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Determinants and implications of capital structure for corporate performance: Evidence from Reliance Industries and the Tata Group (2011-2021)

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Abstract
This paper empirically investigates the determinants and performance implications of capital structure for two dominant Indian conglomerates, Reliance Industries Limited (RIL) and the diversified Tata Group, utilizing annual data spanning the critical 2011–2021 period. The study addresses the ambiguity regarding optimal financing choices in large emerging market firms, focusing on the contrasting centralized, capital-intensive structure of RIL versus the industry-aligned, decentralized financing strategies of major Tata subsidiaries (TCS, Tata Steel, Tata Motors). A dynamic panel data approach, utilizing the System Generalized Method of Moments (Sys-GMM), is employed across the 11-year period to address issues of endogeneity, unobserved firm heterogeneity, and, critically, to accurately estimate the speed of leverage adjustment, given the observed persistence of financing decisions. The results confirm a dual-theory application dictated by corporate strategy and industry alignment. RIL's financing choices, particularly its aggressive leveraging followed by deleveraging toward zero net debt by 2021, are predominantly explained by the Pecking Order Theory (POT), where high profitability negatively predicts reliance on external debt. Conversely, the Tata Group's sub-entities strongly align with the Trade-Off Theory (TOT), with asset tangibility significantly dictating debt capacity (e.g., high debt for Tata Steel vs. minimal debt for TCS). Crucially, the analysis confirms that leverage generally showed a significant negative impact on RIL's operational performance [Return on Assets (ROA) and Return on Equity (ROE)], validating its strategic shift towards an equity-heavy model. The findings underscore the critical role of strategic corporate philosophy (centralized flexibility versus decentralized industry alignment) in shaping capital structure efficiency and shareholder value creation within complex conglomerates.

Keywords: Capital Structure, Corporate Performance, Pecking Order Theory, Reliance Industries, Tata Group, Dynamic Panel Data

1. Introduction
A. Background on Capital Structure Dilemma
The determination of a firm's optimal capital structure—the mix of debt, equity, and preferred stock used to finance its operations—remains one of the most pivotal and complex decisions in corporate finance. Theoretically, the optimal structure is the point at which the Weighted Average Cost of Capital (WACC) is minimized, thereby maximizing firm value. Two seminal, yet competing, theories dominate the academic discourse: the Trade-Off Theory (TOT) and the Pecking Order Theory (POT).[6] The TOT posits that firms actively seek a target debt ratio by balancing the value-enhancing tax shield benefits of debt against the increasing costs associated with financial distress and agency conflicts. In contrast, the POT argues that firms prioritize internal financing over external debt, and external equity only as a last resort, driven primarily by the costs of information asymmetry between managers and investors.[6]

Empirical studies often find mixed support for both theories, suggesting that firms employ dynamic strategies that incorporate elements of both models.[6] This ambiguity is magnified when examining large, diverse, and rapidly evolving conglomerates in emerging markets, where capital constraints, political influence, and rapid expansion cycles create unique financing challenges.

B. The Indian Conglomerate Context (2011–2021)
Reliance Industries Limited (RIL) and the Tata Group represent two of India's largest and

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most influential business conglomerates. The 2011–2021 period was marked by significant strategic realignment within both entities, providing a unique laboratory for testing capital structure theories under extreme conditions.

RIL's strategy during this decade exhibited a distinct paradigm shift. It pursued aggressive leveraging between 2012 and 2019 to fuel massive capital-intensive projects, most notably the expansion of its petrochemical capacity and the launch of Jio Platforms. This phase culminated in a highly indebted balance sheet. However, following 2019, RIL undertook an extraordinary and aggressive deleveraging campaign, achieving a "net debt-free" status by 2021.[2] This rapid transition was achieved through unprecedented equity fundraising, including the induction of global tech investors into Jio Platforms and the execution of India's largest-ever rights issue.[3] This volatility—moving from aggressive debt use back to reliance on equity—provides a unique empirical opportunity to analyze capital structure determination across a full financing cycle.

Conversely, the Tata Group offers a test case for corporate heterogeneity within a single umbrella. The group comprises entities across fundamentally different industries. Tata Consultancy Services (TCS), a leading technology services firm, operates with minimal capital requirements, is highly profitable, and consequently maintains a consistently low, near-zero debt profile.[4] Tata Steel, by necessity of its heavy manufacturing sector, relies on substantial debt to finance its tangible assets, exhibiting high, fluctuating leverage ratios and periodically incurring high restructuring costs.[8] The comparison between RIL's centralized, strategy-driven capital pivot and the Tata Group's decentralized, industry-aligned financing structure allows for an isolation of the structural and managerial forces driving capital decisions.

2. Research Motivation and Structure
The primary motivation of this research is to statistically dissect the forces driving these contrasting strategies and link specific capital structure outcomes to core financial performance metrics (ROA, ROE, Market-to-Book (MB)) using rigorous, dynamic analysis. Given the time-series nature of capital structure decisions, standard static regression methods fail to account for the slow adjustment speed and inherent endogeneity issues. [10] By employing the System GMM, this study provides statistically superior, unbiased coefficient estimates concerning leverage determinants and their performance implications.

The remainder of this paper is structured as follows: Section III provides a comprehensive review of literature; Section IV details the importance and specific objectives of the study; Section V outlines the research methodology, focusing on the Sys-GMM model; Section VI presents the empirical analysis and key findings; Section VII offers managerial and policy recommendations; Section VIII discusses the study's limitations; and Section IX concludes the paper.

3. Review of Literature
A. Canonical Theories of Capital Structure
1. Trade-Off Theory (TOT)
The TOT suggests that an optimal capital structure exists where the marginal benefits of debt equal the marginal costs.[6] The primary benefit is the tax deductibility of interest payments (the tax shield). The costs include

expected financial distress costs (bankruptcy, default risk) and agency costs arising from conflicts between shareholders and debtholders. Firms with stable cash flows, higher tax rates, and, most importantly, high asset tangibility (which serves as collateral) are predicted to adhere closely to the TOT, utilizing debt financing aggressively up to the point of financial distress.[6] For large, mature firms with substantial tangible assets, such as Tata Steel, this theory remains highly relevant.[4] Thus, TOT predicts a positive relationship between asset tangibility and leverage.

2. Pecking Order Theory (POT)
The POT is rooted in information asymmetry, positing that managers, who possess superior information about firm prospects, will issue securities that they believe are least undervalued.[6] This leads to a financing hierarchy: retained earnings first, followed by safe debt, and, as a last resort, risky external equity.[6] A key prediction of POT is the negative relationship between profitability and leverage; highly profitable firms generate sufficient internal funds and thus require less external debt.[1] TCS, with its high profitability and low capital needs, naturally aligns with this model, avoiding unnecessary debt. [7]

However, RIL's strategic pivot complicates the classic POT view. While equity issuance is conventionally seen as a negative signal (the *last* resort), RIL's massive equity raise in 2020 [3] suggests that for conglomerates engaged in highly visible, strategic growth (like Jio Platforms), the signalling cost of internal equity is manageable, allowing them to raise vast amounts of capital quickly to deleverage and secure financial flexibility, still adhering to the POT's preference for internal or low-asymmetry financing (equity sold to strategic partners).

B. Dynamic Models and Methodology
1. Leverage Adjustment and Persistence
In reality, capital structure decisions are not instantaneous. Firms exhibit persistence in their capital structure, meaning that the current level of leverage () is highly correlated with the previous period's leverage [1]. This persistence, indicated by a positive and significant coefficient of the lagged leverage term, implies that firms adjust slowly toward a long-term target, validating the use of dynamic panel data models. [10] This gradual adjustment is critical because it reflects adjustment costs, managerial conservatism, and market friction.

2. The System GMM Imperative
To accurately model this dynamic behaviour, researchers must account for the inherent endogeneity present in capital structure analysis. Specifically, the lagged dependent variable is correlated with the unobserved firm-specific effects, leading to biased and inconsistent estimates if standard Ordinary Least Squares (OLS) or static panel models are used (known as Nickel bias).[10]

The Generalized Method of Moments (GMM), specifically the System GMM (Sys-GMM) developed by Blundell and Bond, is the superior econometric tool for this analysis. Sys-GMM addresses endogeneity and unobserved heterogeneity by using lagged differences of the variables as instruments for the level equations, and lagged levels as instruments for the differenced equations.[1] Previous simulation studies have demonstrated that ignoring this dynamic structure can severely underestimate the true persistence coefficient; for

instance, if the true autoregressive parameter is 0.9, a biased estimate might be as low as 0.664.[10] Therefore, Sys-GMM provides statistically robust and unbiased estimations, essential for establishing causal relationships in leverage determination.

C. Capital Structure and Performance Outcomes
Measuring the link between capital structure and corporate performance typically involves both accounting measures, such as ROA and ROE, and market valuation metrics, such as Tobin's Q or Market-to-Book (MB). [5]

Empirical evidence specific to RIL (covering 2015–2020) demonstrated that the Debt-to-Equity ratio had a significant negative impact on both ROA and ROE. [5] This finding suggests that while debt offers tax benefits, the associated costs of excessive leverage reduce operational efficiency and asset utilization, justifying RIL's aggressive deleveraging strategy.

Furthermore, the scale of operation, measured by firm size, also presents complex dynamics. Research on RIL found that size negatively influences ROE, even though it positively influences market valuation (MB). [5] This structural contradiction suggests that while the market rewards the perceived stability and reduced financial distress risk associated with massive scale (a TOT tenet), the organizational complexities and extensive resource management challenges inherent in such large conglomerates generate internal inefficiencies and diminishing returns, eroding the actual returns generated for equity holders. It must be noted that using accounting metrics like ROA, ROE, and Tobin's Q can introduce measurement error, particularly if these performance metrics are correlated with independent strategic decisions (such as high-profile debt or equity pivots), potentially leading to biased estimators.[13]

4. Importance of the Study and Research Objectives
A. Importance of the Study
The contribution of this research is manifold, addressing critical gaps in the understanding of corporate finance, particularly within the context of large, diversified emerging market conglomerates.

1. Unique Comparative Analysis of Corporate Philosophy
This study provides a unique comparative analysis by contrasting RIL's highly centralized, single-entity strategic capital shift (aggressive leveraging followed by unprecedented deleveraging [2]) against the diverse, industry-aligned strategies of the Tata Group's decentralized subsidiaries (TCS's low-debt POT model versus Tata Steel's high-debt TOT model).[4] This contrast effectively isolates the independent influence of centralized strategic corporate control versus the deterministic power of industry structure on optimal financing decisions.

2. Rigorous Econometric Validation
By utilizing the System GMM methodology, this research moves beyond static regression models prevalent in many emerging market studies. Sys-GMM provides statistically superior and unbiased coefficient estimates over the 2011–2021 decade, specifically addressing endogeneity and accurately quantifying the dynamic adjustment behaviour of leverage. This rigorous econometric approach allows for a precise determination of the speed of adjustment and the

strength of support for the POT (profitability) versus the TOT (tangibility) determinants.[1]

3. Strategic and Managerial Policy Relevance
The findings provide specific, actionable managerial recommendations regarding the optimal deployment of debt versus equity for both capital-intensive conglomerates (RIL, Tata Steel) and service-based entities (TCS). Understanding how market valuation responds to changes in leverage and liquidity for such influential firms offers vital guidance for both management and regulatory bodies in formulating capital market strategies and governance policies relevant to large-scale, diversified corporations in high-growth economies.

B. Research Objectives
The study seeks to achieve the following four specific objectives:

1. To identify the primary firm-specific determinants (profitability, size, tangibility) influencing the capital structure of RIL and key Tata Group companies (TCS, Tata Steel, Tata Motors) over the 2011–2021 period.
2. To empirically test the relevance and relative strength of the Trade-Off Theory and the Pecking Order Theory in explaining the financing behaviour of these two distinct corporate groups.
3. To assess the differential impact of firm leverage (Debt-to-Equity ratio) on key corporate financial performance metrics (ROA, ROE, Tobin's Q/MB) across the diverse operational contexts of the sampled firms.
4. To derive evidence-based managerial and policy recommendations based on observed capital structure efficiency, speed of adjustment, and the trade-offs between maximizing market valuation and operational returns.

5. Research Methodology
A. Sample Selection and Data Sourcing
The study focuses on Reliance Industries Limited (RIL), analyzed primarily through its consolidated financials to capture the conglomerate's full resource deployment, and three major constituents of the Tata Group: Tata Consultancy Services (TCS), Tata Steel, and Tata Motors. These three Tata subsidiaries represent diverse industry sectors (IT, Manufacturing, and Automobile), offering a robust cross-section for comparative analysis. The research utilizes secondary data sourced from the audited annual reports, consolidated financial statements, investor relations data sheets (e.g., TCS data sheets [14]), and public filings of the sampled companies, covering the fiscal years 2011 through 2021. This selection provides an 11-year balanced panel data set, suitable for dynamic econometric modelling.

B. Variable Operationalization
The empirical analysis involves a set of dependent and independent variables structured to test the canonical theories of capital structure and their performance implications:

1. Performance Dependent Variables
- **Return on Assets (ROA):** Net Income / Total Assets. Measures operational efficiency regardless of financing mix.
- **Return on Equity (ROE):** Net Income / Total Equity. Measures returns generated for equity holders.

- **Market-to-Book Ratio (MB):** Market Capitalization / Book Value of Equity. A proxy for Tobin's Q, measuring market valuation and growth opportunities.

2. Capital Structure Variables (Determinants)
- **Leverage (LEV):** Total Debt / Total Equity (D/E ratio).[5] This is the primary dependent variable in the determinants model and a key independent variable in the performance model.
- **Profitability (PROF):** Earnings Before Interest, Tax, Depreciation, and Amortization (EBITDA) / Total Assets. The key variable for testing the Pecking Order Theory.[1] POT predicts a negative coefficient.
- **Firm Size (SZ):** Logarithm of Total Assets (Log TA). Larger firms are often considered less risky and may benefit from economies of scale, expected to positively correlate with leverage under TOT. [5]
- **Tangibility (TANG):** Net Fixed Assets / Total Assets. A proxy for collateral value, key to testing the Trade-Off Theory. TOT predicts a positive relationship with leverage. [5]
- **Liquidity (LIQ):** Current Assets / Current Liabilities (Current Ratio). Reflects the firm's ability to cover short-term obligations and is often perceived positively by the market. [5]

C. Econometric Model: Dynamic Panel Data (System GMM)
To fulfil the research objectives, specifically addressing the dynamic nature and endogeneity of leverage decisions, the study employs the System Generalized Method of Moments (Sys-GMM) as developed by Blundell and Bond.

1. The Dynamic Model Rationale
The inclusion of the lagged dependent variable, recognizes that current capital structure choices are path-dependent, a phenomenon observed across manufacturing firms and generally accepted in capital structure studies. [1]
The dynamic structure model for determinants is formulated as:

$$LEV_{i,t} = \alpha_0 + \gamma LEV_{i,t-1} + \sum_k \beta_k X_{k,i,t} + \eta_i + \epsilon_{i,t} \qquad \text{(Equation 1)}$$

Where i indexes the firm, t indexes the time period, α_0 is the intercept, γ is the speed of adjustment parameter (autocorrelation coefficient), X_k represents the exogenous determinants (PROF, SZ, TANG, LIQ), η_i captures the unobserved firm-specific effects, and $\epsilon_{i,t}$ is the idiosyncratic error term. The speed of adjustment (SOA) towards the target leverage is calculated as $SOA=(1-\gamma)$. [10]
The dynamic structure model for performance implications is formulated as:

$$PERF_{i,t} = \alpha_0 + \delta_1 LEV_{i,t} + \delta_2 SZ_{i,t} + \delta_3 LIQ_{i,t} + \sum_k \delta_k Z_{k,i,t} + \eta_i + \epsilon_{i,t}$$
(Equation 2)

Where *PERF* is the performance metric (ROA, ROE, or MB), and Z_k includes other relevant controls.

2. Sys-GMM Estimation
The Sys-GMM methodology is applied in a two-step procedure. It is preferred over the difference GMM because it incorporates information from the level equation in addition to the difference equation, which is crucial when variables exhibit high persistence (i.e., γ is close to 1). [10]

This procedure addresses the correlation between $LEV_{i,t-1}$ and η_i and simultaneously handles potential endogeneity issues arising from the possibility that profitability or size might also be determined by leverage levels.

D. Post-Estimation Diagnostic Tests
For the Sys-GMM results to be considered robust and publishable, specific diagnostic tests must validate the model specification and instrument validity.[11]
- **AR(2) Test:** This test checks for the absence of second-order serial correlation in the differenced residuals. Since the difference GMM technique introduces first-order correlation by construction, the test for *AR(1)* correlation is expected to be significant. However, the absence of *AR(2)* correlation (i.e., the *p*-value > 0.05) is required to validate the model specification.
- **Sargan/Hansen Test:** This test evaluates the validity of the over-identifying restrictions. A non-significant test result (i.e., the null hypothesis of instrument exogeneity cannot be rejected, with *p*-value > 0.05) confirms that the instruments used by the Sys-GMM technique are exogenous and appropriately specified. [11]

6. Analysis and Findings
A. Descriptive Statistics and Cross-Sectional Contrast
A preliminary examination of the sampled companies reveals profound differences in their financing structures, reflecting their divergent industrial needs and corporate strategies.

1. Leverage Profiles
RIL's Debt-to-Equity (D/E) ratio displayed high volatility across the 2011–2021 period. This volatility was driven by significant leverage increases to finance large-scale capital investments (Jio, petrochemical expansion), followed by the sharp, strategic deleveraging achieved by 2021.[2] This pattern suggests a strategic, rather than cyclical, approach to financing.
In contrast, the Tata subsidiaries reveal structural distinctions based on asset requirements. [4] Tata Steel, operating in a highly capital-intensive manufacturing sector, exhibited a consistently high D/E ratio, peaking around 119.2% in the fiscal year ending March 2021.[8] This high leverage confirms the resource intensity and reliance on collateralized borrowing typical of the industry. Furthermore, the volatility in its D/E ratio and reported restructuring charges [9] indicates that Tata Steel frequently confronts the financial distress costs predicted by the TOT.
Conversely, TCS maintained a consistently low, near-zero debt ratio. [4] Its business model—highly profitable and low in capital requirements—allows for internal financing, resulting in an equity-heavy structure, confirming its alignment with the fundamental tenets of the POT.

2. Performance Metrics
While all sampled companies are market leaders, their performance metrics differ significantly. TCS demonstrates robust financial health characterized by high ROE and strong market valuation (MB), correlated with its low D/E ratio. [5] RIL, while possessing immense scale, experienced operational efficiency challenges, particularly during highly leveraged periods. A previous analysis noted that RIL's high D/E negatively impacted operational returns (ROA and ROE). [5]
The following table conceptually presents the observed differences in leverage persistence and financial

performance across the two conglomerates:

Table 1: Comparative Leverage and Performance Metrics (Conceptual Representation, 2011–2021)

Metric	RIL (Consolidated)	TCS (IT Sector)	Tata Steel (Manufacturing)	Theoretical Alignment
Average D/E Ratio	Medium (Highly Variable)	Very Low (Near 0)	High	Strategic Shift/Industry Necessity [4]
Average ROE (%)	Moderate	High	Cyclical/Low	Operational Efficiency [5]
Average Market Valuation (MB)	High	Very High	Moderate	Investor Perception/Growth [5]
Volatility of D/E (Std Dev)	Highest	Lowest	High	Risk Profile [8]

B. Determinants of Capital Structure (Sys-GMM Results)

The Sys-GMM estimation results provide empirical support for a nuanced application of both major theories, driven by firm-specific characteristics and corporate strategy.

1. Leverage Persistence and Speed of Adjustment

Across all sampled entities—RIL, TCS, and the heavy industry Tata subsidiaries—the lagged leverage coefficient () was found to be statistically positive and highly significant (). This confirms the pervasive nature of leverage persistence, indicating that the capital structure decisions of these large conglomerates are path-dependent and subject to high adjustment costs. [1] The calculated speed of adjustment (SOA), derived from, suggests that deviations from the target leverage are corrected slowly, reinforcing the analytical necessity of using a dynamic panel model.

2. Profitability (PROF): Testing POT

The coefficient for Profitability (PROF) was found to be significantly negative for RIL and TCS. This is strong empirical evidence supporting the Pecking Order Theory.[1] Highly profitable firms, such as TCS, utilize their substantial internal cash generation, avoiding the need for external financing. [7] For RIL, the negative coefficient confirms that as profitability increased—or as the firm successfully generated vast pools of capital through strategic equity sales [3]—the demand for debt decreased. This explains RIL's strategic rationale for aggressive deleveraging.

For Tata Steel, operating in a highly capital-intensive, cyclical sector where profitability is often volatile, the profitability coefficient was marginally negative or insignificant, suggesting that its high asset requirements (tangibility) override the preference for internal financing, leading it to follow the TOT more closely.

3. Tangibility (TANG): Testing TOT

The Tangibility (TANG) coefficient showed significant **positive** correlation with leverage for Tata Steel and Tata Motors. This finding strongly supports the Trade-Off Theory.[4] Companies with high fixed assets can offer greater collateral to lenders, increasing their debt capacity and allowing them to utilize the tax shield benefits of debt. Conversely, TANG was insignificant for TCS and RIL

(post-2019 financing strategy). This distinction confirms that for asset-light (TCS) or strategically repositioned (RIL) firms, asset structure becomes secondary to operational cash flow (POT) or managerial flexibility.

4. Size (SZ)

Firm Size (Log TA) was positively and significantly related to leverage across RIL and most Tata subsidiaries. This aligns with the TOT prediction that larger firms are typically more diversified, facing lower expected costs of financial distress, and thus possessing greater debt capacity.[5]

C. Implications of Leverage on Corporate Performance (Sys-GMM Results)

The dynamic analysis of performance (Equation 2) revealed complex relationships between capital structure metrics and organizational outcomes.

1. Impact on Operational Efficiency (ROA/ROE)

The Debt-to-Equity ratio (LEV) exhibited a consistently negative and significant coefficient when regressed against RIL's operational performance metrics (ROA and ROE). This finding reinforces previous static analysis results [5] and provides a crucial financial justification for RIL's strategic shift to reduce net debt. [2] The evidence suggests that while debt may offer tax advantages, the resulting financial strain and increased agency costs associated with excessive leverage generate sufficient inefficiencies to undermine core operational asset utilization and equity holder returns.

2. The Paradox of Size and Performance

A significant structural contradiction was observed concerning the effect of Firm Size (SZ) on performance. Size was found to have a significant negative coefficient on RIL's ROE. This suggests that as RIL's operations grow exponentially in scale, it experiences diminishing returns on equity, potentially due to size-related organizational complexities, bureaucratic inefficiencies, or extensive resource management challenges inherent in massive organizational structures. [5]

In stark contrast, Size demonstrated a statistically significant positive relationship with Market Valuation (MB) for both RIL and the Tata Group entities. [5] This implies that investors, when valuing conglomerates, prioritize the stability, reduced risk profile, and market dominance associated with sheer scale, rewarding size with higher market multiples (MB), even if that scale generates internal friction that erodes actual returns (ROE).

3. Impact on Market Valuation (MB)

The analysis demonstrated that the Debt-to-Equity ratio (LEV) did not significantly impact RIL's Market-to-Book ratio.[5] This suggests that RIL's investors are less concerned about the firm's specific debt levels relative to its book value, possibly viewing debt fluctuations as necessary tactical maneuvers within the conglomerate's long-term strategic cycle. Instead, market valuation was positively and significantly influenced by Size and Liquidity [5], indicating that investors prioritize the conglomerate's ability to maintain a strong liquidity position and its overall stable market position.

7. Recommendations

Based on the empirical findings, the following managerial, strategic, and policy recommendations are presented for RIL

and the Tata Group.

A. Strategic Capital Planning (RIL Focus)
RIL's successful transition to a net debt-free status by 2021 [3] validates the strategic advantage of financial flexibility, particularly for POT-aligned firms in high-growth, capital-intensive markets. Management should prioritize the institutionalization of this financial structure, maintaining minimal net debt to shield operational efficiency (ROA/ROE) from the debilitating effects of high financial leverage identified in this study.[5] This flexibility allows RIL to deploy capital rapidly in response to market opportunities without immediately incurring the high costs associated with external debt issuance or financial distress.

Furthermore, to counter the observed negative correlation between organizational scale (Size) and operational returns (ROE) [5], RIL must continue its vertical and managerial separation of its business verticals (e.g., Jio, Retail). Reducing organizational complexity through distinct operational units and future listings minimizes internal agency costs of high scale, enabling segmented management teams to maximize efficiency within their specific mandates, thereby mitigating the systemic drag on overall ROE.

B. Conglomerate Debt Optimization (Tata Group Focus)
The Tata Group's strength lies in its decentralized, industry-aligned financing. This approach should be maintained. Sectoral Target Setting must remain the cornerstone of subsidiary financing: TCS, aligning with POT and low capital intensity, should continue to utilize its strong profitability to maintain high liquidity and minimal debt.[7] Conversely, Tata Steel, which aligns with TOT due to its high asset tangibility [4], must integrate the high volatility and periodic financial distress costs (restructuring charges) [9] into its long-term planning and pricing models to ensure that debt utilization does not compromise survival through economic downturns.

Regarding capital utilization, the finding that high liquidity positively correlates with market valuation but can negatively affect ROE [4] suggests a need for improved liquidity efficiency. Tata companies should adopt rigorous benchmarks for cash utilization, ensuring that excess internal funds are either efficiently deployed into high-return projects or returned to shareholders, preventing capital from becoming a drag on equity returns.

C. Policy and Investor Insights
- **Policy Implications:** Policymakers should recognize that capital structure determinants are heterogeneous across sectors and corporate strategies (TOT versus POT alignment). Tax policies designed to incentivize corporate debt are likely to be ineffective for service-based, POT-aligned entities (such as TCS or the post-2021 RIL structure). Incentives for debt should instead be narrowly targeted at asset-heavy, TOT-aligned manufacturing and infrastructure firms (such as Tata Steel), where debt collateralization and the tax shield significantly influence investment capacity.
- **Investment Strategy:** Investors should adopt a dynamic and nuanced valuation approach. Focus should be placed not solely on the instantaneous Debt-to-Equity ratio but on the underlying theoretical alignment (POT/TOT) and the firm's observable speed of

adjustment. Specifically, investors should reward conglomerates (like RIL) that strategically use profitability or equity to build financial resilience, acknowledging that the market rewards the stability and scale of larger firms (high MB) even if organizational size inherently introduces factors that depress operational ROE. [5]

8. Limitations of the Study
While employing a robust dynamic methodology (Sys-GMM), this study is subject to several limitations inherent in panel data analysis and sample selection.

First, the research relies on the analysis of two massive, highly idiosyncratic Indian conglomerates. The unique strategic cycles and market influence of RIL and the specialized sector exposure of key Tata subsidiaries limit the external validity of the findings when extrapolated to smaller, non-listed, or non-conglomerate firms.

Second, the study utilized annual consolidated reports covering an 11-year period. While extensive, the reliance on aggregated annual data means that some intra-year strategic financial shifts, especially rapid tactical debt issuances or repayments, may be obscured. Furthermore, certain granular variables required for comprehensive TOT modelling (such as non-debt tax shields) are often aggregated or approximated, relying on suitable proxies.

Third, the statistical validity of the Sys-GMM estimation fundamentally relies on the acceptance of the Sargan/Hansen test and the absence of second-order autocorrelation (AR (2)).[11] While these diagnostics ensure model robustness, the underlying assumption regarding the exogeneity of the instruments used remains critical to the interpretation of the results.

Finally, while efforts were made to control for endogeneity, the inherent structural limitations of accounting-based performance metrics (ROA, ROE) must be acknowledged.[13] These measures may be subject to measurement error correlated with strategic financing inputs, potentially leading to residual biases. Future research should explore alternative performance metrics, such as Economic Value Added (EVA), which more accurately isolates the profitability generated above the cost of capital.

9. Conclusion
This research successfully investigated the determinants and performance implications of capital structure for Reliance Industries Limited and the Tata Group between 2011 and 2021 using the statistically rigorous System GMM estimation technique.

The findings decisively confirm that capital structure management for these complex entities is a dynamic, path-dependent process, evidenced by the high persistence of leverage across all sampled firms. No single capital structure theory prevails universally; rather, management decisions dynamically reflect strategic corporate philosophy and industry structure. The Tata Group provides a compelling, textbook illustration of the Trade-Off Theory operating at the subsidiary level, where the capital intensity and tangibility of assets dictate financing structure (e.g., high debt for Tata Steel versus minimal debt for TCS).[4] In contrast, RIL's volatile financing cycle, culminating in its 2021 deleveraging, demonstrated a strong strategic adherence to the Pecking Order Theory, utilizing high profitability and strategic equity raises to reduce external

debt and secure long-term flexibility.[1]

Crucially, the dynamic analysis provided robust empirical validation that high leverage significantly reduced RIL's operational efficiency (ROA and ROE). [5] This evidence directly justifies RIL's successful, large-scale pivot away from debt reliance. The analysis also revealed a paradox of scale: while large size is positively rewarded by market valuation (MB), it introduces organizational complexities that generate diminishing returns and internal inefficiencies, negatively affecting operational ROE. [5]

The overall implication for corporate financial management is that maximizing shareholder value requires strategic optimization beyond simple tax benefits. For these complex global conglomerates, success hinges on minimizing internal agency costs associated with large scale and proactively managing the trade-off between market perception (which rewards stability and liquidity) and operational realities (which penalize excessive, efficiency-eroding debt). Strategic capital structure, aligned with specific operational needs and guided by the flexibility favoured by the Pecking Order, remains the key determinant of long-term corporate performance.

References

1. Werdaningtyas H, Achsani NA, Ratnawati A, Irawan T. Unveiling dynamic capital structures on manufacturing firms: insight from system GMM estimation. Economics and Business Quarterly Reviews. 2025;8(3):273–284.
2. Nerlekar VS, Gupta SK, Manjiri G, et al. From net debt free to debt efficient: a case study on Reliance Industries Limited. Journal of Informatics Education and Research. 2025;5(2):5926–5932.
3. RIL becomes net debt free as it raises over ₹1.68 lakh crore in less than two months. The Hindu. 2025.
4. Final report TCS Reliance: capital structure and investing. Scribd. 2025.
5. Megha, Rani R. Analyzing the impact of capital structure on the financial performance of Reliance Industries. International Journal of Enhanced Research in Management & Computer Applications. 2025;14(1):1–10.
6. Pecking order theory – advanced corporate finance. Fiveable. 2025.
7. Sahani A, Shrikant. A study of financial ratios of Tata Group of companies. International Journal of Research Publication and Reviews. 2025;6(6):6624–6627.
8. Debt/common equity for Tata Steel Ltd (*TATASTEEL*). Finbox. 2025.
9. Restructuring charges for Tata Steel Ltd (*TATASTEEL*). Finbox. 2025.
10. Huang R, Ritter JR. Testing theories of capital structure and estimating the speed of adjustment. Journal of Financial and Quantitative Analysis. 2009;44(2):237–271.
11. Determinants of capital structure using the system GMM method with static models. ResearchGate. 2025.
12. Dynamic panel data estimation with system-GMM. Tilburg Science Hub. 2025.
13. Gregory PR. Why ROE, ROA, and Tobin's Q in regressions aren't good measures of corporate financial performance for ESG criteria. ResearchGate. 2025.
14. TCS financial statements and quarterly results. Tata Consultancy Services (TCS). 2025.