Sustainable Corporate Finance and Capital Structure: Redefining determinants through ESG integration

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INTRODUCTION

This research explores the integration of corporate sustainability into the traditional determinants of capital structure, offering novel comparative evidence between emerging Latin American markets, Chile, Peru, and Colombia, and a developed European market, Spain. In an era where environmental, social, and governance (ESG) factors have become central to investment decisions and financial management, understanding their relationship with corporate leverage is both theoretically and practically relevant. The study aims to determine whether sustainability performance constitutes a significant financial determinant of capital structure, complementing or reshaping the classical frameworks that emphasize firm size, profitability, liabilities, and debt service capacity. Using panel data econometric models with 581 firm-year observations from 67 listed companies, this work provides a multidimensional analysis that integrates financial and sustainability perspectives to explain corporate leverage decisions.

The theoretical framework builds upon foundational financial theories, Trade-Off Theory, Pecking Order Theory, and Agency Theory, and their evolution toward hybrid models that incorporate sustainability. According to Trade-Off Theory (Modigliani & Miller, 1958; Modigliani & Miller, 1963; Myers, 1984), firms balance the fiscal benefits of debt against the potential costs of financial distress to achieve an optimal capital structure. Pecking Order Theory (Myers & Majluf, 1984) emphasizes a financing hierarchy, where firms prefer internal funds, followed by debt, and lastly, equity, mainly due to information asymmetries and transaction costs. Agency Theory (Jensen & Meckling, 1976) highlights the conflicts of interest between managers, shareholders, and creditors, suggesting that debt may serve as a disciplinary mechanism aligning managerial actions with shareholder interests.

In parallel, the concept of corporate sustainability, articulated through frameworks such as the Triple Bottom Line (Elkington, 1994), Stakeholder Theory (Freeman, 1984), and the Resource-Based View (Barney, 1991), expands the analysis of firm performance beyond purely financial metrics. Sustainability encompasses the pursuit of long-term value creation by integrating environmental responsibility, social equity, and sound governance. Firms that successfully embed these dimensions are increasingly perceived as lower-risk and more

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resilient, which may enhance their access to external financing. Therefore, sustainability can influence capital structure not only through reputational and ethical channels but also by directly affecting risk perception, borrowing costs, and the willingness of investors and lenders to provide capital.

Despite growing global interest, the relationship between sustainability and capital structure remains underexplored in emerging markets, where regulatory enforcement, market depth, and information transparency differ substantially from developed economies. Existing evidence from Europe and North America shows a positive relationship between ESG performance and access to capital, while findings from Latin America remain fragmented and often inconclusive. This study addresses this gap by comparing companies listed in Latin American stock exchanges integrated through Nuam with those listed on the Spanish stock market, thereby identifying how sustainability interacts with traditional financial determinants in distinct institutional settings.

DATA AND METHODS

The empirical analysis uses data obtained from Refinitiv®, which ensures the comparability of financial and ESG indicators across countries. The dependent variable, capital structure, is proxied by total debt. The independent variables include corporate sustainability performance (logarithm of ESG score), firm size (logarithm of total assets), liabilities (logarithm of total liabilities), profitability (return on assets, ROA), and debt service capacity (interest coverage ratio, ICR). Panel data econometric models, Pooled OLS, Random Effects (RE), and Fixed Effects (FE), were applied sequentially, followed by robust estimations (Arellano and Driscoll–Kraay) to control for heteroskedasticity, serial correlation, and cross-sectional dependence. Diagnostic tests such as Breusch–Pagan, Honda, Hausman, and Pesaran CD confirmed that the Fixed Effects specification was most appropriate, given the correlation between firm-specific characteristics and explanatory variables. Analyses were conducted in RStudio (v.4.4.0), ensuring methodological transparency and replicability.

RESULTS

The results demonstrate that corporate sustainability performance has a positive and statistically significant effect on leverage. Specifically, a 1% increase in ESG performance is associated with an average increase of approximately 0.09% in total debt, suggesting that sustainable firms are perceived as less risky and, therefore, enjoy greater access to financing. This finding corroborates the hypothesis that sustainability has tangible financial implications, reinforcing its role as an emerging determinant of capital structure. The evidence also suggests that sustainability influences creditworthiness, potentially leading to lower borrowing costs and broader financing opportunities, especially in markets with strong institutional support.

Firm size, however, presents a negative and significant relationship with leverage, contradicting traditional expectations that larger firms tend to be more leveraged. This unexpected outcome may reflect two concurrent dynamics. First, larger firms, especially in Spain, possess greater internal financing capacity, allowing them to reduce reliance on debt. Second, in Latin America, large corporations may prefer conservative financial policies to maintain flexibility and mitigate macroeconomic volatility. This behavior may also reflect reputational and governance considerations, as well-capitalized firms avoid high debt levels to preserve their ESG credibility and long-term strategic autonomy.

Liabilities show a strong positive association with leverage, consistent with Agency Theory, which emphasizes that firms with greater financial obligations tend to maintain higher debt levels as a mechanism to discipline management and signal financial robustness. Profitability (ROA) exhibits a negative and statistically significant coefficient, in line with Pecking Order Theory: more profitable firms prefer to finance operations internally rather than rely on external borrowing. Likewise, the interest coverage ratio (ICR) is negatively and significantly associated with leverage, indicating that firms with greater repayment capacity tend to adopt more conservative debt strategies. Collectively, these results reaffirm the continuing relevance of traditional financial determinants while integrating sustainability as a complementary explanatory factor.

Comparative analysis reveals marked differences between Spain and the Latin American countries. Spain exhibits a strong and consistent positive relationship between sustainability and financial performance, reflecting the institutional maturity of European markets, regulatory coherence, and investor demand for ESG transparency. In contrast, the Latin American results are more heterogeneous. Chile and Colombia show intermediate progress in sustainability integration, with moderate ESG scores across environmental, social, and governance dimensions. Peru, however, lags significantly, particularly in the environmental and social components, despite relatively better governance indicators. These disparities reveal how structural weaknesses, such as limited regulatory enforcement, information asymmetry, and shallow financial markets, hinder the financial materialization of sustainability in emerging economies.

The correlation analysis confirms internal coherence among ESG dimensions, with coefficients above 0.85 across the environmental, social, and governance components. However, correlations between ESG scores and financial indicators such as profitability and debt coverage remain weak or negative, suggesting that, in emerging contexts, sustainable practices have not yet translated into improved financial performance or lower capital costs. This contrasts sharply with European markets, where high ESG performers typically benefit from reduced risk premiums, enhanced investor confidence, and easier access to sustainable financing instruments, including green bonds and sustainability-linked loans.

DISCUSSION

From a theoretical perspective, the study advances corporate finance literature by demonstrating that sustainability complements rather than replaces traditional determinants of capital structure. The integration of ESG factors introduces a new dimension of analysis that challenges the boundaries of existing models. Classical theories focusing exclusively on economic trade-offs or information asymmetries are insufficient to explain financing behavior in a globalized economy characterized by ethical, environmental, and social imperatives. The results suggest the emergence of hybrid financial frameworks in which profitability, solvency, and sustainability interact to determine optimal capital structure decisions. In this sense, sustainability functions both as a strategic resource, enhancing reputation, stakeholder trust, and resilience, and as a financial signal that influences market perceptions of risk.

In practical terms, the findings hold significant implications for investors, managers, and regulators. For investors, ESG performance acts as a credible indicator of reduced risk exposure and operational resilience, justifying its growing inclusion in investment strategies and credit assessments. For corporate managers, incorporating sustainability into financial planning can improve access to funding and strengthen relationships with financial institutions. It also aligns corporate objectives with long-term stakeholder expectations, fostering competitive advantages in increasingly sustainability-oriented markets. For policymakers and regulators, the study underscores the importance of establishing mandatory ESG disclosure standards, incentivizing sustainable finance, and developing regulatory frameworks that connect environmental and social outcomes with financial market mechanisms. Public policies that promote transparency and accountability in sustainability reporting could enhance market confidence and attract capital toward firms demonstrating strong ESG performance.

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