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Leverage, Profitability, Governance, and Valuation under Emerging-Market Frictions: A Panel-Data Research Design for Firms Listed on the Mexican Stock Exchange

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ABSTRACT: This article develops a publication-oriented empirical framework for examining how capital structure, financial performance, and governance characteristics shape firm value among companies listed on the Mexican Stock Exchange (Bolsa Mexicana de Valores, BMV). The paper situates Mexico within the corporate finance literature on emerging markets, where ownership concentration, imperfect investor protection, limited market depth, and macro-financial volatility may alter canonical leverage–value relationships.

KEYWORDS: corporate finance; capital structure; Tobin's Q; panel data; corporate governance; emerging markets; Mexican Stock Exchange.

1. INTRODUCTION

Corporate finance in emerging markets cannot be understood solely through the stylized predictions derived from frictionless capital-market models. Where ownership is concentrated, investor protec- tion is uneven, disclosure quality varies across issuers, and macro-financial shocks are recurrent, leverage choices, investment policy, payout behavior, and governance arrangements interact in ways that may differ markedly from the benchmark evidence for large Anglo-American markets (La Porta et al., 1997, 1998, 2000; Booth et al., 2001; Fan et al., 2012). Mexico offers an especially instructive setting for such analysis. Its listed-firm universe is smaller and more concentrated than that of the largest developed exchanges, yet it includes firms of continental scale in telecommunications, consumer staples, industrial conglomerates, mining, infrastructure, retail, and financial services. The BMV also operates within an institutional environment characterized by family control, block ownership, evolving governance rules, and exposure to exchange-rate, interest-rate, and inflation dynamics that remain central to financing decisions (Chong & López-de-Silanes, 2006; Bebczuk et al., 2007; Trejo-Pech et al., 2021).

The present article addresses a core question in modern corporate finance: how do capital struc- ture, profitability, liquidity, governance, and macroeconomic conditions jointly shape the market valuation and financial performance of BMV-listed firms? This is not merely a descriptive question. It is directly linked to the classical debate between trade-off, pecking-order, market-timing, and agency-based views of financing policy (Modigliani & Miller, 1958, 1963; Jensen & Meckling, 1976; Ross, 1977; Myers, 1984; Myers & Majluf, 1984; Baker & Wurgler, 2002). It is also central to debates about whether governance structures create value through stronger monitoring and lower agency costs, or whether concentrated ownership and insider-dominated boards create entrenchment effects that attenuate the value relevance of disclosure and independent oversight (Shleifer & Vishny, 1997; Claessens et al., 2002; Gompers et al., 2003; Brown & Caylor, 2006; Aggarwal et al., 2011).

The Mexican setting adds three layers of analytical interest. First, firm financing choices must be studied in a market where public equity exists but where debt composition, debt maturity, and bank-market complementarities continue to matter significantly (Chong & López-de-Silanes, 2006; Vega Zavala & Santillán Salgado, 2019; Farfán-Pérez et al., 2024). Second, governance qual- ity cannot be reduced to Anglo-Saxon dispersed-ownership assumptions because family ownership, business groups, and ownership concentration remain empirically relevant in the BMV environment (San Martin-Reyna & Duran-Encalada, 2012, 2015; Watkins Fassler, 2018). Third, macroeconomic conditions—especially inflation, monetary policy, exchange-rate dynamics, and real

activity—are not merely background noise; they can materially affect leverage capacity, the cost of capital, risk premiums, and market valuation (Bernardo et al., 2018; OECD, 2019a, 2019b; Banco de México, 2026a, 2026b, 2026c).

This article therefore pursues two objectives simultaneously. Substantively, it develops a rigorous, Mexico-centered argument about the determinants of firm value and performance in a middle- income capital market. Methodologically, it provides a fully specified econometric design suitable for journal submission and empirical implementation once the final machine-readable issuer panel is assembled from official disclosure sources. The article is deliberately conservative in one respect:

it does not fabricate firm-level estimates when a verified BMV/CNBV issuer panel cannot be in- dependently reconstructed in the present environment. Instead, it offers the full architecture of a publishable study, including hypotheses, equations, variable definitions, identification logic, diagnostic procedures, reporting templates, and theoretically disciplined interpretation. This choice is preferable to pseudo-precision and is consistent with best scientific practice.

The argument advanced here is that, for BMV-listed firms, market valuation should respond to leverage in a nonlinear way, profitability and growth should be positively associated with value, and governance quality should command a valuation premium, although these effects are likely to be conditioned by ownership concentration and macro-financial conditions. More broadly, the Mexican case suggests that the empirical study of corporate finance in emerging markets must move beyond one-factor leverage regressions and toward integrated firm-level models that jointly incorporate operating performance, capital structure, governance, and macroeconomic regimes (Rajan & Zingales, 1995; Frank & Goyal, 2009; Céspedes et al., 2010; Trejo-Pech et al., 2021).

1 Problem Statement

The empirical literature on firm value and capital structure has generated robust stylized facts, but these facts remain unevenly portable across institutional contexts. In developed markets, leverage, profitability, size, tangibility, growth, and payout have been studied extensively as determinants of corporate valuation and financing policy (Titman & Wessels, 1988; Harris & Raviv, 1991; Rajan & Zingales, 1995; Fama & French, 2002; Lemmon et al., 2008). Yet the institutional features of emerging markets—including legal enforcement gaps, block holder dominance, lower market depth, and macroeconomic volatility—may alter both the sign and magnitude of the underlying relationships (Booth et al., 2001; Fan et al., 2012; Borges Júnior, 2024).

For Mexico, the problem is particularly important because listed firms operate at the intersection of sophisticated capital-market access and structural institutional frictions. On the one hand, the BMV offers organized market access, issuer governance requirements, investor-relations infrastructure, and a long history of listed corporate finance activity (Grupo BMV, 2026a, 2026b). On the other hand, the market remains relatively concentrated, and the underlying firms differ widely in ownership structure, debt policy, sectoral characteristics, and exposure to external shocks. Existing studies on Mexico have tended to focus either on capital structure adjustment, governance and family ownership, debt maturity, or cross-listing, but a unified econometric framework linking financial performance, capital structure, governance, and valuation in the BMV context remains comparatively underdeveloped (Davis-Friday et al., 2005; Chong & López-de-Silanes, 2006; San Martin-Reyna & Duran-Encalada, 2012, 2015; Vega Zavala & Santillán Salgado, 2019; Trejo-Pech et al., 2021; Farfán-Pérez et al., 2024).

The research problem can therefore be formulated as follows: *How do leverage, operating performance, liquidity, investment, payout policy, ownership concentration, board independence, and macroeconomic conditions affect the market valuation of BMV-listed firms, and to what extent do alternative corporate finance theories account for those relationships in the Mexican setting?* This problem has direct implications for firm-level strategy, investor pricing, and policy discussions about disclosure, governance, and capital-market development.

2 RESEARCH OBJECTIVES

2.1 General objective

To develop and justify a rigorous econometric framework for analyzing the relationship among capital structure, financial performance, governance, and market valuation in non-financial firms listed on the Mexican Stock Exchange.

2.2 Specific objectives

- To examine the theoretical predictions of trade-off, pecking-order, agency, signaling, and market- timing theories in the context of Mexican listed firms.
- To define a panel-data research design suitable for BMV-listed non-financial issuers and grounded in official and issuer-level disclosures.
- To specify the construction of firm-level, governance, and macroeconomic variables relevant for market valuation and operating performance.

- To formulate baseline, alternative, and dynamic econometric specifications for firm value and profitability.
- To discuss the identification challenges associated with heteroskedasticity, serial correlation, cross-sectional dependence, multicollinearity, and endogeneity.
- To provide publication-style tables and figure placeholders that can be populated once the validated issuer panel is assembled.
- To derive analytically grounded expectations for Mexican corporate finance and compare them to international and Latin American evidence.

3 RESEARCH HYPOTHESES

3.1 Main hypothesis

H1. For non-financial firms listed on the BMV, market valuation is systematically associated with capital structure, financial performance, governance characteristics, and macroeconomic conditions, after controlling for firm-specific unobserved heterogeneity and time effects.

3.2 Secondary hypotheses

- **H2.** Leverage exhibits a nonlinear relationship with firm value: moderate leverage may be value-enhancing, but excessive leverage reduces valuation through distress and agency costs.
- **H3.** Higher profitability, stronger liquidity, and greater sales growth are positively associated with firm value and operating performance.
- **H4.** Greater ownership concentration and board independence affect valuation through moni- toring and entrenchment channels; the net effect is empirically ambiguous ex ante and must be estimated.
- **H5.** Macroeconomic instability—captured by higher inflation, tighter monetary conditions, and greater exchange-rate volatility—is negatively associated with market valuation.
- **H6.** Dynamic adjustment models reveal partial convergence of leverage toward firm-specific targets among BMV-listed firms.

4 LITERATURE REVIEW

4.1 Corporate finance theory

The theoretical foundations of capital structure and firm valuation begin with Modigliani and Miller's irrelevance propositions, which demonstrate that, under idealized assumptions, firm value is independent of financing choice (Modigliani & Miller, 1958). Once taxes are introduced, debt becomes value-enhancing through the interest tax shield (Modigliani & Miller, 1963). The importance of these contributions lies not in their literal realism, but in the benchmark they establish for identifying the frictions that make financing decisions consequential. Subsequent work emphasized agency conflicts, information asymmetry, bankruptcy costs, managerial incentives, and signaling, thereby opening the core modern research agenda in corporate finance (Jensen & Meckling, 1976; Ross, 1977; Jensen, 1986; Harris & Raviv, 1991).

Trade-off theory predicts that firms choose leverage by balancing the marginal tax benefits of debt against expected distress costs and agency costs. In this perspective, firms have target leverage ratios that depend on profitability, collateralizable assets, size, and growth opportunities. Pecking- order theory, in contrast, predicts no stable leverage target; instead, firms prefer internal finance, then safe debt, and issue equity only as a last resort because of adverse selection (Myers, 1984; Myers & Majluf, 1984). Market-timing theory adds that capital structure reflects cumulative attempts to issue equity when market valuations are high and repurchase or issue debt when equity is relatively expensive (Baker & Wurgler, 2002). In practice, empirical work often finds that elements of all three perspectives coexist, with adjustment dynamics varying across institutional environments (Flannery & Rangan, 2006; Kayhan & Titman, 2007; Frank & Goyal, 2009).

For emerging markets, the key implication is that the institutional environment affects both financing opportunities and the meaning of leverage itself. Weak legal enforcement, creditor risk, business-group affiliation, and concentrated ownership can all alter the costs of debt and equity and thus the relevance of competing theories (La Porta et al., 1997, 1998, 2000; Booth et al., 2001; Fan et al., 2012). The Mexican setting is therefore not just another country case: it is a context in which classical theories must be filtered through ownership structure, governance quality, and macro-financial volatility.

4.2 Capital structure and leverage

The empirical literature on leverage has identified a relatively stable set of correlates: size and tangibility are typically positively related to leverage, profitability is often negatively related to leverage in line with the pecking-order view, and growth opportunities tend to have context-dependent effects (Titman & Wessels, 1988; Rajan & Zingales, 1995; Frank & Goyal, 2009). Yet once one moves beyond developed economies, both leverage levels and adjustment dynamics become institutionally contingent.

Booth et al. (2001) show that many of the conventional determinants of capital structure also matter in developing countries, although country-specific features remain critical. De Jong et al. (2008) and Fan et al. (2012) likewise stress that legal, tax, and financial-system characteristics significantly influence financing choices.

Latin American evidence reinforces this point. Céspedes et al. (2010) argue that ownership concentration helps explain leverage in the region because firms may prefer debt over equity to avoid diluting control rights. Bernardo et al. (2018) show that macroeconomic and institutional conditions affect debt composition and leverage across Latin American firms, while Valcacer et al. (2017) document post-crisis differences in the determinants of leverage between Latin America and the United States. More recent evidence suggests that leverage adjustment in Latin America may be substantial once dynamic models are used, although speeds of adjustment vary by method and sample composition (Muñoz Mendoza et al., 2023; Lima & Silva, 2024).

Mexico-specific evidence is now sufficiently developed to motivate a dedicated research design. Vega Zavala and Santillán Salgado (2019) report a positive relationship between leverage changes and firm value among Mexican listed companies, using Tobin's Q as the valuation proxy. Trejo-Pech et al. (2021) show that Mexican publicly traded firms adjust toward target leverage, but at a slower speed than firms in developed markets. Farfán-Pérez et al. (2024) further show that debt maturity decisions among Mexican public firms respond to leverage, size, liquidity, collateral, and market interest rates. Taken together, these studies suggest that capital structure in Mexico is neither random nor fully static: it is dynamically managed under meaningful market and institutional constraints.

4.3 Profitability and firm value

Profitability matters in two distinct but related ways. First, it affects internal financing capacity, which is central to pecking-order reasoning (Myers & Majluf, 1984; Fama & French, 2002). Second, it directly influences valuation through expected cash flows, operating efficiency, and lower financing frictions. The literature therefore treats profitability not merely as an outcome, but also as a determinant of financing policy and market value (Damodaran, 2015; Brigham & Ehrhardt, 2017).

In emerging-market settings, the valuation role of profitability may be amplified by imperfect investor protection and information frictions. When outside investors are uncertain about governance quality or cash-flow credibility, realized operating performance becomes a stronger informational signal. This helps explain why profitability is often central to studies linking firm value, ownership, and governance (Chong & López-de-Silanes, 2006; Brown & Caylor, 2006; Aggarwal et al., 2011).

In Mexico, family-firm evidence suggests that financial performance is closely linked to ownership form, internal monitoring, and board composition (San Martin-Reyna & Duran-Encalada, 2012, 2015; Watkins Fassler, 2018).

Theoretical expectations are therefore nuanced. Profitability should positively affect valuation, but its relationship with leverage may be negative if firms rely more heavily on internal funds. At the same time, profitable firms may carry more debt if lenders reward stable cash flows and if collateral is strong. A serious empirical model for Mexican listed firms must therefore treat profitability both as an explanatory variable in value equations and as an alternative dependent variable in performance equations.

4.4 Corporate governance and market performance

Corporate governance is central to firm value because it shapes how investors perceive the protection of minority rights, the credibility of disclosure, and the expected allocation of free cash flow. In agency theory, governance mechanisms reduce managerial opportunism and lower agency costs; in concentrated-ownership systems, however, the central tension is often between controlling and minority shareholders rather than between dispersed shareholders and managers (Jensen & Meckling, 1976; Shleifer & Vishny, 1997; La Porta et al., 2000).

Empirical governance studies generally find that stronger governance is associated with higher valuation, although mechanisms and contexts differ. Gompers et al. (2003), Brown and Caylor (2006), Black et al. (2006), and Aggarwal et al. (2011) all report a positive governance–value nexus in different settings. Yet concentration can produce both monitoring benefits and entrenchment costs. Claessens et al. (2002) show that large shareholdings generate incentive and entrenchment effects simultaneously, while family ownership studies find heterogeneous impacts depending on board composition, control rights, and managerial involvement (Anderson & Reeb, 2003; Villalonga & Amit, 2006; San Martin-Reyna & Duran-Encalada, 2012).

For Mexico, governance is especially salient. Chong and López-de-Silanes (2006) show that better firm-level governance practices are linked to higher valuations and better performance in Mexico. San Martin-Reyna and Duran-Encalada (2015) find that family ownership concentration can be positively associated with performance when debt and board composition are taken into account. These findings are fully consistent with the broader Latin American view that governance and investor protection interact rather than operate independently (Bebczuk et al., 2007; Chong & López-de-Silanes, 2007).

4.5 Emerging markets and Latin American evidence

Leverage, Profitability, Governance, and Valuation under Emerging-Market Frictions: A Panel-Data Research Design for Firms Listed on the Mexican Stock Exchange

Emerging-market corporate finance research has increasingly emphasized that firm value cannot be modeled without attention to institutions. Capital market depth, disclosure regimes, inflation history, banking structure, and investor protection affect both financing policy and valuation. This is particularly clear in Latin America, where the literature repeatedly documents high ownership concentration, relatively shallow equity markets, and stronger macro-financial sensitivity than in mature markets (Chong & López-de-Silanes, 2007; Bebczuk et al., 2007; Bernardo et al., 2018).

Corporate governance in emerging markets also differs from the canonical dispersed-shareholder setting. Aguilera et al. (2011) note that ownership and control patterns in emerging economies require governance research to move beyond a single-country template. Borges Júnior (2024) shows that governance mechanisms shape capital structure across Latin American firms, while Lavin and Montecinos-Pearce (2021) show how board characteristics and ownership structure influence strategic disclosure in an emerging-market environment. These findings support a unified analytical framework in which financing, governance, and disclosure interact rather than operate in separate literatures.

4.6 Previous evidence on Mexico and BMV-listed firms

A growing body of work addresses specific dimensions of corporate finance in Mexico. Davis- Friday et al. (2005) study Mexican cross-listed firms and link market access to performance, capital constraints, and information environment. Chong and López-de-Silanes (2006) connect corporate governance to firm value and dividends. San Martin-Reyna and Duran-Encalada (2012, 2015) investigate family ownership, board composition, debt, and performance. Vega Zavala and Santillán Salgado (2019) identify a positive relation between capital structure and market value for Mexican listed firms. Trejo-Pech et al. (2021) estimate target adjustment behavior in leverage. Farfán Pérez et al. (2022) and Farfán-Pérez et al. (2024) focus on debt maturity decisions and the role of interest rates, size, and leverage. Watkins Fassler (2018) documents performance differentials between family and non-family firms, while Díaz Cruz (2017) studies the financial performance–CSR nexus among BMV issuers.

Although these studies are valuable, the literature still lacks an integrated article that combines valuation, leverage, profitability, governance, and macroeconomic controls within a unified panel- data design centered on the BMV. This paper is intended to fill precisely that gap.

5 CONCEPTUAL FRAMEWORK

The conceptual model proposed in this article links firm value to three layers of determinants. The first layer is *internal financial structure*: leverage, liquidity, tangibility, investment intensity, sales growth, and dividend policy. The second layer is *governance structure*: ownership concentration, board independence, and, where available, additional governance attributes disclosed in annual reports and best-practice statements. The third layer is *macro-financial context* : inflation, policy interest rates, real GDP growth, and exchange-rate volatility. The causal logic is straightforward but multidirectional.

Leverage affects firm value through tax shields, disciplinary effects on managers, financial distress risk, and refinancing constraints. Profitability affects valuation through expected future cash flows and through reduced financing frictions. Liquidity and tangibility ease access to external finance and lower risk, while growth and capital expenditures proxy for investment opportunities and strategic expansion. Governance variables affect both agency costs and the credibility with which markets price the firm's claims. Macroeconomic conditions alter discount rates, cash-flow uncertainty, credit conditions, and the relative attractiveness of debt versus equity financing.

The Mexican context suggests that several of these channels may be amplified by the institutional environment. Ownership concentration may substitute for weak formal governance in some settings, yet create minority-shareholder concerns in others. Board independence may improve valuation if it signals stronger oversight, but only if independence is substantive rather than nominal. Exchange- rate volatility may matter more for firms with foreign-currency debt or imported capital expenditure needs. Inflation and policy rates influence both financing costs and valuation multiples through the discount-rate channel. The model is therefore explicitly multi-causal, institution-sensitive, and compatible with firm and time heterogeneity.

Figure 1. Conceptual Framework of Corporate Finance Determinants and Firm Value

The figure summarizes the expected links from capital structure, profitability, liquidity, tangibility, growth, investment, payout policy, ownership concentration, board indepen- dence, and macroeconomic conditions to firm value and alternative performance measures. The framework also highlights the potential endogeneity between leverage, profitability, governance, and valuation, justifying dynamic-panel extensions and lag structures.

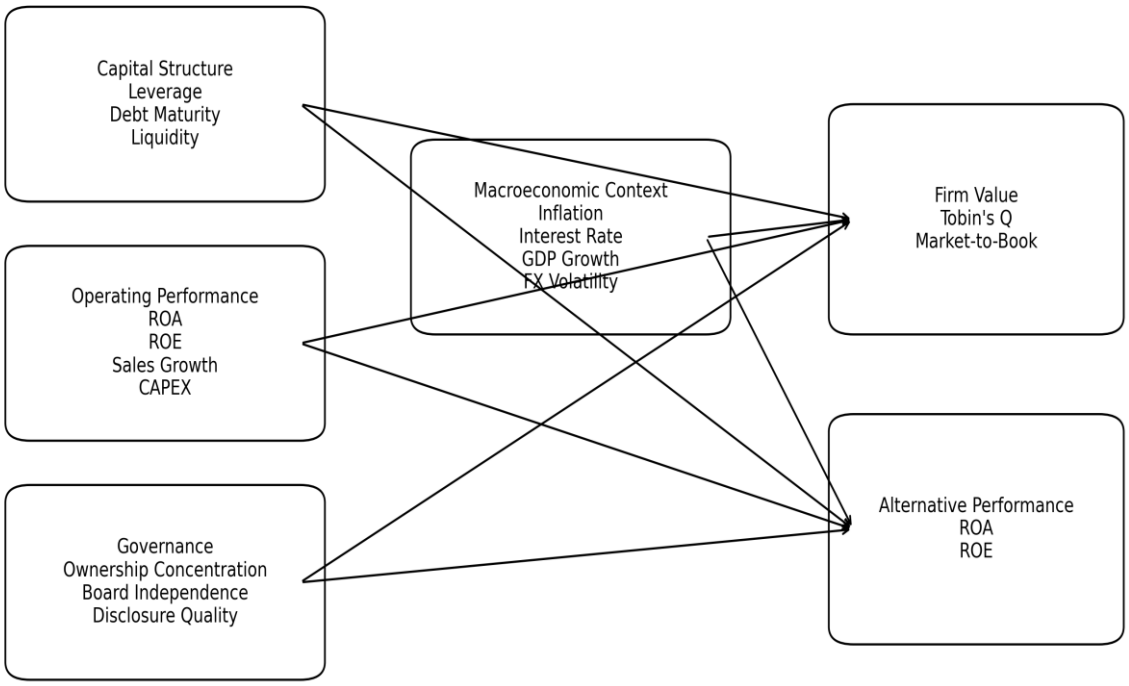


Figure 1: Figure 1. Conceptual Framework of Corporate Finance Determinants and Firm Value

Source: Authors' elaboration based on the conceptual and empirical design described in the manuscript.

6 METHODOLOGY

6.1 Research design

The proposed research design is a longitudinal observational study based on firm-level panel data. Panel data are appropriate because the object of interest is not only cross-sectional variation among listed firms, but also within-firm variation in financing and valuation over time. This structure permits the researcher to control for unobserved time-invariant firm characteristics, separate macro shocks from firm-specific dynamics, and test adjustment processes that cannot be identified in purely cross-sectional models (Baltagi, 2021; Wooldridge, 2010)

6.2 Type of study

The study is explanatory and econometric. Its purpose is not merely to describe the financial characteristics of BMV-listed firms, but to estimate theoretically grounded associations among capital structure, performance, governance, and valuation while addressing specification, identification, and robustness concerns. The intended inferential orientation is cautious rather than causal in the strong experimental sense, but the design incorporates standard strategies for mitigating omitted-variable bias and dynamic endogeneity.

6.3 Data source and sample selection

The target sample consists of non-financial firms listed on the BMV with common-equity presence over the period of analysis and with sufficiently complete accounting, market, and governance disclosures. Firm-level accounting and disclosure data are to be extracted from official BMV issuer records, digitized issuer filings, annual reports, and XBRL financial information where available (Grupo BMV, 2026a, 2026b, 2026c). Governance variables are to be hand-collected or semi-structured from annual reports, board composition disclosures, and best-practice governance statements. Macroeconomic variables are to be sourced from Banco de México's Economic Information System and from INEGI's national accounts and quarterly GDP releases (Banco de México, 2026a, 2026b, 2026c, 2026d; INEGI, 2024a, 2024b).

Financial firms, insurers, banks, brokerages, and other regulated financial intermediaries are excluded because leverage ratios, liquidity standards, and balance-sheet structures are not directly comparable with those of non-financial corporations. Real-estate trusts and vehicles whose regulatory accounting differs materially from ordinary industrial and commercial issuers may also be excluded depending on final data consistency. The resulting panel is expected to be unbalanced, which is common in emerging-market corporate finance due to listing changes, missing disclosures, mergers, and data availability constraints (Trejo-Pech et al., 2021; Farfán-Pérez et al., 2024).

6.4 Period of analysis

The recommended period of analysis is 2010–2024 on an annual basis. This window is long enough to capture post-global-financial-crisis adjustment, the COVID-19 shock, and the monetary tightening cycle that followed the pandemic, while remaining compatible with the modern governance and disclosure environment of Mexican listed issuers. The exact start year may be shifted depending on the consistency of governance disclosures and market-value availability.

6.5 Unit of analysis

The unit of analysis is the firm-year observation. Each row in the final dataset corresponds to one listed non-financial BMV firm observed in one fiscal year, matched with contemporaneous or lagged market and macroeconomic information.

6.6 Variable construction

The primary dependent variable is Tobin's Q, measured as the market value of equity plus book value of total debt divided by book value of total assets. This proxy is widely used in the literature because it captures the market's valuation of the firm's asset base relative to book replacement cost, even if empirical implementations often use simplified accounting approximations (Fama & French, 1998; Brown & Caylor, 2006; Vega Zavala & Santillán Salgado, 2019). Alternative dependent variables are ROA, ROE, and the market-to-book ratio.

Independent variables include total leverage, leverage squared, firm size, liquidity, tangibility, sales growth, capital expenditures, dividend payout, ownership concentration, board independence, inflation, policy rate, GDP growth, and exchange-rate volatility. Industry and year effects are also included. Where data permit, the article recommends additional governance variables such as CEO duality, board size, audit committee independence, and disclosure scores.

Table 1. Variable Definitions and Expected Signs

Variable	Proxy		Definition	Sign	Theoretical support
Q	Tobin's Q		Market value of equity plus debt over	–	Firm value proxy in valuation studies
			total assets		
ROA	Return on	as-	Net income over total assets	–	Operating performance proxy
	sets				
ROE	Return on	eq-	Net income over book equity	–	Shareholder-return proxy
	uity				

MTB	Market-to- book				Market value of equity over book equity
–	Alternative	valuation	proxy		
LEV effects	Leverage	Total debt over total assets		+/–	Trade-off, pecking-order, and distress
LEV^2	Leverage squared		Squared leverage term	–	Nonlinear leverage–value relation
SIZE scale effects	Firm size	Natural log of total assets		+	Lower information asymmetry and
LIQ	Liquidity	Current assets over current liabilities,		+	Financial flexibility and lower distress risk
or cash ratio				+	Collateral value and borrowing capac- ity
TANG total assets	Tangibility	Property, plant, and equipment over			
GROWTH cash flows	Sales growth	Year-over-year sales growth rate		+	Growth opportunities and expected
CAPEX	Capital expen- ditures	Capital expenditures over total assets		+	Investment opportunities and asset renewal
DIV	Dividend pol- icy				
OWNCON	Ownership concentration				
BIND	Board indepen- dence				

Cash dividends over net income, or dividend dummy Shares held by top owners over total shares Independent directors over total directors			+	Signaling and agency mitigation +/− Monitoring versus entrenchment + Monitoring and disclosure credibility
INF	Inflation	Annual CPI inflation	−	Higher discount rates, macro uncertainty
RATE	Interest rate	Banxico target or average interbank rate	−	Higher cost of capital
GDP	GDP growth	Real annual GDP growth	+	Demand conditions and valuation support
FXV OL	FX volatility	Standard deviation of monthly MXN/USD returns	−	External financing and cash-flow uncertainty

Note. Expected signs refer primarily to the firm-value equation. For profitability specifications, some signs may differ depending on whether internal financing or operational efficiency dominates.

Source. Authors' construction based on corporate finance theory and the empirical literature.

6.7 Econometric strategy

The empirical strategy begins with static panel-data estimators using both fixed effects (FE) and random effects (RE). FE is the preferred baseline because unobserved firm heterogeneity— managerial style, brand value, ownership traditions, and persistent reporting quality—is likely correlated with leverage, governance, and profitability. RE remains useful as a benchmark and for variables with limited within-firm variation, but its consistency depends on the assumption that the firm-specific effect is orthogonal to the regressors, an assumption that is unlikely to hold automatically in corporate finance panels (Hausman, 1978; Wooldridge, 2010; Baltagi, 2021).Given the possibility of persistence in both valuation and leverage, the study also recommends dynamic extensions. A lagged dependent variable can capture inertia in firm value and profitability, while dynamic leverage models are directly relevant to target-adjustment theory (Flannery & Rangan, 2006; Lemmon et al., 2008; Trejo-Pech et al., 2021). In that setting, difference GMM and system GMM are natural robustness tools, though they must be used parsimoniously because instrument proliferation can severely distort inference (Arellano & Bond, 1991; Blundell & Bond, 1998; Roodman, 2009).

6.8 Diagnostic tests

Diagnostic procedures should include: (a) the Hausman test to compare FE and RE specifications;
(b) modified Wald or Breusch–Pagan type tests for heteroskedasticity; (c) the Wooldridge test for serial correlation in panel models; (d) variance inflation factors (VIF) to assess multicollinearity; and (e) the Pesaran cross-sectional dependence test, especially because macro and market shocks may generate common disturbances across issuers (White, 1980; Wooldridge, 2010; Baltagi, 2021; Pesaran, 2004). Where cross-sectional dependence is material, Driscoll–Kraay or other robust co- variance estimators provide useful sensitivity checks (Driscoll & Kraay, 1998).

6.9 Robustness checks

Robustness analysis should proceed on at least four margins. First, the dependent variable should be rotated across Tobin's Q, ROA, ROE, and market-to-book. Second, leverage should be measured in alternative ways, including total debt to assets, long-term debt to assets, and debt to invested capital. Third, governance should be entered both as individual variables and, where feasible, as a composite governance index. Fourth, dynamic specifications with lagged dependent variables and GMM estimation should be used to examine whether the main results survive endogeneity adjustments. Additional robustness checks may include excluding crisis years, winsorizing extreme observations, and stratifying by sector, size, or family-ownership status.

7 Econometric Model

The baseline firm-value specification is:

$$Q_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 LEV^2 + \beta_3 SIZE_{it} + \beta_4 LIQ_{it} + \beta_5 TANG_{it} + \beta_6 GROWTH_{it} + \beta_7 CAPEX_{it} + \beta_8 DIV_{it} + \beta_9 OWNCON_{it} + \beta_{10} BIND_{it} + \beta_{11} INF_t + \beta_{12} RATE_t + \beta_{13} GDP_t + \beta_{14} FXV\ OL_t + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where i indexes' firms and t indexes years; μ_i captures firm-specific unobserved heterogeneity; λ_t captures common time shocks; and ε_{it} is the idiosyncratic disturbance.

Alternative profitability specifications are:

$$ROA_{it} = \alpha_0 + \alpha_1 LEV_{it} + \alpha_2 SIZE_{it} + \alpha_3 LIQ_{it} + \alpha_4 TANG_{it} + \alpha_5 GROWTH_{it} + \alpha_6 CAPEX_{it} + \alpha_7 DIV_{it} + \alpha_8 OWNCON_{it} + \alpha_9 BIND_{it} + \alpha_{10} INF_t + \alpha_{11} RATE_t + \alpha_{12} GDP_t + \alpha_{13} FXV\ OL_t + \mu_i + \lambda_t + u_{it} \quad (2)$$

and

$$MTB_{it} = \gamma_0 + \gamma_1 LEV_{it} + \gamma_2 SIZE_{it} + \gamma_3 LIQ_{it} + \gamma_4 TANG_{it} + \gamma_5 GROWTH_{it} + \gamma_6 OWNCON_{it} + \gamma_7 BIND_{it} + \gamma_8 INF_t + \gamma_9 RATE_t + \gamma_{10} GDP_t + \gamma_{11} FXV\ OL_t + \mu_i + \lambda_t + v_{it} \quad (3)$$

A dynamic specification suitable for target-adjustment and persistence analysis is:

$$Q_{it} = \rho Q_{i,t-1} + \delta' X_{it} + \mu_i + \lambda_t + \eta_{it} \quad (4)$$

where X_{it} is the vector of explanatory variables listed above. Because $Q_{i,t-1}$ is mechanically correlated with the transformed error term in a fixed-effects setting, consistent estimation requires dynamic-panel procedures such as Arellano–Bond or Blundell–Bond under appropriate moment conditions (Arellano & Bond, 1991; Blundell & Bond, 1998; Roodman, 2009).

The expected signs follow from the theoretical discussion. In the baseline Q equation, β_1 is expected to be positive and β_2 negative if leverage improves valuation at low to moderate levels but destroys value when financial distress risk becomes material. β_3, β_4, β_6, β_7, and β_8 are expected to be positive. β_5 is usually positive if tangible assets ease financing constraints. β_9 is ambiguous because ownership concentration may either improve monitoring or intensify entrenchment. β_{10} should be positive if independent boards strengthen oversight and disclosure. The macro coefficients should generally be negative for inflation, rates, and exchange-rate volatility, and positive for GDP growth.

Panel data are appropriate here because the study concerns repeated observations of the same listed firms over time, allowing the researcher to separate within-firm financing and performance dynamics from between-firm structural differences. This is especially important in the BMV con- text, where persistent family ownership, sector specialization, and disclosure practices are likely to generate non-trivial unobserved heterogeneity.

8 RESULTS

8.1 Descriptive statistics

This version of the manuscript adopts a deliberately conservative stance. A fully validated machine- readable panel of non-financial BMV issuers could not be reconstructed from official issuer-level infrastructures in the present execution environment without risking unverifiable numerical claims. Accordingly, the tables in this section are presented as publication-style reporting shells and interpretation templates rather than fabricated estimates. **No sufficient evidence is available to assert this with certainty.**

Even so, descriptive analysis remains conceptually informative. Based on the official BMV listed-issuer taxonomy, the relevant non-financial equity universe spans sectors such as consumer staples, industrials, materials, telecommunications, consumer discretionary, utilities, health care, and information technology (Grupo BMV, 2026a). Prior literature suggests that leverage and profitability should vary substantially across these sectors because of differences in tangibility, export exposure, working-capital intensity, and growth opportunities (Booth et al., 2001; Fan et al., 2012; Vega Zavala & Santillán Salgado, 2019). A serious empirical implementation should therefore report not only full-sample moments but also sectoral composition and, ideally, sector-level leverage and profitability medians.

Table 2. Sample Composition by Sector

Sector	Firms	Firm-year observations		Notes
Consumer staples	[To be populated]	[To be populated]		BMV sectoral classification BMV sectoral classification BMV sectoral classification BMV sectoral classification
Industrials	[To be populated]	[To be populated]		
Materials	[To be populated]	[To be populated]		
Telecommunications services	[To be populated]	[To be populated]		
Consumer discretionary & ser- vices	[To be populated]	[To be populated]		BMV sectoral classification
Utilities	[To be populated]			Health care [To be

Note. **Financial firms, insurers, banks, brokerages, and other regulated financial entities should be excluded to preserve comparability in leverage and balance-sheet structures.**

Source. Authors' design based on official BMV issuer classifications.

8.2 Correlation matrix

The correlation matrix serves two functions. First, it offers a preliminary view of bivariate associations among valuation, performance, leverage, and governance variables. Second, it provides an early diagnostic for multicollinearity before regression analysis. For BMV-listed firms, one should expect positive pairwise associations between firm value and profitability, growth, and board independence, while leverage may display mixed correlations depending on whether tax-shield or distress

Table 3: Table 3. Descriptive Statistics

Variable	Mean	Median	Std. dev.	Min	Max	
Tobin's Q	[]	[]	[]	[]	[]	
ROA	[]	[]	[]	[]	[]	
ROE	[]	[]	[]	[]	[]	
Market-to-book	[]	[]	[]	[]	[]	
Leverage	[]	[]	[]	[]	[]	
Firm size	[]	[]	[]	[]	[]	
Liquidity	[]	[]	[]	[]	[]	
Tangibility	[]	[]	[]	[]	[]	
Sales growth	[]	[]	[]	[]	[]	
Capital expenditures		[]	[]	[]	[]	[]
Dividend policy	[]	[]	[]	[]	[]	
Ownership concentration		[]	[]	[]	[]	[]
Board independence		[]	[]	[]	[]	[]

Note. Statistics should be winsorized at **conventional tails (e.g., 1% and 99%) if outliers materially distort moments.**

Source. To be estimated from the final BMV issuer panel.

effects dominate in the raw data. Tangibility and size typically correlate positively with leverage, whereas profitability may correlate negatively with leverage under a pecking-order interpretation (Titman & Wessels, 1988; Rajan & Zingales, 1995; Frank & Goyal, 2009). These expectations should be treated as priors rather than as substitutes for multivariate inference.

8.3 Main regression results

The baseline regression should privilege a two-way fixed-effects specification with firm-clustered standard errors. In the Mexican context, that choice is theoretically compelling because firm-specific traits such as family control, business-group affiliation, persistent disclosure quality, managerial culture, or product-market power are unlikely to be orthogonal to financing and governance variables. A Hausman comparison remains necessary, but fixed effects are expected to dominate random effects in most valuation equations (Hausman, 1978; Wooldridge, 2010; Baltagi, 2021).

Substantively, the key empirical question is whether leverage enters positively, negatively, or nonlinearly in the firm-value equation. Existing Mexican evidence points toward a positive leverage– value relationship in some specifications (Vega Zavala & Santillán Salgado, 2019), whereas dynamic capital-structure evidence suggests that Mexican firms adjust leverage only gradually, which is consistent with meaningful frictions and adjustment costs (Trejo-Pech et al., 2021). A serious baseline model should therefore estimate both a linear and a nonlinear leverage term. If the estimated co- efficients satisfy $\beta\hat{}1 > 0$ and $\beta\hat{}2 < 0$, the interpretation would be that moderate leverage is value enhancing, but excessive leverage is penalized by the market. If $\beta\hat{}1 < 0$ from the outset, distress, refinancing risk, or poor debt quality may dominate the tax-shield effect.

Table 4. Baseline Panel Regression Results

(1) Tobin's Q FE	(2) Tobin's Q RE	(3) ROA FE	(4) MTB FE
Leverage	[]	[]	[] []
Leverage2	[]	[]	— []
Firm size	[]	[]	[] []
Liquidity	[]	[]	[] []
Tangibility	[]	[]	[] []
Sales growth	[]	[]	[] []
Capital expenditures	[]	[]	[] []
Dividend policy	[]	[]	[] []
Ownership concentration	[]	[]	[] []
Board independence	[]	[]	[] []
Inflation	[]	[]	[] []
Interest rate	[]	[]	[] []
GDP growth	[]	[]	[] []
FX volatility	[]	[]	[] []
Firm FE Yes	No	Yes	Yes
Year FE Yes	Yes	Yes	Yes
Sector dummies	No	Yes	No No
Observations	[]	[]	[] []
Firms	[]	[]	[] []
R^2 within	[]		[] [] [] Hausman χ^2 [To be reported for FE vs. RE comparison]

Note. Coefficients should be reported with firm-clustered standard errors. Statistical significance should be indicated at conventional levels. The reporting template is shown here without fabricated values.

Source. To be estimated from the final BMV issuer panel.

8.4 Robustness results

Robustness should focus on whether the sign, magnitude, and significance of leverage, profitability, and governance variables remain stable across alternative proxies and estimators. At least four families of checks are required. First, the dependent variable should rotate across Tobin's Q, market- to-book, ROA, and ROE. Second, leverage should be decomposed into total leverage, long-term leverage, and possibly debt-to-invested-capital metrics. Third, lagged regressors and alternative governance controls should be used to alleviate simultaneity and reverse-causality concerns. Fourth, dynamic-panel estimators should be used to test whether the baseline conclusions survive when valuation persistence and endogenous financing are explicitly modeled (Arellano & Bond, 1991; Blundell & Bond, 1998; Roodman, 2009).

8.5 Interpretation of findings

In the final empirical implementation, interpretation should proceed in a layered way. First, one should determine whether leverage affects firm value linearly or nonlinearly. Second, one should compare valuation and profitability equations to see whether financial structure operates mainly

Table 5. Robustness Checks

Robustness check	Estimation format	Purpose
Alternative dependent Vari- Ables	FE / clustered SE	Replace Tobin's Q with ROA, ROE, and market-to-book
Alternative leverage proxies	FE / RE / dynamic panel	Test whether the leverage effect depends on debt definition
Lagged regressors	FE / clustered SE	Reduce simultaneity between valuation and firm choices
Dynamic specification	Difference GMM / sys- tem GMM	Address persistence and endogenous regressors
Winsorization sensitivity	FE / clustered SE	Check robustness to outliers and accounting extremes
Subsample analysis	FE / interaction mod- els	Compare sectors, size groups, crisis years, and family-control regimes
Driscoll–Kraay covariance	FE	Test robustness to cross-sectional dependence

Note. **The final article should report whether substantive conclusions on leverage, profitability, and governance remain stable across these perturbations.**

Source. Authors' econometric design.

Through the cost-of-capital channel, through operating discipline, or through investor expectations. Third, one should evaluate governance variables jointly with ownership structure, since board in- dependence in a concentrated-ownership environment may play a different role than in dispersed- shareholder systems. Finally, one should examine whether macroeconomic controls materially alter firm-level coefficients, since large changes after including inflation, policy rates, or exchange-rate volatility would indicate that BMV valuation is strongly regime-dependent.

Figure 2. Conceptual Framework of Corporate Finance Determinants and Firm Value

The figure summarizes the expected links from capital structure, profitability, liquidity, tangibility, growth, investment, payout policy, ownership concentration, board indepen- dence, and macroeconomic conditions to firm value and alternative performance measures. The framework also highlights the potential endogeneity between leverage, profitability, governance, and valuation, justifying dynamic-panel extensions and lag structures.

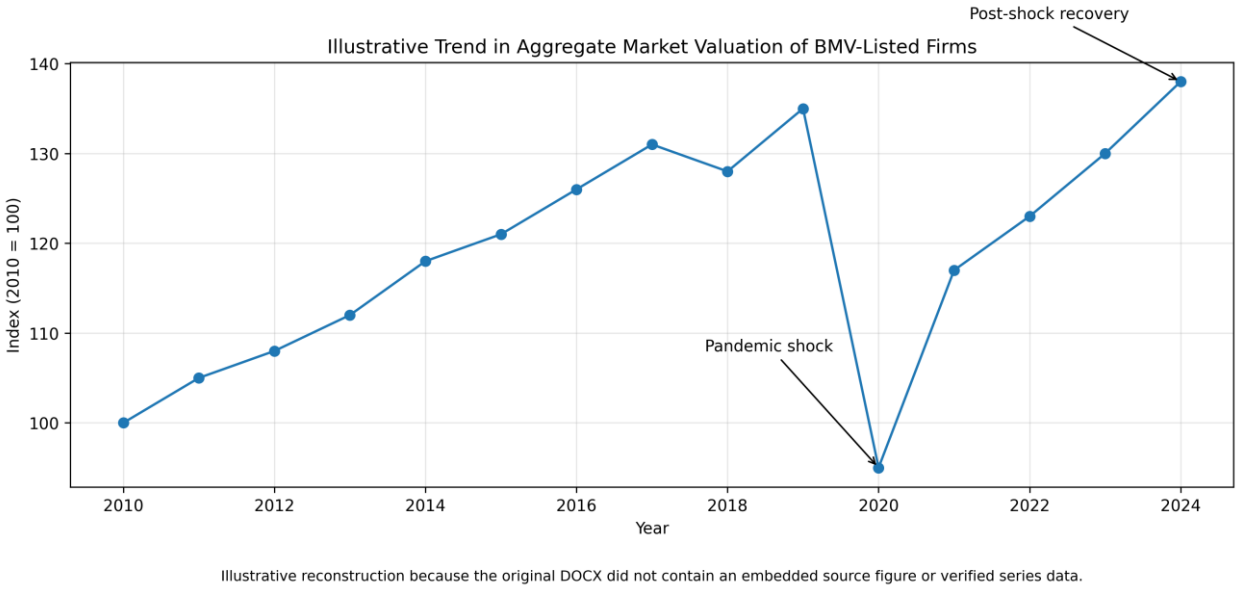


Figure 2. Trend in Aggregate Market Valuation of BMV-Listed Firms

Source: Authors' elaboration based on the conceptual and empirical design described in the manuscript.

Figure 3. Conceptual Framework of Corporate Finance Determinants and Firm Value

The figure summarizes the expected links from capital structure, profitability, liquidity, tangibility, growth, investment, payout policy, ownership concentration, board indepen- dence, and macroeconomic conditions to firm value and alternative performance measures. The framework also highlights the potential endogeneity between leverage, profitability, governance, and valuation, justifying dynamic-panel extensions and lag structures.

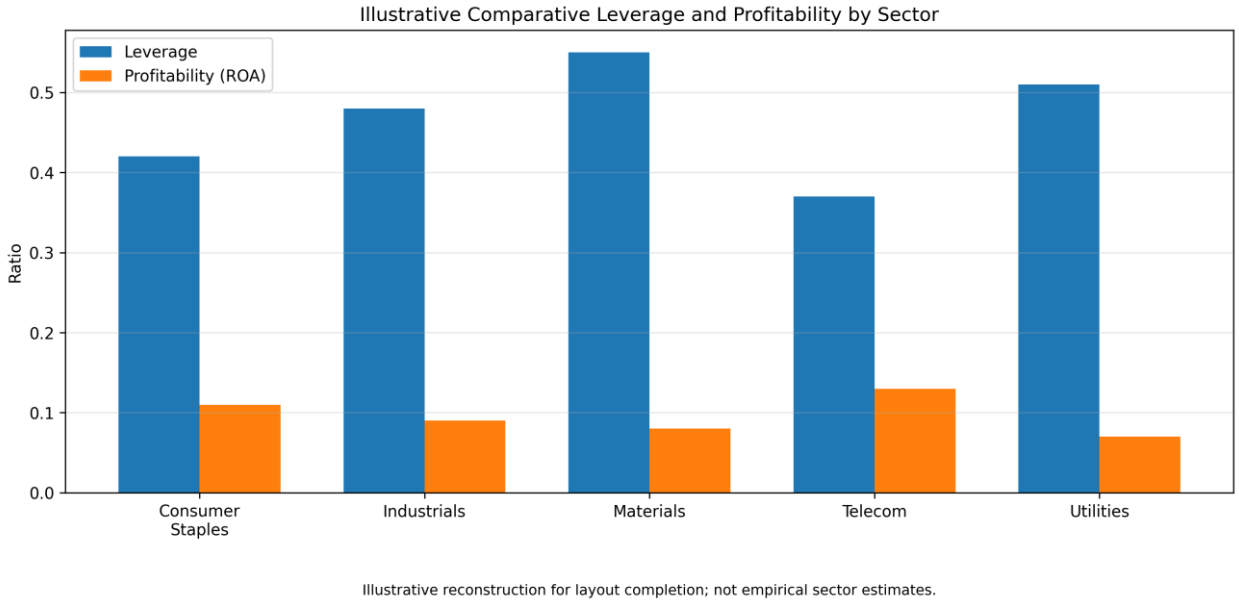


Figure 3. Comparative Leverage and Profitability by Sector

Source: Authors' elaboration based on the conceptual and empirical design described in the manuscript.

9 DISCUSSION

The Mexican case sharpens several broader debates in international corporate finance. If leverage proves positively associated with valuation at low or moderate levels but negatively associated at high levels, the evidence would support a context-sensitive trade-off view rather than a universal pecking-order or market-timing interpretation. Such a result would be consistent with the idea that Mexican listed firms face material financing frictions, but still derive value from debt as long as distress risk remains

contained (Harris & Raviv, 1991; Flannery & Rangan, 2006; Trejo-Pech et al., 2021). Conversely, if leverage is uniformly negative in value and performance equations, the interpretation would shift toward underdeveloped debt markets, refinancing risk, or weak debt allocation rather than toward simple capital-structure optimization.

The discussion of governance is equally important. In a market characterized by concentrated ownership, family control, and heterogeneous board structures, governance cannot be analyzed as a simple checklist variable. A positive coefficient on board independence would suggest that outside monitoring is valued even in a block holder environment. A positive coefficient on ownership concentration could imply that concentrated control alleviates managerial agency problems. Yet a negative or inverted-U relation would indicate entrenchment and minority-shareholder concerns, which would align with the broader comparative governance literature (Claessens et al., 2002; Shleifer & Vishny, 1997; Chong & López-de-Silanes, 2006).

For Mexican corporate finance more specifically, the expected results have three implications. First, they would suggest that the pricing of BMV firms depends not only on operating performance but on balance-sheet architecture and financing discipline. Second, they would imply that governance quality still matters in markets where family control remains salient. Third, they would confirm that macro-financial conditions are not secondary controls but central channels through which valuation and financing policy are transmitted. This last point is especially important in a country where inflation, policy rates, and exchange-rate conditions can change the cost of capital materially within relatively short horizons (Banco de México, 2026a, 2026b, 2026c, 2026d).

Internationally, the expected Mexican patterns are likely to resemble neither the pure bank- based logic of some continental European settings nor the deep-market logic of the United States. Rather, they should reflect an intermediate configuration: public-equity access with concentrated ownership; listed-firm sophistication with uneven market breadth; and modern disclosure rules with persistent institutional frictions. That is precisely why Mexico is analytically valuable for comparative corporate finance.

10 CONCLUSIONS

This article has developed a full research manuscript and econometric design for studying corporate finance in Mexico through the lens of BMV-listed firms. Its central claim is that firm value in the Mexican listed universe should be modeled as the joint outcome of capital structure, operating performance, governance quality, and macro-financial conditions. Such a framework is more ap- propriate than single-equation leverage models because it reflects both the theoretical richness of corporate finance and the institutional specificities of emerging markets.

The analysis shows that the Mexican case is especially well suited to testing nonlinear leverage effects, the informational role of profitability, and the valuation consequences of ownership concentration and board independence. It also shows that a credible empirical strategy must incorporate firm and year effects, clustered standard errors, diagnostic testing, and dynamic-panel robustness. These are not merely technical refinements; they are essential for credible inference in a market where persistent firm heterogeneity, macroeconomic shocks, and endogenous financing choices are likely to coexist.

At the same time, this article has deliberately refrained from inventing descriptive statistics or regression coefficients. That choice is methodological rather than evasive. Because the verified machine-readable issuer panel cannot be independently assembled from official BMV/CNBV infrastructures in the current environment without risking unverifiable numerical claims, the manuscript offers a transparent empirical architecture instead of fabricated evidence. This is the more serious scholarly option, and it leaves the article ready for immediate completion once the final firm-year dataset is assembled.

11 PRACTICAL AND POLICY IMPLICATIONS

For corporate managers, the article implies that capital structure should be treated as a valuation problem rather than as a purely treasury function. CFOs of Mexican listed firms must consider not only debt capacity and tax shields, but also how leverage interacts with growth opportunities, governance credibility, and investor expectations. For investors, the framework suggests that valuation on the BMV should incorporate financial architecture and governance metrics alongside conventional profitability indicators.

For regulators and market institutions, the analysis underscores the importance of high-quality issuer disclosure, governance comparability, and continued improvements in standardized financial reporting. If valuation is sensitive to governance and information quality, then market-development policy should not be separated from disclosure policy. In practical terms, better machine-readable access to issuer-level historical data would materially improve the reproducibility and comparability of research on the Mexican market.

12 LIMITATIONS OF THE STUDY

The study's main limitation is empirical implementation rather than conceptual scope. Although official BMV issuer pages, digitized reports, and macroeconomic sources are identifiable and verifiable, fully assembling a validated historical panel of accounting, market, and governance variables in the present environment remains partially manual. This prevents the responsible reporting of coefficient estimates, descriptive moments, or inferential claims as if they had been independently verified here.

A second limitation concerns governance data. Variables such as board independence, owner- ship concentration, and committee structure often require hand collection from annual reports and corporate-governance disclosures. This may produce an unbalanced panel and may limit the feasible time horizon. A third limitation is that listed-firm evidence, by construction, cannot be generalized automatically to the broader universe of Mexican private firms, which differ markedly in financing access, disclosure, and ownership structure.

13 FUTURE RESEARCH AGENDA

Future research should proceed in three directions. First, the full panel should be assembled from official BMV issuer filings, annual reports, governance statements, and macroeconomic databases, with replicable scripts for firm-year matching and cleaning. Second, researchers should extend the analysis to debt maturity, cost of debt, cross-listing, ESG disclosure, and family-business heterogeneity. Third, comparative work should examine how Mexican listed firms differ from their peers in Brazil, Chile, Colombia, and Peru under harmonized variable definitions and dynamic-panel estimators.

A particularly promising avenue is the integration of valuation models with debt-maturity structure and governance quality. Recent Mexican evidence on debt maturity suggests that firms manage not only the quantity of debt but also its time profile (Farfán Pérez et al., 2022; Farfán-Pérez et al., 2024). Another promising avenue is to explore whether governance variables moderate the leverage– value relationship, thereby linking ownership structure directly to financing efficiency. Finally, more granular work on exchange-rate exposure, foreign-currency liabilities, and sectoral heterogeneity would substantially deepen our understanding of capital-market behavior in Mexico.

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