

Impression Management and economic cycles: a study on Brazilian companies in financial distress

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Abstract

Objective: This study aims to analyze the effects of economic cycles on the relationship between financial distress and impression management in Brazilian companies.

Method: The analysis used data from companies listed on the Brazilian stock exchange between 2010 and 2022, applying content analysis, descriptive statistics, correlation tests between variables, and panel data regression with the support of Python and R. The Schumpeter (1939) model was used to determine the economic cycle, classifying the phases based on variations in Gross Domestic Product (GDP) during the period. The Z-Score model of Altman et al. (1979) was applied to assess financial distress, adapted to the companies in the sample as a means of predicting bankruptcy. For the analysis of impression management, the narrative tone metric developed by Henry (2008) was applied to 2,640 management reports.

Results: The findings showed that companies in financial distress presented management reports with a more negative tone. During the recession and contraction phases of the economic cycle, statistical significance was found in the association between the variables of interest. These results support the assumptions of Signaling Theory, as companies seek to disclose information in a timely manner, anticipate negative outcomes to mitigate investor uncertainty, and use disclosure as a means to reduce information asymmetry.

Contributions: The results assist information users—such as investors, creditors, and regulatory agencies—in identifying impression management practices and serve as indicators of accounting information quality, contributing to more assertive decision-making.

Keywords: Economic Cycle, Financial Distress, Impression Management.

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1 Introduction

The financial market fulfills its purpose when investors and borrowers interact efficiently, contributing to economic growth and the effective allocation of capital. Investors play an essential role in this process, but they depend on the information provided by companies, with financial statements serving as tools to reduce the uncertainties surrounding investment decisions (Assaf Neto, 2018; Malkiel, 2003). Therefore, managers must provide clear, accurate, and transparent information in financial reports and narrative disclosures to enrich the content and quality of the information reported, ensuring effective communication and offering a more reliable depiction of companies' situations (Gelbcke et al., 2018; Santos & Scarpin, 2011).

The literature shows, however, that managers sometimes use narrative disclosures strategically to manipulate users' perceptions of information. This behavior involves distorting corporate reality to influence how a company's events and circumstances are interpreted, thereby affecting market decision-making (Shmakov, 2015). Information manipulation can take many forms, with the most common being impression management, which employs narrative tone and other discursive resources to shape external perceptions of the company's health and direction (Beattie & Jones, 2000; Merkl-Davies & Brennan, 2007).

These impression management practices are closely linked to Signaling Theory (Spence, 1973), which suggests that companies seek to reduce information asymmetry and ensure that the market correctly understands their situation and future prospects when disclosing financial information. In the context of this theory, the signals emitted by a company not only communicate objective data but also reflect its management capacity and economic viability. Signaling, therefore, serves as a tool to reduce market uncertainty, as the information provided helps mitigate risks and offers elements necessary for investment decisions (Milgrom & Roberts, 1992; Zimmerman, 2008). In the case of impression management, signaling is used to soften or distort reality in order to preserve the organizational image, especially when the company faces financial difficulties.

Impression management becomes even more relevant in situations of financial distress, which refer to a company's inability to meet its financial obligations. In this context, companies often resort to practices of obfuscation or attribute failures to factors external to management to protect their reputation in the market and maintain the trust of investors and creditors (Baldwin & Mason, 1983; Merkl-Davies & Brennan, 2007). Financial distress can lead to the continuous deterioration of a company's operations, resulting in failures to meet financial obligations and, in more severe cases, bankruptcy or liquidation (Lemes et al., 2010; Platt & Platt, 2002). In this scenario, the use of a negative narrative tone or the concealment of unfavorable information becomes a signaling strategy aimed at preserving the company's image in the market.

Signaling Theory explains that companies can use impression management to transmit signals of stability and confidence to the market when facing an adverse scenario. This is especially relevant in times of financial distress, as the disclosure of information with an optimistic tone can serve as a strategy to soften market expectations and avoid a drop in stock prices or a loss of investor confidence (Milgrom & Roberts, 1992; Morris, 1987). The manipulation of narrative tone, therefore, involves not only the strategic handling of information but also how these signals are perceived by investors, who often make decisions based on the signaling provided by the company (Healy & Palepu, 2001).

In addition to internal motivations, external factors, such as the economic cycle, also play a crucial role in the dynamics between financial distress and impression management. The economic cycle consists of fluctuations in economic activity, including phases of expansion, recession, contraction, and recovery (Burns & Mitchell, 1946; Schumpeter, 1939). Fluctuations in Gross Domestic Product (GDP) and changes in macroeconomic conditions directly influence companies' financial performance and, consequently, managers' behavior when disclosing information. During periods of economic growth (expansion and recovery), companies tend to adopt a more optimistic stance in their communications, with reports reflecting a positive perception of their performance and prospects. In phases of recession and contraction, financial difficulties increase, which can lead companies to adopt a more cautious or negative tone in their disclosures (Hannan & Freeman, 1984; Paulo & Mota, 2019).

The effect of the economic cycle on impression management is directly reflected in companies' communication practices, which adjust the tone of their messages according to the phases of the economic cycle. The literature suggests that, in times of recession, when a company's economic performance may be negatively affected, managers adopt a more negative narrative tone, often attributing poor performance to the external economic context to justify their results (Cavalca et al., 2017; Patelli & Pedrini, 2014). In contrast, during phases of expansion, the narrative tone tends to be more positive, aiming to highlight achievements and reinforce the company's positive image (Moreno & Jones, 2022; Schumpeter, 1939).

Thus, this study seeks to fill a research gap regarding the analysis of the interactions between economic cycles, financial distress, and impression management in Brazilian companies from the perspective of Signaling Theory. It aims to analyze the effects of economic cycles on the relationship between financial distress and impression management in companies listed on the Brazilian stock exchange, using data from companies listed between 2010 and 2022.

This study's main results confirm a significant and negative relationship between financial distress and the narrative tone of management reports, indicating that companies facing financial difficulties tend to adopt a more negative tone in their disclosures. Additionally, no statistically significant result was found regarding the influence of the phases of the economic cycle, contradicting the expectation that the macroeconomic scenario would alter impression management practices in times of financial distress. However, the recession and contraction phases showed a significant negative relationship with the narrative tone, suggesting that companies reduce their efforts to impress shareholders during periods of economic difficulty (declining GDP) by adopting a more realistic tone about their financial situation. These findings reinforce the application of Signaling Theory, showing that companies seek to reduce uncertainty and information asymmetry between managers and investors by disclosing information in a timely and proactive manner.

By highlighting the critical role of the economic environment, this study contributes to understanding how external variables affect the quality of accounting information, especially in a scenario characterized by high information asymmetry and economic instability. The results can help investors, creditors, and regulators identify patterns of information manipulation and narrative bias, as well as promote more assertive decision-making. Furthermore, by exploring the interaction between economic and organizational variables in the Brazilian context, the study advances the accounting literature by offering a broader view of how external forces shape management practices in times of instability.

2 Theoretical framework

From the perspective of Signaling Theory, a company provides signals to mitigate uncertainties about its productivity and organizational viability and to reinforce its business management capacity (Spence, 1973; Zimmerman, 2008). Signaling is a means of timely communicating private information to the market (Milgrom & Roberts, 1992). The appropriate timing for signaling is linked to the need to reduce information asymmetry between parties (Dalmácio et al., 2013; Morris, 1987), which is why companies disclose private information to external users who, lacking access to this information beforehand, make every effort to obtain it (Kreps, 2004). To ensure basic levels of trust, market information users consult corporate disclosures to assess past events and predict future outcomes based on the signals emitted by management (Healy & Palepu, 2001). Therefore, companies must demonstrate their situation to the market, signaling their performance to achieve better results and competitive prominence (Morris, 1987).

An analysis of management quality from the theoretical perspective of Signaling Theory was conducted by Zhang and Wiersema (2009). According to the authors, following the scandals involving Enron, companies began requiring statements from their Chief Executive Officers (CEOs) to signal credibility and the quality of financial statements to the market. Their results (Zhang & Wiersema, 2009) showed a positive market response in cases where the CEO signaled a larger shareholding, making the company appear more credible to investors. Thus, the market reacts to the manner in which information is disclosed.

Just as the opportunistic idea of earnings management derives from discretionary opportunities in which the organization modifies how accounting information is reported, impression management is conceptualized as the narrative form of influencing the perception of information users about business facts (Shmakov, 2015). Originating from social psychology, impression management is a form of information manipulation that uses words, graphs, and/or images that do not faithfully represent a business situation or that are disclosed as a way of obfuscating or shifting responsibility for results (Beattie & Jones, 2000).

Impression management can be defined as “architecture of choices,” motivated by the fact that investors are influenced by the way information is presented, prompting their opinions about the disclosures (Henry & Peytcheva, 2018; Thaler & Sustein, 2009). Market demands often lead managers to convey a reality that differs from the actual one in order to maintain the corporate image (Hines, 1988). Therefore, the objective of impression management is to gain control over how corporate events and their consequences are perceived by information users (Schlenker, 1980) by sending signals—whether accurate or not—to the market, responding to the demands of the environment in which the organization operates (Mendonça & Amarantino-de-Andrade, 2003).

Changing the perception of information users is possible by shifting or concealing responsibility for results, emphasizing positive outcomes and linking them to the organization, or distancing negative outcomes from the corporate image to maintain its credibility in the market (Merkl-Davies & Brennan, 2007). Shifting responsibility for results or concealing information can also occur through the use of more complex language, making information less accessible, or by repeating content throughout the text to reinforce the organization’s positive aspects (Brennan et al., 2009; Merkl-Davies & Brennan, 2007). Studies show that impression management and earnings management practices tend to be complementary, mainly because both are related to the business objective of modifying perceptions (Cavalheiro, 2019).

A compilation of studies on impression management shows that companies with low profits produce more complex annual reports in terms of text compared to those presented by companies with positive and persistent profits (Li, 2008). Additionally, reports with a pessimistic tone tend to have lower readability compared to those with an optimistic tone (Bernardes et al., 2018). The association between reading difficulty and the narrative tone of reports also varies across sectors (Efretuei, 2021), and there is a positive market reaction to the tone and emphases presented in external audit reports (Souza & Nardi, 2018).

The impact of the financial market on economic growth serves as a mechanism to connect investors and borrowers; thus, it is necessary to provide robust information that supports users in their investment decisions (Assaf Neto, 2018; Malkiel, 2003; Souza & Nardi, 2018). To ensure operational continuity in a market characterized by constant technological development and high competitiveness, companies often adopt more aggressive management decisions, which can sometimes threaten their economic and financial viability (Parkinson, 2018).

Financial instability, although initially presenting limited financial impact may evolve into a lack of liquidity and an inability to meet obligations, culminating in corporate insolvency (Altman & Hotchkiss, 2010), defined as the insufficiency of cash flows to cover the company's long-term future commitments (Whitaker, 1999). The incapacity to honor these obligations can lead to breaches of debt covenants and reductions in dividend distributions, both of which are indicative of a state of financial distress (Baldwin & Mason, 1983). Financial distress represents a late stage of organizational decline and may result from a combination of environmental and organizational factors (Madeira, 2003).

The first predictive models of insolvency were developed by Beaver (1966) using univariate analysis. Subsequently, Altman (1968) introduced multivariate analysis through the Z-Score model, which remains one of the principal tools for predicting insolvency and assessing a company's financial condition (Altman et al., 2017). In 1979, the model was adapted to the Brazilian context (Altman et al., 1979), leading to changes in the variables to enhance comparability and applicability within the emerging market environment. This adaptation has been employed in Brazilian studies, such as that of Martins and Ventura (2020), who examined the predictability of corporate bankruptcy and fraudulent reporting, as well as the significance of corporate governance mechanisms based on proxies for financial distress.

Considering that accounting information must be clear and reliable (Santos & Scarpin, 2011) and that companies are expected to provide timely information to meet market expectations (Milgrom & Roberts, 1992), inconsistencies may arise between the narrative discourse of a company's statements and its financial results, potentially leading users to misunderstand the company's actual situation (Hooghiemstra, 2000; Merkl-Davies & Brennan, 2007; Shmakov, 2015). Given that companies facing financial difficulties tend to manage the tone of their communications (Bernardes et al., 2018; Cavaleiro, 2019; Efretuei, 2021; Li, 2008) and that a primary motivation for employing impression management is to control the market's reaction to business events (Schlenker, 1980), Hypothesis 1 of this study was formulated:

Hypothesis 1 (H1): Companies in financial distress adopt a more negative narrative tone in their management reports.

Stock prices and, consequently, company values in the capital market reflect investors' rational expectations regarding companies' economic value and future cash flows (Halling & Zechner, 2016). Macroeconomic factors, such as fluctuations in Gross Domestic Product (GDP), signal changes in a country's economic activity and influence investment decisions broadly (Burns & Mitchell, 1946; Schumpeter, 1939). Scholars such as Schumpeter (1939) and Burns and Mitchell (1946) examined GDP variability and its economic impacts as cyclical movements that tend to affect investors' decision-making processes.

The economic cycle consists of asymmetrical and unpredictable fluctuations in a country's economic activities (Burns & Mitchell, 1946). Rather than following linear and continuous patterns, economic activity exhibits peaks and valleys, determined by variations in GDP relative to its average over a given period (Schumpeter, 1939). The cycle is composed of four phases: expansion, recovery, recession, and contraction. The first two phases correspond to periods of growth in economic activity, while the latter two reflect a decline (Schumpeter, 1939). A high level of economic activity characterizes the expansion phase, whereas the recession phase is marked by a significant decrease (Knoop, 2010). Contraction and recovery occur between these extremes, linking the peaks and valleys and completing the full economic cycle (Knoop, 2010; Paulo & Mota, 2019; Schumpeter, 1939).

Thus, the macroeconomic scenario tends to influence information asymmetry, as crises directly affect business performance through earnings management and information manipulation (Cavalca et al., 2017; Habib et al., 2013; Halling & Zechner, 2016; Paulo & Mota, 2019; Trombetta & Imperatore, 2014). The impact of macroeconomic conditions is further evidenced in studies showing that, during periods of economic crisis, CEOs' discourse tends to align more closely with companies' actual performance (Patelli & Pedrini, 2014), and that impression management practices shift, with greater emphasis placed on attributing results to the broader economic environment (Moreno & Jones, 2022).

Macroeconomic conditions directly influence investment decisions. One of the indicators commonly used to assess economic development or instability in a country's economic activity is the Gross Domestic Product (GDP) (Burns & Mitchell, 1946; Schumpeter, 1939). Fluctuations in GDP relative to average values over time generate non-linear and cyclical patterns, which define the economic cycle (Burns & Mitchell, 1946; Knoop, 2010; Schumpeter, 1939). Considering the objective of controlling market reactions (Schlenker, 1980) and the importance of timely communication of information to investors as a means of signaling corporate reputation (Milgrom & Roberts, 1992), it is possible that the macroeconomic scenario alters market expectations and, consequently, influences the relationship between financial distress and impression management.

Given the market's social, cultural, and economic demands, one of the motivations for managers to engage in impression management is to build or maintain the organization's image in the face of uncertainty (Hines, 1988; Michelon, 2012). Thus, managers tend to signal a situation that aligns with market expectations in order to preserve their competitive positioning (Mendonça & Amarantino-de-Andrade, 2003). More specifically, it is reasonable to expect that companies will employ impression management techniques to reinforce their growth positioning during periods of economic expansion, as these conditions influence investor decision-making (Burns & Mitchell, 1946; Merkl-Davies & Brennan, 2007; Schumpeter, 1939). Accordingly, Hypothesis 2a of this study is proposed:

Hypothesis 2a (H2a): During the expansion and recovery phases of the economic cycle, companies experiencing financial distress adopt a positive narrative tone in their management reports.

On the other hand, when the economic scenario reflects a decline in economic activity, greater instability in organizational financial performance may prompt the adoption of distinct impression management practices (Cavalca et al., 2017; Moreno & Jones, 2022). Research indicates that corporate positioning tends to shift in response to fluctuations in the economic environment (Cavalca et al., 2017; Moreno & Jones, 2022; Patelli & Pedrini, 2014; Paulo & Mota, 2019). Studies show that during periods of crisis, not only does the tone of managers' communication tend to change, but it also becomes more aligned with actual performance, even when performance is unsatisfactory (Patelli & Pedrini, 2014). Accordingly, Hypothesis 2b of this study is proposed:

Hypothesis 2b (H2b): During the contraction and recession phases of the economic cycle, companies experiencing financial distress adopt a negative narrative tone in their management reports.

3 Methodological procedures

This quantitative, descriptive, and documentary study analyzes data from 2010 to 2022. Its relevance is supported by Brazil's convergence with international accounting standards, which has led to greater comparability and, consequently, higher information quality (Santos et al., 2014). Descriptive statistics, correlation analysis, and multiple linear regression for panel data were employed. Financial information was obtained from the Refinitiv® database, and management reports were collected from the websites of the companies included in the sample during June and July 2023, subject to availability. A total of 3,096 reports were analyzed to assess the study's dependent variable. The final sample comprised 2,640 observations from non-financial companies. Companies in the financial sector were excluded because, as noted by Altman et al. (2017), the model used to determine financial distress is not applicable to this sector. Only companies with fiscal years ending on December 31 were considered.

Regarding data processing and analysis, content analysis was employed to identify positive and negative words (Carlsson & Lamti, 2015; Cavalheiro, 2019; Henry, 2008) and to determine the readability index of the documents (Borges & Rech, 2019). This process was carried out automatically using the Python programming language, through the Natural Language Processing (NLP) library, which is based on artificial intelligence algorithms.

The Python programming language was configured to identify words contained in the reports of the sample companies, based on the dictionary developed by Henry (2008), supplemented by Carlsson and Lamti (2015), and translated into Portuguese and validated by three experts in the field, as presented in the study conducted by Cavalheiro (2019). To determine the narrative tone of the reports, the equation developed by Henry (2008) was applied (Equation 1). The results obtained from Equation 1 range from -1 to 1, with values greater than 0 indicating a positive bias, values less than 0 indicating a negative bias, and values equal to 0 reflecting a neutral construction of the report (Carlsson & Lamti, 2015).

$$TOM = (\sum \text{palavras positivas} - \sum \text{palavras negativas}) / \sum \text{palavras positivas e negativas} \quad (1)$$

Financial distress was determined using the Z-Score of Altman et al. (1979), calculated for the companies in the sample, with coefficients adjusted to better fit the context under study, as performed by Martins and Ventura (2020). Initially, it was necessary to verify the insolvency of the companies, opting to assess insolvency based on balance sheet indicators, using accounting variables, with insolvency indicated by total liabilities exceeding total assets—negative equity (Altman & Hotchkiss, 2010). Thus, the variable was treated as a dummy, assuming a value of 1 when the calculated net equity was negative and 0 when positive.

The insolvency values based on balance were considered the dependent variable in the logistic regression (Equation 2), allowing for the estimation of betas appropriate to the characteristics of the sample (Equation 3).

$$\ln \left[\frac{P(Z\text{-score})}{1-P(Z\text{-score})} \right] = \alpha + \beta_1(X1) + \beta_2(X3) + \beta_3(X4) + \beta_4(X5) + \varepsilon_{it} \quad (2)$$

$$\ln \left[\frac{P(Z\text{-score})}{1-P(Z\text{-score})} \right] = \hat{\alpha} + \hat{\beta}_1(X1) + \hat{\beta}_2(X3) + \hat{\beta}_3(X4) + \hat{\beta}_4(X5) \quad (3)$$

Where: X1 = (current assets – current liabilities)/total assets; X3 = earnings before interest and taxes/total assets; X4 = market value/total liabilities; X5 = sales/total assets.

The model proposed by Altman et al. (1979) (Equation 2) was applied to estimate the coefficients used to calculate the Z-Score (Equation 4).

$$\ln \left[\frac{P(Z\text{-score})}{1-P(Z\text{-score})} \right] = -2,79295 + (-6,14904 * X1) + (-6,31415 * X3) + (-0,09649 * X4) + 0,68049 * X5 \quad (4)$$

Three different forms of analysis were used for the Z-Score. The first, referred to as Z-Score, considered the value obtained for each observation. Next, a dummy variable (FDDummy) was created, assigned a value of 1 for observations with values equal to or greater than 0.8, and 0 for the others. The insolvency parameter based on the Z-Score followed the analysis methodology of Martins and Ventura (2020), classifying companies with values of 0.80 or higher as part of the sample with potential continuity problems, corresponding to a greater propensity for insolvency. Additionally, the continuous variable FDContínua was created, equivalent to the result of multiplying the Z-Score by the FDDummy. Thus, it was possible to work with the continuous value only for companies classified as prone to bankruptcy.

The economic cycle was determined based on Schumpeter's model (1939), subdivided into the phases of expansion, recession, contraction, and recovery. The quarterly variation of GDP compared to its median for the analysis period was adopted as the metric. The recurrence of negative or positive variation in GDP per capita for at least two consecutive quarters was considered to verify changes in classification from one phase to another (Knoop, 2010; Paulo & Mota, 2019). Figure 1 graphically presents the classification into the four phases of the Brazilian economic cycle according to this criterion.

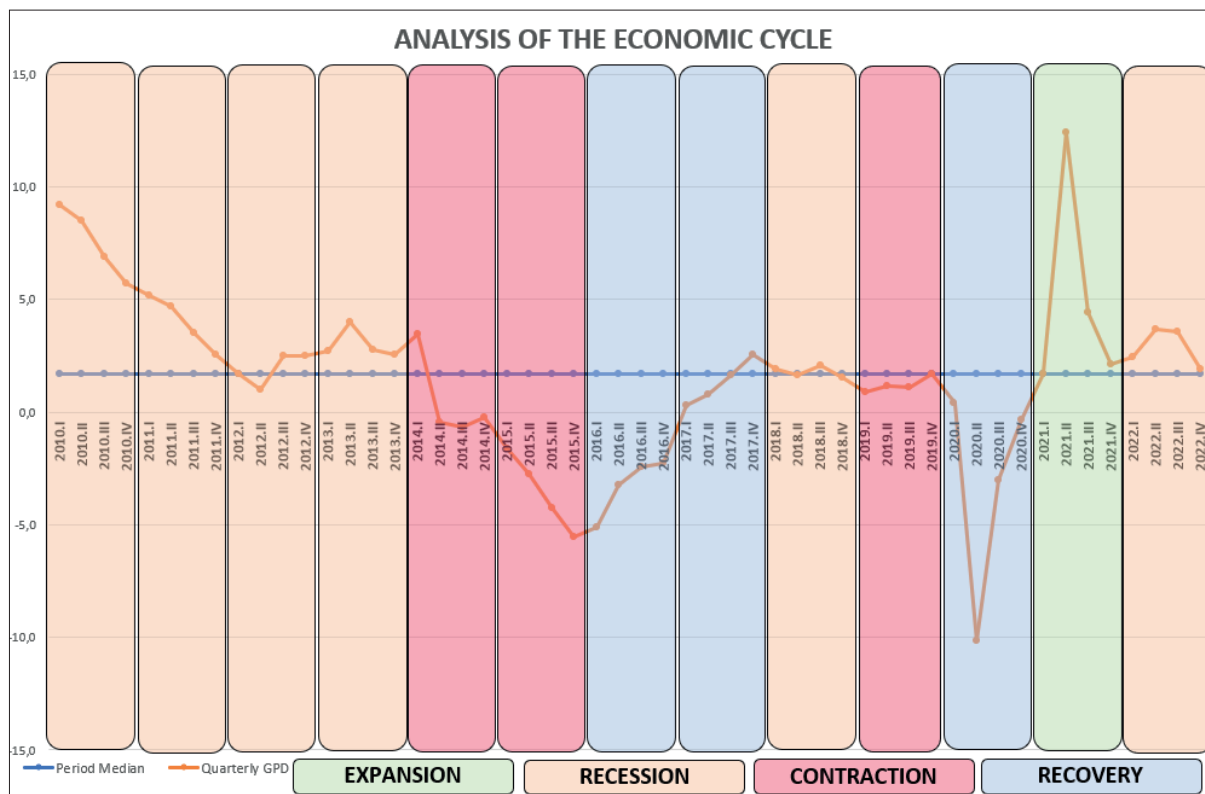


Figure 1 – Classification of the sample according to economic cycle

Thus, contraction is defined as a negative variation in GDP above the median for the period, while recovery is defined as a positive variation in GDP below the median for the period (Equation 5) (Schumpeter, 1939). The phases of the economic cycle were treated as a categorical variable, with the expansion phase used as the reference category, given that studies indicate lower levels of comparability during this specific phase (Choi et al., 2021; Habib et al., 2013).

$$\Delta PIB_t = PIB_t - PIB_{t-1} \quad (5)$$

Note: Conditions for a year to be classified in one of the phases: expansion - two consecutive positive variations with GDP above the median ($\Delta GDP_{t-1} > 0 \wedge \Delta GDP_t > 0 \wedge GDP_t \geq \text{Median}_{2010-2022}$); recovery - two consecutive positive variations with GDP below the median ($\Delta GDP_{t-1} > 0 \wedge \Delta GDP_t > 0 \wedge GDP_t \leq \text{Median}_{2010-2022}$); contraction - two consecutive negative variations with GDP still above the median ($\Delta GDP_{t-1} < 0 \wedge \Delta GDP_t < 0 \wedge GDP_t \geq \text{Median}_{2010-2022}$); and recession - two consecutive negative variations with GDP below the median ($\Delta GDP_{t-1} < 0 \wedge \Delta GDP_t < 0 \wedge GDP_t \leq \text{Median}_{2010-2022}$).

The controls adopted, as well as the literature supporting these choices and the expected signs, are shown in Table 1. Continuous variables were treated for outliers with winsorization between 1% and 99%. Correlation analysis was performed between the variables to verify the possibility of correlation between the independent variables and, simultaneously, all the variables in the model. The Shapiro-Wilk test aimed to determine normality, with a p-value > 0.01 revealing the variables were normally distributed.

Table 1
Study variables

Dimension	Acronym	Variable	Metric	Theoretical framework	Expected sign
Dependent Variable					
Impression management	GI	TOM	[No. of positive words – No. of negative words s] / [No. of positive words + No. of negative words]	Carlsson and Lamti (2015) and Henry (2008)	Not applicable
Explanatory Variable					
Financial distress	Z-Score		$Z\text{-Score} = \alpha + \beta 1(X1) + \beta 2(X3) + \beta 3(X4) + \beta 4(X5)$	Altman et al. (1979) and Martins and Ventura (2020)	-
	FDContínua	Z-Score	Continuous variable for Z-Score >= 0,8		
	FDDummy		dummy for Z-Score >= 0,8		
Economic cycle	CE	Expansion	$\Delta PIB_{t-1} > 0 \wedge \Delta PIB_t > 0 \wedge PIB_t \geq \text{Median}_{2010-2022}$	Choi et al. (2021); Habib et al. (2013), Knoop (2010), Paulo and Mota (2019) and Schumpeter (1939)	+
		Recession	$\Delta PIB_{t-1} < 0 \wedge \Delta PIB_t < 0 \wedge PIB_t \leq \text{Median}_{2010-2022}$		-
		Contraction	$\Delta PIB_{t-1} < 0 \wedge \Delta PIB_t < 0 \wedge PIB_t \geq \text{Median}_{2010-2022}$		-
		Recovery	$\Delta PIB_{t-1} > 0 \wedge \Delta PIB_t > 0 \wedge PIB_t \leq \text{Median}_{2010-2022}$		+
Control Variables					
Readability Index	iLeg	Readability Index	iLeg = 248,835 – (1,015*ASL) – (84,6*ASW)	Bernardes et al. (2018), Borges (2020), Efretuei (2021), Flesch (1948), Li (2008) and Martins et al. (1996)	+
Return on Assets	ROA	Return on Assets	(Operating Profit/Total Assets)	Carlsson and Lamti (2015) and Efretuei (2021)	+
Financial Result	Res	Financial Result	Value 1 for positive result and 0 for negative result	Efretuei (2021) and Patelli and Pedrini (2014)	+
Auditor	Aud	Auditor	Categorical variable for Big Four audit firms, with non-Big Four audit firms as reference	Almeida and Almeida (2009), Machado (2020), Nakao et al. (2017) and Souza and Nardi (2018).	+/-
Company's size	Tam	Company's size	Natural logarithm of total assets	Carlsson and Lamti (2015), Coelho (2016) and Li (2010)	+
Sector of Activity	Set	Sector of Activity	Categorical variable for the sector in which the company operates, according to B3	Efretuei (2021)	+/-
Transitional Tax Regime	RTT	Transitional Tax Regime	Value 1 for period up to 2014 and 0 for period after 2014	Piazetta (2015)	+/-

The regression model with the interaction of the phases of the economic cycle was used, according to equations 6, 7 and 8, reported in the analyses as Mod_GI1, Mod_GI2, and Mod_GI3, respectively. Thus, the individual relationships of the variables of interest, conditioned to each phase of the economic cycle were observed ($FDContínua_{it} * CE_{it}$, $FDDummy_{it} * CE_{it}$ and $Z-Score_{it} * CE_{it}$). All hypotheses could therefore be tested with the three equations: β_1 testing H1 and β_{2-5} testing H2a and H2b. For these interactions, the expansion phase was used as the reference category, as highlighted in the literature as the most appropriate choice (Choi et al., 2021; Habib et al., 2013).

$$GI_{it} = \beta + \beta_1 FDContínua_{it} + D_{1-4} CE_{it} + \beta_{2-5} FDContínua_{it} * CE_{it} + \beta_6 iLeg_{it} + \beta_7 ROA_{it} + D_5 Res_{it} + D_{6-9} Aud_{it} + \beta_8 Tam_{it} + D_{10} RTT_{it} + D_{11} Set_{it} + \varepsilon_{it} \quad (6)$$

$$GI_{it} = \beta + \beta_1 FDDummy_{it} + D_{1-4} CE_{it} + \beta_{2-5} FDDummy_{it} * CE_{it} + \beta_6 iLeg_{it} + \beta_7 ROA_{it} + D_5 Res_{it} + D_{6-9} Aud_{it} + \beta_8 Tam_{it} + D_{10} RTT_{it} + D_{11} Set_{it} + \varepsilon_{it} \quad (7)$$

$$GI_{it} = \beta + \beta_1 Z-Score_{it} + D_{1-4} CE_{it} + \beta_{2-5} Z-Score_{it} * CE_{it} + \beta_6 iLeg_{it} + \beta_7 ROA_{it} + D_5 Res_{it} + D_{6-9} Aud_{it} + \beta_8 Tam_{it} + D_{10} RTT_{it} + D_{11} Set_{it} + \varepsilon_{it} \quad (8)$$

Where: GI_{it} = represents the narrative tone of management reports, according to Equation 1, for company i in period t ; β = intercept; $FDContínua_{it}$ = represents the financial distress variable continuously for values equal to or greater than 0.8 for company i in period t ; $FDDummy_{it}$ = represents the financial distress variable as a dummy with value 1 for values equal to or greater than 0.8, and 0 for other values, for company i in period t ; $Z-Score_{it}$ = represents the financial distress variable continuously at the value obtained in Equation 4, for company i in period t ; CE_{it} = represents the economic cycle for company i in period t , with the phases of expansion, recession, contraction, and recovery, with expansion as the reference phase; ε_{it} = regression error.

Initially, the Pooled, Random Effects and Effects models were estimated, performing the Chow, Breusch-Pagan and Hausman tests to decide on the most appropriate model (Fávero & Belfiore, 2024). The Anderson-Darling test for the presence of normal distribution, the Breusch-Pagan test for homoscedasticity of residuals, the Variance Inflation Factor (VIF) test for multicollinearity, and the Breusch-Godfrey/Wooldridge test for Serial Correlation test were performed to validate the assumptions of the regression model. The regressions in this study did not present multicollinearity problems. The identified problems were addressed by robust statistics, used to provide more reliable inferences when the assumptions of homoscedasticity (constant variance) and normality of residuals are violated.

4 Analysis and interpretation of results

First, the study variables were analyzed using descriptive statistics, segregated by observations of companies classified under financial distress (FD (1)) and financially healthy companies (FD (0)). These results are detailed in Table 2 and are discussed below.

Table 2

Descriptive Statistics of Continuous Variables

		TOM	Z-Score	TOM_w	Z-Score_w	iLeg_w	ROA_w	Tam_w
FD (0)	Median	0.05	0.03	0.05	0.03	-11.46	0.07	20.44
	Mean	0.06	0.06	0.06	0.06	-13.33	0.07	20.39
	Standard Deviation	0.23	0.11	0.21	0.11	17.65	0.11	1.83
	Minimum	-1.00	0.00	-0.45	0.00	-114.57	-0.58	15.11
	Maximum	1.00	0.79	0.71	0.79	23.68	0.41	23.98
FD (1)	Median	0.00	0.98	0.00	0.98	-12.48	-0.08	18.10
	Mean	-0.04	0.95	-0.04	0.95	-14.56	-0.14	18.19
	Standard Deviation	0.17	0.06	0.16	0.06	10.86	0.24	1.77
	Minimum	-0.53	0.8	0.45	0.80	-37.31	-0.58	15.11
	Maximum	0.24	1.00	0.24	1.00	23.68	0.41	23.57
Obs.		2.640	2.640	2.640	2.640	2.640	2.640	2.640
P-Valor		<0.001	<0.001	<0.001	<0.001	0.3	<0.001	<0.001

Note: *TOM*: Narrative tone of Management Reports; *Z-Score*: continuous variable for the companies' Z-Score; *TOM_w*: Narrative tone of Management Reports winsorized from 1% to 99%; *Z-Score_w*: continuous variable for the companies' Z-Score winsorized from 1% to 99%; *iLeg_w*: Readability Index winsorized from 1% to 99%; *ROA_w*: Return on Assets winsorized from 1% to 99%; *Tam_w*: company size winsorized from 1% to 99%; *FD(0)*: observations not classified under financial distress; *FD(1)*: observations classified under financial distress.

The TOM of reports from healthy companies (FD(0)) shows an average of 0.06, while those from companies in financial distress (FD(1)) have an average of -0.04. This significant difference ($p\text{-value} < 0.001$) indicates that management reports more prone to bankruptcy have a more negative narrative tone. However, when analyzing the minimum and maximum values of observations from healthy companies, the maximum value predicted by Henry's equation (2008) was found, meaning that the range of the narrative tone in reports from this part of the sample is the maximum, including reports that do not present either negative or positive words.

Regarding the Z-Score variable, the minimum and maximum values are congruent with the cutoff defined for model classification, given that only companies that presented values equal to or greater than 0.8 (Z-Score) were considered as in financial distress. The high median and mean for companies in financial distress show few observations close to the cutoff line. However, the median and mean values of healthy companies demonstrate a concentration of significantly low probability scores.

The report readability index stands out due to the number of negative results. According to the Flesch methodology, the lower the value, the more complex the report is, i.e., the lower its readability. Although the mean and median of the observations of companies in financial distress and healthy companies are close, their minimum and maximum values present very different values. The minimum of -114.57 for report readability in healthy companies is three times lower than the minimum of -37.31 for companies in financial distress.

A slight change in the behavior of the TOM variable is observed during the contraction and recovery phases when the variables are analyzed according to the phases of the economic cycle (Table 3). In the contraction phase, the minimum TOM value reaches -0.50, meaning that no reports in this phase exhibit the most negative tone, as observed in other phases of the cycle. Additionally, during the recovery phase, the median is 0.00 and the mean is 0.04, suggesting a greater concentration of reports with a positive tone.

Table 3

Descriptive Statistics of Variables by Phase of the Economic Cycle

		Expansion	Recession	Contraction	Recovery
TOM	Median	0.05	0.05	0.05	0.00
	Mean	0.06	0.05	0.06	0.04
	Standard Deviation	0.24	0.22	0.21	0.22
	Minimum	-1.00	-1.00	-0.50	-1.00
	Maximum	1.00	1.00	1.00	1.00
Z-Score	Median	0.03	0.03	0.02	0.03
	Mean	0.08	0.10	0.09	0.10
	Standard Deviation	0.19	0.21	0.21	0.20
	Minimum	0.00	0.00	0.00	0.00
	Maximum	1.00	1.00	1.00	1.00
iLeg	Median	-11.48	-11.57	-10.23	-12.46
	Mean	-13.91	-13.19	-11.51	-13.53
	Standard Deviation	18.41	18.50	13.14	16.17
	Minimum	-114.57	-114.57	-82.04	-114.57
	Maximum	23.68	23.68	23.68	23.68
Observações		290	1.072	678	600

Note: TOM: Narrative tone of management reports; Z-Score: continuous variable representing the companies' Z-Score; iLeg: Readability Index.

The iLeg variable is another notable variable analyzed individually in each phase of the economic cycle. Overall, the maximum, minimum, and standard deviation values are relatively homogeneous across the phases, except in the contraction phase, where a minimum of -82.04 is observed. In contrast, the minimum values in the other phases are approximately 40% lower. This finding indicates that the reports are considered less complex in the contraction phase than in the others. Additionally, the lower standard deviation suggests greater homogeneity around the mean.

Table 4 presents the results of the regression analyses. As outlined in the methodological procedures section, the difference between the models lies in how the financial distress variable is presented or measured, based on the Z-Score used to assess the probability of bankruptcy among the sample companies. In the first model (Mod_GI1), the Z-Score value is used only for companies with scores equal to or greater than 0.8. In the second model (Mod_GI2), a dummy variable is used, with a value of 1 assigned to companies with a Z-Score equal to or greater than 0.8, and 0 otherwise. In the third model (Mod_GI3), the continuous Z-Score value ranging from 0 to 1 is used. It is also worth noting that results were considered significant at the 10% level, which implies a lower explanatory power of the independent variables compared to previous studies that reported significant coefficients at the 5% level.

Table 4
Full Sample Regressions

	E.S.	Mod_GI1	Mod_GI2	Mod_GI3
Intercept		-0.493 *** (0.086)	-0.494 *** (0.086)	-0.464 *** (0.087)
FDContínua	H1(-)	-0.008 (0.024)		
FDDummy	H1(-)		-0.008 (0.022)	
Z-Score	H1(-)			-0.045 * (0.026)
Recession	(-)	-0.019 ** (0.008)	-0.019 ** (0.008)	-0.022 *** (0.008)
Recovery	(+)	0.004 (0.007)	0.004 (0.007)	0.003 (0.007)
Contraction	(-)	-0.022 *** (0.007)	-0.022 *** (0.007)	-0.023 *** (0.007)
FDContínua* Recovery	H2a(+)	0.021 (0.041)		
FDContínua* Recession	H2b(-)	0.021 (0.036)		
FDContínua* Contraction	H2b(-)	0.030 (0.032)		
FDDummy* Recovery	H2a(+)		0.021 (0.039)	
FDDummy* Recession	H2b(-)		0.019 (0.034)	
FDDummy* Contraction	H2b(-)		0.027 (0.030)	
Z-Score* Recovery	H2a(+)			0.036 (0.038)
Z-Score* Recession	H2b(-)			0.009 (0.033)
Z-Score* Contraction	H2b(-)			0.033 (0.029)
iLeg	(+)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
ROA	(+)	0.053 (0.039)	0.053 (0.039)	0.032 (0.040)
Res	(+)	0.018 * (0.010)	0.018 * (0.010)	0.016 * (0.010)
EY	(+/-)	0.007 (0.010)	0.007 (0.010)	0.006 (0.010)
PWC	(+/-)	-0.015 (0.010)	-0.015 (0.010)	-0.015 (0.010)
DELOITTE	(+/-)	-0.008 (0.009)	-0.008 (0.009)	-0.009 (0.009)
KPMG	(+/-)	0.004 (0.009)	0.004 (0.009)	0.004 (0.009)
Tam	(+)	0.026 *** (0.004)	0.026 *** (0.004)	0.024 *** (0.004)
TTR	(+/-)	0.035 *** (0.008)	0.035 *** (0.008)	0.035 *** (0.008)
Observations		2.441	2.441	2.441
R2 Adjusted		0.043	0.043	0.044
P-Value		0.000	0.000	0.000
Panel		Random Effects	Random Effects	Random Effects
FE Year		Yes	Yes	Yes
FE Company		Yes	Yes	Yes

Note: ***, **, * are significant at 1%, 5% and 10%, respectively. Robust standard errors were used, with robust White's correction to address heteroscedasticity and clustering to correct for serial correlation. FDContínua: financial distress variable of form; FDDummy: financial distress variable as dummy; Z-Score: continuous variable for the Z-Score of companies; iLeg: Readability Index; ROA: Return on Assets; Res: Financial result of the company; Tam: company size; TTR: Transitional Tax Regime. FE: Fixed effect. E.S.: expected sign.

Regarding the significant coefficients, the Mod_GI3 model presents a negative and statistically significant coefficient at the 10% level for the Z-Score variable. This result indicates an inverse relationship between the Z-Score value and the tone of management reports, where an increase of one unit in the Z-Score variable may lead to a 0.045 reduction in the TOM variable. Furthermore, the low standard error of 0.026 suggests little uncertainty surrounding the coefficient estimate. Therefore, the higher the probability of company bankruptcy (Z-Score), the more negative the tone used in the reports.

Thus, the results indicate that managers disclose information—even if inconsistent with market expectations—as a way of reinforcing the organization’s image, as evidenced through the lens of impression management by Merkl-Davies and Brennan (2007). The findings also support Signaling Theory, as seminal studies such as Morris (1987), Milgrom and Roberts (1992), and Zimmerman (2008) interpret information disclosure as the emission of signals that reflect management’s capacity to navigate periods of uncertainty, ensuring timely communication and signaling performance that is reliable for business outcomes.

The research results also align with previous empirical studies showing that companies in financial distress disclose information consistent with their performance to external users, either as a way of demonstrating credibility to investors (Zhang & Wiersema, 2009) or to mitigate uncertainty in the current scenario (Cavalca et al., 2017; Moreno & Jones, 2022; Patelli & Pedrini, 2014). These findings provide evidence in support of Hypothesis 1 (H1), which proposes that companies in financial distress use a more negative narrative tone in their management reports.

The analysis of the economic cycle shows a negative relationship across all phases in the three models analyzed. However, only the recession and contraction phases were statistically significant, with significance levels between 1% and 5%. These findings are consistent with the literature, as macroeconomic conditions influence investors’ decisions (Burns & Mitchell, 1946; Schumpeter, 1939). Given the uncertainty and unfavorable outlook associated with economic phases marked by declining GDP (recession and contraction), companies tend to reduce efforts to impress shareholders and instead acknowledge the actual state of their operations (Patelli & Pedrini, 2014).

Through the lens of Signaling Theory and seminal studies on impression management, companies may use the economic situation to emphasize negative results already anticipated by the market, thereby signaling credibility in terms of information transparency and highlighting the economic impacts of the environment in which the organization operates (Beattie & Jones, 2000; Mendonça & Amarantino-de-Andrade, 2003). These findings align with Moreno and Jones (2022) and provide evidence that periods of crisis and financial instability do not halt impression management practices but rather influence their form.

An analysis of the interaction between financial distress and the dummies representing the phases of the economic cycle—allowing for the examination of potential differences in variable behavior across phases—was conducted to address Hypotheses *H2a* and *H2b*. No significant coefficients were found for the interactions of *FDContinua*, *FDDummy*, or *Z-Score* with the economic cycle phases. Therefore, *H2a* and *H2b*, which propose a distinct relationship between financial distress and the narrative tone of management reports across the phases of the economic cycle, are not supported.

As expected based on the literature, both financial distress and the economic cycle showed significance at the 10% level in the individual coefficients, corroborating the findings of Patelli and Pedrini (2014) and Moreno and Jones (2022). However, the interactions between these variables were not significant, indicating that, for the sample and period analyzed in this study, these factors operate independently, without mutually reinforcing effects.

Regarding the control variables, the regression analysis revealed a significant and positive relationship between company size (*Tam*) and tone, with 1% significance in all three models, indicating that larger companies tend to adopt a more positive tone in their management reports. This finding supports Carlsson and Lamti (2015) and contrasts with Li (2008). The company’s financial result (*Res*) also showed a positive relationship, with statistical significance at the 10% level, suggesting that companies with positive financial performance may adopt a predominantly optimistic tone in their reports, in line with the literature on market signaling (Efretuei, 2021; Merkl-Davies & Brennan, 2007; Patelli & Pedrini, 2014). Additionally, the Transitional Tax Regime (*TTR*) exhibited a positive and significant relationship at the 1% level with impression management, reflecting the positive narrative tone during the 2010–2014 period, which was marked by adaptations to international standards and heightened uncertainty (Cunha & Barros, 2021).

5 Final Considerations

This study aimed to analyze the effects of economic cycles on the relationship between financial distress and impression management in Brazilian companies from 2010 to 2022. The primary finding, which supports Hypothesis 1, reveals a significant and negative relationship between financial distress and the narrative tone of management reports. This result aligns with the literature, suggesting that presenting results consistent with business reality serves as a means of validating management's credibility in information transparency, given the political cost of maintaining a positive image (Merkl-Davies & Brennan, 2007; Zhang & Wiersema, 2009). It also reflects the tendency to explain performance in light of macroeconomic conditions as a signaling mechanism to the market (Cavalca et al., 2017; Dalmácio et al., 2013; Moreno & Jones, 2022; Patelli & Pedrini, 2014).

The interaction between the proxies for financial distress and the phases of the economic cycle did not show statistical significance, not even in the robustness analyses. Therefore, it is not possible to assert that the phases of the economic cycle influence the proposed relationship. This result, in addition to not supporting *H2a* and *H2b*, contrasts with studies suggesting that companies facing financial performance issues shift responsibility and/or obfuscate their results in response to the macroeconomic scenario (Li, 2008; Moreno & Jones, 2022; Patelli & Pedrini, 2014). These findings suggest that other variables may need to be examined as potential influences on the observed relationship.

Additionally, a negative and significant relationship was found between the recession and contraction phases and the narrative tone of the reports when the entire sample was analyzed. This result supports the notion that companies reduce their efforts to impress shareholders and instead acknowledge their actual financial conditions when facing unfavorable economic scenarios, as macroeconomic factors influence investment decisions (Burns & Mitchell, 1946; Patelli & Pedrini, 2014; Schumpeter, 1939). Thus, when viewed from the perspective of negative phases, the economic scenario influences how accounting information is disclosed, as companies use macroeconomic conditions to reveal preexisting financial situations.

In light of Signaling Theory, the study's findings regarding the negative relationship between financial distress and the narrative tone of management reports reinforce the theoretical foundation for the timely disclosure of information, the anticipation of results, and the communication of the business situation as a means to mitigate uncertainty and, most importantly, reduce information asymmetry between parties (Dalmácio et al., 2013; Kreps, 2004; Milgrom & Roberts, 1992; Morris, 1987; Zimmerman, 2008). This is particularly relevant given that users rely on business signals derived from past performance to forecast the organization's future (Healy & Palepu, 2001).

The study allows us to infer a significant and negative relationship between financial distress and the narrative tone of management reports. The findings indicate that companies with a higher probability of bankruptcy tend to present management reports with a more negative tone. Overall, these results stimulate further discussion on the relationship between financial distress, the probability of bankruptcy, and impression management, opening new research avenues to explore additional factors that may influence this relationship. The findings also support information users—such as investors, creditors, and regulatory bodies—in identifying perception management practices and potential information bias, while encouraging a more critical approach to the analysis of accounting disclosures. These insights can serve as indicators of information quality, ultimately contributing to more assertive decision-making.

Given that tone is the dependent variable in this study—and that it is a qualitative informational construct with origins in psychology—future studies are encouraged to explore personal factors of those responsible for preparing informational content. One way to address this limitation is to control for non-observable elements in accounting information, such as the composition of the board of directors, changes in CEOs, and even political influences. It is also suggested that future research examine other corporate documents as sources for analyzing impression management practices, such as headlines, press releases, CEO statements, and disclosures of relevant facts, among others. Additionally, future studies may consider using alternative validated dictionaries or incorporating other expressions—supported by empirical and theoretical rationale—that may be used by managers and are relevant to the Brazilian context.

Regarding the economic cycle, the absence of statistically significant relationships suggests that future studies should compare data across countries with macroeconomic contexts different from that of Brazil. Such comparisons may help identify behavioral similarities and differences between countries, as well as support the use of alternative proxies or specific models to define the phases of the economic cycle. Additionally, a limitation of this study is the exclusive use of Schumpeter's model (1939) as the metric for classifying economic cycle stages. Future research could explore other models to assess potential differences in the results.

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