ASAA

Financing of brazilian companies in the light of pecking order and market timing theories: evidence from regionality

Thayla Machado Guimarães Iglesias (ID), **Thayse Machado Guimarães**(ID), **Vinícius Silva Pereira**(ID), **Antônio Sérgio Torres Penedo**(ID)

Universidade Federal de Uberlândia Uberlândia-MG, Brazil.

✉

[1]thayla.adm@gmail.com
[2]thaysemg.adm@gmail.com
[3]viniciuss56@gmail.com
[4]drpenedo@gmail.com

Abstract

Objective: This paper aims to understand how macroeconomic factors and firms' characteristics impact the definition of the Brazilian companies' capital structure in the regional context.

Method: The study involved 426 non-financial Brazilian companies listed on B3 during the period from 2007 to 2017. In the internal perspective, the variables liquidity, ROE, tangibility and size were used, while, in the external approach, the variables GDP, inflation and periods of crisis, concerning the years 2008 and 2015.

Results: The results revealed that the majority of organizations are located in the southeastern and southern regions (86%), with control by the regions being an important factor in decision making regarding the financing of companies. Also, the Pecking Order theory was corroborated, with respect to the characteristics of firms, since companies tend to prioritize the use of internal resources over third resources, especially during economic recession, when there is a greater impact on corporate profits. However, the Market Timing theory has not been ratified, which suggests that companies do not tend to observe the windows of opportunity for the issue of securities.

Contributions: It is relevant to investigate how companies' financing decisions are impacted by issues that go beyond the firms' characteristics, in other words, how they are influenced by the environment in which they operate, especially with regard to macroeconomic factors and the regional context. Thus, this research advances in the literature not only because it covers external factors, but also because it considers the regional differences in Brazil.

Keywords: Indebtedness. Brazilian Regions. Macroeconomic Factors. Firms' Characteristics.

Introduction

The literature on capital structure shows that corporate financing decisions still encourage academic investigation and greater understanding of market agents. Previous studies demonstrate the insufficiency of just one theory to explain the financing decisions of companies (Allini, Rakha, McMillan & Caldarelli, 2017; Cardoso & Pinheiro, 2020), since there is no solid evidence, with empirical analyzes that clearly point out the strengths and weaknesses of the main theories (Frank & Goyal, 2009).

It is understood that financing decisions are influenced both by internal factors and by the environment in which companies are inserted (Santos, 2013; Ahuja & Kalra, 2020). However, there are few studies that try to understand the relationship between financing decisions and macroeconomic characteristics (Bastos, Nakamura & Basso, 2009; Bernardo, Albanez & Securato, 2018) and regional context (La Rocca, La Rocca & Cariola, 2010; Palacín-Sánchez, Ramírez-Herrera & Di Pietro, 2013; Palacín-Sánchez & Di Pietro, 2016; Matias & Serrasqueiro, 2017; Di Pietro, Palacín-Sánchez & Roldán, 2018), especially with a focus on large companies.

The impacts of macroeconomic variables on corporate financing can be different, as the capital structure of organizations can vary according to fluctuations, for example, in interest rates, exchange rates and Gross Domestic Product (GDP). In this sense, depending on the country context and macroeconomic policy definitions, these variables may or may not be crucial in the proportion of third-party capital maintained by organizations (Cardoso & Pinheiro, 2020).

Especially in times of economic recession, companies suffer from limited demand, rising prices and, consequently, falling gross domestic product (GDP). In these scenarios, there are greater challenges for business continuity and ensuring the profitability of companies. Thus, in times of economic disruption, there are changes in the availability of capital and debt costs are different, which can favor or limit the granting of credit (Brighetti & Albanez, 2019; Cardoso & Pinheiro, 2020).

The competitive environment in which businesses are inserted makes managers increasingly concerned about how they finance their businesses and define their capital structures (Jahanzeb, 2013), especially in emerging economies, whose markets are less efficient and there are more critical problems of information asymmetry and adverse selection (Allini et al., 2017), and in contexts

of economic recession (Brighetti & Albanez, 2019). Therefore, it is relevant to deepen the investigation of this theme, considering the external environment, with a regional focus.

Regarding the financing of organizations, as Myers (1984) presents in the Pecking Order (POT) theory approach, companies follow a logical and priority sequence for raising funds, also known in Brazil as the Theory of Hierarchization of Sources of Financing (THFF). According to the Pecking Order, organizations prioritize internal financing, obtained through the cash flow generated by adjustments in the payment of dividends and by the profits obtained. This implies that companies adjust the payment of dividends according to investment opportunities. It is worth noting that, if the capital generated internally is inferior to the investments, it is necessary to resort to external financing through the issuance of bonds to the capital market.

Thus, given the need for external financing, companies opt, first, for debt securities, then for hybrid securities, such as convertible debentures, and, later, for the issuance of shares (Myers, 1984).

From a different perspective, there is a more recent approach, named Market Timing (MTT), which highlights the relationship between capital structure and company stock performance. In this perspective, companies issue shares when these assets are at higher prices and buy them in times of low. This practice, therefore, tends to allow organizations to benefit from temporary fluctuations in issuance costs relative to the cost of other sources of capital. The capital structure of companies would, therefore, be the cumulative result of attempts to synchronize the stock market (Baker & Wurgler, 2002).

As shown in the national and international literature, the capital structure is influenced by factors (internal and external) and, according to the different theories that arise for better understanding and investigation, different relationships of these variables with the leverage of companies are expected. Most researchers have sought to understand how firm factors impact corporate financing, and therefore, the most recent investigation that contemplates macroeconomic variables. Studies in line with the Pecking Order theory are: Bastos et al. (2009), Frank and Goyal (2009), Kayo and Kimura (2011), Santos (2013), Allini et al. (2017), Bernardo et al. (2018), Brighetti and Albanez (2019). It is noteworthy that some of these bring the comparison of theories, therefore, investigations are also seen from the perspective of Market Timing

theory: Santos (2013); Bernardo et al. (2018); Kayo and Kimura (2011).

Empirical approaches to regionality are still incipient in the literature, especially with a national focus. When it comes to international research and emerging economies, some evidence on China stands out, as shown in the studies by Hasan, Kobeissi, Wang and Zhou (2017), Lv, Bian, Lee and He (2021); Cong, Lo and Yu (2021).

For Di Pietro et al. (2018), regional differences in the institutional environment of a country impact the financial structure of companies, especially in small and medium-sized companies. About this, there are the studies by La Rocca et al. (2010), Palacín-Sánchez et al. (2013), Palacín-Sánchez and Di Pietro (2016), Matias and Serrasqueiro (2017), Di Pietro et al. (2018). However, investigations are required about regionality and the impact on the capital structure of companies in big companies.

Given the above, this study presents the following research problem: What is the influence of macroeconomic factors and firm characteristics in defining the capital structure of Brazilian companies, considering the regional approach? The general objective is, therefore, to understand how macroeconomic factors and the characteristics of firms impact the definition of the capital structure of Brazilian companies, considering the regional context. Specifically, it aims to: (i) investigate financing decisions in light of changes in regional GDP and inflation at the country level, with an emphasis on the Pecking Order approach and (ii) understand the relationship between financing decisions and Market Timing Approach. The study sample included 426 non-financial Brazilian companies, listed on B3, with a market value of over R$ 10 million in 2017, in the period from 2007 to 2017.

This research brings theoretical contributions because, compared to other approaches on the capital structure theme, the investigation of the relationship between macroeconomic and institutional variables is relatively recent (Bernardo et al., 2018), especially in the regional context (La Rocca et al., 2010; Palacín-Sánchez et al., 2013; Palacín-Sánchez & Di Pietro, 2016; Matias & Serrasqueiro, 2017; Di Pietro et al., 2018). Furthermore, research focused on emerging economies and that bring an analysis from the perspective of Pecking Order and also Market Timing are not very common (Allini et al., 2017; Ahuja & Kalra, 2020). Therefore, this study contributes by demonstrating the reality of an emerging country, in comparison to other developing economies, as well as to developed countries. Furthermore, unlike previous evidence, this work focuses

on the investigation of the influence of the regional context on the financing decisions of large Brazilian companies, to which, generally, investigations on environmental variables at the multi-country level are associated.

This study also contributes to economic agents, namely: (i) regulators, it enables a better understanding of the structure and development of the capital market; (ii) managers, it ensures better recognition of the need for corporate financing and the possibilities for reducing debt costs; and (iii) investors, greater clarification of how companies operate, generating greater transparency of information needed for investment decisions (Allini et al., 2017). Thus, it is possible to understand how internal and external characteristics interfere in the financing decision-making process, which makes it possible to improve economic activity, reduce fundraising costs and, consequently, improve the competitiveness of organizations (Santos, 2013).

2 Theoretical Reference

In this section, the regional approach is discussed, as well as the capital structure from the perspective of two theories, that is, the Pecking Order (POT) theory and the Market Timing (MTT) theory, which support the study's hypotheses.

2.1 General Aspects on Regionality

For Pettinati (2012), the new era initiated by globalization was characterized by significant changes in the technological sphere, import and export relations, standardization of products and habits, but, on the other hand, there was the imposition of a mass western culture. Added to this approach, Gil, Oliva, Novais and Silva (2013) highlight that this new worldview brought the promise of greater freedom for the exchange of goods and knowledge. However, as negative effects, information was concentrated on those in power and a financial system served their wishes. As a result, the interest in the regional perspective and the relationships that unfold from it was awakened (Pettinati, 2012), that is, a counterpoint to the dominant global aspect was valorization of the regional (Gil et al., 2013).

Gil et al. (2013), in turn, understand that the region is the result of a social construction, which encompasses intellectual constructions, whose object is difficult to experiment and quantify. Haesbaert (2010), on the other hand, portrays the region as a product and producer of the concomitant dynamics between globalization and fragmentation, built through the action of different social subjects, in addition to being a product and producer of the processes of spatial

differentiation.

2.2 Empirical Studies on Regionality

Hasan et al. (2017) investigated the effects of bank financing on regional business activities in China, regarding the quantity and quality of bank financing. Based on the results, it was noticed that the quality of banking services has a major impact on entrepreneurship in local markets, especially in regions with high levels of innovative activities. Furthermore, the efficiency of local banking systems is more important for the formation of small businesses in regions with underdeveloped institutions.

Lv et al. (2021), in turn, analyzed the national green finance development index from the perspective of four regions of China. The results showed that, in general, the green finance development plan in China is growing, but it is not high, the inter-regional gap is the main source of the gap in the development of green finance in the country, and the development of green finance shows a polarizing trend, characterized by an escalating distribution, starting from east, center, west and finally northeast of China.

Cong et al. (2021) researched the Clean Development Mechanism (CDM) in order to identify the regional determinants of carbon emission reduction projects in 30 Chinese provinces. The results showed that such projects are more likely to be implemented in regions with lower GDP per capita, higher CO2 emissions, higher energy intensity and when the amount of domestic loans in fixed asset investments is higher.

In a national approach, Azevedo, Oliveira, Buch, Cavalcante Nascimento and Silva (2017) analyzed whether there is a relationship between corruption, governance and the Human Development Index in Brazil. Based on the results, it was noticed that the states with the highest levels of corruption were the ones with the lowest HDI and the lowest level of governance. Still, the authors highlighted that the cultural aspect inherent to Brazilian regions, provides differences between regions in terms of corruption index, social indicators and governance.

2.2.1 Capital Structure and Regionality

In the literature, there is considerable evidence that companies' capital structure is determined by a combination of factors, including the characteristics of firms and the environment in which they are inserted (La Rocca et al., 2010; Santos, 2013; Palacín-Sánchez et al., 2013; Palacín-Sánchez & Di Pietro, 2016; Matias & Serrasqueiro, 2017; Di Pietro et al., 2018; Ahuja & Kalra, 2020).

Investigations in this regard, especially in analyzes of different countries (Santos, 2013), are more recurrent, while studies focused on institutional differences, in a single country and at the local level, encourage investigations (La Rocca et al., 2010). According to Di Pietro et al. (2018), the few studies (La Rocca et al., 2010; Palacín-Sánchez et al., 2013; Palacín-Sánchez & Di Pietro, 2016) whose analysis focuses on small and medium enterprises from different regions in a single country show differences in indebtedness levels due to the regional institutional system.

The institutional environment is made up by the legal, financial and tax systems, in addition to the national culture (Di Pietro et al., 2018). In this aspect, the relevance of the financial sector is verified (Palacín-Sánchez & Di Pietro, 2016) since when choosing the location to develop the activities of their firms, entrepreneurs of small and medium-sized companies need to consider how the aspect regional influences on companies' capital structure and access to finance, as there is a certain degree of regional heterogeneity (Palacín-Sánchez et al., 2013).

In line with this approach, La Rocca et al. (2010) investigated the influence of institutional differences at the regional level on the capital structure and debt maturity of small and medium-sized Italian companies, given the regional financial development and the effectiveness of oversight of the regional system. The main evidence of the study highlighted that corporate financial decisions are not only the result of the specificities of the firms or the industry, but are also based on the institutional environment in which the company operates, as the firm's leverage was positively influenced by local financial development.

Complementarily, Palacín-Sánchez and Di Pietro (2016) investigated the role of the financial sector in explaining the differences in the capital structure of small and medium-sized companies in different regions belonging to Spain over the years 1999 to 2007. It was noticed that the firms' capital structure depends on the regional financial sector, either by the level of development, as well as by the degree of competition, which affect obtaining credit.

Palacín-Sánchez et al. (2013), in turn, examined whether the capital structure of small and medium-sized companies and the determining factors of firms differ in the regions of a given country, considering companies in the regions of Spain in the 2004-2007 period. The results showed that both the capital structure and the impact of the determining factors of firms, which explain leverage, differ between regions.

In Portugal, Matias and Serrasqueiro (2017) dedicated

themselves to the analysis of the capital structure of small and medium-sized companies, located in different regions of Portugal (NUTS II), from 2007 to 2011. Based on the results, it was noticed that the characteristics of firms impact on capital structure decisions, which corroborates the Pecking Order Theory, and there were notable statistically significant differences in the determining factors of firms and the indebtedness of small and medium-sized Portuguese companies between the various regions.

Di Pietro et al. (2018) analyzed how the regional institutional environment, from the perspective of regional development, influences the capital structure. The authors highlighted that although the factors of the company and the sector in which they operate explain the variation of small and medium-sized companies, it is necessary to consider the regional institutional environment to understand the indebtedness of small and medium-sized companies.

2.3 Pecking Order versus Market Timing

One of the seminal works that encourage the investigation of the financing behavior of firms is that of Modigliani and Miller (1958). Based on assumptions such as the perfect market, these authors understand that the origin of financing for companies does not affect the cost of capital or the value of companies. Capital structure is one of the most important decisions in a company's financial area and the study of theories that support this aspect has inspired many authors (Ahuja & Kalra, 2020). In the current literature, there is no solid evidence that can highlight all the strengths and weaknesses of theories about the financing of organizations (Frank & Goyal, 2009). Most works on this approach provide empirical evidence on two contradictory theories: Pecking Order and Market Timing (Allini et al., 2018).

The pecking Order is a theory developed with the work of Myers (1984) and Myers and Majluf (1984). According to these authors, organizations have assets that are pre-established, as well as different growth opportunities. In this sense, the changes in the weights of these two factors condition the way in which companies resort to financing sources. Furthermore, the priority interest of organizations in the use of internal resources is justified by the attempt to reduce issuance costs, which is why the most profitable companies are generally less leveraged. Given the need for external financing, the choice for debt is due to the fact of informational asymmetry. Some evidence supporting this approach, with regard to internal and external factors, are: Bastos et al. (2009), Frank and Goyal (2009), Kayo and Kimura (2011), Santos (2013), Allini et al. (2017), Bernardo et al. (2018) and Brighetti and Albanez (2019).

With a different position, the authors Baker and Wurgler (2002) argue that companies do not follow a priority order for obtaining resources. To support this position, they considered the historical average of the market-to-book variable to demonstrate how the equity market timing, that is, the behavior of the stock market, affects the capital composition of organizations. For this purpose, over a period of 10 years, non-financial companies whose book values were above 10 million dollars and whose IPO (Initial Public Offering) dates were available were considered. Among the main results, they showed that Market Timing has a large and persistent effect on the capital structure of companies, with the lowest leverage observed in times of high stock market appreciation. Therefore, leverage is strongly and negatively related to historical stock market variations. Some works that corroborate the evidence of these authors are: Santos (2013); Bernardo et al. (2018) and Kayo and Kimura (2011).

2.3.1 Capital Structure from the perspective of Pecking Order

Regarding the capital structure of companies, considering the focus on the Pecking Order theory, Bastos et al. (2009) highlighted that the determinants of the companies' capital structure are not restricted to the firms' factors. They also analyzed different countries (Mexico, Brazil, Argentina, Chile and Peru), considering 388 companies, distributed in 14 sectors, from 2001 to 2006. The main results revealed that GDP growth had negative and statistically significant coefficients, which also indicates that, in times of greater economic activity, companies tend to reduce their indebtedness.

In a broader approach, covering 40 countries from 1997 to 2007, Kayo and Kimura (2011) analyzed about 17 thousand companies to understand the determinants of company leverage. According to the evidence, they noted that firm characteristics explain 42% of the capital structure, while time 36%, industry 12%, country level 3% and the remaining 7% are explained by the sector-country interaction. Indirectly, the variables at the industry and country level influenced the leverage decisions, with the GDP showing a negative relationship, as expected as proposed by the Pecking Order theory.

Also from a perspective of different economic scenarios, Santos (2013) investigated the capital structure of 10,423 companies from 61 countries during the period 2002 to 2011. For this author, indebtedness is more related to the characteristics of firms than to external characteristics. However, the economic environment interferes in financing decision-making, and therefore a negative relationship

between GDP and indebtedness is identified. This indicates that, in times of economic growth, companies have higher cash flows and tend to use debt more.

The authors Bernardo et al. (2018) considered six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Peru), with the intention of understanding the impacts of macroeconomic and institutional factors in determining the capital structure of companies. A total of 608 non-financial companies, whose net worth was not negative, were analyzed and hierarchical regressions were estimated during the period from 2009 to 2014. The main results showed that macroeconomic and institutional factors are important determinants in the capital structure of companies in different countries. The negative and statistically significant relationship with GDP reinforced that, in times of economic growth, companies are able to generate more internal resources and finance their activities, therefore not resorting to external financing. This evidence supports the Pecking Order theory.

Brighetti and Albanez (2019) argue that the capital structure of companies is influenced by environmental factors, such as moments of economic disruption. In the Brazilian case, two periods identified as crisis, therefore, the years 2008 and 2015, impacted on limiting demand, increasing prices and shrinking GDP, which, consequently, changed the availability of capital available to companies and reflected in funding costs.

When analyzing Brazilian, non-financial companies, listed on B3, from 2008 to 2016, it was possible to notice that companies tend to resort to debt to meet their capital needs. However, in times of financial constraints, increased demands from financial institutions can limit access to credit, leading organizations to seek resources in the capital market, which weakens the Pecking Order Approach (Brighetti & Albanez, 2019).

About moments of economic recession, Franzotti and Valle (2020) investigated the effect of financial crises (2008 and 2015) on investments and financing of restricted and unrestricted Brazilian companies during the period from 2007 to 2016. The sample of 192 companies highlighted that the 2008 crisis negatively and significantly impacted the leverage of constrained companies in relation to unconstrained ones. For these authors, financial crises, therefore, impact on the financing and investment decisions of companies and the effects differ according to the characteristics of the firms due to the greater ease or not of obtaining external resources.

Cardoso and Pinheiro (2020), on the other hand, with a

focus on sector indebtedness, covered 211 companies during the period from 2010 to 2018, which involved six different sectors of the economy. They noted that GDP was significant for the basic materials and industrial goods sectors. The minus sign emphasizes POT assumptions. Furthermore, regarding the recession, although it was not possible to differentiate between the cyclical and non-cyclical sectors, the moments of crisis had a positive impact on the indebtedness of companies, which signals an increase in leverage due to the reduction in internal capital.

It is noteworthy that the authors Bastos et al. (2009) perceived a negative relationship between the variable country and financing decisions, which demonstrates that the unique characteristics of countries make them different in the definitions of the capital structures of companies. This evidence highlights the relevance of studies on country-specific factors, which, in the case of this research, correspond to specific characteristics of different regions of Brazil.

Thus, considering the evidence in the literature about the relationship of GDP with the indebtedness of companies, the first hypothesis of this study is:

H₁: Company leverage has a negative relationship with municipal GDP growth.

Still on the relevance of external factors in determining companies' capital structures, there is a focus on inflation. Regarding this approach, there are studies that identified an insignificant relationship (Bastos et al., 2009), a negative relationship (Cardoso & Pinheiro, 2020) or a positive relationship (Frank & Goyal, 2009, Santos, 2013, Bernardo et al., 2018).

The authors Bastos et al. (2009) understand that the theoretical current that explains more strongly the capital structure of companies from different countries is the Pecking Order. Regarding inflation, a positive relationship between this variable and accounting indebtedness was expected, since rising inflation indicates depreciation in the nominal amounts of debt, making it more attractive for companies to borrow funds. However, in the considered sample, no statistically significant relationship was identified.

For Cardoso and Pinheiro (2020), moments of high inflation generate uncertainty for managers, which leads to greater fear of incurring long-term debt. Thus, in relation to this macroeconomic variable, a negative relationship with corporate indebtedness was expected, a relationship not proven in most sectors, but which was statistically significant and negative for the health sector.

Frank and Goyal (2009), on the other hand, highlighted six essential factors that influence the capital structure of companies, including expected inflation. Considering US companies from 1950 to 2003, they noted that the most notable factors in company leverage were: sector, market-to-book, tangibility, size, and expected inflation. Regarding inflation, as expected, they saw that, when high inflation is expected, companies tend to have greater leverage.

Complementarily, Santos (2013) noted a positive and statistically significant relationship between annual inflation and companies' leverage. This indicates that in environments with an increase in the rate of inflation, agents tend to raise funds in the form of debt to ensure greater fiscal protection.

Finally, the positive relationship between inflation and corporate leverage, expected by Bernardo et al. (2018), was confirmed in the reality of Latin American countries. This implies that, in high inflation, there is an economic downturn and greater difficulty for companies to generate resources, therefore, a positive relationship between inflation and company leverage is expected.

Therefore, in view of these notes, the second hypothesis of this research can be seen:

H_2: Companies' leverage has a positive relationship with inflation growth.

Focusing on the characteristics of firms, the work of Rajan and Zingales (1995) is highlighted. According to these authors, four factors, related to institutional characteristics, determine the capital structure of companies, namely: size, tangible assets, profitability and market value over book value. Regarding the first two characteristics, these authors state that the relationship of the variables is positive, while the last two show a negative relationship.

These same characteristics, according to Frank and Goyal (2009) are the core factors of the capital structure. As these authors maintain, larger firms with more tangible assets tend to have greater leverage. Furthermore, organizations that have greater market-to-book and greater profits generally have less leverage.

Along the same lines, Kayo and Kimura (2011) noted that the firm-variables size and tangibility had a positive relationship with leverage, while growth opportunity and profitability had an antagonistic behavior.

For Santos (2013), the characteristics of firms are the most important, with the growth opportunity and profitability

variables having a negative relationship with leverage, while tangibility and size have a positive relationship. Regarding tangibility, it is understood that the offer of credit in the short term requires guarantees so that companies have access to resources. In addition, with regard to the size of companies, it is understood that generally larger companies represent lower risks and, therefore, are able to raise funds in a more efficient manner.

According to Bastos et al. (2009), the determinants that most strongly influence the capital structure of companies are: current liquidity ratio, profitability (ROA), market-to-book and size. Unlike the studies mentioned above, these authors identified a negative and statistically significant relationship between the variables market-to-book, profitability (ROA) and current liquidity with the financing of organizations.

For Allini et al. (2017), the variables profitability, tangibility, size and growth opportunity play an important role in the financing structure of organizations, which reflects the characteristics of companies in an emerging economy. Firm size, tangibility and the market-to-book index had a positive relationship, while profitability had a negative relationship.

Finally, Bernardo et al. (2018), emphasize that the variables profitability and liquidity show a negative relationship with the leverage of companies, which indicates, respectively, that more profitable companies with greater financial slack tend to use more internal resources and are, therefore, less indebted.

Thus, different empirical relationships concerning the characteristics of firms are proven, which emphasizes the importance of these factors in defining the capital structure of firms. So, there is the third hypothesis of this research:

H_3: Firms' leverage is related (positive/negative) to firm characteristics.

2.3.2 Capital Structure from the perspective of Market Timing

With a focus on the practice of issuing shares and, more specifically, contemplating the temporary fluctuations of issuance costs in relation to the costs of other sources of capital, after the survey by Baker and Wurgler (2002), it was possible to notice some works which aimed to investigate how the capital structure of companies is influenced by issues related to market time.

The author Santos (2013) showed that, in the context of the stock market, variables such as market capitalization and trading volume of shares had a negative relationship with

companies' indebtedness. This indicates that countries that had a more developed stock market generally had companies with greater and better access to alternative forms of finance.

Bernardo et al. (2018), in turn, understand that companies tend to explore windows of opportunity for issuing bonds, since a negative relationship was observed between the market-to-book variable and leverage, highlighting that organizations choose to issue shares at times of high market values.

Kayo and Kimura (2011), on the other hand, noted that the development of the stock market had a negative relationship with organizational leverage, which shows that when companies have more sources of financing resources (such as the issuance of shares), they opt for less indebtedness.

Furthermore, Muhammad, Yet, Tahir and Nasir (2020) investigated the reality of three emerging countries in South Asia (India, Pakistan and Bangladesh) during the period from 2006 to 2017, with the aim of exploring the effect of Market Timing on the markets stocks and debt. This study covered 2484 observations and the main evidence showed that the capital structure of family businesses is impacted by Market Timing in both markets. This implies that they issue shares when prices are high and repurchase at low. Furthermore, these companies resort to external capital or issue debentures when the interest rate is below historical values.

Unlike previous evidence, Cardoso and Pinheiro (2020), although they also expected a negative relationship between leverage and financial market performance, found a positive relationship between indebtedness and the market value of the subsectors. This positive and statistically significant relationship was evident in the sectors of industrial goods, basic materials, cyclical consumption, non-cyclical consumption and healthcare. According to these authors, this evidence contrary to the literature is justified by the investigation involving an emerging country, whose market timing theory is not appropriate, as a result of companies increasing the use of third-party capital in the face of periods that favor the issuance of shares.

So, in line with the Market Timing Theory, we can see the last hypothesis of this work:

H_4: Companies' leverage is negatively related to stock performance.

3 Methodological Procedures

In this chapter, the methodological procedures concerning the performance of the study are discussed, that is, the criteria for defining the sample, the definitions of the variables, as well as

the description of the econometric model are demonstrated.

3.1 Study Definitions

In order to achieve the proposed objectives, this research considered the Brazilian companies listed in B3, non-financial, with a market value of more than BRL 10 million in 2017. This selection was chosen, as well as the authors Baker and Wurgler (2002), and Franzotti and Valle (2020). As for the period, considering that this study involves the analysis of environmental factors and moments of economic disruption, the period from 2007 to 2017 was considered, since it covers two moments of economic recession, one at a global level, American subprime in 2008, and one national, 2015, political-economic crisis. It is also noteworthy that the study does not progress beyond 2017, since, because the regional focus involves the municipal GDP of Brazilian cities, the data obtained in the IBGE (Brazilian Institute of Geography and Statistics) system are not updated for more recent periods. Thus, the sample of this work involves 426 organizations.

3.1.1 Variables selected in the search

Table 1 describes the study variables, consisting of six columns, namely: (i) variable – name of the variable under analysis; (ii) symbol – acronym that represents the variable in the estimates; (iii) metric – details on the measurement of the variable; (iv) expected sign – sign that is intended to be obtained in the estimations; (v) theoretical basis – studies that support the hypotheses and the expected signs of the variables and (vi) database – sources of information collection, these being the IBGE and Economática®.

Table 1: Description of research variables

Variable	Symbol	Metrics	Expected Signal	Theoretical foundation	Data base
Leverger	ALAV	Total Debts / Total Assets		(a); (c); (d); (e); (g); (i); (j).	2
GDP M	ΔGDP	Annual GDP variation (municipal)	(-)	(c); (d); (H).	1
Inflation	INF	Average annual rate of inflation	(+)	(c); (d); (j).	1
Crisis	CRISE	Dummy with a value of 1 for the years 2008 and 2015 and 0 for the others	(+ / -)	(g); (j).	1
Market Timing – Market-to-book	MTT (t-1)	(Market Value + Total Debt Value) / Total Assets	(-)	(c); (e); (i); (k).	2
Current liquidity	LIQ	Current Assets / Current Liabilities	(-)	(c); (d); (e).	2
Profitability*	ROE	Net Income / Equity	(-)	(a); (b); (c); (d); (e); (g); (h); (i).	2
Tangibility	TANG	(Fixed + Inventories) / Total Assets	(+ / -)	(a); (b); (c); (d); (e); (g); (h); (i).	2
Size	TAM	Ln (Total Assets)	(+ / -)	(f); (a); (g); (i).	2
Region**	REGIAO	Categorical variables with value 1 for the North region, 2 for the Northeast, 3 Midwest, 4 Southeast and 5 South			1

Theoretical Background: (a) Allini et al. (2017); (b) Baker and Wurgler (2002);

(c) Bastos et al. (2009); (d) Bernardo et al. (2018); (e) Cardoso and Pinheiro (2020); (f) Frank and Goyal (2009); (g) Franzotti and Valle (2020); (h) Kayo and Kimura (2011); (i) Muhammad et al. (2020); (j) Santos (2013); (k) Setyawan (2011).

Database: (1) IBGE; (2) Economática®

*Notes. * The mentioned authors treat profitability as ROA, but in this study the return to shareholders (ROE) will be considered; **The regions were established according to the address of the headquarters of the parent company.*

Source: Survey Data (2020)

3.2 Study econometric model

This research included cross-sectional data (i) relating to companies listed in B3 and which are part of the sample, over a time series (t), whose period was from January 2007 to December 2017. Therefore, it involves a spatial dimension and a temporal dimension, and thus, panel data regression models are more suitable (Greene, 2002). In this work, there is, therefore, an unbalanced panel.

This study comprises the analysis of two econometric models, namely: model 1 and model 2. Model 1 seeks to estimate the relationship of the indebtedness level (ALAV) with the GDP (ΔGDP) and inflation (INF) variables – according to the Theory of Pecking Order, according to equation 1. Model 2, in turn, investigates the relationship between the indebtedness level (LAV) and Market Timing (MTT) – equation 2:

$$ALAV_{it} = \beta_0 + \beta_1 \Delta PIB_{jt} + \beta_2 INF_{it} + \beta_3 CRISE_t + \beta_4 FIRM_{it} + \beta_5 REGIAO_i + u_{it} \ (1)$$

$$ALAV_{it} = \beta_0 + \beta_1 MTT_{i(t-1)} + \beta_2 CRISE_t + \beta_3 FIRM_{it} + \beta_4 REGIAO_i + u_{it} \ (2)$$

Where:
i = refers to company "i"
j = refers to the GDP of municipality "j"
t = refers to time
FIRM = refers to the characteristics of the firms, that is, the Liquidity (LIQ), Profitability (ROE), Tangibility (TANG) and Size (TAM) variables.

To estimate models 1 and 2 of this study, according to equations 1 and 2, we proceeded, first, with the analysis of data normality, by verifying the Kolmogorov-Smirnov test. Furthermore, the Variance Inflation Factor (VIF) test was performed, the average of which corresponded to 1.19 for model 1 and 1.02 for model 2, which indicates that there is no multicollinearity between the model variables. The Wooldridge and Wald tests showed the presence of autocorrelation and heteroscedasticity and both were treated using White's robust standard error. Regressions were estimated by Ordinary Least Squares (MQO), with stacked data.

4 Results and Discussions

This section brings the descriptive statistics of the data, as well as the discussion of the econometric models according to the Pecking Order and Market Timing Theories, which support the four hypotheses of this study.

4.1 Descriptive Analysis

In Table 2, it is possible to identify that the five regions are not proportionally represented, as the sample involves 426 companies with a market value of more than R$ 10 million, which are concentrated in the South and Southeast regions. In these two regions are located the headquarters of more than 86% of the companies, with São Paulo (45%) being the most expressive state.

Table 2: Frequency Analysis of the Region

Region	No.	%	Companies	%
North	44	0.94	4	0.94
North East	407	8.69	37	8.69
Midwest	154	3.29	14	3.29
Southeast	3.344	71.36	304	71.36
South	737	15.73	67	15.73
Total	4686	100	426	100

Source: Research Results (2020)

Descriptive statistics of the dependent and independent variables of the study are shown in table 3. In this table, it is possible to note that the investigated companies have debts (ALAV) corresponding to approximately 54% of total assets, with the North region highlighted having the highest leverage indicator (87%) and the Northeast, the lowest (26%). Furthermore, organizations have good payment capacity (LIQ), since current assets are about 7 times larger than short-term obligations, with tangible assets (TANG) corresponding to approximately 34% of assets total. The region, whose companies have the greatest variability in the liquidity indicator is the Southeast (112.68), as this is the region that includes 71% of the companies in the study.

Regarding the behavior of companies in the market (MTT), the market value associated with total debt is higher than total assets (142%). Regarding this indicator, the Southeast region stands out with 156% and the Center-West with the lowest value 69%. Regarding profitability (ROE), on average, it was observed that organizations guarantee a return to shareholders of 7.36%, although in the North and Center-West regions, on average, companies earn an accounting loss, with a negative ROE of, respectively, -19.27% and -55.35%. However, the highest average return earned to shareholders is observed in the Northeast region (26.57%).

Finally, the average size (TAM) of companies is R$ 1.71 billion (and[14.35]), with the highlight being the Midwest region, whose companies have an average total assets corresponding to R$ 4.64 billion (e[15.35]) and for the South region, with organizations equivalent in size to R$ 0.89 billion (e[13.70]).

Table 3: Descriptive Statistics of Variables

Region	Measure	ALAV	MTT	ΔGDP	LIQ	ROE	TAM	TANG
LIQ	ROE	TAM	TANG	9,73%	0,6300	-19,27%	14,2956	0,4271
North	Average	0.8725	1.4730	9.73%	0.6300	-19.27%	14.2956	0.4271
	DP	1.1984	1.3517	11.45%	0.4735	115.86%	1.1970	0.3954
North East	Average	0.2581	1.0545	9.64%	2.3914	26.57%	14.1074	0.4071
	DP	0.1903	0.6525	7.42%	3.7213	244.33%	2.0093	0.3062
Midwest	Average	0.3627	0.6949	11.48%	1.3437	-55.35%	15.3513	0.2643
	DP	0.4245	0.9281	6.75%	1.4540	604.20%	1.4608	0.2791
Southeast	Average	0.6223	1.5684	9.10%	9.6405	7.87%	14.5039	0.3105
	DP	5.9342	7.6433	8.57%	112.6813	329.92%	2.1235	0.2759
South	Average	0.3424	1.0738	9.82%	1.4986	6.54%	13.6981	0.4425
	DP	0.3629	0.9095	8.93%	1.7250	180.82%	1.8037	0.2483
Total	Average	0.5370	1.4171	9.34%	7.2972	7.36%	14.3559	0.3410
	DP	4.9851	6.4384	8.52%	94.5809	313.15%	2.0688	0.2812

Source: Research Results (2020)

As already highlighted, for this study, regionality was expressed in two ways, namely: (i) by the GDP variable, whose values are at the municipal level; and (ii) by the address of the head office of the parent company. As portrayed in the literature, it is understood that the environment, in which companies are inserted, interferes in the financing decisions of organizations, and this influence is therefore perceived with a focus on small and medium-sized companies. Thus, when extrapolating to the perspective of large companies, as in the case of this study, although there are no equitably represented regions, in table 4, the variations in municipal GDP stand out, according to the federative units and by the five regions covered:

Table 4: Regional Indicator - Municipal ΔGDP

Region	State	N	Average	DP
North	AM	11	7.73%	6.00%
	PA	11	8.04%	6.47%
	TO	22	11.57%	14.98%
	Total	**44**	**9.73%**	**11.45%**
North East	BA	121	8.16%	9.20%
	C	132	10.40%	5.34%
	MA	33	9.35%	8.55%
	PB	22	10.51%	6.95%
	PE	55	9.74%	7.21%
	RN	33	11.40%	6.54%
	SE	11	10.08%	7.04%
	Total	**407**	**9.64%**	**7.42%**
Midwest	DF	33	10.20%	4.13%
	GO	33	9.56%	5.48%
	MS	44	12.51%	7.67%
	MT	44	12.86%	7.82%
	Total	**154**	**11.48%**	**6.75%**
Southeast	ES	44	6.90%	10.57%
	MG	396	10.02%	11.43%
	RJ	792	9.33%	5.58%
	SP	2112	8.88%	8.81%
	Total	**3344**	**9.10%**	**8.57%**
South	PR	198	10.11%	9.77%
	RS	286	9.68%	9.65%
	SC	253	9.74%	7.27%
	Total	**737**	**9.34%**	**8.93%**
Total		**4675**	**9.34%**	**8.53%**

Source: Research Results (2020)

As shown in tables 3 and 4, the average change in GDP was 9.34% over the 10 years of analysis. On the one hand, the region with the highest average variation in this indicator was the Midwest, with the state of Mato Grosso standing out (12.86%). On the other hand, the Southeast region had the smallest change (9.10%), with emphasis on Espírito Santo (6.90%).

4.2 Analysis and Discussion of Regression Results

To respond to the proposed objectives, four hypotheses were established, according to which companies' leverage is justified by the Pecking Order Theory and/or the Market Timing Theory. According to the POT approach, companies' leverage can be influenced by external factors (such as macroeconomic variables) and internal factors (characteristics of firms). The MTT approach, on the other hand, maintains that financing decisions are affected by the past behavior of the stock market.

In view of this, two econometric models were estimated, with model 1 involving the macroeconomic variables GDP and inflation, while model 2, the MTT variable. Both models involved the other variables that express the characteristics of the firms. The Breusch-Pagan and Hausman tests were performed to verify which would be the best form of estimation and, although it was indicated that model 1 was estimated with random effects and model 2 with stacked data, it was decided to estimate the two models with data stacked in order to identify the proposed relationships, with control by region, sector and year. Thus, the econometric models were estimated by multiple linear regressions with stacked data (POLS) and with robust standard errors (Table 5).

Table 5: Leverage Analysis according to Pecking Order Theory and Market Timing Theory

Variables	Model 1			Model 2		
	Beta	P-value	follow	Beta	P-value	Sig
GDP	2.0980	0.2360				
INF	-0.3309	0.0960	*			
MTT				0.5767	0.1690	
CRISE	2,5121	0.0910	*	0.4386	0.3070	
LIQ	-0.0005	0.0420	**	-0.0257	0.1070	
ROE	-0.0010	0.8280		0.0010	0.8950	
TANG	1.1026	0.0000	***	0.6591	0.0240	**
TAM	-0.2140	0.0280	**	-0.2122	0.0580	*
REGIAO						
North	-	-	-	-	-	-
North East	-0.4744	0.0130	**	-0.6783	0.0080	***
Midwest	-0.0802	0.7290		-0.4586	0.2090	
Southeast	-0.0415	0.8620		-0.4630	0.0740	*
South	-1.0010	0.0010	***	-1.0686	0.0010	***
_const	4.1682	0.0080	***	2.9726	0.1350	
Sector	Yes			Yes		
Year	Yes			Yes		
N	3984			2414		
VIF	1.19			1.02		
Wooldrigde	0.0000			0.0000		
Wald	0.0000			0.0000		

*Note. Results of multiple linear regression models (Equation 1 and Equation 2). Asterisks indicate the significance levels: * p < 0.10; ** p<0.05; ***p<0.01. The models were estimated with dummies for the region and with robust errors. As for the dependent variable, the variable "ALAV" (leverage) was adopted in all models, and in model 1, the independent variables "GDP" (GDP variation) and "INF" (inflation) were considered and, in model 2, the variable "MTT" (market timing). The two models were estimated considering the same variables that express the characteristics of the firms and the control variables. Source: Research Results (2020)*

Thus, as shown in table 5, in the two models not all variables present a statistically significant relationship with leverage at least at the 10% level. According to the Pecking Order Approach, in model 1, when considering the macroeconomic variables GDP (ΔGDP) and inflation (INF), the level of indebtedness of companies (ALAV) does not have a statistically significant relationship with GDP, but it does have a negative and significant relationship to 10% with inflation. This evidence does not respond, therefore, to the first two hypotheses of the study.

In relation to GDP (ΔGDP), although some authors, such as Bastos et al. (2009), Kayo and Kimura (2011), Bernardo et al. (2018) and Cardoso and Pinheiro (2020), suggest a negative relationship between the variation of GDP and the leverage of companies (ALAV), it was not possible to reject the null hypothesis of lack of significance between these variables. This indicates that despite moments of recession or economic

growth influencing the profitability of companies, it is not possible to infer that the variation in GDP is a predominant factor in defining the capital structure of companies and, therefore, hypothesis H1 was not confirmed study. According to Palacín-Sánchez et al. (2013), GDP per capita is a classic indicator of the difference in wealth between regions and, in this sense, the average annual growth rate of GDP can be understood as an indicator of the need for financing of companies, which justifies why some regions, and hence their companies, grow faster than others.

With regard to inflation (INF), the negative and statistically significant evidence at the 10% level is contrary to what the authors Bastos et al. (2009), Santos (2013) and Bernardo et al. (2018) indicate. Therefore, according to hypothesis H2, it was expected that, in situations of high inflation, due to the economic downturn and, consequently, greater difficulty for companies to generate resources, there would be greater use of third-party resources. Nevertheless, this negative evidence corroborates the work of Cardoso and Pinheiro (2020), which indicates that companies, whose sectors have low demand elasticity, benefit from rising prices.

It is noteworthy that, despite the Pecking Order not being corroborated by the analysis of external environment variables (GDP and inflation), a positive and statistically significant relationship was observed, at the level of 10%, with the crisis variable. This indicates that, in situations of economic downturn, represented in this study by the years 2008 and 2015, it is possible to infer that there is greater indebtedness of companies. As Franzotti and Valle (2020) argue, financial crises can generate significant impacts on both the financing and investment decisions of companies, as they affect the obtainment of external resources. It is worth noting that the positive and statistically significant relationship observed is justified, because, in times of economic instability, organizations can lose their capacity to produce wealth (Santos, 2013), which makes them resort to third-party capital (Cardoso & Pine, 2020).

Still, regarding model 1, and in view of hypothesis H3 of this study, which deals with the characteristics of firms, it was possible to observe a negative and statistically significant relationship at the level of 5% between leverage (LAV) and liquidity variables (LIQ) and size of companies (TAM). Furthermore, there was a positive and statistically significant relationship at the 1% level with the tangibility variable (TANG). However, no statistically significant relationship with profitability (ROE) was observed. This evidence responds to hypothesis H3 and indicates that the financing of organizations is determined by internal factors.

Regarding liquidity (LIQ), the negative relationship corroborates the Pecking Order and the studies by Bastos et al. (2009) and Bernardo et al. (2018). Thus, it is understood that when companies have more resources available in the short term, that is, when companies are more solvent, they tend to borrow less, because they choose to use internal resources.

Regarding the size variable (TAM), the negative relationship indicates that larger companies are more likely to be more diversified, which, consequently, allows them better conditions to issue shares instead of resorting to issuing/contracting debt (Franzotti & Valle , 2020).

The tangibility variable (TANG), on the other hand, by being positively and statistically related to leverage, corroborates the Pecking Order, as more tangible companies are more susceptible to information asymmetry and then opt for external financing before issuing shares (Allini et al., 2017).

It should be noted that the negative relationship observed with the variable region (REGION), which indicates the location of the parent company, impacts on organizations' financing decisions. The works that support this study do not present a regional analysis, but some (Bastos et al., 2009; Santos, 2013; Bernardo; Albanez & Securato, 2018) highlight that the control carried out by country was significant.

Regarding the Market Timing Approach, expressed in model 2, a negative relationship between leverage (ALAV) and the MTT variable was expected, according to hypothesis H4 of this work. However, there was not enough evidence to reject the null hypothesis of no significance. Therefore, it was not possible to corroborate the influence of the capital market on the financing decisions of companies, whether this is negative according to the studies by Baker and Wurgler (2002), Setyawan (2011) and Muhammad et al (2020) or even positive according to with Cardoso and Pinheiro (2020). In this sense, as it is an emerging country, the Market Timing theory is not a relevant approach to justify the level of indebtedness of organizations (Cardoso & Pinheiro, 2020). This indicates that, for the sample under study, it is not possible to infer that the financing decisions of companies are related to the moment of the capital market, that is, to good past performance.

In model 2, regarding the characteristics of companies, the evidence found corresponds to that already highlighted in model 1, which supports the Pecking Order Approach.

5 Final Considerations

This study aimed to understand how macroeconomic factors and firm characteristics impact the definition of the capital structure of Brazilian companies, considering the regional context. Thus, the investigation was based on the Pecking Order Theory and the Market Timing Theory . For this purpose, 426 non-financial Brazilian companies listed on B3 were considered during the period 2007 to 2017. The econometric models were estimated with stacked data and corrected with robust errors.

Among the four proposed hypotheses, only hypothesis H3 was corroborated , which discusses the impacts of firm characteristics, which can be negative or positive, according to evidence in the literature. In this sense, a negative relationship of financial leverage with the liquidity of companies was observed, which asserts that organizations, when they have more resources available in the short term, that is, when they are more solvent, tend to reduce third-party fundraising.

In addition, there was a positive relationship with the tangibility variable and a negative relationship with size. In relation to tangibility, it is understood that the most tangible companies are more susceptible to informational asymmetry, therefore, they generally opt for external financing prior to the issuance of shares. With regard to size, larger companies tend to be more diversified and, consequently, have more favorable conditions for issuing shares.

Thus, corroborating hypothesis H_3, it is understood that the evidence reinforces the Pecking Order theory, as organizations, by virtue of their characteristics, primarily yearn for the use of internal resources, then for the issuance/raising of debt and, finally, by issuing shares.

Despite the lack of sufficient evidence to ratify hypotheses H_1 and H_2 , it is understood that, in times of economic instability, such as during the 2008 and 2015 crises, companies are more susceptible to reduced profits, which it directs to obtain resources from third parties, which is why the positive relationship between leverage and the crisis was observed. This finding, similarly, is supported by the Pecking Order theory.

Regarding the Market Timing theory , there was not enough evidence to reject the null hypothesis of lack of significance corresponding to H_4, thus saying, the negative relationship, which was expected between the leverage and market-to-book variables, was not observed. This denotes that corporate financing is generally not conditioned by past stock market performance.

It is worth noting the importance of the investigation in a regional context, since the negative relationship with the adopted regions statistically demonstrates the influence of

the location of the parent companies, with most companies belonging to the Southeast and South regions (86%). Furthermore, the absence of a relationship between the organizations' financing decisions (ALAV) and the variation of the municipal GDP (ΔGDP), unlike the literature, is justified by the profile of the investigated sample, since the regional approach is contemplated, above all, in analysis of small and medium companies.

Given these signs, it is understood that this study makes important contributions to economic agents, not only for the market focus, aimed at regulators and investors, but also for managers to have a real understanding of the capital structures of companies and, consequently , debt costs. Furthermore, from a theoretical perspective, it provides more empirical evidence that supports the Pecking Order theory.

This study has limitations regarding the period of analysis, as some data, such as the GDP per municipality, were only available until 2017, which made the investigation of more current years unfeasible. In addition, to express the macroeconomic reality, only the GDP and inflation variables were used, with, in a complementary way, the identification of periods of crisis, such as the years 2008 and 2015. Also noteworthy is the sampling that only included Brazilian companies listed in B3, non-financial, with a market value of more than BRL 10 million in 2017, which may have influenced the concentration of companies in the Southeast and South regions and, consequently, the lack of sensitivity of the regional aspect in the observed results.

Therefore, it is suggested that future studies present new macroeconomic variables, such as the Gini index, as well as an analysis in more fractional series, such as quarterly analysis, in order to capture greater variability, in addition to an approach on regionality that includes others indicators, according to the studies by La Rocca et al. (2010), Palacín-Sánchez et al. (2013), Palacín-Sánchez and Di Pietro (2016), Matias and Serrasqueiro (2017) and Di Pietro et al. (2018)

References

Ahuja, B. R., & Kalra, R. (2020). Impact of macroeconomic variables on corporate capital structure: a case of India. *Managerial Finance.* Vol. ahead-of-print No. ahead-of-print.

Allini, A., Rakha, S., McMillan, D. G., & Caldarelli, A. (2018). Pecking Order and Market Timing Theory in Emerging markets: The case of Egyptian firms. *Research in International Business and Finance*, 44(1), 297-308. Doi: 10.1016/j.ribaf.2017.07.098

Azevedo, E. B., Oliveira, A. G., Buch, C. L., Cavalcante Nascimento, T. & Silva, C. L. (2018). Corrupção, governança e desenvolvimento: uma análise seccional de dados para o Brasil. *GCG Georgetown University – Universia*, 12(1), 48-62. Doi: 10.3232/GCG.2018.V12.N1.02

Baker, M., & Wurgler, J. (2002). Market Timing and Capital Structure. *The Journal of Finance*, LVII (1). Doi: 10.1111/1540-6261.00414

Bastos, D. D., Nakamura, W. T., & Basso, L. F. C. (2009). Determinantes da Estrutura de Capital das Companhias Abertas na América Latina: Um Estudo Empírico Considerando Fatores Macroeconômicos e Institucionais. *Revista de Administração Mackenzie* (RAM), 10(6), 47-77. Doi: 10.1590/S1678-69712009000600005

Bernardo, C. J., Albanez, T., & Securato, J. R. (2018). Fatores Macroeconômicos e Institucionais, Composição do Endividamento e Estrutura de Capital de Empresas Latino-Americanas. *Brazilian Business Review*, 15(2), 152-174. Doi: 10.15728/bbr.2018.15.2.4

Brighetti, E., & Albanez, T. (2019). Decisões de Financiamento de Empresas Brasileiras em Cenários de Crise sob a Perspectiva da Teoria de Pecking Order. In. *XVI CONGRESSO USP DE INICIAÇÃO CIENTÍFICA EM CONTABILIDADE*, 2019, USP. Anais [....] São Paulo: Universidade de São Paulo.

Cardoso, V. R. S., & Pinheiro, M. C. (2020) Influência da recessão e das variáveis macroeconômicas sobre a estrutura de capital setorial. *Revista Contabilidade & Finanças*, 31(84), 392-408. Doi: 10.1590/1808-057x201908100

Cong, R., Lo, A. Y., & Yu, W. (2021). The distribution and regional determinants of nationally financed emissions-reduction projects in China. *Energy Policy*, 152, 112215. Doi: 10.1016/j.enpol.2021.112215

Di Pietro, F., Palacín Sánchez, M. J., & Roldán Salgueiro, J. L. (2018). Regional development and capital structure of SMEs. *Cuadernos de Gestión*, 18 (1), 37-60. Doi: https://doi.org/10.5295/cdg.150530fd

Frank, M. Z., & Goyal, V. (2009). Capital Structure Decisions: Which Factors Are Reliably Important? *Financial Management.*, 38(1), 1-37. https://www.jstor.org/stable/20486683

Franzotti, T. D. A., Valle, M. R. (2020). Impacto de crises sobre investimentos e financiamentos de companhias brasileiras: abordagem no contexto de restrições financeiras. *Brazilian Business Review*, 17(2), 233-252. Doi: 10.15728/bbr.2020.17.2.6

Gil, A. C., Oliva, E. C., Novais, M. B. C., & Silva, E. C. (2013). Fundamentos Científicos da Gestão para o Desenvolvimento da Regionalidade. *Revista de Ciências da Administração*, 15(35), 68-81. Doi: 10.5007/2175-8077.2013v15n35p68

Greene, W.H. (2002). *Econometric Analysis*. 5th Edition, Prentice Hall, Upper Saddle River, 802.

Hasan, I., Kobeissi, N., Wang, H., & Zhou, M. (2017). Bank financing, institutions and regional entrepreneurial activities: Evidence from China. *International Review of Economics & Finance*, 52, 257-267. Doi: 10.1016/j.iref.2017.01.013

Jahanzeb, A. (2013). Trade-Off Theory, Pecking Order Theory and Market Timing Theory: A Comprehensive Review of Capital Structure Theories. *Economics Bulletin*, 33(1), 1-6.

Kayo, E. K., & Kimura, H. (2011). Hierarchical determinants of capital structure. *Journal of Banking & Finance*, 35(2), 358-371. Doi: 10.1016/j.jbankfin.2010.08.015

La Rocca, M., La Rocca, T., & Cariola, A. (2010). The influence of local institutional differences on the capital structure of SMEs: Evidence from Italy. *International Small Business Journal*, 28(3), 234–257. Doi: 10.1177/0266242609360614

Lv, C., Bian, B., Lee, C. C., & He, Z. (2021). Regional gap and the trend of green finance development in China. *Energy Economics*, 102, 105476. Doi: 10.1016/j.eneco.2021.105476

Matias, F., & Serrasqueiro, Z. (2017). Are there reliable determinant factors of capital structure decisions? Empirical study of SMEs in different regions of Portugal. *Research in International Business and Finance*, 40, 19-33. Doi: 10.1016/j.ribaf.2016.09.014

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment.

The American Economic Review, 48(3), 261-297. http://www.jstor.org/stable/1812919.

Muhammad, M., Yet, C. E., Tahir, M., Nasir, A. M. (2020). Capital structure of family firms: the effect of debt and equity market timing. *Journal of Family Business Management*, Vol. ahead-of-print No. ahead-of-print, 2020. Doi: 10.1108/JFBM-09-2019-0059

Myers, S. C. (1984). Capital structure puzzle. *The Journal of Finance*, 39(3), 575-592. Doi: 10.1111/j.1540-6261.1984.tb03646.x

Myers, S., Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-222. Doi: 10.1016/0304-405X(84)90023-0

Palacín-Sánchez, M.J., Ramírez-Herrera, L., & Di Pietro, F. (2013). Capital structure of SMEs in Spanish regions. *Small Business Economics*, 41 (2), 403-519. Doi: 10.1007/s11187-012-9439-7

Palacín-Sánchez, M.J, & Di Pietro, F. (2016). The role of the regional financial sector in the capital structure of small and medium-sized enterprises (SMEs). *Regional Studies*. 70 (7), 1232-1247. Doi: 10.1080/00343404.2014.1000290

Pettinati, A. (2012). Regionalidade e Organizações- Programa de Pós Graduação em Administração da Universidade de São Caetano do Sul, *Páginas & Letras*, 2012. 250p. *Gestão & Regionalidade*, 28(83), 129-130.

Rajan, R. & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421-1460. Doi: https://doi.org/10.1111/j.1540-6261.1995.tb05184.x

Santos, M. A. (2013). *Determinantes da estrutura de capital de empresas em diferentes cenários econômicos e institucionais: um estudo comparativo*. Dissertação de Mestrado - Departamento de Contabilidade, Faculdade de Economia, Administração e Contabilidade de Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto.

Setyawan, I. R. (2011). An Empirical Study on Market Timing Theory of Capital Structure. *International Research Journal of Business Studies*, 4(2), 103-199. Doi: 10.21632/irjbs.4.2.103-119