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Causal Reasoning in Corporate Annual Reports: The Truth and Nothing But the Truth?

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Abstract

Annual reports are companies' business cards to present and explain important corporate performance outcomes, both internally and externally. On the basis of the well-explored self-serving attribution bias in publicly available but unaudited documents, the question remains whether the tendency to take personal credit for positive outcomes (acclaiming attributions) but to assign blame for negative outcomes to external circumstances (defensive attributions) also holds for legally regulated management reports. Beyond that, it remains to be clarified whether acclaiming and defensive attribution patterns are determined either by surrounding conditions (i.e. cognitive information-processing explanation) or by impression management strategies (i.e. motivational explanation). A unique panel dataset of Germany's largest blue-chip corporations provides evidence of the existence of self-serving attribution patterns in the explanations provided for cause-consequence relations in corporate management reports. With regard to acclaiming attributions, our findings support motivational intentions. With regard to the defensive attributions, however, the cognitive information-processing explanation dominates.

Key words: annual reports, management reports, content analysis, self-serving attributions

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1. Introduction

Corporate annual reports are an important source of information for different stakeholder groups, such as (potential) shareholders, investors, employees, politicians, the media, or the society as a whole. The causal reasoning used to explain corporate performance helps these interest groups to form expectations about the quality of the respective companies' management and, thus, to make informed decisions. Despite the scope of these communication means, previous research finds evidence of reporting biases in corporate annual reports (Martinko, 1995; Merkl-Davies/Brennan, 2007). In more detail, there exists a self-serving attribution pattern: Organizations tend to attribute positive results to their internal (dispositional) strengths (resulting in acclaiming attributions), whereas negative outcomes are disproportionately often relegated to external (situational) circumstances (resulting in defensive attributions) (Zuckerman, 1979). The existence of such self-serving attribution tendencies is also supported using other sources of corporate reporting, such as conference calls (Larcker/Zakolyukina, 2012), speeches (Huff/Schwenk, 1990), corporate websites (Beyer et al., 2014; Campbell/Beck, 2004), press releases (Davis et al., 2012), or IPO prospectuses (Aerts/Cheng, 2011).

So far, however, there is no consensus as to why self-serving attributions occur. The empirical evidence of whether the pattern reflects the actual information that is available to management when making the causal reasoning (cognitive information-processing explanation), or whether the bias is due to ego-enhancing and ego-defensive motives (motivational explanation) is unanimous. Nevertheless, the differentiation between both explanations is crucial with regard to the effectiveness of stakeholders' investment decisions. Cause-consequence explanations that do not reflect a company's true condition, but rather aim at presenting an embellished picture (a strategy called impression management) can mislead capital investors in their allocation decisions. From a company perspective, self-serving biases might have severe consequences, too: Attributions that serve motivational reasons (for example driven by managers' self-deception) but that unconsciously do not reflect reality will in all likelihood lead to ineffective strategic responses. In the worst case, decisions that are based on fallacies could cause sunk costs and an escalation of commitment (Staw, 1981). Yet, the highly professional context we observe leads us to assume that attributions (either biased or not) occur consciously, i.e., managers are aware of the grievances and possibilities of their companies. In the remainder, we will, thus, suppose that a possible motivational bias in the attribution pattern results from self-presentation strategies rather than a manager's unconscious ignorance (Staw/Ross, 1989).

The present paper augments the prior literature by analyzing reporting biases in causal reasoning with recent data for Germany. In a first step, we investigate whether the largest (in terms of market capitalization) German listed corporations engage in self-serving attributions when providing reasons for positive and/or negative performance outcomes. We use publicly available data from corporations that are listed in the German DAX, MDAX, SDAX, or TecDAX – a database that comprises 160 corporations. In particular, we draw on data from corporations' management reports that constitute a major part of the annual report. In contrast to previously studied letters to shareholders, management reports are subject to stronger legal regulations (requiring, for example, an audit certificate). Identifying a lower bound of biases in causal reasoning at this stage can have crucial implications, since the statutory framework is expected to cause fewer – if any – attribution biases and should provide a better decision-making basis for stakeholders. In a consequent step, we study the determinants of self-serving attributions and, thus, contribute to the debate on cognitively versus motivationally evoked biases. In order to disentangle the effects of both explanatory approaches, we differentiate between cause-consequence relations in a year of good economic activity (2006) versus a year of crisis (2009). Furthermore, by drawing on data from corporations' forecast reports in 2005 and 2008, respectively, we are able to account for a company's expectations regarding its future performance. In light of the self-serving attributions, it will be particularly interesting to study whether deviations from prior expectations determine the pattern and the amount of attributions, i.e., the actual space used for causal reasoning in the management report.

Our findings provide evidence of the existence of a self-serving attribution pattern in corporate management reports of listed German corporations. In more detail, we find ego-enhancing factors to trigger acclaiming attributions after positive outcomes. Nevertheless, there is no evidence pointing to ego-defensiveness causing external attributions after negative outcomes. In other words, negative performance outcomes are explained by attributions that well matched the economic conditions. Hence, we support the motivational explanation for the tendency to attribute internal causes to successes and the cognitive information-processing explanation for attributing external causes to failures.

The subsequent section 2 reviews the existing research on self-serving attribution patterns in corporate annual reports. Against the background of the theoretical underpinnings explaining self-serving biases in causal reasoning, previous empirical findings serve to develop our research hypotheses. We describe the sample-selection process in section 3 and provide first descriptive results in section 4. Section 5 presents the multivariate analyses, while our findings and implications are discussed in section 6.

2. Self-Serving Attributions: Previous Empirical Evidence and Theoretical Considerations

In his seminal paper on interpersonal relations, Fritz Heider (1958) describes how individuals use available information to explain the performance of others. He argues that due to the fact that information is limited, outside observers behave like “naïve psychologists”, i.e., they tend to neglect situational (external) causes and to overestimate dispositional (internal) reasons. Later, attribution theory was expanded to describe individuals’ explanatory patterns of their own behavior. It was observed that, on the one hand, individuals are inclined to attribute positive outcomes to personal attitudes and strengths (acclaiming attributions). On the other hand, negative outcomes are predominantly explained by situational weaknesses (defensive attributions). This self-serving attributional bias was not only found to exist on an individual level (Bradley, 1978; Campbell/Sedikides, 1999; Fiske/Taylor, 1991; McAllister, 1996; Miller/Ross, 1975; Zuckerman, 1979), but also in explanations of corporations’ annual performance (Merkel-Davies/Brennan, 2007). In other words, company successes are typically attributed to executives’ own actions (in the form of entitlements), while corporate failures are explained primarily by exogenous shocks (in the form of excuses). In their study, Wagner and Gooding (1997) ask 102 executive MBA students to explain the positive and negative outcomes that were described in a business scenario either from the role of a responsible manager or – alternatively – from an external observer’s perspective. Their results indicate that participants ascribe successes to internal qualities and failures to external causes when being in the managerial role, whereas this self-serving pattern could not be supported from the outside observer’s position. This tendency is also documented in studies using field data and, in particular, data from listed corporations (for a comparison between the attribution behavior of listed versus unlisted companies see Aerts, 2005). Bettman and Weitz (1983) were the first to use letters to shareholders and to support the self-serving pattern in 181 U.S. companies. Similarly, Salancik and Meindl (1984) use data from annual stockholder reports of 18 U.S. companies over a period of 18 years and find that firms are three times more likely to acclaim internal strengths for good fortune and also three times more likely to blame the environment for setbacks. The same pattern was identified in public and, thus, regulated utility companies (Clapham/Schwenk, 1991). Apart from the U.S., self-serving attribution patterns were found in public documents of U.K. firms (Clatworthy/Jones, 2003), of Belgian businesses (Aerts, 1994), and of further European companies from the Standard & Poor’s Euro 350 index (Keusch et al., 2012). Since self-serving attributions also exist in disclosure documents of Asian companies (Hooghiemstra, 2008; Tsang, 2002), no cross-cultural differences seem to

exist. In a direct comparison of 50 U.S. and 50 Japanese executive letters to shareholders, Hooghiemstra (2008) find both U.S. and Japanese companies to attribute outstanding years to internal causes. Japanese executives even showed a stronger tendency than U.S. managers to excuse adverse outcomes with external causes. These findings are incompatible with previous experimental research, suggesting that individuals from Asian cultures tend to be more modest than people from Western societies (Mezulis et al., 2004), and, thus, indicate that corporate pressure has the strength to offset underlying cultural norms.

So far, organizational studies did not consider attribution patterns in statutory disclosure documents but focused instead on documents that lack regulatory specifications and are, hence, unaudited (Aerts, 2005; Bettman/Weitz, 1983; Clapham/Schwenk, 1991; Clatworthy/Jones, 2003; Hooghiemstra, 2008; Keusch et al., 2012; Salancik/Meindl, 1984). Hitherto, the executive's letter was a prominent object of analysis. It is a personalized statement of the company's board members that directly addresses the stakeholders and is, thus, strategically positioned to be the opening statement of a corporation's annual report. In our analyses, we extend the literature on self-serving reporting biases and analyze the attributional patterns in management reports of German corporations, which are subject to stronger legal regulations than executive letters to shareholders (German Commercial Code). Due to the more profound descriptions of the corporation's financial statement as well as the mandatory audit certificate, the management report is perceived to be the most important part of the annual report in particular for equity providers, outside creditors, and analysts' ratings (Hartmann, 2010). Compared to the executive letter, investors assume to be exposed to fewer biases and more reliable information regarding company outcomes. Nevertheless, there remains a certain level of flexibility (for example the choice of wording), which still leaves sufficient scope for self-serving attribution biases and, thus, might mislead (inexperienced/non-expert) readers. The external actors' trust in audited (instead of unaudited) disclosure documents requires an in-depth analysis of the attributional patterns, as the consequences of capital misallocation can be assumed to be even worse. According to the theoretically and empirically supported incentives for individuals and organizations to take credit for positive results and dismiss blame for negative outcomes, our first hypothesis observes whether the well-established self-serving pattern also exists in the management reports of German listed corporations. We, thus, hypothesize that:

Hypothesis 1_{SELF-SERVING}: An increase in the share of favorable outcomes will have a positive effect on the share of internal attributions.

Although the available empirical evidence strongly agrees with the existence of a self-serving attributional pattern in corporate reporting, there is still no consensus as to why this pattern occurs. There are two conflicting but equally plausible explanations: The motivational (impression management) argumentation on the one hand, and the cognitive information-processing reasoning on the other hand.

From an agency-theory perspective, impression management describes managers' opportunistic behavior that results from information asymmetries that exist between the corporation and its external audiences. Impression management aims at strategically establishing and/or maintaining certain desired identities (Bozeman/Kacmar, 1997). Stakeholders, on the one hand, pursue several aims and expect managers to lead the corporation in a way such that short-term dividends are maximized, but also that the long-term existence of the company is ensured. Managers, on the other hand, aim for good performance evaluations in order to increase their reputation and simultaneously avoid sanctions (Frink/Ferris, 1998). Consequently, they may exploit their information advantage concerning the company's true standing and manipulate outsiders' perceptions with regard to (i) the organizational performance (thematic manipulation) and/or (ii) the reasons for particular financial outcomes (attributional manipulation). Referring to the former, a manager may, for example, overstate good announcements but understate bad news – leading to a reporting bias. As to the latter issue (which is at the center of our analysis), the manager may take credit for positive outcomes but deny the responsibility for a negative performance – leading to a self-serving bias. Hence, self-serving attributions may have a self-enhancing (after successes) or self-protective (after failures) purpose. Managers cannot only maintain their personal psychological wellbeing, but are also able to influence external impressions, which is a crucial marketing technique in today's competitive surrounding (Rosenfeld et al., 1995). More formally, impression management serves to strategically present oneself to others as favorably as possible, that means highlighting internal strengths that cause positive events but at the same time demonstrating the powerlessness when it comes to negative outcomes (Goffman, 1959). The motivational explanation, thus, serves to maintain the manager's, but also the company's good reputation (Merkl-Davies/Koller, 2012). On the other side, self-serving attribution patterns are not necessarily biased to strategically deceive stakeholders, but might well be based on actual conditions and simply reflect the cognitive interpretation of available information. With regard to Kelley's (1971) principles of discounting and augmentation, internally attributed successes (externally attributed failures,

respectively) will be legitimate, if they are rationally conceivable against the given background.

Contrasting the implications of both explanatory approaches demonstrates the importance of disentangling the underlying drivers for self-serving attributions. While both attempts facilitate a company's access to capital markets, increase the number of investors and, thus, help to protect against crises, such as hostile takeovers, the consequences for the addressees of the reports will be much more severe, if the true performance is strategically and consciously embellished and does not reflect reality. Although it is crucial to understand companies' driving forces behind self-serving attributions, findings so far are equivocal. While some studies indeed find impression management to be the main reason for the so-called "presentational bias" (Aerts, 2005; Keusch et al., 2012; Salancik/Meindl, 1984), others either unambiguously support the informational perspective for the self-serving tendencies (Tsang, 2002) or can neither support a purely cognitive nor a purely motivational explanatory pattern in managerial sensemaking (Bettman/Weitz, 1983). The mixed findings are due to the complexity of attributions suggesting that both explanations are not mutually exclusive. In other words, the rationale behind the explanatory patterns with regard to successes are found to differ from explanations for failures: Bettman and Weitz (1983), for instance, find evidence of the motivational explanation after acclaiming attributions and of the cognitive explanation after defensive attributions.

In order to differentiate between both effects, Bettman and Weitz (1983) as well as Tsang (2002), who replicates the former study with Singaporean data, analyze causal attributions against the nature of the economic environment, i.e., attribution patterns in crises versus non-crises years. The authors assume that under good economic conditions an internally attributed success has a self-enhancing character: Companies pursue to stand out from competitors who are likely to have performed equally well. Similarly, an externally attributed failure that occurred in a favorable economic year is assumed to be rather self-protecting. There will be a greater need to defend the company's strategy, if competitors are more likely to perform successfully (motivational explanation). The other way round, in a year of bad economic conditions an internally attributed success is as legitimate as a negative outcome that is externally attributed in view of an unfavorable economic climate (cognitive explanation). Starting from the premise that self-serving attributions are a function of the interaction between the company outcome and the economic context (Bettman/Weitz, 1983), we argue that a high share of acclaiming attribution patterns (i.e., internally attributed successes) reflects rather self-enhancing objectives in an overall good year, as companies want to stand

out from competitors who are likely to have yielded comparable successes due to the good economic conditions (motivational explanation). In contrast, internally attributed successes in an overall bad economic year have a rather rational explanatory power, since there are only few – if any – plausible external causes for positive outcomes. Considering Kelley's (1971) information-theoretical principles of discounting and augmentation, internal causes will be augmented, if the company yields a success despite unfavorable environmental conditions (cognitive explanation). Accordingly, we propose two competing hypotheses for the occurrence of acclaiming attributions:

Hypothesis 2_{MOTIVATIONAL}: The share of acclaiming attributions will be greater in a non-crisis year than in a crisis year.

Hypothesis 2_{COGNITIVE}: The share of acclaiming attributions will be greater in a crisis year than in a non-crisis year.

In the same vein, a high share of defensive attribution patterns (i.e., externally attributed failures) occurring in a good economic year are motivationally driven (i.e., self-protecting) as they serve to protect the company's reputation. Nevertheless, the defensive pattern can be rationally explained under overall bad economic conditions. Based on Kelley (1971), external causes for negative events will be augmented, if the level of information allows plausible reasons, such as in an overall unfavorable economic year. Moreover, during a crisis year companies might not feel the need for self-protection, since there are other organizations with negative outcomes. In order to explain the existence of defensive attributions we, thus, suggest two competing hypotheses:

Hypothesis 3_{MOTIVATIONAL}: The share of defensive attributions will be greater in a non-crisis year than in a crisis year.

Hypothesis 3_{COGNITIVE}: The share of defensive attributions will be greater in a crisis year than in a non-crisis year.

Apart from economic conditions, early research points to the importance, expectations concerning future performance can have on subsequent attributions of causality, which can further help to differentiate between the cognitive and the motivational explanation. In more detail, the discrepancy between a company's overall outcome and its prior expectations may have a moderating effect on the likelihood to engage in self-serving acclaiming or defensive behavior. Miller and Ross (1975) argue that individuals plan and expect to succeed rather than to fail. Hence, acclaiming attribution patterns will be caused by cognitive information processing, if the positive outcome is consistent with the subjective expectation to succeed.

Similarly, if a negative outcome is inconsistent with the attributor's own expectation (to succeed), it will be reasonable for the company to search for external factors that led to the unexpected events, since the necessary internal arrangements to achieve a success were chosen (expectancy-covariance approach). Using laboratory and field data, respectively, neither Stephan et al. (1979) nor Lau and Russel (1980) find the self-serving attributions to be a function of prior expectations and, thus, reject the cognitive explanation yet support the motivational explanation. As an example, Lau and Russel (1980) use newspaper accounts of baseball and football games and find that coaches and players show self-serving attribution tendencies independent of whether objective expectations (as measured by pre-match bookmakers' odds) are confirmed or not confirmed. Nevertheless, external expectations do not necessarily have to reflect an actor's subjective expectations concerning future events. Hence, based on the theoretical assumptions concerning a company's cognitive information processing of (in)consistent subjective performance expectations, we hypothesize that:

Hypothesis 4_{COGNITIVE}: The share of acclaiming attributions will be greater when the overall positive outcome is consistent rather than inconsistent with the expectation to succeed.

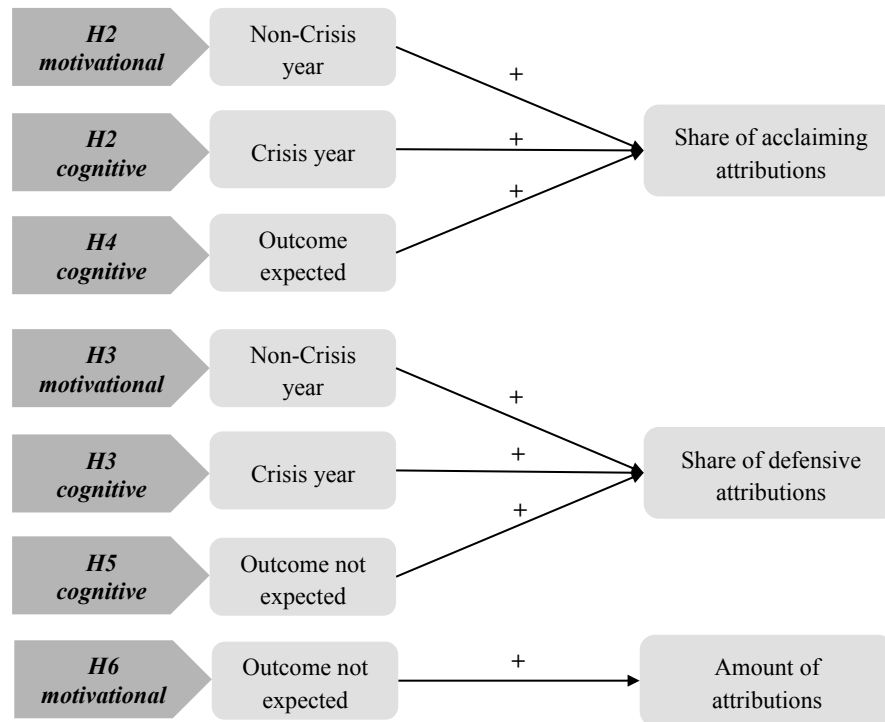
Hypothesis 5_{COGNITIVE}: The share of defensive attributions will be greater when the overall negative outcome is inconsistent rather than consistent with the expectation to succeed.

In addition to the attribution pattern, the amount of causal reasoning – in particular after negative events – can provide insights regarding companies' intentions to engage in motivationally driven attribution biases. Previous literature indicates that attributions are most prevalent after unexpected (Lau/Russel, 1980) or adverse outcomes (Weiner, 1986) but, in particular, when companies did worse than expected (Bettman/Weitz, 1983; Wong/Weiner, 1981). The intensified search for explanations serves to demonstrate control in times of pressure. Hence, we assume that – in order for the motivational explanation after defensive attributions to hold – unexpected negative events will lead to an increase in the provided causal attributions:

Hypothesis 6_{MOTIVATIONAL}: The relative amount of attributions will be greater when the overall negative outcome is inconsistent rather than consistent with the expectation to succeed.

Figure 1 summarizes the predicted effects for the motivational versus cognitive explanations of both the acclaiming and the defensive attribution pattern as hypothesized in H2-H6.

Figure 1: Hypotheses for the Explanation of Self-Serving Attributions



Note. Hypotheses separately contribute to the explanation of the acclaiming and defensive attribution patterns.

3. Dataset

We use corporate information of Germany's major corporations, which are listed in the DAX, MDAX or SDAX. Moreover, we include the 30 technology corporations that follow the shares listed in the DAX in terms of trading volume and market capitalization (TecDAX). In total, the four indices comprise 160 corporations, which are – depending on companies' annual performance – subject to certain fluctuations. According to the German Commercial Code (HGB), joint-stock companies are legally obliged to publish an annual report and to publicly disclose corporate information in order to provide an overview of the company's last financial year (§ 325 HGB). The management report constitutes an integral part of the corporate annual report. According to § 289 I and III HGB, it is supposed to include a detailed analysis and explanation for the annual financial statement and to complement the financial results with additional information concerning the overall state of business. In line with § 317 II HGB, the report's content and implications are subject to an auditor's report in order to guarantee accuracy to all stakeholder groups. These provisions resulted from the German Control and Transparency in Business Act (KonTraG) that is in force since 1998. It was introduced as a result of mounting business scandals and particularly emphasizes the

importance of early risk detection systems. It, thus, aims at professionalizing the Corporate Governance structures in German organizations.

During the generation process of an annual report, information from several departments is required: While the financing departments provide annual key figures and performance indicators, the operative management compiles important business transactions (such as product launches or investments in properties or intangible assets). This information has to be presented in an appealing manner – visually as well as journalistically – in order to catch the reader’s attention. Therefore, corporations typically rely on corporate publishers who are specialized in writing the report according to companies’ requirements. Since management reports are supposed to be free from biases but still could be used as a medium to adversely influence stakeholders (see Section 2), they provide a valuable database to study corporate causal reasoning patterns.

Sample Selection

In order to investigate the driving forces behind self-serving attributions (see hypotheses 2 and 3), the year 2006 is chosen as a favorable financial year and 2009 as an unfavorable economic year. The real economic growth rate – i.e., the rate of change of the real gross domestic product – serves as the selection criterion: It increased by 3.7 percent in 2006, while it decreased by 5.6 percent in 2009 due to the global economic crisis (Worldbank, 2015).³ Due to changes in the index listings between 2006 and 2009, we include in our analyses those corporations that are listed in one of the above-mentioned stock indices (DAX, MDAX, SDAX, or TecDAX) at the key dates of the 31st of December in 2006 and 2009.⁴ Moreover, corporations’ financial years must end between September and December, so that the attributions are related to the conditions of the corresponding economic year. All selected management reports are published in German in order to make codings reliable and comparable. After having excluded corporations that do not fit these criteria, the final sample comprises information on 121 corporations.

³ The DAX performance index could have been used as an alternative selection criterion. In 2008, the development of the DAX performance index was even worse than in 2009. Ex-ante analyses, however, revealed that the real consequences of the global financial crisis did not become visible on corporations’ accounts until 2009, as corporations first released reserves to make up for losses in 2008. Hence, we use the real economic growth rate instead of the DAX performance index to choose the good and bad economic years.

⁴ In total, 17 corporations switched between the indices. See Table 7 in Appendix IV for a list of the sampled corporations.

Content Analysis

Our strategy for the identification and coding of causal attributions closely refers to Bettman and Weitz (1983). In a first step, we define a corporate attribution as a *“phrase or sentence in which some performance outcome, such as profits, sales, or return on investment, was linked with a reason for that outcome.”* (Bettman/Weitz, 1983: 172f.). In line with this definition, we focus on statements explaining a company’s performance outcomes, sales development, consolidated profits/losses (EBT, EBIT, EBITDA, operating and trading results) as well as general statements concerning the current financial status of the corporation in order to identify attributions. Two research assistants independently identified and coded the links between causes and consequences and compared their data once after the identification process, and once again after the coding process. In order to maximize the validity of our results, the scholars closely referred to a rulebook, which was set up after several example reports had been analyzed. The set of rules was adjusted in case of uncertainties that occurred during the data compilation process. First, it was agreed upon treating each reason that is provided for one and the same outcome as a single attribution. As an example, Adidas provided three causes for the company’s sales growth in 2006: The first-time inclusion of Reebok, the FIFA World Cup, and the innovative range of products. Hence, there are three attributions in total. Next, we agreed that one cause could explain several outcomes. Nevertheless, we treat repetitions of cause-consequence relations (which might appear in different parts of the report) as only one attribution. Moreover, all cause-consequence links have to be related to the current business year and should neither focus on future events nor on incidents that took place more than a year ago. Finally, attributions have to be relevant for the corporate group. In other words, information on single segments or regions is ignored, since these are likely to be too heterogeneous in their outcomes and might not reflect the general condition of the group appropriately. Referring to these guidelines, we identify 1,123 attributions in 2006 and 2009 (which are, on average, 4.84 per management report). However, not all companies provided attributions in both years. In more detail, four companies (Allianz, MTU Aero Engines, Patrizia Immobilien, and Premiere/Sky) provided attributions in 2006 only, and six companies (CAT Oil, Deutsche Postbank, Drägerwerk, Grenke Leasing, IVG Immobilien, and Vossloh) provided attributions in 2009 only. Consequently, there are 585 identified attributions in 2006 and 538 attributions in 2009.

In a second step, the identified events and the corresponding causes were coded. The outcomes are coded either as a success (*SUCCESS=1*) or as a failure (*SUCCESS=0*). Successes are all positive events dealing with sales growth, profit increase, or a general

statement concerning the enhancement of the company's situation; Anything to the contrary is defined as a failure. In total, 62.6 percent of the observed attributions refer to successes. In more detail, we observe significantly more favorable outcomes in 2006 (93.5 percent) than in 2009 (29 percent), which supports the appropriateness of our favorable and unfavorable economic year. The explaining factors are coded on the basis of Weiner's (1979) attribution dimension "locus of causality" (i.e., internal versus external). Internal causes relate to actions that are initiated by the corporation itself (dispositional) with regard to products and services (such as new products/services, changes in the product mix or prices, innovative marketing campaigns) or the organizational structure (such as a new strategy, personnel development measures, M&A, voluntary accounting system changes). As an example, Adidas's innovative range of products (see example above) is coded as an internal cause (*INTERN*=1). External (situational) causes relate to issues that arise out of the corporation's control (*INTERN*=0). This refers to the economic situation (such as crises, stock market crashes, recessions, currency fluctuations), environmental scandals (such as weather disasters), or political circumstances (such as tax law changes, mandatory accounting system changes).⁵ On average, 59.31 percent of all attributions are internally coded, with these internal attributions being more prevalent in 2006 (73.33 percent) than in 2009 (44.05 percent).

Relating causes to consequences reveals a first tendency towards a self-serving attribution pattern: 75.11 percent of the successes are internally coded, whereas 67.14 percent of the failures are externally attributed. A Chi²-Test indicates that there is a statistically significant relationship between the performance outcome and the causality of the explanation ($\chi^2(1)=194.46$, $p<0.001$). The separation between 2006 and 2009 (see Table 1) further reveals that the acclaiming pattern (internally attributed successes) seems to persist independent of the economic conditions. The defensive self-serving pattern (externally attributed failures) appears in 2009 but does not seem to exist in 2006. Even though there are only few negative outcomes in 2006 per se ($N=38$), companies seem to take credit for setbacks in times of good economic activity. Nevertheless, in order to make convincing statements concerning the companies' intentions behind self-serving attribution patterns, more in-depth analyses are required.

⁵ While the performance outcomes can be typically coded without any difficulties, it proved more challenging to unambiguously assign the most appropriate causality dimension to the explanation. As an illustration, an increase in prices as a reason for sales growth could be coded as both internal and external. While an internal coding implies a corporate strategy behind the price increase, an external coding reflects that the price increase is due to environmental factors, such as a similar price increase in the costs for resources. Could such ambiguities not be clarified with the help of the management report, the attribution was excluded from the sample. See Table 8 in Appendix IV for a representative excerpt of the analyzed content of BMW's 2006 management report.

Table 1: Attribution Patterns in 2006 and 2009

	2006		2009		Total
	Failure	Success	Failure	Success	
External	17 44.74 %	139 25.41 %	265 69.37 %	36 23.08 %	457 40.69 %
Internal	21 55.26 %	408 74.59 %	117 30.63 %	120 76.92 %	666 59.30 %
Total	38	547	382	156	1,123

Note. Table presents column percentages.

4. Descriptive Statistics

For the multivariate analyses we will aggregate our coding results at the company-year level and define attributional patterns as proportional measures. In total, there are 115 company-level observations in 2006 and 117 company-level observations in 2009. Summary statistics of all dependent and independent variables are depicted in Table 3.

Dependent Variables

In accordance with our first hypothesis on the existence of self-serving attribution patterns (H1), we use as our dependent variable the share of internal attributions (*SHARE_INTERN*), i.e., the number of internal attributions relative to the total number of attributions in a company's management report. On average, 57 percent of the company-year observations are internally coded (i.e., 43 percent are externally coded). Correspondingly, we introduce a measure of success and set the number of positive attributions in relation to the total number of attributions in a company's management report (*SHARE_SUCCESS*). On average, 61 percent of corporate attributions deal with successful outcomes – thus, 39 percent deal with negative events.

Second, in order to empirically analyze the determinants of the self-serving attribution behavior (H2-H5), we set the number of successful events that have been internally attributed in relation to the total number of attributions (*SHARE_ACCLAIMING*). Analogously, we relate the number of failures that have been externally attributed to the total number of attributions in a management report (*SHARE_DEFENSIVE*). Mean comparison tests reveal that there are significantly more acclaiming attributions in 2006 than in 2009 ($t=11.82$, $p<0.001$). Moreover, there are, on average, more defensive attributions in 2009 than in 2006 ($t=-13.34$, $p<0.001$). Finally, in order to analyze the determinants of when corporations tend to attribute the most (H6), we set the number of lines used for attributions in relation to the

total number of lines of the company's management report (*AMOUNT*). On average, 15 percent of the management report are used for causal attributions.

Outcome Expectations

An important part of this paper deals with the question of whether performance outcomes that are either consistent or inconsistent with prior subjective expectations influence the pattern and amount of attributions (H4-H6). In order to operationalize companies' expected outcomes in 2006 and 2009, we first draw on information regarding any expected positive or negative business development that is published in the forecast reports of the years 2005 and 2008, respectively.⁶ Following the above-described identification process of business outcomes, we use all statements regarding expected sales, profits/losses, or general outlooks concerning the overall business development. After that, we conduct a target-performance assessment and compare the number of all actually realized expectations with the number of failed expectations. In more detail, *UNEXPECTED* will equal 1, if the number of failed expectations exceeds the number of actually realized expectations (and equals 0 otherwise). In case of ties (for example two expectations were realized and the other two expectations were not realized), *UNEXPECTED* is coded as 1 (in 37 company-level observations). On average, in one-third of our observations, events did not occur as expected. This percentage is higher in companies that suffer an overall failure (see Table 2). Here, the overall corporate outcome will be coded a success, if at least 50 percent of all attributions deal with positive events, and will be coded a failure otherwise. Descriptive mean comparison tests reveal that there are, on average, more internally attributed successes (acclaiming attributions) when an overall corporate success is consistent rather than inconsistent with the expectations ($t=3.24$, $p=0.001$). However, there are no significant differences in the share of defensive attributions when overall corporate failures have been unexpected rather than expected ($t=-0.1$, $p=0.3223$). Moreover, a further t-test does not suggest any difference between the means of the relative amount used for describing negative events when the general corporate failure is either consistent or inconsistent with prior expectations ($t=0.62$, $p=0.537$).

⁶ Forecast reports are published as parts of the management reports in order to assess the corporation's expected development including its main opportunities and risks (§ 289 I HGB).

Table 2: Frequency Distribution of Overall Failures and Successes

	Overall failures	Overall success	Total
Expected	51 57.74 %	105 72.92 %	156 67.24 %
Unexpected	37 42.05 %	39 27.08 %	76 32.76 %
Total	88	144	232

Note. Table presents column percentages.

Performance Deviations from Industry Benchmarks

Bettman and Weitz (1983) attach great importance to the general economic environment as an argument to differentiate between the cognitive versus the motivational explanation. This macro-level focus ignores the impact of a company's individual performance on corporate attribution patterns. Aerts (2005) overcomes this issue in that he includes the firms' financial performance. The author finds that there are more acclaiming attributional tactics (i.e., taking credit for positive outcomes) when the overall financial performance of listed companies decreases – a phenomenon that is counterintuitive to the cognitive explanation approach and rather supports motivational motives. Salancik and Meindl (1984) compare the company's growth rate with the environment's growth rate to proxy good and bad economic years. The authors argue that firms will be entitled to take credit for their growth rates, if these outweigh the environment's growth rate. They identify only a weak correlation between the relative performance and the reasoning patterns and, thus, also support the motivational explanation for self-serving attributions. Nevertheless, the simultaneous inclusion of both national- and company-level performance indicators still ignores industry-level references, i.e., a company's performance relative to its peers (Aerts, 2005). Thus, in line with Keusch et al. (2012), we account for the competition among firms, which might influence the pattern and amount of companies' causal attributions. As an illustration, profitability deviations from sector averages can provide a proxy for objective expectations: A company's performance relative to its peer group from the same industry might lead to more self-enhancing and/or self-protecting biases when companies underperform rather than outperform competitors (Keusch et al., 2012).

We first use the Thomson Reuters business classification to group corporations into ten economic sectors: Basic materials, consumer cyclicals, consumer non-cyclicals, energy, financials, healthcare, industrials, technology, telecommunication services, and utilities.⁷ The

⁷ See Table 7 in Appendix IV for a list of the sampled corporations allocated to the ten economic sectors.

majority of our observations stem from the industrials sector, while telecommunication services and energy are the least represented business classifications. In a second step, we follow previous research (Aerts, 2005; Keusch et al., 2012) and use three different measures to account for company performance.⁸ First, we use companies' net margins as a profitability measure. Due to data limitations we use banks' efficiency ratios (that includes comdirect, Commerzbank, Deutsche Bank, and Deutsche Postbank) and insurances' investment ratios (comprising Allianz, Hannover Rück, and Münchener Rück) as profitability measures. Second, we measure companies' earning power by using their return on equity (ROE). Again, due to banks' and insurances' different focus we use their pre-tax ROE instead. Third, we proxy a company's risk status using its financial leverage, i.e., the debt-to-equity ratio. For banks, we miss information for a comparable risk ratio. Finally, we calculate a company's performance deviation from the industry benchmark, i.e., the excess of each firm's (profitability, earning power, and leverage) key figure over the industry mean (Keusch et al., 2012).⁹ Due to the fact that companies' key figures are highly correlated with the respective deviations from industry means (see Table 10 in the Appendix), in our empirical analyses we will only include the benchmark measures in order to prevent multicollinearity.¹⁰

Organizational Structure

Apart from key financial figures, we account for company size proxied by its total assets (i.e., market capitalization¹¹) (Aerts, 2005; Keusch et al., 2012). Moreover, we control for changes in the organizational structure. In particular, we use a dummy variable (*NEW_CEO*) that will be 1, if a company's CEO changes from the previous year (2005 and 2008, respectively) to the year of interest (2006 and 2009, respectively). As shown by Chatterjee and Hambrick (2011), personal characteristics of CEOs regarding narcissistic traits can influence the way of accepting failures and successes. On average, there are changes in the CEO position in 10 percent of our observations. Similarly, we control for changes in the auditing firm (*NEW_AUDIT*). Auditors change in on average 7 percent of our observations.

⁸ We drew financial company data from the Thomson Reuters Datastream.

⁹ See Table 9 in Appendix IV for an overview of the formulas used by Thomson Reuters.

¹⁰ Alternative analyses using companies' performance measures instead of their deviations from sector benchmarks do not change our results and conclusions.

¹¹ According to Thomson Reuters, total assets represent the sum of all current assets, for example long-term receivables, investments in unconsolidated subsidiaries, net property plants, equipment, and other assets. For banks, this is the sum of cash and total investments, net loans, customer liability on acceptances, etc. Similarly, for insurances the total assets represent among other assets the sum of cash, total investments, premium balance receivables, investments in unconsolidated subsidiaries, net property, plant and equipment.

Table 3: Summary Statistics

Variable	Definition	Mean (sd)	Min	Max
DEPENDENT VARIABLES				
SHARE_INTERN	Number of internal attributions relative to total number of attributions	.57 (.33)	0	1
SHARE_ACCLAIMING	Number of acclaiming attributions relative to total number of attributions	.46 (.39)	0	1
SHARE_DEFENSIVE	Number of defensive attributions relative to total number of attributions	.28 (.36)	0	1
AMOUNT	Lines of attributions relative to lines of management report	.15 (.08)	.01	.56
INDEPENDENT VARIABLES				
SHARE_SUCCESS	Number of positive attributions relative to total number of attributions	.61	0	1
UNEXPECTED	1=Expectations failed, 0=Otherwise	.33	0	1
DEV_PROFIT	Profitability minus sector average	-.007 (.16)	-1.02	1.18
DEV_EARNINGPOWER	Earning power minus sector average	-.008 (.15)	-.42	.73
DEV_LEVERAGE	Leverage minus sector average	.02 (3.59)	-5.65	44.83
COMPANYSIZE	Ln of total assets	15.04 (2.02)	11.61	21.12
NEW_CEO	1=New CEO in current year, 0=Otherwise	.10	0	1
NEW_AUDIT	1=New audit firm in current year, 0=Otherwise	.07	0	1

Notes. Summary statistics refer to 232 company-level observations. Banks (N=7) not included in profitability and leverage measures due to data unavailability.

Econometric Approach

In the remainder, we aim to overcome the methodological limitations of previous studies, which mainly restrict their analyses to correlations and mean comparison tests between the variables of interest (Aerts, 1994; Bettman/Weitz, 1983; Clapham/Schwenk, 1991; Clatworthy/Jones, 2003; Hooghiemstra, 2008; Wagner/Gooding, 1997). Only few studies indeed control for further covariates and are, thus, able to conduct multivariate analyses (Aerts, 2005; Keusch et al., 2012). In our analyses, we want to exploit the panel structure of our data and the possibility to control for firm-fixed effects in a first step. As all our alternative independent variables are fractions (ranging from 0 to 1), we complement fixed-effects panel regressions using a GLM (generalized linear model) approach with a probit link and the binomial family in a second step. In all our estimations we include index as well as

sector controls. Since fixed-effects models do not allow for time-invariant variables, index and sector indicators are typically dropped. In order to prevent biases from omitted time trends, we capture the effect of aggregate time-series trends by the inclusion of a year dummy (2009).¹²

5. Empirical Findings

In Table 4, the coefficients of both alternative estimation approaches clearly support the existence of a self-serving attribution bias. The higher the relative amount of positive outcomes that are discussed in the report, the higher the share of internal (dispositional) attributions. This positive effect is statistically highly significant throughout all model specifications. Conversely, this means that the relative amount of negative events has a positive effect on the share of external (situational) attributions. Marginal effects after GLM regressions support the fixed-effects coefficients as they reveal that a 10 percent increase in the share of successful outcomes leads to an increase in the share of internal attributions by some 4 percentage points (see Figure 3 in the Appendix). These baseline results support *Hypothesis 1_{SELF-SERVING}*.

A closer look at the control variables does not only reveal that the outcome of the performance has the largest effect on the internal attribution pattern, but also that there are no robust influences of the remaining independent variables across both model specifications except for the negative impact of a company's risk-level deviation from industry benchmarks. More precisely, the more companies positively deviate from their competitors' mean leverage, the less likely are firms to attribute internally. The size of this effect is, however, not economically relevant. The year effect is only significant using the GLM model, which is driven by the fact that the fixed-effects regression already captures the year effect: The likelihood of observing internal attributions decreases by 10.63 percentage points in 2009 as compared to 2006.

¹² In addition to fixed-effects panel regressions, we applied GEE (generalized estimating equations) models, which generalize for use with panel data and fractional dependent variables. GEE coefficients are very similar to the GLM coefficients.

Table 4: Existence of the Self-Serving Attribution Pattern (Test of H1)

	FE		GLM	
SHARE_SUCCESS	0.477***	0.476***	0.981***	1.048***
	(0.080)	(0.083)	(0.174)	(0.173)
2009	-0.013	-0.033	-0.276**	-0.259*
	(0.063)	(0.067)	(0.135)	(0.135)
DEV_PROFIT		0.301		0.133
		(0.195)		(0.527)
DEV_EARNINGPOWER		0.102		-0.427
		(0.232)		(0.504)
DEV_LEVERAGE		-0.016**		-0.036*
		(0.008)		(0.022)
COMPANYSIZE		0.103		-0.012
		(0.063)		(0.067)
NEW_CEO		-0.022		0.230
		(0.060)		(0.170)
NEW_AUDIT		-0.116		-0.396**
		(0.114)		(0.186)
CONSTANT	0.383***	-1.146	-0.522**	-0.293
	(0.113)	(0.921)	(0.220)	(1.179)
Observations	232	225	232	225
Clusters	121	117	121	117
Within R ²	0.605	0.632	./.	./.
Between R ²	0.197	0.065	./.	./.
Overall R ²	0.364	0.206	./.	./.

Notes. Table reports coefficients after fixed-effects (columns 1 and 2) and GLM regressions (columns 3 and 4) with SHARE_INTERN as the dependent variable. Estimations include index and sector controls. Base year: 2006. Robust standard errors clustered at company-level in parentheses. Banks excluded in columns 2 and 4 due to data unavailability for certain performance measures. * p<0.10, ** p<0.05, *** p<0.01.

In order to distinguish between the cognitive information processing and the motivational explanation for both of the self-serving patterns, we separately estimate the impact of *YEAR* on the share of acclaiming (internally attributed successes) and on the share of defensive (externally attributed failures) attributions. As indicated in Table 5, the crisis year has a statistically significant negative effect on acclaiming but a significantly positive effect on defensive attribution patterns. Marginal effects after GLM estimations are illustrated in Figure 2: While the probability of high acclaiming attribution patterns decreases by some 51 percentage points when observing a crisis instead of a non-crisis year, the year effect is almost exactly opposite for the defensive pattern (47.75 percentage points). Consequently, we find support for *Hypothesis 2_{MOTIVATIONAL}* for the acclaiming pattern but support *Hypothesis 3_{COGNITIVE}* for the defensive structure.

Regarding the remaining covariates, a company's deviation from the sector's average earning power exerts a positive effect on the acclaiming attribution pattern. This means that if

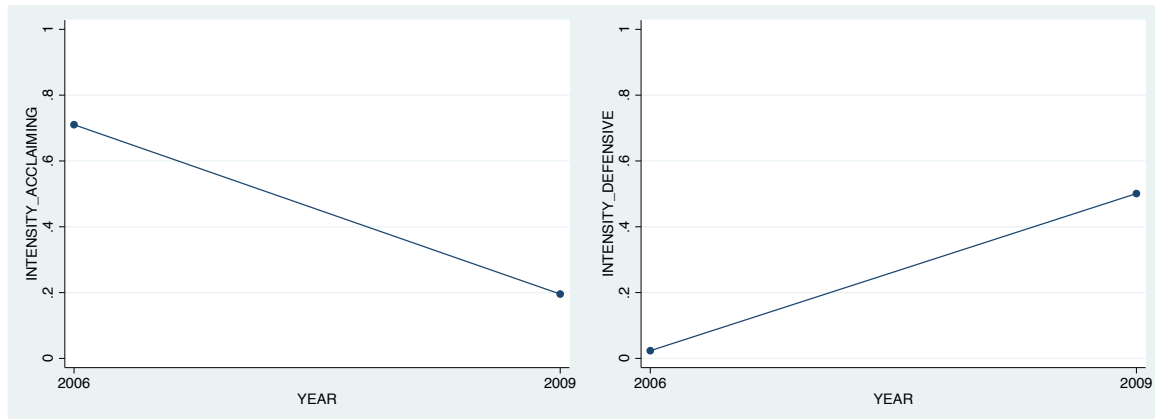
companies are better able than their competitors to efficiently use shareholder's money to generate net income, the share of acclaiming attributions will increase. In contrast, this effect seems to be negative and statistically significant (with regard to the GLM output) when using the share of the defensive pattern as the dependent variable. Again, the deviation from the debt-to-equity ratio of competitors negatively affects the probability to engage in acclaiming attributions. The leverage effect is positive and statistically highly significant with regard to defensive attributions indicating that companies with a relatively high risk compared to their peers engage in blame-avoiding attributional behavior. Nevertheless, the effect sizes are again economically negligible. Furthermore, the fixed-effects model indicates a positive effect for the deviation from the sector's mean profitability on the defensive attribution pattern. This finding gives further support for the cognitive explanation after defensive attribution patterns, as it appears to be legitimate to attribute failures to external causes, if the own profitability exceeds the outcomes of the peer group. Apart from that, the GLM approach indicates that the larger the company (in terms of total assets), the lower the probability of a defensive attribution pattern.

Table 5: Regression Estimates of Year on Acclaiming and Defensive Attribution Patterns (Test of H2-H3)

	ACCLAIMING (H2)		DEFENSIVE (H3)	
	FE	GLM	FE	GLM
2009	-0.488*** (0.053)	-1.416*** (0.141)	0.504*** (0.045)	2.004*** (0.183)
DEV_PROFIT	-0.068 (0.280)	0.390 (0.465)	0.368** (0.182)	0.477 (0.604)
DEV_EARNINGPOWER	0.707** (0.273)	1.431*** (0.494)	-0.343 (0.225)	-1.053* (0.569)
DEV_LEVERAGE	-0.014 (0.011)	-0.035** (0.018)	0.024** (0.010)	0.060*** (0.011)
COMPANYSIZE	0.090 (0.132)	-0.027 (0.067)	-0.149 (0.097)	-0.131* (0.074)
NEW_CEO	-0.051 (0.119)	0.003 (0.224)	-0.001 (0.077)	0.100 (0.199)
NEW_AUDIT	-0.106 (0.123)	-0.193 (0.183)	-0.028 (0.105)	-0.277 (0.354)
CONSTANT	-0.583 (1.898)	0.662 (1.181)	2.247 (1.411)	0.435 (1.260)
Observations	225	225	225	225
Clusters	117	117	117	117
Within R ²	0.570	./.	0.647	./.
Between R ²	0.021	./.	0.025	./.
Overall R ²	0.273	./.	0.225	./.

Notes. Table reports coefficients after fixed-effects (columns 1 and 3) and GLM regressions (columns 2 and 4) with SHARE_ACCLAIMING and SHARE_DEFENSIVE as the dependent variables, respectively. Estimations include index and sector controls. Base year: 2006. Robust standard errors clustered at company-level in parentheses. Banks excluded in columns 2 and 4 due to data unavailability for certain performance measures. * p<0.10, ** p<0.05, *** p<0.01.

Figure 2: Acclaiming and Defensive Attribution Patterns by Year



Notes. Relative amount of acclaiming (defensive, respectively) events depicted on y-axes. Predicted probabilities calculated at specific values of YEAR (depicted on x-axes) and at means of all other covariates after GLM regressions.

As theoretically reasoned above, companies' deviations from their subjective performance expectations can help to provide further support for explaining the self-serving patterns. First,

it is assumed that the acclaiming pattern will be explained by cognitive information processing, if there exists a correlation between the pattern and the expectation to achieve or not to achieve an overall corporate success.¹³ The first column of Table 6 shows that there is no significant effect of whether the overall corporate success has been expected or unexpected. Hence, we have to reject *Hypothesis 4_{COGNITIVE}* and, again, cannot support the cognitive explanation for self-serving attributions after successes. Similarly, the second column does not suggest unexpected negative events (as opposed to expected negative outcomes) to influence the share of defensive attribution patterns in any direction. However, we cannot clearly separate between impression management and the cognitive explanation after overall corporate failures: Although it can be assumed to be plausible to attribute an unexpected failure to dispositional causes (as a company always plans to succeed), this does not necessarily imply that an expected failure has to be attributed internally, since a crisis or any other negative external influence could have been expected in advance as well. This argument is particularly striking with regard to the fact that the majority of the defensive attributions occurred in 2009, i.e., in a year in which the negative consequences of the world financial crisis could have already been expected in 2008. In other words, we are reluctant to accept that companies engage in strategic impression management intentions after failures. Even though we cannot support *Hypothesis 5_{COGNITIVE}*, we will still not reject the cognitive explanation for the self-serving attribution pattern after failures.

The results in column 2 further depict that year does not have an impact, which is, however, driven by the low number of observations of overall failures in 2006 (N=6). Apart from that, we find that a 10 percent increase in the deviation from competitors' mean profitability increases the share of defensive attributions after overall negative outcomes by, on average, 7 percentage points. A closer look at the distribution of *DEV_PROFIT* after overall failures reveals that in 42 percent of our observations the deviation is positive. As illustrated in Figure 4 (see Appendix), the effect slightly decreases for the positive deviations but remains robust and statistically significant positive. Moreover, regression results again point to the negative impact of company size: The larger the company, the lower the probability of a defensive attribution pattern after overall corporate failures.

¹³ Due to insufficient observations, it is no longer possible to conduct fixed-effects regressions in order to test hypotheses H4-H6.

Table 6: Regression Estimates of Expectancy Deviations on Pattern and Amount of Attribution (Test of H4-H6)

	ACCLAIMING after overall success (<i>H4_{COGNITIVE}</i>)	DEFENSIVE after overall failure (<i>H5_{COGNITIVE}</i>)	AMOUNT (<i>H6_{MOTIVATIONAL}</i>)	AMOUNT after overall failure
UNEXPECTED	-0.273 (0.214)	0.253 (0.231)	-0.034 (0.057)	0.120 (0.087)
2009	-0.350 (0.294)	0.269 (0.292)	-0.066* (0.039)	0.514*** (0.155)
UNEXPECTED*2009	-0.046 (0.382)	./.	./.	./.
DEV_PROFIT	0.601 (0.466)	2.819** (1.096)	0.076 (0.182)	-0.522 (0.335)
DEV_EARNINGPOWER	0.035 (0.741)	0.133 (0.713)	-0.106 (0.187)	-0.684** (0.301)
DEV_LEVERAGE	-0.016 (0.028)	0.173 (0.145)	-0.005 (0.004)	-0.006 (0.004)
COMPANYSIZE	-0.087 (0.078)	-0.218*** (0.079)	0.013 (0.028)	0.010 (0.044)
NEW_CEO	0.159 (0.255)	-0.057 (0.266)	0.095 (0.084)	0.186 (0.127)
NEW_AUDIT	-0.554** (0.244)	0.083 (0.219)	0.115 (0.095)	-0.183 (0.130)
CONSTANT	1.551 (1.427)	3.746** (1.486)	-1.128** (0.481)	-1.639** (0.737)
Observations	140	85	225	85
Clusters	110	82	117	82

Notes. Table reports coefficients after GLM regressions. Estimations include index and sector controls. Base year: 2006. Robust standard errors clustered at company-level in parentheses. Banks excluded due to data unavailability for certain performance measures. Interaction term dropped in case of missing observations. * p<0.10, ** p<0.05, *** p<0.01.

The last two columns of Table 6 do not indicate a significant effect of *UNEXPECTED* on the amount of attributions in general (column 3) and the amount of attributions after corporate failures (column 4). Hence, *Hypothesis 6_{MOTIVATIONAL}* and, thus, impression management intentions behind defensive attribution patterns cannot be supported. This further strengthens our findings for cognitive information processing after negative results. The deviation from the average sector earning power has a negative and significant effect on the attribution amount after overall failures: A 0.1-unit increase in the earning power deviation leads to a 1.6 percentage points lower attribution share. Even though the year effect is positive and significant (i.e., more defensive attribution patterns after overall corporate failures in 2009 than in 2006), this effect is driven by the fact that in 93.18 percent of our observations (N=82), overall corporate failures occur in the crisis year. Nevertheless, the negative and

significant year effect in column 3 indicates that there are slightly more attributions made in the good year than in the bad year.¹⁴

6. Discussion and Conclusion

Annual reports are corporations' means to systematically demonstrate their activities and performance outcomes of the preceding financial year to all different kinds of interest groups. The most comprehensive part of the annual report is the management report, which is legally regulated and subject to an audit certificate in order to confirm the truthful presentation of the corporation's results. Nevertheless, since previous empirical studies as well as predictions from behavioral theories suggest the existence of self-serving attribution patterns, the question remains whether a company's management report is a document that accurately reflects reality or whether stakeholders are systematically deceived. This is important because the management reports' statutory framework fosters informed decision making by stakeholders. Hence, biases can lead to considerable adverse consequences.

Using real-life data from the management reports of the largest German blue-chip corporations, we find that managers indeed tend to attribute successes to internal strengths and to make external threats reliable for failures. In other words, after outstanding years, recipients of the management report read more about good decision-making strategies, the managements' and employees' relentless effort, and the dynamic corporate culture. "Annus horribilis", on the other hand, are predominantly explained by strong currencies, political involvements, unfair trade practices, high customs, or reluctant customers.

So far, our findings on the existence of self-serving (i.e., acclaiming as well as defensive) attribution patterns are in line with previous research that, however, exclusively focuses on unregulated data sources (Merkl-Davies/Brennan, 2007) which might have less widespread consequences for the recipients. Moreover, it is still unclear whether the biases are due to strategic impression management techniques or whether the self-serving attribution pattern simply reflects the rational processing of available information. The differentiation is important, since motivationally driven self-serving attributions that aim to enhance one's self-esteem (especially after successes) or relieve one of responsibility when ego-defensiveness is dominant (in particular after unfavorable outcomes) can adversely influence stakeholders in their decision-making processes (Bradley, 1978; Salancik/Meindl, 1984; Snyder et al., 1978; Staw, 1980; Zuckerman, 1979). The primary aim of the present study, hence, is to contribute

¹⁴ See **Fehler! Verweisquelle konnte nicht gefunden werden.** in Appendix IV for an overview of the results of the hypotheses tests.

to the motivational versus cognitive debate and to identify the driving forces behind the self-serving pattern in the attributions a company makes with regard to its performance outcomes. First of all, our analyses of the acclaiming and defensive attribution patterns as a function of the economic condition (2006 as a non-crisis year versus 2009 as a crisis year) as well as the company's performance expectations provide evidence of ego-enhancing tendencies after successes. In contrast to that, we can rule out impression management objectives after failures. Both findings are in line with Bettman and Weitz (1983). The attributions for failures in the management reports correspond with the environmental conditions. There are plausible reasons for the defensive tendencies, since performance outcomes are explained by attributions that are consistent with the economic conditions. This leads us to conclude that management does not engage in misattributions of cause. This is further supported by the fact that there are not significantly more attributions made when results are unfavorable and unexpected. German corporations maintain a stable level of attributions regarding different outcomes and expectations. The constant level gives further support for the cognitive explanation after failures: If companies attribute failures on the basis of plausible information, they will not engage in disproportionate amounts of attributions.

Our results concerning the defensive attribution pattern in times of bad economic conditions are in line with Keusch et al. (2012). However, the authors put forward a contradictory explanation: They argue that managers' pressure to engage in defensive behavior is intensified as the number of adverse outcomes, which need to be explained, increases. Hence, they rather support the impression management perspective for defensive argumentations under bad economic activity. The fact that there are significantly fewer attributions in 2009 than in 2006, however, is incompatible with this argumentation. We argue that if competitors (and other stakeholders) struggle with the same challenges that are triggered by a crisis, companies will not feel the need to defend their self-esteem to such a great extent. The control for performance deviations from sector averages gives further support for the cognitive explanation: We find that an increase in the deviation from the sector's mean profitability (as measured by the net margin) positively impacts the share of defensive attributions. This tendency seems to be plausible as the own profitability is even better than the peer group's average and, thus, failures – if existing at all – are less likely to be due to internal causes.

The results of the content analysis have major implications for corporations' stakeholder groups – investors in particular. Generally speaking, investors can rely on the statements made in the management reports of the sampled corporations. Although there exists a self-serving pattern, only the acclaiming attributions (i.e., the internally attributed successes) seem

to be strategically biased in order to enhance a corporation's reputation. Even though stakeholders should treat the causal reasoning for corporate successes with caution as not all positive outcomes might really result from the corporation's own strengths, the consequences would be more serious, if there existed impression management after failures. Nevertheless, since the defensive pattern seems to be the result of plausible explanations, stakeholders have a lower risk of investing in a company that does not take the blame even though it is responsible for its bad performance outcomes.

The rejection of the motivational explanation for the defensive attribution pattern could be driven by the legal requirement for a truthful representation of the company's standing in the documents we observe. A further explanation for why the corporations engage in cognitive information-processing attributions after failures may be that our sample only contains the major German corporations, which are at the center of media attention and public interest (Snyder et al., 1978). According to Staw (1980), public scrutiny enhances the need for justifications but at the same time also increases the probability of getting caught when making false statements. Besides, the sampled corporations are globally operating and industry-leading market players and, thus, typically have an established reputation and credibility. This can help to facilitate the process of attracting new investors and, thus, may decrease the level of motivational attributions. The negative effect we find for company size on the share of defensive attributions in general and after overall corporate failures supports this argumentation. One has to keep in mind, however, that both explanatory approaches, the motivational as well as the cognitive information-processing explanation, are not necessarily mutually exclusive. In the end, corporations still have enough possibilities to whitewash or euphemize their situation in the annual report as well as in other public documents.

Despite the contributions of this study, there are some limitations. Even though two research assistants independently conducted the content analysis, it remains a subjective procedure as the specific rules and classifications of causes and consequences that were selected prior to the identification and coding process might vary depending on the researcher. Nevertheless, our process is transparent and allows a replication of our findings. Given this fact, it would be highly informative to complement our dataset with a larger panel (similar to Salancik and Meindl, 1984) in order to increase the number of observations – in particular during economic crises. Apart from that, a comparison of our findings from the management reports with the letters to shareholders of one and the same corporations could provide interesting insights into corporations' communication strategies: Discrepancies between the causal attribution patterns in both documents (i.e., a predominance of impression management in the more personalized

CEO letters) would indicate that corporations expected stakeholders to not read the lengthy management report, but to focus instead on the part that is directly addressed to them. This finding would further support our assumption that it is the legal regulation as well as the auditor's report that drive the predominantly cognitive explanations after failures.

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Appendix

Table 7: List of Sampled Corporations

Corporation	Year	Index
Basic Materials		
Aurubis	2006, 2009	MDAX
BASF	2006, 2009	DAX
Dyckerhoff	2006, 2009	SDAX
Fuchs	2006	SDAX
Fuchs	2009	MDAX
H&R Wasag	2006, 2009	SDAX
HeidelbergCement	2006, 2009	MDAX
K+S	2006, 2009	DAX
Kloeckner&Co	2006	SDAX
Kloeckner&Co	2009	MDAX
Lanxess	2006, 2009	MDAX
Linde	2006, 2009	DAX
Pfleiderer	2006, 2009	MDAX
Salzgitter	2006	MDAX
Salzgitter	2009	DAX
ThyssenKrupp	2006, 2009	DAX
Wacker Chemie	2006, 2009	MDAX
Consumer Cyclical		
Adidas	2006, 2009	DAX
BMW	2006, 2009	DAX
Continental	2006	DAX
Continental	2009	MDAX
CTS Eventim	2006, 2009	SDAX
Daimler	2006, 2009	DAX
Douglas	2006, 2009	MDAX
Elring Klinger	2006	SDAX
Elring Klinger	2009	MDAX
Gerry Weber	2006, 2009	SDAX
GfK	2006, 2009	SDAX
Grammer	2006, 2009	SDAX
Hugo Boss	2006, 2009	MDAX
Praktiker Holding	2006, 2009	MDAX
ProSiebenSat.1	2006, 2009	MDAX
Puma	2006, 2009	MDAX
Rheinmetall	2006, 2009	MDAX
Sky (Premiere)	2006	MDAX
TUI	2006	DAX
TUI	2009	MDAX
Volkswagen	2006, 2009	DAX
Consumer Non-Cyclical		
BayWa Vink	2006	SDAX

BayWa Vink	2009	MDAX
Beiersdorf	2006, 2009	DAX
Celesio (Gehe)	2006, 2009	MDAX
CEWE Color	2006, 2009	SDAX
Henkel	2006, 2009	DAX
KWS	2006, 2009	SDAX
Metro	2006, 2009	DAX
Suedzucker	2006, 2009	MDAX
Energy		
CAT oil	2009	SDAX
Conergy	2006, 2009	TecDAX
Q-Cells	2006, 2009	TecDAX
Financials		
Allianz	2006	DAX
Colonia Real Estate	2006, 2009	SDAX
comdirect	2006, 2009	SDAX
Commerzbank	2006, 2009	DAX
Dt Bank	2006, 2009	DAX
Dt Beteiligungs AG	2006, 2009	SDAX
Dt Börse	2006, 2009	DAX
Dt Euroshop	2006, 2009	MDAX
Dt Postbank	2009	MDAX
Dt Wohnen	2006, 2009	SDAX
DIC Asset	2006, 2009	SDAX
Gagfah	2006, 2009	MDAX
GrenkeLeasing	2009	SDAX
Hannover Rückversicherung	2006, 2009	MDAX
Indus	2006, 2009	SDAX
IVG Immobilien	2009	MDAX
MLP	2006, 2009	MDAX
Münchener Rück	2006, 2009	DAX
Patrizia	2006	MDAX
TAG Immobilien	2006, 2009	SDAX
Healthcare		
Bayer	2006, 2009	DAX
Dräger	2009	TecDAX
Evotec	2006, 2009	TecDAX
Fresenius Medical Care	2006, 2009	DAX
Fresenius SE	2006	MDAX
Fresenius SE	2009	DAX
Merck	2006	MDAX
Merck	2009	DAX
MorphoSys	2006, 2009	TecDAX
Qiagen	2006, 2009	TecDAX
Rhoen-Klinikum AG	2006, 2009	MDAX
Stada	2006, 2009	MDAX
Industrials		

Air Berlin	2006, 2009	SDAX
Bauer	2006	SDAX
Bauer	2009	MDAX
Bilfinger Berger	2006, 2009	MDAX
Demag Cranes	2006	SDAX
Demag Cranes	2009	MDAX
Dt Lufthansa	2006, 2009	DAX
Dt Post	2006, 2009	DAX
Deutz	2006	MDAX
Deutz	2009	SDAX
EADS	2006, 2009	MDAX
Elexis	2006, 2009	SDAX
Fraport	2006, 2009	MDAX
GEA Group	2006, 2009	MDAX
Gildemeister	2006	SDAX
Gildemeister	2009	MDAX
HeidelbergerDruck	2006, 2009	MDAX
Hochtief	2006, 2009	MDAX
Jenoptik	2006, 2009	TecDAX
Jungheinrich	2006, 2009	SDAX
KBA	2006, 2009	SDAX
Krones	2006, 2009	MDAX
Kuka + Iwka	2006	MDAX
Kuka + Iwka	2009	SDAX
Leoni	2006, 2009	MDAX
MAN	2006, 2009	DAX
MTU Aero Engines	2006	MDAX
Nordex	2006, 2009	TecDAX
Pfeiffer	2006, 2009	TecDAX
Rational	2006	SDAX
Rational	2009	MDAX
SGL Carbon	2006, 2009	MDAX
Siemens	2006, 2009	DAX
Sixt	2006, 2009	SDAX
TAKKT	2006, 2009	SDAX
Vossloh	2009	MDAX
VTG	2006, 2009	SDAX
Wirecard	2006, 2009	TecDAX
Technology		
Aixtron	2006, 2009	TecDAX
Bechtle	2006, 2009	TecDAX
Infineon	2006, 2009	DAX
kontron	2006, 2009	TecDAX
Loewe	2006, 2009	SDAX
Medion	2006, 2009	SDAX
SAP	2006, 2009	DAX
Software	2006, 2009	TecDAX

United Internet	2006, 2009	TecDAX
Wincor Nixdorf	2006, 2009	MDAX

Telecommunication Services

Dt Telekom	2006, 2009	DAX
QSC	2006, 2009	TecDAX

Utilities

Eon	2006, 2009	DAX
RWE	2006, 2009	DAX
Solar World	2006, 2009	TecDAX
MVV Energie	2006, 2009	SDAX

Note. Economic sectors refer to Thomson Reuters's business classification.

Table 8: Representative Excerpt from the Identification and Coding Procedures of Corporate Attributions

Identification outcome	Coding <i>SUCCESS</i>	Identification explanation	Coding <i>CAUSALITY</i>
Increase in sales volume	1	Programs introduced for efficiency enhancements	1
Most successful year in company's history	1	Programs introduced for efficiency enhancements	1
	1	Process optimization	1
	1	Extension of product range	1
	1	Regional expansion	1
Increase in EBT	1	Programs introduced for process optimization and efficiency enhancements	1
	1	External effects from accounting profits of exchangeable bond of shares	0
Increase in revenues	1	Product campaigns	1
	1	Shifts in product mix	1

Note. Examples are taken from BMW's 2006 management report, which is published in German but translated into English for these purposes.

Table 9: Interpretation of Key Financial Figures

	Key Figure	Formula	Interpretation
PROFITABILITY	Net margin	$\frac{\text{Net profits (=income after tax)}}{\text{Total revenues}}$	<ul style="list-style-type: none"> Measures the return on sales, i.e., how much each Euro earned is translated into profits High ratio indicates that profitability is secure as investments make more money than they cost
	Net interest margin (for banks)	$\frac{\text{Interest income} - \text{interest paid}}{\text{(Interest-earning) assets}}$	
	Investment ratio (for insurances)	$\frac{\text{Net investment income}}{\text{Premiums earned}}$	
EARNING POWER	ROE	$\frac{\text{Net income}}{\text{Average total equity}}$	<ul style="list-style-type: none"> Measures how much profit a company generates with the money shareholders have invested High ratio indicates better returns to investors
	Pre-tax ROE (for banks and insurances)	$\frac{\text{Income before taxes}}{\text{Total equity}}$	
LEVERAGE	Debt-to-Equity (not available for banks)	$\frac{\text{Total debt}}{\text{Common (shareholders) equity}}$	<ul style="list-style-type: none"> Measures how much liabilities a company uses to finance assets High ratio means that a company has been aggressive in financing its growth with debt, which translates into a higher risk level

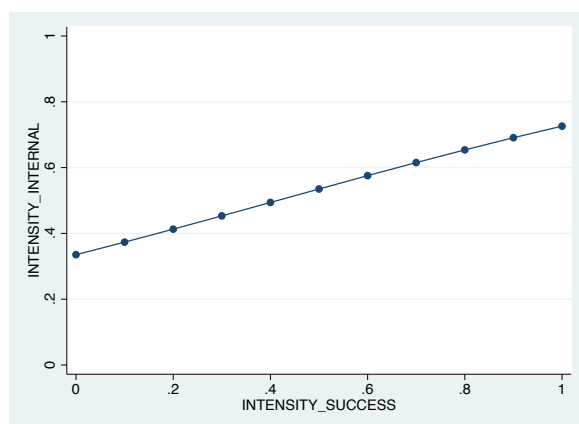
Notes. All key ratios are expressed as percentages. Formulas and interpretations as used by Thomson Reuters.

Table 10: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1 SHARE_INTERN	1																									
2 SHARE_ACCLAIMING	0.85	1																								
3 SHARE_DEFENSIVE	-0.78	-0.76	1																							
4 AMOUNT	0.16	0.11	-0.15	1																						
5 SHARE_SUCCESS	0.63	0.85	-0.89	0.1	1																					
6 UNEXPECTED	-0.17	-0.21	0.21	-0.06	-0.22	1																				
7 DEV_PROFIT	-0.01	0.07	0.05	0.02	0.03	-0.04	1																			
8 DEV_EARNINGPOWER	0.05	0.18	-0.04	-0.03	0.15	0.03	0.37	1																		
9 DEV_LEVERAGE	-0.11	-0.06	0.1	-0.05	-0.05	0.04	-0.09	0.04	1																	
10 COMPANYSIZE	-0.1	-0.13	0.06	0.01	-0.09	0	0.14	-0.02	0.14	1																
11 NEW_CEO	-0.02	-0.09	0.07	0.08	-0.12	0.12	-0.07	-0.08	-0.06	0.13	1															
12 NEW_AUDIT	0	0.05	-0.11	0.09	0.13	0.03	0.08	0.03	-0.03	-0.04	0.02	1														
13 DAX	-0.04	-0.03	0.02	0.02	-0.02	-0.13	0.09	0.02	0.16	0.73	0	-0.04	1													
14 SDAX	-0.1	-0.15	0.1	-0.09	-0.14	0.08	-0.03	0.04	-0.07	0.01	-0.01	-0.12	-0.41	1												
15 MDAX	0.02	0.06	-0.02	0.08	0.05	0.04	-0.04	-0.08	-0.06	-0.42	-0.01	0.14	-0.35	-0.43	1											
16 TECDAX	0.17	0.17	-0.14	0	0.14	0	-0.02	0.02	-0.03	-0.39	0.02	0.04	-0.24	-0.29	-0.25	1										
17 BASIC MATERIALS	-0.12	-0.12	0.05	0.12	-0.06	-0.06	0	0.01	0	0.07	-0.13	0	0.06	0.1	-0.04	-0.15	1									
18 CONSUMER CYCLICALS	-0.01	-0.03	0.07	-0.02	-0.08	-0.06	-0.02	-0.08	0.01	0.02	0.01	-0.07	0.03	0.1	-0.01	-0.17	-0.16	1								
19 CONSUMER NON-CYCLICALS	-0.11	-0.06	0.05	-0.01	-0.02	0.14	0	0.01	0	0.02	-0.04	-0.01	0.08	-0.02	0.03	-0.11	-0.1	-0.11	1							
20 ENERGY	-0.07	-0.05	0.1	-0.02	-0.07	-0.04	0	0.01	0	-0.16	0.05	0.08	-0.09	-0.11	-0.02	0.28	-0.05	-0.06	-0.04	1						
21 FINANCIALS	0.08	0.07	-0.1	-0.05	0.09	0.14	0	0.01	0	0.2	0.09	0.08	0.01	-0.02	0.15	-0.17	-0.16	-0.18	-0.11	-0.06	1					
22 HEALTHCARE	0.17	0.17	-0.16	-0.12	0.15	-0.04	0	0.01	0	-0.02	-0.05	-0.02	0.05	-0.02	-0.18	0.19	-0.11	-0.13	-0.08	-0.04	-0.13	1				
23 INDUSTRIALS	-0.02	-0.05	0.06	-0.04	-0.08	-0.07	0	0.02	0	-0.13	0.02	-0.01	-0.17	0.1	0.08	-0.02	-0.22	-0.25	-0.16	-0.09	-0.25	-0.18	1			
24 TECHNOLOGY	0.02	0.05	-0.02	0.01	0.05	-0.02	0	0.01	0	-0.19	0.05	-0.08	-0.04	-0.16	-0.05	0.31	-0.11	-0.13	-0.08	-0.05	-0.13	-0.09	-0.19	1		
25 TELECOMMUNICATION	0.03	0.02	-0.05	0.3	0.03	-0.02	0	0	0	0.04	0.06	-0.04	0.08	-0.1	-0.08	0.14	-0.05	-0.06	-0.04	-0.02	-0.06	-0.04	-0.08	-0.04	1	
26 UTILITIES	0.03	0.06	-0.02	0.01	0.05	0.07	0	0.01	0	0.14	-0.06	0.14	0.11	-0.14	-0.01	0.06	-0.07	-0.08	-0.05	-0.03	-0.08	-0.06	-0.11	-0.06	-0.03	1

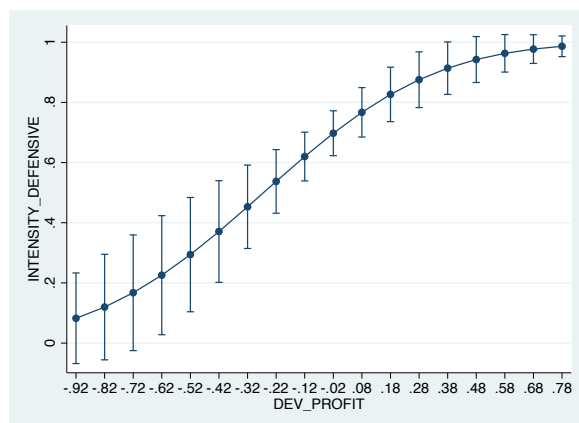
Notes. Correlations refer to 232 company-level observations. Banks not included in profitability and leverage measures due to data unavailability.

Figure 3: Marginal Effects of Successful Attributions on Internal Attributions



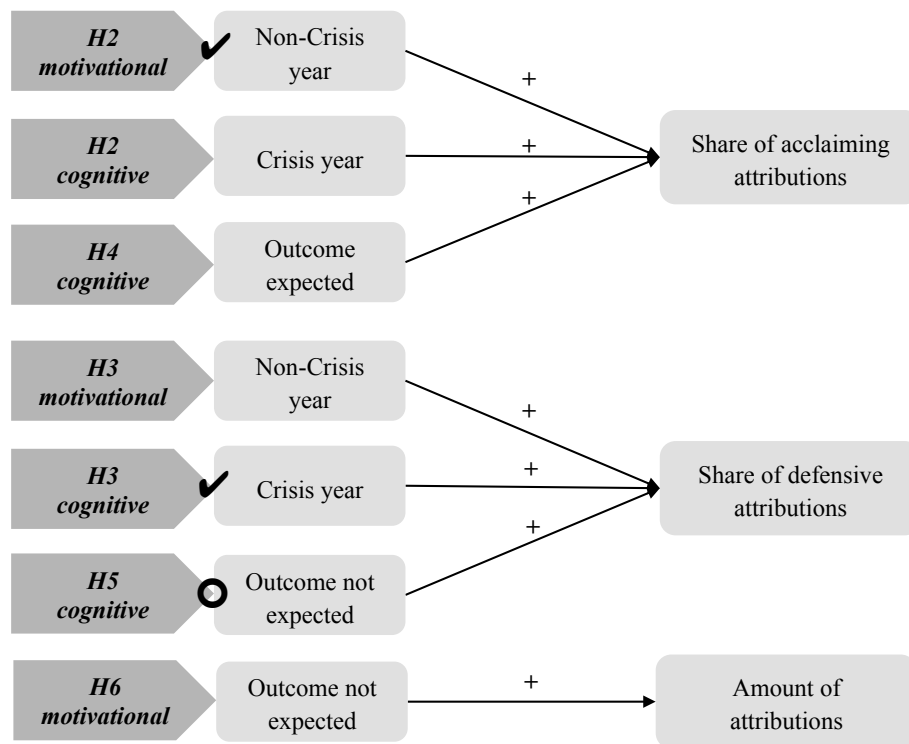
Notes. Blue dots represent the marginal effects of a 0.1-unit increase in SHARE_SUCCESS (x-axis) on the predicted probabilities of SHARE_INTERNAL (y-axis).

Figure 4: Marginal Effects on Defensive Attribution Pattern after Overall Corporate Failures



Notes. Relative amount of defensive events depicted on y-axis. Predicted probabilities calculated at specific values of DEV_PROFIT (depicted on x-axis) and at means of all other covariates after GLM regressions.

Figure 5: Hypotheses Tests



Note. Hypotheses separately contribute to the explanation of the acclaiming and defensive attribution patterns.