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## Full Length Article

# Reciprocal influence? Investigating implicit frames in press releases and financial newspaper coverage during the German banking crisis



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## ABSTRACT

This study investigates the interrelation of implicit frames in press releases by the two largest German banks (Deutsche Bank, Commerzbank) and the German financial media from 2007 until 2013. Findings suggest that an increase in the salience of certain frames in press releases by German banks resulted in a decrease of that same frame in the financial media the subsequent months. Furthermore, time series analyses indicate that the banks adopted frames that were present in the media the previous month. The results imply a resistance of German financial media towards the frames used by Deutsche Bank and Commerzbank.

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## 1. Introduction

Media and the public were quick in identifying the main scapegoats of the global financial crisis 2007–2009: the banks and their supposedly greedy, reckless, and risk-taking investment bankers (Ghetti, 2015). In the aftermath of the crisis, this criticism has gotten reflected in declining reputation and brand values of banks in the past years, including Deutsche Bank or Commerzbank in Germany (Farthing, 2015; Geißler, 2010). For example, the study conducted by *Brand Finance* showed that European banks have lost significant brand value between 2014 and 2015, with German banks losing six percent in their value (Farthing, 2015). Hence, it seems that the financial industry in Germany is facing a reputational crisis.

Communicating with stakeholders has been identified as one of the main strategies to restore trust and confidence in times of crises and to contain reputation damage (Coombs, 2007; DiStaso, 2010). In that vein, not only transparent and accurate communication, but also the usage of diverse communication activities, for example press releases, are important communication tools to manage relationships with various stakeholders (Carter, 2006). In fact, communication professionals in the financial industry interviewed by DiStaso (2010) have indicated that they have focused on communicating with the media in order to reach out to current and potential stakeholders in times of crises. Yet, given the delicate situation of the financial crisis, its aftermaths and the reputational crisis of banks, the question arises how successful were banks in communicating with their stakeholders through the media, for example, by means of press releases.

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Framing messages in press releases—hence, selecting and emphasizing certain aspects of an issue or announcement (Entman, 1993)—might have been one way for the banks to communicate to their stakeholders. Although framing analysis of the financial crisis has attracted some scholarly attention in recent years (e.g., McCann, 2013; Mao, 2014; Thompson, 2009), the power of the financial sector in influencing the media agenda (i.e., agenda-building) has been neglected, particularly with regard to frames. Furthermore, most of the existing studies on agenda-building theory are not taking forecasting into consideration; thus, not allowing inferences about who is more likely to influence whom (e.g., looking at correlations: Kiouisis, Popescu, & Mitrook, 2007; or cross-lagged correlations: Ragas, Kim, & Kiouisis, 2011). Moreover, recent developments on third-level agenda-building theory have extended the focus on latent links and network analyses (Guo & McCombs, 2016; Carroll, 2016), also using time-lag designs (e.g., Schweigert, Neil, Kim, & Kiouisis, 2016). However, to the best of our knowledge, no studies so far have investigated the predictive power of latent links in the corporate sector on the presence of those links in the media for a longer period of time, using time series analyses.

To account for these shortcomings, this study offers an analytical approach to scrutinize agenda-building processes across two sectors and over time by using both semantic network analysis and Vector Autoregression analysis. In that way, this study contributes to agenda-building and public relations research in two ways: First, by accounting for recent advancements in agenda-building theory (cf. Guo & McCombs, 2016), this study employs semantic network analysis to identify implicit frames as latent constructs in two separate outlets (i.e., German banks and German financial media). Second, by using Vector Autoregression analysis, this study provides insights in the bi-directional transference processes of implicit frames from the corporate sector (i.e., press releases of German banks) to the media sector (i.e., articles of German financial media) over a period of seven years, including the German banking crisis (2007–2009).

## 2. Theoretical framework

### 2.1. Media portrayals and corporate reputation

The portrayal of a corporation in the media is crucial for its reputation (Deephouse, 2000). Based on agenda-setting theory, it can be assumed that stakeholders' knowledge about a corporation primarily originates from the news media (Carroll & McCombs, 2003; Carroll, 2004). Hence, the way a corporation is presented and framed in the media might have an influence on how stakeholders think about a firm and which attitudes they develop towards it. With regard to Germany, research on agenda-setting has received considerable attention (e.g., Brosius & Kepplinger, 1990; Schönbach, 1982), while the focus on business or financial news and corporate reputation has comparatively been neglected (Einwiller, Bentele, & Landmeier, 2011).

One reason for this lack of research might be the fact that reputation can be seen as a rather complex concept that consists of various factors, making it difficult to measure (Fombrun & Shanley, 1990). In acknowledging this obstacle, Deephouse (2000) has developed the concept of media reputation, meaning “the overall evaluation of a firm presented in the media” (p. 1091). In his analyses, he could show that media reputation can be considered a strategic resource that can improve the performance of commercial banks. In this sense, being favorably covered in the media might not only improve performance of financial institutes, but might also affect the reputation of a bank. Using descriptive analyses, Einwiller et al. (2011) have indeed showed that companies in Germany that overall had a very good reputation in the “2006 Image Profile” survey by *Manager Magazin* also received overall positive media coverage in the period before the survey was conducted. Following these findings, the communication with stakeholders via the media can be seen as a useful public relations tool for corporations to manage reputation.

### 2.2. The power of the corporate agenda over the media's agenda

Banks have been in the need of restoring a favorable reputation among stakeholders ever since the outbreak of the global financial crisis 2007–2009. German banks have suffered in particular from declining reputation rankings in the past years as shown in the *YouGov Brand Index* in 2010 (Geißler, 2010) and the study on brand values by *Brand Finance* (Farthing, 2015). Hence, being positively portrayed in the media and having corporate messages conveyed in the financial media as initiated has become a determining factor for the banks' public relations and reputation management.

To achieve positive media coverage and to get their messages resonated in the media, corporations often make use of so-called “information subsidies”, such as press releases, advertisements, speeches or similar material (Berkowitz & Adams, 1990). By means of these information subsidies, sources try “to intentionally shape the news agenda by reducing journalists' costs of gathering information” (p. 723). Given the increasing time pressure on today's news agencies and the dilemma of providing more news in less time but for the same remuneration, information subsidies give journalists and news organizations the possibility to save time and cut costs (Gandy, 1982; Lewis et al., 2008). Previous research has in fact shown that journalists tend to increasingly rely on information subsidies (e.g., press releases) to construct their news articles and get inspirations for stories (e.g., Curtin, 1999; Len-Ríos et al., 2009).

Research that investigates the influencing factors of the media agenda largely stems from the agenda-building theory (e.g., Gandy, 1982; Turk, 1986). Representatives of this stream of research are interested how the media agenda gets constructed and what sources and factors shape the news. More specifically, by relating agenda-building theory to the corporate agenda, Carroll and McCombs (2003) proposed, “organized efforts to communicate a corporate agenda will result in a significant

degree of correspondence between the attribute agenda of the firm and the news media” (p. 42). Following this proposition, it can be assumed that messages used in corporate communication might have an effect on the news media’s reporting.

Public relations research that investigates how the corporate agenda affects the media agenda has indeed shown that public relations activities (i.e., press releases) are forming the media’s agenda to a considerable extent. Carroll (2011) provides an overview of the vast amount of studies that has employed agenda-setting and agenda-building theory in the corporate sector across countries and markets. In line with these findings, Kiouisis et al. (2007) have found that the amount of times an organization was mentioned in press releases was positively correlated with the presence of the name of that organization in *The New York Times* and *The Wall Street Journal*. DiStaso (2012), similarly, has shown annual earnings press releases to relate to positive content in local media coverage and negative content in national coverage. Extending previous research on correlations by means of cross-lagged correlations, Ragas et al. (2011) provide evidence that corporate information subsidies by Yahoo have been reflected in the financial news media.

While the studies mentioned before have mainly investigated the influence of the corporate agenda on the news agenda by focusing on the transmission of objects (first-level agenda building) or attributes (second-level agenda-building) (cf. Ragas et al., 2011), Carroll (2016) argues for a third-level agenda-building theory where the focus lies on the links between objects, attributes and actors. To find out about these connections, according to Carroll, latent links have to be identified that might best be examined by means of network analyses. As Carroll (2016) argues, these latent links might be important factors that influence the media agenda.

Following this suggestion, a recent example by Schweigert et al. (2016) has investigated third-level agenda-building processes between public relations material and policy activity, using a time-lag design. Hence, following these recent theoretical developments and empirical findings, the aim of this study is to explore third-level agenda-building processes between the corporate sector and the media sector over time by making use of network analyses and investigating latent links. In connection with recent developments in public relations research (e.g., Van der Meer, 2016), these latent links are considered as *implicit frames* here.

### 2.3. *Implicit frames*

Hellsten, Dawson, and Leydesdorff (2010) define implicit frames as a network of words that occur as latent dimensions in communication. They hence originate from “spurious correlations between word (co-)occurrences in communication” (Hellsten et al., 2010; p. 593). In that vein, words gain meaning through the semantic context in which they appear. Scholars from information science argue that meaning is created based on the structural characteristics of communication networks (Leydesdorff & Hellsten, 2006). Thus, by being able to refer words to other words (i.e., semantic context), ambiguous meanings of words can be excluded, which in turn substantiates the analysis of frames by means of semantic networks (i.e., implicit frames).

Implicit frames have been analyzed in various fields of research so far, and recently specifically in the field of public relations. Schultz, Kleinnijenhuis, Oegema, Utz, and van Atteveldt (2012) have made a first step in this direction by showing the probabilities in which semantic networks from BP public relations correspond with the semantic networks present in UK or US news. While the study by Schultz et al. (2012) relies on a semi-inductive approach to infer “associative frames”, Van der Meer’s (2016) line of research particularly draws on an inductive approach to analyze “implicit frames” in crisis communication. The latter method allows the comparison of frames used in the organizational context, social media and news media (e.g., Van der Meer and Verhoeven, 2013) or with regard to crisis-response strategies by organizations and the public (Van der Meer, 2014). Furthermore, analyzing implicit frames enables the researcher to examine the alignment of frames between various outlets, e.g., public relations, news media, or the public for various points in time (Van der Meer, Verhoeven, Beentjes, & Vliegenthart, 2014).

However, none of the studies mentioned above has investigated the reciprocal influences between the corporate agenda and the news media *over time*. In other words, previous studies so far have researched the simultaneous correlation of implicit frames in diverse outlets (e.g., social media, news media) for different time points, but have not scrutinized whether the presence of implicit frames in one outlet can predict the presence of implicit frames in another. Hence, this study aims at extending recent developments in implicit framing and agenda-building research (cf. Guo & McCombs, 2016; Ragas et al., 2011; Schweigert et al., 2016) by testing to what extent implicit frames from the corporate sector (i.e., press releases by Deutsche Bank and Commerzbank) affect the presence of implicit frames in the media (i.e., German financial news articles) over time. The first research question thus reads: (RQ1) *To what extent do German financial media assimilate their implicit frames with the two German banks Deutsche Bank and Commerzbank?*

### 2.4. *Banks following the media agenda*

While a vast number of agenda-building studies have demonstrated that the corporate agenda can affect the media agenda (e.g., Kiouisis et al., 2007; Ohl, Pincus, Rimmer, & Harrison, 1995; Ragas et al., 2011), the media’s influence on the corporate agenda is less fathomed by empirical research. While some studies in business and management research imply an influence of the media’s agenda on the corporate sector (e.g., corporate social responsibility strengths and weaknesses: Zygliopoulos, Georgiadis, Carroll, & Siegel, 2012), there are only few empirical studies that allow inferences to what extent the media affects corporate communication.

As one of the first, Ragas (2013) has recently given evidence for mutual relationships between the corporate agenda and the media agenda. In examining corporate information subsidies and financial media coverage related to activist shareholder campaigns in the U.S. stock market, Ragas (2013) has not only shown that issues that were given prominence in news releases and shareholder letters were linked with financial media, he also found evidence for mutual influences. Similarly, the study by Schweigert et al. (2016) suggests temporal relationships between political public relations and policymaking, whereas policymaking activity was found to have a stronger influence on public relations efforts than the other way around. Hence, these findings provide a basis for the assumption that the media might also affect the communication of corporations.

In fact, referring to Gandy (1982), Manheim (1994) and Turk (1986), McCombs (2004) asserts “communication professionals subsidize the efforts of news organizations to cover the news providing substantial amounts of organized information, frequently in the form of press releases prepared in the exact style of news stories” (p. 115). In particular, Gandy (1982) argues in his political economic analysis of news that not just the form, but also the content of a press release might be “structured in such a way as to flow in sync with the media system’s requirements” (p. 57). This argument might not only apply to the simple message construction in press releases, but might also be the case regarding frames. Hence, the second research question of this study reads: (RQ2) *To what extent do Deutsche Bank and Commerzbank assimilate their implicit frames with the German financial media?*

### 3. Method

#### 3.1. Case selection

*Deutsche Bank* is the biggest bank in Germany, belonging to the leading financial institutions in the world, while *Commerzbank* is the second-largest bank in Germany. *Commerzbank* was partially nationalized in order to be able to take over Dresdner Bank in 2009. After the financial crisis 2007–2009, both banks have suffered from a tarnished reputation (Geißler, 2010). Especially Deutsche Bank’s involvement in the manipulation of the Libor rate, the selling of risky US mortgage securities and litigation processes as well as high credit risks in case of Commerzbank have put both banks in financial troubles and also under scrutiny by the media and the public (cf. Hüthig, 2014).

#### 3.2. Data collection

In order to be able to extract implicit frames from press releases by the two largest German banks and the four most popular German financial news media, all press releases from Deutsche Bank (*deutsche-bank.com*;  $N=475$ ) and Commerzbank (*commerzbank.de*;  $N=461$ ) that were published on the official websites between January 2007 and the end of 2013 were downloaded and saved as text files. Furthermore, all news articles in which “Deutsche Bank” or “Commerzbank” were mentioned in the headlines in any of the four most relevant German financial media outlets (*Handelsblatt*, *Börsen-Zeitung*, *Wirtschafts-Woche*, *Focus Money*) were incorporated for the same period of analysis.<sup>1</sup> See Fig. 1 for the frequencies of press releases and articles per news outlet for Deutsche Bank and Commerzbank.

#### 3.3. Frame analysis

This study has applied an inductive approach to analyze the implicit frames present in the corporate and media sector, following the procedure by Van der Meer et al. (2014). The method of automatic semantic network analysis, which is characterized by the objectivity of computer-assisted analyses (Vlieger & Leydesdorff, 2012), involves the measurement of the meaning of words in relation to their context. Following Hellsten et al. (2010), words do not only appear within a document, for example within a press release or a news article, but also across several documents, and even over time. Therefore, implicit frames were extracted from both press releases by DB and CB and the German financial media simultaneously. In that way, the frames identified originate from both sectors, making it more straightforward to assess framing dependencies in time series models. In fact, Vector Autoregression (VAR) analyses are based on two time series with preferably no missing values (Wilson, Tomsett, & Toumi, 2003). Therefore, it is not logical to measure the effect of one implicit frame that is present in one outlet (e.g., the frame “banking” in press releases) on the usage of another implicit frame in another outlet (e.g., the frame “crisis” in financial media).

##### 3.3.1. Word frequency lists

The first step of the analysis was to save all press releases from Deutsche Bank (DB) and Commerzbank (CB) as well as all news articles that were retrieved as single text-files (Vlieger & Leydesdorff, 2012). Next, a sample was created to establish the most frequently occurring words per bank in both outlets: the financial media and the press releases. To do so, for each

<sup>1</sup> *Handelsblatt* is the most cited daily business newspapers in Germany (Ots, 2012, 2014); *Börsen-Zeitung* is especially consumed by executive managers and the financial industry (Littger, 2013); *Wirtschafts-Woche* has the highest circulation of business news in Germany (Statista, 2014); *Focus Money* has the second largest weekly business newspaper circulation in Germany (Statista, 2014); news articles from *Handelsblatt*, *Wirtschafts-Woche* and *Börsen-Zeitung* were retrieved from the online databases belonging to the newspapers. Articles from *Focus Money* were downloaded from LexisNexis.



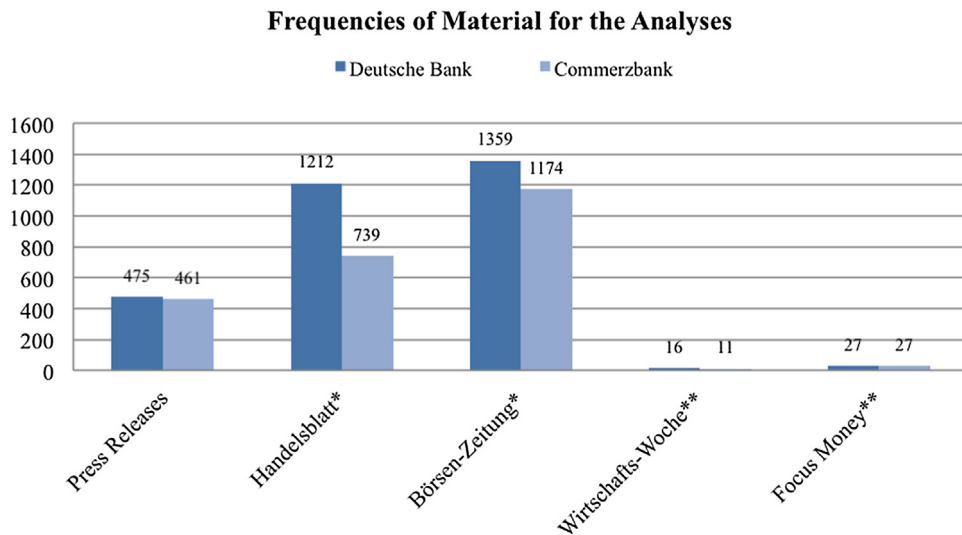


Fig. 1. \*Daily financial newspapers; \*\*weekly financial magazines.

bank (DB, CB) all press releases and five percent<sup>2</sup> of all news articles per quarter and per outlet were read into the word counting program called JFreq. Moreover, in order to filter out irrelevant words from the list beforehand, a list of stopwords based on the German language<sup>3</sup> was added to the program (Vlieger & Leydesdorff, 2012). Afterwards, the csv-file created by JFreq was analyzed with SPSS. Here, the word frequencies are displayed in word/document matrices, where the cases are represented by documents and the words are considered as variables (Leydesdorff & Welbers, 2011; Van der Meer et al., 2014). Some irrelevant words still remained that had to be removed manually. For example, words that referred to the format of the texts, hyperlinks, reflexive words, adverbs, or incomplete words. An overview of rules for the clearance of the word frequency lists can be requested from the corresponding author. Furthermore, words with a zero variance had to be deleted because they could be included in the subsequent factor analyses (Vlieger & Leydesdorff, 2012).

Per bank, each word frequency list was then restricted to 250 of the most frequently used words. Eventually, both frequency lists—one based on the press releases and one based on five percent of news articles—were combined. After removing duplicates, one frequency list for the most frequently used words for DB and one for CB resulted. Those words were then imputed in a Yoshikoder dictionary per bank. Consecutively, this dictionary was uploaded in the program JFreq in which now the entire material per bank (all press releases and all news articles) was content analyzed. Once again, the resulting word frequency lists were imported in SPSS.

### 3.3.2. Factor analyses

In the second step, principal component factor analyses with varimax rotation was employed to analyze the correlation among the 255 most frequently used words and to identify implicit frames (e.g., Van der Meer et al., 2014; Vlieger & Leydesdorff, 2012). The extraction of factors was limited to twelve components based on the scree plot that indicated for both data sets (DB, CB) points of inflexion at twelve factors (Field, 2013). The twelve components have the highest portion of explained variance ( $R^2$ ) and eigenvalue (EV) and thus equal the most prevailing implicit frames within the entire data set (press releases and financial news articles) per bank. Other components were neglected as they have explained a smaller variance of the data. More specifically, the lower the explained variance and eigenvalue, the weaker the association between the words. Hence, these components can only be considered as sub-ordinated implicit frames, and are thus seem to be less relevant (cf. Van der Meer et al., 2014).

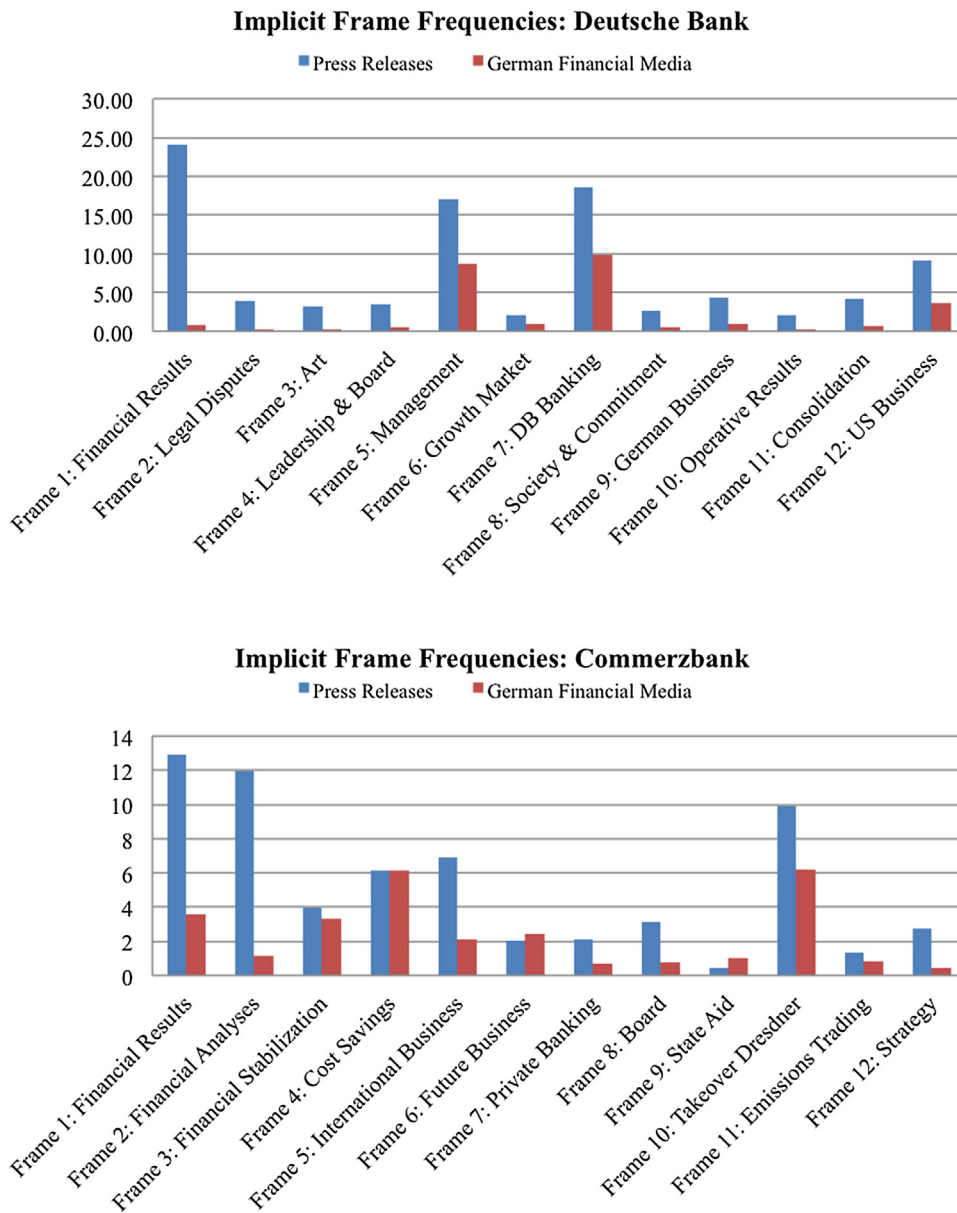
The factor analysis was conducted twice, once based on the word frequency list on DB and once for CB. In order to identify the frequency of the implicit frames identified in the overall material, the ten words that loaded highest on a factor were chosen for further analyses.<sup>4</sup> The labeling of the frames was based on the words that constituted the frame and, hence, followed an interpretative approach. Cronbach's alpha for all implicit frames ranged between 0.500 and 0.893 and thus indicated reliable scales (Nunnally, 1978).<sup>5</sup>

<sup>2</sup> The amount of news articles had to be reduced to five percent per quarter due to technical limitations.

<sup>3</sup> Source: [http://solariz.de/de/downloads/6/german\\_enhanced\\_stopwords.htm](http://solariz.de/de/downloads/6/german_enhanced_stopwords.htm)

<sup>4</sup> In case there were words in a frame that are part of a second word in the frame, an additional word was included to the ten highest loading words (e.g., investment and investmentbanking → include an additional word to the frame).

<sup>5</sup> Cronbach's alphas, the labeling of the frames, and the factor loadings of all frames can be requested from the corresponding author.



**Fig. 2.** Deutsche Bank: Press Releases,  $N=475$ ; Media All,  $N=2614$ ; Commerzbank: Press Releases,  $N=461$ ; Media All,  $N=195$ ; \*including: *Börsen-Zeitung, Handelsblatt, Wirtschafts-Woche, Focus*; the numbers indicate the frequencies of each frame in the press releases and German financial media from 2007 to 2013; the numbers are corrected for the amount of documents per bank and per outlet.

### 3.3.3. Frame presence analyses

In the next step, it was investigated to what extent the identified frames were present in the press releases by the banks (DB, CB) and in the financial news media. To achieve this, the extracted implicit frames (ten words loading highest per factor; 12 per bank) were translated in one Yoshikoder dictionary per bank. After uploading the Yoshikoder dictionary in JFreq, the presence of frames was analyzed by conducting content analyses for all documents (news articles, press releases) separately and per month. The frames were analyzed per month given that a weekly or daily analysis would have resulted in too many missing values, causing estimation problems in the subsequent VAR analyses (Wilson et al., 2003).

The content analyses produced the amount of times the implicit frames were present in the outlets per month. After correcting for the amount of documents per month (dividing the frame frequency by the number of documents), it was possible to extract a monthly value of frame presence of each frame for both banks (DB, CB) in the media and the press releases. Fig. 2 gives an overview of the frequencies of the 12 frames for Deutsche Bank and for Commerzbank for the entire period of analysis (2007–2013).

Eventually, the resulting two datasets were aggregated to a monthly level for the subsequent time series analyses. This was achieved by recoding the frame frequencies in a dataset that showed each frame per outlet (press releases per bank, *Handelsblatt*, *Börsen-Zeitung*, *Wirtschafts-Woche*, *Focus Money*) as variable and the time (2007–2013, monthly) as cases. For further analyses, the scores for the four German financial media outlets were summed up.

### 3.4. Time series analyses

Given that a mutual relationship between implicit frames used by the German banks (DB, CB) and the German financial media was assumed, Vector Autoregression analysis (VAR) was chosen as a method of analyses (Brandt & Williams, 2007; Vliegenthart, 2014). In fact, this method is greatly acknowledged in public relations research (e.g., Kleinnijenhuis, Schultz, Utz, & Oegema, 2015; Kleinnijenhuis, Schultz, & Oegema, 2015; Strauß, Vliegenthart, & Verhoeven, 2016) and has also been suggested for future research on agenda-building theory (Ragas et al., 2011).

Hence, by using this method, it was investigated whether the financial media is following the implicit frames presented in the press releases by banks, or the other way around. More specifically, *Granger causality tests* were conducted in order to find out whether a variable *x* (press releases or media) Granger-caused variable *z* (media or press releases) and thus improves the prediction of the value of *z* above and beyond the past values of *z* (Brandt & Williams, 2007). Furthermore, to gain insight to what extent an additional shock (impulse) in one variable at time point zero has an additional influence on the subsequent values of another variable, the *cumulative impulse response function* (CIRF) was estimated (Vliegenthart & Montes, 2014). The CIRF gives information on the persistence of an effect and will thus be reported in this paper. Moreover, the *forecast error variance* (FEV) was estimated as an indicator to show how much of the movement of a variable is attributed by shocks of its own past and to what extent by shocks of the other variable(s) (Vliegenthart & Montes, 2014).

#### 3.4.1. Stationarity

In order to conduct a VAR analysis, the time series need to be stationary. Stationarity implies that the mean of the series should not change over time. In other words, no trend or random walk of the series should be present (Vliegenthart, 2014). To test for this, Dickey-Fuller unit root tests were conducted for the time series of each frame in press releases and in the media. In all cases, for DB as well as for CB, all series of frames in press releases and in the media were found to be stationary. Thus, no data transformation (e.g., differencing) needed to be applied.

#### 3.4.2. Model specification

In the next step, the number of lags of the variables in the model was specified (Vliegenthart, 2014). Following previous research by Leskovec, Backstrom, and Kleinberg (2009), and work relating to the framing cycle theory (Miller & Riechert, 2008), a maximum of three lags was considered reasonable. In other words, an effect of the press release on the media or vice versa was assumed to occur within three months. Based on the estimation of three models, that ranged from zero to three lags, the best model could then be chosen by inspecting the fit-statistics, including the final prediction error (FPE), Akaike information criterion (AIC), Hannan-Quinn information criterion (HCQIC), Schwarz-Bayesian information criterion (SBIC), and likelihood ratio tests (Enders, 1996; Vliegenthart, 2014).

In several instances, the selection order criteria suggested to use the model with zero lags. This indicates that past values of both series do not seem to contribute substantially to the prediction of current values. In other words, there might be a correlation between the two time series (press releases and the media) within the same unit of analysis (month) (Vliegenthart, 2014). However, the correlation coefficients for the frames present in press releases and the media were rarely significant and never exceeded a correlation value of 0.327.<sup>6</sup> Therefore, in order to make the analyses among the frames comparable and in effort to say something about prediction, the model with one lag or the second-best fitted model was chosen in such incidents.

#### 3.4.3. Autocorrelation

By means of the Portmanteau (Q) test, the absence of autocorrelation in the residuals can be tested (Vliegenthart, 2014). Presence of autocorrelation indicates that the series' own past still contains information that has been left unmodeled in the VAR model so far. In some cases the residuals of the time series were indeed found not to be white noise, and thus indicated autocorrelation of residuals. Adding additional lags can often solve this issue (Vliegenthart, 2014).<sup>7</sup> In case autocorrelation was still present in such extended models, the model with fewer lags was chosen for interpreting the VAR analyses.

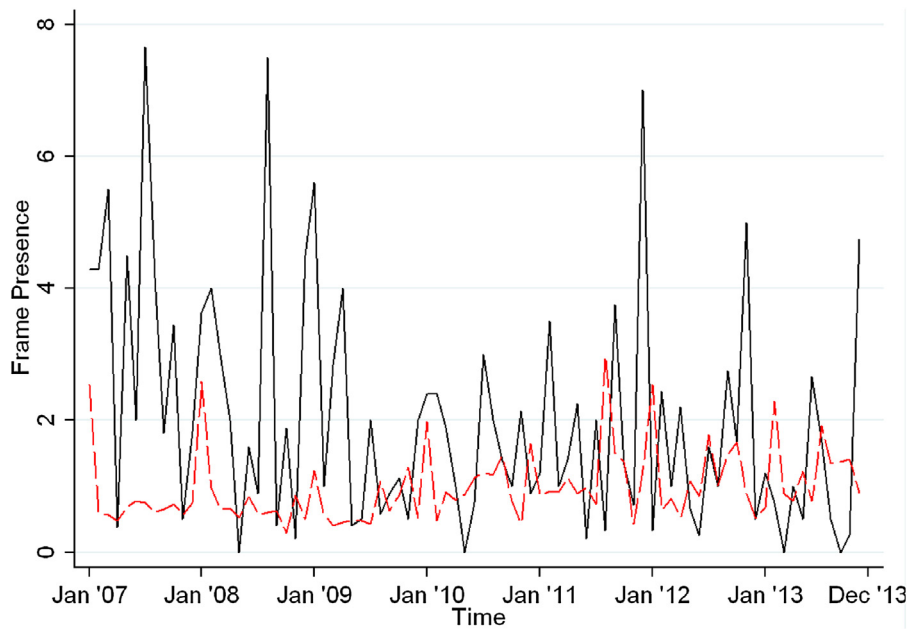
#### 3.4.4. Heteroscedasticity

The squared residuals were also tested for autocorrelation by means of Portmanteau (Q) tests. This was performed in order to rule out autoregressive conditional heteroscedasticity (Vliegenthart, 2014). In two cases, the tests were significant and

<sup>6</sup> The graphs of the cumulative impulse response function (CIRF), the results of the Dickey-Fuller unit root tests, an overview of the selection-order criteria, and the correlation coefficients of all frames can be requested from the corresponding author.

<sup>7</sup> The patterns of autocorrelation function (ACF) and partial autocorrelation function (PACF) were inspected to identify the number of lags to be included.





**Fig. 3.** Presence of the implicit frame “Growth Market” in press releases by Deutsche Bank (black line) and the German financial media (2007–2013) (red line). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

thus pointed to the problem of heteroscedastic data (Vliegenthart, 2014). Following Vliegenthart (2014), taking logarithmic values of the time series removed heteroscedasticity.<sup>8</sup>

#### 3.4.5. Exogenous variable

Furthermore, in order to find out whether the German banking crisis (2007–2009) affected the frame presence in both press releases and the media, the external event “Banking Crisis” was included in the model as a dummy variable (Illing, 2013).

## 4. Results

Based on the previous steps of the VAR analyses, the models were estimated for the time series of each frame in press releases and its complementary frame in the financial media from January 2007 until the end of December 2013. Fig. 3 is an example of the time series of the frame presence of “Growth Market” in press releases by DB and the German financial media for the entire period of analysis.

Given that the VAR analysis was conducted for every frame (12 frames) per bank, resulting in 24 VAR analyses in total, only the frames evincing Granger causality will be reported in this paper. Tables 1 and 2 show the results of the VAR models with significant Granger causality tests for both Deutsche Bank and Commerzbank.<sup>9</sup>

### 4.1. Results for deutsche bank

#### 4.1.1. Press releases influencing media

The first research question of this study dealt with the extent to which German financial media assimilated their implicit frames with the two German banks Deutsche Bank (DB) and Commerzbank (CB). In case of DB, the VAR analyses showed that, in fact, the frame presence in press releases had an influence on the frame presence in the financial media, but in a negative direction (see Table 1). In particular, evidence for a negative and small effect for the frames “Management” and “Growth Market” in DB press releases on German financial media was found. Given that the residuals of the frame “Management” were autocorrelated, the frame “Growth Market” that had no statistical impairments will be outlined in more detail in the following.

The VAR analysis showed that the frame presence of “Growth Market” in the press releases by DB had a significant negative effect on the presence of that implicit frame in the media at time lag two,  $z(-4.50) = -0.134$ ,  $p = 0.000$ . Thus, a one-unit increase of the frame presence of “Growth Market” in press releases by DB led to a 0.134 decrease of the same frame in

<sup>8</sup> An overview of the Portmanteau (Q) tests for the (squared) residuals can be requested from the corresponding author.

<sup>9</sup> The VAR analyses and Granger causality tests for all frames can be requested from the corresponding author.

**Table 1**  
Results for Deutsche Bank of VAR Models with Significant Granger Causality Tests.

	Implicit Frames in Financial Media	Implicit Frames in Press Releases
Press Releases		
Frame 5: Management		
1st lag	−0.182(−2.30) <sup>*</sup> [−0.182(−2.30) <sup>*</sup> ]	
Granger causality test, p-value	5.304 <sup>*</sup> [7.847 <sup>**</sup> ]	
Frame 6: Growth Market		
2nd lag	−0.134(−4.50) <sup>***</sup> [−0.103(−3.46) <sup>**</sup> ]	
Granger causality test, p-value	20.289 <sup>***</sup> [14.032 <sup>**</sup> ]	
Financial Media		
Frame 3: Art		
2nd lag		8.817(3.89) <sup>***</sup> [9.059(3.96) <sup>***</sup> ]
Granger causality test, p-value		15.737 <sup>***</sup> [16.258 <sup>***</sup> ]
Frame 4: Leadership & Board		
1st lag		2.618(2.26) <sup>*</sup> [1.526(1.26)]
Granger causality test, p-value		5.089 <sup>*</sup> [1.593]

Notes. z-scores in parentheses; results with German banking crisis (2007–2009) as exogenous factor in squared brackets.

<sup>\*</sup> p < 0.05.

<sup>\*\*</sup> p < 0.01.

**Table 2**  
Results for Commerzbank of VAR Models with Significant Granger Causality Tests.

	Financial Media	Press Releases
Press Releases		
Frame 1: Financial Results		
2nd lag (log)	−0.173(−2.54) <sup>*</sup> [−187(−2.63) <sup>**</sup> ]	
Granger causality test, p-value	12.847 <sup>**</sup> [13.399 <sup>**</sup> ]	
Frame 7: Private Banking		
1st lag	0.098(2.10) <sup>*</sup> [0.091(1.94)]	
Granger causality test, p-value	4.416 <sup>*</sup> [3.753]	
Financial Media		
Frame 4: Cost Savings		
2nd lag		0.194(2.62) <sup>**</sup> [0.192(2.58) <sup>*</sup> ]
3rd lag		0.171(2.27) <sup>*</sup> [0.170(2.24) <sup>*</sup> ]
Granger causality test, p-value		12.716 <sup>**</sup> [12.067 <sup>**</sup> ]
Frame 5: International Business		
1st lag		2.005(5.42) <sup>***</sup> [2.075(5.64) <sup>***</sup> ]
Granger causality test, p-value		29.423 <sup>***</sup> [31.817 <sup>***</sup> ]
Frame 10: Takeover Dresdner Bank		
2nd lag		0.237(2.77) <sup>**</sup> [0.247(2.92) <sup>**</sup> ]
Granger causality test, p-value		9.932 <sup>*</sup> [11.424 <sup>*</sup> ]

Notes. z-scores in parentheses; results with German banking crisis (2007–2009) as exogenous factor in squared brackets.

<sup>\*</sup> p < 0.05.

<sup>\*\*</sup> p < 0.01.

<sup>\*\*\*</sup> p < 0.001.

the financial media two months later. Furthermore, it could be shown that the implicit frame in press releases Granger caused the presence of this frame in the financial media above and beyond its past values,  $\chi^2 = 20.289$ ,  $p = 0.000$ . However, when controlling for the banking crisis (2007–2009), the effect decreased, but still stayed significant,  $z(-3.46) = -0.103$ ,  $p = 0.001$ ;  $\chi^2 = 14.032$ ,  $p = 0.001$ .

Estimating the cumulative impulse response function (IRF), it became evident that an additional one-unit increase of the frame presence “Growth Market” in the press releases by DB led to a 0.074 decrease of the presence of this frame in the media two months later. This change remained intact for the subsequent months. Furthermore, the results of the forecast error variance (FEV) indicated that the frame presence of “Growth Market” in press releases did not explain any variance of the frame presence of “Growth Market” in the financial media in the first month; only in the second month the value increased slowly up to 1.6%. In the third month, the explained variance of the presence of the frame “Growth Market” in the financial media by DB press releases rose to 15%, and stayed there for the subsequent five months.

#### 4.1.2. Media influencing press releases

The second research question dealt with the extent to which Deutsche Bank (DB) and Commerzbank (CB) assimilated their implicit frames with the financial media. The VAR analyses provided evidence that German banks did follow the implicit frames that were present in the German financial media. The reversed effects were especially present for the frame “Art” by DB as well as for the frame “Leadership & Board” and “Growth Market.” However, the time series of “Leadership & Board” evinced autocorrelation. Hence, the frame “Art” will be described hereafter.

A one unit-increase of the frame “Art” in the media led to a large and significant increase of the same frame in the press releases by DB two months later,  $z(3.89) = 8.817$ ,  $p = 0.000$ . In addition, the analysis has shown that the frame presence of “Art” in the media Granger caused the frame presence in press releases above and beyond its past values,  $\chi^2 = 15.737$ ,  $p = 0.000$ . The effect was even stronger when controlling for the banking crisis,  $z(3.96) = 9.059$ ,  $p = 0.000$ ;  $\chi^2 = 16.258$ ,  $p = 0.000$ .

When inspecting the CIRF, the picture of the additive effect of the frame presence of “Art” on the frame presence in press releases by DB becomes clearer. An additional one-unit increase of the presence of the frame “Art” in the media led to a significant 6.735 increase of that frame in press releases in the subsequent months. This effect stayed significant for the following six months. The results of the FEV sustain these findings. While the financial media could explain only 0.4% of the variance of the frame presence of “Art” in the press releases in the first month, this value increased to 17.1% in the third month, and leveled off at 17.3% the subsequent months.

### 4.2. Results for commerzbank

#### 4.2.1. Press releases influencing media

The VAR analyses for the implicit frames for Commerzbank (CB) showed similar results concerning the first research question as in the case of Deutsche Bank (DB). On the one hand, it was found that the implicit frame “Financial Results” in the press releases by CB had a negative influence on the frame presence in the German financial media the subsequent months (see Table 2). On the other hand, a positive effect for the implicit frame “Private Banking” in press releases by CB on the presence of that same frame in the financial media was found. In order to have a different example to DB, the results for the frame “Private Banking” will be outlined in more detail below.

The VAR analysis has shown that a one-unit increase of the frame presence of “Private Banking” in press releases by CB led to a significant and positive increase of the presence of that frame by 0.098 in the media the subsequent month,  $z(2.10) = 0.098$ ,  $p = 0.036$ . In addition, the Granger causality test gave evidence that the presence of the frame “Private Banking” Granger caused the presence of that frame in the financial media,  $\chi^2 = 4.416$ ,  $p = 0.036$ . After including the banking crisis as an exogenous variable, however, the effect diminished and resulted in a just non-significant Granger causality test,  $z(1.94) = 0.091$ ,  $p = 0.053$ , *ns*;  $\chi^2 = 3.753$ ,  $p = 0.053$ , *ns*. Hence, when controlling for the banking crisis, the effect of the frame presence of “Private Banking” in press releases by CB on the presence of this frame in the German financial media decreased, putting the agenda-building effect in question.

The CIRF supports those findings. An additional one-unit increase in the frame presence of “Private Banking” in press releases by CB caused a 0.091 increase of the presence of that frame in the financial media the subsequent month. Here, the effect decreased in month two by 0.075 and evened out in the subsequent months by around 0.079, but still stayed significant. The results of the FEV, however, limit these effects, showing that much of the frame presence of “Private Banking” in the financial media was predicted by its own values. In fact, the frame presence of “Private Banking” was fully explained by its own values in the first month (100%). Only in the second month, the percentage decreased to 96.2% and indicates a 3.8% explanation of the frame presence of “Private Banking” in the financial media by the presence of this frame in press releases by CB. The explained variance of the frame presence of “Private Banking” in the financial media by press releases increased to 3.9% in the third month and persisted around that value in the subsequent months.

#### 4.2.2. Media influencing press releases

Similarly to Deutsche Bank (DB), the results of the VAR analyses for Commerzbank (CB) indicated that the presence of frames in the media had an influence on the frame presence in press releases by CB. This was the case for the frames “International Business,” “Cost Savings,” and “Takeover Dresdner Bank.” However, only in case of the frame “International Business,” autocorrelation of residuals could be ruled out and will thus be described in more depth below.

As such, a one-unit increase of the frame presence of “International Business” in the media led to a 2.005 increase of this frame in press releases by CB the subsequent month,  $z(5.42) = 2.005, p = 0.000$ . Furthermore, the presence of this frame in the financial media was found to Granger cause the presence of this frame in CB press releases,  $\chi^2 = 29.423, p = 0.000$ . Moreover, and again similar to the case of DB, this effect increased when controlling for the banking crisis (2007–2009). Here, the influence of frame presence in the media on “International Business” led to 2.075 increase of this frame in press releases by CB,  $z(5.64) = 2.075, p = 0.000, ns; \chi^2 = 31.817, p = 0.000$ .

The CIRF underlines these findings. An additional increase of the frame presence “International Business” in the media led to a 2.004 increase of the same frame in CB press releases after one month. In the second month this effect decreased to 1.775 and leveled off at 1.741 in the following months. The FEV revealed that 99.9% of the variance of the frame presence of “International Business” in press releases in the first month was explained by its own values. Only in the second month, the frame presence of “International Business” in the financial media explained 26.1% of the presence of that frame in press releases by CB.

Summing up the results for both Deutsche Bank (DB) and Commerzbank (CB), it appears that the German financial media does not assimilate the frames employed in press releases by DB and CB. Instead, the VAR analyses suggest that both banks followed the media with regard to the implicit frames used in their press releases. For CB this was the case for “International Business” and for DB this applied to the implicit frames “Art,” “Leadership & Board,” and “Growth Market.”

## 5. Discussion

When drawing conclusions from the findings on the reciprocal influences of implicit frames, it can be argued that both banks Deutsche Bank (DB) and Commerzbank (CB) failed to communicate their frames to the German financial media within the period of analysis. Instead, it seemed that the financial media reacted with resistance. More specifically, when DB or CB increased the frame presence of certain frames (e.g., “Growth Market” for DB; “Private Banking” for CB), the media subsequently decreased the presence of these frames in their news articles.

Contrasting previous findings on agenda-building theory (e.g., [Kioussis et al., 2007](#); [Ragas et al., 2011](#)), the findings of this study suggest that press releases by DB and CB exercised less power over the German financial media and that journalists seemed to have acted more independently from the corporate agenda. Indeed, several studies have shown that journalists do not entirely rely on press releases, but use the information and add a personal opinion or an oppositional viewpoint to it ([Tuchman, 1972](#)), or even shed light on aspects that the original press releases tried to ignore (e.g., [Shehata, 2010](#)). [Pander Maat \(2007, 2008\)](#), for example, found that journalists transform press releases in a more neutralized tone, eliminating the self-promotion that is prevalent in most corporate press releases.

The findings of this study might indeed suggest that the implicit frames of DB and CB (“Growth Market,” “Financial Results,” “Private Banking”) had a promotional character. It is likely that DB has publicized the expansion of the banking business on the Eastern market in the frame “Growth Market,” while CB might have promoted its business with private clients within the frame “Private Banking.” Frames like these might have little journalistic value for financial journalists, making it less likely to be covered in the news. In depth textual analyses are, however, required to affirm these assumptions (e.g., [Berger, 2001](#); [Strauß, 2015](#)).

Furthermore, the absence of the agenda-building effect appears to be logical when the period of analysis is considered. 2007–2013 did not only encompass the German banking crisis (2007–2009), but also other crises such as the Euro crisis. [Barth and Donsbach \(1992\)](#) have argued that the extent to which public relations activities affect the media agenda is diminished in times of crisis, as journalists become more discerning in such situations. That could imply that financial journalists might have become more critical in their reporting style on banks in the aftermath of the global financial crisis. This could also be considered as a reaction to the public criticism that they received regarding the coverage on the global financial crisis ([Knowles, Philips, & Lidberg, 2015](#)).

Thus, the finding that the two German banks (DB and CB) had difficulties to get their frames resonated in the media might be opposing to general findings on agenda-building theory, but is substantiated by studies dealing with crisis communication (e.g., [Coombs, 2007](#)). In that sense, it could be inferred that it seems more difficult for public relations to set the media’s agenda by means of press releases in times of crises. Alternative approaches such as personal conversations with journalists, exclusive interviews with executives, or field visits could be considered as more fruitful strategies for public relations when facing precarious situations to communicate with the media—and hence with stakeholders.

On the downside, the results of the VAR analyses showed that press releases by DB and CB were rather following the implicit frames presented in the German financial media. In case of DB, it was found that the bank was particularly inclined to follow the frame presence of “Art” and “Growth Market.” Regarding CB, a similar effect was found for the frame “International Business.” In both cases, this form of imitation was particularly present when controlling for the German banking crisis (2007–2009). Hence, this result seems to be in line with previous findings that have shown press releases to be aligned to news making style ([Gandy, 1982](#); [Manheim, 1994](#); [Turk, 1986](#)). Furthermore, the findings also support recent research that has provided evidence for reciprocal influences within agenda-building processes (e.g., [Ragas, 2013](#); [Schweigert et al., 2016](#)).

In that sense, [Ragas \(2013\)](#) who has found mutual influences of the corporate and the media agenda argues that his findings open up discussions about the “key linkage between agenda-building theory and co-creation-oriented theories, such as excellence, coorientation, relationship management, and dialogic communication”. Thus, future research should aim at disentangling these interrelationships between news sources (e.g., public relations, investor relations, news agencies) and

news outlets in more detail, thereby showing how power relationships and dependencies contribute to the construction of financial news. Surveying or observing parties in both sectors might provide useful insights for this field of research.

At this point it has to be mentioned that the results of this study are not easily generalizable and only give limited insights into the actual adaptation processes between news media and press releases. Automatic semantic network analysis, the method which was applied in this study, merely investigates word (co-)occurrences. Hence, this method focuses on word clusters that originated from diverse outlets. Therefore, in order to come to firmer conclusions about the extent to which news media follows the content and form of press releases or vice versa, careful in- and output analysis or event analyses would be necessary (e.g., Berger, 2001; Strauß, 2015).

In this sense, the results of this study have to be considered with caution. The restricted evidence for causal relationships (only few significant Granger causality tests) as well as the model selection order criteria that pointed to the preference of time lag zero for several models suggest that future research should look at time intervals at a lower level, such as weekly or daily time series. In addition, upcoming studies could extend this research design, investigating a number of banks, or corporations from diverse sectors. This study only looked at two German banks (Deutsche Bank and Commerzbank) to test the agenda-building effect, while other studies have investigated a number of companies from diverse sectors (e.g., Kioussis et al., 2007).

Furthermore, the results might also be subject to confounding variables such as external events that might have had an influence on the relationships (un-)discovered. It could have been that the accumulated presence of scandals in the past years in case of DB or CB (e.g., suspicion of tax evasion at DB, well-nigh bankruptcy of CB) might have driven financial media to report more critically on these banks. In addition, recent developments in the news media environment, such as declining readerships and therewith cutbacks in editorial offices (Len-Ríos et al., 2009) or the increasing influence of social media for corporate reputation (e.g., Schultz, Utz, Göritz, 2011) might represent factors that have affected the relationship between German financial media and German banks' public relations activities.

### 5.1. Conclusion

Concluding, this study has provided a first attempt in studying the interrelationship and dynamic assimilation processes of word (co-)occurrences (i.e., implicit frames) between the corporate sector (i.e., Deutsche Bank and Commerzbank) and the media sector (i.e., German financial media) over time. The main merit of this paper lies in the methodological and analytical advancement in agenda-building theory and public relations research. By employing semantic network analyses, it could be shown that public relations researchers are able to compare word (co)occurrences across sectors, allowing inferences to what extent communication is in alignment between different actors or sectors. For future research, more advanced automated analyses are needed to investigate agenda-building processes in more detail, also paying attention to valence, actors or issues.

Furthermore, this study has shown that time series analyses are an appropriate method of analysis for public relations researchers to draw conclusions about the predictive power of transmissions processes between various outlets. In that way, this study invites future research to employ this method design in other corporate settings (e.g., consumer, technology), to compare agendas over time, and maybe even include other relevant agenda-building parties (e.g., public policies: see Berger, 2001).

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