Fiduciary Responsibility of Governance: Operational and Financial Management

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Abstract

This article, as part of research in development, aims to propose an analytical, theoretical-positivist model to assess the fulfillment of the fiduciary responsibility of managers, under operational and financial aspects, based on the efficiency indicator of the fiduciary responsibility of governance (FRG), supported by a set of equations that measure the efficiency of operational management, through the Degree of Operational Leverage (DOL), and the efficiency of financial management using the Financial Efficiency Ratio (FER), the Current Ratio (CR) and the Liquidity Sustainability Ratio (LSR). The model is empirically tested with laboratory data, retrieved from the Standardized Financial Statements (SFS), of a sample of firms listed on B3, in the post-COVID-19 period, in the time horizon 2021 to 2023, in the environment of the research groups "Laboratory of Research and Extension of the Third Sector - LRETS" and "Sustainability of Financial Liquidity Management - SFLM", at the University of Brasília, accredited by CNPq. The results provide robust evidence of the adequate specification of the model, and the empirical tests using the data from six firms from the laboratory indicate that none of the firms complied, as a whole, with the requirement of fiduciary responsibility of operational and financial management. Finally, it is expected that research with a broader scope of firms and business segments, in a broader time horizon, can evaluate, criticize and test the model to obtain more robust and significant results.

Keywords: fiduciary responsibility, operational efficiency, financial efficiency, governance, financial solvency

1. Introduction

This article develops an analytical, theoretical-positivist model to assess the fiduciary responsibility of managers in the business governance process, based on the informational content of the Standardized Financial Statements (SFS), prepared based on internal accounting policies and technical standards recommended by institutional regulators, but the model is not applicable to financial institutions.

Governance, in the perception of the World Bank (World Bank, 1992), is defined as the way in which power is exercised in the management of a country's economic and social resources for development, and that good governance is synonymous with solid development management.

Corporate governance, in the view of the BICG (Note 1) (https://www.ibgc.org.br/conhecimento/governanca-corporativa), is a structured system composed of principles, rules and processes through which organizations are managed and monitored, from the perspective of sustainable value that satisfies the organization, investors and Society.

Fiduciary responsibility is semantically understood as the responsibility of one person for another and that, in the business context, has the duty to inform well, including rendering accounts, protect people and the assets for whom the fiduciary is responsible, as argued by Whitman (1972). Furthermore, the fiduciary's responsibility is characterized by the possession of legal powers that are attributed to them in relation to the interests of the beneficiary so that, in this way, the agent is authorized to exercise them to promote the interests of the principal,

as argued by Miller and Gold (2015).

In this context, the institutional regulators in Brazil are the Federal Accounting Council (FAC), the Securities and Exchange Commission (SEC) and the National Treasury (NT). The analytical, theoretical-positivist model is tested with data from market institutions, processed in the laboratory, recovered from the SFS of firms listed on B3, from 2021 to 2023, post-COVID-19 epidemic. The context of the assessment is limited to operational and financial management, as a starting point for business sustainability, anchored in behavioral, technical and ethical-legal commitments.

Business operators, who hold the role of managers, are fiduciary debtors with respect to the interests of investors and other related parties, to whom they owe loyalty and who, based on this loyalty, are prohibited from acting in interests other than corporate interests, as discussed by Miller (1993), so as not to incur an agent-principal conflict, and to comply with contractual compliance as discussed by Coase (1937), agent theory and firm theory, respectively.

Therefore, fiduciary responsibility combines knowledge and behavior that are the trust of business managers, who guarantee public faith in the informational, quantitative and qualitative content of the SFS data disclosed by corporate management anchored in the governance process.

Standardized Financial Statements (SFS) are prepared based on the adoption of accounting policies, in compliance with specific regulations, designed to ensure the effectiveness of controls in a governmental or private context. The governmental context must be committed to transparent disclosure of government business, while the private context must assume this commitment with the business of market organizations. This is how the design of accounting policies can signal the transparency of business disclosure with the disclosure of fair information, understood as information without bias or tendency that hinders the perfect understanding of the acts carried out by governance, thus mitigating possible incomplete information directed to users outside the corporation, compromising the fiduciary duty.

Governance is the guardian of the fiduciary responsibility of accounting information and controls, to ensure credibility of the informational content. Otherwise, the informational content of the financial and non-financial reports produced by accounting is not fair and the decision made based on reports that do not ensure this compliance compromises the sustainability of the business and the continuity of the institution.

Even if the management agents go beyond the limits of fiduciary responsibility, they should not deviate from it, because the compliance process, which requires accountability, obliges the manager to combine talent, insight and competence to add value to the business in order to satisfy the investor and meet the needs of society in the social, environmental and governance triad, which make up the Sustainable Development Goals (SDGs) of the Paris Agreement. Therefore, as an inference, it can be understood that there is no social and environmental without governance.

Anchored in the context of this problematization, the article raises the concern of investigating whether the introduced model evaluates governance, public or private, in relation to compliance with fiduciary responsibility in the operational and financial management of institutions.

To satisfy the research concern, the objective is to develop an analytical, theoretical-positivist model, capable of evaluating the fiduciary responsibility of operational and financial management, based on the definition of internal accounting policies and the requirements of regulators but, although it touches on the content of SDGs, it is not applicable to the evaluation of the ESG (Environmental, Social and Governance) process.

The arguments brought for discussion are part of research in development in the research groups "Third Sector Research and Extension Laboratory - TSREL" and "Sustainability of Financial Liquidity Management - SFLM", hosted at the University of Brasília (UnB), accredited by CNPq (Note 2) at "dgp.cnpq.br/dgp/espelhogrupo3170976735381631" and "dgp.cnpq.br/dgp/espelhogrupo/672356517923243, respectively.

The model's responses, although preliminary, as ongoing research, are already sufficient to assess the consistency of a business policy, whether public or private, because they signal the effectiveness and sustainability of governance, providing a relevant contribution to the literature and to the academic and market communities. In this context, the article's contributions differ from others referenced in the literature because they focus on specifying an analytical model to assess the fiduciary responsibility of governance in business continuity.

Finally, the article is structured, in addition to this section (1) introduction, in (2) theoretical discussion; (3) Modeling of the financial and operational efficiency of governance to assess fiduciary responsibility; (4) Description of data and evaluation of results; (5) Final considerations; and References.

2. Theoretical Discussion

This section discusses relevant parts of the literature that contribute to the problematization of the ongoing research, seeking to combine the quantitative and qualitative methodological aspects applicable to the assessment of the fiduciary responsibility of governance.

2.1 Literature Approaches on Fiduciary Responsibility of the Governance

The semantics of "fiduciary" are discussed by Whitman (1972) as being someone's responsibility for people and, in this context, fiduciary responsibility is understood as one of the basic legal principles, universally recognized and applied in court decisions, provided for in statutes and contracts, in a wide variety of situations. Thus, the concept of fiduciary responsibility should include a duty to properly inform, account for and protect people to whom the fiduciary is responsible.

Miller & Gold (2015) argue that fiduciary mandates generally involve one person managing the business or property of another, in which the fiduciary and the beneficiary are parties. They also add that the role of the fiduciary is characterized by the possession of legal powers maintained in relation to the interests of the beneficiary and in this way the agent is authorized to exercise certain powers to bind his principal in a contract, being understood as exercising his powers to promote the interests of the principal.

In a study conducted to assess the Governance Chess Game in Brazil, albeit in a journalistic text, Safatle (2021) shows the experiences of experts who state that asset managers do not monitor the day-to-day running of the business as they should, and this distancing puts the fiduciary responsibility of governance at risk. But this distancing, as experts say, may be a consequence of fear of challenging controllers and thereby contributing to the loss of investors related to the business chain.

Fredette & Bradshaw (2012) presented a study that examines the effectiveness of boards of directors of non-profit organizations using data from organizations operating in the third sector in Canada. They state that they specified the relationship between a three-factor social capital model and a multidimensional measure of governance effectiveness, and that the results of the study indicate a positive contribution of social capital that provides effective capacity to management effectiveness. However, although the results of the study may be contributive to the literature, there is no research that evaluates the contribution of fiduciary responsibility to sustainable governance.

As discussed by Strebel (2004), governance is necessary to deal with situations that occur outside the markets that can manipulate decisions to their own advantage, and since information may not be fully transparent, Boards of Directors have a fundamental fiduciary responsibility to audit the financial performance of the business to ensure that governance works in the interests of the owners of the capital and other related parties. According to the author, if management is effective and externalities are not relevant, boards of directors should assume an audit role in order to fulfill the fiduciary responsibility of monitoring the performance of the business in the interest of shareholders, but if externalities are significant, the board should go beyond its fiduciary responsibility to incorporate supervision and policy to mitigate the effects of the risks of these externalities.

Vieira and Silva (2023) analyzed the Brazilian financial market situation in light of the developments and discoveries of Operation Lava Jato, and in their perceptions they believe that it is imperative to promote studies on methods of maturing Corporate Governance, with an emphasis on publicly traded companies because they have a greater fiduciary responsibility to their investors. The conclusions of the analysis highlight the difficulties that companies face in improving internal controls, but do not provide significant contributions that can mitigate them.

In a study that assesses the relationship between executives, who are responsible for directors, and capital owners, Miller (1993) argues that the new concentration of ownership in the form of institutional investor organizations has led to greater corporate discipline because organized groups of shareholders have a significant impact on governance by requiring directors to improve performance and increase shareholder value. This requirement impacts members of boards of directors to monitor management performance more comprehensively and objectively in the interests of shareholders.

2.2 Literature Approaches on Accounting Policies for Governance

Accounting policies, as a starting point for planning the information content of businesses to be made available to society, are the principles, bases, conventions, rules and specific practices applied by an entity in the preparation and presentation of financial statements, as defined by the International Accounting Standards Board (IASB, 2003).

Accounting planning and policies are the basis for defining procedures for measuring assets, managing information and the control structure, which should contribute to the security of fair information, or information without bias.

Information with this attribute is required by users and regulatory entities, at national, continental and intercontinental levels, as discussed by De França (2005).

Evaluating the Enron accounting scandals, Grossman (2007) argues that corporate governance has become a household term because it has shed light on the failure of executives to act as the eyes and ears of the shareholders who elected them, and that the board of directors, in the corporate governance system, fails to oversee the affairs of firms because it cannot effectively perform its activities. As a result, a sense of fraud and governance misconduct can flourish, which strengthens the justification for pointing the finger at managers for having inadequately overseen the management of the business. It also strengthens the sense that the failures of accounting firms and directors to keep unreliable accounting records, and abuses under control, have become widely known and criticized.

Ishak, Omar and Ahmad (2011) discuss the issue of corporate policies in Malaysia and the United States. They argue that boards of directors are responsible for fiduciary duties, including the formulation of corporate policies, strategic plans that include authorization of large transactions and sale of additional securities, and declaration of dividends that ultimately impact the future of specific organizations. They also address the moral framework of the economists' concept because the economic system has wreaked havoc due to incessant corporate failures characterized by various misdeeds by corporate insiders. They point out that Enron's Board of Directors was unable to identify a variety of accounting methods that concealed trades that benefited certain insiders, which conflicted with the information made available to external users, which harmed the company.

In a study that explores the role of the business community in promoting sustainable consumption, which can influence the fiduciary responsibility of governance, Michaelis (2003) states that firms assume that their contribution to sustainability lies in improving eco-efficiency, while remaining within the behavioral limits of business. The author also noted that sustainable consumption requires broad changes, including the incentives that shape the actions of firms and other agents, in addition to changes in the culture that underlie market expectations.

For Richards & Laughlin (1980), who analyzed the contributions of the literature on the management of working capital, investments and long-term financing of firms, working capital management receives less attention than the others. This lack of attention to the liquidity management process can cause inefficiency due to short-term adverse events, and their conclusions are in line with the fiduciary responsibility of governance when they suggest that simply examining the conventional and static liquidity relations of the balance sheet is not enough. They suggest that to mitigate this risk it is necessary to incorporate a combination with activity indicators.

2.3 Approaches from the Literature on Operational and Financial Efficiency of Governance

In a theoretical study that investigates the level of production that maximizes the firm's profit, applying a positivist methodology, De França and Lustosa (2011) evaluated corporate operational performance using metrics from the Degree of Operating Leverage (DOL). The conclusion of the study suggests that a firm is operationally efficient and sustainable when the DOL orbits around 2. The argument of this conclusion mitigates fixed cost idleness and responds positively to the challenge of the fiduciary responsibility of governance regarding the firm's optimal performance.

Analyzing the performance of governance, Lacruz, Nossa, Lemos and Guedes (2021) proposed an index to assess the governance of third sector organizations, of a multidimensional nature, of the environmental business in Brazil. The authors state that they used cluster theory to help propose the model. However, the specification of the model is not clear enough to contemplate the characteristics of agglomerations that are the object of said theory.

In approach the sustainability of corporate liquidity, De França and Sandoval (2022) proposed a non-linear analytical model to assess the sustainability of corporate liquidity, based on the contributions of traditional liquidity. As stated by the authors, traditional liquidity does not assess the efficiency of effective liquidity or corporate financial solvency. To fill this gap in the assessment of efficiency, two indicators were proposed, namely: **(a)** one called Financial Efficiency Ratio (FER), specified by $((FER=(1+i))^{(fc/oc)}<1$ and oc > 0, which assesses the organization's payment capacity, with "*i*" being the agreed interest rate; and another **(b)** identified as the Liquidity Sustainability Ratio (LSR), specified by LSR= CR*1/FER > CR, which assesses the sustainability of liquidity and financial solvency, with CR being obtained by dividing Current Assets (CA) by Current Liabilities (CL), that is, (CR = CA/CL). In the model specification in **(a)**, "fc" is the financial cycle indicator (FC = OC - DPO) and **"oc"** is the operating cycle indicator (OC = DSI + DSO). In the model in **(b)** "CR" is the current ratio. Both models are a starting point for assessing the fiduciary responsibility of accounting and governance because the model in **(a)** suggests that financial management is committed to the effective payment capacity, signaling credibility, and the model in **(b)** signals that the financial management is responsible for ensuring that liquidity is effective with financial solvency capacity. Therefore, since the model in **(b)** is already a combination of the effective payment

capacity with the financial solvency capacity, which guarantees sustainable liquidity, there is a robust signaling of fiduciary responsibility in this governance aspect. DSI is the average inventory renewal period; DSO is the average sales renewal period; and DPO is the average purchase payment period. (note: see the complete model in De França & Sandoval, 2019).

3. Modeling the Financial and Operational Efficiency of Governance to Assess Fiduciary Responsibility

The specification of the model to assess the fiduciary responsibility of governance, supported by indicators of compliance with accounting-financial responsibility, is based on the adaptation of the model for assessing the sustainability of corporate liquidity, proposed by De França and Sandoval (2022). See also De França and Sandoval (2019). It is worth noting that the semantics of fiduciary responsibility, in a comprehensive way, also contemplates the search for business sustainability, in public or private entities, in the long term, aiming at the continuity of activities and institutional longevity.

The model, originally specified to assess liquidity sustainability, converges with the fiduciary responsibility of governance because it suggests credibility of financial management in honoring corporate commitments.

However, to assess governance responsibility, in terms of financial and operational efficiency, it is necessary to combine liquidity sustainability with operational sustainability, the combination of which indicates sustainability of business management, as shown in 3.1 to 3.3 below.

3.1 Financial Performance Model of Governance

Financial management performance is one of the requirements of the fiduciary responsibility of governance for business prosperity, assessed in three stages. The first stage is assessed by the Financial Cycle (FC) coefficient. The second stage is measured by the Financial Efficiency Ratio (FER) that incorporates the variables from the first stage. The third stage investigates the sustainability of financial liquidity and solvency through the Liquidity Sustainability Ratio (LSR) that uses responses from the second stage.

3.1.1 First Stage in Time Units Based on FC

The first stage of financial performance is specified by the FC model (Eq. 1), obtained by dividing the Operating Cycle (OC) indicator by the Average Purchase Payment Term (DPO) indicator, which allows three metrics for assessing informational content. Both OC and DPO are physical quantities of time, in a diffuse form, available in the literature.

$$\text{FC} = \text{OC} * \text{DPO}^{-1} < 0; \qquad \forall \ \text{DPO} > 0 \qquad (\text{Eq. 1})$$

Metrics FC

$$\textbf{FC} = \begin{cases} < 0. \ \text{Signals that cash inflows precede cash outflows} \\ > 0. \ \text{Signals that cash outflows precede cash inflows} \\ = 0. \ \text{Signals cash inflows and outflows occurring simultaneously} \end{cases}$$

Analysis of the partial fiduciary responsibility of the financial management of governance based on the FC.

FC < 0. The assessment of this metric suggests that fiduciary responsibility is being met, even though it is not possible to estimate whether the total financial assets are sufficient to pay all financial obligations within the time horizon in which they are required.

FC > 0. The informational content of this metric indicates that there is a time deficit in meeting financial obligations because, on average, the time required for cash outflows is less than the time estimated for cash inflows, but this is not sufficient to infer non-compliance with fiduciary responsibility governance because it is necessary to know the firm's credit granting policy.

FC = 0. This metric signals, all else being equal, equivalence of cash inflows and outflows, in units of time, however the condition of compliance with the fiduciary responsibility of governance is inconclusive because it is necessary to evaluate the firm's financial planning.

3.1.2 Second Stage in Time Units Based on the FER

The assessment of the financial performance of governance, through the Financial Efficiency Ratio (FER), specified in the model of Eq. 2, admits three metrics, whose informational content incorporates the variables of the first stage, combining interest rate and quotient of time variables.

$$0 < (\text{FER} = (1 + i)^{fc/oc}) < \ 1 \ ; \quad \forall \ i \geq 0 \ \wedge \ oc \ > 0 \qquad (\text{Eq. 2})$$

Metrics FER

$$FER = \begin{cases} 0 < FER < 1. & \text{Signals efficiency of financial management} \\ FER > 1. & \text{Signals inefficient financial management} \\ FER = (1 + i). & \text{Signals balance in financial management} \end{cases}$$

Analysis of the partial fiduciary responsibility of the financial management of governance based on the FER.

0 < FER < 1. This metric satisfies the condition of compliance with fiduciary responsibility because there is a signal of efficient financial management, with FER orbiting in the range between 0 and 1. However, this signal is restricted to the compatibility of the time of disbursement and reimbursement.

FER > 1. The quantum of this metric indicates that the combination of the opportunity cost rate with the quotient of the time variables suggests that financial management is not efficient. This lack of signal of efficiency implies that, in order to assess compliance with fiduciary responsibility, it is necessary to obtain knowledge of the assumptions of the firm's financial planning.

FER = (1 + i). This quantum of financial management balance suggests compliance with fiduciary governance because it signals, ultimately, equivalence of magnitude of the Operating Cycle (OC) and Financial Cycle (FC) quanta, producing a ratio fc/oc equal to 1. On the other hand, if the quantum "fc" is zero, we have the identity FER = 1.

3.1.3 Third Stage in Monetary Units Based on LSR

The financial management performance in the third stage, specified by Eq. 3, assessed by the Liquidity Sustainability Ratio (LSR), combines the payment capacity and payment opportunity requirements that symbolize financial solvency. Payment capacity requires $CR \geq 1$ and payment opportunity requires a sufficient amount of cash to honor financial commitments at each maturity of the obligations. This coefficient also allows for three metrics for assessing information content.

$$LSR = CR * 1/FER > CR, \ \forall \ CR \geq 1 \ (Eq.3)$$

Metrics LSR

$$LSR = \begin{cases} LSR > CR. & \text{Signals sustainable financial liquidity and solvency} \\ LSR < CR. & \text{Signals unsustainable financial liquidity and solvency} \\ LSR = CR. & \text{Signals financial liquidity and solvency in balance} \end{cases}$$

Conclusive analysis of the fiduciary responsibility of financial management of governance based on the LSR

LSR > CR. This quantum of LSR matches receipt terms and payment terms with volumes of financial assets and total short-term financial obligations. The magnitude of the quantum signals compliance with fiduciary responsibility, within the time horizon of financial management, because it combines sustainable financial liquidity and solvency.

LSR < CR. For this metric, the signaling of financial liquidity and solvency is unsustainable, which would count compliance with the fiduciary responsibility of financial management because, on average, repayment terms are longer than financial disbursement terms and this reduces the nominal payment capacity assessed by the quantum of CR.

LSR = CR. The quantum of this metric signals the steady state of financial management because, in theoretical terms and on average, the ratio of the FER exponent (fc/oc) is equal to 1 and the quanta of CR and LSR are equal. Due to the restriction of the model, the quantum of CR must satisfy the condition of being at least equal to 1.

3.2 Governance Accountability Operational Performance Model

Operational performance is another requirement to ensure compliance with the fiduciary responsibility of governance because it signals the sustainability of economic performance.

The metric of this economic performance is assessed by the Degree of Operating Leverage (DOL), which should orbit around 2, as argued by De França and Lustosa (2011), specified by the model in Equation 4 (Eq. 4). The variable τ identifies the fixed cost and π identifies the profit.

$$DOL = 1 + \tau * \pi^{-1} \cong 2 \ ; \ \forall \ \pi > 0 \qquad (Eq.4)$$

Conclusive analysis of the fiduciary responsibility of the operational management of governance based on the DOL.

Satisfaction of the DOL metric, in the vicinity of 2, guarantees compliance with fiduciary responsibility because it mitigates fixed cost idleness (τ) and signals full employment of installed capacity with an optimal level of

utilization of assets allocated to production.

3.3 Efficiency of Fiduciary Responsibility of Governance (FRG)

The combination of the performance of operational and financial management, at the level of optimization of installed capacity, is the binomial that signals the efficiency of fiduciary responsibility of governance to ensure corporate sustainability.

This guarantee of corporate sustainability is signaled by compliance with the metrics in Eq. (1) to Eq. (4), as discussed by De França & Lustosa (2011) and De França & Sandoval (2019). Thus, compliance with Eq. 5 suggests that the firm presents operational performance, sustainable liquidity and financial solvency. This trinomial suggests compliance with the fiduciary responsibility of the firm's governance, in the areas of operational management and financial management.

$$DOL < CR < LSR \quad \geq 1 \rightarrow FRG, \qquad \forall \ CR \geq 1 \qquad\qquad (Eq. 5)$$

Conclusive analysis of the fiduciary responsibility of the operational and financial management of governance based on the FRG

A LSR coefficient greater than 1, obtained by DOL and CR, converges towards the efficiency of the fiduciary responsibility of governance (FRG), in the operational management and financial management aspects, because it indicates that the firm generates financial assets and has effective payment capacity, even if there is no compatibility between the terms of cash disbursement and repayment. This convergence, adjusted by the interest rate of the economy in the FER model, indicates that the firm complies with the agent-principal contractual compliance and mitigates conflicts between the agent theory and the firm theory with the delivery of credible informational content.

4. Description of Data and Evaluation of Results

The results presented in this section were obtained from laboratory data, retrieved from the SFS of six companies listed on B3, randomly selected, from 2021 to 2023, with the objective of testing the answers power of the model. Laboratory data are used to test a model under development, with a reduced sample space and, therefore, a larger sample size is required to test the power and robustness of the model reaction in subsequent research.

The sampled firms explore the segments of beverages, agricultural tools and road and rail accessories, machinery and tools, capital goods, foundry and machining, and metallurgical products, as shown in **Table 1** following. These industries are representative of the base of the economy and for this reason were selected.

Table 1. Business industry of sample firms listed on B3 - 2021 to 2023

Firms	Business industries
AMBEV	Beverages
METISA	Agricultural tools, road and rail accessories
ROMI	Machines and tools
SCHULZ	Casting and machining
WEG	Capital goods
WHIRPOOL	Metallurgical products, machinery, equipment and tools

Source. https://www.b3.com.br/pt_br/produtos-e-servicos/negociacao/renda-variavel/empresas-listadas.htm

4.1 Presentation of the Variables and Answers Coefficients of the Model

The monetized content of the variables that satisfy the model specified by (Eq. 3) and (Eq. 4) is presented in Table 2 and the coefficients are displayed in Table 3, both bellow, by firm, in the time horizon 2021 to 2023. Table 2 contains the primary variables in R$ 10^3 used to obtain the coefficients presented in Table 3. Therefore, Table 3 reflects the model answer required to evaluate the proposed objective and answer the research question.

Table 2. Accounting aggregates of interest to the research - firms listed on B3 - 2021 to 2023

VARIABLES	FISCAL YEAR 2023 BRL 10^3					
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
INVENTORIES	607.007	7.116.286	326.408	9.619.022	159.663.116	1.194.608
RECEIVABLES	713.406	6.070.556	354.249	5.741.457	75.092.314	2.840.756
PAYABLES	80.128	2.190.088	115.928	21.386.001	9.633.285	3.661.222
NET SALES	1.227.247	32.503.601	1.925.762	79.736.856	572.837.218	11.487.988
COST OF GOODS SOLD	959.705	21.702.737	1.424.433	39.291.571	416.445.321	9.521.956
OPERATING EXPENSES	111.387	2.426.457	163.152	18.163.049	50.854.583	731.549
FIX COST (τ)	345.481	2.067.859	146.077	6.027.235	43.900.153	504.197
NET INCOME (π)	164.587	5.867.615	277.892	14.960.459	87.278.025	254.064
CA	1.400.895	21.562.311	1.554.732	36.563.950	426.754.172	6.388.922
CL	628.279	11.219.689	533.256	41.064.897	96.293.601	6.329.202
PURCHASE OF GOODS	925.915	21.174.632	1.369.816	35.986.668	410.001.396	9.542.129
VARIABLES	FISCALYEAR2022BRL10^3					
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
INVENTORIES	640.797	7.644.391	381.025	12.923.925	166.107.041	1.174.435
RECEIVABLES	710.732	5.614.423	448.222	5.349.105	124.103.880	2.987.709
PAYABLES	135.557	2.036.216	148.809	23.663.960	18.176.943	342.467
NET SALES	1.592.302	29.904.722	2.093.038	79.708.827	798.615.522	10.798.149
COST OF GOODS SOLD	1.083.470	21.209.235	1.549.676	40.422.069	556.414.564	9.108.069
OPERATING EXPENSES	126.756	2.164.802	164.872	18.732.680	78.689.452	645.462
FIX COST (τ)	304.636	1.626.478	124.542	5.859.002	41.343.020	448.737
NET INCOME (π)	216.096	4.272.872	269.981	14.981.291	93.113.595	418.695
CA	1.388.934	19.653.210	1.561.776	37.816.711	417.081.727	5.937.849
CL	597.847	10.262.877	576.967	40.540.538	132.540.046	5.702.408
PURCHASE OF GOODS	1.187.568	22.356.578	1.506.322	42.345.648	582.855.737	8.418.611
VARIABLES	EXERCICIOSOCIAL2021BRL10^3					
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
INVENTORIES	536.699	6.497.048	424.379	11.000.346	139.665.868	1.863.893
RECEIVABLES	630.307	4.317.393	415.915	4.791.634	129.546.119	3.027.589
PAYABLES	129.391	2.120.338	125.397	24.076.395	22.019.901	4.191.681
NET SALES	1.383.499	23.563.338	1.705.670	72.854.344	581.753.222	11.380.278
COST OF GOODS SOLD	966.710	16.602.381	1.326.340	35.659.744	418.915.240	9.365.276
OPERATING EXPENSES	110.895	1.833.204	118.811	16.968.255	58.730.876	691.380
FIX COST (τ)	261.586	1.391.564	93.138	5.738.720	29.486.132	547.550
NET INCOME (π)	204.148	3.657.480	192.716	13.122.582	53.186.863	1.375.186
CA	1.164.282	15.945.946	1.426.864	38.627.141	366.222.292	6.930.814
CL	576.153	7.927.884	481.462	38.868.405	142.147.386	6.539.782
PURCHASE OF GOODS	914.661	16.028.710	1.348.017	34.697.955	405.694.654	9.710.005

Source. Standardized Financial Statements (SFS) retrieved from the B3 website.https://www.b3.com.br/pt_br/produtos-e-servicos/negociacao/renda-variavel/empresas-listadas.htm

The variables used to assess the fiduciary responsibility of operational management are specified in the DOL model (Eq. 4), identified by τ (Fixed Cost) and π (Profit). To assess the fiduciary responsibility of financial management, the coefficients are those represented by the models (Eq. 1) to (Eq. 3), FC (Financial Cycle), FER (Financial Efficiency Ratio) and LSR (Liquidity Sustainability Ratio), operationalized through the OC (Operational Cycle) and DPO (Days Payable Outstanding), as shown in Table 3 bellow.

Table 3. Accounting aggregate ratios - firms listed on B3 - 2021 to 2023

| RATIOS | 2023 | | | | | |
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
DSI	237	124	91	105	143	45
DSO	212	66	76	25	63	93
OC	449	190	167	130	206	138
DPO	43	36	35	228	12	77
FC	407	153	131	-98	194	61
FC/OC	0,905	0,808	0,788	-0,756	0,940	0,445
FER	1,041	1,036	1,035	0,967	1,042	1,020
CR	2,230	1,922	2,916	0,890	4,432	1,009
LSR	2,143	1,855	2,816	0,921	4,252	0,990
DOL	3,099	1,352	1,526	1,403	1,503	2,985
RATIOS	2022					
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
DSI	198	122	95	108	100	61
DSO	154	61	75	23	58	102
OC	352	182	170	131	158	163
DPO	41	34	33	206	13	98
FC	311	148	137	-75	146	64
FC/OC	0,884	0,814	0,805	-0,568	0,920	0,395
FER	1,040	1,036	1,036	0,975	1,041	1,018
CR	2,323	1,915	2,707	0,933	3,147	1,041
LSR	2,235	1,848	2,613	0,956	3,022	1,023
DOL	2,410	1,381	1,461	1,391	1,444	2,072
RATIOS	2021					
	ROMI	WEG	SCHULZ	AMBEV	METISA	WHIRPOOL
DSI	212	149	114	118	127	66
DSO	172	72	91	25	80	97
OC	384	221	205	142	208	163
DPO	52	48	36	252	19	121
FC	332	173	169	-110	189	41
FC/OC	0,864	0,784	0,826	-0,773	0,909	0,254
FER	1,039	1,035	1,037	0,967	1,041	1,011
CR	2,021	2,011	2,964	0,994	2,576	1,060
LSR	1,945	1,943	2,858	1,028	2,475	1,048
DOL	2,281	1,380	1,483	1,437	1,554	1,398

Source. Author. DSI=Days Sales of Inventory. DSO = Days Sales Outstanding. OC=Operating Cycle (DSI+DSO). DPO = Days Payable Outstanding. FC=Financial Cycle. FER=Financial Efficiency Ratio. CR=Current Ratio. LSR=Liquidity Sustainability Ratio.

4.2 Quanta of the Coefficients of Operational and Financial Management

The *quanta* of the coefficients of fiduciary responsibility of operational and financial management are evaluated in Table 4 below. The coefficients are the answers of the DOL models specified by Eq. 4, FER given by Eq. 2, and

LSR according to Eq. 3. Using the metrics of the model proposed by De França and Lustosa (2011) and by De França and Sandoval (2019; 2022), operational efficiency is expected with DOL in the vicinity of 2, financial management with FER between zero and 1 (0<FER<1) and LSR greater than the CR, with the restriction of CR at least equal to 1. The CR is specified in subsection 2.3 of the theoretical discussion.

Table 4. Fiduciary responsibility ratios - operational and financial management -2021 to 2023

Firms	DOL/YEAR			FER/YEAR			CR/YEAR			LSR/YEAR		
	2023	2022	2021	2023	2022	2021	2023	2022	2021	2023	2022	2021
ROMI	3,099	2,410	2,281	1,041	1,040	1,039	2,230	2,323	2,021	2,143	2,235	1,945
WEG	1,352	1,381	1,380	1,036	1,036	1,035	1,922	1,915	2,011	1,855	1,848	1,943
SCHULZ	1,526	1,461	1,483	1,035	1,036	1,037	2,916	2,707	2,964	2,816	2,613	2,858
AMBEV	1,403	1,391	1,437	0,967	0,975	0,967	0,890	0,933	0,994	0,921	0,956	1,028
METISA	1,503	1,444	1,554	1,042	1,041	1,041	4,432	3,147	2,576	4,252	3,022	2,475
WHIRPOOL	2,985	2,072	1,398	1,020	1,018	1,011	1,009	1,041	1,060	0,990	1,023	1,048

Notes. DOL = Degree of Operating Leverage. FER = Financial Efficiency Ratio. CR = Current Ratio. LSR = Liquidity Sustainability Ratio.

4.2.1 Assessment of Operational Management Metrics for Economic Performance

The answers from the DOL model that assesses economic performance, Table 4, reveal that the fiduciary responsibility of operational management, assessed by (Eq. 4), was fulfilled by all firms in the sample, in the time units 2021 and 2022 and by 4 of the 6 firms in 2023, because they are in the neighborhood of 2, by the right-hand approximation criterion between 2.5 and 2. In the time unit 2023, the firms ROMI and WHIRPOOL move away from this neighborhood because they are in the neighborhood of 3.

The neighborhood of 3, where the firms ROMI and WHIRPOOL are located, may not mean non-compliance with fiduciary responsibility, if this positioning is cultural or is contemplated in the accounting policies of these firms, but this assessment is not part of the research objectives.

With this evidence, the model is robust enough to signal the status of fiduciary responsibility for operational performance using DOL metrics.

4.2.2 Assessment of Financial Management Metrics Based on Liquidity and Solvency Performance

a) FER Metrics

The *quanta* of the financial management assessment metrics specified by Eq. 2, FER, which signal partial fulfillment of fiduciary responsibility, are shown in Table 4. Partial fulfillment of fiduciary responsibility, signaled by financial management efficiency, with *quantum* in the range between 0 and 1 (0<FER<1) or (1 + i), was only met by AMBEV. The other firms did not meet this metric requirement.

b) LSR Metrics

The *quanta* of the LSR metrics, defined by Eq. 3, which signal the status of fiduciary responsibility in financial management, are shown in Table 4. According to these metrics, fiduciary responsibility is fulfilled by meeting the sustainability requirement of financial management, with LSR greater than or equal to CR, maintaining the restriction of CR at least equal to 1.

The signaling of the *quanta* of the metrics is that none of the firms in the sample meets the financial sustainability requirement because 5 of the 6 firms have LSR lower than CR and one does not meet the restriction of CR at least equal to 1, as detailed in Table 5 below.

The answers of the model, for assessing fiduciary responsibility, in the financial management item, are robust because they provide support for adequate decision-making in business continuity.

4.2.3 Metrics for Assessing Fiduciary Responsibility for Governance (FRG)

The answers of the FRG model (Eq. 5) for the laboratory data, retrieved from the SFS of the six sample firms, shown in **Table 5**, indicate that none of them, as a whole, complies with fiduciary responsibility in operational and financial management, in the time horizon 2021 to 2023.

The FRG requirement to be satisfied is (DOL<CR<LSR $\rightarrow$ FRG, $\forall$ CR $\geq$ 1), therefore the quantum of LSR must

be greater than the quanta of CR and DOL, with CR at least equal to 1, in the same time unit, in order to comply with fiduciary responsibility for governance.

Table 5. Responses of the FRG model for the sample firms - 2021 to 2023

Firm	Year	Theoretical assumptions of the model	Result Obtained	*Status* da FRG
ROMI	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	2,281; 2,01; 1,945	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	2,410; 2,323; 2,235	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	3,099; 2,230; 2,143	FRG not satisfied
WEG	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,380; 2,011; 1,943	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,381; 1,915; 1,848	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,352; 1,922; 1,855	FRG not satisfied
SCHULZ	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,483; 2,964; 2,858	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,461; 2,707; 2,613	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,526; 2,916; 2,858	FRG not satisfied
AMBEV	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,437; 0,994; 1,028	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,391; 0,933; 9,956	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,403; 0,890; 0,921	FRG not satisfied
METISA	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,554; 2,576; 2,475	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,444; 3,147; 3,022	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,503; 4,432; 4,252	FRG not satisfied
WHIRPOOL	2021	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	1,398; 1,060; 1,048	FRG not satisfied
	2022	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	2,072; 1,041; 1,023	FRG not satisfied
	2023	DOL < CR < LSR → FRG; ∀ $CR \geq 1$	2,985; 1,009; 0,990	FRG not satisfied

The model answers, presented in Tables 4 and 5, corroborate the theoretical premises of the metrics, with clear and objective indications that the specifications and choices of the explanatory variables guarantee robust empirical results to indicate whether the fiduciary responsibility of the operational and financial management of governance is fulfilled or not.

This robustness provides significant contributions to the literature, as well as allowing the assessment of the behavioral, technical and ethical-legal commitment of the agent-principal relationship to mitigate conflicts inherent in the fulfillment of contractual compliance discussed by Miller (1993) and Coase (1937), agent theories and theory of the firm, respectively.

5. Final Considerations

As part of ongoing research, this article proposed an analytical, theoretical-positivist model to assess compliance with the fiduciary responsibility of operational and financial management, based on the attributes of efficiency and sustainability, in the context of governance, based on the contributions of De França and Lustosa (2011) and De França and Sandoval (2019; 2022).

The model that assesses the efficiency of financial management is composed of a set of three equations that specify (a) Financial Cycle (FC) indicator, (b) Financial Efficiency Ratio (FER), (c) Liquidity Sustainability Ratio (LSR) to, as a whole, signal the effective payment capacity that translates into financial liquidity and solvency.

The model that assesses the performance of operational management uses the quantum of the Degree of Operating Leverage (DOL) to signal the efficiency of economic performance, which mitigates the idleness of fixed costs and optimizes the use of installed capacity.

The combination of the financial management assessment model with the operational management assessment model signals the *status* of compliance with the fiduciary responsibility of governance through the metric of the efficiency indicator of fiduciary responsibility of governance (FRG).

FRG was tested with laboratory data, retrieved from the Standardized Financial Statements (SFS), of six firms listed on B3, in the 2021 to 2023 horizon, and the model responses indicate that none of the firms satisfied the condition of fiduciary responsibility, as a whole, which combines efficiency of operational and financial management.

In conclusion, the results indicate that the model specification is adequate and robust to signal the *status* of the fiduciary responsibility of operational and financial managers, because the declared metrics were tested and the empirical answers ensure comfort for the interested parties, agent and principal, in fulfilling the fiduciary responsibility.

The model's answers, using the selected sample of six firms listed on B3, suggest that the operational and financial management coefficients, which incorporate levels of systematic risk, are robust enough to signal evidence of efficiency and sustainability *status* in the period immediately after COVID-19. This evidence supports the conclusions of compliance with the fiduciary responsibility of governance defined by the model.

Finally, although the model's responses provide robust evidence of significant contributions to the literature, it is expected that other studies will be able to evaluate and criticize the model by applying it to a sample with a longer time horizon and a greater number of firms per business segment.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal and publisher adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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References

Coase, R. H. (1937). The nature of the firm. *Economica, New Series*, *4*(16), 386-405.

De França, J. A. (2005). Planejamento e políticas contábeis: instrumento de apoio à gestão da informação. *Revista Brasileira de Contabilidade*, *151*, 85-97.

De França, J. A., & Lustosa, I. A. (2011). Eficiência e alavancagem operacional sob concorrência perfeita: uma discussão com base nas abordagens contábil e econômica. *Contabilidade, Gestão e Governança*, *14*(3), 60-76.

De França, J. A., & Sandoval, W. S. (2019). Necessary and sufficient conditions for liquidity management. *International Journal of Economics and Finance*, *11*(5), 85-96. https://doi.org/10.5539/ijef.v11n5p85

De França, J. A., & Sandoval, W. S. (2022). Faces of corporate liquidity sustainability: necessary and sufficient conditions. *Generis*.

Fredette, C., & Bradshaw, P. (2012). Social capital and nonprofit governance effectiveness. *Nonprofit Management & Leadership*, *22*(4), 391-409. https://doi.org/10.1002/nml.21037

Grossman, N. (2007). Director compliance with elusive fiduciary duties in a climate of corporate governance reform. *Fordham Journal of Corporate & Financial Law*, *12*(3), 395-466.

IASB. (2003). *IAS 8 Políticas Contábeis, Mudanças nas Estimativas Contábeis e Erros*. International Accounting Standards Board.

Ishak, S., Omar, A. R. C., & Ahmad, A. (2011). Directors' fiduciary duties to perform in the best interest of the companies: An inter-related relationship between ethics and governance. *International Business and Management*, *3*(1), 35-39. https://doi.org/10.3968/j.ibm.1923842820110301.098

Lacruz, A. J., Nossa, V., Lemos, K. R., & Guedes, T. A. (2021). Mensurando a governança de organizações não governamentais: proposta de índice de governança. *Contabilidade Vista & Revista*, *32*(3), 98-122. https://doi.org/10.22561/cvr.v32i3.6661

Michaelis, L. (2003). The role of business in sustainable consumption. *Journal of Cleaner Production*, *11*, 915-921.

Miller, H. R. (1993). The fiduciary relationship between directors and stockholders of solvent and insolvent corporations. *Seton Hall Law Review*, *24*, 1467-1515.

Miller, P. B., & Gold, A. S. (2015). Fiduciary governance. *William & Mary Law Review*, *57*, 513-586.

Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management*, *9*(1), 32-38.

Safatle, A. (2021). O xadrez da governança. *Repositório FGV de Periódicos e Revistas*, N. 113. https://periodicos.fgv.br/pagina22/article/view/88286

Strebel, P. (2004). Em defesa da governança contingencial. *Revista portuguesa e brasileira de gestão*, 8-17.

Vieira, L. P. V., & Silva, A. H. C. (2023). A percepção dos auditores externos sobre a adequação dos sistemas de controle interno nas empresas requeridas pela lei Sarbanes-Oxley. *Brazilian Journal of Business*, *5*(3), 1789-1807. https://doi.org/10.34140/bjbv5n3-023

Whitman, R. (1972). National fiduciary accounting study. *Real Property, Probate and Trust Journal*, *7*, 467-478.

World Bank. (1992). *Governance and development*. World Bank.

Notes

Note 1. Instituto Brasileiro de Governança Corporativa (IBGC) acronym Brazilian Institute of Corporate Governance (BICG)

Note 2. Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) – Acronym National Council for Scientific and Technological Development – NCSTD.

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