



Textual Analysis to Empirically Assess the Impact of Economic Crises on Stakeholder Orientation

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Abstract: This study uses textual analysis of annual reports to evaluate the presence of stakeholder theory in times of economic crises. Although the literature on stakeholder tendency in times of crises is scarce and predominantly focused on U.S. and Austrian data, it suggests that adopting the principles of a stakeholder model may lead companies to a more successful crises management outcome. Academic contributions to German-listed companies utilizing textual analysis are limited. Hence, we start by proposing a qualitative textual approach to analyze annual reports of German-listed companies in the DAX from the period 2000 to 2020 to extract relevant information on the tendency to apply shareholder- or stakeholder-theory-related aspects in times of economic crises such as the Global Financial Crises and more recently the COVID-19 crises. We examine our gathered word extractions with a well-found methodological approach based on a comprehensive literature review and perform a logit regression to test formulated hypotheses. By analyzing word frequencies in annual reports that refer to either shareholders or stakeholders we aim to assess the importance that the management of listed companies attaches to each management approach in times of crises. Based on existing literature, we formulate the central research question of whether the word frequency of shareholder-related words in years of economic crises increases compared to years without economic crises. In line with Asel, Posch, and Speckbacher (2011), our research reconfirms that there is no tendency or conflict of both shareholder and stakeholder management in times of economic crises. In a nutshell, our empirical results indicate that there is no statistically significant increase in word frequencies of either shareholder- or stakeholder-related words in years of economic crises present. Finally, we conclude by challenging the effectiveness of either the shareholder or stakeholder orientation in economic crises-like situations and encouraging further empirical research contributions on this field, and utilizing the proposed textual analysis for other essential research questions, such as the presence of AI-related aspects amongst German-listed companies or indications about price increases in times of high inflation.

Keywords: Textual analysis, Tidy text, Annual reports, Shareholder, Stakeholder, DAX40, Economic crises

1. Introduction

Economic crises and the two dominant management approaches, shareholder and stakeholder theory, have been the subject of much academic research over the last decades (Bottenberg et al., 2017; Hillman and Keim, 2001; Shin et al., 2022). Although intensively studied, there is scarce literature to extract findings on the tendency to apply shareholder- or stakeholder-theory-related aspects in times of economic crises such as the Global Financial Crises and more recently the COVID-19 crises.

We examine our gathered word extractions with a well-found methodological approach based on a comprehensive literature review. Thus, we aim to fill this research gap and provide new evidence on the field of crises management literature based on a sample of German-listed companies. The company's annual reports have been chosen as the most comprehensive textual document of listed firms and are the basis of our research. Our cleansed sample comprises 12 German blue chip companies continuously listed in DAX40 (formerly DAX30). The earliest year for the conducted textual analysis has been set to 2000 to allow for a holistic view over two decades. In a nutshell, our sample is structured

as panel data comprising 12 cross-sectional units over 21 periods with a total number of 12.646.783 words observed. We follow i.a. Wickham and Grolemond (Wickham and Grolemond, 2017) to apply the tidy text procedures of sentiment analysis to investigate whether the content of annual reports of DAX40 companies mainly addresses the interests of shareholders or stakeholders by fully capturing the summarized text and visualizing its outcome (Wickham and Grolemond, 2017).

Following economic intuition, analyzed annual reports shall underpin that in times of economic crises, the presence of shareholder-related words shall increase as the pressure of investors to adopt a short-term oriented management approach in these times rises. Formulated hypotheses are tested in-sample by performing a logit regression. The research paper is structured as follows. Section 2 provides a literature review focusing on relevant academic contribution streams. Section 3 introduces textual analysis as a sophisticated approach to quantify the content, structure, tone, and messages, non-numerical data contain (Fisher et al., 2022). In section 4 our sample is presented. The empirical results of our analysis are presented and visualized in section 5. Finally, section 6 discusses the results of the research paper and presents conclusions and limitations along with recommendations for academics and practitioners.

2. Literature Review

For decades the predominant management approach has been a shareholder-oriented model in which the organization is seen as an entity primarily focusing on shareholder value maximization (Sundaram and Inkpen, 2004; Vidaver-Cohen, 1998). As the maximization of the shareholder value is seen as the only objective that enhances the outcome for all other stakeholders (Sundaram and Inkpen, 2004, p.370). The pursuit of additional objectives would lead to a lack of purpose which would impede the most efficient creation of value (Battilana et al., 2022; Blair M, 1995). Hence, shareholder-oriented models target the only responsibility to generate returns while simultaneously increasing the market value of the organization in the long run (Friedman, 1970; Jensen, 2001; Jensen and Meckling, 1976). During the 1980s and the 1990s the shareholder management approach became the prevalent agenda for governing organizations which lead to managerial decisions that primarily focused on satisfying investors and analysts (Davis, 2011; Fligstein, 2001; Useem and Gager, 1996). During the previous decades, the trend of separating ownership and control gained increasing popularity and was integrated into most companies. This separation was used by managers to serve their interests rather than trying to maximize a company's profit and to concentrate on their shareholders' claims (Alfred D. Chandler, 1984; Dobbin and Jung, 2010; Goldstein, 2012). To reinforce the focus on profit maximization, investors formed alliances to strengthen their influence on an organization's management and demanded higher returns and extensive control mechanisms (Deakin et al., 2006). Therefore, characteristic practices for shareholder management were downsizing through layoffs (Dial and Murphy, 1995; Fligstein and Shin, 2007; Useem and Gager, 1996), refocusing of businesses through divestitures, (Dobbin and Zorn, 2005; Zuckerman, 1999), and a decline in the diversification of companies (Jung and Shin, 2019).

The modern stakeholder management approach was the answer to criticism of the shareholder-oriented approach, formulated by Freeman in 1984. Freeman critiqued that the sole orientation towards shareholder value offers the management incentives to focus purely on short-term financial gains while neglecting immaterial goals (Freeman, 2010). In the 2000s public skepticism towards the effectiveness of the shareholder management approach rose after events like the Enron accounting fraud (Harrison et al., 2020; Stout, 2012) or the subprime mortgage crises had shown how short-term orientation contributed to a lasting reduction of companies' value, in return posing a threat to their longevity and leading to lasting societal challenges (Piao, 2010; Priem et al., 2022). These events accompanied by the environmental crises and globalization shifted the social context of business and pressured companies to include social and environmental responsibilities in their decision-making process (Cagnin and Loveridge, 2012; Foray et al., 2012; George et al., 2016; Hillman and Keim, 2001). As a result, during the last decade, there have been increasing calls from social movements, non-governmental organizations, governments, and business associations for businesses to show commitment to objectives regarding their stakeholders (Campbell, 2007; Govender and Smit, 2022) and integrate policies of corporate social responsibility (González et al., 2008). Consequently, over the last decade, the stakeholder management approach (Pedrini and Ferri, 2019; Shin et al., 2022) and the importance of transparent public stakeholder communications (Govender and Smit, 2022) gained increasing relevance and have proven to positively influence the performance of organizations (Bottenberg et al., 2017).

Despite this general paradigm shift in corporate governance, it is still unclear how businesses adapt their management approach during times of crises. A significant body of work has been dedicated to shareholder and stakeholder management. Among these, less contribution focuses on gaining insights into its presence in times of economic crises. The traditional shareholder-oriented management response to crises involves efforts to minimize stakeholder losses only if simultaneously shareholder value can be maximized, which can lead to decisions that benefit shareholders only or even harm a company's stakeholders (Alpaslan, 2009, p. 42). According to Koller, Manyika, and Ramaswamy (2017) in times of economic crises, the pressure on investors to adopt a short-term oriented management approach increases, as the pursuit of long-term value creation may come at the expense of short-term earnings. Correspondingly, survey findings in the McKinsey Quarterly survey panel of 2017 with more than 1,000 executives in the years 2015 and 2016 stress the rise of short-termism during economic crises. In addition, they filled the literature gap of measurement of short- and long-

term at the level of individual companies and came to the conclusion that companies focusing on long-term goals outperform short-term-oriented firms (Koller et al., 2017). Studies that argue that greater emphasis on stakeholder claims may help to overcome crises or even to prevent crises from happening have been existing for a long time. Pearson and Mitroff (1993) proposed a framework for effective crises management relying on stakeholder management communication as a major component (Pearson and Mitroff, 1993, pp. 56–59). Grounding on stakeholder theory, Ulmer (2001) demonstrates in a case study the importance of establishing strong communication channels and positive value positions with external and internal stakeholders well before crises occur (Ulmer, 2001). Acquier, Gand, and Szpirglas (2008) conducted a case study to investigate the operational value of a stakeholder-oriented crises management framework. They found that further consideration of the stakeholders' perspective of a crises helps to formulate responses that move beyond the legal and technical obligations and therefore help to manage the possible damage to the image caused by stakeholder opposition (Acquier et al., 2008). Alpaslan, Green, and Mitroff (2009) argue that the stakeholder model offers a better understanding of a company's organizational entirety and therefore may help to recover from crises more successfully (Alpaslan et al., 2009). Asel, Posch, and Speckbacher (2011) analyze in their paper the effects of economic crises in 2008 and 2009 on a company's management of stakeholder relations and its use of management control mechanisms. Based on survey data from 204 major Austrian companies, the authors found that the companies "significantly adjusted their control systems as a response to the economic crises" (Asel et al., 2011, p. 1). Finally, the authors underpin that there is no conflict between a short-term finance approach such as cost-cutting and liquidity measures while simultaneously following a sustainable stakeholder strategy (Asel et al., 2011, p. 1). In conclusion, it still seems questionable whether committing to a long-term stakeholder strategy is compatible with the pressure on firms to focus on liquidity and cost-cutting in crises. In the face of a crises, an organization's management might focus on easily quantifiable measures while neglecting the multidimensional nature of performance.

To the best of our knowledge, there is no existing literature analyzing the changes in companies' management approaches in times of economic crises with a focus on advanced textual analysis of annual reports of companies listed in the DAX40. Therefore, as a starting point to close this literature gap and a call for further research, we formulated the following hypotheses derived from the literature review. For simplicity reasons, we just denoted the alternative hypotheses without explicitly formulating the null hypotheses.

- H1a.: The word frequency of shareholder-related words in years of economic crises will increase compared to years without economic crises, as the financial pressure forces the management to dedicate more attention to shareholder-related topics.*
- H2a.: The word frequency of stakeholder-related words in years of economic crises will decrease compared to years without economic crises, as the financial pressure forces the management to dedicate more attention to shareholder-related topics.*
- H3a.: The most used words of the annual reports in years of economic crises will differ from the most used words in years without economic crises.*

We aim to contribute to the current scientific discourse by intuitively testing the above-listed hypotheses, as according to Popper, formulating a scientific hypothesis is rather an intuitive process without the consideration of predefined rules. (Schurz, 2013)

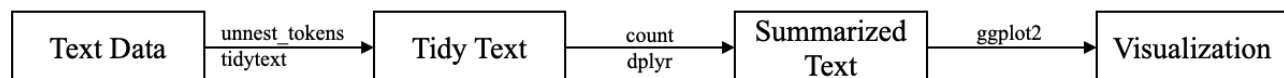
3. Methodology

The use of information technology and in particular for textual analysis has grown significantly over the last decade. There are various strategies to apply textual analysis and different text components to focus on. Textual analysis is a sophisticated approach to quantifying the content, structure, tone, and messages, non-numerical data contain (Fisher et al., 2022). To assess the content of a text, it is necessary to analyze which words are most used and to classify which content each word refers to. This can be done with pre-defined lexicons which match certain words to specific, previously defined content groups (see for example Hsu et al., 2021). These pre-defined lexicons are a common tool for sentiment analyses in which tools of text mining are used to approach the emotional content of the text (Sharpe et al., 2017). In course of this analysis, we utilize these tools of sentiment analysis to investigate whether the content of annual reports of DAX40 companies mainly addresses the interests of shareholders or stakeholders. When analyzing the content of a text, the text can be considered as a combination of each word it contains, and the general content of the text is described as the combination of the content each word refers to (Kreines and Kreines, 2020, p. 697). Therefore, we developed a unique lexicon, classifying words referring to either shareholder or stakeholder orientation. To classify which and how many words in the company's annual reports are associated with either shareholders or stakeholders, first an own lexicon has to be created containing the information on which words to assign to which category. The decision of which particular words can be associated with either shareholders or stakeholders was defined by existing literature in which certain words were preassigned (Christ et al., 2018; Freudenreich et al., 2020; Skrzipek, 2005). The words used for the lexicon, the

classification of each word, and the information on which literature basis these words and classifications were formed are presented in Appendix 1.

To analyze the content of the annual reports we make use of the tidy text principles. According to Wickham (2014), “tidy datasets are easy to manipulate, model and visualize, and have a specific structure: each variable is a column, each observation is a row, and each type of observational unit is a table” (Wickham, 2014, p. 1). Wickham and Golemund (Wickham and Golemund, 2017) underpin that working with tidy data offers the following two advantages. First, deciding on one consistent way of extracting and storing data provides a consistent data structure which is required in econometrical tasks as utilized functions are characterized by an underlying uniformity. Second, transforming variables in vectors of values allows using of R-packages such as dplyr and ggplot2 as well as other packages in tidy-verse to fully capture the summarized text and its visualization capabilities (Wickham and Golemund, 2017). Figure 1 highlights a simplified flowchart for tidy datasets. First, the analyzed annual reports are formatted as a table with one token per row. A token can be described as a meaningful unit of text, such as a single word, a sentence, or even a paragraph which may be part of the subsequently performed text analysis. Hence, utilizing the one token per row principle allows data manipulation with consistent tools. Using the argument `unnest_tokens` allows us to perform tokenization which is by default in single words. Next, within the tidy text structure, further cleansing activities have to be performed. In textual analysis, it is crucial to perform data cleansing activities to increase data efficiency. In light of the fact that annual reports provide unstructured qualitative and non-numeric data, a clear process to arrive at a tidy dataset is pivotal. Removal of stop words is performed using the package `tidytext` and numerical data is excluded as our analysis focuses on word extractions, only. Subsequently, one arrives at a cleansed data set, also referred to as the summarized text in Figure 1. This dataset lays the foundation to perform further analysis such as the linkage to a self-developed lexicon as described above to draw further conclusions and derive appropriate implications. Last, the output is visualized using `ggplot2` and word cloud to visually compare attributes such as word frequencies, and the percentages of words that refer to either shareholders or stakeholders.

Figure 1: Simplified flowchart for tidy datasets



Source: representation based on (Wickham, 2014, p. 1).

4. Sample

Providing documents with yearly frequency, the company’s annual reports have been chosen as the most comprehensive textual document of listed firms and will therefore be the center of our research. Our cleansed sample comprises 12 German blue chip companies continuously listed in DAX40 (formerly DAX30). The earliest year for the conducted textual analysis has been set to 2000 to allow for a holistic view over two decades. The 12 companies listed in the German stock market index DAX have been purposefully selected, as each constitution is without interruption a member of the index, allowing analysis focusing on data development. Annual reports have been extracted from Refinitiv Eikon’s advanced filing listings. In a few cases where data was unavailable or erroneous, respective annual reports have been manually retrieved from the company’s website. In course of our research, we analyzed 21 annual reports from 2000 until and including 2020 leading to panel data set comprising 12 cross-sectional units over 21 periods (252 firm-year observations) with a total number of 12.646.783 words observed. Table 1 provides descriptive statistics of the underlying cleansed annual reports from the above-described 12 constituents in the DAX. Summary statistics are further presented in Appendix 2.

To explore how the management approaches of our sample companies have changed during times of crises, we computed word frequencies referring to either shareholders or stakeholders for each annual report in a given year. On basis of this, we calculated the average word frequencies of our sample companies per year and compared these frequencies on a year-over-year development with close attention to times of crises. The binominal variable *crises* have been set to the years 2007, 2008, and 2020 and can be linked to the financial crises of 2007/2008 and the financial crises of 2020, triggered by the coronavirus. These global events were crises that have impacted every company regardless of their sector and industry. The hypothesis that in times of crises, companies can not stick to a long-term stakeholder-oriented strategy as the financial pressure forces companies to focus on easily quantifiable measures is therefore tested by performing a logit regression. The model provides statistical in-sample results on the year-over-year development of word frequencies of shareholder- and stakeholder-related words throughout years of crises. Additionally, we analyzed if companies’ most frequently used set of words in years of crises differs from years with no crises indicator. Therefore, we created two new datasets, one dataset for times of crises combining every observation from 2007, 2008, and 2020 and one dataset for years without any crises combining all remaining observations. Subsequently, we looked at the 200 most used words of these two datasets and visualized the results with word clouds in descending order by their frequency.

Table 1: Sample statistics: an overview of DAX40 constituents and the total number of cleansed words

DAX constituents	Industry	Annual reports	Number of total words*
Allianz SE	Multiline Insurance & Brokers (NEC)	21	1.012.026
BASF SE	Diversified Chemicals	21	1.103.773
Bayer AG	Pharmaceuticals (NEC)	21	1.086.643
Bayerische Motoren Werke AG	Auto & Truck Manufacturers (NEC)	21	472.884
Beiersdorf AG	Personal Products (NEC)	21	891.294
Deutsche Bank AG	Banks (NEC)	21	1.319.819
E.ON SE***	Multiline Utilities	21	1.830.312
Henkel AG & Co. KGaA	Adhesives	21	949.343
Mercedes-Benz Group AG**	Auto & Truck Manufacturers (NEC)	21	767.328
RWE AG	Multiline Utilities	21	869.255
Siemens AG	Industrial Conglomerates	21	1.172.352
Volkswagen AG	Auto & Truck Manufacturers (NEC)	21	1.171.754
12		252	12.646.783

Source: Own representation

Note: * cleansed total words from 2000-2020 after removing stop words and numbers

** previously named Daimler, Daimler-Benz, and DaimlerChrysler)

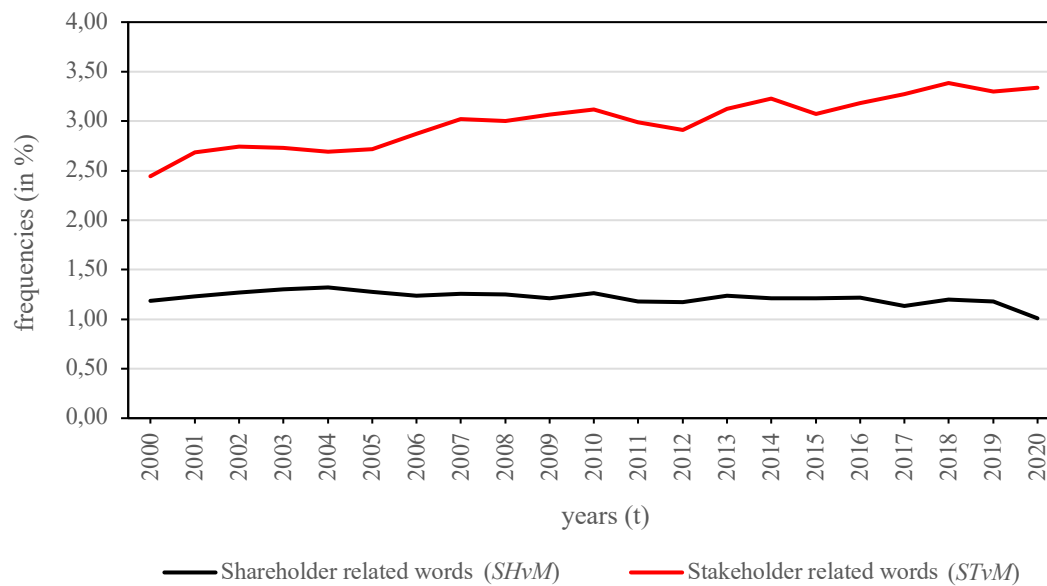
*** previously named VIAG/VEBA

5. Empirical Results and Visualization

As the purpose of this research paper is to assess the impact of economic crises on stakeholder orientation based on annual reports, we calculated word frequencies of words related to either shareholders or stakeholders with close attention to the development over the years of 2007, 2008, and 2020. In Figure 2 the year-over-year development of the average word frequencies of the sample companies is depicted to visualize the respective results. The black line represents the frequency of words referring to shareholders, whereas the red line represents the frequency of words referring to stakeholders.

Figure 2 shows that the year-over-year development of shareholder-related words stays steady at around the median of 1.22 % while reaching a high of 1.32 % in 2004 and a low of 1.00 % in 2020. For the years 2007 (1.26%) and 2008 (1.25%), the observation shows no outliers. Throughout the observed timeframe, the frequency of shareholder-related words shows no strong interim increases, as the steepest increase in comparison to the previous year can be observed in 2018 with +0.069% in the year-over-year development. The steepest decrease can be observed in the year-over-year development from 2019 (1.18%) to 2020 (1.00%) with a decrease of -0.17%. Then, in H1a anticipated development of increasing word frequencies of shareholder-related words in the years 2007, 2008, and 2020 fails to reject the null hypothesis (logit p-value 0.1670 for *SHvM* and hence not statistically significant at all significance levels).

The development of the frequency of stakeholder-related words deviates from the previously described development. Coming from the lowest point of the observed timeframe in 2000 (2.44%), the frequency of stakeholder-related words grows to 3.34% in 2020. In 2018 an interim high of 3.29% is reached. H2a implied that the increasing pressure for companies to focus on short-termed financial measures can also be expressed by decreasing references to stakeholder-related topics and a connected decrease in the frequency of stakeholder-related words in the annual reports. As neither in 2007 (3.02%), 2008 (3.00%) nor in 2020 (3.34%) a development that is inconsistent with the generally outlined growth trend of the frequencies of stakeholder-related words can be observed, we fail to reject the null hypothesis for H2a (logit p-value 0.1092 for *STvM* and hence not statistically significant at all significance levels). Summary statistics and the logit regression are listed in Appendix 2. However, as described in the literature review, the paradigm shift in corporate governance of stakeholder orientation which gained increasing relevance over the last decades is not surprisingly confirmed by our word frequency analysis depicted in Figure 2. The general trend of the growing importance of stakeholder orientation during the last decades can be validated in our sample. Hence, this study delivers a clear message for practitioners to address stakeholder orientation in their management approach, especially in face of current crises, such as growing geopolitical disruptions and deteriorating supply chains.

Figure 2: Percentage of words from annual reports referring to shareholders or stakeholders per year

Source: Own representation

Figure 3: Word clouds of most used words in annual reports; left visualization: years without crises, right visualization: years of crises

Source: Own representation

After calculating word frequencies to assess the impact of economic crises on stakeholder management, we focused on combining all data sets containing observations during times of crises in one data set and all remaining observations in a second data set to compare the most used words of both data sets. Hypothesis H3a suggests that the most used words of annual reports during times of crises will differ from a report of economically stable times, as in years of economic crises the management of our sample companies adopts a more short-term oriented management approach, generally associated with shareholder management. Figure 3 presents the 200 most used words of these two datasets, visualized with word clouds in descending order by their frequency. The left word cloud shows the dataset of years without economic crises whereas the right illustrates years with economic crises. The ten most used words of annual reports during times without crises are in this order descending: “financial”, “million”, “board”, “management”, “assets”, “income”, “business”,

“risk”, “cash” and “net”. The most used words in years with economic crises are in this order descending: “financial”, “million”, “board”, “management”, “assets”, “income”, “risk”, “business”, “cash” and “supervisory”. Of the ten most used words of the data set without crises, nine of these words are among the ten most used words of years of economic crises. When comparing the whole two sets of 200 words, 192 words of the datasets are identical. These results fail to reject the null hypothesis again and oppose the H3a formulated hypothesis as they do not show that the set of most used words differs significantly between times of crises and times without. Additional hypothesis testing for H3a has not been performed.

6. Summary and Outlook

Our study contributes to the growing body of literature by developing a literature-based lexicon and applying textual analysis to investigate shareholder and stakeholder tendencies in times of economic crises of German listed companies in the DAX40 based on annual reports. Our research indicates that there is no statistically significant increase of word frequencies of either shareholder- or stakeholder-related words in years of economic crises present and hence not in line with other research contributions leaning towards a shareholder orientation in times of economic crises (Koller et al., 2017, pp. 1–2). Compared to Asel, Posch, and Speckbacher (2011), our research reconfirms that there is no tendency or conflict of both shareholder and stakeholder management in times of economic crises (Asel et al., 2011, p.1). Furthermore, a general trend of stakeholder orientation during the last decades in our tested sample can be validated by the conducted word frequency analysis as depicted in Figure 2.

Although our findings are robust, further examination of the development of alternative word lexicons has to be performed to further support our findings. Further empirical research is encouraged to use the proposed textual analysis approach for other up-to-date research questions, such as the presence of AI-related aspects amongst German-listed companies or indications about price increases in times of high inflation.

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Appendices

Appendix 1: Overview and classification of words used in the lexicon

Papers	Groups named explicitly	Classification	Words associated with the group
Skrzipek (2005)	Shareholder	Shareholder	growth, value, dividends, gain, equity, participation, revenue, turnover, investment
	Management	non-shareholding Stakeholder	power, salary, reputation, prestige, career
	Employees	non-shareholding Stakeholder	quality of life, liveability, salary, wage, security of employment, workplace safety, working conditions
	customers	non-shareholding Stakeholder	product quality, product safety, customer satisfaction, Image
	suppliers	non-shareholding Stakeholder	business relationship, security
	providers of debt	non-shareholding Stakeholder	credit, risk, interest, amortisation
Freudenreich et al. (2020)	government	non-shareholding Stakeholder	welfare, charity, tax
	society	non-shareholding Stakeholder	societal benefits, common good, equality, environmental protection
	Shareholder	Shareholder	profit, economic, outcome
	Management	non-shareholding Stakeholder	power, salary, profit, time
	Employees	non-shareholding Stakeholder	working conditions, personal growth
	customers	non-shareholding Stakeholder	functional value
Christ et al. (2018)	suppliers	non-shareholding Stakeholder	business relationship, stability
	providers of debt	non-shareholding Stakeholder	n.a.
	government	non-shareholding Stakeholder	policy, tax
	society	non-shareholding Stakeholder	ethical, moral, societal benefits, equality, diversity, ecological, social
	local communities	non-shareholding Stakeholder	ethics, moral
	Shareholder	Shareholder	profit, return on investment, financial resilience, long-term viability
Christ et al. (2018)	Employees	non-shareholding Stakeholder	salary, workplace safety, working conditions
	customers	non-shareholding Stakeholder	product quality, product safety, customer satisfaction, Image, value in use, value proposition
	suppliers	non-shareholding Stakeholder	relationship
	government	non-shareholding Stakeholder	welfare, charity,
	society	non-shareholding Stakeholder	community, equality, diversity, labour standards, health, safety
	Environment	non-shareholding Stakeholder	ecological, renewable, emission rate, waste, pollution, preservation, resources, biodiversity

Appendix 2: Summary Statistics and logit regression

Summary statistics

	Mean	Median	Minimum	Maximum
Crises	0.14286	0.0000	0.0000	1.0000
SHvM	0.012160	0.012200	0.00086300	0.021400
STvM	0.029951	0.029000	0.014600	0.049800
	Std. Dev.	C.V.	Skewness	Ex. kurtosis
Crises	0.35062	2.4544	2.0412	2.1667
SHvM	0.0030552	0.25125	0.053313	0.13455
STvM	0.0066230	0.22113	0.71551	0.48921
	5% perc.	95% perc.	IQ range	Missing obs.
Crises	0.0000	1.0000	0.0000	0
SHvM	0.0075455	0.017500	0.0042600	0
STvM	0.020795	0.044800	0.0082000	0

Summary Statistics, using 252 observations

Dependent variable: Crises indicator

Standard errors based on Hessian

	Coefficient	Std. Error	z	p-Value
const	-2.13797	0.949349	-2.252	0.0243 **
SHvM	-84.1154	60.8749	-1.382	0.1670
STvM	44.4829	27.7672	1.602	0.1092
Mean dependent var	0.142857	S.D. dependent var	0.350623	
McFadden R-squared	0.016279	Adjusted R-squared	-0.012749	
Log-likelihood	-101.6669	Akaike criterion	209.3338	
Schwarz criterion	219.9220	Hannan-Quinn	213.5943	

Number of cases ‘correctly predicted’ = 216 (85,7%)

f (beta’x) at mean of independent vars = 0.119

Likelihood ratio test: Chi-square (2) = 3.36487 [0.1859]

		Predicted	
		0	1
Actual	0	216	0
	1	36	0

Logit regression, using 252 observations

Note: p-value below 0.01 indicates statistical significance at the 1 percent level and is marked with ***. ** indicates significance between 1 and 5 percent and * indicates significance between the 5 and 10 percent levels.