Subsidizing the news?

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Jelle Boumans

The relation between organizational press releases and newspaper content has generated considerable attention. Yet longitudinal evidence that can substantiate claims of media's increased reliance on this "subsidized content" is scarce, and equally scarce is literature about the reliance of the news agency—a key factor in the news production process—on this content. Applying an automated content-analytical approach, this study assesses the impact of 4455 press releases on Dutch newspaper and news agency content over a period of 10 years. A distinction is made between source type (non-governmental organization or corporation) and newspaper type (quality, popular and free). Two indications of source reliance are proposed: first, the extent to which news articles are initiated by a press release, and second the extent to which the literal press release content is reproduced. Findings indicate that 1 in every 10 newspaper article is initiated by a press release; for the agency this is slightly higher. A routine of "churnalism"—copy-pasting of press releases—has been found for neither the agency nor the newspapers. These findings, combined with the fact that the reliance remains stable over time, call for a more nuanced perspective on journalists' dependency on organizational press releases.

KEYWORDS   agenda building; automated content analysis; churnalism; information subsidies; news agency; news production; political economy; press releases

Introduction

A healthy and uncontrolled flow of information and ideas upon which the public can make informed choices is of vital importance for democracies. News media play a key role in the circulation of this information. While different perspectives on the societal responsibility of the press do exist, there is a general consensus that at the very least, journalists have the task of actively gathering information from various sources, packaging this information into news and communicating it to the public (Manning 2001). Concerns have been raised that this news production process is drastically changing: rather than producing information, journalists are increasingly consuming and processing public relations (PR) material (Jackson and Moloney 2015). Both professional as well as academic observers fear that news media content is becoming dominated by content from organizations that do not necessarily serve the public interest (Davis 2000; Lewis, Williams, and Franklin 2008; Prenger et al. 2011).

The alleged increased influence of PR efforts on news media is often linked to developments in the media market. Decreasing newsroom capacity, faster (online) news cycles, high levels of competition, declining readership and falling advertising revenues are just some of the challenges that newspapers face these days (Lewis, Williams, and Franklin 2008; Manning 2001). Investors and the capital market in general have put further pressure on the need for media to be profitable (McChesney 2008). These pressures are believed to have given rise to "public relations news": news that is cheap to produce because it consists of basically unchanged PR information (Erjavec 2005, 156). More reliance on PR material generally implies less journalistic independence, less initiative and less rigorous journalistic efforts (Reich 2010).

A number of studies have demonstrated the substantial influence of organizational press releases on news coverage (Erjavec 2005; Maat 2008; Sissons 2012). An inevitable drawback of these thorough, in-depth analyses is that they typically rely on either case studies or very small sample sizes, which makes it hard to draw generalizable conclusions. Journalism scholars deliver additional evidence, generally by means of a content-analytical (Hijmans et al. 2011; Lewis, Williams, and Franklin 2008) or interview approach (Reich 2006, 2010). Yet, an empirical measure to determine systematically the influence of subsidized content on the news on a large scale and over time is still lacking. Moreover, an important institute in the news production process is structurally overlooked: the news agency. The scarce research that is dedicated to agencies predominately assesses to what extent news media use agency input and consistently demonstrates that agency copy plays a considerable role (Hijmans et al. 2011; Lewis, Williams, and Franklin 2008; Paterson 2005; Scholten and Ruigrok 2009; Welbers et al. 2016). However, only a handful of studies have illuminated the news production routine of the news agency itself. This article therefore not only investigates newspapers' reliance on press releases, but also that of the news agency. Specifically, we analyse to what extent organizational press releases influence the agenda and content of the largest Dutch news agency and newspapers.

The impact of organizational press releases can be assessed on several levels of the news production process. This article introduces an innovative automated tool to first investigate to what extent press releases lead to media coverage (agenda building) and, second, to what extent the media coverage literally reproduces the content of the press release (churnalism). Agenda building refers to sources' attempts to create access to the media agenda (Curtin 1999). Churnalism refers to the (criticized) journalistic practice of recycling existent (PR) content (Davies 2008). Over a research period of 10 years, we investigate the influence of organizational press releases on these two stages of news production and assess whether this influence has increased. The article furthermore clarifies the role of two important contextual factors of the media–source relationship: the type of organization and the type of newspaper. When looking at organizations, a useful distinction is between corporate and non-governmental actors (NGOs) (Manning 2001). While traditionally, corporate actors have been found to be more successful in accessing the media agenda, recent studies suggest that NGOs are increasingly able to gain access as well (Fenton 2010; Van Leuven and Joye 2014). Just like distinguishing between types of organization offers a more refined insight, so too does distinguishing between types of newspaper. In general, one can expect a relation between newsroom capacity and reliance on subsidized content (Davies 2008): the smaller the newsroom, the greater the need for

ready-to-publish copy. Both contextual factors will be discussed in detail below. To our knowledge, this study is the first to systematically compare the effects of PR material from different types of organization on different media types over a longer time period.

A Political Economist Explanation of News Media's Reliance on Subsidized Content

From a political economy perspective, the increased influence of PR efforts on journalists can be explained by looking at the institutional and (market) structural context in which media organizations operate (Manning 2001). This context includes the strong pursuit of profit, the size of the media organization, the amount and nature of competition on the media market, the influence of advertising and the specific interests of media owners and managers (McChesney 2003). Consequently, the "commercial underpinnings" of the news industry affect the content the media produce (Forde and Johnston 2013) and some scholars believe they are driving the current crisis of journalistic quality (Bergman 2014; McChesney 2008). In a cynical response to the ongoing cutting of newsrooms and investigative journalism, Robert McChesney (2008, 124) signals that "doing journalism is bad for the bottom line". In short, business norms are believed to prevail over journalism norms. Because "passive discovery" of news through news subsidiaries is the most cost-efficient practice, sources are able to gain power over the news production process. This development has been documented in various countries, among which the United States (Curtin 1999; McChesney 2003; McManus 1994), the United Kingdom (Jackson and Moloney 2015; Lewis, Williams, and Franklin 2008), Slovenia (Erjavec 2005) and Israel (Reich 2010). Exceptions to the trend have also been reported, however: a longitudinal content analysis of Belgian newspaper coverage from 1995 to 2010 did not show any signs of increased source reliance (Van Leuven, Deprez, and Raeymaeckers 2014). An explanation for the countries' differences may be found in the level of competition on the news media market, which is less fierce in Belgium. Additionally, the Belgian media market has a strong public service ideology in journalism.

This study is situated in the Dutch context, which has a similar media system as Belgium in terms of the level of competition and of a journalistic ethos that carries the print marks of public service broadcasting values (Brants and Van Praag 2006). Yet, as is the case in many countries, the Dutch news media market—and in particular the print sector—faces challenging times, with steadily declining readership numbers and advertising revenues since the early 2000s (Tijdelijke Commissie Innovatie en Toekomst Pers 2009). These developments, combined with cutbacks in the news organizations to promote efficiency, have "inflicted deep wounds on the print sector" (5). The position of the news agency is in many respects comparable to that of the newspapers (Rutten and Slot 2011). While the number of employees is structurally reducing in the past few years, the output of the national Dutch agency Algemeen Nederlands Persbureau (ANP) steadily increases (Tijdelijke Commissie Innovatie en Toekomst Pers 2009). If indeed reliance on subsidized content is partly explained by journalistic resources, we may expect to find an increase in the use of press releases for the agency as well as the newspapers. In the next two sections we will describe two levels at which this reliance on press releases manifests itself: agenda building and churnalism.

The Agenda-building Capacities of Corporations and NGOs

News coverage is the outcome of an ongoing negotiation between sources and journalists. Agenda building examines how outside forces influence media coverage (Curtin 1999). Organizations subsidize the media with material in an attempt to promote an organization's image and reputation. Several studies have demonstrated that these attempts are often successful (Erjavec 2005; Maat 2008; Sissons 2012). Reich (2010) shows that only 40 per cent of the Israeli news items involve no direct PR input. Similarly, a content analysis of the UK quality press demonstrates that nearly one in five newspaper stories are verifiably derived *mainly* or *wholly* from PR material (Lewis, Williams, and Franklin 2008, 7). Reported numbers for the Netherlands as well as Belgium are considerably lower: around 1 in 10 of the newspaper stories are traceable to subsidized content (Hijmans et al. 2011; Van Leuven, Deprez, and Raeymaeckers 2014).

The majority of agenda-building studies has focused on either political actors (Kiousis et al. 2014; Ragas and Kiousis 2010; Roberts and McCombs 1994) or corporate actors (Kim, Kiousis, and Xiang 2015; Kiousis, Popescu, and Mitrook 2007). In the UK news, for instance, corporations are nearly four times as likely as NGOs or pressure groups to have their material included in news stories (Lewis, Williams, and Franklin 2008, 12). It has been argued, however, that the changing news ecology provides opportunities for NGOs to gain ground in the struggle over news access (Castells 2008). The diminishing of foreign news coverage has created a news hole that NGOs fill by positioning themselves as expert news sources, providing background information and reliable eyewitness accounts (Van Leuven and Joye 2014). Recent research suggests that NGOs are utilizing the same type of PR practices as corporations (Greenberg, Knight, and Westersund 2011). While the agenda-building processes initiated by many different types of sources have been studied, rarely has this been done in a comparative and integrated fashion over a longer time period. This article contributes by making an explicit distinction between corporations' and NGOs' agenda-building capacities over a period of 10 years. Given the recent mixed findings on which organizational type is most successful in terms of influencing the media agenda, we refrain from formulating a hypothesis. Instead, potential differences between the two categories are assessed by means of an open research question:

> **RQ1:** To what extent is the newspaper agenda initiated by press releases from corporations and NGOs, and (how) has this changed over time?

Churnalism

The allegedly increasing influence of organizations on news production is not limited to accessing the media agenda, but is also visible in the literal news content. Being consistently forced to increase output without a corresponding increase in resources, journalists nowadays rely more and more on information subsidies provided by news agencies and PR practitioners to fill the newshole (Davies 2008; Jackson and Moloney 2015; Lewis, Williams, and Franklin 2008). These subsidies typically come in the shape of a media release: "ready-made" material that is written in a journalistic writing style and meets journalistic standards and practices such as news values, accuracy and timeliness. The combination of reduced journalistic capacities and PR practitioners that are increasingly adapted to

journalism has led to a situation where news outlets often publish PR material almost or completely unchanged (Erjavec 2005; Sissons 2012). To assess the influence of press releases on the Dutch print press, the second research question is:

> **RQ2:** To what extent do newspapers literally reproduce press release material from corporations and NGOs, and (how) has this changed over time?

Different Newspapers, Different Susceptibility?

It would be a simplification to treat the newspaper sector as a homogenous group: inevitably, there will be differences in sourcing practices due to, for instance, newspaper size and organizational contexts. This study therefore distinguishes three types of newspaper: quality, popular and free newspapers. Research confirms that newsrooms with greater capacities have more opportunities to create unique content, and are less receptive to subsidized content (Lewis, Williams, and Franklin 2008). Free newspapers, for instance, have considerably fewer journalistic resources than broadsheet newspapers; the latter typically employ at least 10 times as many journalists (Bakker 2002). We thus expect quality newspapers to rely least heavily on subsidized content, followed by popular newspapers and free newspapers. This varying reliance is expected to manifest itself in both the agenda-building as well as the churnalism dimension:

> **H1:** The agenda of free newspapers and popular newspapers is to a greater extent initiated by organizational press releases than is the agenda of quality newspapers.

> **H2:** The content of free newspapers and popular newspapers is more similar to organizational press releases than is the content of quality newspapers.

Under the Academic Radar: News Agencies

Much for the same reasons as the alleged increased reliance on PR material—most notably cost reduction—news organizations also strongly rely on agency copy (Hijmans et al. 2011; Scholten and Ruigrok 2009; Welbers et al. 2016). News agencies are a key target for any actor seeking media attention. Apart from the agency's massive reach, they also have an important validation function: a message gains in status when agencies report on it (Vermaas and Janssen 2009). Surprisingly though, there has been little academic attention in news agencies' functioning, earning them the title of "silent partners" of news organizations (Forde and Johnston 2013). By investigating news agencies' reliance on organizational press releases for their output, we aim to come to a better understanding of the way news agencies function. The same type of research questions that have been formulated for the newspapers will thus also be formulated for the news agency:

> **RQ3:** To what extent is the agenda of the news agency initiated by press releases from corporations and NGOs, and (how) has this changed over time?

> **RQ4:** To what extent does the news agency literally reproduce press releases from corporations and NGOs, and (how) has this changed over time?

Data

In the following section we first briefly describe the data-set, after which we explain the mechanisms behind the analytical tool.

Organizational Press Releases

While input from organizations can take various shapes and forms (for instance public speeches, press conferences or background briefings for the press), the press release is still regarded as a key instrument to inform the press (Erjavec 2005). The selection of corporations to include was based on three criteria: they are among the largest companies in the Netherlands, their press releases are written in Dutch and they need to represent different types of industry. Specifically, these are electronica (Apple), finance (insurance company Aegon), energy (Nuon) and consumer goods (Ahold). The selection of NGOs was based on similar criteria: they are all among the largest NGOs in terms of budget, they need to cover a range of different missions, and their press release archive must be available. The organizations either focus on humanitarian aid (Médecins Sans Frontières; Unicef; Dutch Council for Refugees), the environment (Greenpeace), wildlife (WWF) or health (Dutch Cancer Society, DCS). The press releases are downloaded through the websites of the organizations or obtained after personal contact with the organization. In total, 1937 corporate press releases and 2518 NGO press releases are included. Appendix A provides a specific overview of the number of releases per organization.

News Media

The media data (newspapers and agency) consist of all articles published between 2004 and 2013 in which one of the above organizations is mentioned at least once. We selected the oldest and largest Dutch national news agency, ANP. The newspaper selection covers the spectrum of the print media landscape: *NRC Handelsblad*, *de Volkskrant* and *Financieel Dagblad* are the largest quality newspapers, *De Telegraaf* and *Algemeen Dagblad* are the largest popular newspapers, and *Metro* and *Spits* are the two national free newspapers. The articles are obtained through the LexisNexis database, using a search string that includes all names of the organizations. Editorials, sports news and letters to the editor are excluded from the data-set. In total, 6147 agency releases and 19,985 newspaper articles are included. In general, corporations are more often talked about than NGOs: the majority of the articles (70.4 per cent) were devoted to the corporations ($N = 18,388$). Appendix A provides a specific overview of the number of articles per newspaper.

Method

After obtaining the data, the articles are categorized in separate folders per organization, agency and newspaper. Next, a metafile is constructed that includes the following elementary information of every individual file: the name of the article, the date of publication, the type of domain (organization/agency/newspaper), and the name of the organization or medium. For every media article, the customized software then evaluates whether (agenda building) and to what degree (churnalism) that media article is based on a press release. To be sure that the media article is initiated by the press release and

not the other way around, the press release must precede the media article in date, with a maximum of three days. The following two sections will describe the agenda building and churnalism measures in detail.

Agenda-building Ratio

In line with Reich (2010), we operationalize the agenda-building capacity as the percentage of media items about an organization that is initiated by a press release from that organization. Determining whether there is a link between two articles is based on a measure called cosine similarity which has been applied in previous input–output studies (Paterson 2005; Welbers et al. 2016). The measure indicates how likely it is that two documents discuss the same subject matter (Tan, Steinbach, and Kumar 2006), or in other words: to what extent they share the same terms. A cosine score can take any value between [0,1], where a score of zero implies that the two documents do not share any terms, while a score of 1 implies that the terms of both documents are identical. A systematic manual analysis of a subset of the data showed that a similarity score of 0.33 and above indicates that two articles are about the same subject. This value therefore serves as the threshold to determine whether or not there is a link between a media article and a press release. When the cosine score is 0.33 or higher, the software reports the existence of a link. With this threshold as criterion, it can thus be determined for every news article whether it is initiated by a press release. The formula of the ratio is as follows:

$$\text{Agenda - building ratio} = \frac{n\_i}{n\_t} (1)$$

where n_i is the number of media articles that are initiated by a press release from an organization and n_t is the total number of media articles related to that organization. The following hypothetical example illustrates the agenda-building ratio. Let us presume that in a given period, the newspaper *De Telegraaf* publishes 14 articles about Greenpeace ($n\_t = 14$). The software tool finds that seven of those newspaper articles share content with a press release of Greenpeace that has been published in the three days before the newspaper article ($n\_i = 7$). The agenda-building ratio is thus 7/14 = 0.50, indicating that 50 per cent of *De Telegraaf*'s coverage on Greenpeace is initiated by (based on) subsidized content from that actor.

Churnalism Index

The Churnalism Index informs on the degree of similarity between a press release and a media text. At the core of this index is Levenshtein distance (lev), a well-established measure in computer science and information theory that is among others often used in plagiarism detection tools. The Levenshtein distance measures the difference between two sequences. Commonly applied to compare words, lev is the minimum number of edits that are required to change one word into the other. An edit can be an insertion, a deletion or a substitution. In this case, the unit of analysis is the article instead of a word. We are interested in the degree to which media content consists of subsidized content. Therefore, the measure needs to control for difference in length: unlike adding information, deleting information from a press release is not considered a journalistic effort. Furthermore, we want to analyse the *relative* effort a journalist has put into an article so the measure also controls for the length of the journalistic text. Formally then, the formula

for the Churnalism Index is the following:

$$\text{Churnalism Index} = 1 - \frac{\text{lev}_{a,b} - (\text{LI}_a - \text{LI}_b)}{\text{LI}_b(2)}$$

,where $\text{lev}_{a,b}$ is the Levenshtein distance between organization's text a and media text b, LI_a is the length indicator of the organization's text and LI_b is the length indicator of the media text. By definition, the value of the Churnalism Index ranges from 0 to 1. The measure is inversed to facilitate interpretation: the higher the score, the higher the overlap (and thus the higher the degree of churnalism). A systematic manual analysis of a subset of the data showed that when the Churnalism Index > 0.7, the two texts are nearly identical, whereas a Churnalism Index score of 0 indicates that while there is some resemblance in terms of topic and word usage, the media text differs substantially from the organization's text.

Analysis

The six research questions and hypotheses either focus on differences between organizational and media categories or trends over time. To assess differences between groups, analysis of variance (ANOVA) is the appropriate technique. To assess trends over time, regression analysis is most suitable. Additionally, the ratios will be plotted visually over time to get a good overview of the trends. Because we are interested in possible differences between types of organizations as well as types of newspapers on the agenda-building ratio, factorial ANOVAs are applied. To assess possible trends, regression analyses are conducted. For this purpose, data have been aggregated to yearly quarters to guarantee sufficiently large cell sizes.

Results

The results are presented in four parts. First, the agenda-building ratios are compared per type of organization and type of medium. Second, the agenda-building ratio over time is analysed. Third, we compare the degree to which the different news media literally reproduce press release content, as measured by the Churnalism Index score. Fourth, the Churnalism Index score is analysed over time.

Agenda-building Ratio per Type of Organization and Type of Medium

The mean agenda-building ratio for newspapers and organizational press releases is 0.096 (SD = 0.087), indicating that overall, about 10 per cent of the newspaper articles are initiated by an organizational press release. To assess possible differences between organizations and media categories, Figure 1 gives a specified visual insight in the agenda-building ratio.

We expect to find statistically significant differences in the agenda-building ratios between the different newspaper categories (H1). Specifically, we expect that the coverage of free newspapers and popular newspapers is more strongly initiated by press releases (and thus score higher on the agenda-building ratio). Results of the ANOVA indicate that the interaction between type of organization and type of medium is significant, F(3,
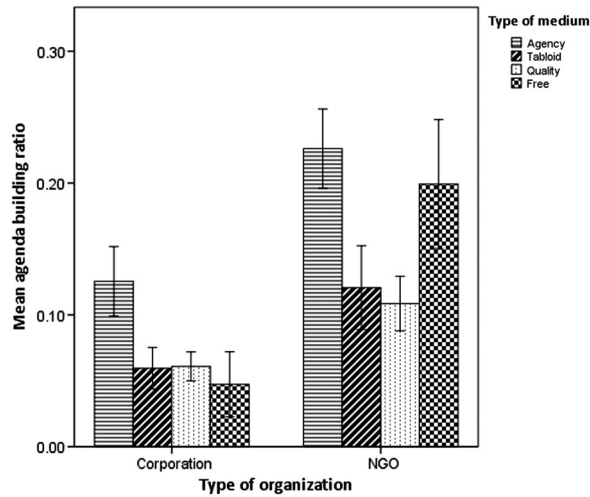
FIGURE 1
Mean agenda-building ratios per type of organization and medium. Error bars depict 95 per cent confidence interval

252) = 5.898, $p < 0.01$, partial $\eta^2 = 0.066$. This implies that the effect of organizational type on the agenda-building ratio differs per medium type. The assumption of homogeneity of variance is violated (as assessed by Levene's Test of Homogeneity of Variance; $p = 0.000$). The Welch F test is considered robust for violations of the homogeneity of variance assumption, thus separate one-way ANOVAs for the two organizational categories in combination with Welch's F test are performed.

With respect to the corporate press releases, the agenda-building ratios for the media categories are statistically significantly different, Welch's $F(3, 131) = 16.734$, $p = 0.000$. A Games-Howell *post hoc* test reveals that the ratio of the agency (mean = 0.126, $N = 34$, SD = 0.075) is statistically significantly higher than the ratio of all three newspaper types: quality (mean = 0.061, $N = 34$, SD = 0.032), popular (mean = 0.060, $N = 34$, SD = 0.045) and free outlets (mean = 0.047, $N = 30$, SD = 0.066). Between the three newspaper types, the mean differences are not statistically significantly different. With respect to the NGO press releases, the agenda-building ratios for the media categories are statistically significantly different as well, Welch's $F(3, 63) = 16.483$, $p = 0.000$. A Games-Howell *post hoc* test reveals that the agenda-building ratios of the agency (mean = 0.226, $N = 34$, SD = 0.086) and of the free newspapers (mean = 0.200, $N = 26$, SD = 0.121) are statistically significantly higher than the ratios of the quality (mean = 0.109, $N = 34$, SD = 0.059) and the popular newspapers (mean = 0.121, $N = 34$, SD = 0.091). Differences between the agency and the free outlets are not statistically significant, and neither is this the case for the combination quality/popular.

Overall, H1 is refuted: the agenda of free newspapers and popular newspapers is not more often initiated by organizational press releases than the agenda of quality newspapers. Only in the case of NGO content, the coverage of free newspapers is statistically significantly more initiated by press releases than is the case for quality and popular newspapers. We can now also formulate a partial answer on the extent to which the news agency's agenda is initiated by press releases. Figure 1 shows that, respectively, 12
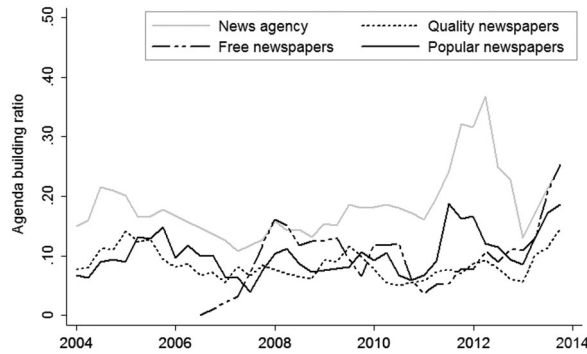
FIGURE 2
Agenda-building ratio 2004–2013 per type of medium

per cent of the agency's coverage on corporations and 22 per cent of their coverage on NGOs is initiated by a press release. For newspapers, this is statistically significantly lower: between 5–6 and 11–20 per cent, respectively. The next section will consider the second part of RQ1 and RQ3: how the agenda-building ratio evolves over time.

Agenda-building Ratios Over Time

To assess visually whether overall the agenda-building ratios of the newspapers and the agency have increased (RQ1 and RQ3), the ratios have been plotted over time (see Figure 2).

On the basis of Figure 2, it becomes clear that the ratio of all categories fluctuates over time, but trends are not immediately evident. To find a decisive answer on the research questions, regression analyses were conducted for each combination of source type and media type separately. Table 1 depicts the results.

The results indicate that time is a statistically significant predictor for the agenda-building ratio for only one of the combinations, namely quality newspapers/NGO. The

TABLE 1
Agenda-building ratio per media/organization relationship regressed over time

Relation	β	t	p	Equation
Agency/corporation	0.061	0.663	0.509	$0.059 + 0.000x$
Agency/NGO	0.063	0.962	0.337	$0.168 - 0.001x$
Quality/corporation	−0.009	1.248	0.863	$0.047 - 0.000x$
Quality/NGO	−0.086	−2.00	0.046*	$0.157 - 0.002x$
Popular/corporation	0.084	1.248	0.213	$0.020 + 0.000x$
Popular/NGO	0.005	0.090	0.928	$0.125 + 0.000x$
Free/corporation	−0.099	−1.117	0.266	$0.078 - 0.001x$
Free/NGO	0.039	0.601	0.549	$0.146 + 0.002x$

Statistics of linear regression model, effect of x (time in quarters of a year) on agenda-building ratio.
*Significant at the $p < 0.05$ confidence interval level.

negative coefficient points to a decrease of the ratio. In other words, the percentage of NGO-related articles in quality newspapers that is based on a press release decreases with −0.002 per quarter of a year, or 0.008 per cent per year. For the other combinations, no statistically significant trends over time have been demonstrated. On the basis of this information, RQ1 and RQ3 can now conclusively be answered: both news agency as well as newspaper coverage is to a moderate extent initiated by press releases (around 16 per cent for agencies and 10 per cent for newspapers), the ratio is significantly higher in the case of press releases from NGOs, and the ratios remain overall stable over time.

Churnalism Index Score per Type of Organization and Type of Medium

RQ2 concerns the degree to which press release content is literally reproduced by newspapers. Statistics indicate that the mean Churnalism Index score of newspaper articles that are initiated by press releases is 0.260 (SD = 0.171, N = 1887). A score of 0.260 implies that while parts of the media text overlap with parts of the press release, the majority of the media text does not overlap with the press release. Literal copy-pasting of press releases (indicated by a Churnalism Index score > 0.70) is practically not occurring: only three of such cases have been found in the data-set (0.01 per cent). Concerning RQ2, we can thus infer that the differences between press releases and media texts are generally so high that we cannot speak of mere copy and pasting practices. The score of the agency (mean = 0.280, SD = 0.30, N = 8874) is slightly higher than for the newspapers, but also not of a level that indicates copy and paste practices. Literal replications of press releases are very rare: one case has been found (0.02 per cent). Figure 3 gives a visual insight in the means of the Churnalism Index score specified by type of organization and media type.

On the basis of the unequal financial and journalistic resources, we expect the quality newspapers to conduct less churnalism than popular and free newspapers (H2). Residual
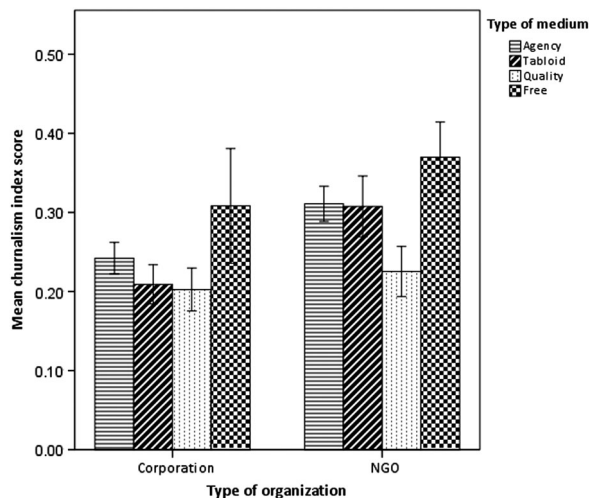

FIGURE 3
Mean Churnalism Index scores per type of organization and medium

analysis was performed to test for the assumptions of the two-way ANOVA. Outliers were assessed by inspection of a boxplot, normality was assessed using Shapiro–Wilk's normality test and homogeneity of variances was assessed by Levene's test. The residuals of the combination quality newspapers/corporations showed two outliers, for the combination free newspapers/NGOs three outliers are reported. Since these outliers are not extreme and are genuinely unusual data rather than measurement errors, the data points are maintained in the data-set. The residuals were normally distributed ($p > 0.05$) for all but the two relationships mentioned above (quality/corporations: $p = 0.045$; free/NGO: $p = 0.080$) and for the combination agency/NGO ($p = 0.063$). Since the ANOVA is considered fairly robust to deviations from normality (Maxwell and Delaney 2004), this is not considered problematic. Finally, the Levene's test was violated, indicating there is heterogeneity of variances ($p = 0.000$). Therefore, the Welch test is the appropriate test to run.

Results of the 4×2 factorial ANOVA show that there is no statistically significant interaction between source type and media type on the index, $F(3, 264) = 2.069$, $p = 0.105$, partial $\eta^2 = 0.023$. Yet, considering that the p-value is on the edge of being significant, meaningful differences between the scores per media type and source type may be expected. Therefore, we decide to run one-way ANOVAs to compare the Churnalism Index scores for media type for the corporate and the NGO category separately, rather than combined.

With respect to the press releases of corporations, the Churnalism Index scores for the media categories are statistically significantly different, Welch's $F(3, 59) = 4.353$, $p = 0.008$. A Games-Howell *post hoc* test reveals that the Churnalism Index score of the free outlets (mean = 0.308, $N = 21$, SD = 0.159) is statistically significantly higher than the ratios of the quality newspapers (mean = 0.203, $N = 40$, SD = 0.085) as well as the tabloid newspapers (mean = 0.209, $N = 40$, SD = 0.077). In other words, the content of free newspapers is statistically significantly more similar to corporate press releases than the content of quality and tabloid newspapers is. Between the categories quality and tabloid, no statistically significant differences exist. Popular newspapers thus do not reproduce more subsidized content than their quality counterparts, at least with respect to corporate press releases. The score of the news agency lies between the free newspapers and the popular/tabloid (mean = 0.241, $N = 34$, SD = 0.056), yet does not differ statistically significantly from either of the three newspaper types. With respect to the press releases of the NGOs, the Churnalism Index scores of the media categories are statistically significantly different, Welch's $F(3, 68) = 11.264$, $p = 0.000$. A Games-Howell *post hoc* test reveals that the Churnalism Index score of the quality outlets (mean = 0.225, $N = 39$, SD = 0.100) is statistically significantly lower than the ratios of the agency (mean = 0.311, $N = 34$, SD = 0.064) as well as the two other newspaper types: popular (mean = 0.311, $N = 38$, SD = 0.117) and free (mean = 0.367, $N = 26$, SD = 0.110). The findings indicate that the reproduction of subsidized content from NGOs is significantly higher for the agency, tabloid and free newspapers than it is for quality newspapers. The agency, popular and free newspapers do not differ statistically significantly from each other. In sum, the expectation that the content of free newspapers and popular newspapers is more similar to press releases than the content of quality newspapers (H2) can be partly confirmed. It is true in the case of free newspapers, yet for the comparison between quality and popular newspapers it only holds in the case of NGO content.

The results above also inform on the degree to which the agency reproduces subsidized content (RQ4). Overall, the Churnalism Index score of the agency does not differ much from the newspapers. While the agency's score is statistically significantly higher than the score of the quality newspapers, it is equal to the popular newspapers and
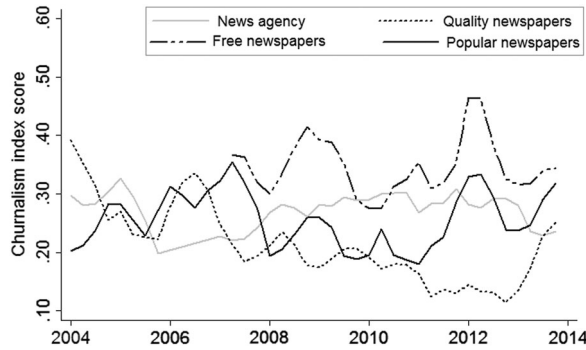
FIGURE 4
Churnalism Index scores 2004–2013 per type of medium. Quarterly-level aggregated data. Plotted lines represent the moving average of three time periods

lower than the score of the free newspapers. In other words, just as is the case for the newspapers, the agency dedicates a fair amount of effort into its content. The Churnalism Index score indicates that, in general, the content of a media text differs substantially from the source text it is initiated by.

Churnalism Over Time

The second parts of RQ2 and RQ4 focus on the degree of churnalism over time. In Figure 4, the Churnalism Index score between 2004 and 2013 is plotted.

Figure 4 shows that fluctuations over time exist in the data-set. Of particular interest is the index of the quality newspapers, which shows a decrease between 2004 and 2013. This indicates that churnalism has thus actually declined over the years. The trend line of the popular newspapers seems to show a slight upward movement, suggesting that churnalism has increased for this category. Table 2 shows the regression statistics.

From Table 2 we can infer that for the quality newspapers, time is indeed a statistically significant predictor for the Churnalism Index. The negative coefficients related to the corporate and NGO sources point to a decrease of the churnalism score, implying that the

TABLE 2
Churnalism Index scores per media/organization relationship regressed over time

Relation	β	t	p	Equation
Agency/corporation	0.041	0.231	0.819	$0.238 + 0.000x$
Agency/NGO	−0.136	−0.776	0.443	$0.327 - 0.001x$
Quality/corporation	−0.699	−6.033	0.000***	$0.307 - 0.005x$
Quality/NGO	−0.438	−2.960	0.005***	$0.299 - 0.004x$
Popular/corporation	0.222	1.406	0.168	$0.179 + 0.001x$
Popular/NGO	−0.205	−1.254	0.218	$0.351 - 0.002x$
Free/corporation	0.094	0.411	0.686	$0.256 + 0.002x$
Free/NGO	−0.157	−0.781	0.443	$0.432 - 0.002x$

Statistics of linear regression model, effect of x (time in quarters of a year) on Churnalism Index score.
***Significant at the $p < 0.01$ confidence interval level.

similarity with the source texts is actually decreasing with −0.005 and −0.004 per quarter of a year. For the other relationships, no statistically significant differences are found. This implies that for the 10 years under investigation, time is largely unrelated to degrees of churnalism. Finally, RQ2 and RQ4 can be answered: both the news agency as well as the newspapers reproduce press releases to a very limited extent, the similarity is significantly lower in the case of releases from NGOs, and the ratios remain overall stable over time for all media except for the quality newspapers, whose churnalism scores are statistically significantly decreasing over time.

Conclusion

The relation between sources and news media has been a key point of interest for journalism scholars for decennia. Concerns have been expressed about a "PR-isation within news media" (Jackson and Moloney 2015, 2), where the PR industry increasingly dominates journalism. This article has introduced two measures to assess empirically two outcomes of the alleged PR-isation of the news: stronger agenda-building capacities of organizations, and increased reproduction or even verbatim use of subsidized content by the media.

The results differ from the alarming findings from studies from the United Kingdom and United States. Instead, they sketch a nuanced picture for the Netherlands, with significant differences in terms of source reliance between types of newspaper. First, results of the agenda-building ratio show that overall, only about 1 in 10 news articles are initiated by a press release. For the agency, this is about 16 per cent. For neither the agency nor the newspapers is there a trend of increased agenda-building capacities of sources. Second, when a media release is indeed initiated by a press release, the Churnalism Index score overall indicates that the content of both the newspapers as well the agency differs substantially from this press release. This contrasts with earlier findings on agencies' heavy reliance on and nearly verbatim use of press release material (Forde and Johnston 2013). It is illustrative that less than 1 per cent of the media texts is a verbatim copy of a press release. Here too, no strong positive trends over time have been found. Instead, the only statistically significant trends point to a decrease in churnalism levels. Overall then, the results refute the claim that Dutch media passively process news material, as has been documented for other countries. As such, the findings are reassuring for those worrying about news being dominated by PR influences—at least for the Dutch (print media) case. From a political economists' perspective this is an interesting finding, given that the mechanisms blamed for increased source reliance are present indeed. Yet, the economic hardship does not appear to have led to a routine of copy-pasting press releases. It might be the case that while pressures have increased, journalists are adapting to this increasing speed and quantity of the news cycle. An alternative explanation for the fact that no trend has been found is that the study's time frame is too limited to capture the impact of recent mechanisms held responsible for these trends. Indeed, the influence of economic pressures on newsroom capacities—"sacrificing journalistic values to keep profit levels high"—had been signalled in the 1980s already (Curtin 1999, 55). In other words, it might be that the critical point is already beyond us. Yet even when this is the case, the general results do not give an impression of a highly problematic dependency on subsidized content. The near absence of churnalism that we found is consistent with earlier research in the Dutch context (Hijmans et al. 2011) and also with findings in the Belgian context (Van Leuven, Deprez, and Raeymaeckers 2014), which in many respects has a comparable media

system to the Netherlands. Arguably the most plausible explanation is that Dutch and Belgian media do not face the same pressures, or with the same intensity, as the media markets that political economists typically consider (most notably the United States and the United Kingdom). These markets are characterized by higher levels of competition and economic pressure than the Dutch market. To make more precise inferences on the relation between media system characteristics and agenda-building and churnalism practices, a cross-national study that takes the media environment into account is warranted. The academic community has just begun to unravel the dynamics between the various factors that shape news (Hanitzsch et al. 2010), and there is a need for comparative integrative research to further theoretical insights (Hanitzsch, Hanusch, and Lauerer 2016). It would be an important step forward to relate the measures of agenda building and churnalism presented in this study to variations in media system characteristics like inclusiveness of the press market, journalistic professionalism, ownership regulation and press subsidies (Brüggemann et al. 2014).

Although there is compelling evidence that press releases are an important information subsidy, a limitation of the study is that it focuses only on this one type. Consequently, we are cautious about making generalizations of the impact of information subsidies in general on print media. Apart from other traditional types, the era of digital communication has brought along new types of subsidies and may well have led press releases to become less important. Research from the United States and the United Kingdom shows that today's PR professionals—often ex-journalists—employ increasingly sophisticated media relations practices. Content can be tailored to different media outlets, or even come in a whole package, including editorial suggestions, third-part commentary and case studies. Sources may, for instance, provide media with information through direct mailing, but also through blogs, Twitter or YouTube (Kiousis et al. 2014; Parmelee 2013). Nonetheless, various studies show that press releases and other classical news-gathering channels remain central factors in news production (see Van Leuven, Deprez, and Raeymaeckers 2014). Additionally, the finding that reliance on press releases has remained stable over time does not support the thesis that the new channels have replaced the traditional press release as information sources for journalists.

One finding that is worth considering in greater depth is that NGOs' attempts to access the media appear to be more successful than corporate attempts. While our data show that, overall, corporations appear more often in the news than NGOs, *when* NGOs are covered this is significantly more often initiated by a press release than is the case for corporations. Furthermore, a news article that is based on an NGO's press release reflects the content of that press release to a larger extent than a news article that is based on a corporate press release. In contrast to the traditional notion of NGOs being in a disadvantageous position compared to elite sources, the results are more in line with the findings of the Belgian news coverage study that NGOs have enhanced agenda-building capacities (Van Leuven and Joye 2014). An explanation for their relative success compared to corporate sources might be that NGOs typically appeal to the public interest (Erjavec 2005). Consequently, it is more likely that their messages are picked up by the media. The findings support more optimistic notions that the changing news ecology offers new possibilities for non-established sources to access the news arena (Castells 2008; Greenberg, Knight, and Westersund 2011). It should be noted, however, that the NGOs in the current study are all relatively large and well-resourced organizations, which begs the question whether these findings are representative for NGOs in general. Additional research is required to assess to what extent smaller, less-resourced NGOs enjoy access to the media.

It is worth noting that the proposed approach does not distinguish between different text parts. However, news reports typically are structured along an inverted pyramid, starting with the most important information. Previous textual analyses have demonstrated that most of journalistic transformations in source material occur later in the text, leaving the primary message intact (Maat and de Jong 2012). Though journalists thus may alter the press release and add or contextualize information, radical transformations are rare. A future expansion of the tool would ideally distinguish the headline, lead and introduction from the body of the text.

While quantitative "input–output" analyses are all but new in agenda-building and churnalism studies, the advantage of an automated content analysis approach is not to be underestimated: large-scale data analysis—for instance, in a cross-country design—is now possible without a substantial budget. The statistical parameters can serve as yardsticks to assess the impact of subsidized content across countries and media markets. The approach also opens up venues for time-series analyses that take into account factors on the meso-level—such as media organizations' financial performance, the newsroom capacities—and the macro-level—like ownership concentration and the degree of competition on the media market, advertising models, and the volume and sophistication of the PR industry. At a time when concerns about increasingly sophisticated sources manipulating ever less-equipped journalists are thriving, the proposed automated approach can offer valuable empirical insights to the discussion.

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Appendix A

Numbers of Press Releases and Media Articles in the Data-set

NGOs		Corporations		Agency		Quality newspapers		Popular newspapers		Free newspapers	
Médecins Sans Frontières	254	Aegon	597	ANP	6147	*NRC Handelsblad*	3364	*De Telegraaf*	4157	*Spits*[a]	726
Greenpeace	556	Ahold	223			*de Volkskrant*	3405	*Algemeen Dagblad*	2225	*Metro*[a]	888
DCS	183	Apple	483			*Financieel Dagblad*	5220				
Unicef	245	Nuon	634								
Dutch Council for Refugees	213										
WWF	1067										
Total	2518		1937		6147		11,989		6382		1614

[a]Data collected from 2004–2013, except where indicated: data from 2008–2013.