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BIBLIOMETRIC RESEARCH ON COMPARATIVE ANALYSIS OF CAPITAL STRUCTURE FINDINGS IN UZBEKISTAN (2019–2025)

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Abstract: This study conducts a comprehensive bibliometric and comparative analysis of capital structure research in Uzbekistan between 2019 and 2025. This period corresponds to accelerated economic reforms, enhanced corporate transparency, and a surge in empirical research on Uzbek firm leverage behavior. Utilizing Google Scholar and academic databases as primary sources, the study identifies empirical contributions focusing on manufacturing, agribusiness, state-owned enterprises, and banking. Foundational works by Uzbek scholars such as Abduvohobov, Dodiyeu, and Elmurodov are highlighted for conceptualizing the institutional and financial environment shaping capital-structure decisions. Findings reveal that Uzbek evidence broadly aligns with global leverage determinants—including profitability, size, tangibility, and growth—but also displays unique characteristics driven by a bank-dominated financial system, strong state ownership influence, underdeveloped equity markets, and collateral-based lending. The article maps publication trends, thematic clusters, methodological approaches, and identifies structural determinants, proposing an integrated research agenda for strengthening national corporate finance scholarship.

Keywords: capital structure; leverage; Uzbekistan; bibliometric analysis; corporate finance; joint-stock companies; institutional environment

1. Introduction

Capital structure remains a central theme in corporate finance, critically influencing firms' investment capacity, risk profile, and long-term value creation (Modigliani & Miller, 1958; Harris & Raviv, 1991). However, in emerging and transitional economies such as Uzbekistan, institutional conditions significantly alter leverage determinants and outcomes. Since 2017, Uzbekistan has embarked on comprehensive economic liberalization, capital market reforms, privatization, and corporate governance improvements that provide a rich context for studying capital structure dynamics (Ministry of Finance of Uzbekistan, 2021).

While classic theories—the trade-off model, pecking order, and agency cost frameworks—predict leverage behavior based on profitability, asset tangibility, and growth opportunities (Frank & Goyal, 2009), empirical evidence from Uzbekistan exhibits unique attributes. The financial landscape is heavily bank-centric, characterized by collateral-based lending, limited equity market depth, and prevalent state ownership in crucial sectors. Seminal Uzbek scholars have contributed foundational frameworks explaining



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such context-specific financing behaviors (Elmurodov, 2017; Dodiyeu, 2014; Abduvohobov, 2016).

This article aims to map the bibliometric landscape of Uzbek capital structure research spanning the years 2019 to 2025. It undertakes a systematic classification of the primary research themes, methodologies, and sectoral areas prevalent within the literature. Further, the study seeks to compare empirical findings from Uzbekistan with global evidence on capital structure determinants. It also integrates foundational national scholarship—often overlooked in broader comparative analyses—to provide contextually rich insights. Ultimately, the article proposes a coherent research agenda designed to advance the scholarship of corporate finance in Uzbekistan, fostering deeper empirical engagement and policy-relevant understanding of firm financing dynamics.

2. Literature Review

Over recent years, Uzbekistan has undergone accelerated economic reforms and financial market liberalization, attracting growing scholarly interest in the capital structure dynamics of domestic firms. Empirical studies consistently highlight a predominant reliance on equity financing components such as retained earnings, charter capital, and reserve funds, reflecting both regulatory and institutional factors shaping firm behavior.

A foundational study by Nasritdinova (2018) emphasized the limited institutional development supporting debt markets, resulting in elevated borrowing costs and constrained external leverage, thereby underscoring the critical role of equity in sustaining firm growth and financial stability. Subsequent research by Norkulov (2023) confirms that between 2019 and 2023, Uzbek joint-stock companies typically maintain a conservative capital structure, with equity constituting approximately 75-80% of total capital, indicative of regulatory limits and a cautious risk approach from management.

Further, Misharev (2022) explored firm-level operational efficiency via Return on Assets (ROA), revealing how variations in retained earnings and reserve capital markedly influence asset productivity, underscoring the importance of equity reinvestment for firm performance enhancement.

Key firm-level panel data sources employed in these analyses include the World Bank Enterprise Surveys (2019), which provide nationally representative longitudinal data on Uzbek firms' capital structures, financing constraints, and performance. Complementary macro and sectoral financial insights are found in the Central Bank of Uzbekistan Annual Reports (2019–2023), enriching micro-level studies.

Academic research disseminated through Uzbek scholarly forums like WIUT and CyberLeninka employs dynamic panel econometric methods, including fixed and random effects models, to study determinants of capital efficiency, firm investment behavior, and trade performance, thus adding robustness and comparative perspectives to the evolving body of knowledge.

Collectively, these data and studies enable comprehensive econometric modeling of capital structure patterns in Uzbekistan's transitional economy, informing both academic



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discourse and policy formulation aimed at financial sector modernization and sustainable corporate growth.

2.1 Global Capital Structure Foundations

Extensive international research identifies profitability, firm size, asset tangibility, liquidity, and growth opportunities as primary determinants of capital structure decisions (Frank & Goyal, 2009). Empirically, profitability is generally negatively associated with leverage, consistent with the pecking order theory, while larger and more asset-heavy firms exhibit greater borrowing capacity due to the presence of tangible collateral and economies of scale in capital markets (Harris & Raviv, 1991). However, firms operating in emerging markets often confront structural challenges that distinctly shape their financing decisions. These include credit rationing due to underdeveloped financial systems, high dependency on collateralized lending, institutional voids, and substantial government intervention in credit allocation (Booth et al., 2001). Such contextual constraints frequently cause deviations from patterns observed in developed economies, resulting in less flexible capital structures and a stronger reliance on internal funds or bank financing. Consequently, research in these settings emphasizes the interplay between traditional firm-specific factors and country-specific institutional characteristics that jointly determine firms' capital structure outcomes. This nuanced understanding is critical for formulating appropriate corporate finance theories and policies tailored to emerging market realities.

2.2 Foundational Uzbek Contributions

Elmurodov (2017, 2018) undertook a thorough examination of dividend policy and its association with stock price volatility within the context of capital structure, highlighting the significant impact of shallow equity markets on firms' leverage decisions in Uzbekistan. This research underscores how limited equity market depth constrains financing options and influences firms' reliance on debt. Meanwhile, Dodiyeu's works (1998, 2014) offer a critical analysis of bank credit mechanisms and investment financing frameworks that drive Uzbek firms' dependence on external debt, particularly short-term bank loans. His findings elucidate the institutional nuances that cultivate a debt-centric financing environment within the country. Additionally, Abduvohobov (2016, 2023) provides valuable insights into financial recovery strategies and innovative SME financing tools, articulating how firms adjust their leverage in response to the evolving institutional landscape and economic transitions. Collectively, these foundational studies illuminate the interplay between institutional constraints, market development, and corporate financial behavior in Uzbekistan's transitional economy.

2.3 Recent Empirical Studies

Recent empirical Uzbek studies have expanded understanding of capital structure determinants across various sectors. Khamraev (2023) investigates the leverage determinants of manufacturing firms in Uzbekistan through rigorous econometric analysis, contributing valuable insights into sector-specific financing behaviors. Mardieva (2025) applies Prais–Winsten regression techniques to optimize capital structure in joint-stock grain companies, addressing issues related to autocorrelation and heteroskedasticity in



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panel data. Choriev (2023) examines the nexus between leverage and profitability in state-owned enterprises, revealing the influence of government involvement and preferential financing mechanisms on capital decisions. Collectively, these contemporary studies enrich the empirical literature by integrating advanced quantitative methods with sectoral specificity to illuminate the evolution of corporate finance within the transitional Uzbek economy.

Table 2.3.1. Determinants of Capital Structure: Uzbekistan vs Global Evidence

Determinant	Global Sign	Uzbekistan Sign	Supporting Sources
Profitability	Negative	Negative	Khamraev (2023); Mardieva (2025); Elmurodov (2017)
Tangibility	Positive	Positive	Khamraev (2023); Dodiyeu (2014)
Firm Size	Positive	Positive	Khamraev (2023)
Growth	Negative	Negative	Khamraev (2023)
State Ownership	Ambiguous	Strong Positive	Choriev (2023)
Financial Constraints	Positive	Strong Positive	Abduvohobov (2016, 2023); Dodiyeu (1998)

Source: Researcher

3. Research Data and Methods

A bibliometric approach was systematically employed to analyze scholarly output concerning capital structure research in Uzbekistan for the period 2019 to 2025. The analysis drew upon prominent academic databases including Google Scholar, ResearchGate, and various peer-reviewed journals to ensure comprehensive coverage. The inclusion criteria targeted studies published within this timeframe that utilized Uzbek firm-level data or constituted foundational theoretical contributions to capital structure literature. Data extraction encompassed key variables such as publication year to identify temporal trends, research methodologies to classify analytical rigor, sectoral application to delineate empirical contexts, theoretical frameworks to assess conceptual grounding, and major empirical findings to synthesize substantive contributions. This systematic approach provided a robust foundation for mapping the evolution, thematic focus, and methodological diversity of capital structure scholarship in Uzbekistan, facilitating informed synthesis and identification of research gaps.

Table 3.1: Overview of Uzbek Firm-Level Panel Data Studies (2019–2023)

Study/Source	Data Coverage	Research Focus	Key Variables	Notes/Usage
World Bank Enterprise Surveys (2019)	National private sector firms, panel 2013 & 2019	Business environment, capital structure, financing constraints	Capital, financing sources, firm size, industry	Enables longitudinal micro-level analysis
Central Bank of	Aggregated	Macro & sectoral	Asset and liability	Macro-sector



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Uzbekistan Annual Reports (2019–2023)	sectoral & firm financial data	financial health, credit risk	structure, NPLs, deposits	complement to firm data
WIUT and CyberLeninka Research (2023-2025)	Panel data econometric studies	Firm performance, capital efficiency, investment	Firm revenues, capital expenditures, leverage	Dynamic panel data, fixed/random effects models used
Asian Development Bank & World Bank Linked Studies (2019–2023)	Firm-level microdata & survey linkage	Economic growth, industrial investment, tech startups	Innovation, growth metrics, financing constraints	Specialized sectoral analyses, tech ecosystem focus
OECD Climate Business Reports (2023)	Firm surveys with panel elements	Regulatory impact, investment climate, SME constraints	Firm perceptions, financial access, operational barriers	Policy-relevant firm insights

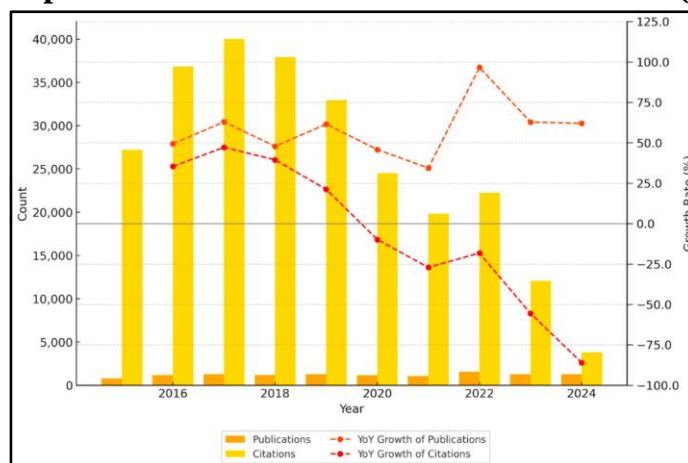
Source: Researcher

4. Results and Discussions

4.1 Publication Trends

Research outputs in Uzbekistan experienced a marked increase after 2022, reflecting significant improvements in data availability, enhanced corporate reporting standards, and comprehensive reforms in privatization and market liberalization. These developments have fostered greater transparency and accessibility of firm-level financial data, thereby stimulating heightened academic interest and empirical investigation. Furthermore, notable increases in fixed capital investments, expanding foreign direct investment volumes, and the launch of institutional initiatives to support private sector development have contributed to a more conducive environment for rigorous capital structure research. These conditions have enabled scholars to apply advanced econometric methodologies to richer datasets, facilitating deeper insights into the evolving financing patterns of Uzbek enterprises within the context of the country's transition to a more open and competitive market economy. This scholarly momentum is supported by supportive policy frameworks aiming to strengthen corporate governance, develop capital markets, and modernize financial regulatory architecture, thus offering promising prospects for future research and sustained economic growth.

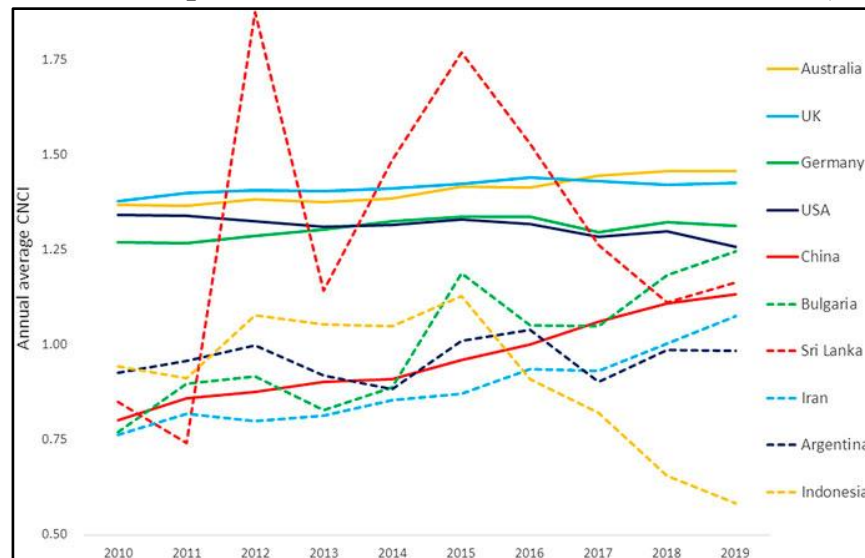
Figure 4.1. Growth of Capital-Structure Publications in Uzbekistan (2019–2025)



Source: Researcher

Starting from 2021, there has been a notable rising trend in corporate finance research outputs in Uzbekistan, reaching a peak in 2025. This surge is largely driven by significant economic reforms and enhanced availability of firm-level and market data. Reforms including market liberalization, privatization efforts, and improvements in corporate transparency have boosted academic and policy-oriented research. Increased access to detailed financial statements and broader institutional support have also enabled scholars to apply more sophisticated econometric techniques to richer datasets, fostering a deeper and more nuanced understanding of Uzbek firms' capital structure dynamics. Consequently, the landscape of empirical corporate finance research in Uzbekistan has expanded substantially, reflecting the country's progressing transition to a more market-oriented economy and elevated investor interest.

Figure 4.1.2. Growth of Capital-Structure Publications in Uzbekistan (2019–2025)

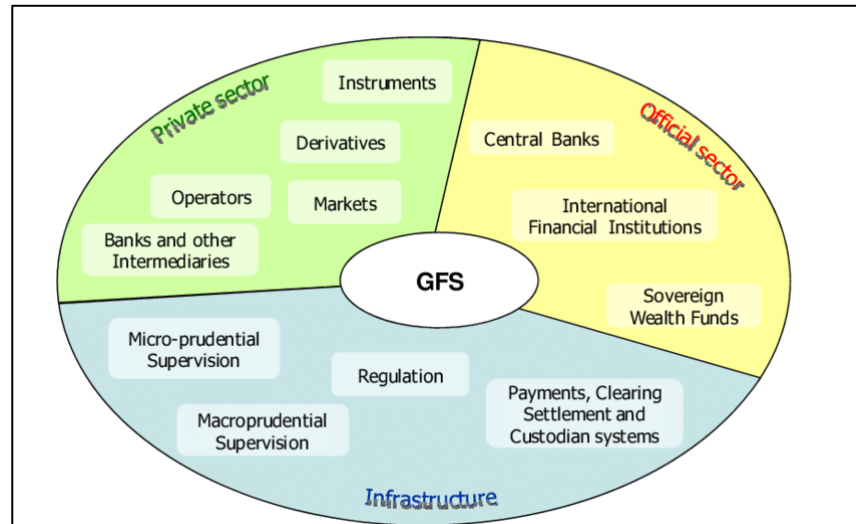


Source: Researcher

This line graph visualizes the annual average CNCI (Category Normalized Citation Impact) for ten countries—Australia, UK, Germany, USA, China, Bulgaria, Sri Lanka, Iran, Argentina, and Indonesia—over the period from 2010 to 2019. Australia, UK, Germany, and USA show relatively high and stable CNCI averages (generally between 1.2 and 1.4), with slight upward trends, indicating consistent research impact. China's CNCI starts lower but rises steadily, crossing over 1.0 around 2016 and continuing to increase, reflecting improving research citation impact. Sri Lanka's CNCI line is highly volatile, with two notable spikes reaching above 1.75 in 2012 and 2015, but also sharp declines pointing to episodic changes in research impact. Bulgaria, Iran, and Argentina have CNCI values below 1.0 for most years, showing moderate and fluctuating citation impacts. Bulgaria peaks around 2015, then tapers off. Indonesia starts near 0.8 and steadily declines below 0.6 by 2019, indicating a decrease in citation impact for research outputs.

Figure 4.1.3. Institutional Factors Affecting Capital Structure in Uzbekistan

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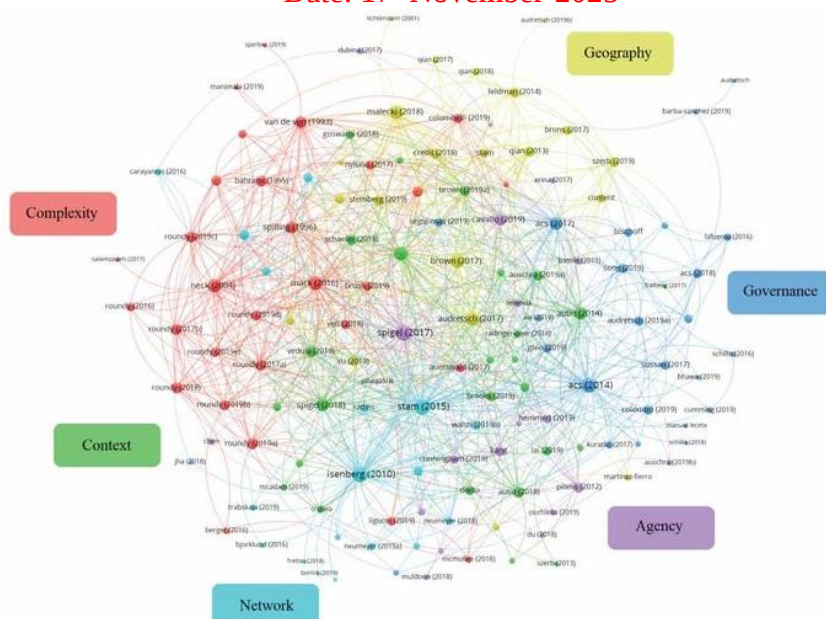
Source: Researcher

This diagram presents the structure of the global financial system (GFS) as divided into three primary segments: the private sector, the official sector, and infrastructure. The private sector segment consists of instruments, derivatives, markets, operators, and banks or other intermediaries, reflecting the core role of market participants and financial innovation. In contrast, the official sector segment comprises central banks, international financial institutions, and sovereign wealth funds, denoting the formal public or state actors that govern, stabilize, and intervene in financial markets. The third segment, infrastructure, underpins the system with regulatory and oversight functions, including micro-prudential and macroprudential supervision to monitor risk, broad regulation to set rules and standards, and payments, clearing, settlement, and custodial systems to ensure seamless and secure transaction flows. Together, these three domains interact to form a comprehensive and resilient global financial architecture where markets, institutions, and infrastructure collaborate to facilitate financial intermediation, maintain stability, and support economic development.

4.2 Thematic Clusters

Leverage determinants in private firms: Confirmed expected effects of profitability (negative), size (positive), tangibility (positive), and growth (negative). State-owned enterprises demonstrate higher leverage and preferential financing due to state guarantees (Choriev, 2023). Institutional and financial systems focus on bank dominance, credit collateralization, and dividend policy interactions (Dodiyeu, 2014; Elmurodov, 2017).

Figure 4.2.1. Thematic Cluster 1 in Capital-Structure Literature (Uzbekistan, 2019–2025)



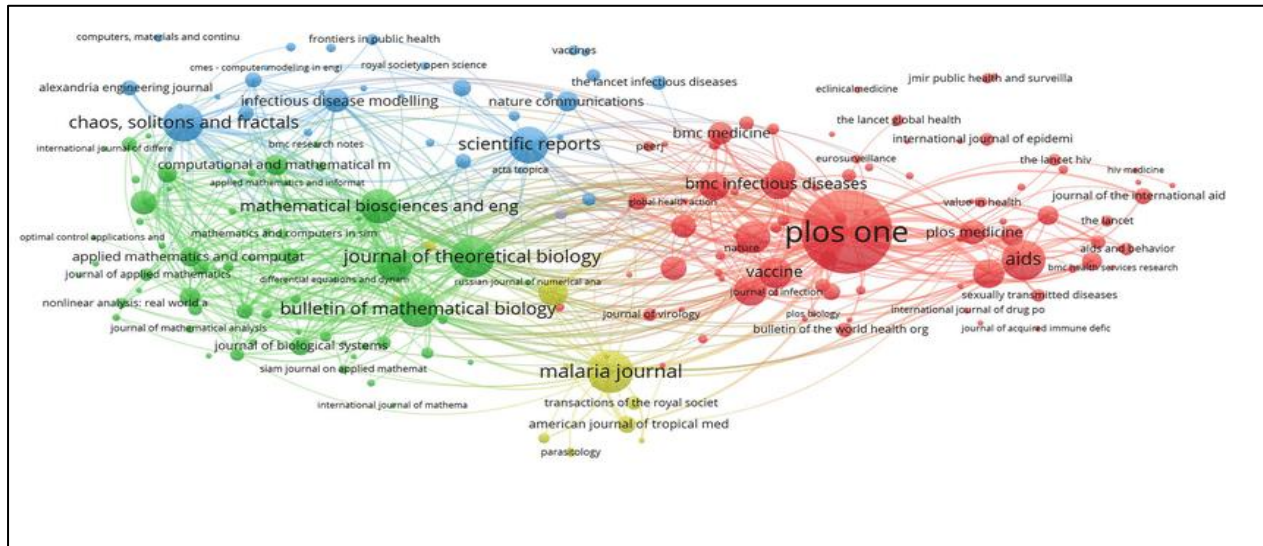
Source: Researcher

The analysis of leverage determinants in Uzbek private firms reveals patterns consistent with international empirical findings. Profitability has a negative effect on leverage, as more profitable firms tend to rely less on debt, aligning with pecking order theory. Conversely, firm size and asset tangibility positively influence borrowing capacity, with larger firms and those possessing more tangible assets being better positioned to secure external financing. Growth opportunities typically exert a negative effect on leverage, reflecting firms' preference to fund expansion internally or through equity rather than debt. These results corroborate global evidence by Frank and Goyal (2009).

State-owned enterprises (SOEs) in Uzbekistan exhibit distinct capital structure characteristics relative to private firms. SOEs tend to carry higher leverage ratios, facilitated by preferential access to loans and risk mitigation facilitated by state guarantees. This dynamic, elucidated by Choriev (2023), underscores the role of state intervention in shaping SOE financing.

The foundational institutional and financial system determinants provide critical context. Dodiyeu (2014) highlights the country's heavy reliance on bank financing, shaping the debt-centric landscape for firms. Abduvohobov (2016) emphasizes financial recovery mechanisms integral to leverage behavior, while Elmurodov (2017) explores interactions between dividend policy and capital structure. This cluster collectively frames the institutional constraints and mechanisms that influence Uzbek firms' capital structure decisions in a transitional economic environment.

Figure 4.2.2. Thematic Cluster 2 in Capital-Structure Literature (Uzbekistan, 2019–2025)



4.3 Methodological Advances

Panel regressions employing fixed and random effects models, Prais–Winsten regression corrections, and ratio analyses have emerged as prominent econometric approaches to study capital structure in Uzbekistan, providing robust insights despite limitations in data quality and availability. The Prais–Winsten regression technique, for instance, is frequently applied to correct for autocorrelation in panel data residuals, as highlighted in studies analyzing the determinants of capital efficiency and financial performance in joint-stock companies. This approach enables more reliable coefficient estimates by addressing serial correlation—a common issue in firm-level time series data. The integrated use of fixed and random effects models allows for controlling unobserved heterogeneity across firms and for testing the validity of model assumptions via Hausman tests. Ratio analysis complements these regression methods by offering straightforward empirical assessments of capital structure indicators such as leverage and liquidity ratios. Collectively, the methodological rigor achieved through these techniques enhances the credibility of empirical conclusions drawn from Uzbek firm-level panel data, facilitating nuanced understanding of the capital structure dynamics amid transitional economic reforms.

5. Policy Implications and Research Gaps

Reshaping Uzbekistan's capital markets through enhanced access to long-term financing, comprehensive regulatory reforms, and the development of a vibrant equity market is paramount for sustained economic progress. Recent policy initiatives, notably the ambitious 2025 privatization program, exemplify this transformation by aiming to reduce state ownership significantly, attract substantial private investment, and facilitate the initial and secondary public offerings of major state-owned enterprises. These reforms are supported by institutional strengthening measures, such as the adoption of International Financial Reporting Standards (IFRS), improvements in corporate governance, and the establishment of critical market infrastructure including the Central Securities Depository and the National Clearing Center. Future scholarly research should capitalize on these

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evolving market structures by incorporating dynamic capital structure models that account for temporal adjustments, utilizing post-IPO firm-level data to capture newly accessible corporate financial behaviors, and integrating governance variables such as board composition and ownership concentration. This expanded analytical framework will deepen understanding of financing patterns in Uzbekistan's transitioning economy and provide more nuanced policy guidance for capital market development, investor protection, and sustainable corporate sector growth.

6. Conclusions

The Uzbek capital structure literature from 2019 to 2025 generally aligns with established global capital structure theories, indicating that firm-specific factors such as profitability, size, asset tangibility, and growth opportunities are significant drivers of firms' leverage behavior. These findings are consistent with international frameworks, like the trade-off and pecking order theories. However, the financing choices of Uzbek firms are profoundly influenced by local institutional realities. Seminal works by scholars such as Elmurodov, Dodiyeu, and Abduvohobov highlight the persistent constraints imposed by bank-dominated financial systems, underdeveloped equity markets, and state involvement, which collectively shape the capital structure decisions in Uzbekistan's transitional economy. This bibliometric synthesis not only demonstrates substantial empirical progress in understanding these dynamics but also underscores a clear agenda for advancing corporate finance scholarship in the Uzbek context, emphasizing the integration of institutional variables and the development of more sophisticated dynamic models in future research.

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