

# Corporate governance and capital structure in Latin America: empirical evidence

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148

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## Abstract

**Purpose** – This study aims to examine the relationship between corporate governance mechanisms and the capital structure of Latin American firms.

**Design/methodology/approach** – The sample included companies from Argentina, Brazil, Chile, Colombia, Mexico and Peru. The authors collected data from 201 non-financial companies between 2009 and 2018, totaling 1,716 firm-year observations. The data were analyzed using descriptive statistics and linear regression models with panel data.

**Findings** – The main results indicated that chief executive officer duality, legal protection system and corporate social responsibility voluntary disclosure impact the firm's total debt ratio, corresponding to a positive effect for the first two variables and a negative for the last.

**Originality/value** – This study advances in two main ways. Firstly, due to the broad approach in which the authors addressed corporate governance, involving board composition, ownership structure, minority shareholders legal protection system and information disclosure. Secondly, by presenting empirical evidence about the effects of corporate governance on capital structure from an extensive sample of Latin American firms, the authors expect to contribute to the international debate on the capital structure due to the unique characteristics of Latin America in this regard.

**Keywords** Capital structure, Corporate governance, Capital markets, Latin America

**Paper type** Research paper

## 1. Introduction

The predominant understanding of corporate finance literature is that managers, motivated by their interests, will not make decisions regarding capital structure composition aiming exclusively at maximization of shareholders wealth (Morellec *et al.*, 2012). According to Morellec *et al.* (2012), this considerably alters research studies on capital structure, since its determination is not limited only to market elements, such as taxes, bankruptcy and financing costs, but also to the intensity of the conflicts between managers and shareholders, known as agency conflicts. Agency conflicts turn out to be relevant in this sense so that they may even be the reason for divergent evidence documented in studies about capital structure (Morellec *et al.*, 2012).

Agency conflicts arise from the separation between firm ownership and control. Assuming that economic agents are maximizers of their utility, it is natural to expect that, in an agency relationship, the agent (manager) makes decisions aimed at its own interests to the detriment of principal (owner) benefits (Jensen and Meckling, 1976). The effects of agency costs on capital structure composition come from, among other aspects, the volume of resources under the manager's control. Jensen (1986) argues that managers may incur debt,



aiming to increase the resources under their management, thus originating debt agency costs, such as insolvency costs.

In this context, corporate governance stands out as an instrument that acts in the alignment of interests between agent and principal. According to [Silveira \(2002\)](#), corporate governance is characterized as a set of mechanisms, whether endogenous or exogenous to the firm, whose purpose is to mitigate conflicts between managers and shareholders resulting from the separation between ownership and control. Some of the internal mechanisms mentioned by [Silveira \(2002\)](#) are board of directors, manager compensation and ownership of firm shares. The external mechanisms mentioned by [Silveira \(2002\)](#) are mandatory information disclosure, market efficiency and labor market competitiveness.

Based on the premise that corporate governance mechanisms affect agency conflicts and since they are associated with decisions about the composition of firms' funding sources, there are reasons to assume that corporate governance is related to capital structure. Therefore, this research aims to examine the relationship between corporate governance mechanisms and firms' capital structure. To do so, we analyzed data of 201 Latin American non-financial listed companies from 2009 to 2018, which resulted in 1,716 firm-year observations. The data were analyzed using descriptive statistics and linear regression models with panel data.

Recent studies have addressed the relationship between corporate governance and capital structure. [Detthamrong et al. \(2017\)](#) examined the relationship between corporate governance and capital structure and its effect on the performance of non-financial firms; [Kieschnick and Moussawi \(2018\)](#) evaluated whether firm age affects the association between corporate governance and capital structure; [Bajagai et al. \(2019\)](#) analyzed the impacts of ownership structure and corporate governance on firms' capital structure. Despite these studies, [Feng et al. \(2020\)](#) argue that capital structure decisions still constitute a fertile study field due to the mixed evidence in the literature.

As a way of providing subsidies in this sense, this research advances previous ones in two main ways. Firstly, by addressing four corporate governance mechanisms: board composition, ownership and control structure, minority shareholders protection and information disclosure. Secondly, this study also contributes by presenting empirical evidence regarding the effects of corporate governance on capital structure from an extensive sample of Latin American firms. [Céspedes et al. \(2010\)](#) state that to study Latin America may bring important contributions to the international debate about capital structure, since this region has unique characteristics, such as lower levels of corporate indebtedness, less developed financial markets, higher economic volatility and few corporate financing options.

The remainder of this paper is organized as follows. In [Section 2](#), it is provided a brief literature review, in which topics related to capital structure and corporate governance are discussed, as well as hypotheses development. In [Section 3](#), the methodology is presented, in which the sample selection, variables and models' estimation are described. In [Section 4](#), the results and their implications are exposed. Finally, the conclusions are indicated in [Section 5](#).

## 2. Literature review and hypotheses development

### 2.1 Capital structure

According to [Copeland et al. \(2013\)](#), the capital structure of a company can be understood as the composition of its funding sources, i.e. debt or equity capital. The funds for firm investment are provided by investors, which may claim firm's cash flows as debt or equity holders ([Copeland et al., 2013](#)). As debt holders, investors get bonds from which the firm promise to pay them periodic interest cash flows and also the principal capital in the future, as a compensation for their lend in the present ([Copeland et al., 2013](#)). As equity holders, investors buy shares of firm's equity and, as consequence, acquire the right to claim residual

earnings of the firm in the future, as well as the control for its strategic decisions (Copeland *et al.*, 2013).

Initially, it should be mentioned that there is no such thing as a universal theory of capital structure, especially one that indicates an optimal composition between financing from debt and equity (Myers, 2001). According to Myers (2001), there are conditional theories that prove to be useful for explaining the decisions about the funding sources, as well as their impact on firm performance. One of these is the trade-off theory, whose bases are attributed to Kraus and Litzenberger (1973) and which assumes an equilibrium between costs and benefits involved in the choice of capital structure. Another example, also relevant, is the pecking order theory, in which Myers and Majluf (1984) suggest that firms initially finance themselves through their resources and only when insufficient is that they search for external alternatives, such as debt and, ultimately, raising funds through the issuance of new equity shares.

There are still valid and widely accepted concepts that minimize the importance of the composition of financing sources for the firm, an example is the capital structure irrelevance propositions from Modigliani and Miller (1958). Modigliani and Miller (1958) present two propositions to demonstrate that the different financing sources are not significant to explain the firm's value, since the weighted average cost of capital represents a constant variable in their models. In the first proposition, Modigliani and Miller (1958) state that, as the firm's market value is a function of the sum of the market value of its debts and the market value of its shares, the firm's value is, therefore, independent from the composition of its capital structure. The second proposition by Modigliani and Miller (1958) assumes that the cost of capital is seen as a function of the sum of the expected rate of return and the risk premium, arising from financing with third-party capital, which rises linearly according to the increase in the proportion of debts.

Despite the propositions of Modigliani and Miller (1958), much of the empirical evidence observed in the most recent studies about the subject, which will be discussed throughout this section, is inconsistent with the capital structure irrelevance propositions. Copeland *et al.* (2013) argue that, as financial markets are not fully efficient, so that market prices do not reflect all information, especially those that are not publicly available, managers' choices for a capital structure composition function as a signaling mechanism. The capital structure reports elements of the firm's financial policies and, therefore, is relevant to investment decisions by market agents (Copeland *et al.*, 2013).

Given the informational asymmetry and interest conflicts inherent to different stakeholders, there are reasons to assume that the capital structure can not only impact the firm's value, as Copeland *et al.* (2013) assert, but also be influenced by corporate policies, especially those involving governance systems. Based on the agency theory, Feng *et al.* (2020) state that corporate governance mechanisms contribute to improving the capital structure management, because they act to reduce agency costs and, as a result, provide better decisions regarding funding. In addition, Choi *et al.* (2020) mention that corporate governance elements, such as institutional ownership, expand the ability firm monitoring by its shareholders, thus affecting managers' capital structure choices. Thus, for the study of the capital structure proposed in this article, it is necessary to understand corporate governance, discussed as follows.

## *2.2 Corporate governance*

Corporate governance can be understood as a set of mechanisms, both internal and external, that aim to align the interests of managers and shareholders, emerging from the conflicts between these agents. Those conflicts arise from the separation between ownership and control within the scope of modern organizations (Silveira, 2002). Silveira (2002) states that

corporate governance is relevant for firms, as it positively affects performance and market value, as long as its mechanisms are in line with the requirements of market agents. Among the corporate governance mechanisms, there are five main ones, namely, board of directors' composition; ownership and control structure; managers compensation modalities; minority shareholders protection; and information disclosure.

The board of directors' composition is an element of corporate governance because several of its characteristics, such as size, composition and functioning, affect the monitoring and guidance of the firm's managers (Andres and Valellado, 2008). For example, Duru *et al.* (2016) argue that when there is a chief executive officer (CEO) duality, i.e. when the board of directors' chairman and the company's executive director are the same person, the board's independence from management becomes weakened, implying in managerial entrenchment and, as a consequence, negative performance. As for size, Nas and Kalaycioglu (2016) argue that when the board of directors has many members, efficiency in communication and decision-making is compromised, since when higher the number of people, the more difficult it is to reach a consensus in the deliberations. It should be noted that, since the number of board members may vary depending to firm industry, Nas and Kalaycioglu (2016) consider the size of the board ranging from three (minimum) to 12 (maximum) as a criterion to determine a large or small board, according to their sample data.

Another element of corporate governance concerns the ownership and control structure. Wang and Shailer (2015) show that ownership structure concentration, i.e. a situation in which property rights are concentrated in a small number of shareholders, jeopardizes a firm's performance. The explanation for this, stated by Wang and Shailer (2015), is that ownership concentration intensifies the interest conflicts, especially between majority and minority shareholders. In addition, it makes it difficult to raise capital since corporate policies are focused on controlling shareholders at the expense of creditors and minority shareholders. Still, regarding ownership and control structure as a corporate governance mechanism, Boone and White (2015) indicate that institutional ownership is associated with better transparency indicators and less informational asymmetry because institutional investors have more favorable skills and conditions to monitor the firm's operations.

Managers' compensation modalities function as corporate governance mechanisms as they are used to align interests between shareholders (principal) and managers (agent), thus reducing agency conflicts. Conyon and He (2011) showed that executive compensation based on performance is positively associated with firm performance. Lovett *et al.* (2021) state that executive compensation linked to the payment of the firm's shares, whether through stock options or restricted shares, solves the problem of the manager's performance aiming at his/her interest to the detriment of shareholders. This is because, in these cases, the manager also becomes a partner in the organization so that his/her reward is linked not only to short-term but also to long-term performance.

About the protection of minority shareholders, La Porta *et al.* (2002) argue that investors are interested in financing firms when legal protection systems are appropriate and, mainly, complied with. Legal systems to protect shareholders are also a determinant of financial market development level, since in countries where the systems are efficient, the markets are large and with high value, while in the opposite cases, there is market stagnation (La Porta *et al.*, 2002). In addition to legal protection systems, Loderer and Waelchli (2010) highlight that firms themselves develop protection schemes for their minority shareholders. An example cited by Loderer and Waelchli (2010) is the disclosure of information in addition to what is required by law and in greater detail, precisely so that minority shareholders can be as informed as controllers.

Finally, the transparency of published information is a corporate governance mechanism, as it enables the reduction of informational asymmetry. Augustine (2012) defines transparency as a set of corporate governance devices used to control behavior within a

firm. As for the effects of transparency, [Cheynel \(2013\)](#) observes that firms with a good information environment, i.e. that voluntarily disclose information beyond what is required, manage to reduce their cost of capital since investors consider them less risky and, therefore, they understand that the allocation of their resources in these companies is more efficient. Additionally, [Balakrishnan et al. \(2014\)](#) demonstrate that the voluntary disclosure of information, by reducing information asymmetry, increases the liquidity of a firm's shares and, as a consequence, its market value.

The link between corporate governance and capital structure, explored in this research, is founded on the agency conflicts between shareholders and managers. According to [Morellec et al. \(2012\)](#), the prevailing understanding is that managers, who are agents that maximize their own interests, do not always make decisions about capital structure in the best interests of shareholders. In this sense, [Morellec et al. \(2012\)](#) demonstrated that some mechanisms commonly employed as proxies for corporate governance, whether internal or external, such as ownership structure, managerial characteristics, board structure and antitakeover provisions, are correlated with agency costs and, consequently, affect the capital structure dynamics.

Due to the discussions presented by [Morellec et al. \(2012\)](#), which consider agency conflicts as an argument to address the influence of different corporate governance mechanisms on the decisions about capital structure, this research contemplates the effects on capital structure of four corporate governance mechanisms widely disseminated in the literature, in which two of them are organizational specific (board size and CEO duality) and the other two are systemic measures (protection system and transparency). To understand how those corporate governance mechanisms are related to the firm's capital structure, the next subsection of this paper presents the foundation of the hypotheses, based on previous studies on the subject.

It is worth mentioning that, although there are several previous studies that have already evaluated the effects of corporate governance mechanisms on capital structure, this study seeks to fill a gap regarding the specificities of Latin America market. Unlike traditional markets, in which the cost of capital is fundamentally determined by the risk associated with operations, the Latin American market is characterized by high interest rates, inflation, and a predominance of public versus private funding sources. All these conditions make capital structure dynamics unique and, therefore, justify the investigation of the effects of corporate governance in this context.

### *2.3 Hypotheses development*

As discussed earlier, the number of members on the board of directors compromises efficiency in communication and decision-making. Therefore, it is more difficult to reach a common understanding when there is a high number of people in the deliberations ([Nas and Kalaycioglu, 2016](#)). [Feng et al. \(2020\)](#) argue that board size is related to the capital structure since the larger the board, the greater the agency conflicts, and thus, more debt capital is needed to alleviate agency problems. On the other hand, [Lorca et al. \(2011\)](#) showed that when the board of directors is considered efficient, the cost of debt tends to decrease, as creditors trust the board's monitoring capacity. Assuming that a board of directors with few members is more efficient ([Nas and Kalaycioglu, 2016](#)), there would be incentives (e.g. low cost of debt) for financing through third-party capital at the expense of equity. That leads to the first hypothesis:

*H1.* There is a statistically significant relationship between the size of the board of directors and the firm's capital structure leverage.

According to [Kang and Ausloos \(2017\)](#), it is expected an association between CEO duality and the capital structure, because when the company's executive director also occupies the board

chairman position, the agency costs that arise from the separation between ownership and control are null. [Feng et al. \(2020\)](#) partially confirmed the conjecture of [Kang and Ausloos \(2017\)](#) by showing the existence of a positive relationship between CEO duality and the proportion of long-term debt to the firm's total assets. On the other hand, [Tarus and Ayabei \(2016\)](#) advocate in the opposite direction in which high levels of managerial control, as occurs in a CEO duality situation, would imply opportunistic behavior and a lower degree of leverage. Given an entrenchment situation, the manager would be less inclined to resort to debts to avoid the disciplinary effects that they impose on the firm's management ([Tarus and Ayabei, 2016](#)). Thus, there is the following hypothesis:

*H2.* There is a statistically significant relationship between CEO duality and the firm's capital structure leverage.

According to [Cotei et al. \(2011\)](#), capital structure decisions are not only a function of firms' characteristics but also the legal system and market development level in which they operate. [Cotei et al. \(2011\)](#) observed that firms originating from environments with low legal protection for investors, less transparency and market underdevelopment present higher capital costs. As a result, they tend to finance themselves primarily with their resources. Similarly, [Aris \(2016\)](#) argues that stronger legal systems are associated with a higher proportion of debt in corporate financing, especially in developing markets, where equity issuance is a restricted practice. In this context, the third hypothesis is:

*H3.* There is a statistically significant relationship between the legal protection system and the firm's capital structure leverage.

[Petacchi \(2015\)](#) argues that requirements in terms of corporate transparency affect firms' financing decisions. For [Petacchi \(2015\)](#), firms with a low transparency level have higher informational asymmetry. That causes the cost of equity capital to rise, leading managers to opt for a higher portion of third-party funds in the composition of the capital structure. [Gao and Zhu \(2015\)](#) state that equity capital is much more sensitive to informational asymmetry than third-party capital. Thus, the premium required for risk is higher in the portion arising from equity, leading firms with a weak informational environment to finance themselves through debt ([Gao and Zhu, 2015](#)). Therefore, there are reasons to assume a relationship between transparency and capital structure, as indicated in the following hypothesis:

*H4.* There is a statistically significant relationship between transparency and the firm's capital structure leverage.

### 3. Methodology

#### 3.1 Sample

To achieve the main objective of this research, which is to examine the relationship between corporate governance mechanisms and capital structure leverage of Latin American firms, the sample included list companies from Argentina, Brazil, Chile, Colombia, Mexico and Peru. The data were collected from 201 non-financial companies in the period from 2009 to 2018, which counted 1,716 company-year observations. The data were obtained from Thomson Reuters, World Bank and Global Reporting Initiative (GRI) databases. The sampling period was defined according to data availability in the different databases consulted at collection time. The choice for non-financial companies was because financial sector companies have capital structures that differ significantly from other industries, which could compromise the proposed analysis.

We do not perform data exclusions for firms with state control, i.e. when government holds the largest share of a firm's equity, because all sample comprises companies whose equity shares are publicly traded on the stock exchanges and, therefore, somehow finance

their operations through equity. Also, previous literature shows that state ownership does not seem to impact capital structure of publicly traded companies on emerging markets. [Barros and Silveira \(2008\)](#) examined the determinants of capital structure, including a manager behavioral perspective, from a sample of 153 Brazilian publicly traded companies. Their findings evidenced the same outcomes for capital structure determinants in subsamples with and without companies with state control.

Regarding sample countries, Argentina, Brazil, Chile, Colombia, Mexico and Peru were considered to represent Latin America, as they constitute the largest economies from the region in terms of the gross domestic product (GDP), according to the World Economic Outlook Database report by [International Monetary Fund \(2019\)](#). [Bleger \(2011\)](#) states that these six countries had a pattern of increasing globalization over time so that both of their public and private sectors are active in the international market, trading debt instruments and making investments. Additionally, these countries have the best conditions for capital markets development and financial stability in Latin America due to the progressive increase in companies with shares listed on global financial centers ([Bleger, 2011](#)). Thus, justifying the choice of these countries to compose the sample of this research. [Table 1](#) shows the sample composition based on companies and observations numbers, separated by sector, country and year.

According to [Table 1](#), the sample included 201 listed firms. Since the sample period comprises 2009 to 2018, the data should contain 2,010 company-year observations (201 companies  $\times$  10 years). However, it was identified missing values for some variables, which it was treated through the exclusion of all observations whose data were not available for at least one variable, resulting in a total of 1,716 company-year observations. It should be mentioned that even with the exclusions, the number of observations in this study is still higher than the samples of previous related research. For example, [Granado-Peiró and López-Gracia \(2017\)](#) evaluated the relationship between capital structure and corporate governance of 89 Spanish companies among 2005 and 2011, which totaled 566 observations; [El-Habashy \(2018\)](#) investigated the impact of corporate governance characteristics on the capital structure decisions of Egyptian companies from 2009 to 2014, which resulted in 240 observations; and [Feng et al. \(2020\)](#) examined the relationship between corporate governance, ownership structure and capital structure of 119 Chinese firms from 2014 to 2018, totaling 595 observations. Therefore, the exclusion of observations due to missing values in this research does not compromise the proposed analyses.

Also in [Table 1](#), the countries with the highest number of observations were Brazil (594), Mexico (295) and Chile (287). With regard to the industries in which the companies operate, the observations were divided into 19 specific sectors and a category called "Others," in which there are observations of companies whose activities did not fit into any of the specific groups. Among the different industries, those with the highest number of observations were "Electrical Energy" (287), "Food and Beverages" (250) and "Oil and Gas" (154). The categories with the lowest number of observations were "Textile" (ten), "Vehicles and Parts" (ten) and "Agriculture and Fishing" (19). The "Others" category, which included firms not classified in specific sectors, had 178 company-year observations.

### 3.2 Dependent variables

Three measures were considered as dependent variables to measure the leverage of the capital structure, namely, (1) total debt (*TDEBT*), obtained from the ratio between the firm's liabilities and its total assets; (2) long-term debt (*LDEBT*), obtained from the ratio between the firm's long-term liabilities and its total assets; and (3) short-term debt (*SDEBT*), obtained from the ratio between the firm's short-term liabilities and its total assets. These variables were employed by [Dasilas and Papasyriopoulos \(2015\)](#) in the analysis of the relationship between corporate governance, credit ratings and capital structure of small and medium-sized

## Panel A: Sample selection

Firms	201 firms
Period	2009–2018
Firm-year observations	1,716 observations

## Panel B: Sample observations by country and year

Country/year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Argentina	22	24	21	23	24	24	24	23	23	21	229
Brazil	67	64	59	58	63	58	60	57	58	50	594
Chile	31	31	31	28	28	27	26	29	28	28	287
Colombia	14	14	13	12	12	10	10	8	4	5	102
Mexico	34	32	32	33	31	29	28	25	26	25	295
Peru	25	23	23	21	20	17	22	22	19	17	209

## Panel C: Sample observations by industry and year

Industry/year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Agro and fishing	3	2	2	2	2	2	2	1	1	2	19
Food and beverage	29	27	29	21	25	24	25	23	23	24	250
Commerce	13	13	12	13	14	13	13	9	11	9	120
Construction	12	14	13	13	14	12	12	11	9	6	116
Electronics	2	2	2	2	2	2	2	2	2	2	20
Electric power	31	31	30	29	28	26	28	29	28	27	287
Machine	3	2	1	2	2	3	3	3	3	3	25
Mining	11	11	9	10	9	9	11	10	10	8	98
Other	21	20	17	19	18	17	17	18	16	15	178
Pulp and paper	4	4	4	4	4	4	4	4	4	4	40
Oil and gas	17	18	17	17	16	14	15	15	12	13	154
Chemical	6	5	5	5	6	5	5	5	5	2	49
Steel and metal	11	11	10	11	12	9	10	12	11	10	107
Software and data	3	3	3	3	3	3	3	3	3	2	29
Telecom	7	7	6	5	6	5	5	5	5	5	56
Textil	1	1	1	1	1	1	1	1	1	1	10
Textile	18	16	17	17	15	15	13	12	13	12	148
Vehicles	1	1	1	1	1	1	1	1	1	1	10
Total	193	188	179	175	178	165	170	164	158	146	1,716

Source(s): own elaboration

**Table 1.**  
Sample selection and  
firm-year observations

companies. [Mirza et al. \(2017\)](#) employed total debt, long- and short-term debt to verify the dependence on financing through third-party capital in pre-crisis, during the crisis and post-crisis periods. [Feng et al. \(2020\)](#) also included these same dependent variables when examining the relationship between corporate governance, ownership structure and capital structure of Chinese firms.

### 3.3 Independent variables

We established as independent variables of interest four measures that comprises the pillars of corporate governance, namely, board of directors' composition, ownership and control structure, minority shareholders protection and transparency. The board of directors' composition was evaluated through the size of the board of directors (*BFSIZE*), obtained from the number of board members ([Ali and Ayoko, 2020](#); [Ngatno et al., 2021](#)). The ownership and control structure was defined based on the existence or not of CEO duality (*DUALT*), measured by a dummy that received value of 1 in cases where the CEO also occupied the



position of board of directors chairman and 0 otherwise (Morás and Klann, 2020). The proxy for minority shareholders protection was based on the country enforcement level (*ENFOR*), measured using the State of Law indicator from World Bank's Worldwide Governance Indicators (Silva *et al.*, 2019). Finally, the transparency was evaluated through voluntary disclosure of corporate social responsibility reports (*DISCL*), whose variable was a dummy that received value 1 for companies that voluntarily disclosed information about corporate social responsibility (CSR), and 0 otherwise (Borges Junior, 2019; Souza *et al.*, 2020).

### 3.4 Control variables

It was included as control, the variables that previous studies have shown to maintain some relationship with capital structure leverage. The first control variable included was firm size (*FSIZE*), measured through the natural log of total assets (Feng *et al.*, 2020; Zaid *et al.*, 2020). Secondly, the firm's profitability (*EARN*) was measured by the ratio between earnings before interest, taxes, depreciation and amortization (EBITDA) and total assets (Feng *et al.*, 2020; Zaid *et al.*, 2020). A measure for growth opportunity (*GROW*) was also employed, obtained through the change rate in sales revenue (Zaid *et al.*, 2020). Finally, the market-to-book ratio (*MTBR*) was used as a control, defined as the firm market value divided by its book value (Harris and Roark, 2019).

Since the sample included companies from different industries, and as a way of preventing that specific characteristic of these industries influence the investigation about the effect of corporate governance on firm's capital structure, it was included as a control variable a vector of dummies for the 20 industry groups (*INDUSTRY*) of the sample. Likewise, since firm observations involve the period from 2009 to 2018, it was also included as control a vector of dummies comprising each year of the sample period (*YEAR*), to capture the temporal differences that may have occurred. Table 2 presents the variables description.

### 3.5 Analysis procedures

The variables were analyzed using descriptive statistics and linear regression models with panel data. Regression models with panel data are properly indicated when seeking to assess the behavior of a dependent variable in the presence of explanatory variables with repeated or longitudinal measures. In this sense, the procedure adopted is adequate for the purpose of this research, which is to examine the relationship between corporate governance mechanisms and capital structure leverage of 201 Latin American companies over the period of 2009–2018. The regression models are given by the following equations:

$$\begin{aligned}
 TDEBT_{i,t} = & \beta_0 + \beta_1 BSIZE_{i,t} + \beta_2 DUALT_{i,t} + \beta_3 ENFOR_{i,t} + \beta_4 DISCL_{i,t} + \beta_5 FSIZE_{i,t} \\
 & + \beta_6 EARN_{i,t} + \beta_7 GROW_{i,t} + \beta_8 MTBR_{i,t} + \sum_{j=1}^{20} \gamma_j * INDUSTRY_j \\
 & + \sum_{t=2009}^{2018} \theta_t * YEAR_t + \varepsilon_{i,t}
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 LDEBT_{i,t} = & \beta_0 + \beta_1 BSIZE_{i,t} + \beta_2 DUALT_{i,t} + \beta_3 ENFOR_{i,t} + \beta_4 DISCL_{i,t} + \beta_5 FSIZE_{i,t} \\
 & + \beta_6 EARN_{i,t} + \beta_7 GROW_{i,t} + \beta_8 MTBR_{i,t} + \sum_{j=1}^{20} \gamma_j * INDUSTRY_j \\
 & + \sum_{t=2009}^{2018} \theta_t * YEAR_t + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

Notation	Measure	Source
<i>Panel A: Dependent variables</i>		
TDEBT	Total debt to total assets ratio	Thomson Reuters
LDEBT	Long-term debt to total assets ratio	Thomson Reuters
SDEBT	Short-term debt to total assets ratio	Thomson Reuters
<i>Panel B: Independent variables of interest</i>		
BSIZE	Number of members in board of directors	Thomson Reuters
DUALT	Dummy with value 1 CEO duality, and 0 otherwise	Thomson Reuters
ENFOR	Level of enforcement from State of Law indicator	World Bank
DISCL	Dummy with value 1 for CSR disclosure, and 0 otherwise	GRI Database
<i>Panel C: Control variables</i>		
FSIZE	Natural logarithm of total assets	Thomson Reuters
EARN	EBITDA to total assets ratio	Thomson Reuters
GROW	Growing rate of sales revenue	Thomson Reuters
MTBR	Market-to-book ratio	Thomson Reuters
INDUSTRY	Vector of dummy variables for 20 industry categories	Thomson Reuters
YEAR	Vector of dummy variables for years from 2009 to 2018	Thomson Reuters

Source(s): own elaboration

**Table 2.**  
Variable descriptions

$$\begin{aligned}
 SDEBT_{i,t} = & \beta_0 + \beta_1 BSIZE_{i,t} + \beta_2 DUALT_{i,t} + \beta_3 ENFOR_{i,t} + \beta_4 DISCL_{i,t} + \beta_5 FSIZE_{i,t} \\
 & + \beta_6 EARN_{i,t} + \beta_7 GROW_{i,t} + \beta_8 MTBR_{i,t} + \sum_{j=1}^{20} \gamma_j * INDUSTRY_j \\
 & + \sum_{t=2009}^{2018} \theta_t * YEAR_t + \varepsilon_{i,t}
 \end{aligned} \tag{3}$$

where:

*TDEBT*, *LDEBT* and *SDEBT* constitute the general debt in relation to total assets, the long-term debt in relation to total assets and the short-term debt in relation to total assets, respectively; *BSIZE* is the size of the board; *DUALT* is a dummy for CEO duality; *ENFOR* is the enforcement level; *DISCL* is a *dummy* for CSR disclosure; *FSIZE* is firm size; *EARN* is the ratio between EBITDA and total assets; *GROW* is the change rate in sales revenue; *MTBR* is the market-to-book ratio; *INDUSTRY* is a dummy for firm industry; *YEAR* is a dummy for year; the variables coefficients are given by  $\beta$ ,  $\gamma$  and  $\theta$ ;  $i$  represents the firms;  $t$  the time; and  $j$  the industry category;  $\varepsilon$  the idiosyncratic error term.

To ensure that the models do not suffer from problems arising from heteroscedasticity and autocorrelation, the method proposed by Wooldridge (1989) was applied, in which the parameter coefficients are estimated using robust standard errors. To identify possible multicollinearity problems, the variance inflation factor test was employed, with the variance inflation factor (VIF) value higher or equal to 4 as a criterion for dropping a variable. Finally, regarding treatment of outliers, we employed the winsorization procedure with a maximum value of 0.025. The treatment of outliers is important when the researcher is interested in evaluating the behavior of a variable without extreme values affecting the analysis. In this way, the winsorization is the appropriate procedure as it effortlessly eliminates extreme observations from each side of the distribution.

## 4. Results

### 4.1 Descriptive statistics

Initially, [Table 3](#) presents descriptive statistics for measures of capital structure, corporate governance mechanisms and firm characteristics.

It is observed in [Table 3](#) that the general debt to total assets ratio (*TDEBT*) of sample firms is about 54.4%. The most part of debt corresponds to the long-term debt (*LDEBT*), whose proportion in relation to total assets is approximately 31.1%. On average, the proportion of short-term debt to total assets (*SDEBT*) is 22.7%. These findings indicate that Latin American companies' debt level is consistent with Chinese firms studied by [Feng et al. \(2020\)](#). [Feng et al. \(2020\)](#) observed that Chinese companies have an average overall debt of 64.6%, long-term debt of 21.7% and short-term debt of 42.9%. It is interesting to note that, unlike the Chinese market, most of the debt composition of companies in Latin America comes from long-term debt, which may be a reflection of the high cost of third-party capital, especially short term in that region.

Regarding corporate governance mechanisms, it seems that the firm's board of directors is composed, on average, of 11 members (*BFSIZE*). The cases of CEO duality, a situation in which the executive director also holds the position of board chairman, occurs in around 26.2% of the observations. The enforcement level (*ENFOR*) had a negative average, suggesting that there is little confidence in the Latin America legal environment, e.g. compliance with contracts, property rights protection, strict law application, among others. Finally, approximately 38.2% observations indicated a voluntary disclosure of CSR reports (*DISCL*). The results demonstrate that, in terms of corporate governance quality, Latin America still ranks below other emerging and advanced economies. As an example, the CEO duality occurs on average in 17.5% of Chinese companies ([Feng et al., 2020](#)) and the average size of board of directors is approximately seven members in Australia ([Ali and Ayoko, 2020](#)).

### 4.2 Inferential statistics

[Table 4](#) shows the results of linear regression models with panel data. Model 1 aims to assess the effect of governance mechanisms in the firm's capital structure leverage through total debt (*TDEBT*) as a dependent variable. Model 2 examines the relationship between corporate governance dimensions and long-term debt (*LDEBT*). Finally, short-term debt (*SDEBT*) is considered in Model 3. In all three models, the corporate governance variables employed were board of directors' size (*BFSIZE*), CEO duality (*DUALT*), enforcement level (*ENFOR*) and voluntary disclosure of CSR reports (*DISCL*). The control variables refer to firm characteristics, involving measures for firm size (*FBSIZE*), profitability (*EARN*), growth perspective (*GROW*) and market-to-book ratio (*MTBR*). We also employed controls for the year and industry.

It can be seen in Model 1 that CEO duality, enforcement level and voluntary disclosure of CSR information, as a proxy for transparency, proved to be statistically significant to explain variations in the total debt. The results indicate that the existence of CEO duality and high enforcement levels are positive related to a greater proportion of debt in the capital structure. On the other hand, there is a different effect for CSR disclosure, since its association with total debt was negative. These findings corroborate [H2](#), [H3](#) and [H4](#), which conjecture a statistically significant relationship between the three governance mechanisms under discussion, respectively, the CEO duality, the legal protection system and transparency, and the firm leverage. Since it was not verified a statistical significance for the variable referring to board of directors' size, the evaluation of [H1](#) remained inconclusive.

It is worth mentioning that the findings for the effect of CEO duality and legal protection system on firm leverage were robust to long-term debt (Model 2) and short-term debt (Model 3), reinforcing the confirmation of [H2](#) and [H3](#). [Kang and Ausloos \(2017\)](#) showed that CEO duality is positively related to total debt, as well as to long- and short-term debt, which

Variable	Obs	Mean	SD	Min	P <sub>10</sub>	P <sub>25</sub>	P <sub>50</sub>	P <sub>75</sub>	P <sub>90</sub>	Max
TDEBT	1,716	0.5441	0.1788	0.1514	0.3003	0.4240	0.5460	0.6636	0.7655	0.9325
LDEBT	1,716	0.3111	0.1640	0.0121	0.0814	0.1878	0.3144	0.4265	0.5258	0.6612
SDEBT	1,716	0.2274	0.1355	0.0404	0.0818	0.1244	0.2036	0.2914	0.3980	0.6442
BSIZE	1,716	11.0309	4.0879	5.0000	7.0000	8.0000	10.0000	13.0000	18.0000	22.0000
DUAL.T	1,716	0.2617	0.4397	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
ENFOR	1,716	-0.0784	0.6454	-0.7708	-0.5905	-0.5492	-0.2538	-0.0499	1.2965	1.3919
DISCL	1,716	0.3823	0.4861	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
FSIZE	1,716	21.4543	1.4583	18.4592	19.5020	20.4422	21.4616	22.5143	23.3537	24.5206
EARN	1,716	0.0992	0.0785	-0.0547	0.0141	0.0495	0.0872	0.1382	0.2058	0.3210
GROW	1,716	-0.1454	0.8934	-3.3938	-0.8113	-0.3667	-0.1267	0.0814	0.5191	2.5824
MTBR	1,716	5.3607	9.6639	0.0731	0.5062	1.1153	2.1778	4.8402	11.0261	53.1876

**Note(s):** Obs.: observations; SD: standard deviation; Min.: minimum value; P<sub>k</sub>: k percentile; Max.: maximum value. See [Table 2](#) for variable descriptions  
**Source(s):** own elaboration

**Table 3.**  
Descriptive statistics

Model/variable	(1) TDEBT	(2) LDEBT	(3) SDEBT
BFSIZE	0.0003	-0.0023**	0.0026***
DUALT	0.0406***	0.0257***	0.0159**
ENFOR	0.0168**	0.0098*	0.0097**
DISCL	-0.0145*	-0.0280***	0.0166**
FSIZE	0.0283***	0.0465***	-0.0165***
EARN	-0.3711***	-0.3285***	0.0089
GROW	-0.0107**	-0.0017	-0.0110**
MTBR	0.0067***	0.0017***	0.0043***
YEAR	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes
Obs	1,716	1,716	1,716
R <sup>2</sup>	0.2347	0.2945	0.3356
Mean VIF	1.19	1.19	1.19

**Note(s):** \*\*\* statistically significant at the 1% level. \*\* statistically significant at the 5% level. \* statistically significant at the 10% level. The models were estimated through *pooled* OLS with robust standard errors. See

Table 2 for variable descriptions

**Source(s):** own elaboration

**Table 4.**  
Linear regression  
models results

indicates a preference of managers to finance through debt. As for the legal protection system, the results presented in this study corroborate [Ariss \(2016\)](#), in the sense that the greater the strength of the legal protection system, the better the conditions for the firm to finance at lower costs, thus encouraging a higher proportion of debt in its capital structure.

It is interesting to note that, although the evidence regarding the effect of transparency on long-term debt (Model 2) was similar to that observed for total debt (Model 1), there is divergence between the findings for the transparency mechanism when considering long-term debt (Model 2) in relation to short-term debt (Model 3), since the latter maintained a positive relationship and the former an inverse association. [Petacchi \(2015\)](#) and [Gao and Zhu \(2015\)](#) argue that transparency is negatively related to debt, because low levels of transparency imply informational asymmetry and, consequently, an increase in the cost of equity. This may lead managers to opt for a larger share of debt in the capital structure. Therefore, despite Models 1 and 2, the results of Model 3 for the association between transparency and short-term debt diverge from what was expected. A possible explanation for these findings may lie in the financial dynamics of emerging markets, in which short-term interest rates are higher than long-term interest rates and also the insufficient credit lines for companies, especially long-term resources.

Finally, although [HI](#) was inconclusive for the model whose dependent variable was total debt (Model 1), the board of directors' size demonstrated a significant effect on long term (Model 2) and short term debt (Model 3), thus supporting what is conjectured by [HI](#). The relationship between board size and long-term debt was positive, while for short-term debt, the sign was negative. [Feng et al. \(2020\)](#) also found relationships with different signs between the board of directors' size and the proportion of short- and long-term debt. The justification for this difference may be due to the different costs between the debts, depending on their settlement period. As shown by [Lorca et al. \(2011\)](#), the board of directors' size is among the cost of debt determinants.

#### 4.3 Robustness tests

To minimize concerns arising from endogeneity, as well as to ensure that our findings hold the same even when employing other methodological procedures, we perform robustness tests adopting the method of instrumental variables. The instrumental variables models were

estimated by two-stage least squares, in which corporate governance mechanism measures, such as board size (*BSIZE*), CEO duality (*DUALT*), enforcement level (*ENFOR*) and disclosure (*DISCL*), were instrumented. The instruments employed was lagged variables for corporate governance mechanisms ( $t-1$ ) and the controls for firm size (*FSIZE*), profitability (*EARN*), growth opportunity (*GROW*) and market-to-book ratio (*MTBR*). The results of instrumental variables models are presented in [Table 5](#).

It can be seen in [Table 5](#) that the results for the models estimated by two-stage least squares with multiple instrumental variables were equivalent to the findings for ordinary least squares models. The voluntary disclosure of CSR information proved to be the most relevant corporate governance mechanism to explain variations in capital structure, since it showed statistically significant effects on total indebtedness, long- and short-term indebtedness. On the other hand, unlike the findings for ordinary least squares method, the board size showed a significant relationship only with short- and long-term debt and the CEO duality with total and long-term debt. The country enforcement level was not relevant for capital structure according to two-stage least squares models.

In view of the above, the results presented in this research contribute to a better understanding of corporate governance, since they indicated the corporate governance mechanisms that are most relevant to capital structure decisions in Latin America. Considering that the Latin American market is still little explored, understanding the dynamics of the capital structure in relation to corporate governance not only contributes to the development of the markets in the region, but may also support firms' decisions regarding their financing sources and governance policies. Also, the evidences fill a literature gap concerning the effects of corporate governance mechanisms on capital structure in markets with specific characteristics, such as higher economic volatility, interest and inflation rates, few financing options, among other conditions inherent to Latin American markets.

## 5. Conclusions

The aim of this study was to examine the relationship between corporate governance mechanisms and capital structure leverage of Latin American firms. The sample comprised 201 companies from Argentina, Brazil, Chile, Colombia, Mexico and Peru, with data collected from 2009 to 2018, which totaled 1,716 firm-year observations. The governance mechanisms considered were board of directors' composition, ownership and control structure, shareholder protection and, finally, information transparency. With regard to capital

Model/Variable	(1) TDEBT	(2) LDEBT	(3) SDEBT
BSIZE	-0.0003	-0.0020*	0.0019*
DUALT	0.0220**	0.0180*	0.0069
ENFOR	0.0051	0.0020	0.0069
DISCL	-0.0350***	-0.0502***	0.0201**
FSIZE	0.0326***	0.0486***	-0.0150***
EARN	-0.4585***	-0.4210***	0.1410
GROW	-0.0101**	-0.0015	-0.0135***
MTBR	0.0061***	0.0016***	0.0038***
Obs	1,435	1,435	1,435
R <sup>2</sup>	0.1655	0.2008	0.1397

**Note(s):** \*\*\* statistically significant at the 1% level. \*\* statistically significant at the 5% level. \* statistically significant at the 10% level. The models were estimated through two-stage least squares with multiple instrumental variables. See [Table 2](#) for variable descriptions

**Source(s):** own elaboration

**Table 5.**  
Models with multiple  
instrumental variables  
results

structure variables, the measures involved general debt, long- and short-term debt. For data analysis, we employed descriptive statistics and linear regression models with panel data.

The main findings showed that the CEO duality, the legal system and the voluntary disclosure of CSR information impact the firm's total debt ratio, with a positive effect for the first two variables and a negative effect for the last. When observing the debt time horizon, it was found that all governance dimensions considered were relevant to explain variations in long- and short-term debt. For both debt variables, the effect of CEO duality and the legal system was positive. On the other hand, the variables board size and information transparency were negatively related to long-term debt, but positively associated with short-term debt.

Despite the results, it is appropriate to mention some limitations. Although this research presents an extensive analysis of the relationship between corporate governance mechanisms and capital structure in Latin America, since 201 firms in six different countries were considered, the region has other countries and, consequently, a higher number of firms than the amount contemplated in this study. Therefore, the findings observed here must be limited to the sample composition. In addition, despite the attempt to cover corporate governance mechanisms from different pillars, the concept is still quite broad, so aspects equally relevant to those evaluated here were not included in the analyses, such as executive compensation, conflicts between majority and minority shareholders, informational asymmetry, market efficiency, among others.

To overcome the limitations mentioned above, it is recommended that future studies expand the number of countries considered in the sample, including other regions besides Latin America, as a way of establishing comparisons and, eventually, identifying regional characteristics that may affect the relationship between corporate governance and capital structure. Furthermore, further related research could address the capital structure focusing on the proportion of equity capital, or even the influences of the cost of capital in capital structure composition and the role of governance in this regard. This is justified because this research focused only on measures related to debt, i.e. the proportion of third-party capital in the capital structure, therefore not taking into account the other related elements, such as equity capital.

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