

IMPRESSION MANAGEMENT, MACROECONOMIC CRISIS DUE TO COVID-19, AND FEMALE REPRESENTATION IN BRAZILIAN PUBLICLY TRADED COMPANIES

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Abstract

Impression management (IM) in organizational contexts is employed by companies to enhance their image, preserve their reputation, and ensure legitimacy before stakeholders. This practice can be influenced by the macroeconomic environment in which the company operates. The literature on the relationship between IM and macroeconomic crises presents divergent empirical results, rendering the debate inconclusive. Consequently, it is worth discussing whether other variables may affect this relationship, such as female representation in top management, since women are generally less prone to manipulating corporate information due to personal characteristics such as ethical behavior. This study aims to analyze the relationship between IM, the macroeconomic crisis resulting from the Covid-19 pandemic, and female representation in top management in companies listed on the Brazilian stock exchange (B3). This is a descriptive and quantitative study, based on a sample of companies listed on B3 that published Earnings Releases from 2017 to 2021. Techniques such as descriptive statistics, mean difference tests, and multiple linear regression using panel data were applied. The findings revealed a statistically significant and positive relationship between IM and the crisis, indicating that the level of IM is higher during periods of economic instability. Furthermore, no evidence was found of a relationship between IM and female representation in top management, nor that such representation weakens the IM-crisis relationship by mitigating this practice.

Keywords: impression management; Covid-19 crisis; female representation in top management.

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1 Introduction

Impression management (IM) was initially studied within the field of social psychology, defined as a set of strategies used by individuals to control how others perceive them (Hooghiemstra, 2000). Later, this concept was extended to organizations (Mendonça; Vieira; Santo, 1999) and became associated with maintaining corporate legitimacy, enhancing the company's image, and minimizing the negative impact of its actions to ensure business continuity (Brennan; Guillamón-Saorín; Pierce, 2009; Kos; Scarpin, 2021).

This practice can manifest in accounting narratives through the emphasis on positive outcomes and the obfuscation of negative results (Merkl-Davies; Brennan; McLeay, 2011), potentially becoming harmful to the market, as unsophisticated investors may be susceptible to such phenomena (Tan; Wang; Zhou, 2014).

Teixeira, Durso and Cunha (2017) found a tendency among managers to attribute positive results to internal factors and negative outcomes to external causes such as the economic environment. Therefore, IM can be sensitive to the context in which the organization operates (Patelli; Pedrini, 2014), particularly the macroeconomic environment (Moreno; Jones, 2022).

Hadro, Klimczak and Pauka (2017), in analyzing CEO letters from companies listed on the Warsaw Stock Exchange during the 2008 crisis, observed that most letters attempted to attribute poor performance to external factors, while success was linked to internal strengths, revealing higher levels of IM.

Conversely, other studies have identified different behavior, suggesting that during challenging macroeconomic times, companies tend to adopt lower levels of IM due to increased scrutiny, opting for more cautious reporting to restore stakeholder trust (Moreno; Jones, 2022; Patelli; Pedrini, 2014).

Given the duality of results in the literature, researchers have focused on other factors that may influence IM levels, such as firm performance (Cho; Roberts; Patten, 2010), governance practices (Osma; Guillamón-Saorín, 2011), and characteristics of the board of directors — for instance, the number of board members, the existence of a corporate social responsibility committee, and gender or age diversity in executive leadership (Arena; Bozzolan; Michelon, 2015).

Gender diversity, specifically female representation in top management, stands out as a variable capable of positively influencing the quality of corporate narratives, as women in top positions are seen as a managerial oversight mechanism (Gul; Srinidhi; Ng, 2011). Previous studies indicate that the presence of women in executive roles influences decision-making processes (Eagly; Johannesen-Schmidt; Van Engen, 2003), resulting in higher performance, profitability, market share, accounting information quality, and firm value (Gul *et al.*, 2011).

In the context of IM, García-Sánchez, Suárez-Fernández and Martínez-Ferrero (2019) found that gender diversity on boards affects the level of IM in sustainability reports, with boards featuring a higher proportion of women employing fewer IM strategies.

Gender diversity has become a key topic in corporate governance, attracting considerable interest from governments, policymakers, academics, and professionals (Nguyen; Ntim; Malagila, 2020). However, women remain underrepresented. According to a 2022 Forbes article, only three of the 500 largest U.S. companies have female CEOs or CFOs (Macgrath, 2022). In Brazil, 85% of companies have boards composed exclusively of men, as highlighted by a CNN Brasil article (Elias, 2022).

Previous research supports the notion that women improve the quality of financial reporting. Therefore, it is hypothesized that the IM-crisis relationship could be influenced by female representation in top management, given women's intrinsic traits such as conservatism,

risk aversion, and ethical behavior (Barua *et al.*, 2010; García-Sánchez; Martínez-Ferrero; García-Meca, 2017; Peni; Vähämaa, 2010).

Focusing on the economic instability caused by the Covid-19 crisis, which was triggered by the global spread of the highly contagious SARS-CoV-2 virus in early 2020, this pandemic led to a global recession due to social distancing and lockdown measures, resulting in the greatest economic depression since 1929 (International Monetary Fund, 2020). Hence, the Covid-19 crisis period offers a relevant context for empirically assessing the discursive biases of companies during turbulent macroeconomic times.

Therefore, the main objective of this study is to analyze the relationship between impression management, the macroeconomic crisis resulting from Covid-19, and female representation in top management among companies listed on B3 S.A.

This research is relevant because examining IM in different contexts helps to understand the disclosure patterns in corporate reports, as preparers often seek to shape readers' perceptions through specific language, especially in times of poor performance (Clatworthy; Jones, 2003). Additionally, this study is innovative in investigating whether IM levels differ based on the presence of women in top management in the Brazilian market context. In today's corporate landscape, female leadership has become increasingly relevant, as the diversity of perspectives brought by women has significant implications for how companies present themselves to stakeholders. Despite evidence of the effectiveness of female leaders, women hold only 19.7% of board seats globally (Deloitte, 2022), a figure still considered low. Thus, this article contributes to the ongoing discussion on gender equality in Brazil's capital markets.

2 Theoretical Framework

The theoretical framework of the present article provides a detailed discussion of the constructs addressed herein, namely impression management, macroeconomic crisis, and female representation in top management

2.1 Impression Management and Macroeconomic Crisis

Agency Theory provides a foundational theoretical framework for research focused on the preparers of corporate disclosures. It describes the contractual relationship between two or more parties, where a principal hires an agent to perform a service on their behalf, delegating authority and decision-making power. Both parties are considered utility maximizers, which gives rise to concerns that the agent may not always act in the best interests of the principal (Jensen; Meckling, 1976).

The agency problem represents a misalignment between the behavior desired by the principal and that exhibited by the agent. One manifestation of this phenomenon is impression management (IM), defined as the process by which individuals, motivated by their personal goals, attempt to present a distorted view of reality to influence others' perceptions (Leary; Kowalski, 1990).

Voluntary disclosure, especially when combined with qualitative content, provides managers with opportunities to subtly influence market participants (Davis; Piger; Sedor, 2007). It also facilitates IM in reports that are not heavily regulated - particularly when transparency serves the company's interests (Merkl-Davies; Brennan, 2007). Prior research has shown an increase in the use of specific qualitative information and demonstrated that presenting positive information leads to more favorable evaluations from corporate report users (Davis *et al.*, 2007).

There are many motivations for employing IM. However, the further an organization's results deviate from the "ideal," the stronger the motivations to justify or obscure certain narratives in corporate reports (Bloomfield, 2002).

Grove and Fisk (1989) noted that not all IM is intentional. Some managerial behaviors may be deliberate, while others may be genuine. In other words, IM occurs in corporate narratives to varying degrees, but it is not always purposeful.

To better understand and summarize the existing empirical evidence, Box 1 presents a synthesis of studies on the relationship between IM and macroeconomic crises.

Box 1 - Summary of Studies on Impression Management and Macroeconomic Crisis

Author (year)	Study Data / Period	Main findings
Patelli and Pedrini (2014)	664 CEO letters from companies listed in the Fortune 500 ranking. Period: 2007 to 2010.	During macroeconomic crises, companies tend to reduce strategic manipulation of narrative reporting, leading to more honest and transparent communication, with lower levels of IM.
Viana Júnior and Lourenço (2020)	CEO letters, management reports, and notes included in the financial statements of three companies in the luxury goods sector from 2019, and press releases from 2020.	Companies generally used IM tactics to minimize negative impacts and highlight positive aspects related to the Covid-19 outbreak.
Im, Kim and Miao (2021)	57 CEO letters from 36 hospitality companies listed in the 2019 Fortune 500 ranking.	IM was identified as an integral part of crisis management strategy. Companies used it to project a virtuous and responsible image of the sector during the pandemic.
Moreno and Jones (2022)	264 management reports from companies listed in the IBEX35 index on the Spanish stock exchange. Period: 2002 to 2012.	During the 2008 global financial crisis, IM was less intense compared to the pre-crisis period. Under greater scrutiny, companies opted for a more transparent and neutral stance.
Oliveira, Souza and Silva (2023)	Material facts from the retail sector listed on B3, totaling 779 observations. Period: 2017 to 2022.	No significant differences were observed in the levels of IM in material facts disclosed before and during the Covid-19 crisis.

Source: prepared by the authors (2023).

In Box 1, it can be observed that only two studies, Moreno and Jones (2022) and Patelli and Pedrini (2014), reported a decrease in IM practices during periods of macroeconomic crisis. The other cited studies mostly indicated an increase in IM levels during times of economic instability. However, Oliveira *et al.* (2023) found no significant differences between IM levels before and during the COVID-19 pandemic.

It is also possible to note that the studies by Viana Júnior and Lourenço (2020) and Im; Kim and Miao (2021), regarding the macroeconomic crisis resulting from COVID-19, registered that IM was used as part of crisis management tactics aimed at mitigating negative impacts on organizations.

Given the presented context and the results highlighted in Box 1, it is assumed that the macroeconomic environment influences the level of IM in corporate narratives. Thus, considering the crisis resulting from the COVID-19 pandemic, which affected companies' financial health and the quality of accounting reports (Taylor; Awuye; Cudjoe, 2023), the first hypothesis of this study was defined as follows:

H1 - The macroeconomic crisis resulting from the COVID-19 pandemic is associated with an increase in the level of impression management in accounting narratives.

2.3 Female Representation, Performance and Report Quality

Studies on female representation in top management agree that women tend to be more risk-averse (Berger; Kick; Schaeck, 2014) in decision-making processes. They are frequently associated with a more ethical leadership style and a more conservative mindset (Ho *et al.*, 2015). Their personal characteristics, such as attentiveness, support, and collaboration, contribute to the formation of a transformational leadership style (Eagly; Carli, 2003), in which they apply higher ethical standards, helping to earn investors' trust (García-Sánchez *et al.*, 2019).

Some research has addressed the relationship between female presence in top management and financial performance. Fernando, Jain and Tripathy (2020), exploring the relationship between the proportion of women on the board of directors and financial performance, investigated U.S. firms during the 2008 - 2015 recession period. The authors observed that increased female representation yields positive performance effects, both during stable periods and macroeconomic crises. This finding supports previous research exploring the intersection of female gender and periods of economic instability, sustaining the argument that there is a positive relationship between firm financial performance and female representation in top management (Willhans; Lindström, 2022).

This underscores the importance of promoting gender diversity on boards of directors and executive positions, not only as a matter of equity but also as a business strategy that can strengthen firms' resilience in the face of economic challenges.

Box 2 - Summary of studies on female representation and the quality of corporate reports

Author (year)	Study Data / Period	Main findings
Cucari, De Falco and Orlando (2017)	54 Italian companies listed on the Milan Stock Exchange. Period: 2011–2014.	The results showed that the number of female directors on the board does not have a positive impact on improving CSR disclosure.
García-Sánchez <i>et al.</i> (2019)	273 observations collected from the Thomson Reuters and Ethical Investment Research Service (EIRIS) platforms. Period: 2006–2014.	Boards with greater female representation reduce the risk of impression management in sustainability disclosures.
Santos, Santos and Filho (2022)	Sustainability reports, management reports, and explanatory notes from 78 companies listed on B3 that have an audit committee. Period: 2012–2017.	The proportion of women on the audit committee is not related to greater disclosure of environmental information or to the quality of the reports presented.
Pinheiro, Sampaio, Bastitella and Carraro (2021)	62 multinational energy sector companies from 25 different countries. Period: 2016–2018.	A positive influence of the number of women on the board on CSR disclosure is observed. Diversity contributes to companies issuing more comprehensive environmental reports.
Portácio, Ferreira and Vasconcelos (2022)	88 largest companies by market value. Period: 2021.	Board gender diversity positively affects the readability of management reports.

Source: prepared by the authors (2023).

Another stream of research has addressed female presence and the quality of disclosures. Box 2 presents a summary of studies that explored the theme of female representation in top management and the quality of corporate disclosures.

The studies presented in Box 2 mostly showed that companies with higher female representation issued higher-quality reports and that a more gender-diverse top management team brings a broader range of skills and knowledge, which leads to more critical decision-making compared to more homogeneous leadership (Zhang; Zhu; Ding, 2013).

Thus, based on the literature that suggests female representation in top management enhances report quality, it is expected that the presence of women on boards of directors and executive teams reduces impression management practices. In line with this, the second hypothesis of the study is defined as follows:

H2 - There is a negative relationship between impression management and female representation in top management.

The transparency and cautious approach of female leaders, together with their management characteristics, can positively influence reporting practices (Bassyouny; Abdelfattah; Tao, 2020), leading to more effective deliberations and stricter oversight of disclosures (García-Sánchez *et al.*, 2019). In this context, it is argued that women in executive positions tend to foster an organizational culture that values transparency, participation, and prudence, contributing to a more collaborative work environment and more reliable disclosures.

Several studies indicate that gender-diverse boards are associated with lower levels of managerial opportunism in corporate discourse, particularly regarding earnings management and higher report quality (Ho *et al.*, 2015). Therefore, the presence of women - who generally show less tendency to manipulate corporate information due to their ethical and transparent behavior, as noted by Heminway (2007) - may help reduce the level of impression management (García-Sánchez *et al.*, 2019) in corporate reports.

In a more specific context, Saggese and Sarto (2022) analyzed a sample of publicly traded Italian companies during the Covid-19 pandemic and found that boards with a higher number of women delivered higher-quality financial disclosures.

Given this, women in top management emerge as better monitors, and this trait impacts the quality of financial reporting, potentially mitigating impression management practices during the macroeconomic crisis triggered by the Covid-19 pandemic. This conception underpins the formulation of the third hypothesis of this study:

H3 - Female representation in top management mitigates the effects of the macroeconomic crisis caused by Covid-19 on impression management.

3 Methodology

The methodology section of the present paper presents data sources, analytical procedures, and criteria used in conducting the research, ensuring transparency and enabling replication.

3.1 Population, Sample, and Data Collection

The research population comprises all publicly traded companies listed on the B3 S/A website for the period from 2017 to 2021. The year 2017 was chosen as the starting point because Brazil's Gross Domestic Product (GDP) grew by 1% in that year, after two

consecutive years of contraction (Instituto Brasileiro de Geografia e Estatística, 2018), and following a period of significant political and economic instability that led to a recession lasting until 2016. Additionally, 2017 precedes the health and economic crisis caused by the Covid-19 pandemic.

The study sample includes companies that published earnings releases for all 20 quarters of the five-year period under analysis (2017 - 2021). These reports were collected from the website of the Securities and Exchange Commission of Brazil (CVM), specifically under the section "Financial and Economic Data" (Press Release item). The collection of secondary data took place between June and December 2022, drawing from the following sources: Economática® database, Reference Forms (items 12.5/6) of each company, the CVM website, and the standardized financial statements available on the B3 website.

To evaluate impression management in discretionary disclosures, earnings release reports were selected as the primary material, since they represent the first public disclosure of corporate performance and typically summarize the most important insights of the relevant period. The earnings release files for the companies in the research sample were downloaded in PDF format from the CVM website. These files were then converted to TXT format, with characters such as tables, numbers, charts, and captions removed - leaving only the narrative (textual) content.

To build the sample, companies listed on B3 as of June 2022 (date of data collection) were initially identified, totaling 462 firms. A balanced panel was chosen to avoid bias from missing data. As a result, 358 companies that did not publish earnings releases or did not cover the full 20-quarter span of interest were excluded.

3.2 Impression Management Metric

This study uses textual tone as a proxy for impression management (IM), applying text mining techniques to analyze sentiment polarity - positive (+1), negative (-1), and neutral (0) - in textual data (Pang; Lee, 2008). The analysis was carried out using Natural Language Processing (NLP) tools to reduce subjectivity, increase the sample size, and enhance confidence in the results (Davis *et al.*, 2007).

The IBM Watson Natural Language Understanding (WNLU) platform was chosen due to its capacity to analyze unstructured text efficiently (Viana Júnior *et al.*, 2019; Watson, 2022). WNLU scores tone by breaking down the text into sentences and words and analyzing their grammatical and semantic context to ensure accuracy and consistency. The platform assigns scores based on the presence and intensity of linguistic features associated with different tones, providing a detailed and effective analysis (IBM Cloud, 2024).

3.3 Female Representation Metric

Female representation was measured based on the proportion of women in top management, considering both the Board of Directors and the Executive Board. This variable was obtained by analyzing the composition of these bodies as reported in the Reference Form (items 12.5/6), dividing the number of women by the total number of members. Since elections for these positions occur annually, the same data was replicated for all quarters of each year, as reported in the Reference Form.

3.4 Crisis Metric

Economic instability was assessed using a dummy variable, with a value of 1 assigned to quarters of crisis and 0 to others (Cinegaglia, 2019). The years 2020 and 2021 were defined as crisis periods due to the severe economic downturn in Brazil driven by the Covid-19

pandemic. In 2020, Brazil experienced a historic GDP contraction of -4.1% , resulting from social distancing measures and lockdowns (IBGE, 2021).

Unemployment reached 14.7% in the first quarter of 2021 (IBGE, 2024), and the accumulated inflation in 2020 exceeded the Central Bank's target by 4.52% (IBGE, 2024). These indicators reflect a macroeconomic crisis, shaped by the containment policies implemented during the pandemic.

3.5 Statistical Technique, Estimated Models, Data Treatment, and Control Variables

Descriptive statistics were initially calculated for the companies in the sample over the 2017 - 2021 period, using measures of central tendency, including minimum, maximum, and standard deviation values.

To achieve the main objective of this study, a Multiple Linear Regression with Panel Data was employed. This method was used to: assess the relationship between impression management and the crisis resulting from the Covid-19 pandemic, and test the first hypothesis (Equation 1); examine the relationship between impression management and female representation in top management, testing the second hypothesis (Equation 2); and finally, verify whether female representation moderates the effect of the Covid-19-related macroeconomic crisis on impression management, testing the third hypothesis (Equation 3). The following econometric models were estimated accordingly.

$$IM_{i,t} = \alpha_1 + \beta_1 CRISIS_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 MTB_{i,t} + \beta_5 \Delta GDP_{i,t} + \beta_6 SECTOR_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$IM_{i,t} = \alpha_1 + \beta_1 FRI_{i,t} + \beta_2 ROA_{i,t} + \beta_3 LEV_{i,t} + \beta_4 MTB_{i,t} + \beta_5 \Delta GDP_{i,t} + \beta_6 SECTOR_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$IM_{i,t} = \alpha_1 + \beta_1 CRISIS_{i,t} + \beta_2 FRI_{i,t} + \beta_3 FRI \times CRISIS_{i,t} + \beta_4 ROA_{i,t} + \beta_5 LEV_{i,t} + \beta_6 MTB_{i,t} + \beta_7 \Delta GDP_{i,t} + \beta_8 SECTOR_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where:

- a) $IM_{i,t}$: Impression Management, measured by the tone of firm i in period t ;
- b) $CRISIS_{i,t}$: Dummy variable equal to 1 during crisis periods and 0 otherwise, for firm i in period t ;
- c) $FRI_{i,t}$: Female Representation, measured by the proportion of women in top management, calculated as the ratio of the number of women in top management to the total number of executives in firm i in period t ;
- d) $FRI \times CRISIS_{i,t}$: Interaction term between female representation in top management and the macroeconomic crisis caused by the Covid-19 pandemic for firm i in period t ;
- e) $ROA_{i,t}$: Performance, measured by Return on Assets, calculated as the ratio of Net Income to Total Assets for firm i in period t ;
- f) $LEV_{i,t}$: Leverage, measured by the ratio of Total Liabilities to Total Assets for firm i in period t ;
- g) $MTB_{i,t}$: Market-to-Book ratio, measured as the ratio of Market Value to Book Value of Equity for firm i in period t ;
- h) $\Delta GDP_{i,t}$: GDP growth, calculated as the percentage change in GDP between periods t and $t - 1$;
- i) $SECTOR_{i,t}$: Sector dummies, where value 1 is assigned to the sector to which the firm belongs, and 0 to all others;

j) $\varepsilon_{i,t}$: Error term of the regression.

In addition to the main variables investigated in this research, the models include the following control variables, selected based on the literature on impression management: Return on Assets (ROA), Leverage (LEV), Market-to-Book (MTB), GDP growth (Δ GDP), and Industry Sector (SECTOR).

4 Results and Discussion

This section describes the results obtained in the present study, deepening the understanding of the constructs addressed.

4.1 Descriptive Statistics Analysis

According to the data presented in Table 1, the level of impression management (IM) in earnings release reports is higher during the macroeconomic crisis period caused by the Covid-19 pandemic, reaching an average score of 0.5468. Notably, the year 2021 stands out as the period with the highest level of IM, with a mean of 0.5707.

This is justified by the fact that 2021 recorded the highest number of new Covid-19 cases, according to the Ministry of Health (2023). During this time, companies from various (non-essential) sectors were subject to legal restrictions that impacted their performance (Souza; Carraro; Pinheiro, 2022), and consequently, their accounting narratives.

Additionally, it is possible to infer a generally positive tone in the accounting narratives of the sampled firms, with an average score of 0.5201.

Table 1 - Descriptive Statistics for the Impression Management Variable

Period	Year	Obs	Mean	Min	Max	SD
Before Covid-19 crisis	2017	416	0,4747	-0,8100	0,8300	0,3873
	2018	416	0,5184	-0,8900	0,8900	0,3457
	2019	416	0,5138	-0,8700	0,9300	0,3660
Whole previous period		1.248	0,5023	-0,8900	0,9300	0,3669
During Covid-19 crisis	2020	416	0,5229	-0,7700	0,9700	0,3431
	2021	416	0,5707	-0,8300	0,9500	0,3271
Whole period of Covid-19 crisis		832	0,5468	-0,8300	0,9700	0,3358
Whole period previous and during Covid-19 crisis		2.080	0,5201	-0,8900	0,9700	0,3554

Source: prepared by the authors (2023).

To highlight the macroeconomic crisis resulting from the Covid-19 pandemic in Brazil between 2020 and 2021, Figure 1 presents the quarterly GDP growth rate since 2017. A sharp decline is observed in 2020, reaching -3.3% in the fourth quarter, due to the losses caused by the pandemic. In 2021, GDP grew by 4.8%, driven by the resumption of in-person services, including travel and entertainment (IBGE, 2021). However, despite the recovery, Brazil faced stagflation, characterized by modest economic growth and high inflation (Cable News Network Brasil [CNN], 2022).

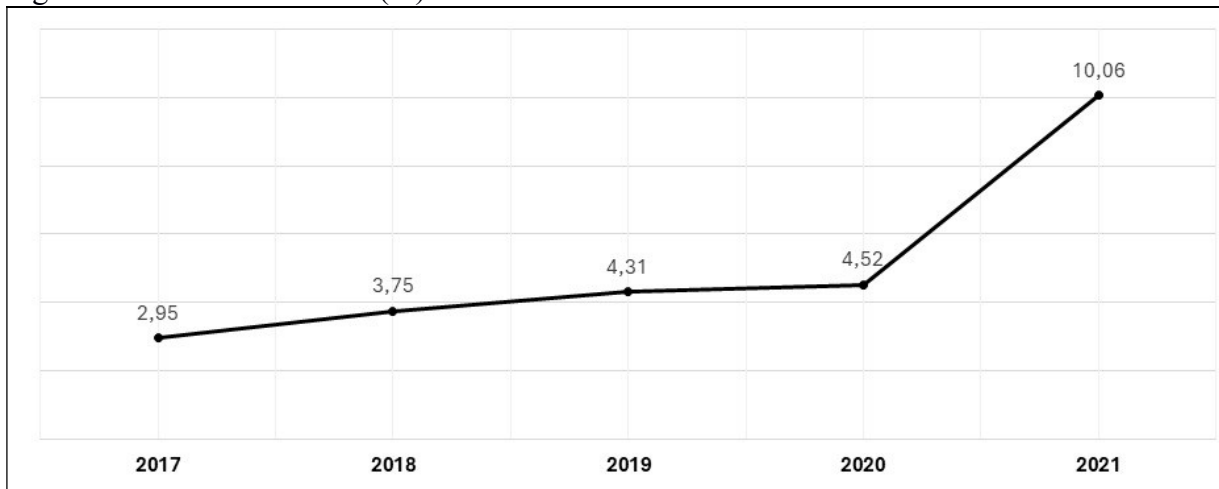
Figure 1 - Quarterly GDP Growth Rate (%)



Source: prepared by the authors (2023).

Figure 2 presents the accumulated Broad Consumer Price Index (IPCA) for the years 2017 to 2021. This figure clearly shows the increase in accumulated inflation in 2021, which reached 10.06%, compared to previous years. This sharp rise in inflation characterizes the period as one of stagflation, reflecting a significant macroeconomic crisis. Thus, the combined analysis of GDP growth and inflation reveals the challenges faced by Brazil during this period.

Figure 2 - Cumulative IPCA (%) – Broad Consumer Price Index



Source: prepared by the authors (2023).

Table 2, which presents the descriptive statistics of the proportion of women in top management, segmented into periods before and during the macroeconomic crisis resulting from the Covid-19 pandemic, shows an increase of 2.68 percentage points in the average female representation in top management, rising from 10.23% before the pandemic to 12.91% during the outbreak. This indicates a growth in female representation during the period of market instability.

Indeed, a more gender-diverse top management team can enrich discussions, as female leaders bring new perspectives and insights by demonstrating a greater propensity to share

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information and power, as well as fostering consensus in team decision-making. This leadership style is considered an advantage in situations of economic instability, as the search for appropriate responses to guide a company through challenges requires contributions from diverse viewpoints, information, and opinions (Sieweke; Bostandzic; Smolinski, 2023).

Table 2 - Descriptive Statistics of Female Representation Before and During the Covid-19 Crisis

Period	Year	Obs	Mean (%)	Min (%)	Max (%)	SD (%)
Before Covid-19 crisis	2017	416	9,75	0,00	36,36	9,33
	2018	416	10,04	0,00	45,45	9,81
	2019	416	10,89	0,00	54,55	10,49
Whole previous period		1.248	10,23	0,00	45,45	9,88
During Covid-19 crisis	2020	416	12,62	0,00	54,55	10,86
	2021	416	13,21	0,00	50,00	10,83
Whole period of Covid-19 crisis		832	12,91	0,00	52,27	10,84
Whole period previous and during Covid-19 crisis		2080	11,30	0,00	48,18	10,26

Source: prepared by the authors (2023).

To complement the descriptive statistics, a mean comparison test was conducted to investigate differences between the observations of companies before and during the Covid-19 macroeconomic crisis. As shown in Table 3, the mean of impression management (IM) is higher and statistically significant at the 1% level during the crisis, indicating that IM tends to increase in periods of economic instability. The female proportion (FR) also showed statistically different means at the 10% level, suggesting that the proportion of women in companies is higher during economic crises compared to periods of stability.

Table 3 - Mean Difference Test of Sample Observations

Variable	Panel A – Macroeconomic crisis period			Panel B – Non crisis period			p-value
	N	Firms	Mean	N	Firms	Mean	
IM	832	104	0,5468	832	104	0,5023	0,0051***
FR	832	104	0,1291	832	104	0,1022	0,0000*
ROA	832	104	0,0025	832	104	0,0074	0,2697
LEV	832	104	0,7649	832	104	0,7451	0,485
MTB	832	104	2,4313	832	104	1,9717	0,0437**
ΔGDP	832	104	0,0268	832	104	0,0141	0,0000*

Note (s): Significance levels: (***) at 1%; (**) at 5%; (*) at 10%.

Source: prepared by the authors (2023)

4.2 Econometric Analysis of the Data

Before performing panel data regressions, the assumptions were tested to identify the most appropriate model. Initially, the Pooled Ordinary Least Squares (POLS) model was estimated and the Variance Inflation Factor (VIF) test was conducted, yielding a value of

1.32, indicating the absence of multicollinearity. The Chow F-test (p-value = 0.00) and Hausman test (p-value > 0.05) indicated that the random effects model was the most appropriate. The Breusch-Pagan test (p-value = 0.00) revealed the presence of heteroscedasticity; therefore, regressions with robust standard errors were used to obtain unbiased estimators.

The results of Model 1, with the variables IM and CRISIS, showed a positive and statistically significant relationship at the 5% level between IM and the macroeconomic crisis caused by the Covid-19 pandemic, indicating that during economic instability, companies engage more in impression management practices. This evidence corroborates the results from Table 3, which show a higher mean IM during turbulent macroeconomic periods. The finding is also consistent with the study by Teixeira *et al.* (2017) in the Brazilian capital market, which indicated a higher level of IM in response to the 2015 economic crisis in Brazil. Thus, the manifestation of a higher level of IM can also be attributed to the attempt by information preparers to persuade stakeholders about companies' ability to manage the challenging period (Theiss; Beuren, 2022).

This result supports the theoretical hypothesis H1 that IM is influenced by the macroeconomic context in which the company operates, as well as corroborates some previous evidence (Im *et al.*, 2021; Teixeira *et al.*, 2017). Therefore, this study accepts hypothesis H1, evidencing that the macroeconomic crisis caused by the Covid-19 pandemic influenced the increase in the level of IM, as shown in Table 4.

Table 4 - Panel Data Regression

Variable	Model 1	Model 2	Model 3
		GI	
CRISIS	0,0404**		0,0423
FR		0,0045	-0,0079
CRISIS*FR			-0,1262
ROA	0,2434***	0,2369***	0,2433***
LEV	0,0241**	0,0253**	0,0238**
MTB	0,0015**	0,0017**	0,0016**
ΔGDP	0,3202*	0,4048**	0,3203*
SET_COMUNIC	0,0892*	0,0883*	0,0898**
SET_CONS_CICLICO	0,0696	0,0704	0,0693
SET_CONS_N_CICL	0,1810***	0,1815***	0,1809***
SET_FINANCE	0,1572***	0,1576***	0,1571***
SET_GAS_PETRO	0,1300**	0,1311**	0,1297**
SET_MAT_BAS	0,0097	0,1128	0,0093
SET_HEALTH	0,1544**	0,1567**	0,1538**
SET_IT	0,2448***	0,2438***	0,2453***
SET_UTILITIES	-0,0279	-0,0298	-0,0271
N° of observations	2080	2080	2080
N° of firms	104	104	104
Prob > Chi2	0,0000	0,0000	0,0000
R ² Overall	0,0541	0,0516	0,0556

Note (s): Significance levels: (***) at 1%; (**) at 5%; (*) at 10%.

Source: prepared by the authors (2023).

The idea is that information preparers used prominent sections of accounting reports to highlight the impacts of the Covid-19 pandemic on the global economy, the country, and the analyzed sectors as a means to justify the results obtained (Hossain; Alam; Mazumder, 2022).

On the other hand, Model 2, which seeks to verify the relationship between IM and the proportion of women in top management (FR), was not statistically significant. Although some scholars have postulated that women influence the quality of corporate disclosures (Barua *et al.*, 2010), this was not reflected in this specific case, as also reported by Cucari *et al.* (2017), who found no significant relationship between the presence of female directors and the quality of corporate disclosure in Italian companies. Therefore, based on the results in Table 4, the second hypothesis (H2 - There is a negative relationship between impression management and female representation in top management) is rejected.

Finally, the third hypothesis was tested (H3 - Female representation in top management mitigates the effects of the macroeconomic crisis caused by Covid-19 on impression management). Model 3 shows that the moderating variable is not significant, indicating that the presence of women in top management has no effect on the relationship between IM and CRISIS. Therefore, hypothesis H3 is rejected.

It is believed that female representation is still not high enough to cause effects on report quality (Shaiki; Oktavini, 2022), and thus, the presence of women in top management is not a determining factor in reducing the level of IM by companies either in normal periods or in times of crisis.

5 Conclusions

This study aimed to analyze the relationship between impression management (IM), the macroeconomic crisis, and female representation in Brazilian companies listed on B3. It was observed that during the pandemic period, the level of IM increased compared to the stability period, from 0.5023 to 0.5468. This relationship was confirmed through the estimation of panel data models, which showed a significant and positive relationship at the 5% level between IM and the CRISIS variable, confirming hypothesis H1. In summary, during the period of economic instability, the sample companies increased their level of IM, either to justify their results or to project positive future outlooks.

It is relevant to highlight that despite the challenging context faced by companies during the pandemic, there was a tendency to use a positive tone in the accounting narratives of earnings releases, increasing from 0.4307 in the first quarter of 2017 to 0.5383 in the last quarter of 2021. This trend can be attributed to crisis management policies, including IM strategies, whereby companies sought to reassure their investors by adopting a dialogue-oriented stance. Companies aimed to convince shareholders that they were capable of overcoming the challenging period.

It was possible to observe that before the Covid-19 crisis period, companies had on average 10.23% female representation in top management (board of directors and executive board). During the Covid-19 pandemic period, this rate increased to 12.91%. It is worth noting that women possess relevant personal characteristics that can enrich perspectives during periods of instability. This movement aligns with the global trend toward seeking gender parity in executive positions. However, the existence of a negative relationship between female representation in top management and IM was not confirmed, resulting in the rejection of hypothesis H2.

Regarding the general objective, the findings suggest that female representation in top management does not mitigate the relationship between CRISIS and IM, indicating that the

presence of women in executive positions does not reduce the practice of IM during periods of economic instability. Thus, hypothesis H3 of this study is rejected.

This study contributes to the expansion of the literature on IM in the national context, encouraging discussions on female representation in top management. Although the results were not statistically significant, it is crucial to persevere in the pursuit of arguments for gender equity in executive positions in large corporations. For future research, it is suggested to analyze other factors that may influence the relationship between IM and the crisis caused by the Covid-19 pandemic, covering a longer longitudinal period.

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