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News media and the stock market: Assessing mutual relationships

An interdisciplinary multi-method study of financial journalism, news media, emotions, market events and the stock market

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Chapter 1

Introduction

The interplay between news media and the stock market has fascinated people ever since the birth of the first stock exchange, the Amsterdam market for Dutch East India Company shares in 1602 (Petram, 2011). Extreme examples from the past in which news and information distribution have led to irrational exuberance (Shiller, 2005) on the market are numerous, ranging from the tulip crisis in the Netherlands in the 1630s (MacKay, 1852), to the Great Depression of the late 1920s and the dot.com bubble in the early 2000s (e.g., Bhattacharya, Galpin, Ray, & Yu, 2009), and most recently the Global Financial Crisis 2007–2009 (GFC). Scholars in finance and related disciplines have tried to explain not only the creation, sustenance and bursting of such bubbles (e.g., Bhattacharya & Yu, 2008; Campbell, Turner, & Walker, 2012; Tuckett, 2009), but also in more general terms the underlying mechanisms that steer news, information distribution and market reactions thereto (Dyck & Zingales, 2003; Shiller, 2005). Studies in finance and economics in particular (e.g., Dougal, Engelberg, García, & Parsons; Engelberg & Parsons, 2011; Fang & Peress, 2009; Tetlock, 2007) have investigated how news and information influence market movements. In this regard, there has been intensive discussion over the past fifty years as to whether markets are efficient in the sense that all available information is instantly integrated into market prices (i.e., efficient market hypothesis: Fama, 1970), or that markets behave irrationally and unpredictably, and are subject to anomalies and emotions as put forward by advocates of behavioral finance (e.g., Nofsinger, 2005; Prechter, 2001; Shiller, 2003).

In recent times, it seems that most scholars in finance agree that financial markets can best be explained by more dynamic models, which give room for human error, herd behavior and a feedback relationship between information and share prices (Prechter, 2016; Shiller, 2003). Thus, acknowledging that the explanatory factors for market reactions might be manifold—also fluctuating with time, market circumstances and cultural context—information and communication about market events, either in the news media or through other channels (e.g., market participants), seem to play a crucial role in making sense of stock market movements (Schuster, 2006; Shiller, 2005). However, the impetus for previous research in finance and related disciplines has so far stemmed from an economic perspective, while the specific role of the news media and all their facets has often been disregarded.

Similarly, only few empirical studies or theoretical work dealing with news media, journalism and the stock market can be found in the field of communication science (cf. Lee, 2014). Research in financial communication has been confined to five thematic categories since the 1980s, according to Lee (2014): “(a) financial media and journalism; (b) representations and the financial media; (c) information, technology, and finance; (d) the impact of the financial crisis on the media industries; and (e) other crises and sociocultural issues” (p. 716). Thus, scholars in financial communication have so far neglected to adopt an approach that puts the interrelationship between news media and the stock market at the center of research endeavors. The handful of studies related to communication science deal with single listed stocks at a specific period of time (e.g., three Dutch banks during the GFC: Kleinnijenhuis, Schultz, Oegema, & Atteveldt, 2013), the mediating role of the news media during a particular corporate crisis (e.g., BP oil spill: Kleinnijenhuis, Schultz, Utz, & Oegema, 2015), or have only investigated daily news coverage and stock market quotes (Scheufele, Hass, & Brosius, 2011), thereby disregarding today’s high-speed information and trading environment (Hope, 2006; 2010).

Consequently, the questions remain: How is financial news produced today in the post-crisis era? How does financial news get integrated into prices within short-term and long-term processes? Are there feedback effects of media coverage, and if so to what extent? Who is interacting within today’s digital and international financial information networks? And to what extent do market events themselves, news coverage about the market events and/or emotions dominate stock market price movements? To answer these questions and to

offer new insights into the complex interrelationships between news media and the stock market, communication science as a discipline is eminently suitable, with its proven mass communication theories (McQuail, 2010), its tradition of using a variety of methods (Brymann, 2012; Treadwell, 2017) and inclination to conduct more interdisciplinary multi-method research (Jensen, 2013). Thus, the overarching research question to be answered in the course of this dissertation reads: *How can the interrelations between news media and the stock market be explained from a communication science perspective?*

The Power of the Media on Financial Markets

In the field of communication science, media and all its manifestations are of key interest (Jensen, 2013; McQuail, 2010). When talking about stock market movements, various scholars have emphasized the role of news media for financial markets. Most influential probably has been the Nobel Laureate and economist Robert J. Shiller. In his book “Irrational Exuberance” (2005, 2nd ed.), Shiller explains which factors had contributed to the stock market bubble of the early 2000s and the real estate boom prior to the GFC. While, according to Shiller (2005), the expansion of business news in the 90s is one of the reasons more people became interested in supposedly lucrative investments during the new economy, he also ascribes to the media a peculiar interpretative feature for the stock market: “news functions more often as an initiator of a chain of events that fundamentally change the public’s thinking about the market” (p. 91).

As it appears, Shiller’s notion seems to be closely related with communication science theories such as *agenda-setting* (McCombs & Shaw, 1972), *second-level agenda-setting* (Carroll & McCombs, 2003), *priming* (Iyengar & Kinder, 1987; Scheufele & Tewksbury, 2007) and *framing theory* (McCombs, Llamas, Lopez-Escobar, & Rey, 1997). Representatives of the *agenda-setting theory* argue and have found empirical evidence that topics which are salient on the news media agenda are likely to be transferred to the public agenda (e.g., McCombs & Shaw, 1972). The more centrally a certain topic or issue is covered in the news media, the more likely the audience is to rank this topic or issue high in relevance when asked (Iyengar & Kinder, 1987). Hence, when referring to the stock market and companies listed on the stock exchanges, it can be deduced that the more attention the news media pay to particular investment vehicles (e.g., shares of a listed company), the more pervasive this vehicle becomes in the minds of the public, or the financial audience. In turn, investors who consume news media (both private and professional) might be more likely to invest in an investment product that is more prominently covered in the news media.

Besides focusing on the salience of issues, scholars studying the *second-level agenda-setting theory* presume that the way an issue and/or actors are framed in the news media also translates to the public agenda (Carroll & McCombs, 2003). This assumption is closely related to research on *priming* (Scheufele, 2000; Scheufele & Tewksbury, 2007) and *framing theory* (Huang, 1995; McCombs, Llamas, Lopez-Escobar, & Rey, 1997). While priming scholars study how news media can contribute to evaluations and judgments among people by accentuating certain issues or aspects of issues (Scheufele & Tewksbury, 2007), framing scholars investigate how media frames (Entman, 1993) are transported to the audience’s perceptions. Hence, whether the news media evaluate a listed company or a specific fund positively or negatively might also spill over to the evaluation of these investment products by the consuming news audience (cf. Deephouse, 2000; Pollock & Rindova, 2003). In other words, news media are said to influence the knowledge, opinions and attitudes the audience holds toward actors and issues; and thus, also toward investment products.

Employing the *agenda-setting* and *framing* theories to the stock market, and citing Shiller's (2005) quotation from the beginning of this dissertation, it is suggested that: "The media actively shape public attention and categories of thought, and they create the environment within which the stock market events we see are played out" (2005, p. 105). In fact, Shiller (2005) assumes that by letting news seem interesting to the audience, the news media function as a "fundamental propagator of speculative price movements" (p. 105). In this vein, news media might not only have the power to drive stock market prices on the broader, aggregated level—possibly leading to risky financial bubbles—but the news media might also contribute in focusing attention on specific investment products (e.g., stocks, funds, bonds) at particular points in time.

Herd Behavior and Cascade Effects on Financial Markets

The reactions that news media coverage might induce on the broader stock market but also for single investment vehicles can be explained based on a range of theories dealing with herd behavior and cascade effects among people and financial market actors. Representatives of behavioral finance and financial market psychology have argued that the market, and investors in particular, do not act completely rationally when making trading decisions, and that they are subject to certain decision-making processes triggered by herd behavior (Nofsinger, 2005; Prechter, 2001; Scharfstein & Stein, 1990). In fact, not only psychological experiments with economics students (e.g., Smith, Suchanek, & Williams, 1988), but also laboratory experiments with financial market professionals (e.g., Cipriani & Guarino, 2009) imply the existence of such herding behavior.

Furthermore, arguing from a media scholar perspective, Davis (2006) claims that investors behave collectively due to their media consumption and their focus on the consensus market opinion. Davis (2005) concludes from his interviews with professional traders that decisions taken by investors are based less on the actual value of a stock than on what they believe other traders might sell or buy. Truly, trading based on the consensus market opinion has a long tradition, and has already been observed by John Maynard Keynes (1936), who is known for his analogy of individual investments as "beauty contests." In other words, traders and investors are more concerned with identifying the prevalent market opinion and knowing how other market actors will interpret and act upon certain information, rather than putting their own spin on a trade (Davis, 2015).

Closely related to the idea of following the consensus market opinion, is the concept of informational cascades in financial fads (Bikhchandani, Hirshleifer, & Welch, 1992), which states that an investor's best strategy is to follow what other investors are or might be doing. It is argued that the availability of in-sync information especially, such as market data on listed companies, analysts' stock evaluations, or news wire alerts, to which most professional investors nowadays have access, leads to this "herd-like" behavior (Davis, 2006). Scheufele et al. (2011) and Kleinnijenhuis et al. (2013) refer here to the "third-person effect" (cf. Paul, Salwen, & Dupagne, 2000), implying that news media coverage about the financial markets offers legitimized and general market opinions that are believed to affect other traders—rather than oneself. In this sense, staying up to date with recent financial developments and prevalent opinions on the market as presented in the news media might be crucial for market participants to trade at a profit, by either speculating according to or ahead of the predominant trading beliefs (Davis, 2015).

At this point, news media are allocated a crucial role, given that media sources (e.g., financial news media, analyst assessments, agency reports) oftentimes report to reflect the consensus market opinion by, for example, talking about "the market" or "the shareholders"

(Davis, 2006). Furthermore, as stated by Prechter (2001), not all investors on the stock market might have access to firsthand knowledge, which would allow them to form a unique and independent opinion that could outperform the market. Instead, even professionals might have to rely on numbers, tickers, and evaluations by experts such as financial analysts or journalists, thereby following the “naïve majority” (Prechter, 2001, p. 121). The leading role that financial analysts’ recommendations and financial journalists’ writings are assumed to play in forming investors’ perceptions and decisions on the market can be related to the well-known *two-step flow* of communication and *opinion leader theory* in communication science (Katz & Lazarsfeld, 1966). Here, it is suggested that opinion leaders have a leading role in distributing information from the mass media, which is also put in context and reflected upon with regard to elite media, to the broader public. In this vein, the distinction between private and professional investors becomes superfluous (also following previous research: e.g., Fang & Peress, 2009; Scheufele et al., 2011; Tetlock, 2007).

Certainly, most professional investors have primary access to economic information (e.g., through Reuters or Bloomberg terminals) and have developed a stronger expertise in evaluating complex financial information when compared to private investors (Davis, 2005). Furthermore, it is noteworthy that nowadays it is professional investors and fund managers who undertake the majority of trading transactions on financial markets, whereas private investors only participate on the margins of the stock market realm. A recent survey by Gallup has shown, for example, that 54% of Americans are invested in the stock market (Jones, 2017), whereas in Germany and the Netherlands the share of people holding shares or funds is much lower.¹ Furthermore, holding shares or a fund does not necessarily imply that these private investors exercise trading decisions themselves. In most cases, private investors hire fund managers or professional investors who manage their portfolios. In addition, a great many private investors are invested in pension funds and life insurances, which are usually also operated by institutional investors who invest on behalf of their clients, the private investors (Investopedia, 2017a).

Hence, although it seems that private investors—a steadily decreasing community, particularly in the U.S. (McCarthy, 2015), only constitute a fraction of the overall trading activity on the stock market, the argument that professional investors are driven in their trading decisions by the consensus market opinion portrayed in the public and financial media underlines the subliminal presupposition of this dissertation that news media might have the potential to move the stock markets after all.

The Role of Emotion on Financial Markets

When talking about herd behavior, cascade effects and irrational behavior, the role of emotions in financial markets is inescapable. By their very nature, financial assets are predestined to evoke emotions in investors. The volatile nature of the value of stocks makes it likely to provoke sudden and uncontrolled impulses in traders, ranging from “impatient greedy excitement about potential reward” (Tuckett, 2009, p. 11)—in other words, hope—and “panicky anxiety about potential loss” (p. 11), or simply fear. In fact, the VIX (Chicago Board of Options Exchange Volatility Index), which measures financial instability and which is called by investors the “fear index” or “investor fear gauge” (Whaley, 2000) points to an “*implicit agreement*” (highlighted by the author; Berezin, 2009, p. 337) among the financial community that the economy is based on irrational and emotional behavior. Again, the

¹ In a recent survey study, 23% of 2,000 Dutch households were indicated to hold stocks in 2017 (Tilburg University, 2017); in Germany, roughly 9 million people were in possession of equity investments in 2015, equalling 14% of the total population of Germany (dasinvestment.com, 2016).

dot.com bubble and the GFC work as prime examples in the discussion of how irrationality on the market can cause the market to collapse and spark a global financial crisis. But even on a regular, daily basis, stocks become overheated and represent prices that sometimes do not reflect the true value of their fundamentals anymore (e.g., recent discussions about the overvaluation of technology companies, Editorial, 2017). Hence, and as Berezin (2009) puts it: “Emotion is a constitutive dimension of the economy—even if we only collectively recognize it in times of crisis” (p. 336).

Especially the two emotions “hope” of potential gains and “fear” of potential losses can be considered crucial on financial markets, as these emotions are likely to bias rational investment decisions (Kleinnijenhuis et al., 2013; see for “fear” and “greed”: Neri, 2009; Nofsinger, 2005). Nofsinger (2005) uses the terms “optimism” and “pessimism” in this context and assumes that these social moods or emotions can influence financial decision making. More specifically, he argues that positive social mood (optimism, hope, happiness) is associated with optimism among investors and consumers, which becomes integrated into stock market prices in terms of “higher-risk portfolios, stock buying, and greater levels of trading” (p. 152). Conversely, a negative social mood (pessimism, conservatism, and suspicion) comes with pessimistic attitudes that are played out in declining stock market prices, higher volatility and a turn toward safer portfolios. Prechter (2001) even goes so far as to say that a change in emotions among the mass (i.e., financial crowds) is the ubiquitous driving force for financial market transactions.

Within these “emotional” decision-making processes, then, media, and particularly financial and economic news, can be assigned an important role. Given that assessments by opinion leaders might affect investors’ trading decisions (cf. *second-level agenda-setting theory*, *two-step flow* and *opinion leader theory*) in general, the emotions conveyed in the media are assumed to impact traders’ investment decisions in particular (Neri, 2009). However, the question that arises is whether the words in news articles themselves convey emotions in the literal sense, or whether these emotions are evoked in readers when reading the news. Acknowledging the fact that the individual behavior of investors is not assessed in this dissertation (e.g., by means of experiments), appraisal theory (Scherer, 1999) is used as the underlying concept instead to understand the mechanism that explains how emotions in the news media lead to subsequent (trading) decisions on the aggregated level (see Chapter 3 for a thorough explanation of appraisal theory).

Feedback Model – The Dual Role of the News Media

Although the relation between news media and the stock market has so far been portrayed as unidirectional, the way news media shape investors’ trading decisions has also been found to be part of a circular process. In criticizing the inflexibility of the efficient market hypothesis (Fama, 1970), Shiller (2003) propagates the rise of behavioral finance and points to the relevance of the long existing, but so far broadly neglected, feedback model of financial markets. In this model, he argues that when stock market prices increase, public attention will be drawn to these investments, which leads in turn to enthusiasm among investors (“word-of-mouth”)², expecting a continuous rise in prices. This excitement about the investment will create even more investment demand and will push the prices further up. According to Shiller

² See also work on (e)WOM in business, marketing and advertising (e.g., Allsop, Bassett, & Hoskins, 2007; Lee, Rodgers, & Kim, 2009; Mangold & Faulds, 2009).

(2003), if this feedback loop is not interrupted, the circular process might lead to a speculative bubble.³

Also in this feedback model, Shiller (2005) identifies a major function of the news media (i.e., newspapers, magazines, etc.). Similar to the power of the media in spreading the consensus market opinion among investors, Shiller (2005) believes that the “news media are essential vehicles for the spread of ideas” (p. 85). To get the market moving, a significant group of people need to believe in a certain (market) idea or have to follow the same (market) thinking, for which the news media provide an accessible and legitimized “market place of ideas” (Gordon, 1997).⁴ The news media here are not only considered independent observers of market events, but they are also an “integral part of these market events” (Shiller, 2005, p. 85) themselves. Hence, the media not only objectively report on events, but they might also by means of their evaluative coverage influence and shape the emergence of events on the financial markets. Similarly, the management scholar David L. Deephouse (2000) identifies two functions of the mass media for the stakeholders of a firm: on the one hand, media can be seen as an “information broker,” distributing information passively to stakeholders (i.e., investors); on the other hand, media are an “active participant” providing comments and assessments that stakeholders can use when making decisions (i.e., investment decisions).⁵

The dual and reflective function of the news media has also been identified in mass communication theory. While *public agenda-setting theory*, *second-level agenda-setting* and *framing theory* have regarded the media as the independent and the public as the dependent variable in their models, *media agenda-setting theory* reverses the equation. Here it is argued that the media agenda is contingent upon various factors (Rogers, Dearing & Bregman, 1993). Thus, research endeavors in this area are concerned with finding out how the agenda of the media gets set. Influencing variables in this regard range from news sources, organizational culture, the news production environment, advertisers and public opinion to individual factors such as journalistic norms and values (McManus, 1995; Shoemaker & Reese, 1996). In this sense, movements on the stock market, market events (e.g., an initial public offering) or the regular reporting on the stock market as a firm component of journalistic practices can be considered explanatory factors for setting the daily financial news agenda.

Yet, reasons and factors that determine what eventually becomes news in the media are at the center of the traditional *news values theory* in communication science (Galtung & Ruge, 1965; Harcup & O’Neill, 2001). As shown more than fifty years ago, there are certain characteristics of stories that make them more likely to become news in the media. These factors range from dealing with the power elite, being a surprise, conveying bad or good news, to the magnitude and relevance of a story or the extent to which the story fits with the news agenda of the outlet (Harcup & O’Neill, 2001). As such, stock market events are also

³George Soros (1994) argues similarly that prices on the stock market are reflexive in a sense that information on stocks becomes incorporated in prices of stocks that are reflected on trading charts, and therewith influences opinions and evaluations of traders about the value of a certain stock. Given that market prices are assumed to reflect the consensus market opinion, the extent to which financial information is considered as valid or truthful is likely to be dependent on and constitutive of the collective perceptions of traders. Thompson (2009) identifies this as one of the three forms of communicative reflexivity in financial markets, namely “contingent” or “game” reflexivity. In other words, investors observe what other actors on the market might think, trying to anticipate these trading opinions, and converting those beliefs in their own trading decisions (see also Davis, 2006).

⁴The power of the media in spreading ideas is also related to the diffusion of innovation theory that assumes a social process in which “perceived information about a new idea is communicated” (Rogers, 1995, p. xvii). Innovations or ideas thus only arrive at their meaning through communication and continuous social construction.

⁵See Fombrun and Shanley (1990, p. 240) for a similar distinction of the role of the media regarding corporate reputation.

more likely to become reported in the news when they deal with bad or good news (e.g., strong upward/downward shifts in prices) or when a stock price or index evinces a surprising reaction. Indeed, the fact that news media are likely to follow the stock market has also been pointed out by one of the few works in the field of communication science: Scheufele and colleagues (2011). Taking a short-term perspective and focusing only on the German stock market on a daily level, the scholars show that German news media mirror the prices of the stock market rather than determining them. However, other research has contested these findings, implying that stock prices might also be negatively influenced by the extent of news coverage on stocks (e.g., Kleinnijenhuis et al., 2015).

Contested Media Effects

In fact, more scholars have argued—mainly based on qualitative research (e.g., interviews with investors and fund managers)—that media effects on the stock market are small (Davis, 2005), and that reinforcing influences such as described in the feedback model by Shiller (2003) or reversed media effects (e.g., Scheufele et al., 2011) are rather limited. More specifically, news and information that is publicly available to anybody has been found to be of little use for professional investors and their daily trading decisions (Davis, 2015). In the eyes of active traders and fund managers, public news media, and specifically daily newspapers, are far too slow to keep up with a trading environment that is characterized by real-time and high-speed information generation and distribution these days (Davis, 2015; Hope, 2010; Lewis, 2014). In order to outperform the market or trade ahead, investors are instead looking for private information or market analyses that provide insights which other market participants do not yet have, thus providing them with a trading advantage over others (Davis, 2015). However, empirical evidence for this assumption by means of quantitative meta-analyses that take a theoretical and methodological communication science approach is so far limited (see for an exception: Scheufele et al., 2011).

Aim and Academic Relevance of the Dissertation

Looking back at the theoretical foundation that has been sketched so far, it becomes apparent that the news media certainly play a role in stock market movements. What is less clear, however, is to *what extent, which direction, what content features* and under *what circumstances*. The disagreement among scholars regarding the direction, degree and dynamic relationships that news media might have with stock market prices—particularly in communication science (cf. Kleinnijenhuis et al., 2013; Scheufele et al., 2011)—calls for more rigorous empirical research in this field. Furthermore, apart from the two aforementioned publications, it seems that no communication science scholar has further investigated in a systematic manner the role of the media in explaining stock market movements and with regard to today's fast-paced news media and stock market environment.

For sure, there has been a vast body of work accomplished in economics, finance and accounting, investigating how information plays into market prices. Among others, one finds event studies aimed at unraveling how market events impact stock market prices in the short and long run (e.g., MacKinlay, 1997), macro-studies investigating the effect of economic announcements on indices and stock market indicators (e.g., Hayo & Neuenkirch, 2013) or automated and computer-assisted analyses of news content and its aggregated effects on stock market prices (e.g., Antweiler & Frank, 2004: investigating Internet messages; Tetlock, 2007: looking at the popular daily *Wall Street Journal* column; Birz & Lott, 2011: studying

newspaper headlines). Hence, although there are a few studies that have taken news media coverage into account, the approaches taken derive more from an economic or finance background, and do not discuss the particular role that news media and the specific characteristics of the coverage might have in explaining stock market price movements.

In this regard, it is still unclear to what extent emotions in news media affect stock market prices in the long and short run or vice versa, how expert opinions or news that appears more relevant (e.g., media attention toward a particular stock, a topic covered multiple times) relate to stock market movements, or how the communication among a particular financial network interrelates with stock market prices. Furthermore, and although there is a plethora of research that has investigated the influence of market events on stock market prices (see for an overview: Dechow, Sloan & Zha, 2014), the demarcation of the effects of market events vis-à-vis news coverage is less fathomed by empirical research. In addition, as regards the role of financial journalism for financial markets, a recent assessment of the discipline after the GFC is more than overdue.

Viewed from this perspective, another limitation of previous research in the field of economics and related fields is the methodological approaches taken. While the majority can be identified as computer-assisted content analyses with partly clear reliability measures (Antweiler & Frank, 2004; Bollen, Mao, & Zeng, 2011; Tetlock, 2007), there are only a few survey studies that investigate the perceptions and behaviors of actual market actors (e.g., Oberlechner & Hocking, 2004). In line with the economic research tradition, qualitative studies such as case studies, interview studies or descriptive network analyses are also rare, let alone interview studies with market participants in order to critically reflect upon the interrelations between the news media and the stock market. The few qualitative exceptions in this field of research can instead be mainly found in critical cultural studies, such as from sociologists (e.g., de Goede, 2005; Knorr Cetina & Bruegger, 2002a, b) or media scholars (e.g., Davis, 2005; 2006; Thompson, 2009; 2013).

Furthermore, only a few of the quantitative studies conducted in this field of research have so far considered reversed and mutual influences between news media and stock market prices, and thus lack in terms of external validity. Most of the studies in economics use regression analyses to analyze the relationships between media and the stock market with a unidirectional effect assumption (Jang, 2007; Fang & Peress, 2009). However, facing the problem of simultaneous causality, time series analyses (i.e., vector autoregression) would be more appropriate to unravel the dynamic relationship between media coverage and stock market ratings, thus also allowing the investigation of mutual dependencies and feedback mechanisms. Moreover, only a small number of studies have considered lower than daily time aggregates in their analyses up to now, disregarding recent developments in the speed of information generation, distribution and integration into stock market prices (see for an exception: Groß-Klußmann & Hautsch, 2011). While the data collection of stock quotes for lower time intervals (e.g., seconds, minutes) might certainly be difficult, it appears that it is also less common in economic or finance research to take a multi-method approach and to try and validate the quantitative findings with secondary (qualitative) data.

Nevertheless, one has to point out that cultural scholars (e.g., Davis, 2005, 2006; de Goede, 2005; Ho, 2009; Knorr Cetina & Bruegger, 2002a, b; Norfield, 2016; Thompson, 2009; 2013) who have looked at the financial markets with a socially critical lens have contributed valuable insights into the characteristics and constituents of the financial information systems so far—by also using a range and combination of data types (e.g., observations combined with interviews). However, most of this research was conducted before financial markets got hit by the GFC, which brought about an upheaval in financial regulations thereafter and a discussion in practice and academia on the role of financial journalism in having sparked a global financial meltdown (Manning, 2012; Usher, 2012).

Thus, and given that the information and stock market environment has changed drastically in the past decade with regard to high-frequency trading (Lewis, 2014) and automated journalism (Blankespoor, deHaan, & Zhu, 2017, *in press*), there is a pressing need to reassess the role of the news media in financial markets from both a qualitative and quantitative research perspective. This dissertation provides such a comprehensive answer to the recent call for more research on financial communication, and particularly on the role of financial journalism and the news media for financial markets (cf. Lee, 2014).

Outline of Dissertation

In the course of reviewing previous research dealing with the interrelationships between news media and the stock market, three research themes have been identified in which it was found that a communication science perspective that takes both recent developments and the specific characteristics of news media and the reporting into account could provide new and fruitful insights for academia and practice: **1) Financial Journalism and the Stock Market, 2) Emotions, News Media and the Stock Market, and 3) Events, News Media and the Stock Market.** By focusing on these three fields of research, various objects of investigation in terms of news media (newspaper articles, online news articles, tweets) and time horizons for media effects (long-term, short-term) were chosen. Figure 1.1 gives an overview of the setup for the empirical studies that have been conducted in this dissertation.

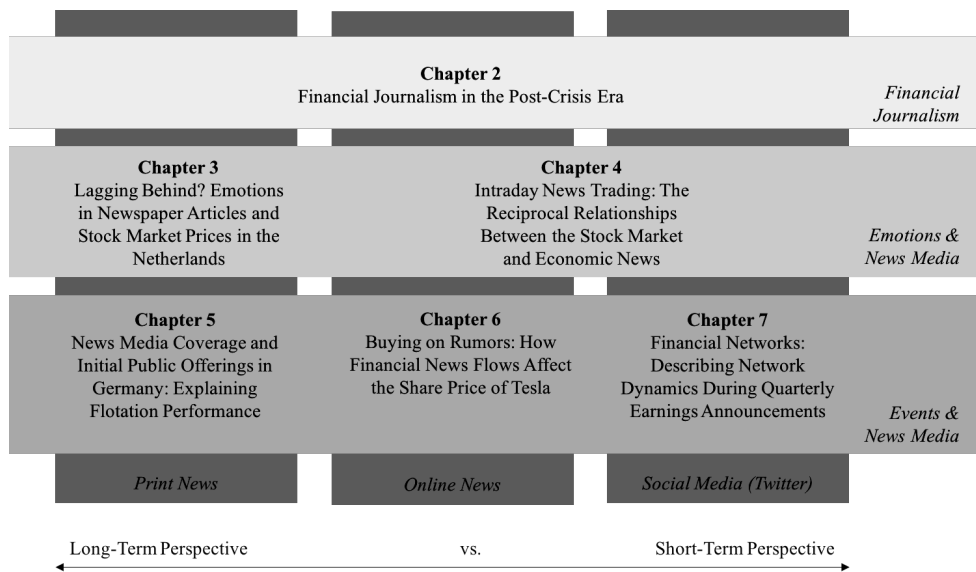


Figure 1.1 Overview of the empirical studies in this dissertation.

1) Financial Journalism & the Stock Market

The first part of the dissertation deals with the role of financial journalists with regard to the stock market and has been investigated by means of a qualitative interview study with 22 experts on the financial markets and a survey among 40 financial journalists in the U.S

(Chapter 2). The findings indicate that most journalists do not enact the active watchdog role, although this is the role they identify themselves most with. Rather, and in light of the daily practices of the majority of journalists interviewed, it is argued that the watchdog role of financial journalism should be reconsidered in academia and practice, combining investigative reporting with an information transmission view. Furthermore, the whole process of constructing and distributing financial news has been found to be part of a self-referential financial information system. This leaves little room for alternative voices or a significant impact of daily and regular financial reporting on the stock market. An influence on stock market prices through financial reporting has been found to be dependent on various factors. Eventually, with regard to the proliferation of online news, a general concern about the loss of a journalistic culture and standards has been expressed among interviewees. At the same time, journalists also saw potential for their discipline in the future with regard to automated reporting and online publications.

2) Emotion, News Media & the Stock Market

The focus of the second part of the dissertation lies on emotions in news media coverage and its effects on the stock market—both on an aggregated level (i.e., stock market index) and on an individual level (i.e., listed companies). The first study (Chapter 3) investigates the recursive long-term effects of daily newspaper coverage and the amount of emotional words (positive/negative) on stock market prices of 21 stocks listed on the Amsterdam Exchange index (AEX) between 2002 and 2013. Findings imply that an increase in negative emotional words leads to a decrease in the opening prices for a few AEX stocks, while the interaction effect of media attention and emotional words on opening prices is less clear. Instead, time series analyses suggest reversed effects, with newspapers using more negative emotional words after an increase in the change of the opening prices of certain stocks. The second study in this part of the dissertation (Chapter 4) looks at the mutual relationships between economic tweets by Reuters and Bloomberg during the trading month September 2015 and the intraday fluctuations of the Dow Jones Industrial Average (DJI) index. Findings indicate that news volume, news relevance, and expert opinion in tweets influence the fluctuation of the DJI positively, while the economic tweets appear to react to market fluctuations with less coverage (i.e., fewer retweets, favorites, updates or expert opinions). Furthermore, Bloomberg was found to provide first-hand information about the market to professionals by means of influential market stories, while the economic tweets by Reuters and Bloomberg could rather be considered follow-up reporting. Moreover, given that the effects of economic tweets on the DJI fluctuation were found to be strongest within longer time intervals (i.e., 1 hour instead of 5-minute or 20-minute intervals), it was concluded that public traders need more time to make sense of information and to trade upon when compared to professional investors who receive Bloomberg market moving stories first-hand.

3) Events, News Media & the Stock Market

The third and final part of the dissertation deals with specific market events and the effects of the events themselves and the media coverage thereof on the stock market. The first study (Chapter 5) here deals with 50 initial public offerings (IPOs) in Germany that went public between January 2011 and December 2015. The aim was to find out how media coverage about the IPOs is related to their flotation performance during the first days of trading. The findings suggest that an increase in media coverage on the day of the IPO leads to a higher share price percentage gain of IPOs after the second day of trading. Furthermore, a negative relationship between negative sentiment in the news media, the presence of information on a new product or products of IPOs and the flotation performance of IPOs could be detected. The relationships found were more evident and robust when considering media coverage

published on the day when the IPO went public as compared to media coverage summarized for the six days prior to the IPO.

In the second study (Chapter 6) a more pragmatic and qualitative approach was taken, studying Tesla Motors and the effect of a business event (i.e., introduction of a new battery in August 2016) and the financial reporting on Tesla's intraday stock market prices. It could be shown that Tesla's share price reacted strongest to the business event itself and the expectations raised on the market rather than to the follow-up financial news reporting about the event. In this context, the Twitter accounts of Elon Musk and Tesla have been identified as providing market-relevant information for shareholders and day traders, also having the potential to cause broad (speculative) financial reporting along the lines of the issue-attention cycle.

The third study of this part (Chapter 7) deals with financial networks on Twitter. By focusing on the quarterly earnings (QE) announcements of DJI firms in summer 2016, it became evident that the financial network consists at its core of established news media, journalists and professional investors, but that alternative and anonymous voices also get heard. The findings, however, support the assumption that financial networks are self-referential and mainly consist of established and elitist groups of people, primarily situated within the financial centers of the world, both online and offline. Investigating the influences of the communication within the particular network on Twitter, it could be shown that more attention devoted to the reporting companies leads to declining stock prices in the short-run, while effects in the reverse direction seemed to vary. Looking at the press releases and the news media reporting about the QE in particular, predominant support for the time series analyses could be detected. Furthermore, the qualitative analysis of the corporate and media data has suggested that not only expectations on the market, but also the actual reporting of the QE as well as the evaluation of the numbers by the financial media thereafter might influence how the stock market prices of the reporting companies react during the QE announcement period.

Interdisciplinary Multi-Method Approach

The overview of the dissertation has shown that this research project aims at covering a broad range of research topics that relate to the interrelationships between news media and the stock market. In this connection, and to provide extensive—but far not exhaustive—insights into this research field, this dissertation takes advantage of an interdisciplinary multi-method approach (Jensen, 2013). To do so, this dissertation 1) relies on quantitative time series analyses—more specifically, on vector autoregression analyses (Vliegenthart, 2014)—to account for the mutual and dynamic interrelationships between news media and the stock market. In so doing, this dissertation follows a few scholars in economics who have taken a similar approach (Uhl, 2014; Wu, Stevenson, Chen, & Güner, 2002), but who have not yet focused on specific news characteristics (Chapter 3, 4, 7). 2) In line with previous research (e.g., Pollock & Rindova, 2003; Tetlock, 2007), this dissertation uses (hierarchical) OLS regression analyses to study the unidirectional relationship of news media with stock market prices (Chapter 3), particularly with regard to market events (Chapter 5).

Furthermore, 3) to account for the long tradition in economic and finance research, this dissertation also uses event studies (MacKinlay, 1997) to assess intraday stock market movements (Chapter 5). 4) By using a combination of both manual and computer-assisted content analyses, this dissertation acknowledges and tries to overcome the shortcomings of both methods of analyses (e.g., Kalampokis, Tambouris, & Tarabanis, 2013). 5) With regard to the rise and omnipresence of social networks (Castells, 2010), this dissertation moreover

relies on network analyses to study financial networks on Twitter (Chapter 7). 6) Following previous cultural scholars (e.g., Knorr Cetina & Bruegger, 2002a, b; Davis, 2005; 2006), a qualitative interview study with experts on the financial markets provides, in addition, a more critical perspective on the role of financial journalism in financial markets (Chapter 1). 7) A case study on Tesla offers a more illustrative example on the interactions between news media and individual stock market prices, promoting the use of this underrepresented methodology in related research disciplines.

And finally, 8) this dissertation can be considered unique in its combination of both quantitative and qualitative methods not only across the studies conducted, but also within the individual chapters. For example, the interview study (Chapter 2) is accompanied by a survey among 40 financial journalists; the manual analyses of Reuters and Bloomberg tweets are supported by a qualitative in-depth reading of Bloomberg market moving stories and an expert interview with a Bloomberg editor (Chapter 4); the case study on Tesla does not only make use of intra-day stock quotes and event studies, but also investigates the online financial news reporting and Twitter communication by Tesla itself (Chapter 6); and lastly the network study (Chapter 7) combines time series analyses with a qualitative assessment of the corporate communication and financial media coverage on the QE announcements of the listed companies under study.

Besides the rich use of methodologies from diverse fields of research, this dissertation also puts its geographical focus on three different countries. Whereas the main focus lies on the biggest financial marketplace in the U.S. (Chapter 2, 6, 7), it also accounts for smaller stock market exchange environments such as the Amsterdam Exchange index in the Netherlands (Chapter 3) and the market for initial public offerings in Germany (Chapter 5). Although thereby the studies range in their focus and methodological approaches over a wide spectrum, the choice of investigating three different countries in this dissertation allows for gaining insights into various international marketplaces and stock markets.

Practical and Societal Relevance

Investigating the power of the media in moving the stock market is not only of relevance for scholars in finance, economics, accounting and communication science, it is also crucial for practitioners in the area of financial communications. For example, investor relations officers, financial public relations experts, strategic communication consultants as well as people who work in the corporate or financial sector might be greatly interested in learning about how news media relate to stock market prices. More specifically, they would take advantage of the findings of this dissertation for their practice in knowing to what extent specific news media outlets (i.e., online, print, social media), various news media characteristics (e.g., attention, emotions, relevance, expert opinion) and certain market circumstances (initial public offerings, product introduction, quarterly earnings releases) can be considered as explanatory factors for market movements. In addition, the analytical approaches taken (e.g., daily vs. intraday stock market prices; manual vs. automated content analyses, time series vs. regression analyses; case studies vs. meta analyses) cover a broad range of methods and perspectives that could—more or less, depending on the level of expertise—also be employed in practice.

On a broader level, knowing about the role of the news media in driving stock market prices becomes increasingly relevant for a financialized global society, characterized by the “increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies” (Epstein, 2005, p. 3). In fact, more than 50 million employees with about \$4.7 trillion retirement plan assets in

the United States are recently invested in the stock market by means of 401(k) plans (Investopedia, 2017b). Hence, particularly for private investors who might not know the specifics of financial markets, their investments or the complex interrelations of money transactions across countries (de Goede, 2008), it might be interesting to learn at least how news media—which are also easily accessible in their daily lives and thus may be more proximate and easier to understand—relate to stock market movements. Taking this forward, this dissertation also contributes to recent calls for improving financial literacy among the public (Pollard, 2016), and might thereby engage citizens in becoming more involved in democratic processes that concern economic decision making. More precisely, knowing more about the interactions between the news media and the financial markets is not only crucial to prevent private investors from risky media-hyped investments, but it is also important to understand policy making processes in the financial sector. Seeing through those mechanisms might encourage citizens to take action and demand more transparent and rigorous financial policies (e.g., with regard to the *Panama Papers leak* in 2016).

Eventually, the most recent speculative bubble on subprime mortgages in the U.S. that burst in 2007, and which led to a widespread international banking crisis in 2008/2009 with a severe aftermath both for citizens and governments all over the world, made us again aware of the critical meaning of the stock market and the financial sector for our society and daily life. In fact, the role of the news media in having furthered the global spread of the financial crisis is still a hotly debated topic, both in academia and practice (Bhattacharya & Yu, 2008; Manning, 2012; Usher, 2012). Furthermore, with governments becoming increasingly influenced by corporations and money, be it politicians with strong associations with the corporate sector (e.g., the election of Donald Trump as U.S. president in 2016), or lobby groups of profit-oriented organizations that have a strong impact on national and supranational policy making (Drutman, 2015), this dissertation provides important contributions for our understanding how news media influences the financial sector, or vice versa, and to what extent news media themselves can be understood as part of the financial system.