To pass or not to pass

How corporate characteristics affect corporate visibility and tone in company news coverage

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To Pass or Not to Pass: How Corporate Characteristics Affect Corporate Visibility and Tone in Company News Coverage

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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 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, our results indicate that government-owned companies tend to be portrayed more negatively than listed firms and family businesses.

KEYWORDS
Gatekeeping; company news; company characteristics; visibility; tone; news; automated content analysis

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 2009) and countries (e.g. Wu 2000), company news research lacks studies that compare coverage across actors (see for exceptions, e.g. Capriott 2009; Moon and 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 and McCombs 2003; Carroll and Deephouse 2014). This is important because companies put a lot of strategic effort in influencing the news media, which are considered to be a crucial interface between companies and their stakeholders (Cornelissen, Carroll,
The literature shows a reciprocal relationship between public relations professionals and journalists that are mutually dependent on one another (Bentele, Liebert, and Seeling 1997) and continuously negotiate the frames used in reporting about companies (Cornelissen, Carroll, and Elving 2009). This co-production of corporate news has consequences for media coverage about companies. Empirical research shows a substantial influence of companies on media content about them and also that proactive media relations policies can be beneficial for them (see for an overview, Verhoeven 2016). The way companies are presented in the news have varied effects on different publics. Studies show for example that negative news damages corporate reputations (e.g. Zhang 2018) but also that a positive reputation can protect companies against negative publicity (Meijer and Kleinnijenhuis 2006). On a macro level research demonstrates that the content of economic news can influence consumer confidence in the economy (Hollanders and Vliegenthart 2011) and the stock market (e.g. Strauss, Vliegenthart, and Verhoeven 2017). Although many studies into the co-production of company news and its effects have been done, research into the overarching news agenda about companies and the possible drivers behind this news agenda is currently lacking. In this paper we aim to add insights about this overarching company news agenda and the corporate characteristics influencing it.

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 and Hyun 2014). While some firms are presented as being highly salient, others are barely given mention (Jonkman et al. 2018). 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, and Hayward 2006). News tone is another key variable in 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 and McCombs 2003).

So, how can variation across companies in the news - in terms of how much and how they are covered - be explained? To answer this question we first draw on gatekeeping theory, which offers a framework to conceptualize how the selection of company news works and the factors that may influence cross-corporate differences (Carroll and 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 and 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 and 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 and Reese 2011).

Against this background, and following previous attempts to compare firms in the news (e.g. Moon and Hyun 2014; Capriotti 2009), we concentrate on the determining role of
hard corporate characteristics or intrinsic features of firms e.g. organizational demographics, ownership structures and business types. 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 and 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. Overall, we seek to answer the following overarching research question: To what extent do corporate characteristics affect visibility and tone in company news?

Company News Coverage: A Focus on Visibility and Tone

Mainly inspired by the agenda-setting theory, previous research has examined company news content by focusing on corporate visibility (e.g. Capriotti 2009; Moon and Hyun 2014); tone (e.g. Deephouse 2000); both visibility and tone (e.g. Zhang 2018); corporate attributes and the tone of such attributes (e.g. Kiousis, Popescu, and Mitrook 2007), corporate associations with issues (e.g. Meijer and Kleinnijenhuis 2006), and frames (e.g. Schultz et al. 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 et al. 2010).

An actor’s visibility in the news reflects the extent to which journalists consider that actor newsworthy (Harcup and 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 and Vliegenthart 2011). Additionally, object characteristics may not only drive visibility but also the way in which those objects are evaluated in terms of news tone.

The Role of Corporate Characteristics in News Selection

According to studies that have been inspired by gatekeeping theory and 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 and McCombs 2003; Moon and Hyun 2014; Schafraad, van Zoonen, and Verhoeven 2016). Rosengren (1970) already advocated that research should focus on extra-media data; 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 and Vliegenthart 2011). Hard corporate characteristics qualify for use as such real-world indicators.

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. Meznar and Nigh 1995). In addition, the geographical location of a firm’s headquarters may play a role (see, e.g. Eilders 2006). Furthermore, media coverage may be different across company types. Attention has been drawn to (stock-)listed firms (e.g. Strauß, Vliegenthart, and Verhoeven 2017) and to differences between government-owned and privately owned organizations (e.g. Liu, Suzanne, and Levenshus 2010; Wonneberger and Jacobs 2016). In addition, 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.

To the best of our knowledge, this current study is the first to integrate studies on corporate characteristics from diverse academic fields in a media-centric, gatekeeping-based framework, while comparatively testing this framework across a large set of corporate actors and media outlets. Hence, this study substantively enhances our present knowledge about how corporate actors affect news coverage.

Hypotheses and Research Questions

The Effect of Corporate Characteristics on Visibility

Research in the US indicates that larger businesses tend to attract more media coverage (e.g. Moon and Hyun 2014; Meznar and 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 (Schultz, Mouritsen, and 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 and Hyun 2014) and the amount of employees (e.g. Meznar and 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 and McCombs 2003; Schultz, Mouritsen, and Gabrielsen 2001). As a firm grows older, the chances increase that it will accrue a history of media visibility. In fact, the research indicates that companies that are in the news tend to remain visible in the news (Mizuno et al. 2012). 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 and 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 firms with other ownership structures (e.g. Liu, Suzanne, and Levenshus 2010). Because government-owned firms are financed by public means, journalists are generally more focused on monitoring the conduct of such organizations (Thorbjornsrud, Figenschou, and 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 and Byrkjeflot 2012). This leads to the following hypothesis:

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

Arguably, listed firms are intrinsically newsworthy because shareholders and investors are fundamentally dependent on the media for stock information (e.g. Strauß, Vliegenthart, and Verhoeven 2017). 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 and 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 and 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 and 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 (Schultz, Mouritsen, and Gabrielsen 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 firms (Liu, Suzanne, and Levenshus 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. 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 (e.g. Éthier et al. 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 (e.g. fans). This may stimulate journalists to select positive information on B2C firms. Hence, the following research question is stated:

RQ3: Two 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 and 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 and Scholten 2014). 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*. 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 by the largest business newspaper *Het Financieele Dagblad* (FD) were included in our initial dataset. Table 1 provides an overview of the total amount of news articles that were used for the content analysis (N = 373,202).

RSS feeds of the news sites were used to gather the online data. The online items were downloaded automatically by employing a Python program that was developed and explained by Trilling, Tolochko, and Burscher (2017). The print articles were retrieved from the *LexisNexis* database. In a final step, the news data were automatically preprocessed with a toolkit for automated content analysis (see: Jonkman et al. 2018). The program 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. 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 (see for approach: Jonkman et al. 2018).

**Company Characteristics**

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 *B. 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 (e.g. Moon and Hyun 2014). The Elsevier 500 list has previously been used in the academic research on company news in The Netherlands (e.g. Schaafraad, van Zoonen, and Verhoeven 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 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” (e.g. BP Netherlands). Thus, this study focuses on Dutch organizations instead of all companies with headquarters that are based in The Netherlands.

Ten other companies were subsequently removed

<table>
<thead>
<tr>
<th>News outlet Description</th>
<th>All articles</th>
<th>Company news articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financeele Dagblad (print)</td>
<td>Financial/business newspaper</td>
<td>23943</td>
</tr>
<tr>
<td>Telegraaf (print)</td>
<td>Popular newspaper (financial focus)</td>
<td>59503</td>
</tr>
<tr>
<td>Telegraaf (online)</td>
<td>Popular newspaper (financial focus)</td>
<td>102377</td>
</tr>
<tr>
<td>NRC (print)</td>
<td>Quality newspaper (economy focus)</td>
<td>39623</td>
</tr>
<tr>
<td>NRC (online)</td>
<td>Quality newspaper (economy focus)</td>
<td>10275</td>
</tr>
<tr>
<td>Volkskrant (print)</td>
<td>Quality newspaper</td>
<td>34672</td>
</tr>
<tr>
<td>Volkskrant (online)</td>
<td>Quality newspaper</td>
<td>51617</td>
</tr>
<tr>
<td>Metro (print)</td>
<td>Free daily</td>
<td>19263</td>
</tr>
<tr>
<td>Metro (online)</td>
<td>Free daily</td>
<td>31929</td>
</tr>
</tbody>
</table>

Note: Only company news articles are included in the statistical analyses.
from the list, because of name confusion or lack of available information. 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**

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. 2018). To validly count the mentions, a replacement list was made and used to query the company names (see: Jonkman et al. 2018). 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. To manually check the extent to which the replacement list was accurate, we manually checked the visibility scores and improved the list.

News articles that mention at least one of the 100 corporations on our list were deduced from the initial population of all news articles. 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 et al. 2010), an algorithm that performs well (see, e.g. Vargo et al. 2014; González-Bailón and Paltoglou 2015), also specifically with regard to company news (Kroon and Van der Meer 2018). 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. A single sentiment score per article was calculated by taking the sum of the positivity and negativity scores. 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.

We constructed an averaged tone variable (see, e.g. Kiousis, Popescu, and Mitrook 2007). With regard to our overall research question - in which emphasis is placed on the gatekeeping process - this averaged tone is arguably the most appropriate measure of sentiment (see for a comparison of tone measures in company news e.g. Zhang 2016), because we focus on how company characteristics may affect journalistic evaluations of companies in terms of average tone. Notably, 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 would 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:

\[
\text{Std Tone} = \frac{\sum \text{(pos)} + \sum \text{(neg)}}{\sum \text{(pos - neg)}}
\]

Where \(-5 \leq \text{neg} \leq -1\) and \(1 \leq \text{pos} \leq 5^3\).

**Independent Variables**

Firm size is operationalized in terms of an economic (H1a) as well as a socio-demographic (H1b) indicator (see e.g. Meznar and 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 and Vliegenthart 2011). The socio-demographic indicator is measured as the decadic logarithm of the number of employees (e.g. Manolova, Ivan M., and 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 head-quarters 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 and 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.” Hence, these four mutually exclusive dummy variables were 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**

Research suggests that a large share of the daily news content originates indirectly from information subsidies by (corporate) public relations professionals (see, e.g. Verhoeven 2016). Following the approach by Moon and Hyun (2014) the number of press releases that were published by a company in 2014 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. 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.4

In addition, research indicates that both media attention and tone may differ across sectors (see, e.g. Van Lunenburg 2002). In accordance with the approach by (Jonkman et al. 2018) each corporation in the data set was allocated to the following industries (sectors) on the basis of the Global Industry Classification Standards (GICS) industry classification scheme: (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 and Deephouse 2014). The sample incorporates a diverse set of outlets and news types that include newspapers from several ideological backgrounds (see Bakker and 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 cross-nested in organizations. Multilevel modeling is a way to account for non-independence in nested groups (Hox 2010). After running a cross-nested mixed-effects negative binomial regression model for visibility, and a cross-nested mixed-effects linear regression for tone, regular regression models were also performed; these did not control for the lack of independence of observations, but did include fixed effects for outlets (dummy variables) to remove the variance caused by outlet differences that are not of key concern in this paper. The results of the cross-nested and these simpler models were virtually identical. On the basis of this, the simpler and more easily interpretable models are presented in the results section.5

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. The tone variable is estimated with an OLS regression, with standard errors clustered by organizations. Because we could not calculate tone values for cases with zero visibility, the total amount of observations in the tone model is lower than that in the visibility model (N = 655, see Table 2). Notably, for tone, we conducted an analysis on the article level as an additional robustness check.
Here we considered articles to be nested in a combination of outlet and organization. A cross-classified multi-level model including 44,718 observations – this is more than the total number of articles, since some of them contain two or more company names and are included multiple times.

Results

This study is focused on the affective relationship between company characteristics and two distinct characteristics of company news coverage: visibility and tone. The average amount of articles about one company (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-news 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 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

### Table 2. Descriptive statistics of all variables in the dataset

<table>
<thead>
<tr>
<th>Variables</th>
<th>Visibility</th>
<th>Tone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>Dependent variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visibility</td>
<td>900</td>
<td>49.71</td>
</tr>
<tr>
<td>Tone</td>
<td>655</td>
<td>$-0.25$</td>
</tr>
<tr>
<td>Independent variables</td>
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<td></td>
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<tr>
<td>Employees (log10)</td>
<td>100</td>
<td>3.82</td>
</tr>
<tr>
<td>Revenue 2014 (log10)</td>
<td>100</td>
<td>3.54</td>
</tr>
<tr>
<td>Firm age (log10)</td>
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<td>1.57</td>
</tr>
<tr>
<td>Randstad located</td>
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<tr>
<td>Government-owned</td>
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<td>0.13</td>
</tr>
<tr>
<td>Other ownership</td>
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<td>0.32</td>
</tr>
<tr>
<td>Family business</td>
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<td>0.17</td>
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<tr>
<td>B2C (vs. B2B)</td>
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<td>0.36</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number press releases (log10)</td>
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<td>1.26</td>
</tr>
<tr>
<td>Industrials</td>
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<td>0.33</td>
</tr>
<tr>
<td>Energy</td>
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<td>0.06</td>
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<td>Telecom</td>
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<tr>
<td>Materials</td>
<td>100</td>
<td>0.04</td>
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<tr>
<td>Financials</td>
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<td>0.16</td>
</tr>
<tr>
<td>Consumer discretionary</td>
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<td>0.10</td>
</tr>
<tr>
<td>Consumer staples</td>
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<td>0.24</td>
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<tr>
<td>Technology hardware</td>
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<td>0.01</td>
</tr>
<tr>
<td>Utilities</td>
<td>100</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. $N = 900$ and $N = 655$ is based on the following aggregation: companies x media outlets. $N = 100$ and $N = 92$ refer to the the amount of companies in the datasets.
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.

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 on a weekly level; 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 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_{government-owned} / IRR_{listed} = 1 / 0.25); 9.09 times higher than family businesses (IRR_{government-owned} / IRR_{family business} = 1 / 0.11); and 6.25 times higher compared to other business types (IRR_{government-owned} / IRR_{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_{listed} / IRR_{family business} = 1 / 0.43); and 1.56 times when they are compared to other types (IRR_{listed} / IRR_{other ownership} = 1 / 0.64). Hypothesis 5 (H5) anticipates that B2Cs are more visible in the news than B2Bs. The results provide strong support

| 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] | 2.666 (0.555)** [1.773; 4.009] |
| Yearly revenue 2014              | 1.309 (0.375) [0.747; 2.295] | 1.309 (0.375) [0.747; 2.295] |
| Firm age                        | 1.161 (0.281) [0.722; 1.866] | 1.161 (0.281) [0.722; 1.866] |
| Randstad located                | 1.389 (0.304) [0.904; 2.133] | 1.389 (0.304) [0.904; 2.133] |
| Listed                          | 0.254 (0.093)** [0.124; 0.520] | 0.254 (0.093)** [0.124; 0.520] |
| Family business                 | 0.109 (0.044)** [0.049; 0.241] | 0.109 (0.044)** [0.049; 0.241] |
| Other ownership                 | 0.162 (0.062)** [0.076; 0.343] | 0.162 (0.062)** [0.076; 0.343] |
| B2C (vs, B2B)                   | 3.318 (0.949)** [1.895; 5.811] | 3.318 (0.949)** [1.895; 5.811] |
| Controls                        |                 |
| Log pseudolikelihood            | −3452.8055 −3180.2717 | −3452.8055 −3180.2717 |
| Alpha                           | 2.431 (0.283) | 2.431 (0.283) |
| 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.
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).

However, with regard to company types, we do find significant differences between corporate actors. The OLS model for 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.

The analysis from a cross-nested multilevel model that focuses on individual articles confirms these results (see Appendix). Also here we find that listed and firms ($b = 0.13, p < 0.01$) and family businesses ($b = 0.11, p < 0.01$) are more positively evaluated than government-owned and “other” companies. The linear regression model suggests that company characteristics add 5 percent to the explained variance ($R^2$ squared increasing from 0.089–0.139). The cross-nested model shows that they reduce the variance at the company level with 47 percent (from 0.057–0.030).

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 and Appendix).

**Discussion and Conclusions**

This paper concentrated on the question of to what extent corporate characteristics explain the media coverage of firms in terms of visibility and tone. The answer to this question is equivocal. Substantial differences were observed between corporate characteristics in the extent to which firm-features can explain corporate visibility. There is less variety between corporate characteristics in terms of their power to explain variation in news tone.

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**Table 4. Linear regressions predicting tone in news on large corporations**

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

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. *$p < .05$.

**$p < .01$. ***$p < .001$. **
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 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, Suzanne, and Levenshus 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 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. This links to literature in journalism that has found that the news media itself are a consumer driven system that is focused on the needs of news audiences.

A second notable finding, which is in line with previous research on company size (e.g. Meznar and 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 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. Notably, however, the analyses reveal a negativity bias in the company news data that were studied in this project, indicating that 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 and 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 and
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. Highly visible companies tend to remain visible in the news. In addition, sending out press releases may be a corporate attempt to control and diminish the negativity of the mass-mediated information. However, ironically, if this holds true, communicative proactivity would thus function as a defense strategy.

It is important to note that this article is limited with regard to its cultural and geographical scope. The study focused on Dutch organizations and the Dutch media-landscape only, which obviously limits the generalizability of the results. One could - on a speculative note - expect that the findings of this study are different in Western democratic countries with different media systems, and probably more different in non-Western countries, but similar in Western nations with comparable media-systems (Hallin and Mancini 2004). Nonetheless, we believe that this study and our approach of examining the relationship between hard company characteristics and news coverage is of value to journalism studies in general and gatekeeping research in particular, especially because (hard) company characteristics are very comparable across countries and cultures (see e.g. Capriotti 2009; Moon and Hyun 2014). Therefore, we recommend future research to examine the relationship between characteristics of large corporations and news content across nations and cultures.

Future research could in addition contrast “hardware features” with the “software features” of companies (e.g. branding strategies, identity types, CEO visibility).

Notes
1. Bureau van Dijk is a professional research organization from The Netherlands specialized 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.
2. In addition, so-called “mailbox companies” – which are 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.
3. The standardized tone variable has a theoretical range from -1 to +1. In the formula 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.
4. English and Dutch press releases were both considered relevant, as the language of professional communication in the Netherlands is often English.
5. The advantage of a multilevel model is a decomposition of the variance: it offers the opportunity to determine how the company characteristics that are central in this article reduce the variance at the level of the companies. Results of the cross-nested models (not displayed here) suggest that this is the case to a considerable degree: 43 percent visibility, 45 percent for tone.
6. Calculations are based on a model with “listed” firms as a reference category instead of “government-owned” companies.

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References


### Appendix

Cross-nested multi-level model predicting tone in news on large corporations.

<table>
<thead>
<tr>
<th>Expected predictors of tone</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number employees</td>
<td>0.014(0.020)</td>
<td></td>
</tr>
<tr>
<td>Yearly revenue 2014</td>
<td>−0.019(0.026)</td>
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</tr>
<tr>
<td>Firm age</td>
<td>0.012(0.018)</td>
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<tr>
<td>Randstad located</td>
<td>−0.017(0.019)</td>
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</tr>
<tr>
<td>Listed</td>
<td>0.132(0.028)***</td>
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<tr>
<td>Family business</td>
<td>0.106(0.035)***</td>
<td>0.033(0.029)</td>
</tr>
<tr>
<td>Other ownership</td>
<td></td>
<td>−0.005(0.020)</td>
</tr>
<tr>
<td>B2C (vs, B2B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
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<tr>
<td>Press releases</td>
<td>−0.036(0.019)</td>
<td>−0.036(0.016)*</td>
</tr>
<tr>
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<td>−0.177(0.038)**</td>
<td>−0.278(0.069)**</td>
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<td>44,718</td>
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</tbody>
</table>

Note. Both models control for economic sectors, but these variables are not included in the table. Unstandardized coefficients. Standard errors in brackets. *p < .05. **p < .01. ***p < .001.