the employee ratio was taken, the model indicates that if the amount of employees increases by factor 10, visibility will be 2.66 times as high; or increases by 166 percent (see *IRR* score in Table 4). The effect of yearly revenue in 2014 (also estimated based on its decadic logarithm) is not statistically significant. Hence, the findings support *H1b*: Firm size, in terms of employees, is positively related to visibility, whereas no effect is found for revenue (*H1a*). The effect for the relationship between firm age and visibility was not statistically significant, thus we do not find support for *H2*. Neither do we find support for the expectation that Dutch companies that are located in the same region in which all of the news outlets are based (*De Randstad*) are more visible than companies that are located in other regions (*H3*).

However, with regard to corporate types, we do find significant effects. First, the model strongly supports the expectation that government-owned companies are more visible in the news than corporations with other ownership structures (*H4a*): according to our model (see Table 3), the visibility of government-owned corporations is approximately 4 times higher compared to listed companies ($IRR_{\text{government-owned}} / IRR_{\text{listed}} = 1 / 0.25$); 9.09

times higher than family businesses ($IRR_{\text{government-owned}} / IRR_{\text{family business}}, 1 / 0.11$); and 6.25 times higher compared to other business types ($IRR_{\text{government-owned}} / IRR_{\text{other ownership}}, 1 / 0.16$). We also find some support for *H4b*: Our data indicate that listed firms are 2.33 times as visible in the news as family businesses ($IRR_{\text{listed}} / IRR_{\text{family business}}, 1 / 0.43$); and 1.56 times when they are compared to other types ($IRR_{\text{listed}} / IRR_{\text{other ownership}}, 1 / 0.64$).¹⁹ Hypothesis 5 (*H5*) anticipates that B2Cs are more visible in the news than B2Bs. The results provide strong support for this expectation: According to the model B2Cs are 3.32 times as visible in the news as B2Bs (see Table 3).

The data for the OLS regression models with tone as a dependent variable indicate no significant relationship between company size and tone (*RQ1a, RQ1b*), nor are company age and tone significantly related (*RQ2*) (See Table 4 and 5).

TABLE 4.

Linear Regressions Predicting Tone in News on Large Corporations, average tone values

	Model 1	Model 2
Expected predictors of tone		
Number employees		0.015(0.026)
Yearly revenue 2014		-0.022(0.035)
Firm age		0.030(0.023)
Randstad located		-0.028(0.033)
Listed		0.094(0.036)**
Family business		0.134(0.053)**
Other ownership		-0.007(0.039)
B2C (vs, B2B)		0.015(0.034)
Controls		
Press releases	-0.005(0.022)	-0.009(0.022)
Constant	0.189(0.044)***	-0.283(0.094)***
R2	0.089	0.139
N	655	655

Note. Both models control for economic sectors and news outlets, but these variables are not included in the table. Unstandardized regression coefficients. Standard errors (clustered by week) in brackets. *p < .05. **p < .01. *** p < .001.

With regard to company types, we do find significant differences between corporate actors. The model with average tone (see Table 4) shows that both listed firms (b = 0.09, p < 0.01) and family businesses (b = 0.13, p < 0.01) tend to be presented more positively compared to government-owned firms. No significant difference is found between government-owned and the ‘other’ category. In sum, *H6* is partly supported.

However, when we review the visibility-based model for tone (see Table 5), it becomes apparent that the amount of negative news that is flowing through the news gates

¹⁹ Calculations are based on a model with “listed” firms as a reference category instead of “government-owned” companies.

is significantly higher for government-owned firms than for the other firm types: listed ($b = 35.47$, $p < 0.001$); family business ($b = 39.56$, $p < 0.001$); other ownership structures ($b = 29.45$, $p < 0.01$).

TABLE 5.

Linear Regressions Predicting Tone in News on Large Corporations, summed tone values

	M0	M1
Expected predictors of tone		
Number employees		-9.561(4.893)
Yearly revenue 2014		-6.768(4.807)
Firm age		-6.284(4.550)
Randstad located		-5.171(2.927)
Listed		35.473(9.678)***
Family business		39.563(8.535)***
Other ownership		29.447(9.072)**
B2C (vs, B2B)		-16.377(6.102)**
Controls		
Press releases	-21.714(5.274)***	-14.081(4.801)**
Constant	4.743(6.835)	38.382(17.654)**
R2	0.232	0.451
N	655	655

Note. Both models control for economic sectors and news outlets, but these variables are not included in the table. Unstandardized regression coefficients. Standard errors (clustered by week) in brackets. * $p < .05$. ** $p < .01$. *** $p < .001$.

Finally, with regard to *RQ3*, we do not find that businesses-to-consumer firms are more or less negatively portrayed than business-to-business companies (see Table 4).

However, when reviewing at Table 5, we do see that the amount of negative news is higher for B2C companies than it is for B2B firms ($b = -16.38$, $p < 0.01$).

CONCLUSION AND DISCUSSION

This paper concentrated on the question of to what extent can corporate characteristics explain the media coverage of firms in terms of visibility and tone. The answer to this question is equivocal. The corporate characteristics that are included in this research add *substantially* to the explanation of visibility, but less to tone. Substantial differences were observed between characteristics in the extent to which firm-features can explain visibility; however, there is less variety between corporate characteristics in terms of their power to explain variation in tone. The results specifically draw attention to differences between company types. Government-owned companies are not only substantially more visible

in the news; they are also presented more negatively compared to most other ownership structures. In addition, the total amount of news on government-owned firms is more negative compared to other types. Further, business-to-consumer firms are more visible than business-to-business firms, and the total amount of news on business-to-consumer firms tends to be more negative. These findings have implications for the study of journalism and mass communication but also for public relations because they help to clarify journalistic gatekeeping and news selection in the context of news about corporations.

A finding that stands out is the strong effect of organizational type on news visibility. The finding on the higher visibility of government-owned organizations is in line with the extant research on governmental organizations and the news media, which has argued that government-owned organizations are more scrutinized by the media than private firms (e.g., Liu, et al., 2010). This is also in accordance with the literature on the watchdog-role of the press, which has noted that the news media system is generally highly focused on controlling state power and monitoring the common good (see, e.g., Kalogeropoulos et al., 2014). Additionally, the results strongly support the notion that B2C companies are more visible in the news than B2B companies (see also Capriotti, 2009). Seen from a media-centric perspective, this links to the literature in journalism that has found that the news media itself are a consumer driven system that is focused on the life world of news audiences and their needs (e.g., Habermas, 2006).

A second notable finding, which is in line with the previous research on company size (e.g., Meznar & Nigh, 1995), is that firms with high numbers of employees are more visible in the news. However, the expectation that higher revenue rates would increase visibility is not supported. This draws attention to the notion of ‘relevance’ in the gatekeeping literature (see, e.g., Eilders, 2006): The amount of employees may not only signal more newsworthiness with regard to consequences of corporate conduct and management for employees and civilians (e.g., strikes, dismissals), but employees may also be important news sources for journalists. This also fits journalism as a consumer-driven system that benefits personal perspectives.

The findings indicate that hard company characteristics are less predictive for tone than for visibility. The literature suggests that tone in company news seems to be better explained by the issues with which a company is associated and specific incidents or crises (see, e.g., Schultz et al., 2012), or ‘software corporate characteristics,’ such as having a media-attractive CEO or a specific branding strategy. However, the data and analyses do reveal some interesting findings with regard to tone. First, there is a slight negative bias in the company news data that were studied in this project, which show that economic news about corporations is usually negative. This is in line with the existing research that is related to negativity in economic news (see, e.g., Soroka, 2006).

One important caveat when interpreting the results of our tone analysis is the measurement of the tone variable. While visibility was straightforward to measure as the number of articles, tone is much more difficult to operationalize. Even the best sentiment analysis algorithms are far from perfect, and the relative imprecision of the measure can lead to an underestimation of the effects of tone. In addition, while sentiment analysis algorithms are often evaluated within highly specific domains (e.g., movie reviews or customer feedback), to the best of our knowledge, there is no algorithm that is specifically

geared towards the analysis of economic or business news. Future research could employ a supervised machine-learning approach to obtain a more precise measurement of tone (see, e.g., González-Bailón & Paltoglou, 2015)

Notably, the results of our study also show that communicatively proactive firms (measured by the number of press releases in 2014) are more frequently visible in the news and that the total amount of news about these ‘communicative firms’ is more negative. This is an interesting finding, because it may suggest that communicative companies may be successful in setting the media agenda on the first level of agenda setting, but not as much on the second level. According to agenda-building and agenda-setting theory, the ‘first level’ refers to the salience of (corporate) actors and issues, while the ‘second level’ refers to the attributes of news objects such as evaluations (see, e.g., Carroll & McCombs, 2003). An alternative explanation for our results is that press releases are a defense mechanism for companies that are highly visible in the news. Our results indicate that media-visible companies are on average portrayed in a negative manner. Sending out press releases may be a corporate attempt to control and diminish the negativity of the mass-mediated information –, i.e., a corporate defence mechanism. However, ironically, if this holds true, communicative proactivity would thus function as a defense strategy.

The approach that was used in this study, the findings and the theoretical framework combined, suggest a number of challenges for future research. First, the company data in this paper entail a limited number (100 Dutch corporations). These firms are comparable to the extent that they are all very large in terms of revenue, and they are from one country. This limits the extent to which the results are generalizable to other contexts (e.g., countries, firm types). Second, the amount of hard corporate characteristics that are included in this study is limited. If available, additional characteristics (e.g., more ownership categories, detailed information on assets) could offer a more complete framework. While this paper is focused on so-called ‘hardware characteristics,’ contrasting the ‘hardware features’ with the ‘software features’ of companies (e.g., communication budgets, branding strategies, identity types, CEO visibility) could offer more explanatory power to predict visibility and tone.

With regard to the media content, other characteristics of content could be considered, such as frames and past attention (see, e.g., Verhoeven, 2016). Moreover, more attention should be paid to the dynamical aspect of the interrelations between media coverage and companies. Time-series modeling offers possibilities to account for overtime variation across influences in- and on the news – (e.g., past coverage; day-to-day variation in stock ratings, press releases; or year-to-year variation in turnover rates, and communication budgets). Finally, there is a need for more qualitative research and theory building, to better understand the relationship between corporate characteristics and news content.

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