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Analysis of the Capital Structure of Latin American Companies in Light of Trade-Off and Pecking Order Theories

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Abstract: The study of capital structure is one of the most relevant topics in finance because, despite the various theories that seek to explain it, there is still no consensus on the determining factors or the behavior of financing decisions in companies. This study empirically analyzes the capital structure decisions of Latin American companies during the period 2013–2023 in light of trade-off and pecking order theories. A panel data methodology is applied to 62 companies, using fixed and random effects models. The results show that, on average, companies correct around 5.80% of the gap between their current and optimal level of indebtedness per period, partially supporting the trade-off theory. However, the effects of the financial deficit on indebtedness are heterogeneous and, in most cases, inconsistent with the pecking order theory, especially in countries such as Colombia. It is concluded that country risk has a marginal influence on debt decisions, and the need to consider each country's institutional and market particularities when analyzing the dynamics of capital structure in emerging economies is emphasized.

Keywords: capital structure; trade-off theory; pecking order theory; latin america; leverage; data panel

1. Introduction

Maintaining a precise balance between debt and equity financing sources is undoubtedly one of the company's main challenges. A company's capital structure influences its future source of financing, cost of capital, risk, liquidity, return to investors, and company valuation. As a fundamental financial decision, it is a widely researched area, with essential contributions from eminent researchers in the form of capital structure theories (Bajaj et al., 2021).

The role of capital structure is that its correct and optimal determination allows company management to maximize its capitalization and long-term operating objective; thus, how companies finance their investments is a key topic in financial literature. In this context, one of the main works is that of Modigliani and Miller (1958), according to whom the choice of capital structure cannot theoretically alter the value of a company when perfect financial markets and the absence of taxes are assumed. In this context, the value of a company is determined solely by the profitability that its assets can generate (Colombo et al., 2023).

In the literature, various theories can be found that explain the decision on corporate capital structure. Two of the main theoretical contributions are the trade-off and hierarchical order theories. The first indicates that companies decide on their capital structure by balancing the costs of bankruptcy (Bradley et al., 1984), tax incentives, and corporate control over agency conflicts (Jensen & Meckling, 1976), suggesting the existence of an optimal capital structure to which companies partially adjust. The second predicts companies will establish their capital structure by hierarchically selecting their financing based on information asymmetry costs (S. C. Myers & Majluf, 1984). The

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empirical debate on this issue remains open in both developed and emerging markets, with no clear consensus on which theory best predicts capital structure decisions (Agyei et al., 2020; Dang, 2013; De Jong et al., 2011; Jarallah et al., 2019; Serrasqueiro & Caetano, 2014). More recent studies have also analyzed both approaches together and concluded that they are not mutually exclusive and that their dynamic behaviors would affect the adjustment of the capital structure (Kannadhasan et al., 2018).

This topic is critical in the current socioeconomic context of Latin America, as companies need to plan their economic resources in a way that allows them to manage their obligations in a solvent and adequate manner; implementing models that increase the productivity of their assets means that, based on the optimized profits of companies, the tax burden rises by the fiscal principle of progressivity, i.e., the higher the profit, the higher the level of taxation, which naturally represents an increase in the volume of tax collection by states, which in turn, especially in Latin American regions, allows for improved wealth distribution. Therefore, it is a line of development that starts with economics and ends with social issues.

The objective of this study was to analyze which of the two predominant theories on capital structure, the pecking order theory or the trade-off theory, most adequately describes the financing decisions made by Latin American non-financial companies listed on the stock exchange during the period 2013–2023. The paper is organized into six sections, including this introduction. The second section presents a review of the relevant literature; the third describes the variables used and the econometric methodology applied; the fourth presents the empirical results obtained; the fifth offers an analysis and discussion of these results; and the sixth summarizes the study's main conclusions.

2. Literature Review

Over the years, various theoretical approaches have emerged to understanding and explaining how companies choose their optimal financial structure (Miller, 1977; Modigliani & Miller, 1958). These theories offer unique perspectives on the factors and considerations influencing financing decisions, from the impact of taxes and tax benefits to the influence of risk, growth, and the business environment (Pinillos Villamizar et al., 2025).

Several theories exist, two of the most studied in the literature being the trade-off theory (TO), also known as the compensation model or objective leverage model, and the pecking order theory, also identified as the financial hierarchy model. The trade-off theory states that companies finance their investments in exchange for tax benefits. In contrast, the pecking order theory states that companies have an order of priority in obtaining financing (Gómez et al., 2014).

The trade-off and pecking order theories are not alternative views of the same problem but represent complementary approaches to how companies define their capital structures (De Andrés et al., 2018). For this reason, numerous empirical studies in finance have tested many theories on capital structure. As noted above, the pecking order and trade-off theories are among the most influential theories on capital structure (Culata & Gunarsih, 2012).

Many theories attempt to explain financial constraints by focusing on capital structure. Forté et al. (2013) mentioned that, since 1950, capital structure has become a controversial area of research in the field of corporate finance, with one of the most prominent discussions in this area found in the work of Modigliani and Miller (1958), who argue that the market value of a company is not related to its capital structure (Bradley et al., 1984). A few years later, Modigliani and Miller (1963) revised their initial assumptions about perfectly competitive markets and recognized the tax advantage of debt since interest is deductible from income tax. However, this does not mean that companies should always strive to use the maximum amount of debt available.

The trade-off theory is introduced in this context, which considers the effects that affect the entire industry, such as taxes, bankruptcy costs, and agency problems. This theory also envisages an optimal structure that balances the costs and benefits of issuing debt and equity. From this theoretical approach, leverage is considered advantageous in certain circumstances, and owners and managers tend to prefer using debt even when internal funds are available. This theory assumes that the optimal capital structure is achieved by balancing the benefits of leverage, mainly tax savings, with

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the costs arising from financial difficulties. Therefore, when companies take on debt, tax savings are expected to be higher, but the costs associated with the risk of default also increase (Briozzo et al., 2016).

Later, Miller (1977) expanded the model to incorporate taxes on income received by investors, whether in the form of stock income (dividends and capital gains) or interest, in addition to the tax benefits mentioned above (Rivera, 2002). The conclusion reached in this model is that the tax advantage of taking on debt dissipates when both types of taxes are considered. It summarizes the thesis that capital structure is irrelevant regarding company value.

As an alternative to previous developments, the Pecking Order (PO) theory was introduced. This theory describes a hierarchy of financing options and focuses on asymmetric information between companies and lenders. Since companies have more complete information about their future than lenders, the need for supervision increases borrowing costs, leading companies to initially opt for internal financing. It was argued that companies prefer to reinvest their profits to avoid adverse selection problems (Myers, 1984; Myers & Majluf, 1984).

When these internal funds are exhausted, companies resort to financing through bank debt and, ultimately, turn to the stock market. As the business cycle evolves, information asymmetries decrease, and access to financing improves in terms of costs and terms. The authors of the pecking order theory explain that this hierarchical order arises due to the greater flexibility and reduced transaction costs associated with using internal resources compared to external resources.

Within this school of thought, leverage is considered less favorable compared to using internal sources of financing. Owners and managers prioritize the use of internal resources in the first instance. However, if these internal funds are exhausted and investment opportunities persist, they opt for debt to avoid missing out on those opportunities. Similarly, once internal funds are available, they prefer to pay off debt before it matures (Briozzo et al., 2016).

One current theory is the so-called growth cycle theory, which argues that a company's financial structure evolves based on size and age (Berger & Udell, 1998). According to this approach, in the early stages, when companies are young or small, they tend to have less transparency in terms of financial information, which leads them to rely mainly on internal sources of financing, such as their resources, investments from family, and friends, as well as commercial loans or angel investors as these companies advance in their growth cycle and reach more significant stages of expansion, their ability to access various external sources of financing increases may include the participation of venture capital institutions, entry into financial markets for the issuance of shares or bonds, and obtaining financing from commercial banks (Berger & Udell, 1998).

Several authors have concluded that the Trade-Off (TO) and the PO have not considered mutually exclusive explanations for financing decisions (Aybar-Arias et al., 2012; Degryse et al., 2012; López-Gracia & Sogorb-Mira, 2008; Serrasqueiro & Caetano, 2014). Along the same lines, it is mentioned that companies tend to adopt a "wait and see" approach when it comes to adjusting their capital structure (Titman & Tsyplakov, 2007). They observe whether changes in investment opportunities or product prices have the necessary impact to achieve the optimal leverage ratio. Consequently, the theories of the financing hierarchy (PO) and the trade-off (TO) are not mutually exclusive. Instead, companies choose their leverage ratios based on the benefits of debt financing, as trade-off theory proposes. Still, they may adjust their behavior for the reasons described in the financing hierarchy theory.

Other studies combine elements of both theories, the trade-off theory and the financing hierarchy theory (Gaud et al., 2007; Hovakimian & Li, 2011; Titman & Tsyplakov, 2007). These studies consider the existence of an optimal leverage target according to the trade-off theory, toward which companies converge over time, allowing for behavior similar to that of the short-term financing hierarchy. Market imperfections, such as transaction and agency costs, can hinder this convergence toward the leverage target, which may explain temporary deviations from the target.

Over time, additional contributions have emerged in the field of corporate capital structure, including theories such as agency theory (Fama & Miller, 1972; Harris & Raviv, 1991; Jensen &

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Meckling, 1976), credit rationing (Stiglitz & Weiss, 1981), corporate strategy theory (Barton & Gordon, 1987; Brander & Lewis, 1986; Mishra & Mcconaughy, 1999), market timing (Baker & Wurgler, 2002), and the matching principle (Brealey et al., 1998), among others. These theories and approaches complement the arguments that describe different perspectives on the capital structure of companies, underscoring the complexity and diversity of factors that influence corporate financing decisions.

To conclude this theoretical framework, which supports the research topic and its objective and is based on classic and recent literature on capital structure, Table 1 presents the development of the most representative theories and their authors. The authors set themselves the objective of consolidating and generating a comprehensive view of the importance of capital structure. It gives meaning to the need to continue research in this field.

Table 1. Eminent Studies on Capital Structure**.**

Sr.no	References	Findings
1	Modigliani and Miller (1958)	It has a significant contribution in the area of capital structure with the origin of 'Irrelevance theory' which states that capital structure has no impact on firm value.
2	Modigliani and Miller (1963)	It analysed the impact of tax shield on interest expense.
3	Kraus and Litzenberger (1973)	The study introduced classical 'Trade-off theory'. It covers the concept of trade-off between cost of financial distress and benefits derived from debt tax shield.
4	Stiglitz (1973)	It developed the concept of pecking order. This study states that leverage ratio is the unexpected resultant of profits and investments made by firm.
5	Jensen and Meckling (1976)	Introduced 'Agency cost theory' and analysed the impact of debtholder-shareholder and manager-shareholder conflict on capital structure financing.
6	Miller (1977)	Propounds the significance of personal and corporate tax in the financial decision making.
7	Ross (1977)	It developed the 'Signaling theory' of capital structure and promoted the debt issue as positive indicator in the performance in capital structure financing.
8	Bradley et al. (1984)	Introduced the well-known 'Static trade-off theory'.
9	Kane et al. (1984)	It introduced the Dynamic trade-off theory which includes trade-off theory along with the impact of uncertainty, cost, taxes and tax benefits.
10	Myers and Majluf (1984)	It propounded the 'Pecking order theory' and the major role of information asymmetry towards choice between internal fund, debt and equity for capital structure financing.
11	Fischer et al. (1989)	It initiated the transaction cost concept and shown its impact on leverage in the capital structure of the firm.
12	Harris and Raviv (1991)	It initiated the concept of 'Control driven theory'.
13	Baker and Wurgler (2002)	It predicts the long run impact of market value fluctuations on the capital structure. It states that firm issue equity when market is overvalued and issue debt when undervalued

Source: Sisodia y Maheshwari (2022).

The information of capital structure presented in the Table 1 above shows that the study began in 1958. Authors such as Modigliani and Miller (1958) contributed significantly to the origin of the "irrelevance theory," which states that capital structure does not impact the firm's value. Later, in 1963, they analyzed, under certain assumptions, the effect of the tax shield of interest expense. On

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the other hand, the studies by Kraus and Litzenberger (1973) contributed to the compensation theory, which addresses the concept of compensation between the cost of financial difficulties and the benefits of the tax shield of debt. In the same year, Stiglitz (1973) developed the concept of hierarchical order. This study asserts that the leverage ratio is the unexpected result of the profits and investments made by the company. For their part, Jensen and Meckling (1976) introduced the theory of agency costs.

In 1977, Miller proposed the importance of personal and corporate taxes in financial decision-making, while Ross (1977) developed the theory of capital structure signaling and promoted the issue of debt as a positive indicator of performance in capital structure financing. The "static equilibrium theory" (Bradley et al., 1984) and the "dynamic compensation theory" (Kane et al., 1984) continued to be relevant, especially the latter, which includes the theory of compensation along with the impact of uncertainty in costs, taxes, and tax benefits. Later, in 1984, Myers and Majluf proposed the theory of hierarchical order, arguing that information asymmetry plays an essential role in the choice of internal funds, debt, and equity for financing the capital structure.

Researchers Fischer et al. (1989) pioneered the concept of transaction costs and showed their impact on a company's capital structure's leverage. Harris and Raviv (1991) worked on the control-driven theory, which is used to predict the long-term impact of market value fluctuations on capital structure. For their part, Baker and Wurgler (2002) established that companies issue shares when the market is overvalued and issue debt when it is undervalued.

3. Materials and Methods

The model incorporated the methodology Shyam-Sunder and Myers (1994) and other authors such as Mongrut et al. (2010) used. The method of Shyam-Sunder and Myers (1994) consists of analyzing the capital structure at the company level as a data panel to determine the optimal leverage. The financial hierarchy model in its aggregate version is as follows:

$$D_{it} = \beta_0 + \beta_1 DEF_{it} + \beta_2 D_{protect\ j} + \beta_3 RP_j + e_{it} \quad (1)$$

where D corresponds to the amount of debt incurred by company i in period t, DEF is a coefficient of the deficit at the company level. D_protect is a binary variable that takes the value 1 when there is a debt protection law in the country where the company operates and 0 otherwise. In the case of RP, it refers to the risk indicator as a representation of the risk of investing in a given country. β_0 is the intercept of the proposed model, and the other β are the coefficients for each of the explanatory variables derived from the model.

In the target leverage model specification, some modifications are made to equation (1). In this case, the gap to optimal leverage is calculated based on the optimal corporate debt multiplied by the company's net worth, and this is the difference from the previous period (Mongrut et al., 2010) (Appendix A contains a description of each indicator used in the research). In this sense, the specification of the second model is as follows:

$$D_{it} = \beta_0 + \beta_1 Ajust_{it} + \beta_2 D_{protect\ j} + e_{it} \quad (2)$$

Adjust is the adjusted version of the gap or optimal leverage adjustment, analyzed again for company I in period t. Appendix A details the creation of the indicators used to estimate equations (1) and (2).

The data used in the research is a compilation of indicators calculated from the financial statements of non-financial companies listed on the stock exchange of each country involved in the study in 2013–2023. Access was provided to the Bloomberg platform to compile the data. Based on the information, a set of indicators was constructed for each company, including sixty-two (62) companies. The temporal and cross-sectional variability was exploited from the financial indicators per company to build a data panel structure, with a total of six hundred and eighty-nine (689) observations.

The sample of countries used in the research considered two criteria: (1) the amount of financial information found consecutively on the Bloomberg platform, and (2) the countries belonging to the

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Pacific Alliance, given that it is an initiative for the integration of countries articulated in political and economic aspects, to promote cooperation and integration in investment projects (Table 2). Therefore, the Pacific Alliance guarantees the inclusion of emerging economies, which is relevant to the dynamics of the business sector.

Table 2. Distribution of the sample by country.

Country	Companies
Chile	22
Colombia	7
Mexico	24
Peru	9
Total	62

Source: Own elaboration.

Table 3 shows the distribution of companies by economic sector, revealing a notable concentration in mining (24.20%), miscellaneous sectors (21.00%), and services (11.30%). The prominence of the mining sector underscores its critical role in the region's economies, suggesting a strong dependence on natural resource exploitation. This reliance can lead to increased vulnerability to fluctuations in international commodity prices. The relevance of the services sector is also evident, given its contribution to employment generation and its support of complementary activities across other productive areas. Meanwhile, the sectors of food and beverages, trade, technology, communications, and air transport each represent 6.5% of the sample.

Table 3. Distribution of the sample by economic sector.

Sector	Percentage
Mining	24.20%
Other	21.00%
Services	11.30%
Industry	9.70%
Construction	8.10%
Food and beverages	6.50%
Trade and restaurants	6.50%
Technology and communications	6.5%
Air Transport	6.5%

Source: Own elaboration.

4. Results

Table 4 shows the descriptive statistics for the variables used in the model. Regarding the amount of debt incurred, the results are homogeneous, with an average between 0.01 and 0.02. In contrast, the financial deficit showed greater heterogeneity among countries. For example, Colombia stood out for having a negative average deficit (-0.19) and high dispersion, suggesting fiscal imbalances. In contrast, the other countries analyzed had positive financial deficits for low levels and with less variability, indicating more stable management.

Table 4. Descriptive statistics.

Country	Variables	mean	SD
Chile	Amount of debt incurred	0.01	0.06
	Financial deficit	0.09	0.11
	Debt protection	1.00	0.00

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Country	Variables	mean	SD
	Amount of debt incurred*	97.33	628.77
	Adjust	178.12	1347.89
	RP	1.58	0.26
	Protect	0.98	0.21
	Amount of debt incurred	0.02	0.06
	Financial deficit	-0.19	1.66
	Debt protection	0.00	0.00
Colombia	Amount of debt incurred*	339.08	1439.46
	Adjust	351.22	1899.63
	RP	2.45	0.75
	Protect	-0.38	0.08
	Amount of debt incurred	0.02	0.06
	Financial deficit	0.07	0.14
	Debt protection	0.00	0.00
Mexico	Amount of debt incurred*	200.55	1070.68
	Adjust	317.86	1440.75
	RP	3.08	0.87
	Protect	-0.64	0.14
	Amount of debt incurred	0.02	0.06
	Financial deficit	0.07	0.10
	Debt protection	0.00	0.00
Peru	Amount of debt incurred*	73.76	388.32
	Adjust	117.98	426.36
	RP	1.71	0.25
	Protect	-0.52	0.05

Source: Own elaboration. *Not divided among company assets.

The equations were estimated using panel data models, including Pooled (POOL), Fixed Effects (FE), and Random Effects (RE). Likewise, Hausman tests were applied to determine the best model according to the financial data set used in the research. Table 5 presents the results of the economic hierarchy model in an aggregated version (1). The leading coefficient of interest in this approach is the financial deficit of companies. It was found that in all models, including the fixed effects version with a single variable, the effects are adverse and significant, indicating that a higher deficit does not mean a proportional increase in indebtedness. Likewise, the results suggest a weak and inverse relationship between the financial deficit and the increase in debt, which questions the empirical validity of the theory proposed by Shyam–Sunder and Myers (1994) for Latin American companies. As for the variables related to country risk and creditor protection, no statistical significance was found, suggesting that institutional and macroeconomic factors do not systematically affect the relationship between the deficit and the level of indebtedness, at least from the perspective of the aggregate model.

Table 5. Aggregate financial ranking results.

	FE (1)	FE (2)
(Intercept)		
DEF	-0.009*	-0.009*
	(0.004)	(0.004)
Dprotec		
RP		0.002
		(0.004)
Number of observations	682	682
R2	0.007	0.007

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	FE (1)	FE (2)
R2 Adj.	-0.093	-0.094
AIC	-1,931.9	-1,930.1
BIC	-1,922.8	-1,916.6
RMSE	0.06	0.06

Source: Own elaboration. *p<0.1, **p<0.05, ***p<0.01.

Table 6 presents the results of the disaggregated financial ranking model (1). The current long-term debt (R) portion shows a significant negative relationship. In the fixed effects specification, however, the relationship is more pronounced, suggesting that firms adjust their debt levels based on their prior obligations. This result is consistent with aspects associated with financial sustainability but not with a strict ranking. Regarding the results related to the fixed effects and institutional variables (debt protection and country risk), the fixed effects were shown to present a positive and marginally significant result. Therefore, it is expected that firms tend to increase their debt levels in the short term in a context of high-country risk.

In the presence of higher country risk, credit is expected to become more expensive and less accessible to firms. For this reason, short-term corporate financing decisions can be considered a precautionary strategy (Rücker & Treibich, 2024). In this scenario, companies can anticipate difficulties in accessing credit, resorting to borrowing before the country's conditions deteriorate. High levels of country risk in emerging markets do not necessarily reduce access to local debt since alternative financing mechanisms such as subsidies or preferential loans exist.

Table 6. Results of disaggregated financial hierarchy.

	FE (1)	FE (2)
DEF	0.135	0.140
	(0.108)	(0.107)
DIV	0.000	0.000
	(0.000)	(0.000)
I	0.139	0.156
	(0.117)	(0.117)
W	0.001	-0.001
	(0.111)	(0.110)
R	-0.647***	-0.658***
	(0.135)	(0.134)
C	0.143	0.148
	(0.108)	(0.108)
Dprotec		
RP		0.008*
		(0.004)
Number of observations	681	681
R2	0.144	0.151
R2 Adj.	0.050	0.057
AIC	-2,019.6	-2,023.2
BIC	-1,987.9	-1,987.0
RMSE	0.05	0.05

Source: Own elaboration. *p<0,1 **p<0,05 ***p<0,01.

Regarding the optimal leverage model, Table 7 shows the results for equation (2) estimates. The coefficient of the variable "adjusted" is statistically significant, with a value close to 0.05, similar to the forecast made by Mongrut et al. (2010). This result supports the hypothesis of the target leverage model proposed by Shyam-Sunder and Myers (1994), according to which firms adjust their current debt based on the gap between their observed debt level and the desired optimal level; that is, the

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speed of adjustment points to the optimal leverage. Therefore, it is possible to affirm that, on average, firms correct 5.80% of the gap between their current debt level and their target level for each period.

Table 7. Optimal leverage.

	FE (1)	FE (2)
(Intercept)		
Ajust	0.056***	0.057***
	(0.009)	(0.009)
Dprotec		-109.128
		(70.751)
Number of observations	682	682
R2	0.054	0.058
R2 Adj.	0.039	0.041
AIC	11,182.4	11,182.0
BIC	11,191.5	11,195.6
RMSE	876.91	875.35

Source: Own elaboration. *p<0,1 **p<0,05 ***p<0,01.

The results in Table 8 allow us to identify patterns in the capital structure dynamics for each of the countries included in the research. The results are generally heterogeneous concerning the magnitude and significance of the coefficients on the financial deficit and the speed of adjustment. It suggests the presence of institutional factors and market aspects that influence the behavior of firms in each country.

A positive and statistically significant coefficient was observed in the aggregate financial ranking model for Mexico, suggesting that Mexican firms tend to cover their deficit by increasing their leverage, which is consistent with the financial ranking theory. In contrast, the results for Colombia show an inverse relationship, given that, faced with a larger deficit, firms may opt for a leverage reduction. Furthermore, Colombia may have restrictions on access to credit, or firms may be opting for domestic sources of financing. The relationship between the financing gap and leverage from the model (2) approach is unclear for Chile and Peru.

The target leverage model's results are positive and significant for all countries. For companies located in Colombia and Mexico, the speed of adjustment is higher, suggesting greater flexibility in correcting deviations from the target leverage. In contrast, in countries like Chile and Peru, a slower speed of adjustment could be associated with greater market frictions or less pressure to achieve an optimal capital structure in the short term.

Table 8. Models by country.

Country		Model (1)	Model (2)
Chile	(Intercept)	0.0093	-555.44
	DEF	-0.010 (0.03)	
	Ajust		0.2698***(0.05)
Mexico	(Intercept)	0.0131	-1457.63
	DEF	0.106***(0.03)	
	Ajust		0.6084***(0.09)
Peru	(Intercept)	0.0102	-80.44
	DEF	0.0716(0.07)	
	Ajust		0.2036**(0.15)
Colombia	(Intercept)	0.0183	-1433.78
	DEF	-0.0111***(0.00)	
	Ajust		0.7161***(0.12)

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Source: Own elaboration, model (1) Aggregate financial hierarchy, model (2) Target leverage.*p<0,1 **p<0,05 ***p<0,01.

The results reveal that corporate responses to financial imbalances and their ability to adjust toward optimal leverage levels vary significantly across countries. This heterogeneity reflects substantial differences in institutional environments, the degree of development of financial markets, and restrictions on access to financing. Therefore, the findings highlight the need to incorporate each country's specific economic and institutional context when analyzing the dynamics of capital structure in Latin American economies. This perspective is consistent with the literature that recognizes the role of the institutional and financial environment in determining corporate financing decisions (La Porta et al., 1998; Rajan & Zingales, 1995), as well as approaches that emphasize the need for differentiated analytical frameworks for emerging economies (Fan et al., 2012).

5. Discussion

The results obtained in this study reveal notable heterogeneity in corporate financing dynamics among the Latin American countries analyzed (Chile, Colombia, Mexico, and Peru). The stability observed in the amount of debt contracted, with homogeneous means between 0.01 and 0.02, contrasts with the significant variability in the financial deficit, especially in Colombia, where a negative average deficit and high dispersion are evident. This pattern suggests the presence of profound fiscal imbalances that could impact debt capacity and corporate financial management.

Panel models consistently show that the financial deficit does not translate into a proportional increase in debt, which challenges the empirical validity of traditional financial hierarchy theory in the context of the Latin American economies studied (Shyam-Sunder & Myers, 1994). This finding indicates that firms do not use debt as an automatic source to cover deficits, possibly due to credit restrictions, debt aversion, or a preference for self-financing.

Institutional and macroeconomic variables, specifically country risk and creditor protection, do not present significant systematic effects in the aggregate model. However, the disaggregated analysis shows that country risk exerts a marginally substantial positive impact on debt, suggesting that, in contexts of high sovereign uncertainty, firms may anticipate future difficulties and increase their debt as a precautionary strategy (Rücker & Treibich, 2024). This strategy is consistent with emerging market scenarios, where alternative financing mechanisms can cushion credit restrictions.

Regarding the optimal leverage model, the estimated adjustment speed of around 5.80% reflects that firms gradually correct deviations between the observed and target debt levels. However, this adjustment capacity varies by country, for example, as is the case with Mexico and Colombia, which are more flexible than Chile and Peru. It could be attributed to differences in the depth and efficiency of local financial markets.

The country analysis shows that the financial deficit and debt relationship varies significantly. At the same time, Mexican companies adjust their debt according to the traditional financial hierarchy. In contrast, Colombia shows the opposite behavior, possibly associated with restrictions on access to credit or a greater dependence on domestic sources of financing. These results emphasize the need to contextualize corporate financial decisions within each country's institutional and market specificities.

6. Conclusions

This study provides empirical evidence on companies' complex capital structure dynamics in emerging Latin American economies. Firms' responses to financial imbalances and their ability to adjust toward optimal capital structures vary significantly across countries, reflecting the influence of institutional factors, market restrictions, and macroeconomic conditions. There is also a weak or inverse relationship between financial deficits and debt, which calls into question the universal applicability of this theory in emerging economies, given the presence of other factors such as access to credit and preferences for self-financing.

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Country risk and legal protection from creditors do not systematically affect debt at the aggregate level, although the disaggregated analysis reveals a precautionary effect of country risk on corporate debt. Regarding the adjustment toward optimal leverage, companies tend to gradually correct deviations from their target debt level, albeit with different adjustment speeds that reflect the heterogeneity of the region's financial markets and institutional structures. Thus, the heterogeneity of results highlights the need to design financial strategies and policies adapted to each country's specific context, considering market constraints, the institutional environment, and the characteristics of emerging economies.

These findings reinforce the importance of incorporating analysis of the economic and institutional context in studies on capital structure. They contribute to a better understanding of financial decisions in Latin America and provide a basis for future research in emerging economies.

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Appendix A

Preparation of financial indicators

Dividends paid

DIV = $\frac{DIV_P}{A}$

DIV = Dividend payout ratio based on assets.

DIV_P: Dividends paid

A: Average total assets.

Net change in working capital

ΔW = $\frac{(AC_t - CL_t) - (AC_{t-1} - CL_{t-1})}{A}$

AC: Current assets

PC: Current liabilities

A: Average total assets

Internally generated cash flow after taxes and interest

C_t = $\frac{[EBIT - FE - IT + Dep + Am]}{A}$

EBIT: Internally generated cash flow after taxes and interest

FE: Financial expenses

IT: Income taxes

Dep: Depreciation

Am: Amortization

A: Average total assets

Working capital

$W = (AC - CL)$

AC: Current assets

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PC: Current liabilities

Current portion of long-term debt

$$CLTD\ Ratio = \frac{CLTD_{t-1}}{A}$$

CLTDt−1: Current portion of long-term debt from year t−1.

A: Total assets

Net Investments

$$I_t = \frac{(PPE_{Acq} + Int_{Paid} + PI) - (PPE_{Sold} + PI_{Sold} + OI_{Sold})}{A}$$

$I_t = Net\ investment\ as\ a\ proportion\ of\ average\ total\ assets$

$PPE_{Acq} = Acquisition\ of\ property, plant\ and\ equipment$

$Int_{Paid} = Interest\ paid$

PI: Permanent investments (long-term investments acquired).

$PPE_{Sold} = Sale\ of\ property, plant\ and\ equipment$

$PI_{Sold} = Sale\ of\ permanent\ investments$

$OI_{Sold} = Sale\ of\ other\ investments$

A: Total assets

Financial Deficit

$DEF_t = DIV_t + I_t + \Delta WC_t + R_t - C_t$

$DEF_t = Financial\ deficit\ in\ period\ t$

$DIV_t = Dividends\ paid$

$I_t = Net\ investment$

$\Delta WC_t = Net\ change\ in\ working\ capital$

$R_t = Current\ maturity\ of\ long-term\ debt\ at\ the\ beginning\ of\ the\ period$

$C_t = Internally\ generated\ cash\ flow\ after\ taxes\ and\ interest$

Amount of debt incurred by company *i* in period t (*trade off*)

$$NewDebtRatio = \frac{(ST\ Debt_t + LT\ Debt_{t)} - (ST\ Debt_{t-1} + LT\ Debt_{t-1})}{A_t}$$

$ST\ Debt = Short\ term\ debt$

$LT\ Debt = Long\ term\ debt$

A: Total assets

Amount of debt incurred by company *i* in period *t* (*pecking order*)

$$NewDebtRatio = (ST\ Debt_t + LT\ Debt_{t)} - (ST\ Debt_{t-1} + LT\ Debt_{t-1})$$

$ST\ Debt = Short\ term\ debt$

$LT\ Debt = Long\ term\ debt$

Debt Optimum

$$D^* = \frac{L_{t-1} + L_{t-2} + L_{t-3}}{3}$$

$D^* = Optimal\ debt\ level$

$L_{t-1}, L_{t-2}, L_{t-3} = Total\ liabilities\ from\ one, two, and\ three\ years\ ago\ respectively$

The denominator (3) indicates a three-year average

D*

$$D = D^*\ x\ E$$

D: Optimal debt

*D**: Optimal debt ratio (based on average total liabilities).

E: Equity

Ajust

$$Adjustment_t = D_t^* - D_{t-1} = \left[\frac{1}{3}\sum_{t=-2}^{0}\left(\frac{D}{E}\right)_t * E_t\right] - D_{t-1}$$

$Adjustment_t = Debt\ adjustment\ required\ in\ period\ t$

D_t^* = Optimal debt level for period t

D_{t-1} = Actual debt from the previous year

$\left(\frac{D}{E}\right)_t$ = Debt-to-equity ratio for year t

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E_t = Equity in year ttt

Appendix B

Table A1. Aggregate financial ranking results.

	FE (1)	POOL	FE (2)	RE
(Intercept)		0.013		0.013
		(0.009)		(0.009)
DEF	-0.009*	-0.011**	-0.009*	-0.011**
	(0.004)	(0.004)	(0.004)	(0.004)
Dprotec		-0.008		-0.008
		(0.006)		(0.006)
RP		0.002	0.002	0.002
		(0.003)	(0.004)	(0.003)
Number of observations	682	682	682	682
R2	0.007	0.019	0.007	0.018
R2 Adj.	-0.093	0.014	-0.094	0.013
AIC	-1931.9	-1,856.7	-1,930.1	-1,863.0
BIC	-1922.8	-1,834.1	-1,916.6	-1,840.4
RMSE	0.06	0.06	0.06	0.06

Source: Own elaboration.

Table A2. Results of disaggregated financial hierarchy.

	POOL (1)	FE (1)	RE (1)	POOL (2)	FE (2)	RE (2)
(Intercept)	0.000		0.000	-0.008		-0.008
	(0.005)		(0.005)	(0.010)		(0.010)
DEF	0.104	0.135	0.104	0.109	0.140	0.108
	(0.075)	(0.108)	(0.075)	(0.075)	(0.107)	(0.075)
DIV	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
I	0.081	0.139	0.081	0.075	0.156	0.077
	(0.084)	(0.117)	(0.084)	(0.084)	(0.117)	(0.085)
W	-0.075	0.001	-0.075	-0.080	-0.001	-0.078
	(0.082)	(0.111)	(0.082)	(0.082)	(0.110)	(0.083)
R	-0.161*	-0.647***	-0.161*	-0.164*	-0.658***	-0.165*
	(0.078)	(0.135)	(0.078)	(0.078)	(0.134)	(0.078)
C	0.118	0.143	0.118	0.123	0.148	0.122
	(0.075)	(0.108)	(0.075)	(0.075)	(0.108)	(0.075)
Dprotec				-0.002		-0.002
				(0.006)		(0.006)
RP				0.004	0.008*	0.004
				(0.003)	(0.004)	(0.003)
Number of observations	681	681	681	681	681	681
R2	0.063	0.144	0.063	0.068	0.151	0.068
R2 Adj.	0.055	0.050	0.055	0.057	0.057	0.057
AIC	-1,878.5	-2,019.6	-1,878.5	-1,877.9	-2,023.2	-1,879.7
BIC	-1,842.3	-1,987.9	-1,842.3	-1,832.7	-1,987.0	-1,834.5
RMSE	0.06	0.05	0.06	0.06	0.05	0.06

Source: Own elaboration. *p<0.1, **p<0.05, ***p<0.01.

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Table A3. Optimal leverage.

	POOL (1)	FE (1)	RE (1)	POOL (2)	FE (2)	RE (2)
(Intercept)	28.725		30.231	66.787		68.252
	(40.13)		(53.710)	(47.168)		(59.082)
Ajust	0.058***	0.056***	0.057***	0.058***	0.057***	0.057***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Dprotec				-109.350	-109.128	-109.232
				(71.396)	(70.751)	(70.778)
Num.Obs.	682	682	682	682	682	682
R2	0.055	0.054	0.055	0.058	0.058	0.058
R2 Adj.	0.054	0.039	0.053	0.056	0.041	0.055
AIC	11,206.9	11,182.4	11,195.1	11,206.5	11,182.0	11,194.6
BIC	11,220.4	11,191.5	11,208.6	11,224.6	11,195.6	11,212.7
RMSE	891.45	876.91	883.76	889.91	875.35	882.20

Source: Own elaboration. *p<0.1, **p<0.05, ***p<0.01.

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