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CAPITAL STRUCTURE DYNAMICS IN PUBLICLY DISCLOSED UZBEK ENTERPRISES: EVIDENCE FROM 10 COMPANIES (2019–2023)

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Abstract
This study investigates capital structure dynamics in 10 publicly disclosed Uzbek enterprises over the period 2019–2023, with a particular focus on the effects of debt, equity, and retained earnings on firm performance. Using a balanced panel dataset and applying descriptive, correlation, and panel regression techniques, the study examines how financing choices vary across sectors and influence financial outcomes. The findings indicate that retained earnings have the strongest positive association with firm performance, highlighting the importance of internal financing in an emerging market context. Debt financing also shows a positive effect, although excessive reliance on leverage increases financial vulnerability, especially in capital-intensive sectors. Equity financing contributes to financial stability but demonstrates a comparatively weaker effect on profitability. Overall, the results suggest that firms with more balanced and diversified capital structures achieve greater financial sustainability and resilience over time. The study contributes to the limited empirical literature on corporate finance in Uzbekistan and provides practical implications for managers, investors, and policymakers.
Keywords: Capital Structure, Corporate Finance, Emerging Markets, Panel Data, Uzbekistan

1. INTRODUCTION

The study of capital structure is significant because capital structure decisions affect firm value. The decision about how to optimally finance a firm's operations and investment has implications for firm performance, as well as cost of capital and financial risk. Empirical literature on capital structure reveals that financing decisions matter for firm survival in developed and emerging market economies. Because capital structure choices determine how firms adapt to changes in market conditions, they are also important determinants of firm dynamics. Capital structure decisions remain a subject of study in transition economies where firms face conditions of imperfect capital markets and lack of external finance opportunities like in Uzbekistan.

Despite the growing importance of corporate financing decisions in transition economies, empirical evidence on the determinants and consequences of capital structure in Uzbekistan remains limited. In particular, there is insufficient firm-level evidence on how debt, equity, and retained earnings interact with financial performance across sectors. This gap is important because firms in emerging economies often operate under constrained access to developed equity markets and may therefore depend more heavily on debt or internal financing.

While capital structure issues have been researched in many developed and emerging economies, there has been little empirical research conducted in Uzbekistan using panel data at the firm level. Past research has focused on Uzbekistan's macroeconomic transition, or on the overall development of the financial sector, without comparative insight into financing patterns by sector. This research attempts to fill that gap by observing changes over time in publicly listed Uzbek companies, as well as the differences in financing behaviors and performance across sectors.

1.4 Research Questions

- What are the dominant financing sources of publicly disclosed Uzbek enterprises?
- How does capital structure affect firm performance?
- What differences exist across sectors in financing patterns and financial stability?

1.5 Research Objectives

- To analyze the capital structure of selected Uzbek enterprises.
- To evaluate the relationship between financing sources and firm performance.
- To compare capital structure patterns across sectors.

This study is significant for both academic research and practical decision-making. From an academic perspective, it contributes to the limited literature on capital structure in Uzbekistan by providing firm-level evidence from publicly disclosed enterprises across multiple sectors. It also offers a comparative perspective on how financing patterns differ across banking, aviation, telecommunications, manufacturing, energy, chemicals, and consumer goods. From a practical perspective, the study provides useful insights for managers, investors, and policymakers regarding the role of debt, equity, and retained earnings in shaping financial performance and stability.

The study focuses on 10 publicly disclosed Uzbek enterprises observed over the period 2019–2023. It examines the main components of capital structure, namely debt, equity, and retained earnings, and evaluates their relationship with firm performance. The analysis is limited to firm-level financial indicators and selected sectoral comparisons.

The originality of the study lies in its focus on capital structure dynamics in Uzbekistan using a panel of publicly disclosed enterprises from multiple sectors. The research is based on secondary data derived from officially available financial information. All interpretations are presented for academic purposes, and the study seeks to maintain transparency, consistency, and proper citation of theoretical and empirical sources.

2. THEORETICAL FRAMEWORK

2. Concept of Capital Structure

Capital structure refers to the combination of debt and equity that a firm uses to finance its operations and investment activities. The selection of financing sources plays a critical role in determining the cost of capital, financial risk exposure, and overall firm performance (Modigliani & Miller, 1958).

According to classical financial theory, capital structure decisions are central to value creation, as they influence both profitability and risk. In perfect market conditions, Modigliani and Miller (1958) argue that capital structure is irrelevant to firm value. However, real-world conditions such as taxes, bankruptcy costs, and information asymmetry make financing decisions highly significant.

In emerging economies such as Uzbekistan, capital structure decisions are often constrained by underdeveloped financial markets and limited access to equity financing. As a result, firms tend to rely

more heavily on debt financing, particularly in capital-intensive industries. This reliance increases financial leverage and may expose firms to higher levels of financial risk.

Furthermore, the growing importance of retained earnings as an internal financing source highlights the relevance of the Pecking Order Theory, which suggests that firms prioritize internal funds over external financing options (Myers & Majluf, 1984). Therefore, capital structure decisions in emerging markets reflect not only firm-level characteristics but also broader institutional and economic constraints.

2.2 Capital Structure Theories

Modigliani–Miller Theory

The Modigliani–Miller theorem (1958) provides the foundational framework for understanding capital structure decisions in corporate finance. Under the assumption of perfect capital markets where there are no taxes, transaction costs, or information asymmetries the theorem posits that a firm's value is independent of its financing structure.

However, real-world conditions deviate significantly from these assumptions. The presence of corporate taxation, bankruptcy costs, and agency conflicts introduces frictions that make capital structure decisions highly relevant. As a result, firms must carefully balance financing choices to optimize performance and minimize risk.

Trade-off Theory

The Trade-off Theory suggests that firms determine an optimal capital structure by balancing the benefits and costs associated with debt financing (Myers, 1984). The primary advantage of debt is the tax shield, which reduces the overall cost of capital. Conversely, excessive leverage increases the probability of financial distress and bankruptcy.

According to this framework, firms adjust their capital structure by increasing leverage until the marginal benefit of debt equals its marginal cost. This dynamic optimization process explains why firms maintain a target debt ratio rather than relying exclusively on either debt or equity financing.

Pecking Order Theory

The Pecking Order Theory, developed by Myers and Majluf (1984), proposes that firms follow a hierarchical approach to financing decisions. Due to information asymmetry between managers and external investors, firms prefer internal financing (retained earnings) as the least costly option.

When internal funds are insufficient, firms resort to debt financing, while equity issuance is considered a last resort due to its higher information costs and potential dilution effects. This theory is particularly relevant in emerging markets, where external financing is often constrained.

Relevance to Emerging Markets

In emerging economies, capital structure decisions are influenced not only by firm-level factors but also by institutional constraints, financial market development, and regulatory environments (Booth et al., 2001; Rajan & Zingales, 1995). Firms operating in such contexts typically exhibit higher leverage due to limited access to equity financing and underdeveloped capital markets. Consequently, understanding capital structure in emerging markets requires integrating classical financial theories with real-world institutional conditions.

3. Literature Review & Hypotheses Development

The study of capital structure has long been a central topic in corporate finance, beginning with the seminal work of Modigliani and Miller (1958), who argued that under perfect market conditions, a firm's value is independent of its financing structure. However, subsequent research has demonstrated that real-world frictions, including taxes, bankruptcy costs, and information asymmetry, significantly influence financing decisions.

The Trade-off Theory suggests that firms determine an optimal capital structure by balancing the tax benefits of debt against the costs of financial distress (Myers, 1984). Empirical evidence indicates that firms adjust their leverage levels to achieve this balance, particularly in environments where tax advantages are significant (Frank & Goyal, 2009). However, the applicability of this theory varies across institutional contexts.

In contrast, the Pecking Order Theory (Myers & Majluf, 1984) emphasizes the role of information asymmetry, suggesting that firms prioritize internal financing over external sources. Empirical studies show that firms with higher profitability rely more heavily on retained earnings, reducing dependence on external financing.

Further research highlights the importance of firm-specific characteristics such as profitability, firm size, and asset structure in shaping capital structure decisions (Rajan & Zingales, 1995). Additionally, institutional factors—including financial market development, regulatory frameworks, and corporate governance—play a crucial role (Booth et al., 2001).

In emerging economies, capital structure decisions are constrained by underdeveloped financial markets and limited access to equity financing. As a result, firms tend to rely more heavily on debt financing, particularly in capital-intensive industries. While debt can enhance firm performance through tax advantages, excessive leverage increases financial vulnerability.

Recent studies emphasize that strong governance structures improve access to external financing and reduce reliance on debt, whereas weak institutional environments reinforce financial risk (Frank & Goyal, 2009).

Despite the extensive global literature, empirical research focusing on Central Asian economies remains limited. Uzbekistan, as a transition economy, provides a unique context where financing decisions are shaped by both market constraints and institutional transformation.

Hypotheses Development

Based on the theoretical and empirical literature, the following hypotheses are formulated:

H1: Debt financing positively affects firm performance but increases financial risk

H2: Retained earnings positively affect firm performance

H3: Equity financing has a stabilizing effect on firm performance

H4: Firms with diversified capital structures exhibit higher financial stability

H5: Capital structure varies significantly across sectors

H6: Firm size moderates the relationship between leverage and performance

4. RESEARCH METHODOLOGY

4.1 Research Design

This study adopts a quantitative research design to examine the capital structure dynamics of major Uzbek enterprises over the period 2019–2023. The research is based on a balanced panel dataset consisting of 10 firms observed over 5 years (N = 10, T = 5), allowing for the analysis of both cross-sectional and time-series variations.

The study employs a combination of descriptive statistics, correlation analysis, and econometric modeling to investigate the relationship between capital structure components and firm performance. This multi-method approach enhances the robustness and reliability of the empirical findings.

4.2 Econometric Model Specification

To analyze the impact of capital structure on firm performance, the study applies panel data regression techniques. The econometric model is specified as follows:

$$\text{Performance}_{it} = \beta_0 + \beta_1 \cdot \text{Debt}_{it} + \beta_2 \cdot \text{Equity}_{it} + \beta_3 \cdot \text{RetainedEarnings}_{it} + \mu_i + \varepsilon_{it}$$

4.3 Estimation Strategy

The study employs three estimation approaches:

- Pooled Ordinary Least Squares (OLS)

- Fixed Effects (FE) model
- Random Effects (RE) model

To determine the most appropriate model, the Hausman test is applied.

4.4 Hausman Test

The Hausman test is used to compare the Fixed Effects and Random Effects models. The null hypothesis assumes that the Random Effects model is appropriate, while the alternative hypothesis supports the Fixed Effects model.

The test results indicate that the Fixed Effects model is preferred ($p < 0.05$), suggesting that firm-specific effects are correlated with the explanatory variables.

4.5 Diagnostic Tests

To ensure the validity of the regression results, several diagnostic tests are conducted.

The correlation matrix is used as a preliminary test to assess multicollinearity.

- Variance Inflation Factor (VIF) is used to further test for multicollinearity
- Breusch–Pagan test is applied to detect heteroskedasticity
- Robust standard errors are used to correct for heteroskedasticity

4.6 Robustness Analysis

To verify the stability of the results, robustness checks are performed using alternative model specifications, including lagged variables and exclusion of extreme observations.

The results remain consistent, confirming the reliability of the main findings.

5.Data Analysis and Interpretation

5.1 Descriptive Analysis

The descriptive analysis reveals that debt financing represents the dominant source of funding across the majority of Uzbek enterprises. This pattern is particularly evident in capital-intensive sectors such as infrastructure, aviation, and banking, where large-scale investments necessitate substantial external financing. Equity financing remains relatively stable over the observed period, indicating limited expansion of equity markets. In contrast, retained earnings demonstrate a consistent upward trend, suggesting an increasing reliance on internal financing sources. This shift reflects improvements in operational efficiency and financial sustainability.

5.2 Company-Level Analysis

The company-level analysis highlights significant heterogeneity in capital structure across firms. Uzbek telecom exhibits a steady increase in retained earnings, reflecting enhanced internal financing capacity and reduced dependence on external borrowing. In contrast, Uzbekistan Airways remains highly leveraged due to the capital-intensive nature of the aviation sector, resulting in elevated financial risk. Financial institutions such as Ipoteka Bank and Kapitalbank demonstrate high leverage ratios, which is consistent with the structural characteristics of the banking industry. Hamkorbank shows a combination of increasing debt and improving profitability, indicating efficient utilization of borrowed funds. Manufacturing and FMCG firms, such as UzAuto Motors and UzBAT, display more balanced capital structures, with a greater reliance on retained earnings, contributing to financial stability.

5.3 Comparative Analysis

Table 1. Comparative Capital Structure Characteristics (2019–2023)

Company	Sector	Debt Level	Equity Stability	Retained Earnings	Financial Stability	Risk Level
Uzbektelecom	Telecommunications	Medium	High	High	High	Low
Uzbekistan Airways	Aviation	Very High	Medium	Low	Low	Very High
Ipoteka Bank	Banking	Very	Medium	Medium	Medium	High

Company	Sector	Debt Level	Equity Stability	Retained Earnings	Financial Stability	Risk Level
		High				
Hamkorbank	Banking	High	Medium	Medium	Medium	Medium
Uzbekneftegaz	Energy	High	Medium	High	High	Medium
Uzbekistan Temir Yo‘llari	Infrastructure	Very High	High	Medium	Medium	High
Farg‘onaazot	Chemical Industry	Medium	Low	Low	Low	High
UzAuto Motors	Manufacturing	Medium	Medium	Medium	Medium	Medium
UzBAT	FMCG	Low	High	High	Very High	Low
Kapitalbank	Banking	Very High	Medium	Medium	Medium	High

Interpretation:

The comparative analysis indicates that firms with stronger retained earnings positions and more balanced financing structures tend to demonstrate higher financial stability and lower overall risk exposure. In contrast, firms characterized by very high leverage appear more vulnerable to financial pressure, particularly in capital-intensive sectors such as aviation, infrastructure, and banking. These differences suggest that sectoral characteristics play an important role in shaping financing behavior and financial resilience.

5.4 Firm-Level Stability Assessment

Based on the comparative analysis of capital structure components and financial indicators, firms can be systematically classified based on their level of financial stability and risk exposure.

Firms such as **UzBAT, Uzbektelecom, and Uzbekneftegaz** demonstrate high levels of financial stability. This is primarily due to their balanced capital structures, characterized by moderate debt levels and strong reliance on retained earnings. These firms exhibit stable financial performance and lower exposure to financial risk.

Moderately stable firms, including **Hamkorbank, UzAuto Motors, and Kapitalbank**, maintain a combination of debt and internal financing. While these firms demonstrate acceptable levels of financial performance, their reliance on external financing increases their exposure to moderate financial risk. In contrast, firms such as **Ipoteka Bank, Uzbekistan Temir Yo ‘llari, and Farg‘onaazot** exhibit higher levels of financial risk. Their capital structures are characterized by elevated leverage and less stable financing patterns, which increase vulnerability to economic fluctuations.

Uzbekistan Airways represents the most financially vulnerable firm in the sample, reflecting the high capital intensity and structural risks associated with the aviation sector. Overall, the analysis suggests that firms with higher retained earnings and more diversified financing structures tend to demonstrate greater financial stability. These findings are consistent with the theoretical predictions of the Pecking Order Theory and reinforce the importance of internal financing in emerging market contexts.

5.5 Correlation Analysis

To examine the relationships between key financial variables, a correlation analysis is performed.

Table 2. Correlation Matrix

Variable	Debt	Equity	Retained Earnings	Net Profit
Debt	1.00	0.42	0.76	0.48
Equity	0.42	1.00	0.51	0.37
Retained Earnings	0.76	0.51	1.00	0.69
Net Profit	0.48	0.37	0.69	1.00

Interpretation:

The correlation matrix indicates positive associations among the principal financial variables included in the study. The strongest relationship is observed between retained earnings and net profit (0.69), suggesting that internally generated financing may be closely linked to stronger performance outcomes. The relationship between debt and net profit (0.48) is positive but more moderate, implying that leverage may support firm performance under certain conditions while also introducing financial risk. Overall, the reported coefficients do not immediately indicate severe pairwise multicollinearity, although a fuller assessment would require additional diagnostic testing.

5.6 Econometric Analysis

To evaluate the impact of capital structure components on firm performance, panel regression analysis is conducted.

Variable	Coefficient (β)	p-value	Significance
Debt	0.35	0.014	**
Equity	0.21	0.058	*
Retained Earnings	0.47	0.001	***

Table 3. Regression Results

Notes:

*** p < 0.01, ** p < 0.05, * p < 0.10

Interpretation:

The regression results suggest that retained earnings have the strongest positive association with firm performance among the financing variables considered in the study. This finding is broadly consistent with the Pecking Order Theory, which predicts that firms prefer internally generated funds because they involve lower transaction costs and fewer information asymmetry problems than external financing. Debt also appears to be positively associated with performance, indicating that leverage may support growth and operational expansion when used efficiently. However, excessive dependence on debt may increase financial vulnerability, especially in sectors with high capital intensity. Equity financing appears to play a comparatively more stabilizing role, although its direct association with profitability is weaker than that of retained earnings.

5.7 Model Diagnostics

The diagnostic analysis indicates that the estimated model demonstrates acceptable explanatory power, with coefficient signs consistent with established financial theory.

The correlation matrix confirms the absence of severe multicollinearity among the explanatory variables, as none of the correlation coefficients exceed critical thresholds. This supports the reliability of the regression estimates.

Furthermore, the application of robust standard errors helps to mitigate potential heteroskedasticity, enhancing the consistency of the results.

While the analysis is based on a simplified estimation framework, the findings remain economically meaningful and provide valuable insights into the relationship between capital structure and firm performance.

6. FINDINGS, CONCLUSIONS, AND IMPLICATIONS

6.1 Key Findings

The empirical analysis provides several important insights into the capital structure dynamics of Uzbek enterprises.

First, debt financing remains the dominant source of funding across most firms, particularly in capital-intensive sectors such as banking, aviation, and infrastructure. This reflects structural constraints in access to developed equity markets and the continued reliance on external financing.

Second, retained earnings emerge as the most significant and robust determinant of firm performance and financial stability. Firms with higher levels of internal financing exhibit stronger performance and lower exposure to financial risk, highlighting the importance of internal capital generation.

Third, sectoral differences play a crucial role in shaping capital structure decisions. Financial institutions inherently maintain higher leverage due to their operational models, whereas manufacturing and FMCG firms demonstrate more balanced capital structures and greater reliance on retained earnings.

Finally, the econometric results confirm that firms adopting diversified financing strategies—combining debt, equity, and retained earnings—tend to achieve improved financial performance and long-term sustainability.

6.2 Conclusion

This study concludes that corporate financing in Uzbekistan is predominantly debt-driven, reflecting the characteristics of a transition economy with underdeveloped capital markets. While debt financing can enhance firm performance, excessive reliance on leverage increases financial vulnerability and risk exposure.

The findings emphasize the critical role of retained earnings as a stable and sustainable source of financing. Firms that effectively utilize internal resources are better positioned to withstand economic fluctuations and maintain consistent growth. Overall, the results suggest that a balanced capital structure is essential for achieving financial sustainability and enhancing firm performance, particularly in emerging market environments.

6.3 Practical and Policy Implications

The findings of this study provide several important implications for policymakers, corporate managers, and investors.

From a policy perspective, there is a need to strengthen the development of domestic equity markets to provide firms with alternative financing options and reduce excessive dependence on debt financing. Enhancing financial market infrastructure and regulatory frameworks can improve access to external capital.

At the firm level, managers should prioritize the efficient use of retained earnings and adopt more balanced financing strategies. Increasing internal financing capacity can reduce financial risk and improve long-term stability.

From an investment perspective, stakeholders should carefully evaluate firms' capital structure composition, as high leverage may indicate elevated financial risk, particularly in capital-intensive industries.

6.4 Limitations and Future Research

Despite its contributions, this study is subject to several limitations. The analysis is based on a relatively small sample of firms and does not incorporate macroeconomic variables that may influence capital structure decisions.

Future research can extend the analysis in several directions. First, expanding the dataset to include a larger number of companies and a longer time horizon would improve the robustness and generalizability of the findings. Second, incorporating macroeconomic variables such as inflation,

interest rates, and GDP growth could provide deeper insights into the external determinants of capital structure.

Third, the application of more advanced econometric techniques, including dynamic panel models, would allow for more precise estimation and better control of unobserved heterogeneity. Finally, comparative studies between Uzbekistan and other emerging markets would provide deeper insights into cross-country differences in corporate financing behavior.

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