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# The Effects of Sovereign Rating and Corporate Governance on The Capital Structure of Latin American Companies

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## ABSTRACT

This study analyzed the effects of sovereign rating and corporate governance (CG) on the capital structure of Latin American companies. A multilevel regression model was used for 823 companies listed on major Latin American stock exchanges over the period 2004–2018. The results showed that firm level is the most responsible factor for the variation in companies' capital structure, while country level had the greatest influence on the variation in long-term debt. In the absence of CG mechanisms, sovereign rating is one of the factors not controlled by managers that can explain the capital structure of Latin American companies, which reduce their debt levels to protect themselves in the face of their countries' sovereign rating variations. The results indicated that, despite having an audit committee and keeping independent members on the committee, firms choose to reduce their debt levels to protect themselves against the constant variations of their countries' sovereign rating. The results also showed that CG mechanisms do not act in isolation when it comes to reducing agency problems. This research is one of the first studies to provide evidence on the implications of sovereign ratings and CG on the capital structure of firms in Latin America.



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## INTRODUCTION

The search for an optimal capital structure that mitigates the agency problem has motivated the use of various mechanisms and methodologies to solve the puzzle through empirical evidence of the main theories that transcend the firm's capital structure (Bajaj et al., 2020; Shahar & Manja, 2018).

Debates on the topic gave rise to three major theories — pecking order, trade-off, and market timing — that have guided empirical studies on the determinants of a capital structure that combines own and third-party resources to finance investments, while adding value to shareholder wealth (Berkman et al., 2016; M'ng et al., 2017; Rahman, 2019). The study by Jensen and Meckling (1976) was a landmark to the approach of agency theory in another dimension, highlighting the ownership structure and agency costs incurred by monitoring the entrenchment behavior of executives. According to Bajaj, Kashiramka, and Singh (2020), the agency problem arises due to the existence of conflicts of interest between agent and principal; furthermore, with the persistence of information asymmetry problems, executives have access to privileged data about the real financial situations of companies, which gives them greater bargaining power in relation to other stakeholders.

Agency conflicts lead companies to create mechanisms that control the relationship between managers, shareholders, and creditors (Buvanendra et al., 2017; Vijayakumaran & Vijayakumaran, 2019). Consequently, corporate governance has emerged in order to address aspects related to board structure, transparency and disclosure of information, minority shareholder protection, ownership and control structure, as well as compensation for managers (Jara et al., 2018; Vazquez et al., 2020). Empirical evidence indicates that the adoption of corporate governance practices influences the firm's capital structure (Ellili, 2020; Gaitán et al., 2018; Kajola et al., 2019; Kieschnick & Moussawi, 2018).

In recent decades, the advance of globalization has enabled the emergence of new strategic alliances between countries that seek to eliminate economic borders in order to integrate markets with the international financial system (Jesuka et al., 2021; White, 2010). Investors apply their wealth across borders unaware of the management practices adopted by the beneficiaries. In this context, according to Turrent and García (2015), a concern with the agency problem and the conflicts of interest among agents has guided the studies on corporate governance practices, as well as their impacts on the firm's capital structure.

In addition to the internal factors that affect debt choice, firms are still subject to the external conditions

of the market in which they operate. Several studies have analyzed the influence of the macroeconomic environment on firms' debt and performance (Bernardo et al., 2018; Dierker et al., 2019; Hromei, 2021; Jesuka et al., 2021). From the agency theory perspective, corporate ratings issued by major rating agencies — Standard & Poor's, Fitch Rating, Moody's Investor — are also used as a tool to investigate issuers' debt strategies and governance quality (Kisgen, 2019; Krichene & Khoufi, 2016; Rogers et al., 2016).

Chen et al. (2016a) explained that the rating issued by rating agencies indicates the level of default risk of a capital borrower as well as its ability to honor its commitments on due time. Cantor and Packer (1996) stated that agencies issue one report that classifies the risk quality for companies (corporate rating) and another one for countries (sovereign rating) to assist individual and institutional investors in the application of their resources.

For a long time, corporate rating has assumed a significant role in the literature debates, with several studies showing its relationship with governance quality and corporate default risk. However, sovereign rating — which measures the political, economic, and social stability of countries — is little considered in financial literature (Chen et al., 2013; Chen et al. (2016a); Sajjad & Zakaria, 2018). Several studies indicate that the change in sovereign rating significantly affects the availability of capital in the financial markets, consequently affecting firm debt (Afonso et al., 2012; Cai et al., 2016; Freitas & Minardi, 2013). However, the lack of empirical evidence leaves a gap in the literature regarding the implications of sovereign rating variation on firms' capital structure.

In this context, this study sought to analyze the effects of sovereign rating and corporate governance on the capital structure of Latin American companies in the period 2004-2018. This is relevant due to the scarcity of empirical evidence on the relationship between corporate governance and capital structure in Latin America, when considering that most studies use indices to measure the quality of governance, which do not reveal the individual effect of the mechanisms.

The constant political and economic instabilities in Latin American countries draw the attention of researchers who have been studying how corporate debt is affected. As highlighted in the International Monetary Fund (IMF) report published in 2017, the 2008 global crisis continued to affect countries such as Argentina, Brazil, Chile, and Colombia, which experienced several periods of political and economic stability that favored the increase in gross domestic product (GDP), the maintenance of low inflation, and interest rates under control. However, starting in 2014, Brazil and Argentina

faced major political and economic difficulties that worsened the main economic indicators.

Consequently, there was contagion among countries that suffered several modifications in sovereign rating by agencies. Latin American countries have experienced approximately 40 upgrade and downgrade decisions that may have affected the cost of external financing and the stock prices of firms (Bustillo et al., 2018; Freitas & Minardi, 2013; Jesuka & Peixoto, 2022). In this context, this study adopted a three-level hierarchical regression model to find evidence on the implications of sovereign rating variation on the capital structure of Latin American companies, considering the adoption of underexplored best governance practices.

## THEORETICAL FRAMEWORK

### Corporate governance and capital structure of the firm

The discussions on capital structure began with the seminal studies by Durand (1952) and Modigliani and Miller (1958) on whether there is a relationship between the debt choice and the financial performance of the firm, considering a perfect market with no taxes, no transaction and bankruptcy costs, and abundant availability of capital. Later, Myers (1974) retorted Modigliani and Miller (1958) by stating that the market is not perfect and, in some situations, firms take advantage of market conditions and tax benefits to go into debt. The lack of consensus among theorists has led to the emergence of various approaches to corporate debt. In this context, the capital structure theory and the agency theory evidenced by Jensen and Meckling (1976) and Harris and Raviv (1991) are two pillars that have supported empirical work investigating the determinants of capital structure and which mechanisms can help reduce agency problems and information asymmetry.

In financial literature, capital structure is addressed from different perspectives in which the strategies adopted by managers to choose a structure that minimizes the agency conflict are investigated. Marques, Ribeiro, and Barboza (2018) point out that corporate governance could provide a balance point in the capital structure that maintains the scale of the company and reconciles the interests of the parties involved. Studies conducted in several countries investigate the determinants of capital structure from different perspectives (Berkman et al., 2016; M'ng et al., 2017; Shahar & Manja, 2018).

The agency problem and capital market frictions lead corporate boards to impose strict governance practices to align the interests of managers, creditors, and shareholders. In this scenario, Berkman et al., 2016 report that leverage is used as a control mechanism.

However, corporate governance is seen as an effective tool to monitor the entrenchment behavior of managers, and thus prevent the expropriation of shareholders' rights (Jara et al., 2018; Vazquez et al., 2020). Several studies investigate the relationship between CG mechanisms and capital structure choice of firms in emerging markets (Kajola et al., 2019; Kieschnick & Moussawi, 2018; Marques et al., 2018; Vijayakumaran & Vijayakumaran, 2019).

Kieschnick and Moussawi (2018) investigated the impacts of firm age and corporate governance on the capital structure choice of 1,500 listed U.S. firms over the period from 1996 to 2016. They used board size and composition, duality of CEO/chairman of the board roles, and dual class of shares as metrics for corporate governance. The authors found that firms using a dual class of shares tend to become more indebted as they age; meanwhile, without considering its interaction with corporate governance characteristics, age is negatively correlated with the financial leverage of the firm. In addition, the authors indicated that, as firms age, by-law restrictions and board composition start influencing their capital structure choices quite differently from younger companies.

Feng, Hassan, and Elamer (2020) studied the effects of corporate governance and ownership structure on the capital structure of 119 Chinese real estate firms. They found that board size, ownership concentration and size positively influenced capital structure. Also in China, Vijayakumaran and Vijayakumaran (2019) observed an inverse relationship between state ownership and capital structure, while board size and the proportion of independent directors had no influence on the firms' debt choice. Buvanendra, Sridharan, and Thiyagarajan (2017) found that the duality of CEO/chairman of the board roles and family ownership positively affect the debt of Indian and Sri Lankan companies listed on the Colombo Stock Exchange – CSE.

Seen as environments of low legal protection for shareholders, Latin American countries spare no efforts to establish principles that favor the adoption of good corporate governance practices. Vazquez, Carrera, and Cornejo (2020) indicated a similarity to North American and Continental European governance standards, in which, among other mechanisms, the independence of the board of directors is mostly adopted by the companies. There is empirical evidence on the effects of corporate governance on the debt of Latin American firms (Jara et al., 2018; Kayo & Kimura, 2011; Marques et al., 2018; Ruiz, 2017). Ruiz, 2017 investigated the influence of CG on the leverage of 575 firms listed in Brazil, Chile, and Mexico over the period from 2006 to 2014. They included ownership concentration, board size

and independence, internal audit committee, CEO/ chairman duality, and audit reputation as corporate governance variables. The results showed that a higher level of ownership concentration encourages the majority shareholder to exercise a higher level of control over directors, imposing a higher level of debt. They found, on the one hand, that board independence increases leverage to extend control over managers' behavior, and, on the other hand, that the internal audit committee exerts a negative impact on leverage.

The evidence presented shows that corporate governance has an important role in mitigating agency conflicts, and that managers are sometimes forced to leverage companies, as they must work to maintain the scale of the firm, aligning their interests with shareholders and creditors. In this context, firms in Latin America are expected to use capital structure as a tool to control managerial actions, which will be tested by the following hypothesis:

H1: Improvements in the quality of corporate governance raise the debt of firms in Latin America.

### **Sovereign rating and capital structure of the firm**

Evidence from the literature points to the existence of two types of markets characterized by the levels of protection afforded to investors. [La Porta et al. \(2000\)](#) indicated that there is a low legal protection of minority shareholders' interests in companies located in countries that adopt a Civil Law regime, which consequently represents a high-risk exercise for investments. In this context, in addition to the governance quality of firms, rating reports issued by rating agencies have an important role in assisting investors in their decisions ([Cheikh et al., 2021](#); [Dasilas & Papasyriopoulos, 2015](#)).

According to [White \(2010\)](#), in more than a century, the three major rating agencies — Standard & Poor's, Fitch Rating, and Moody's Investors — have emerged and consolidated themselves in the global market in a context in which capital needs have led firms to seek third party resources to finance their expansion and growth projects. In this context, rating agencies act as an alternative to mitigate the effects of the lack of regulation by the international financial system and the implications of information asymmetry problems in the global market ([Ahmed et al., 2020](#); [Boumparis et al., 2019](#)).

Rating agencies rate the credit quality of securities issued by firms (corporate rating) and sovereign states (sovereign rating) by means of an evaluation based on predefined criteria and assign a grade that represents a creditor's ability and willingness to honor its obliga-

tions on due time ([Ahmed et al., 2020](#); [Cheikh et al., 2021](#)). The agencies' ratings affect firms and countries through the impact of announcing decisions to upgrade or downgrade their credit qualities ([Cantor & Parker, 1996](#); [Chen et al., 2016b](#)). Because investors use sovereign rating as a guideline in their investment decisions, it has an important role in the debates about its implications in managerial actions.

Despite their importance in the international financial system, rating agencies are the object of criticism in the academy for failing to anticipate the major financial crises that have haunted the global market in recent decades ([Brooks et al., 2004](#); [Drago & Gallo, 2016](#)). [Hooper, et al. \(2008\)](#) stated that the significant impacts of ratings issued by agencies provide new information to the market that can somehow intensify, prolong, or even alleviate financial crises. However, the reliability and credibility of ratings released by agencies was questioned by [Drago and Gallo \(2016\)](#), who recalled the Lehman Brothers bank case in the United States and cases in many European countries that had top credit quality ratings on the eve of the 2008 crisis. These events led [Brooks et al. \(2004\)](#) to clarify once again that ratings have no anticipatory power over financial crises, but only confirm facts that already exist in the market.

However, in a context of lack of regulation in the financial market and persistence of the information asymmetry problem, as reinforced by the [Basel Committee \(2003\)](#), rating agencies are key agents for the proper functioning of the international financial system, when considering that sovereign credit risk is still assessed by the large banks when defining the cost of loans in the capital market.

The announcements of sovereign rating downgrades signal financial difficulties of governments, directly influencing capital markets due to the flight of investors. There is also an increase in debt costs related to the rise in interest rates and inflation, in addition to an increase in the premium charged by international creditors to compensate for the risk inherent in the countries. In this context, several studies have presented empirical evidence on the effects of sovereign ratings on both the performance and debt of firms ([Cai et al., 2019](#); [Chen et al., 2013](#); [Jesuka & Peixoto, 2022](#); [Joo & Parhizgari, 2021](#); [Medina & Di Pietro, 2019](#)).

[Chen et al. \(2013\)](#) investigated the effects of sovereign rating changes in 48 countries on corporate investment over the period 1983-2009 and found that there were significant increases in private investment growth after sovereign rating upgrades, as well as significant and temporary declines in investment after sovereign rating downgrades. [Medina and Di Pietro](#)

(2019) investigated the effects of rating changes on the speed of leverage adjustment of listed European firms over the period 2004–2014 and reported that a rating downgrade decision adjusts capital structure more slowly than an upgrade.

Considering the above, sovereign rating plays a crucial role for countries, with downgrades having an immediate effect on stock prices in the capital market and making it difficult for companies to borrow due to the increase in external funding costs. Considering that Latin American countries have undergone several changes in their sovereign risk rating, this study proposes that an increase in credit risk quality exerts a positive impact on the capital structure and value of firms, as expressed in the following hypothesis:

H2: An increase in sovereign rating quality raises the debt of Latin American firms.

## METHODOLOGY

### Sample and data sources

To investigate the effects of sovereign rating and corporate governance on capital structure, we used an initial sample of 906 non-financial companies listed on stock exchanges located in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, and Venezuela over the period from 2004 to 2018. Bolivia, Ecuador, and Venezuela were excluded from the sample because corporate governance data for these countries and in this period were not available, resulting in a final sample of 823 companies. All financial, corporate governance, and sovereign rating data were collected from the Eikon — Thomson Reuters database. The period between 2004 and 2018 was chosen in order to observe the impacts of the 2008 crisis on companies in Latin America; in addition, Argentina, Brazil, and Peru went through several rating upgrades and downgrades by major rating agencies in this period.

### Study variables

In this research, like in [Bernardo, Albanez, and Securato \(2018\)](#), [Dasilas and Papasyriopoulos \(2015\)](#), [Bajaj, Kashiramka, and Singh \(2020\)](#), and [Berkman et al. \(2016\)](#), capital structure was measured through financial leverage (LEV) — calculated by the ratio of total debt to total assets —, debt at long-term debt (LTD) — the ratio between long-term debt and total assets —, and debt on equity (DE) — calculated by the ratio between total debt and net equity. Also based on the literature, the following independent variables were considered:

1. Board size (BSIZE): the board has the role of controlling the entrenching power of the CEO. A large board can reduce the opportunistic behavior of managers ([Vazquez et al., 2020](#)). The total number of members on the board of directors was used.
2. CEO/chairman of the board (DCEO) duality: [Kieschnick and Moussawi \(2018\)](#) indicated that dual roles provide a scope that broadens the CEO's influences on the board's strategic decisions and may diminish its monitoring power. A dummy variable was created that takes on a value of one if the chairman of the board is also the CEO of the company, and zero otherwise.
3. CEO is a board member (CEOBM): according to [Yang and Zhao \(2014\)](#), the presence of the CEO as a board member is considered a negative fact that can undermine the quality of corporate governance. A dummy variable was created that takes on the value of one if the CEO is also a board member, and zero otherwise.
4. Audit committee (AUDITC): According to [Ararat, Black, and Yortoglu \(2017\)](#), the audit committee is a governance mechanism that ensures the compliance and transparency of disclosed financial reports and improves the company's image in the market. It was calculated through a dummy variable that takes on a value of one if the company has an audit committee, and zero otherwise.
5. Audit committee independence (IND\_AUDIT): [Bansal and Sharma \(2016\)](#) indicated that audit committee independence is highly recommended by CG guidelines, as it limits any possibility of earnings management by managers. According to [Arslan, Zaman, Malik, and Mehmood \(2014\)](#), the presence of a larger number of independent members on the committee can reduce information asymmetry problems. The percentage of independent directors in the audit committee was considered.
6. Audit committee expertise (AUD\_EXP): the provisions established by Sarbanes-Oxley (SOX) in 2002 recommend that audit committee members have knowledge and experience in finance, accounting, and related fields. Having an audit committee full of members without expertise in accounting and/or finance creates risk of invalidating reports by external users ([Ghafran & O'Sullivan, 2017](#); [Sultana & Van der Zahn, 2015](#)). A dummy variable was created that takes on a value of one if at least one committee member has expertise in finance, accounting, or related fields, and zero otherwise.
7. Sovereign rating (SOVRAT): when there are changes in the sovereign rating of a country, the financial market reacts according to the type of announcement and generates contagion among economic sectors, affecting the cost of external funding of companies and possibly causing investor flight ([Jesuka & Peixoto,](#)

2022; Medina and Di Pietro (2019). In this study, following Boumparis, Milas, and Panagiotidis (2019), we transformed the ratings from Standard & Poor's, Fitch Rating, and Moody's Investors into a numerical scale so that the higher the rating, the better the country's sovereign rating. Then, we calculated the average

annual score that three agencies assigned to each country over the period from 2004 to 2018.

To control the relationship between corporate governance, sovereign rating, and capital structure, the variables related to firms' characteristics were chosen based on similar studies as highlighted in Table 1.

**Table 1.** Summary of the study variables.

Variable	Symbol	Metric	Expected signal	Author
Dependents				
Leverage	LEV	Total debt / Total assets		Bernardo et al., (2018); Dasilas and Papasyriopoulos (2015)
Long-term debt	LTD	Long-term debt / Total assets		Bajaj et al., (2020); Vijayakumaran and Vijayakumaran (2019)
Debt on equity	DE	Total debt / Shareholders' equity		Afonso et al., (2012); Dasilas and Papasyriopoulos (2015)
Independents				
Board size	(BSIZE)	Number of members in the board of directors	-	Bansal and Sharma (2016); Dasilas and Papasyriopoulos (2015); Turrent and García (2015)
CEO/President DUALITY	(DCEO)	Dummy variable, one if the chairman of the board is the CEO, zero otherwise	+/-	Dasilas and Papasyriopoulos (2015); Jaradat (2015); Kieschnick and Moussawi (2018)
Duality CEO board member	(CEOBM)	Dummy variable, one if the CEO is also a board member, zero otherwise	+/-	Ararat et al., (2017); Kieschnick and Moussawi (2018);
Audit committee	(AUDC)	Dummy variable, one if there is an audit committee, zero otherwise	+	Ararat et al., (2017); Bansal and Sharma (2016)
Independence of the audit committee	(AUD_IN D)	Percentage of independent members in the audit committee	+	Arslan et al. (2014); Bansal and Sharma (2016); Dasilas and Papasyriopoulos (2015)
Audit committee expertise	(AUD_EX P)	Dummy variable, one if committee members have expertise in finance, zero otherwise	+	Ghafran and O'Sullivan (2017); Sultana and Van der Zahn (2015)
Sovereign rating	(SOVRAT)	Average annual scores of Standard & Poor's, Moody's, and Fitch Rating, transformed from zero to 21	+	Jesuka and Peixoto (2022); Joo and Parhizgari (2021); Kayo and Kimura (2011)
Control				
Firm size	FSIZE	Ln (total asset)	+	Alqatamin (2018); Dasilas and Papasyriopoulos (2015); Turrent and García (2015)
Market-to-book	MTB	Market value / Stockholders' equity	+	Ararat et al., (2017)
Current liquidity	CL	Current assets / Current liabilities	+	Kieschnick and Moussawi (2018)
Investments	INV	CAPEX / Total assets	+	Yang and Zhao (2014)

Note. Prepared by the authors.

## ECONOMETRIC MODEL

Multi-country studies use traditional methods estimated by ordinary least squares (Turrent & García, 2015; Vazquez et al., 2020). However, these methods are widely criticized in the literature because they consider the normal distribution of the standard errors; by assuming that the variance is constant, the estimators can be biased and inconsistent (Fávero & Confortini, 2010; Goldszmidt et al., 2011). Kayo and Kimura (2011) indicated that hierarchical models are more appropriate when the data is nested at different levels and provides a generalized view of the estimators, enabling observation of the variation of the dependent variable at each level, in addition to reducing the problems of endogeneity.

Like Bernardo, Albanez, and Securato (2018) and Jesuka and Peixoto (2022), this study adopted the three-level hierarchical linear regression model with repeated measures to observe the behavior of the capital structure of each

firm and in each country over time. The models were estimated through full maximum likelihood (ML) without predictors. For the first level, Equation (1) considered the linear function for the average capital structure  $Y_{ikt}$  assumed over period  $t$ , in each firm  $i$  and in each country  $k$ :

$$Y_{ikt} = \beta_{0ik} + e_{ikt} \sim ND(0, \sigma_e^2) \quad (1)$$

where  $\beta_{0ik}$  is the average capital structure assumed over the entire period  $t$  (years), for firm  $i$  in country  $k$ , and the random error  $e_{ikt}$  is the variation in a firm's capital structure over time and the variation in omitted factors. The random error term assumes a normal distribution with mean zero and variance  $\sigma^2$ . Then, at the second level, considering the coefficient of Equation (1) as the dependent variable, Equation (2) estimated the average capital structure  $\beta_{0ik}$  of every period for each firm  $i$  and each country  $k$ .

$$\beta_{0ik} = \beta_{00k} + \mu_{ik} \sim ND(0, \sigma_e^2) \quad (2)$$

At the second level, we investigated the average capital structure assumed over the entire period and for all firms in country  $k$  represented by the expression  $\beta_{00k}$  and  $\mu_{ik}$  is the random error term for firm  $i$  in country  $k$  that assumes a normal distribution with mean zero and variance  $\sigma^2$ . Finally, in the last level — the linear function of the average capital structure for all firms —, the whole period in each country  $\beta_{00k}$  was estimated in Equation (3).

$$\beta_{00k} = \beta_{000} + \varepsilon_{ik} \sim \text{ND}(0, \sigma_{\varepsilon}^2) \quad (3)$$

where  $\beta_{000}$  is the capital structure assumed over the entire period for all firms in all countries, plus the random effect  $\varepsilon_{ik}$  with a normal distribution with mean zero and variance  $\sigma^2$ . After estimating the models for the three levels, the hierarchical model was estimated in Equation (4) to investigate the relationship between the effects of corporate governance and sovereign rating on capital structure, including control variables.

$$\text{DEBT}_{ikt} = \beta_{000} + \beta_1 \text{GOV}_{i,k,t} + \beta_2 \text{SOVRAT}_{k,t} + \beta_3 \text{CONT}_{i,k,t} + \mu_{ik} + \varepsilon_{tik} \quad (4)$$

where  $\text{DEBT}_{ikt}$  represents the set of capital structure variables (leverage, long-term debt, and debt on equity) of firm  $i$  in country  $k$  and at time  $t$ .  $\text{GOV}_{i,k,t}$  represents the set of the seven corporate governance variables of firm  $i$  in country  $k$  and at time  $t$ .  $\text{SOVRAT}_{k,t}$  is the sovereign

rating of each country at time  $t$ .  $\text{CONT}_{i,k,t}$  represents the control variables of firm  $i$  in country  $k$  and at time  $t$ .  $\varepsilon_{ik}$  is the random effect of country  $k$ ;  $\mu_{ik}$  is the random effect of firm  $i$  in country  $k$ , and  $\varepsilon_{tik}$  is the random error term that is the variation in the capital structure of the  $i^{\text{th}}$  firm and in the  $k^{\text{th}}$  country over time.

## RESULTS ANALYSIS

### Descriptive analysis

The results in Table 2 present the mean and standard deviation of the variables for the overall sample and the mean for each country, as well as the ANOVA test for comparing the means between the countries. For the capital structure variables, it was observed that Brazil and Mexico, representing more than half of the sample, have leverage averages equal to 0.28 and 0.25 respectively, while it was 0.23 in the general sample. In addition, Argentina, Chile, Colombia, and Peru have a leverage average ranging between 0.18 and 0.20. Regarding the long-term debt level, all countries show close values, except Brazil and Mexico, which registered 0.172 and 0.178 respectively. Argentina and Mexico registered a debt-to-equity ratio of 0.829 and 0.746 respectively, above the general average of 0.663.

**Table 2.** Descriptive statistics of the variables.

Variable	Obs.	Argentina	Brazil	Chile	Colombia	México	Peru	General sample		ANOVA
								Mean	Std. dev.	
LEV	10,242	0.196	0.279	0.204	0.18	0.248	0.187	0.231	0.187	222.88***
LTD	10,185	0.107	0.172	0.148	0.12	0.178	0.112	0.149	0.147	136.18***
DE	10,247	0.649	0.829	0.558	0.409	0.746	0.462	0.663	0.864	63.72***
BSIZE	5,297	13.02	7.352	8.2	8.142	13.65	8.471	8.593	4.205	768.14***
DCEO	4,916	0.204	0.256	0.138	0.099	0.392	0.212	0.241	0.428	455.66***
CEOBM	4,793	0.563	0.495	0.071	0.00	0.782	0.446	0.464	0.499	299.40***
AUDC	4,635	0.963	0.33	0.458	0.98	0.99	0.601	0.494	0.5	350.09***
AUDIND	2,618	46.53	54.28	59.74	82.22	98.02	36.15	63.04	39.9	763.23***
AUDEXP	4,358	0.499	0.264	0.156	0.285	0.719	0.202	0.323	0.468	53.67***
SOVRAT	12,345	6.022	12.16	17.8	12.6	14.62	13.24	13.17	3.398	275.15***
INV	8,938	0.053	0.0481	0.048	0.0399	0.0527	0.048	0.049	0.0445	37.90***
FSIZE	10,270	18.68	20.08	19.37	19.52	20.6	18.92	19.66	2.106	201.81***
MTB	8,666	2.347	2.537	2.342	1.658	2.663	1.63	2.323	2.455	476.14***
CL	9,968	1.568	1.754	1.914	1.821	2.015	1.929	1.834	1.395	73.73***

Note. \*\*\* represents significance at the 5% level. Source: Research results.

The results for the explanatory variables present an overview of the progress in the adoption of corporate governance practices by Latin American companies. Regarding the variables related to the board of directors, it was noticed that, on average, in the six countries, firms have a board of directors composed of about eight members, with Argentina and Mexico having an average of 13 members. Overall, on average, in 46.4% of companies, the chief executive officer (CEO) is also an

active member of the board of directors, while in 23.1%, he or she is also the chairperson of the board of directors. There is a dual role of CEO/chairman of the board in 39.2% of companies, and the CEO is also a board member in 78.2% of the firms in Mexico.

Regarding the variables related to auditing, 49.4% of the companies have an audit committee, 63.04% of the committee members are independent, and 32.3% have expertise in auditing, that is, they have special-

ists in administration, accounting, and related areas. In Argentina, Colombia, and Mexico, more than 98% of companies have an audit committee, and between 82.22% and 98.02% of auditors are independent; Mexico was the only country where there was an average of 72% of members with expertise in the audit committee compared to their counterparts.

With respect to the sovereign rating (SOVRAT), with an average of 13, the countries in the region were at investment grade in the risk rating reports issued by the three rating agencies. It is worth mentioning that Argentina was in the lowest level of the ranking, registering an average equal to six, which is equivalent to CCC+, while Brazil had an average equal to 12.16, which is equivalent to BB+, one level below investment

grade. Accordingly, the ANOVA test was run to check if there is a difference in averages for all variables among the countries. As expected, the test results presented in Table 2 show that there is a significant mean difference at the 5% level for all variables in all countries.

Table 3 presents the results of Pearson's correlation analysis between the study variables. As observed, all corporate governance, sovereign rating, and control variables registered relatively low degrees of association, possibly indicating that there are no multicollinearity problems. The variance inflation factors (VIF) test was performed for each of the regressions and the results showed values lower than three, confirming that there is no multicollinearity problem in the models.

**Table 3. Pearson correlation analysis.**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) LEV	1.00													
(2) LTD	0.81*	1.00												
(3) DE	0.24*	-0.13*	1.00											
(4) INV	0.08*	0.13*	-0.04*	1.00										
(5) FSIZE	0.29*	0.42*	-0.17*	0.14*	1.00									
(6) MTB	0.39*	0.34*	0.26*	0.10*	0.15	1.00								
(7) CL	-0.32*	-0.15*	-0.49*	-0.09*	-0.09*	-0.07*	1.00							
(8) BSIZE	0.05*	0.16*	-0.18*	0.15*	0.51*	0.04*	0.22*	1.00						
(9) AUDIND	-0.04	0.07*	-0.09*	0.07*	0.32*	0.15*	0.16*	0.20*	1.00					
(10) DCEO	-0.06*	-0.09*	0.06*	-0.07*	-0.07*	0.01	-0.01	0.03*	0.23*	1.00				
(11) CEOBM	0.02	-0.02	0.05*	-0.08*	-0.06*	0.01	0.04*	0.01	0.14*	0.38*	1.00			
(12) AUDC	0.05*	0.17*	-0.17*	0.12*	0.42*	0.18*	0.25*	0.54*	0.27*	-0.027	-0.01	1.00		
(13) AUDEXP	0.01	0.06*	-0.08*	0.08*	0.13*	0.13*	0.02	0.29*	0.15*	0.07*	0.03	0.52*	1.00	
(14) SOVRAT	-0.02*	0.05*	-0.22*	0.01	0.06*	0.02*	0.27*	-0.08*	0.16*	-0.13*	0.01	-0.07*	-0.09*	1.00

Note. Source: Survey results.

### Model analysis

Table 4 presents the results of the null or empty models, which, based on the random intercepts, consider the average of the variables that measure capital structure (financial leverage, long-term debt, and debt on equity) for

Latin American companies. These models, which do not include the explanatory variables, show the degree of influence of each level on the variation of the dependent variables through the decomposition of variances that is represented by the interclass correlation index – ICC.

**Table 4. Debt structure of companies located in BRICS countries – Null model.**

	LEV	LTD	DE
Remarks	10,242	10,185	10,247
Fixed effects	Coefficient	Coefficient	Coefficient
Intercept	5.706***	15.562***	23.519
<b>Estimators (variance) – Random effects parameters</b>			
Country	0.0011	0.0020	0.0209
Company	0.0209	0.4123	0.3384
Time	0.0027	0.0052	0.0114
Total	0.0247	0.4395	0.3707
<b>Interclass correlation coefficient (ICC)</b>			
Level 3 (Country)	3.18%	3.5%	2.79%
Level 2 (Company)	62.39%	61.07%	47.93%
Level 1 (Time)	34.43%	35.43%	49.28%
Total	100.00%	100.00%	100%
LR test (Chi2)	7,510.23***	2,529.9***	4,665***
Wald	95.88***	13.16***	57.24***

Note. ALAV – Financial leverage; DIVLP – Long-term debt; DIVPL – Debt over equity. \*\*\*, \*\*, and \* indicate significance of 1%, 5%, and 10%, respectively.

As can be seen, the country level had less influence on the variation in capital structure, indicating that 3.5% to 2.79% of the variation in this variable is due to companies being in their respective countries. For the firm level, this accounts for most of the variation in the companies' debt levels (between 62.39% and 47.93%) over the period. The time level, in turn, contributed between 49.28% and 34.43% in the variation of the capital structure. In general, the results of the null models indicate that the characteristics of each firm play an important role in their choice of capital structure. The maximum likelihood ratio tests (LR test) being significant at the

1% level indicate that the multilevel model is more appropriate than the models estimated by ordinary least squares.

The results of the regressions that investigate the impacts of the sovereign rating and corporate governance on the capital structure of Latin American firms are presented in Table 5. In a first model, the relationship between sovereign rating and debt variables was analyzed, including the control variables. A second model included the corporate governance variables to observe their influence on this relationship in the presence of the sovereign rating.

**Table 5.** Corporate governance, sovereign rating, and capital structure.

Variables	LEV		LTD		DE	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
INV	-0.1464*** (0.0355)	-0.2397*** (0.0824)	0.0019 (0.0296)	-0.1439** (0.0710)	-1.2059*** (0.1612)	-1.0885*** (0.4158)
FSIZE	0.0226*** (0.0019)	0.0456*** (0.0047)	0.0336*** (0.0015)	0.00537*** (0.0038)	-0.1467*** (0.0079)	-0.2115*** (0.0213)
MTB	0.0134*** (0.0007)	0.0172*** (0.0016)	0.0101*** (0.0006)	0.0114*** (0.0014)	0.2044*** (0.0032)	0.1757*** (0.0081)
CL	-0.0284*** (0.0016)	-0.0328*** (0.0016)	-0.0011*** (0.0012)	-0.0012 (0.0030)	-0.0706*** (0.0063)	-0.0972*** (0.0175)
SOVERAT	-0.0019** (0.0009)	-0.0034* (0.0020)	-0.0028*** (0.0008)	0.0060*** (0.0018)	0.0048 (0.0038)	0.0234** (0.0100)
BSIZE		-0.0007 (0.0013)		0.0038 (0.0011)		-0.0037 (0.0065)
CEOBM		0.0074 (0.0112)		-0.0120 (0.0095)		-0.0334 (0.0557)
DCEO		0.0004 (0.0123)		0.0011 (0.0108)		-0.0226 (0.0623)
AUDC		-0.0159 (0.0138)		0.0140 (0.0118)		-0.1846*** (0.0696)
AUDIND		-0.0040*** (0.0001)		-0.0030*** (0.0002)		-0.0011*** (0.0007)
AUDEXP		-0.0033 (0.0085)		0.0069 (0.0073)		-0.0251 (0.0428)
_Constant	0.1701*** (0.0414)	0.6025*** (0.0988)	-0.5037*** (0.0333)	-0.8646*** (0.0827)	-2.4841*** (0.1702)	3.5012*** (0.4846)
Observation	7688	1480	7677	1479	7688	1480
VIF	1.16	1.18	1.17	1.19	1.15	1.18
Wald	1069.55***	362.88***	850.47***	331.41***	4914.06***	655.88***
LR	5124.14***	867.59***	4246.07***	779.51***	3951.62***	681.47***

Note. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively. Source: Survey results.

As can be observed in Model 1, sovereign rating (SOVERAT) shows a statistically negative relationship with financial leverage at the 5% level, indicating that Latin American companies are less leveraged when their respective countries receive a better sovereign risk rating by rating agencies. In Model 2, the variable maintained its negative effect and reduced its significance level in the presence of the governance variables. Only audit committee independence (AUDIND) showed a statistically significant and negative relationship with firm leverage, indicating that the higher the number of independent members in audit committees, the lower

the leverage of firms, corroborating the study of [Arslan et al. \(2014\)](#).

These results reject Hypothesis 2 of the study and partially reject Hypothesis 1, and do not corroborate the studies of [Sajjad and Zakaria \(2018\)](#) and [Joo and Parhizgari \(2021\)](#), which indicated that a good quality of sovereign rating reduces the cost of capital and encourages an increase in the indebtedness of firms. In this aspect, considering that some Latin American countries such as Argentina, Brazil, Colombia, and Peru underwent several changes in the rating classification by agencies in the observed period, it can be inferred that, facing a scenario with

the prospect of a downgrade, companies avoid leveraging to prevent the negative consequences of a downgrade in investment rating.

The presence of the rating may explain why most of the governance variables do not affect the indebtedness of firms, since it presents an overview of the internal political-economic environment of each country. The relationships found by the control variables are consistent with the literature that states that, when there is a high level of liquidity, firms do not leverage to finance their investments (Kieschnick & Moussawi, 2018; M'ng et al., 2017); on the other hand, large companies encounter fewer financial constraints, so they are more leveraged.

In Model 3, the same relationship remained negative with the long-term debt at the 1% level, demonstrating that, in periods of good country risk ratings in Latin America, there is a reduction in the long-term debt of companies. Once again, the results reflect the strategy adopted by companies in the region to reduce their debt levels even in periods of better sovereign rating of their respective countries, when considering the prevailing political and economic instability in the region.

In Model 4, we observe that the rating started to exert a positive effect on the long-term debt variable in the presence of the corporate governance variables. The independence of the audit committee showed a negative relationship with long-term debt, as was the case for the leverage model. This fact may signal that the adoption of better governance practices may lead firms to take on debt in periods of good sovereign risk ratings. All control variables maintained their previous behavior, with market-to-book and firm size remaining positively related to long-term debt, while current liquidity and investment remained negatively related to long-term debt.

Finally, the results of Model 5 show that sovereign rating did not exhibit a statistically significant effect on debt on equity. Investment, firm size, and current liquidity reduce debt-to-equity, but market-to-book raises it, in line with the literature (Ellili, 2020; Hromei, 2021; Jaradat, 2015). In Model 6, which included the corporate governance variables, sovereign rating started to exert a positive relationship at the 5% level, unlike Models 2 and 4; like the independence of the audit committee, its existence has a negative impact on the indebtedness of companies.

In general, corroborating the findings of Krichene and Khoufi (2016) for firms in the United States, the results of this study show that, in the absence of corporate governance mechanisms, the sovereign rating of Latin American countries is an important factor that is considered by companies when choosing their capital structures. The evidence rejects the first hypothesis (H1) for leverage and long-term debt and confirms it for long-term debt and debt to equity. Like Ghafan and O'Sullivan (2017) and

Sultana and Van der Zahn (2015), this study infers that having an audit committee and ensuring its independence can facilitate access to funding sources; however, this is a reducing factor in the debt levels of Latin American firms. The statistical significance of the maximum likelihood ratio (LR) and Wald tests indicate that the multilevel regression is the most appropriate for the models.

### Robustness test

The results show that the adoption of corporate governance mechanisms can influence the capital structure of Latin American firms. However, the problem of unobservable and simultaneous endogeneity remains a major challenge in studies involving corporate governance versus capital structure (Feng et al., 2020; Vijayakumaran & Vijayakumaran, 2019). Using various corporate governance mechanisms, the authors report that endogeneity arises in this relationship when there is omission of unobserved variables, as well as a reverse relationship between the variables of interest. For instance, Hromei (2021) highlighted that firms' current conditions may lead to decisions that would affect governance structure as well as firms' debt, and consequently redirect their future actions.

The literature revealed several methods employed to reduce this problem, where an exogenous relationship is sought between the variables of interest in multiple regression models. In this study, following Jesuka and Peixoto (2022) and Kieschnick and Moussawi (2018), a robustness test was performed to control for unobservable and simultaneous heterogeneity in the relationship between corporate governance and capital structure. Consequently, at first, the duality variables CEO/chairman of the board and CEO/active member of the board were changed to have a positive relationship with corporate governance, that is, 'the higher, the better' in terms of governance, so that all CG variables had the same relationship. Next, all variables, changed or not, were grouped by means of principal component analysis (PCA), which led to the creation of two governance indexes: (1) an index involving all instruments related to the composition of the board of directors (BOARD) and (2) an index involving only the variables dealing with the audit committee structure (AUDIT).

In parallel, like Detthamrong, Chancharat, and Vithessonthi (2017) and Jesuka and Peixoto (2022), we included a one-period lag of the capital structure variables in the models. Therefore, we ran the regressions including the lag of the dependent variables as explanatory variables in addition to the two governance indexes constructed and the sovereign rating, to control for possible simultaneous relationships and reverse causality. The results of the robustness tests are presented in Table 6.

**Table 6.** Corporate governance, sovereign rating, and capital structure — Robustness test.

Variables	LEV		LTD		DE	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
BOARD		-0.0018 (0.0020)		-0.0076** (0.0036)		-0.0446*** (0.0151)
AUDIT		-0.0089** (0.0044)		-0.0007 (0.0036)		-0.0383*** (0.0163)
SOVERAT	-0.0024** (0.0008)	-0.0030* (0.0019)	-0.0037*** (0.0007)	-0.0071*** (0.0014)	-0.0074** (0.0032)	-0.0220*** (0.0063)
INV	-0.1638*** (0.0293)	-0.2039*** (0.0798)	-0.0485* (0.0258)	-0.1799*** (0.0665)	-1.2522*** (0.1469)	-1.2824*** (0.3233)
FSIZE	0.0084*** (0.0011)	0.0382*** (0.0041)	0.0150*** (0.0011)	0.0191*** (0.0034)	0.0806*** (0.0063)	0.0979*** (0.0145)
MTB	0.0075*** (0.0005)	0.0153*** (0.0015)	0.0062*** (0.0005)	0.0040*** (0.0013)	0.1697*** (0.0030)	0.1253*** (0.0066)
CL	-0.0182*** (0.0011)	-0.0334*** (0.0034)	-0.0009 (0.0092)	-0.003 (0.0029)	-0.0550*** (0.0057)	-0.0699*** (0.0137)
DLEV	0.5811*** (0.0083)	0.6832*** (0.0520)				
DLTD			0.5341*** (0.0092)	0.6282*** (0.0176)		
DDE					0.3438*** (0.0082)	0.4535*** (0.0179)
_Constant	0.1195 (0.0252)	0.4985*** (0.0940)	-0.1949*** (0.0233)	-0.2481*** (0.0762)	-1.3086*** (0.1353)	-1.5817*** (0.3127)
Observations	7484	1644	7438	1641	7484	1644
VIF	1.10	1.11	1.10	1.12	1.15	1.12
Wald	6943.86***	308.93***	5026.19***	283.83***	7520.14***	1624.08***
LR	338.67***	898.49***	304.18***	868.22***	1221.89***	103.02***

Note. Source: Survey results.

As can be seen in Model 2, audit committee characteristics (AUDIT) exert a negative effect on firms' financial leverage (LEV), while in Model 4, only the structure of the board of directors (BOARD) showed a statistically negative relationship with long-term debt (LTD), all at the 5% level. In Model 6, the two governance indicators are negatively related at the 5% level of significance to the debt-to-equity ratio (DE). The control variables included in the models showed expected results. The lag of the dependent variables showed that previous year's debt positively influences current year's capital structure.

Kajola et al. (2019) found that board composition positively affects the capital structure of companies located in East Africa, and highlighted that debt is used by firms with weak governance as a tool to limit the availability of free cash flow and the entrenchment behavior of managers. Kieschnick and Moussawi (2018) also conducted a robustness test by creating an index reflecting board composition and found a positive relationship with debt in U.S. firms. As a negative relationship was found in all observed scenarios, these robustness test findings also rejected Hypothesis 1 of the study, where a positive relationship with firm debt was expected.

As for the rating, with or without the presence of the corporate governance indicators, all the models tested

show a negative effect on financial leverage, long-term indebtedness, and the ratio between debt and equity, indicating that the companies reduce their debt levels even in periods of good sovereign risk rating of their respective countries. This result may explain the phenomenon observed with the significant reduction in the debt levels of the companies throughout the period analyzed in this study. The negative relationship with governance indicators shows that companies have adopted a cautious strategy in which they avoid getting into debt to protect themselves against the effects of economic instability in Latin American countries that have experienced constant variation of the sovereign rating by the agencies, as noted by Bustillo, Perrotti, and Velloso (2018).

## CONCLUSION

This study analyzed the effects of sovereign rating and corporate governance on the capital structure of Latin American firms over the period from 2004 to 2018. The result of the adopted three-level hierarchical regressions showed that firm level is the most responsible for the variation in capital structure of companies in Latin America, while country level had the greatest influence on the variation in long-term debt. The maximum likelihood (LR) tests showed that the multilevel regression estimators provided better estimations than the other traditional methods.

These findings indicate that, in the absence of corporate governance mechanisms, the sovereign rating is one of the factors not controlled by managers that can explain the capital structure of Latin American companies, which, through management strategies, reduce their debt levels to protect themselves against the constant variation of the sovereign rating of their respective countries. The relationship between sovereign rating and capital structure when corporate governance mechanisms are present points in the direction of major impacts on managers' decisions. From the results, it is also inferred that the adoption of corporate governance mechanisms increases the influence of sovereign rating on the indebtedness of firms. With respect to the adoption of governance practices, the evidence found indicates that, in the Latin American scenario, even if firms have an audit committee and keep independent members on it, they choose to reduce their indebtedness levels to protect themselves against the instabilities of the external funding market.

The findings of this paper provide evidence that contributes to the financial literature by addressing factors controlled and not controlled by managers that significantly influence the capital structure of Latin American firms. In this sense, it contributes to the search for a better understanding of agency theory and information asymmetry in Latin American countries. Because it is little used in empirical work in corporate finance, the multilevel regression model helps validate the results. A practical contribution of this study is assisting managers in choosing governance mechanisms that may help guide strategic debt decisions to reduce agency problems among shareholders, creditors, and other stakeholders. For Latin American governments, there is a need to establish a stable economic and political environment to improve sovereign ratings, which is a determining factor to mitigate the foreign market's perception of credit risk quality and, consequently, increase the inflow of foreign investments.

This work had some limitations, among which was the lack of corporate governance data for some Latin American countries, which may signal a delay in these nations regarding the adoption of good governance practices. Another limitation was the measurement of capital structure through financial leverage, long-term debt, and debt/equity ratio. The heterogeneity of the countries, especially in the variation of the sovereign rating, made it impossible to investigate how corporate governance mechanisms behave in periods of sovereign rating downgrades. Future research can use other econometric models and explore other CG mechanisms that were not covered in this study, as well as consider other metrics for the capital structure of Latin American firms. Furthermore, it is possible to study how governance variables interact with firms'

capital structure in periods of sovereign rating downgrades in each of the countries.

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