INFLUENCE OF JOINT FINANCIAL RESOURCES MANAGEMENT ON THE ECONOMIC VALUE ADDED OF BRAZILIAN COMPANIES

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ABSTRACT

This study aims to investigate the influence of joint financial resources management on the economic value added of Brazilian companies. Data were collected from the Thomson Reuters Eikon® database and the website of the Central Bank of Brazil (BACEN). The research sample comprised 184 publicly traded Brazilian companies listed on Brazil Stock Exchange and Over-the-Counter Market (B3) stock exchange, covering the period between 1997 and 2018. The data were operationalized using statistical techniques, including quadratic regression with one predictive variable (isolated influence) and, above all, quadratic regression with two predictive variables (joint influence). The results confirm that, in isolation, both capital structure and financial slack have an optimal level to maximize the Economic Value-Added Margin (EVAM) of Brazilian companies. Even more significant is the evidence that decisions regarding financial resources – capital structure and financial slack – should be treated jointly to achieve the highest EVAM in Brazilian companies. Specifically, the results indicate that the optimal level of capital structure and financial slack to maximize corporate EVAM may range in absolute terms by up to 9.65% when comparing isolated influence with joint influence, which is a significant aspect of better decision-making by stakeholders. These findings suggest that, given the inherent shortcomings of observing the phenomenon in question through linear relationships and/or isolated effects, the evolution of knowledge should, in the future, involve observing it in a three-dimensional way.

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INFLUÊNCIA DA GESTÃO CONJUNTA DE RECURSOS FINANCEIROS NO VALOR ECONÔMICO ADICIONADO DE EMPRESAS BRASILEIRAS

RESUMO

Objetiva-se verificar a influência da gestão conjunta de recursos financeiros no valor econômico adicionado de empresas brasileiras. As informações foram coletadas da base de dados *Thomson Reuters Eikon*® e do *website* do Banco Central do Brasil (BACEN). A amostra de pesquisa abrangeu 184 empresas brasileiras de capital aberto listadas na Brasil, Bolsa, Balcão (B3), contemplando o período entre 1997 e 2018. Os dados foram operacionalizados por técnicas estatísticas, com destaque a regressão quadrática com uma variável preditiva (influência isolada) e, sobretudo, a regressão quadrática com duas variáveis preditivas (influência conjunta). Os resultados confirmam que de forma isolada, a estrutura de capital e a folga financeira apresentam nível ideal para maximizar a Margem do Valor Econômico Adicionado (MEVA) de empresas brasileiras. Ainda mais considerável, são as evidências de que as decisões acerca dos recursos financeiros – estrutura de capital e folga financeira – devem ser tratadas de forma conjunta a fim de se alcançar o maior MEVA em empresas brasileiras. Especificamente, os resultados apontam que o nível ideal de estrutura de capital e de folga financeira a fim de maximizar o MEVA corporativo pode oscilar em termos absolutos em até 9,65% quando se compara a influência isolada com a influência conjunta, sendo tal aspecto considerável para a melhor tomada de decisão por parte dos *stakeholders*. Tais achados sugerem que dadas as insuficiências inerentes ao se observar o fenômeno em questão por relações lineares e/ou por efeitos isolados, a evolução do conhecimento perpassa, adiante, pela sua observância de forma tridimensional.

Palavras-Chave: Gestão conjunta. Recursos financeiros. Estrutura de capital. Folga financeira. Valor Econômico Adicionado.

1 INTRODUCTION

Performance is a prerequisite for the competitiveness and success of the company (Horvathova, Mokrisova & Dancisinova, 2018). As Anderson (2016) points out, while an organization can be successful in various ways, the most common is in economic terms. In the case referred to, corporate success is often linked to value creation, that is, the company's ability to generate returns in terms of invested capital. Therefore, market analysts, managers, and investors, among others, have always sought identifiers of business success, with performance measures being known as crucial for proper decision-making.

The predominant objective of business units (companies) is to constantly improve their performance, increase corporate assets, and consequently, maximize shareholder wealth. These corporate objectives are achieved through the creation of well-aligned plans. Considering that the resources needed for the

implementation of such plans are scarce, the need for efficiency becomes essential (Gyan, Brahmana & Bakri, 2017). Among the most important corporate resources are financial resources, both in terms of their acquisition according to corporate capital structure and the possibility of allocation in financial slack.

Capital structure represents how an organization is financed, where the mix of funds adopted affects the cost of capital (Muritala, 2012) and, consequently, the performance and survival of companies. Rationally understanding how organizations structure their capital to maximize its utility for corporate stakeholders is a matter of ongoing interest for researchers. This occurs, according to Ahmed and Afza (2019), because the correct combination of equity and indebtedness capital is considered a significant precursor to improving corporate performance (Ahmed & Afza, 2019), even though there is no theoretical and empirical consensus on the best way to structure sources of financing for companies.

Regarding slack, Cyert and March (1963) introduced the concept of organizational slack as the difference between the total resources existing in an organization and the total payments necessary to maintain it (Cyert & March, 1963). Financial slack is configured as one of the ways to create organizational slack, and its understanding complies with the concept described earlier, regarding exclusively financial resources. In the existing literature, theoretical considerations linked to empirical evidence of financial slack in maximizing corporate performance are diverse. In fact, Augustí, Galán, and Acedo (2021) report that the literature on the slack-performance relationship has increased and diversified over time, becoming an important research line.

Given the consideration that both capital structure and financial slack have the potential to affect corporate economic and market performance, it is essential to highlight that these dimensions work together to achieve the organizational objective. According to Minton and Wruck (2001), companies, in general, tend to be conservative. Therefore, they adopt as a financial strategy the maintenance of indebtedness capacity and/or the composition of financial slack. In the future, when necessary, they use these resources to finance acquisitions (capital goods) and discretionary expenditures.

Despite theoretical considerations of a joint relationship in the phenomenon in question, empirical studies are scarce, especially when performance is represented by measures of added economic value. Therefore, based on all the foregoing, the following research problem emerges: What is the influence of the joint management of financial resources on the added economic value of Brazilian companies? The objective of this study is to verify the influence of the joint management of financial resources on the added economic value of Brazilian companies, with financial resources represented by capital structure and financial slack.

In a recent study conducted in the field of corporate finance, the findings by Ayaz, Zabri, and Ahmad (2021) suggest researchers move away from the linear search for a relationship between leverage and performance (Ayaz et al., 2021), a trend also observed in the context of financial slack and performance, as seen in Paeleman and Vanacker (2015). Therefore, to advance these perspectives, this research aims to test the validity of the underlying nonlinear

approaches to capital structure and financial slack on performance, operating them jointly. If the expectations are confirmed, it may lead to discussions of new arrangements, where fostering such discussions is likely to provide practical informational gains for the analysis of companies to numerous stakeholders. Shareholders and potential investors will have more robust and reliable parameters to decide whether to invest their resources in a particular organization, anticipating future returns.

Furthermore, based on the formulated essence, this research also brings social contributions. Given that organizations are significant players in society, the financial consolidation of corporations will bring those within that environment a higher quality of life. The strengthening of a region, driven by generated wealth, tends to increase all socioeconomic indicators, including education level, life expectancy, security, and level of happiness, among others. Therefore, this research aims to provide insights that go beyond the core of companies, extending to the entire society.

2 THEORETICAL FRAMEWORK

2.1 Economic Value Added

One of the questions that practically all organizational stakeholders face is regarding performance measurement, given the proliferation of performance measures. The ever-growing pursuit of excellence, efficiency, and performance improvement by corporate managers has been fueled by new performance measures, accounting systems, reports, and business standards, established by academics, consulting firms, and other developers (Hall, 2018).

In this scenario, a notable indicator is Economic Value Added (EVA). This metric is not as common in the literature as Return on Assets (ROA) or Return on Equity (ROE), primarily due to its contemporary nature, which necessitates more robust theoretical explanations for its use. According to Sabol and Sverer (2017), EVA is a performance measure that emphasizes maximizing shareholder value as opposed to mere net profit maximization. Purswani and Raj (2018) state that EVA captures how much profit a company can generate above the returns required by shareholders.

Specifically, as interpreted by Purswani and Raj (2018), when a company's net operating profit exceeds the total cost of capital employed, the EVA will be positive (Purswani & Raj, 2018), indicating that the analyzed organization is creating value for shareholders; conversely, if there is a negative EVA, value destruction for shareholders occurs. According to Sabol and Sverer (2017), in the latter case, owners (shareholders) would be better off allocating their capital elsewhere (Sabol & Sverer, 2017), or even in another potential investment.

The use of EVA can also be justified by its ability to capture a company's true economic profit, helping managers make better decisions (Brasin, 2017). Furthermore, despite being less commonly used, the empirical application of EVA can also be observed in the literature, as in Aleknevičienė and Basevičiūtė (2017) and Horvathova et al. (2018). Specifically, Horvathova et al. (2018) observed a relationship between leverage and EVA, emphasizing the need to consider the

increasing financial risks of the relationship. According to Aleknevičienė and Basevičiūtė (2017), despite some contradictions, the majority of researchers consider EVA to be an appropriate measure for observing the ideal capital structure.

Furthermore, in the realm of financial slack, Bosch, Blandón, Ravenda, and Blasco (2018) argue that the effect of slack may vary depending on the performance measure, while Laffranchini and Braun (2014) suggest that specific company characteristics, such as size and ownership and management type, interfere in this relationship. Regardless, both cited studies, using diversified measures of economic performance, including EVA, argue that there is an influence of slack on performance, reinforcing the position of using EVA. This reinforcement is reported in both the context of capital structure and financial slack on EVA and dimensions of financial resources addressed subsequently.

2.2 Financial Resources

The financial resources addressed in this research encompass both the raising of funds, precisely the corporate capital structure, and one of the forms of resource deployment, which, in this case, consists of financial slack. According to the literature, both dimensions have the potential to affect corporate value added.

2.2.1 capital structure

Capital structure is the combination of owner/shareholder equity (equity) and indebtedness (liabilities) (Das & Swain, 2018). Specifically, the primary sources that companies can use to raise the necessary financial resources are internal financing, which is equity, and external financing, which is indebtedness (Narang, 2018), these sources form the corporate capital structure. Corroborating these precepts, Dakua (2019) states that the capital structure revolves around two main dimensions: indebtedness (liabilities) and equity.

Martellini, Milhau, and Tarelli (2018) mention that the current understanding of liability management decisions (including equity) is comparatively more limited than asset allocation decisions, both from a theoretical and empirical perspective (Martellini et al., 2018). The debate about the impact of capital structure variables on company value and performance is ongoing in the field of finance (Aggarwal & Padhan, 2017), especially considering that empirical literature has presented conflicting results (Islam & Iqbal, 2022).

However, even with different understandings of the topic, there is no doubt that the performance of any organization depends on its competence in operating viably through its composite capital structure (Bandyopadhyay & Barua, 2016). Over more than half a century of studies, various approaches have been developed to explain value creation through the structuring of corporate capital (Vo & Ellis, 2017), with a focus on trade-off theory, pecking-order theory, and market timing theory (Aggarwal & Padhan, 2017).

In the trade-off theory, it is asserted that companies have an optimal level of indebtedness, and this process is determined by the balance (trade-off)

between the advantages and disadvantages of indebtedness. The benefits of leverage primarily consist of the corporate tax advantage of interest deductibility, which leads to consequential gains in reducing the average cost of capital. As negatives, indebtedness tends to bring costs of financial distress and provides personal taxes that incur in receiving interests (Brown, Dutordoir, Veld & Merkoulova, 2019). However, the latter harm of indebtedness mentioned is minimized because it falls on the lender and not the company, and even so, when thinking about shareholders' optimal, personal taxes tend to be lower than corporate taxes.

Furthermore, Jarallah, Saleh, and Salim (2019) argue that in the pecking-order theory, there is no defined target capital structure. Companies prefer internal financing over external funds. When there are internal generation bottlenecks, companies will opt for loans rather than issuing equity (Jarallah et al., 2019). This is due to the issue of informational asymmetry that directly impacts the cost of financing sources, producing a hierarchy of preferences. Moreover, according to Jarallah et al. (2019), internal cash flow (internal generation) is preferable in the first instance because it can be dictated, allowing the company to manage many of its investments, and avoid risks.

Finally, for Le and Phan (2017), the market timing theory holds that capital structure decisions are influenced by market conditions of stock prices. Managers will issue securities in the market after an increase in stock prices and/or if stocks are overvalued to take advantage of the favorable situation and, conversely, will use indebtedness in case of declining stock prices. Thus, there is no notion of an ideal capital structure to maximize company value (Le & Phan, 2017), as funding is done based on the existing opportunity at the time.

2.2.2 Financial slack

For organizational slack, the seminal concept by Cyert and March (1963) is defined as the difference between the total existing resources and the total payments required in a company. Specifically, due to frictional issues in mutual adjustment, there is typically a disparity between the resources available in the organization and the payments required to maintain the coalition, resulting in organizational slack. Consolidating knowledge on the subject, Subramanian, Wang, and Chai (2019) describe organizational slack as the surplus resources that can provide adaptive flexibility to companies in the technological field and various other areas of corporate activity (Subramanian et al., 2019), depending on how it is formed, viewed, and utilized within the organization.

Entering exclusively into the purpose of the research, the concept of financial slack is consistent, at its core, with that of organizational slack, specifying only that in this case, the excess resources adhere to monetary cash or are operationally convertible to monetary cash. It is worth noting that organizational slack can arise from financial, human resources, physical resources, intangible resources, among others, and is therefore more comprehensive. Given the complexity of the topic, from its seminal discussions, currents have emerged that denote slack as either a performance and value

maximizer (positive relationship), a performance and value minimizer (negative relationship), or a reconciler of the previous extremes (curvilinear relationship).

In the positive relationship between slack and performance, the excess resources existing in the organization are seen as an appropriate and available source for financing new ventures, increasing the potential for corporate success. In addition to facilitating innovation and development, slack is positively understood as a driver of corporate resilience against external shocks and a deterrent to internal conflicts (Rafailov, 2017), with the latter aspect linked to the coalition of parties existing in the company aiming at their satisfaction, especially regarding desired returns and the consequent maintenance of stakeholders' interests in the organization.

For researchers advocating the negative relationship between slack and performance, maintaining too many idle resources is financial waste, as it generates low measurable returns and incurs high costs (Xu & Hitt, 2020). Specifically, management can use free cash (financial slack) inefficiently, which is derived from agency problems. In this conception, slack provides managers with excessive resources for opportunistic behavior, which does not serve the interests of shareholders and destroys value. Additionally, creating reserves through Slack compensates for losses from bad decisions (Rafailov, 2017), concealing strategic errors. Finally, slack resources originate from some costly source but do not provide a return to the company now, as they do not fit into the corporate organizational design.

The orderly arguments stem from the understanding, according to George (2005), that organizations are constantly challenged to promote growth and improve performance while facing strong exogenous pressures and endogenous constraints, having to align these situations to achieve the expected return. Such views are not necessarily incongruent but rather occur at different levels (George, 2005), causing nonlinear interactions - in curvilinear form - between slack and performance (Rafailov, 2017). In summary, from this perspective, slack does not solely combine positive or negative effects (Rafailov, 2017), thus there is a balance of the more extremist views referred to earlier.

2.3 Positioning and Hypothesis

Initially, it is necessary to consider the choice of approaches regarding the main theme - financial resources - specifically capital structure and financial slack, which are linked to corporate performance and value. In this regard, concerning capital structure, the position is in favor of using the trade-off theory. According to Abel (2018), among the existing approaches, this is the underlying capital structure approach in most of the empirical work on the subject (Abel, 2018), making it essential in corporate finance.

Yang, Meysami, and Meisami (2017) found that although not sufficient in all cases, the trade-off theory demonstrated greater explanatory power among the tested competing theories - trade-off theory, pecking-order theory, and market timing theory. Recognizing the latent relevance of the trade-off theory in explaining how organizations raise funds and aligned with the research objective of verifying the influence of the joint management of financial resources on the

economic value added of Brazilian companies, where the proposed joint influence is in the form of an optimal level, the position becomes, necessarily, for the trade-off theory.

Recently, Ayaz et al. (2021) examined the relationships between leverage and the performance of Malaysian companies, with an emphasis on the principles of the trade-off theory. The results show that initially, leverage improves the performance of companies; however, this relationship turns negative when the optimal level is exceeded. Therefore, they conclude that leverage has a nonlinear impact on the performance of companies, and the benefits of indebtedness should outweigh its costs (Ayaz et al., 2021), which involves making good investments and reducing borrowing costs.

Similarly, for the spectrum of financial slack, given the positional condition of the optimal level, the choice is based on the curvilinear relationship of financial slack with performance. The efforts expended by previous research to indicate whether high slack helps or hinders company performance represent a poorly formulated question (Laffranchini & Braun, 2014). This proposition arises from the fact that extremes tend to be erroneous, with slack being most useful when balanced between its costs and benefits. Recent studies such as Rafailov (2017) and Bosch et al. (2018) consider this proposition in their theoretical precepts, as well as finding some empirical evidence in its favor, pointing to the direction of advances in this line of knowledge.

Furthermore, Paeleman and Vanacker (2015) demonstrate that neither abundance nor restrictions of slack resources, including financial resources, are ideal for the performance and survival of organizations (Paeleman & Vanacker, 2015), meaning that the optimal level lies in an intermediate position and is therefore represented by a downward-facing parabola. It is thus concluded that the curvilinear approach is capable of addressing the outlined objective while also considering the combined effect of capital structure.

For the understanding of the suggested joint effect, the need to understand two dimensions of performance is highlighted. Paeleman and Vanacker (2015) investigated how different types of slack, namely financial slack and human resource slack, influence corporate performance. In isolation, neither the abundance nor the restriction of financial and human resources proved beneficial for the performance of the analyzed companies. More importantly, it is noted through the combined effect that companies that combine financial slack with constraints on human resources exhibit superior performance. Therefore, it was observed that the joint operationalization of dimensions in performance brings new and differentiated perspectives.

Investments made generate future results for organizations, but these must be evaluated, in terms of their achievement, in conjunction with the availability and costs of financial resources, which can come through decision-making movements in capital structure and corporate financial slack. Rapp, Schmid, and Urban (2014) report that financial decisions determine the financial flexibility of companies. Among financial decisions, those linked to capital structure and cash reserves (financial slack) are considered the most important, with financial flexibility resulting from past decisions of this type.

Marchica and Mura (2010) observed that financially flexible companies not only invest more but also invest better (Marchica & Mura, 2010), generating superior performance and value. Additionally, the recent findings of Chang, Lee, and Wong (2018) reaffirm the importance of capital structure and financial slack when managers make investment decisions, especially in periods pressured by profits. Therefore, companies must have sufficient resources to take investment risks (Chang et al., 2018), without exposing themselves excessively to the costs associated with operations. All the described dimensioning results in the following research hypothesis:

H_1 = *There is an optimal joint level of financial resources that maximizes the economic value added by Brazilian companies.*

3 METHODOLOGICAL PROCEDURES

The present study, aimed at verifying the influence of the joint management of financial resources on the economic value added of Brazilian companies, is defined as descriptive, documentary, and quantitative. The target population consisted of 481 publicly traded companies listed on the Brazil Stock Exchange (B3) and included in the Thomson Reuters Eikon® database, with information from 1997 to 2018 (22 years in total). From the target population, the sample composition was undertaken, following an unbalanced panel. Initially, 134 organizations classified as "financial" were excluded based on the Thomson Reuters Business Classification (TRBC) sector classification, as they present specific characteristics. Sequentially, another 68 organizations were removed that did not have a TRBC sector classification, with the field completed as "NULL," which makes it impossible to control the sector in the regression models.

The next delineation included the exclusion of organizations (and their observations) that did not have all the necessary information to calculate the research variables. Companies with negative net worth were also removed, as it is understood that such organizations no longer have the conditions to choose their capital structure, as they are exclusively struggling for survival. Even so, operationally, such a condition would make it impossible to use the Economic Value Added Margin (EVAM). Finally, observations from organizations defined as outliers were excluded, as they were more than three standard deviations away from the overall mean.

At this stage, the sample consisted of companies operating in nine sectors of the Brazilian economy, specifically: 1) cyclical consumption; 2) non-cyclical consumption; 3) industrial; 4) basic materials; 5) public utilities; 6) telecommunications; 7) energy; 8) technology; and 9) health. From the referenced sectors, the last four were chosen to be removed due to the reduced number of remaining organizations in such activities, which could distort the research findings when controlling for the sector. In the end, the research sample consisted of 184 companies from the sectors of cyclical consumption, non-cyclical consumption, industrial, basic materials, and public utilities, providing a total of 1,570 observations.

For data analysis, descriptive statistics of the numerical variables were developed, with the dependent variable being the economic value added

margin (EVAM), the independent variables representing capital structure and financial slack (TI, OI, CFS, and STS), and the control variables specific to firms (FS and SG). With these variables, together with the fixed effects of sector and year, quadratic regression models were prepared. To better understand the above, Figure 1 is presented below, which encompasses the research variables at the core of their dimension, as well as the equation and previous research (authors) that support how these variables are evaluated for empirical use.

Variable	Dimension	Equation	Authors
Dependent Variable			
Economic Value Added Margin (EVAM)	Performance	$\frac{(NOPAT\ -(WACC * Investiments))}{NetSalesRevenue}$	Adapted from: Aleknevičienė and Basevičiūtė (2017); Horvathova et al. (2018)
Independent Variable			
Total Indebtedness (TI)	Capital Structure (CS)	$\frac{(Current\ Liaabilities + Non - Current\ Liabilities)}{Total\ Assets}$	Le and Phan (2017); Narang (2018); Ayaz *et al.*, (2021); Islam and Iqbal (2022)
Squared Total Indebtedness (TI^2)		$\left[\frac{(Current\ Liaabilities + Non-Current\ Liaabilities)}{Total\ Assets}\right]^2$	
Onerous Indebtedness (OI)		$\frac{(Short - term\ Onerous\ Liabilities + Long - term\ Onerous\ Liabilities)}{Total\ assets}$	García, Méndez and Requejo (2016); Bandyopadhyay and Barua (2016)
Squared Onerous Indebtedness (OI^2)		$\left[\frac{(Short-term\ Onerous\ Liabilities + Long-term\ Onerous\ Liabilities)}{Total\ assets}\right]^2$	
Cash Flow Slack (CFS)	Financial Slack (FS)	$\frac{Cash\ and\ cash\ equivalents}{total\ assets}$	Paeleman v Vanacker (2015); Bosch *et al.* (2018); Xu and Hitt (2020)
Squared Cash Flow Slack (CFS^2)		$\left[\frac{Cash\ and\ cash\ equivalents}{total\ assets}\right]^2$	
Short-Term Slack (STS)		$\frac{Current\ Assets}{Current\ Liabilities}$	Laffranchini and Braun (2014); Rafailov (2017); Ayaz *et al.*, (2021)
Short-Term Slack (STS^2)		$\left[\frac{Current\ Assets}{Current\ Liabilities}\right]^2$	
Joint Effect (Moderator) of Capital Structure and Financial Slack (CS*FS)	Capital Structure and Financial Slack	Capital Structure and Financial Slack	Original work
Firm-Specific Control Variables			
Firm Size (FSZ)	Firm-Specific	Natural Logarithm of Total Assets	Rafailov (2017); Bosch *et al.* (2018); Islam and Iqbal (2022)
Sales Growth (SG)		$\frac{(Net\ Sales\ Revenue_t - Net\ Sales\ Revenue_{t-1})}{Net\ Sales\ Revenue_{t-1}}$	Le and Phan (2017); Bosch *et al.* (2018)

Industry Fixed Effect (IFE)	Fixed Effects	Sector Classification according to TRBC, with: 1) Cyclical Consumer; 2) Non-Cyclical Consumer; 3) Industrial; 4) Basic Materials; and 5) Public Utilities	Laffranchini and Braun (2014); Bandyopadhyay and Barua (2016)
Year Fixed Effect (YFE)		Observation year, with: 1) 2018; 2) 2017; 3) 2016; 4) 2015; [...] 19) 2000; 20) 1999; 21) 1998; and 22) 1997	Bandyopadhyay and Barua (2016); Bosch *et al.* (2018)

Figure 1 – Research Construct - Dependent, Independent, and Control Variable(s) Legend: NOPAT – Net Operating Profit After Taxes (in Portuguese, Lucro Operacional Líquido após os Impostos); WACC – Weighted Average Cost of Capital (in Portuguese, Custo Médio Ponderado do Capital); ST – Short Term; and LT – Long Term.
Note(s): 1.1) To provide comparability between companies, especially aiming at conducting scientific research, the result of EVA is usually weighted by a factor, with net sales revenue being the most common. This procedure aims to bring proportionality to the economic value added of different companies, by considering an aspect that represents the "size" of the organization. In this scenario, the most usual and coherent solution was opted for, denoting it as "Economic Value Added Margin - EVAM". Nevertheless, it is emphasized that the conceptual understanding provided by the EVA remains unchanged; 1.2) NOPAT is calculated by subtracting the Operating Profit of a given company from its respective income tax and social contribution percentage in the period under observation; 1.3) WACC is the weighted average cost of total capital, that is, investments, naturally encompassing the proportion of each source in the total invested. *1.3.1)* The weighted average cost of indebtedness capital for the composition of WACC is calculated as follows: interest expenses for the period according to the Income Statement (IS) divided by the total onerous indebtedness capital (liabilities). The resulting value is then multiplied by 100 to express the weighted average cost of indebtedness capital as a percentage. *1.3.2)* The weighted average cost of equity capital for the composition of WACC was obtained as follows: SELIC rate - Special System of Settlement and Custody - which is effectively the average daily interest rate, annualized based on 252 business days and extracted from the Central Bank of Brazil (BACEN). 1.4) Investments correspond to the total of equity capital (that is, net worth) added to the total of onerous indebtedness capital; 2) Onerous liabilities comprise third-party capital sources that incur interest payments (GARCÍA et al., 2016), specifically, loans, financings, and short-term (current) and long-term (non-current) debentures. 3) The combined (moderator) effect between "Capital Structure" * and "Financial Slack" is operationalized with one variable from each dimension per stage. Since the dimensions of capital structure and financial slack are conceived by two main variables each, there are four plausible moderations (2*2 = 4 combinations); and, 4) "Own elaboration" refers solely to the moderation between the dimensions of capital structure and financial slack in the scenario of seeking the ideal joint level. The mentioned moderated dimensions can be evidenced in past research, especially in finance, but presenting other methodological configurations.
Source: developed by the authors.

Using the variables from Figure 1, eight quadratic regression models were formed. The first four models operationalize a main predictive variable influencing EVAM, namely TI, OI, CFS, and STS, each with its squared term, along with control variables. This stage aims to identify if there is a maximum point, the ideal isolated level of capital structure, and financial slack to maximize corporate EVAM, which will subsequently be used for comparative purposes of the joint ideal level to be observed.

According to Nunes, Morais, Muniz, and Sáfadi (2004), through a quadratic regression model containing one independent (predictive) Variable – $\hat{y}_i = a + bX_i + cX^2{}_i$ –, an estimator for the critical point of the equation can be achieved by deriving $\hat{y}_i$ concerning X and setting its derivative equal to zero, as follows:

$$\frac{dy_i}{dX} = \frac{d(a + bX_i + cX^2{}_i)}{dX} = \hat{b} + 2\hat{c}X_i = 0$$

Based on the equation provided, the estimator of the critical point of the quadratic regression equation will be the abscissa of a maximum point when $\hat{c}$ is negative and, conversely, a minimum point if $\hat{c}$ is positive. Therefore, the maximum or minimum point is achieved accordingly.: (Nunes *et al.*, 2004)

$$x_i = \frac{b}{-2c}$$

Following this, four additional quadratic regression models are elaborated, operating with two predictive variables that are linked to the research premises - problem, objective, and hypothesis. Bremer (2012) argues that polynomial regression models with two predictive variables and interaction terms are quadratic forms (Bremer, 2012). Models with this defined configuration proceed to find a maximum or minimum point for each of the two explanatory variables, while also evaluating their combined effects on the dependent variable (EVAM). Empirically, this model was used by Paeleman and Vanacker (2015) in observing another phenomenon. The theoretical configuration of this model is as follows (Bremer, 2012):

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_{11} X^2{}_1 + \beta_{22} X^2{}_2 + \beta_{12} X_1 X_2 + \varepsilon$$

Based on the described model, the surfaces can take one of three forms, depending on the parameters discovered from the model (Bremer, 2012). To do this, it is necessary to observe the coefficients of the predictive variables of interest and determine the shape using the Hessian matrix and derivatives. Specifically, we can have:

a) Local maximum point: with X and Y (representing the independent variables) having a maximum point in terms of Z (representing the dependent variable). For this, the linear coefficients of the two independent variables need to be positive and significant, while the quadratic coefficients need to be negative and significant.

b) Local minimum point: with X and Y having a minimum point in terms of Z. For this, the linear coefficients of the two independent variables need to be

negative and significant, while the quadratic coefficients need to be positive and significant; and,

c) Saddle point: with X and Y having opposite inflection points, that is, one maximum (as in "a") and the other minimum (as in "b") in terms of Z, where the coefficients follow the same signs (direction) and significance as presented previously.

In all the mentioned cases, the linear and quadratic coefficients need to be statistically validated. However, the moderation between the two predictive variables does not need to be statistically significant, as the primary goal is not to determine whether the interaction of X and Y influences Z. The moderation coefficient is used to calculate the minimum and/or maximum points of X and Y, weighting the combined influence of the variables on Z, i.e., it is used to form the intended paraboloid. The graphical representation, by paraboloid, of quadratic models with two predictive variables is configured as follows:

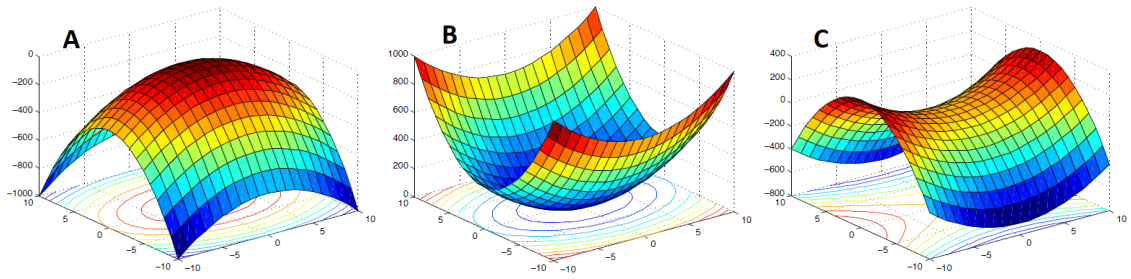

Figure 2 – Representation of quadratic models with two predictive variables:
Note(s): Model "A" displays two maximum points, proceeding as "local maximum point"; Model "B" displays two minimum points, proceeding as "local minimum point"; and, Model "C" displays one maximum point and one minimum point, proceeding as "saddle point".
Source: adapted from Bremer (2012).

It should be noted that to comply with the premises outlined in this study, the research findings should exhibit the form of Model "A" as organized in Figure 2. In Model "A," the combined effect of the two predictive variables on the dependent variable is demonstrated as possessing an ideal level, with this level constituted by a maximum point through joint conventions of the trade-off theory of capital structure and the curvilinear relationship of financial slack on performance.

Regarding the above, it becomes pertinent to specifically display the research model. Therefore, this is shown in a generic manner, where CSV corresponds to one of the capital structure variables, which can be TI or OI, while FS corresponds to one of the financial slack variables, which can be CFS or STS. With the existence of two distinct variables for each predictive dimension, four models are operationalizable (2*2 = 4 combinations). Below is the quadratic model with two predictive variables applied.

$$EVAM_{it} = \beta_0 + \beta_1 CS_{it} + \beta_2 CS^2{}_{it} + \beta_3 FS_{it} + \beta_4 FS^2{}_{it} + \beta_5 CS_{it} * FSZ_{it} + \beta_6 FSZ + \beta_7 SG_{it} + \Sigma\text{Fixed Effects of Year} + \Sigma\text{Fixed Effects of Sector} + \varepsilon_{it}$$

In addition to the filters already mentioned for sample composition, which included the removal of outliers, the data underwent winsorization at 1% on both tails. This technique was employed to ensure that no remaining discrepant information could bias the displayed results. For data tabulation and the execution of statistical techniques, spreadsheet software and specialized statistical software were used, with the latter being IBM STATA® 12.

Finally, it is essential to highlight that the assumptions for conducting ordinary least squares regression models were assessed - residual normality, multicollinearity, autocorrelation, and heteroscedasticity - also using IBM STATA® 12. It was found that, due to the normality of residuals, the data were adjusted according to the Central Limit Theorem; furthermore, no issues of multicollinearity among the linear variables were identified based on the Variance Inflation Factor (VIF); there were also no problems of autocorrelation according to the Durbin-Watson test; and, additionally, the White matrix (robust regression) was applied to all regression models, adjusting standard errors considering the model's heteroscedasticity, thus overcoming this condition.

4 DATA ANALYSIS

4.1 Descriptive Statistics

It is essential to know the general attributes of the sample. In this regard, Table 1 is presented, which includes the mean, median, standard deviation, minimum, and maximum of the numerical variables in the study. In addition to descriptive statistics, the ANOVA test is presented, which compares the means of the numerical variables across different sectors and years of analysis.

Table 1
Descriptive Statistics and ANOVA (Average test)

Variables	Mean	Median	Standard Deviation	Minimum	Maximum	Sector ANOVA	Year ANOVA
EVAM	-0.0625	-0.0114	0.2071	-1.1320	0.2732	0.0000***	0.0000***
TI	0.5902	0.5982	0.1828	0.1419	0.9444	0.0000***	0.0242**
OI	0.3100	0.3120	0.1651	0.0009	0.7158	0.0000***	0.2427
CFS	0.1211	0.1016	0.0946	0.0021	0.4569	0.0000***	0.1024
STS	1.6883	1.4029	1.0645	0.3391	6.6002	0.0000***	0.2424
FSZ	21.9404	21.9325	1.6222	18.2112	25.8620	0.0000***	0.0000***
SG	0.1417	0.1066	0.2664	-0.4054	1.6081	0.0065***	0.0000***

Label: EVAM – Economic Value Added Margin; TI – Total Indebtedness; OI – Onerous Indebtedness; CFS – Cash Slack; STS – Short-Term Slack; FSZ – Firm Size; and, SG – Sales Growth.
Note(s): Significance at the 10% level*, 5% level**, and 1% level***.
Source: developed by the authors.

The ANOVA test reveals that the EVAM of firms is statistically different, at the 1% level, for sectors and years. The average EVAM is -0.0625, with a median of -0.0114, a standard deviation of 0.2071, a minimum of -1.1320, and a maximum of 0.2732. From the results obtained for the EVAM, efforts should be concentrated on understanding its negative average number in Brazilian organizations. According to Purswani and Raj (2018), for EVA to be positive, the company's net

operating profit must exceed the cost of capital employed (Purswani & Raj, 2018). Unlike net profit composition, EVA considers not only the cost of indebtedness capital, which is shown in the Income Statement (IS) as a financial expense but also the cost of equity capital.

In this research, the SELIC rate was applied for the cost of equity capital, which presents a quite complex condition for the Brazilian market. Over the 22 years under study, the SELIC rate varied from a maximum above 30% per year (in 1997) to a minimum below 7% per year (in 2017 and 2018), making the desired minimum return and, consequently, the cost of equity capital, quite unstable and, in some periods, excessively high. Such a condition is typical of developing countries, where economic data are volatile, making them a very particular study environment. Therefore, the high cost of equity capital is an explanatory factor for the average negative EVAM in Brazilian companies.

Furthermore, it is observed that the average total Indebtedness is approximately 59% (0.5902), the average onerous indebtedness is exactly 31% (0.3100), the average cash slack is approximately 12% (0.1211), and the average short-term slack is 1.6883. Regarding these averages, the ANOVA test indicates that the corporate sector is important for understanding differences in averages in all independent variables, while the year variation impacts the firm's average only for total Indebtedness. Finally, the control variables indicate a total assets average of 21.9404 (represented in natural logarithm), while the average nominal revenue growth of the analyzed firms is approximately 14% per year (0.1417), with both averages varying according to the corporate sector and the year of analysis.

4.2 The Effect of Financial Resources on Economic Value Added

In this section, we present the findings related to the regression models, which have the potential to examine the research focus relationship. Specifically, in this initial stage, the results of quadratic regression models with one predictive variable are presented. The purpose of this stage is to provide models that will be used as a comparison in the discussion of the results. With that said, Table 2 presents the quadratic influence of financial resources - TI, OI, CFS, and STS - on the EVAM of Brazilian companies in four models.

Table 2
Influence of financial resources management on EVAM, namely: total indebtedness on EVAM, onerous indebtedness on EVAM, cash buffer on EVAM, and short-term buffer on EVAM.

EVAM TI		**EVAM OI**		**EVAM CFS**		**EVAM STS**	
Variables	**Coef.**	**Variables**	**Coef.**	**Variables**	**Coef.**	**Variables**	**Coef.**
TI	0.3721**	OI	0.2303**	CFS	0.6534***	STS	0.0052
TI²	-0.2062*	OI²	-0.3332*	CFS²	-1.4837***	STS²	-0.0010
FS	0.0085**	FS	0.0125***	FS	0.0097***	FS	0.0132***
SG	0.0502*	SG	0.0556*	SG	0.0473	SG	0.0555*
_CONS	-0.2939***	_CONS	-0.2710***	_CONS	-0.2237***	_CONS	-0.2626***
FE sector	Yes	FE sector	Yes	FE sector	Yes	FE sector	Yes

FE Year	Yes	FE year	Yes	FE year	Yes	FE Year	Yes
Sig. Estat F	0.0000***	Sig. Estat F	0.0000***	Sig. Estat F	0.0000***	Sig. Estat F	0.0000***
R^2	0.2324	R^2	0.2206	R^2	0.2275	R^2	0.2180
N.	1.570	N.	1.570	N.	1.570	N.	1.570

Label: EVAM – Economic Value-Added Margin; TI – Total Indebtedness; ET^2 – Total Indebtedness Squared; FS – Firm Size; SG – Sales Growth; _CONS – Constant; OL – Onerous liabilities; OL^2 - Squared Onerous liabilities; CFS – Cash Flow Slack; CFS^2 – Cash Flow Slack Squared; STS – Short-Term slack; STS^2 – Squared Short-Term slack; and, FE – Fixed Effect.
Note(s): Significance at the 10%*, 5%** and 1%*** levels.
Source: developed by the authors.

Based on the parameters from Nunes et al. (2004) presented in the "methodological procedures" section, the maximum point of total indebtedness to maximize EVAM is 0.902 (90.2% of total Indebtedness), being significant at the 10% level; the maximum point of onerous indebtedness to maximize EVAM is 0.346 (34.6% of EO), being significant at the 10% level; the maximum point of cash surplus to maximize EVAM is 0.220, significant at the 1% level; and, the maximum point of short-term surplus to maximize EVAM is 2.496, not being significant.

Furthermore, there are relationships between quadratic models with two predictive variables, the main interest of the research, is aimed at verifying the influence of joint management of financial resources on the economic value added. As previously reported, four models were conducted. Table 3 contains the findings of the first two models, with TI and CFS in EVAM and TI and STS in EVAM, which will sequentially be the focus of the analysis.

Table 3
Influence of joint management of financial resources on EVAM, namely: total Indebtedness and cash flow slack on EVAM, and total Indebtedness and short-term slack on EVAM.

EVAM TI and CFS				**EVAM TI and STS**			
Variables	**Coef**	**test**	**Sig**	**Variables**	**Coef**	**Test**	**Sig**
TI	0.4527	2.85	0.004***	TI	1,0414	3,68	0,000***
TI^2	-0.2476	-2.01	0.044**	TI^2	-0,6009	-3,20	0,001***
CFS	0.7742	3.14	0.002***	STS	0,08859	2,32	0,020**
CFS^2	-1.3566	-3.13	0.002***	STS^2	-0,0050	-1,38	0,169
TI*CFS	-0.2270	-0.84	0.401	TI*STS	-0,0835	-2,10	0,036**
FS	0.0052	1.51	0.132	FS	0,0093	2,74	0,006***
SG	0.0426	1.44	0.150	SG	0,0506	1,68	0,094*
_CONS	-0.2982	-3.41	0.001***	_CONS	-0,6192	-4,64	0,000***
FE sector	Yes			FE sector	Yes		
FE year	Yes			FE year	Yes		
Sig. Estat F	0.0000***			Sig. Estat F	0.0000***		
R^2	0.2428			R^2	0.2435		
N.	1.570			N.	1.570		

Label: EVAM - Economic Value-Added Margin; TI - Total Indebtedness; TI^2 - Squared Total Indebtedness; CS - Cash Slash; CS^2 - Squared Cash Slash; FSZ - firm Size; SG - Sales Growth; _CONS - Constant; STS - Short-Term Slash; STS^2 - Squared Short-Term Slack; and, FE - Fixed Effect.
Note(s): Significance at 10%*, 5%**, and 1%*** levels.
Source: developed by the authors.

The results from Table 3 reveal that Brazilian companies maximize EVAM when operating jointly at 0.815 of total indebtedness and 0.217 of cash surplus, with a significance level of 5%. The local maximum point of ET and FC on EVAM confirms the applicability to the analyzed phenomenon of the trade-off theory approach to capital structure and the curvilinear relationship of financial slack on performance. The illustration of the result is provided below in Figure 3.

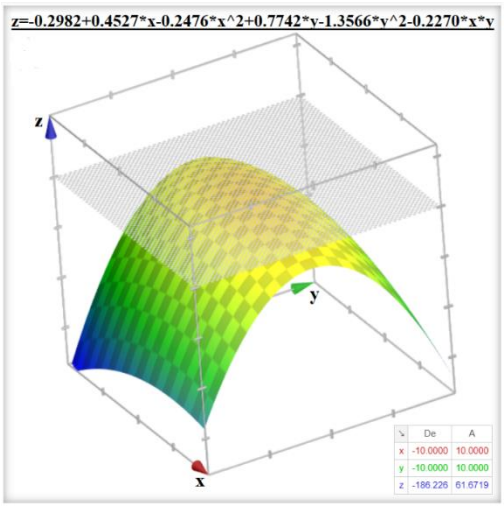

Figure 3 – Joint Effect of Financial Resources - Total Indebtedness and Cash Slack - on EVAM.
Note(s): 1) The "x" axis corresponds to the measure of total indebtedness (TI); the "y" axis corresponds to the measure of cash Slack (CS); and the "z" axis corresponds to the measure of Economic Value-Added Margin (EVAM); and, 2) the figure is derived from the regression result, based on coefficients identified at the top of the figure. Therefore, it is a simulation that may not reflect the exact curvature, but something close to it. Hence, it is displayed to facilitate understanding of the phenomenon through visual representation.
Source: developed by the authors.

In addition to the findings already illustrated and discussed, Table 3 further indicates that EVAM reaches its maximum value when companies operate with 0.602 of total indebtedness and 3.801 of short-term surplus. However, the variable STS^2 is not significant, indicating that the findings do not correspond to the premises of the curvilinear relationship approach of financial slack in performance and, in the joint perspective, do not align with the conjecture in the research hypothesis. Subsequently, Table 4 presents the quadratic and joint results for OI and CS on EVAM and OI and STS on EVAM, respectively.

Table 4
Influence of joint management of financial resources on EVAM, namely: of onerous indebtedness and cash slack on EVAM and of onerous indebtedness and short-term slack on EVAM.

EVAM OI and CS				EVAM OI and STS			
Variables	**Coef**	**test**	**Sig**	**Variables**	**Coef**	**test**	**Sig**
OI	0.2273	1.84	0.067*	OI	0.2656	1.76	0.079*
OI^2	-0.3590	-2.06	0.040**	OI^2	-0.3567	-1.87	0.061*
CS	0.6426	3.44	0.001***	STS	0.0072	0.32	0.747
CS^2	-1.4256	-3.24	0.001***	STS^2	-0.0005	-0.18	0.859
OI*CS	0.0302	0.10	0.922	OI*STS	-0.0097	-0.27	0.784

FSZ	0.0090	2.45	0.014**	FSZ	0.0127	3.67	0.000***
SG	0.0485	1.64	0.101	SG	0.0555	1.85	0.064*
_CONS	-0.2343	-2.92	0.004***	_CONS	-0.2900	-3.37	0.001***
FE sector	Yes			FE sector	Yes		
FE year	Yes			FE year	Yes		
Sig. Estat F	0.0000***			Sig. Estat F	0.0000***		
R^2	0.2304			R^2	0.2208		
N.	1.570			N.	1.570		

Label: EVAM - Economic Value-Added Margin; OI - Onerous Indebtedness; OI² - Squared Onerous Indebtedness; CS - Cash Slack; CS² - Squared Cash Slack; FSZ - Firm Size; SG - Sales Growth; _CONS - Constant; STS - Short-Term Slack; STS² - Squared Short-Term Slack; and, FE - Fixed Effect.
Note(s): Significance at 10%*, 5%**, and 1%*** levels.
Source: elaborated by the authors.

In Table 4, for the measures of onerous indebtedness and cash slack on EVAM, once again, there is a statistically significant local maximum point (at 10%). EVAM reaches its maximum when organizations operate with 0.326 of onerous indebtedness and 0.229 of cash slack. However, the existence of an ideal joint level of onerous indebtedness and short-term slack on EVAM is not confirmed. When deriving the model, the ideal level of onerous indebtedness is obtained as 0.318 and that of short-term slack as 4.004, but the latter, formed by STS and STS², is not significant. Therefore, from the two models, the findings are simultaneously consistent with the trade-off theory of capital structure, while the curvilinear relationship of financial slack on performance is only compliant with the first one.

4.3 Discussion of Results

To provide more robust insights, the discussion will be based on comparing the results of quadratic models with two predictive variables against the findings of quadratic models with one predictive variable. With this context established, emphasis will be placed on differentiating between the recognized ideal levels, which will encompass the movement made from combined models as opposed to isolated ones. Therefore, Table 5 is presented for further inferences.

Table 5
Comparison between the maximum points obtained for financial resources - capital structure and financial slack - in EVAM

Variables	*EVAM TI and CS		EVAM TI and STS		*EVAM OI and CS		EVAM OI and STS	
	TI	CS	TI	STS	OI	CS	OI	STS
(+) Models with Two Predictive Variables (Combined Effect)	0.815	0.217	0.602	3.801	0.326	0.229	0.318	4.004
(-) Models with One Predictive Variable (Isolated Effect)	0.902	0.220	0.902	2.496	0.346	0.220	0.346	2.496
(=) Difference (Movement)	-0.087	-0.003	-0.300	1.305	-0.020	0.009	-0.028	1.508

Percentage Variation (%) From isolated Effect to Combined Effect	-9.65%	-1.36%	-33.26%	52.28%	-5.78%	4.09%	-8.09%	60.42%

Label: EVAM – Economic Value-Added Margin; TI – Total Indebtedness; OI – Onerous Indebtedness; CS – Cash Slack; and STS – Short-Term Slack.
Note(s): *Represents models that achieved significance at the 1%, 5%, and/or 10% level in all variables necessary to indicate the local maximum point for "models with two predictive variables (combined effect)", i.e., those that resulted in the non-rejection of the hypothesis.
Source: developed by the authors.

According to Table 5, when examined individually, the ideal level of total indebtedness to maximize EVAM is 0.902, while for cash slack it is 0.220. The combined effect of these factors indicates an ideal total indebtedness of 0.815 (a reduction of 9.65%) and a cash slack of 0.217 (a reduction of 1.36%). Thus, it is inferred that there is a local maximum point, and therefore, the approaches of the trade-off theory of capital structure (Yang et al., 2017; Ayaz et al., 2021) and the curvilinear relationship of financial slack in performance (Laffranchini & Braun, 2014; Paeleman & Vanacker, 2015) are validated in the Brazilian scenario studied here, with EVAM as the dependent variable for corporate performance.

Furthermore, following the statistically significant results, the third quadratic model with two predictive variables in Table 5 indicates that the ideal level of onerous indebtedness to maximize EVAM is 0.326, which is 5.78% lower than the inflection point when viewed individually (which was 0.346). For cash slack, the modeling with two predictive variables pointed to the ideal level of 0.229 compared to the 0.220 in the model containing the isolated effect, representing an increase of 4.09%. In summary, although there are modifications, the movement of both axes seen together compared to the isolated effect is a relatively low percentage, but still important to achieve maximum corporate performance.

Viewed in a consolidated manner, the described joint quadratic results bring significant insights to corporate management. Given that the ideal cash slack in both cases was around 22% of total assets, that the ideal level of total indebtedness is 81.5%, and that the ideal level of onerous indebtedness is 32.6%, corporate managers can aggregate these findings to achieve maximum EVAM for the companies they manage. Therefore, the best scenario to maximize EVAM would be to adopt approximately 0.220 of cash slash, while the capital structure would consist of exactly 0.185 of equity (1 – 0.815), 0.489 of operational liabilities (1 – (0.185+0.326)), and 0.326 of onerous indebtedness, thus reaching 100% (base 1) of resource origins.

It is worth noting that the solution mentioned was developed based on the methodology of this research, given by the quadratic models with two predictive variables that obtained statistical significance for the formation of the local maximum point. As it results from two distinct models, it should be interpreted with caution, as such analysis goes beyond the completeness of each of the operationalized regressions. Most importantly, these findings support the research hypothesis – H_1 = There is an ideal joint level of financial resources that maximizes the economic value added of Brazilian companies – making it not rejected.

The complexity of the aspects mentioned makes the results found in this research unique and directs toward the formation of new knowledge. These differentials include: a) the determination of inflection points, considering a larger set of dimensions, as essential for the formation of assertive knowledge; and, b) the formalization of knowledge using both the trade-off approach of capital structure and the curvilinear relationship approach of financial slack with performance. Therefore, future research on the subject should start from these new parameters, which have proven to be consistent and innovative for the observed phenomenon.

5 CONCLUSIONS

This study aimed to examine the influence of joint financial resource management on the added economic value of Brazilian companies. The theoretical frameworks adopted suggest that capital structure and financial slack have a local maximum point concerning corporate economic value added, with the trade-off theory and the curvilinear relationship of financial slack in performance underpinning the way the phenomenon is understood. To this end, data from the Thomson Reuters Eikon® database and the website of Brazil Central Bank (BCB) were used. The research sample encompassed 184 Brazilian companies listed on the Brazil Stock Exchange (B3), with data analyzed between 1997 and 2018.

5.1 Contributions to Advancing Knowledge

Under the theoretical premise, where the literature is fragmented due to both capital structure and financial slack approaches, this research suggests that capital structuring and the allocation of part of this capital to slack resources should be done in a balanced manner, evaluating the costs and benefits of financial decisions, and considering the interrelation of these decisions. Specifically, it is argued that as companies take on more debt, the average cost of capital tends to increase due to the increasing perception of creditor risk. Through this process, at some point, here advocated as the optimal level of indebtedness, the costs of debt – linked to financial difficulties and their consequences – outweigh the benefits of debt – fiscal advantages – and, consequently, the return generated, reaching the inflection point.

Similarly, it is argued that financial slack affects the economic value added of Brazilian companies, in the balancing act of the extreme perspectives of the benefits of slack resources – resources for exploring new opportunities and products, reducing conflicts, and mitigating environmental uncertainties – and the drawbacks of slack resources – resources as drivers of strategic accommodation and hiders of losses from misguided decisions –, balancing out at a certain inflection point, here referred to as the optimal level of financial slack. More importantly, it is the interrelation between capital structure and financial slack in economic value added. Together, it is observed that financially sound companies leverage their ideal points of capital structure and financial slack to boost corporate operations sustainably, generating the highest performance and value creation.

Therefore, in empirical considerations, the significant and consistent results with the theoretical positioning adopted in this research are considered essential to maximize the utility of corporate functioning. The evidence is useful for numerous information users, as maximizing performance is the main objective of for-profit companies and will consequently meet virtually any stakeholder's desire. In Brazil, corporate managers and investors have new parameters for ideal capital structure and financial slack, especially when interested in the inherent benefits of EVAM, which represents a contemporary measure of corporate performance.

5.2 Limitations and Recommendations for Future Research

Despite the rigorous methodological rigor throughout the study, limitations are intrinsic to research of this nature. Therefore, it is noteworthy to highlight the complexity of understanding the added economic value of companies, given the multitude of factors that can interfere with the adopted measure of interest – EVAM. Robust models require controlling factors, which was done with variables such as company size, sales growth, and especially fixed sector and year effects. Although such control variables are common in the literature, it cannot be claimed that they are the best factors and/or that other factors should have been controlled to establish even more comprehensive models.

Furthermore, the high ideal level of indebtedness – especially total indebtedness – to maximize EVAM brings about a special opportunity for research in the Brazilian scenario. In calculating EVAM, not only the cost of third-party capital is used, but also the cost of equity capital. For the latter, the SELIC rate was applied to corporate equity, a measure that fluctuated substantially over the longitudinal period under study, with a minimum below 7% per year (in 2017 and 2018) and a maximum above 30% per year (in 1997). Thus, in various study periods, the SELIC rate was significantly high, especially until the mid-2000s. Therefore, this historical characteristic of the Brazilian market did not favor the use of equity capital on a large scale to maximize EVAM, causing companies with significant debt levels to achieve higher EVAM.

This aspect does not affect the accuracy of the results obtained here within the observed longitudinal period. However, given the dynamism of the Brazilian market, in 2020 (a year not included in the analysis, even due to the unavailability of such information as of August 2020), the SELIC rate reached its historical minimum of 2% per year, as updated in August 2020. Given this condition, future research, especially when considering the availability of this data, may focus on a narrower range of years for study, where the SELIC rate is at lower levels, thus verifying the ideal level of indebtedness to maximize EVAM. In theory, it is expected that such an ideal level would have decreased compared to what was observed here, as the cost of equity capital has significantly decreased, making it more attractive from the perspective of EVAM.

REFERENCES

Abel, A. B. (2018). Optimal debt and profitability in the trade-off theory. *The Journal of Finance, 73*(1), 95-143. https://doi.org/10.1111/jofi.12590

Aggarwal, D., & Padhan, P. C. (2017). Impact of capital structure on firm value: evidence from indian hospitality industry. *Theoretical Economics Letters, 7*(4), 982-1000. https://doi.org/10.4236/tel.2017.74067

Ahmed, N., & Afza, T. (2019). Capital structure, competitive intensity and firm performance: Evidence from Pakistan. *Journal of Advances in Management Research, 16*(5), 796-813. https://doi.org/10.1108/JAMR-02-2019-0018

Aleknevičienė, V., & Basevičiūtė, I. (2017). Capital structure formation decisions in joint-stock companies based on maximization of economic value added. *Science and Studies of Accounting and Finance, 11*(1), 1-13. https://doi.org/10.15544/ssaf.2017.01

Augistí, M. A., Galán, J. L, & Acedo, F. J. (2021). Understanding the evolution of the slack-performance relationship from a bibliometric perspectiva. *Baltic Journal of Management, 16*(3), 479-499. https://doi.org/10.1108/BJM-06-2020-0191

Ayaz, M, Zabri, S. M., & Ahmad, K. An empirical investigation on the impact of capital structure on firm performance: evidence from Malasya. *Managerial Finance, 47*(8), 1107-1127. https://doi.org/10.1108/MF-11-2019-0586

Banco Central do Brasil – BACEN. *Taxa de Juros Básica – Histórico (SELIC)*. Recuperado de: https://www.bcb.gov.br/controleinflacao/historicotaxasjuros

Bandyopadhyay, A., & Barua, N. M. (2016). Factors determining capital structure and corporate performance in India: Studying the business cycle effects. *The Quarterly Review of Economics and Finance, 61*(1), 160-172. https://doi.org/10.1016/j.qref.2016.01.004

Bosch, J. M. A-., Blandón, J. G-., Ravenda, D., & Blasco, M. M-. (2018). An empirical analysis of the curvilinear relationship between slack and firm performance. *Journal of Management Control, 29*(3-4), 361-397. https://doi.org/10.1007/s00187-018-0270-4

Bremer, M. (2012). *Multiple linear regression*. Math 261ª, Spring. Recuperado de http://mezeylab.cb.bscb.cornell.edu/labmembers/documents/supplement%205%20-%20multiple%20regression.pdf

Brown, S., Dutordoir, M., Veld, C., & Merkoulova, Y. V. (2019). What is the role of institutional investors in corporate capital structure decisions? A survey analysis. *Journal of Corporate Finance, 58*(1), 270-286. https://doi.org/10.1016/j.jcorpfin.2019.05.001

Chang, H-Y., Lee, C-Y., & Wong, Y-J. (2018). Impact of earnings pressure on exploratory innovation. *R&D Management, 49*(4), 470-483. https://doi.org/10.1111/radm.12334

Cyert, R., & March, J. (1963). *A behavioral theory of the firm*. Englewood Cliffs, New Jersey: Prentice-Hall.

Dakua, S. (2019). Effect of determinants on financial leverage in Indian steel industry: A study on capital structure. *International Journal of Finance & Economics, 24*(1), 427-436. https://doi.org/10.1002/ijfe.1671

Das, C. P., & Swain, R. K. (2018). Influence of capital structure on financial performance. *Parikalpana – KIIT Journal of Management, 14*(1), 161-170. https://doi.org/10.23862/kiit-parikalpana%2F2018%2Fv14%2Fi1%2F173256

García, R. A-., Méndez, C. F-., & Requejo, S. M-. (2016). The growth and performance of family business during the global financial crisis: The role of the generation in control. *Journal of Family Business Strategy, 7*(4), 227-237. https://doi.org/10.1016/j.jfbs.2016.11.003

George, G. (2005). Slack resources and the performance of privately held firms. *Academy of Management Journal, 48*(4), 661-676. https://doi.org/10.5465/amj.2005.17843944

Gyan, A. K., Brahmana, R., & Bakri, A. K. (2017). Diversification strategy, efficiency, and firm performance: Insight from emerging market. *Research in International Business and Finance, 42*(1), 1103-1114. https://doi.org/10.1016/j.ribaf.2017.07.045

Hall, J. H. (2018). Value creation measures: An industry-based study. *Productivity and Performance Management, 67*(2), 426-444. https://doi.org/10.1108/IJPPM-08-2016-0178

Horvathova, J., Mokrisova, M., & Dancisinova, L. (2018). Modelling of capital structure in relation to business performance maximization. *Investment Management and Financial Innovations, 15*(2), 292-304. http://dx.doi.org/10.21511/imfi.15(2).2018.26

Islam, Z. ul, & Iqbal, M. M. (2022). The relationship between capital structure and firm performance: new evidence from Pakistan. *Journal of Asian Finance, Economics and Business, 9*(2), 81-92. https://doi.org/10.13106/jafeb.2022.vol9.no2.0081

Jarallah, S., Saleh, A. S., & Salim, R. (2019). Examining pecking order versus trade-off theories of capital structure: New evidence from Japanese firms. *International Journal of Finance & Economics, 24*(1), 204-211. https://doi.org/10.1002/ijfe.1657

Laffranchini, G., & Braun, M. (2014). Slack in family firms: Evidence from Italy. *Family Business Management, 4*(2), 171-193. https://doi.org/10.1108/JFBM-04-2013-0011

Le, T. P. V., & Phan, T. B. N. (2017). Capital structure and firm performance: Empirical evidence from a small transition country. *Research in International Business and Finance, 42*(1), 710-726. https://doi.org/10.1016/j.ribaf.2017.07.012

Marchica, M. T., & Mura, R. (2010). Financial flexibility, investment ability, and firm value: Evidence from firms with spare debt capacity. *Financial Management, 39*(4), 1339-1365. https://doi.org/10.1111/j.1755-053X.2010.01115.x

Martellini, L., Milhau, V., & Tarelli, A. (2018). Capital structure decisions and the optimal design of corporate market debt programs. *Journal of Corporate Finance, 49*(1), 141,167. https://doi.org/10.1016/j.jcorpfin.2017.11.011

Minton, B. A., & Wruck, K. H. (2001). *Financial conservatism: Evidence on capital strucuture from low leverage firms*. Working paper, Universidade Estadual de Ohio, Ohio, Estados Unidos.

Muritala, T. A. (2012). An empirical analysis of capital structure on firms' performance in Nigeria. International *Journal of Advances in Management and Economics, 1*(5), 116-124.

Narang, M. (2018). Impact of capital structure on firm performance: A study of listed firms on national stock exchange. *Advanced Educational Research, 3*(1), 251-254.

Nunes, C. C. F., Morais, A. R. de, Muniz, J. A., & Sáfadi, T. (2004). Variâncias do ponto crítico de equações de regressão quadrática. *Ciência e Agrotecnologia, 28*(2), 389-396. https://doi.org/10.1590/S1413-70542004000200020

Paeleman, I., & Vanacker, T. (2015). Less is more, or not? On the interplay between bundles of slack resources, firm performance and firm surviral. *Journal of Management Studies, 56*(6), 819-848. https://doi.org/10.1111/joms.12135

Purswani, G., & Raj, A. (2018). Determining the impact of capital structure on economic value added with reference to select pharmaceutical companies listed in National Stock Exchange. *Asian Journal of Management, 9*(1), 347-350. https://doi.org/10.5958/2321-5763.2018.00054.9

Rafailov, D. (2017). Financial slack and performance of bulgarian firms. *Journal of Finance and Bank Management, 5*(2), 1-13. https://doi.org/10.15640/jfbm.v5n2a1

Rapp, M. S., Schmid, T., & Urban, D. (2014). The value of financial flexibility and corporate financial policy. *Journal of Corporate Finance, 29*(1), 288-302. https://doi.org/10.1016/j.jcorpfin.2014.08.004

Sabol, A., & Sverer, F. (2017). A review of the economic value added literature and application. *UTMS Journal of Economics, 8*(1), 19-27.

Subramanian, A. M., Wang, B., & Chai, K-H. (2019). Does technological diversity help or hurt small firms? The moderating role of core technological coherence. *IEEE Transactions on Engineering Management, 66*(3), 299-311. https://doi.org/10.1109/TEM.2018.2791667

Vo, X. V., & Ellis, C. (2017). An empirical investigation of capital structure and firm value in Vietnam. *Finance Research Letters, 22*(1), 90-94. https://doi.org/10.1016/j.frl.2016.10.014

Xu, K., & Hitt, M. A. The international expasion of family firms: the moderating role of internal financial slack and external capital availability. *Asia Pacific Journal of Management, 37*(1), 127-153. https://doi.org/10.1007/s10490-018-9593-9

Yang, H., Meysami, M., & Meisami, A. (2017). A rising market and capital structure decisions. *Universal Journal of Accounting and Finance, 5*(4), 102-108. https://doi.org/10.13189/ujaf.2017.050404