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IMPACTS OF CORPORATE GOVERNANCE ON PRODUCTIVITY: AN ANALYSIS BASED ON THE VALUE ADDED OF COMPANIES LISTED ON B3

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ABSTRACT

This study investigated whether the adoption of Corporate Governance practices by companies listed on B3 is associated with increased productivity, measured by Net Value Added. The sample comprised 121 companies that, between 2011 and 2021, joined, migrated between, were delisted from, or conducted an IPO within the differentiated corporate governance segments. A quantitative methodology was employed, using secondary data and the Kolmogorov-Smirnov and Wilcoxon statistical tests to comparatively analyze productivity in the two years before and after the change in segment. The results indicate no statistically significant differences for companies that joined, migrated between, or were delisted from these segments. Only companies that conducted an IPO showed a significant change, characterized by a reduction in productivity following the public offering. It is concluded that the adoption of formal governance mechanisms does not translate into greater productive efficiency, suggesting that other factors exert a more relevant influence on operating performance. The study contributes to the literature by questioning the relationship between Corporate Governance and productive efficiency and, in practical terms, indicates that its adoption does not automatically ensure performance gains.

Keywords: corporate governance, productivity, value added, B3.

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1 INTRODUCTION

Currently, companies should assess the results of their financial management using broader measures than accounting profit, creating scope for value-based management (Assaf Neto, 2012).

The market does not regard information on the wealth allocated to shareholders with the same relevance as it does companies' capacity to generate wealth, with firm value being more closely related to the wealth generated than to how that wealth is distributed among *stakeholders* (Crippa & Coelho, 2012).

Productivity is the primary means of measuring wealth generation in a society, since increases in productivity represent not only an increase in value added relative to the resources used in production processes but also the expansion and diversification of markets as a whole (King *et al*., 2014).

The pursuit of productivity is a constant in the corporate world and becomes even more important in environments characterized by resource scarcity and financing needs. Therefore, to remain attractive to investors, companies must demonstrate a strong capacity to increase productivity and, consequently, return on capital.

According to the seminal article by Shimizu *et al*. (1991), productivity analyses based on value added are used to compare companies both within the same industry and across different industries. Value-added-based productivity is a management tool that enables companies to measure the productivity and profitability of their resources.

An effective contribution to a broader measurement of organizational performance can be based on the concept of value added, which is reported in the Statement of Value Added (SVA) (Francischini & Fodra, 2020).

Companies also use Corporate Governance mechanisms as a means of improving their relationships with the market and investors. However, the studies reviewed indicate that estimating the potential impact of governance practices on operating performance is not a simple task, since numerous factors, in addition to the quality of governance practices, may lead to differences in a company's performance.

Productivity considers how efficiently companies maximize (multiple) outputs from (multiple) inputs. Productivity measures involve sophisticated models that lack theoretical grounding in managerial approaches. The use of productivity measures to examine whether sound Corporate Governance mechanisms improve corporate performance is therefore relevant (Nanka-Bruce, 2009).

As a rule, studies assessing the impact of Corporate Governance on companies are characterized by the use of accounting indicators and stock analysis. Thus, measuring performance using other analytical techniques represents a relevant contribution to this field of study (Tian & Twite, 2011; Ferreira *et al*., 2013; Pandeya *et al*., 2015; Akbar *et al*., 2016; Borges *et al*., 2016; Arenas *et al*., 2020; Crisóstomo *et al*., 2020).

The same applies to the SVA. In analyzing the relevance of this statement, Barros *et al*. (2013), Machado *et al*. (2015), and Santos *et al*. (2019) examined the relevance and effects of its information on the capital market, focusing specifically on stock prices, which are considered the primary metric in terms of relevance to investors.

Thus, a gap can be observed in the literature regarding the importance of this statement to the capital market, together with divergent empirical findings, and the existing literature still leaves unresolved questions regarding the relevance of the SVA (Santos *et al*., 2019; Checon & Santana, 2023).

According to Nanka-Bruce (2009), studies linking governance to corporate efficiency are very limited and have been conducted separately from studies employing other performance measures. Akbar *et al*. (2016), in turn, explain that most existing studies overlook the dynamic

nature of the relationship between corporate governance and performance.

Machado *et al*. (2015) suggest that the wealth generated by companies better explains asset returns, since users expect companies to create wealth that ensures their continued operation with strong performance, rather than merely providing a return on equity.

In this sense, value added, as reported in the SVA, makes it possible to assess corporate productivity based on the value added to goods and services acquired from third parties.

Thus, the research question is: **Has the adoption of Corporate Governance mechanisms led to increased productivity?**

To address the research question, this article aims to analyze whether the adoption of Corporate Governance practices, through migration between the governance segments of Brasil, Bolsa, Balcão (B3), led to increased productivity, based on net value added, from 2011 to 2021.

There is a lack of research examining, for the same companies, whether productivity improved after they became listed in one of the Corporate Governance segments. Therefore, the point at which companies enter differentiated governance segments provides an opportunity for such a comparison.

In this regard, this study innovates by measuring firm performance through productivity, as indicated by net value added, and analyzing whether changes in companies' Corporate Governance segments are reflected in their indicators through within-firm comparisons of the periods before and after such migration.

Thus, this study contributes to the literature by proposing an alternative approach to performance measurement that has been relatively underexplored in the literature and by providing empirical evidence on the effects of adopting Corporate Governance mechanisms through comparisons of companies' indicators over time.

2 THEORETICAL FRAMEWORK

2.1 Corporate Governance

Against the backdrop of Agency Theory, studies on Corporate Governance, such as those discussed below, argue that reducing agency conflicts can result in various improvements within companies, including improvements in performance, which can be measured from different perspectives, one of which is productivity.

In their seminal study, Shleifer and Vishny (1997) emphasize that companies with better governance practices tend to exhibit higher operating performance, since adequate oversight reduces opportunistic behavior and improves strategic decision-making. Thus, Agency Theory not only explains the challenges inherent in the principal-agent relationship but also highlights the importance of Corporate Governance as a catalyst for organizational productivity.

Shleifer and Vishny (1997) use operating performance as a measure of firm performance based on the argument that, because effective governance mechanisms reduce the control rights exercised by managers over companies relative to shareholders, managers are compelled to invest in positive present value projects, which are reflected in operating performance.

Pedroso (2017) shares the view that organizational performance can be defined as a set of results achieved by an organization as it carries out its activities and that good performance is measured through a set of interrelated dimensions, such as effectiveness, efficiency, quality, productivity, quality of life, innovation, and profitability.

The relationship between corporate governance and productivity can be understood through the mechanisms by which governance structures influence organizational decision-making. By establishing rules for monitoring routines, ensuring information transparency, and holding managers accountable, governance mechanisms tend to reduce agency conflicts and encourage decisions aligned with the interests of shareholders and other *stakeholders*. In this context, better governance practices are expected to promote more efficient resource allocation,

encourage discipline in cost management, and foster the adoption of value-creation-oriented strategies. These factors may positively affect operating efficiency and, consequently, corporate productivity.

Efficiency refers to companies' ability to produce the maximum output from a given set of inputs under a given production technology. Technical measures of efficiency are rare in governance studies (Nanka-Bruce, 2009). Martani and Saputra (2009) examined the influence of governance systems on organizational performance and found that they significantly affect Economic Value Added (EVA).

Although the literature frequently associates better corporate governance practices with improvements in organizational performance, some studies emphasize that implementing these mechanisms also entails additional costs for companies. The adoption of more robust governance structures may require investments in internal control systems, independent audits, greater information transparency, and stronger *compliance* practices. These institutional and regulatory costs, often described in the literature as a *compliance burden*, may increase companies' administrative and operating expenses, particularly in the short term, temporarily reducing efficiency and productivity indicators (Aguilera & Jackson, 2010).

Santos *et al*. (2019) and Aleixo and Santos (2019) compared productivity, measured by net value added, among companies listed at different governance levels of the stock exchange, comparing companies at one level with those at another. These studies concluded that the information contained in the SVA may influence investors' decisions due to greater information transparency and that better governance practices result in greater wealth allocated to *stakeholders*.

Based on an analysis of 115 international and Brazilian articles, Politelo (2013) identified the performance variables, both accounting- and market-based, most frequently used in studies addressing Corporate Governance and performance. The study identified 56 different performance variables, although only 7 proved to be particularly relevant due to their higher frequency of use in the literature. Table 1 presents these variables.

Table 1
Performance variables and their frequency of use in research

Variables	Frequency	Classification
Return on Assets (ROA)	64.35%	Accounting
Return on Equity (ROE)	39.13%	Accounting
Tobin's Q	37.39%	Market
Market-to-book	12.17%	Market
Return on Sales (ROS)	11.30%	Accounting
Dividend Yield	10.43%	Market
Debt Ratio	6.09%	Accounting

Source: Politelo (2013).

Research involving Corporate Governance generally uses as analytical criteria the existence of specific structures or rules (such as the existence of boards, ownership concentration, voting rights clauses, disclosure of financial statements, etc.) and their effects on market-based indicators (share prices) or accounting indicators (ROE, ROA, etc.).

The use of value added as a productivity indicator makes it possible to assess how the

wealth generated by entities relates to their governance structures, providing a perspective that complements traditional approaches based on accounting or market indicators. Thus, this study seeks to contribute to the literature by analyzing whether changes in companies' corporate governance levels are associated with changes in their productivity levels.

Therefore, based on the literature discussed, the hypothesis is that companies with better Corporate Governance practices tend to exhibit better productivity performance.

Brasil, Bolsa, Balcão (B3) created the Differentiated Corporate Governance Levels (NDGC) in the 2000s, which are special listing and classification segments for companies that voluntarily adopt better governance practices. The objective was to foster a trading environment that would attract investors and encourage the appreciation of companies traded in these segments (Ribeiro & Souza, 2023).

Table 2 summarizes some of the requirements of the differentiated levels: Level 1, Level 2, and New Market.

Table 2
Characteristics of B3 Corporate Governance Levels

DESCRIPTION	TRADITIONAL	LEVEL 1	LEVEL 2	NEW MARKET
Minimum Percentage of Shares in Free Float	No rule	Minimum 25% free float	Minimum 25% free float	Minimum 25% free float
Characteristics of Shares Issued	Allows the issuance of common (ON) and preferred (PN) shares	Allows the issuance of common (ON) and preferred (PN) shares	Allows the issuance of common (ON) and preferred (PN) shares	Allows only common (ON) shares
Board of Directors	Minimum of three members (as required by law)	Minimum of three members (as required by law)	Minimum of three members (as required by law)	Minimum of five members, at least 20% of whom must be independent
Annual Financial Statements under International Standards	US GAAP or IFRS	US GAAP or IFRS	US GAAP or IFRS	Optional
Granting Tag-Along Rights	100% for common (ON) shares	100% for common (ON) shares, 80% for preferred (PN) shares	100% for common (ON) shares, 80% for preferred (PN) shares	80% for common (ON) shares (as required by law)

Source: Barros *et al*. (2013).

In the present study, B3 governance levels were used as a proxy for these various mechanisms. This choice reflects the preference for measuring structures common to the companies in a standardized manner using objective criteria.

2.2 Productivity

Productivity is a measure used to assess how effectively resources are employed to create the desired output (Shimizu *et al*., 1991).

In a historical analysis, Niquelatti (2014) explains that, although productivity has been a constant concern of humankind, historically at least since household production, and has been

studied by various authors such as François Quesnay, Adam Smith, Frederick Taylor, and Henry Ford, it was from the 1950s onward, through the work of Robert Solow, that the transformative role of productivity in the economy was demonstrated, earning him a Nobel Prize.

Measuring productivity based on value added provides information to support investment decisions and the integration of *stakeholders*, investors, employees, managers, among others (Niquelatti, 2014).

Value added is obtained from the difference between companies' sales and the total acquisitions or purchases made to generate such revenues, representing the sum of all remuneration for the efforts expended in the company's activities (Cosenza, 2003).

Niquelatti (2014) explains that value added is the wealth created by an organization through the collective efforts of those who work in the organization (employees) and those who provide capital (creditors and investors). It consists of the increase in value resulting from the use of resources before its distribution to those participating in the production process, namely shareholders, employees, third parties, and the government.

According to Shimizu *et al*. (1991), value-added analysis shows how productivity can be increased through its factors, labor and capital, resulting in greater profitability. According to the authors, the importance of value-added lies in providing a basis for productivity measures and, theoretically, the greater the profit, the greater the value added.

Once productivity became associated with profitability, it ceased to be merely an internal factor and became a means of comparing performance among competitors (Niquelatti, 2014).

One distinguishing feature of this measurement is that it also captures companies' intangible assets. Phusavat (2013) explains that intangible assets, such as human capital and intellectual property, have replaced tangible assets in assessing a company's market value and brand.

In this sense, value added, as a measure of productivity, is relevant to various *stakeholders*, serving as a measure for evaluating management performance and supporting investment decisions.

2.3 Statement of Value Added

With the aim of providing users, particularly investors, with better information for decision-making, the Statement of Value Added (SVA) emerged to meet financial statement users' demand for information on the amount of wealth generated by a company and its distribution among those who contributed to the creation of that value and benefit from it (Santos *et al*., 2019).

The SVA is the financial statement that reports the value generated by a company through its own activities and the remuneration of the economic agents that contributed to the formation of this value. By eliminating all elements originating externally (purchases and acquisitions made), it enables the company's internal value generation to be accurately assessed (Cosenza, 2003).

The SVA, which was initially disclosed voluntarily by companies, became mandatory under Law No. 11,638/2007, which amended Law No. 6,404/1976, governing corporations in Brazil. The changes introduced by Law No. 11,638/2007 and the activities of market-related entities through the Accounting Pronouncements Committee (CPC) resulted in the full adoption of international accounting standards (*International Financial Reporting Standards* – IFRS) in 2010 (Checon & Santana, 2023).

In the SVA, value added is presented as the "Total Value Added to Be Distributed" (CPC, 2008, p. 16), which, according to De Luca *et al*. (2009), consists of the value added by productive activity, that is, it represents the increase in value attributed to a good during the production process.

According to CPC 09 (CPC, 2008), value added is defined as Total Value Added to Be Distributed (VAD) and is expressed by the following equation: VAD = Revenues (−) Inputs Acquired from Third Parties (−) Depreciation, Amortization, and Depletion + Value Added Received in Transfer.

Therefore, for the purposes of this study, productivity measured by the net value added reported in the SVA is considered a determinant of corporate performance, on the basis of which the effect of adopting Corporate Governance mechanisms will be analyzed.

2.4 Related studies on the topic

Recent studies involving Corporate Governance, value added, and productivity measures do not confirm the positive relationship established in the literature.

Machado *et al*. (2015), studying the relationship between wealth generated per share (VAD/number of shares issued) and stock returns in publicly traded companies listed in Brazil, found a significant association regarding the *value relevance* of VAD. According to their findings, VAD is an even better proxy for stock returns than net income. The authors suggest analyzing the usefulness of the SVA for investors, particularly with regard to the adoption of governance practices.

Pandeya *et al*. (2015), in turn, studied a sample of 269 non-financial family firms listed on the Bombay Stock Exchange and reported a non-significant relationship between governance and firm performance.

Francischini and Fodra (2020) analyzed the financial statements of 81 companies in the agribusiness and oil and gas sectors listed on B3 from 2009 to 2016 and found a negative and statistically significant correlation between value-added generation and risk management practices, while the results for other Corporate Governance variables were not statistically significant.

Contrary to most studies, Akbar *et al*. (2016) analyzed a sample of 435 publicly traded non-financial companies in the United Kingdom from 1999 to 2009, and their results suggest that compliance with corporate governance regulations is not a determinant of corporate performance.

Focusing on the distribution of value added, Aleixo and Santos (2019) analyzed 85 publicly traded Brazilian companies from 2013 to 2015 and identified an influence of Corporate Governance listing segments on the distribution of wealth, particularly on the remuneration of third-party capital.

Other studies have also failed to confirm the relationship between Corporate Governance and productivity. Arenas *et al*. (2020) analyzed the degree of correspondence between the adoption of Corporate Governance practices and value creation among the leading companies listed on the Chilean stock exchange from 2015 to 2017. Their results indicate that adherence to Corporate Governance practices was low, particularly in the case of economic value added, for which the relationship was very weak and negative.

In a study by Ribeiro *et al*. (2020), which analyzed the relationship between variables associated with Corporate Governance practices and value-added creation in 56 Brazilian industrial companies listed on B3 from 2010 to 2016, no statistical evidence was found that governance significantly affects the value added generated by companies.

The analysis of the literature reveals heterogeneous empirical findings regarding the effects of corporate governance on firm performance. While some studies identify a positive association between better governance practices and financial or market indicators, others report no statistically significant association or even negative relationships. Some of these divergences may be associated with methodological differences among studies, the performance variables employed, and the characteristics of the markets analyzed. Furthermore, many studies focus on

traditional accounting indicators or market metrics, with less attention devoted to measures related to productive efficiency, such as those based on value added.

3 METHODOLOGICAL PROCEDURES

The research adopts a quantitative, exploratory approach through documentary analysis, using data obtained from secondary sources. The analysis was performed using multivariate statistics (mean comparison test).

This is a paired samples mean test, in which the distinctive characteristic of paired samples is that each observation in the first group has a corresponding observation in the second group (Assis *et al*., 2020). The authors further explain that pairing is frequently employed in an attempt to control extraneous sources of variation that might otherwise influence the results of the comparison, thereby providing a more precise comparison.

The study sample comprises companies listed on Brasil, Bolsa, Balcão (B3) that joined the higher Corporate Governance levels (Novo Mercado, Level 1, and Level 2) between 2011 and 2021. For these companies, the two years preceding admission and the two years following admission were considered in order to identify whether there were significant differences in productivity.

The period selected for the study is due to Brazil's adoption of international accounting standards through Law No. 11,638/2007. The objective is to use the same basis for preparing financial statements in order to avoid distortions in the results arising from different accounting criteria.

The list of companies that transitioned through any of the special listing segments related to Corporate Governance was obtained from the B3 website (B3, 2025), through the option "Access the history of listings and delistings in the special segments here." The steps described above returned a Microsoft Excel spreadsheet with data updated through September 28, 2021, covering almost the entire period analyzed in this study and thus enabling the study sample to be defined.

Financial institutions were excluded from this list due to their specific accounting requirements, as were companies for which data were unavailable for the periods required for analysis due to their creation, dissolution, or incorporation.

The final sample therefore comprised 121 companies, of which 24 were already listed on the stock exchange in the Traditional Market and subsequently joined the differentiated Corporate Governance levels, 11 migrated from one differentiated level to a higher level, 6 returned from the differentiated segments to the Traditional Market, and 80 conducted an initial public offering (IPO) and were already listed in differentiated segments.

Productivity was measured based on Net Value Added, obtained from the companies' SVAs. Value added before and after the companies migrated to the governance segments was compared in order to infer whether such compliance was reflected in productivity figures. Data from the year preceding the migration were compared with those from the year following it, and the average of the two preceding years was compared with the average of the two subsequent years.

Following Niquelatti (2014), the ratio between value added and sales (formula: VA / Sales Revenue) was used. The higher the ratio, the greater the profitability generated by the factors, indicating sound management of purchases and services and/or a balance between product selling prices and purchases; conversely, the lower the ratio, the lower the efficiency.

Considering the SVA model established in CPC 09, the calculation was based on item 5, which represents the Net Value Added produced by the entity, adjusted by item 1.1, relating to revenues derived from the companies' principal activities.

Using the results obtained from the calculation above, the data were subjected to the

Kolmogorov-Smirnov normality test to determine whether the distribution of the variables followed a normal distribution. This result is necessary to determine the most appropriate statistical test to be applied to the samples.

Subsequently, a paired-samples statistical test was performed, using either the parametric *t*-test for normally distributed data or the Wilcoxon test as an alternative for nonparametric data.

Based on the premise that the data must be measured on at least an ordinal scale, the Wilcoxon test can be used to compare two paired groups (X and Y), for which measurements of the same sampling unit may be obtained at two different time points or under two different conditions (Sousa, 2018).

The Wilcoxon hypothesis test seeks to determine whether there are significant differences between the variables being compared, such that the result is expressed as a significance statistic which, at the 5% level, indicates whether the null hypothesis should be rejected, namely, that there are no significant differences between the variables (Fávero *et al*., 2009).

The results were initially presented through an overall analysis of the sample and subsequently according to the type of transaction undertaken by the companies, with the aim of reaching both an overall conclusion and conclusions according to the type of movement across governance levels. The statistical analysis was performed using IBM SPSS software, version 21.

4 RESULTS

Initially, the normality of the data was assessed using the Kolmogorov-Smirnov test due to the sample size, and the significance level (Sig.) was found to be close to zero for all sample means, as shown in Table 3. A significance value below 0.05 indicates that the data are not normally distributed, that is, they follow a nonparametric distribution.

Table 3
Normality test for productivity

Description of the variables	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Productivity – Previous year	.331	121	,000
Productivity – Subsequent year	.132	121	,000
Productivity – Two previous years	.299	121	,000
Productivity – Two subsequent years	.175	121	,000

a. Lilliefors Significance Correction

For sample data with a nonparametric distribution, the appropriate test for comparing paired groups is the Wilcoxon test. The principle of this test is to assess whether changes occurred in the data between the two assessment points.

When the changes or differences are very small, they may be due to chance; however, when they are substantial, they are unlikely to be due to chance and may instead result from a causal factor (Moreno & Morcillo, 2020).

The hypotheses of the Wilcoxon test are the Null Hypothesis (H_0), according to which there is no difference between the two time points, that is, the distributions before and after are statistically equal, and the Alternative Hypothesis (H_1), according to which there is a statistically significant difference between the values before and after.

This test was performed for all companies in the sample, and the results are presented in Table 4.

The decision regarding which hypothesis to consider depends on the significance of the test, as indicated by the p-value. If $p < 0.05$, H_0 is rejected, that is, there is a significant difference between the groups. If $p > 0.05$, H_0 is not rejected, that is, there is insufficient evidence to conclude that the groups are different.

Table 4
**Wilcoxon test for productivity*[a]

	Productivity: Subsequent year - Previous year	Productivity: Two subsequent years - Two previous years
Z	-2.120[b]	-1.708[b]
Asymptotic Significance (2-tailed))	.034	.088

a. Wilcoxon Signed-Rank Test.
b.Based on positive ranks.

The difference between the subsequent year and the previous year is statistically significant (Z = -2.120, p = 0.034). For the average of the two previous years and the two subsequent years, since p > 0.05, there is no statistically significant difference (Z = -1.708, p = 0.088). The negative Z statistic suggests that value added, in absolute terms, decreased in the subsequent periods, with a greater decrease in the first year that was attenuated over the two-year period.

Therefore, in the first case, considering only the difference between the year preceding and the year following the change in segment, H_0 is rejected, indicating statistically significant differences. In the analysis of the two-year periods before and after the change, however, the difference is not statistically significant.

The Wilcoxon test ranks for all companies in the sample are presented in Table 5.

Table 5
Wilcoxon test ranks for productivity

Description of the variables		N	Mean Rank	Sum of Ranks
Productivity: Subsequent year - Previous year	Negative Ranks	69[a]	65.36	4510.00
	Positive Ranks	52[b]	55.21	2871.00
	Ties	0[c]		
	Total	121		
Productivity: Two subsequent years - Two previous years	Negative Ranks	70[a]	62.16	4351.00
	Positive Ranks	51[b]	59.41	3030.00
	Ties	0[c]		
	Total	121		

a. Subsequent period < Previous period
b. Subsequent period > Previous period
c. Subsequent period = Previous period

When comparing the year preceding and the year following the change, it was found that, of the 121 companies, 69 exhibited lower Productivity ratios after entering the differentiated Corporate Governance levels, while 52 companies exhibited higher ratios. The same pattern was observed for the data covering the two years before and after the change (70 companies exhibited lower values and 51 exhibited higher values).

The figures above contrast with the Sales Revenue data. As shown in Table 6, revenue values increased in nominal terms after the companies entered the governance levels, except in cases of delisting, in which a decrease was observed.

Table 6
Sales revenue of the companies

Sales revenue	Previous year	Subsequent year	Variation	Two previous years	Two subsequent years	Variation
Admission	526,203,297	606,649,381	15.29%	558,578,843	596,443,181	6.78%
Delisting	43,582,112	34,219,983	-21.48%	52,559,547	35,644,547	-32.18%
IPO	307,005,972	423,565,369	37.97%	297,027,649	454,103,424	52.88%
Migration	258,775,001	313,445,944	21.13%	243,463,686	315,452,655	29.57%
TOTAL	1,135,566,382	1,377,880,677	21.34%	1,151,629,725	1,401,643,807	21.71%

Based on the Wilcoxon test ranks for Sales Revenue, as shown in Table 7, the comparison between the subsequent year and the previous year indicates a decrease for 14 companies and an increase for 107 companies. In the comparison between the two years before and the two years after the change, 12 companies exhibited a decrease and 109 exhibited an increase. Since the number of positive ranks is substantially higher, it can be observed that most companies experienced an increase in sales revenue after entering the differentiated Corporate Governance levels.

Table 7
Wilcoxon test ranks for sales revenue

Description of the variables		N	Mean Rank	Sum of Ranks
Sales revenue: Subsequent year - Previous year	Negative Ranks	14[a]	53.64	751.00
	Positive Ranks	107[b]	61.96	6630.00
	Ties	0[c]		
	Total	121		
Sales revenue: Two subsequent years - Two previous years	Negative Ranks	12[a]	60.00	720.00
	Positive Ranks	109[b]	61.11	6661.00
	Ties	0[c]		
	Total	121		

a. Subsequent period < Previous period
b. Subsequent period > Previous period
c. Subsequent period = Previous period

This means that, for the sample as a whole, although Sales Revenue increased in nominal terms, the decline in Productivity indicates a possible loss of efficiency or an increase in costs. Therefore, overall, it cannot be concluded that better Corporate Governance is associated with increased Productivity.

Subsequently, the companies were divided according to the type of transaction they underwent admission to differentiated governance levels (ADMISSION); migration from one level to another with a higher degree of governance (MIGRATION); removal of the company from the differentiated segments (DELISTING); and initial public offering, when the company's shares were offered to the market while already being listed in a differentiated governance level (IPO).

The results are presented in Table 8.

Table 8

Wilcoxon test for productivity by transaction[a]

Transaction		Productivity: Subsequent year - Previous year	Productivity: Two subsequent years - Two previous years
Admission	Z	-.800[c]	-.343[c]
	Asymptotic Significance (2-tailed)	.424	.732
Migration	Z	-1.423[b]	-.356[b]
	Asymptotic Significance (2-tailed)	.155	.722
IPO	Z	-2.676[c]	-2.609[c]
	Asymptotic Significance (2-tailed)	.007	.009
Delisting	Z	-.314[c]	-.1.153[c]
	Asymptotic Significance (2-tailed)	.753	.249

a. Wilcoxon Signed-Rank Test.
b. Based on negative ranks.
c. Based on positive ranks.

The significance levels for the Admission, Delisting, and Migration transactions were greater than 0.05; therefore, the null hypothesis (H_0) of the Wilcoxon test, which states that there are no statistically significant differences between the periods before and after the change in the Corporate Governance segment, was not rejected. This means that, for these companies, there was no statistically significant change in Productivity following changes in their Corporate Governance profile.

The difference is considered statistically significant only for companies that conducted an IPO ($p < 0.05$). Therefore, for these companies, going public while already being listed in differentiated governance levels had an impact on Productivity.

An important observation is that, except for companies that migrated between segments, the other transactions indicated an increase in Productivity (Z test based on positive ranks) for most companies in the sample, in absolute terms.

The Wilcoxon test ranks, separately by transaction, are presented in Table 9.

Table 9

Wilcoxon test ranks by transaction

		Admission			Migration			IPO			Delisting		
Description of the variables		N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks
Productivity: Subsequent year - Previous year	Negative Ranks	12[a]	14.83	178.00	4[a]	4.25	17.00	50[a]	43.56	2178.0	3[a]	4.00	12.00
	Positive Ranks	12[b]	10.17	122.00	7[b]	7.00	49.00	30[b]	35.40	1062.0	3[b]	3.00	9.00
	Ties	0[c]			0[c]			0[c]			0[c]		
	Total	24			11			80			6		
Productivity: Two subsequent years - Two previous years	Negative Ranks	11[a]	12.55	138.00	6[a]	7.83	29.00	51[a]	42.43	2164.0	4[a]	4.00	16.00
	Positive Ranks	13[b]	12.46	162.00	5[b]	7.40	37.00	29[b]	37.10	1076.0	2[b]	2.50	5.00
	Ties	0[c]			0[c]			0[c]			0[c]		
	Total	24			11			80			6		

a. Subsequent period < Previous period
b. Subsequent period > Previous period
c. Subsequent period = Previous period.

Since IPO was the only transaction associated with a statistically significant difference, the impact of the IPO on Productivity was negative. The analysis shows that, on a year-to-year basis, 50 companies experienced a decline and 30 experienced an increase. Considering the two years before and after the change, the rankings were similar, with 51 companies experiencing a decline and 29 experiencing an increase. The continuous decline in Productivity observed in many companies suggests inefficiencies or increased operating costs following the IPO.

It was also observed that the magnitude of the negative ranks (mean ranks of 43.56 and 42.43) was considerably greater than that of the positive ranks (mean ranks of 35.40 and 37.10). This means that, in addition to there being more reductions, they were also more pronounced than the increases.

In the case of companies that were already listed and subsequently joined the differentiated Corporate Governance levels, the effect on Productivity was neutral. In both time comparisons, Productivity was almost evenly divided, with 12 and 11 companies experiencing a decline and 12 and 13 companies experiencing an increase. Although these results were not statistically significant, they suggest that the impact of admission on Productivity was neutral and did not necessarily translate into greater operating efficiency.

Migration between the differentiated levels, which also produced statistically non-significant effects, initially had a positive influence on Productivity, since, in the year-to-year comparison, 4 companies experienced a decline and 7 experienced an increase. However, in the comparison of the two years before and after the change, the situation was reversed, with 6 companies experiencing a decline and 5 experiencing an increase. Thus, migration produced an initial increase in Productivity that was not sustained over the longer term.

Finally, delisting had a weak and non-significant impact, with an equal number of companies experiencing an increase and a decrease in Productivity in the year-to-year comparison, while 4 companies experienced a decline and 2 experienced an increase in the two-year comparison. Thus, delisting did not result in significant changes in Productivity.

The results obtained suggest that the adoption of formal Corporate Governance mechanisms is not necessarily associated with immediate improvements in companies' productive efficiency. Although the literature frequently emphasizes that more robust governance structures contribute to reducing agency conflicts and improving decision-making processes (Shleifer & Vishny, 1997), the findings of this study indicate that such mechanisms may not directly translate into operational gains measurable through productivity based on value added.

The only transaction that showed a statistically significant difference in means was the IPO. For these companies, there was a reduction in average Productivity after the shares were offered to the market.

This finding contradicts the assumptions of the present study and is consistent with evidence in the literature indicating that companies often experience significant changes in their operating indicators following an IPO.

This may indicate that, as companies prepare to enter the stock market, a certain degree of earnings management may have occurred to make them more attractive in the public offering, followed by greater accuracy in the financial statements disclosed, as indicators were adjusted to more realistic levels, resulting in a reduction in performance-related metrics, as concluded by Melo and Lamounier (2020).

Furthermore, compliance with legal requirements and Corporate Governance rules may impose costs on companies' economic and financial performance, as concluded by Francischini and Fodra (2020). Thus, the results may reflect a *trade-off* between greater organizational control and transparency, and the costs associated with implementing and maintaining these institutional mechanisms.

Despite this burden, companies still choose to adopt such segmentation because it signals to the market better management of companies that join differentiated governance levels, as identified by Barros *et al*. (2013).

5 CONCLUSION

In response to the objective of this article, the statistical tests indicate that the adoption of Corporate Governance practices by companies listed on B3 did not result in increased productivity, based on net value added.

The expected positive correlation between Corporate Governance levels and Productivity, as advocated by Shleifer and Vishny (1997), Martani and Saputra (2009), Santos *et al*. (2019), and Aleixo and Santos (2019), was not confirmed.

Companies that joined one of the differentiated levels, migrated from one level to another with more robust governance, or delisted from the Corporate Governance levels did not exhibit significant changes in Productivity. The few changes identified were neither substantial nor statistically significant.

Crippa and Coelho (2012) also concluded that there were no significant differences between governance practices and the value added generated by companies. Souza and Faria (2018), Francischini and Fodra (2020), and Ribeiro *et al*. (2020) likewise found no statistically significant relationship between value-added generation and Corporate Governance practices. In Chile, Arenas *et al*. (2020) identified a weak and negative relationship between Corporate Governance practices and value-creation metrics, including economic value added.

It should be emphasized that these authors compared different companies across different governance segments. In the present study, the comparison was conducted within the same companies, considering periods before and after their admission to the differentiated levels.

The exception was represented by companies that conducted an IPO while already being listed in differentiated Corporate Governance levels. For these companies, there was a statistically significant deterioration in the results.

Based on this study, it cannot be stated that these companies' level of Corporate Governance before the public offering was the same as that prevailing after the offering; therefore, the findings cannot be attributed solely to Corporate Governance. However, the evidence shows that the presence of governance mechanisms was insufficient to prevent the decline in Productivity that occurred after the public offerings. This finding is consistent with the conclusions of Akbar *et al*. (2016), Francischini and Fodra (2020), and Ribeiro *et al*. (2020).

Therefore, companies' decision to adopt good Corporate Governance practices and signal them to the market through specific segmentation did not result in improved operational productivity. On the contrary, the decline identified in this study may indicate that governance mechanisms impose costs that negatively affect economic and financial performance.

This suggests that the benefits of governance may manifest themselves in other dimensions of organizational performance, such as transparency, access to capital, or reduced financing costs, without necessarily having a direct impact on productive efficiency in the short term.

This study contributes to the advancement of the literature by questioning the generally accepted hypothesis that higher levels of Corporate Governance lead to greater productive efficiency. By presenting empirical evidence contrary to the positive relationship proposed by classical authors, the study broadens the understanding of the limits and conditions under which Corporate Governance affects organizational performance.

From a practical perspective, the results provide insights for managers, investors, and researchers by indicating that the adoption of formal Corporate Governance mechanisms, by itself, does not guarantee productivity gains. Companies should assess the balance between the

benefits of transparency and control and the administrative and operational costs arising from their implementation.

It should be considered that the relationship between corporate governance and performance may be subject to endogeneity and self-selection problems. Companies that choose to join differentiated governance levels or conduct initial public offerings may possess pre-existing structural characteristics, such as larger size, greater financing needs, or expansion strategies, that simultaneously influence both the decision to adopt governance practices and their operating results. Thus, although the present study uses a within-firm temporal comparison, it cannot be ruled out that unobservable factors or simultaneous strategic decisions influenced the results obtained.

Nevertheless, future research may explore complementary approaches using alternative measures of economic magnitude or interfirm econometric models.

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CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

DATA AVAILABILITY

The complete dataset supporting the findings of this study is available from the authors upon reasonable request.

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author
Conceptualization	♦	♦
Data Curation	♦	
Formal Analysis	♦	♦
Funding Acquisition	N/A	N/A
Investigation	♦	
Methodology	♦	♦
Project Administration	♦	
Resources	♦	
Software	♦	
Supervision		♦
Validation	♦	♦
Visualization	♦	♦
Writing – Original Draft Preparation	♦	
Writing – Review & Editing		♦

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