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The Practical Applicability of Capital Structure Theories: A Comparative Study of Jd.com and Alibaba Group

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Abstract. This paper explores the real-world applicability of capital structure theories by comparing two representative Chinese firms: JD.com and Alibaba. Using financial indicators and theoretical alignment, the study examines how the Trade-off Theory and Pecking Order Theory explain each firm's financial behavior under varying corporate conditions. The comparative analysis focuses on debt structure, interest coverage, cash flow patterns, and governance models. Findings show that JD.com's stable cash flow, asset intensity, and centralized governance align with the Trade-off Theory, while Alibaba's strong internal cash flow, asset-light operations, and sensitivity to control dilution reflect the logic of the Pecking Order Theory. These results highlight that capital structure decisions are highly context-specific and must correspond to a firm's financial profile, risk tolerance, and strategic priorities. The study emphasizes that no single capital structure theory is universally applicable; rather, firms should adopt a contextual approach that balances cost efficiency with organizational stability. These insights contribute to a more nuanced understanding of corporate financing strategy and offer practical guidance for companies facing diverse financial and governance environments.

Keywords: Capital structure theory, Trade-off theory, Pecking order theory

1. Introduction

Capital structure remains a fundamental topic in corporate finance, as the way firms balance debt and equity financing directly affects their cost of capital, risk exposure, and long-term sustainability. Classical theories such as the Trade-off Theory, Pecking Order Theory, Agency Theory, and Market Timing Theory offer distinct perspectives on corporate financing behavior, each grounded in different assumptions regarding taxes, information asymmetry, managerial incentives, and market efficiency. These theories have provided valuable insights into how firms might optimize their capital mix under idealized conditions.

However, in real-world settings, firms operate within diverse institutional, industry, and organizational environments. Capital structure decisions are often shaped by a combination of internal and external factors, including profitability, asset structure, cash flow stability, governance mechanisms, ownership concentration, and strategic development stage. Consequently, it becomes difficult for any single theory to universally explain observed financing behaviors across different firms and industries.

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This study selects JD.com and Alibaba Group—two of China's most prominent internet-based technology companies—as case studies to investigate the contextual applicability of capital structure theories. These firms differ significantly in their business models, asset intensity, governance structures, and financing preferences, making them ideal for theory-driven comparison. Through a structured analysis of key financial indicators and theoretical alignment, this paper aims to evaluate how the Trade-off Theory and the Pecking Order Theory apply under varying corporate conditions. The goal is to enrich the understanding of how firms design their capital structures in practice and to provide refined theoretical insights that accommodate firm heterogeneity and strategic complexity.

2. Capital structure theory

Capital structure refers to the proportional composition of debt and equity capital in a firm's long-term financing. Its core objective is to maximize firm value by optimizing financing sources while balancing financial risk and cost of capital. The essence of capital structure decision-making lies in risk-return trade-offs and resolving agency conflicts. This concept builds on the foundational work by Modigliani and Miller, who showed that under perfect market conditions, capital structure is irrelevant to firm value [1].

However, real-world markets are far from perfect. Fama and French argue that neither the Trade-off nor the Pecking Order theory alone can fully explain firms' financing behavior, suggesting that both may coexist under different contexts [2]. In practice, firm-specific characteristics such as industry context, life-cycle stage, profitability model, and governance structure must be integrated into the analysis.

Table 1 presents a comparative summary of major capital structure theories, outlining their core assumptions, financing logic, and applicable firm characteristics.

Table 1. Comparison of major capital structure theories

Theory	Core proposition	Typical Firm Profile
Trade-off theory	Firms optimize capital structure by balancing tax shield benefits against financial distress costs	Stable-profit firms Asset-heavy industries High-tax firms
Pecking order theory	Due to information asymmetry, financing hierarchy: Internal funds > Debt > Equity	High-growth tech firmsFirms with strong FCFControl-sensitive firms
Agency Theory	Capital structure mitigates shareholder-creditor conflicts & managerial opportunism	Firms with dispersed ownershipComplex governance structuresHigh FCF agency risks
Market Timing Theory	Firms exploit capital market mispricing for financing timing	IPO/SEO-dependent firmsCyclical industriesEmerging-concept firms

Among these, the Trade-off and Pecking Order theories represent two fundamentally different logics—risk-return optimization versus information asymmetry management—which makes them particularly useful for contrasting JD and Alibaba.

3. Case background: industry commonality and firm-level differences

3.1. Industry commonalities and case comparability

In the context of China's capital market, Chen finds that state ownership, profitability, and market access significantly influence capital structure decisions [3]. JD.com and Alibaba are both dominant

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players in China's internet industry, with overlapping business focuses in e-commerce, logistics, and digital services. Both are subject to similar macroeconomic cycles, regulatory frameworks, and capital market systems, and they apply consistent financial reporting standards. This provides a strong foundation for direct comparison.

Despite their divergent operational models—JD.com adopts an asset-heavy, self-operated logistics model, while Alibaba builds asset-light digital platforms—the two firms share key industry attributes: high dependence on technology, large user bases, intense market competition, and advanced digital infrastructure. These shared external conditions, paired with divergent internal strategies, make them ideal case studies for testing the contextual applicability of capital structure theories.

3.2. JD.com: asset-heavy model and strategic use of leverage

JD.com operates a vertically integrated fulfillment model, requiring significant investment in warehouses, transportation, and infrastructure. This business model results in a high proportion of fixed assets and strong reliance on capital expenditure. Its financial statements consistently show a relatively high debt-to-asset ratio and debt-to-equity ratio, suggesting a reliance on debt financing to support infrastructure expansion.

Moreover, JD's long-term debt dominates its capital structure, indicating a deliberate rather than reactive use of leverage. Its governance structure is centralized, enabling long-range financial planning. The firm uses debt not merely for liquidity but as a strategic instrument to reduce its weighted average cost of capital (WACC), laying a solid empirical foundation for applying the Trade-off Theory in later analysis.

3.3. Alibaba: asset-light, cash-rich, and conservatively financed

Alibaba, by contrast, runs a transaction-enabling platform model. It does not hold inventory or manage logistics internally, leading to a minimal share of fixed assets and modest capital expenditure needs. Its profitability and operational scale ensure strong internal cash flows that are sufficient to support growth without external financing.

The firm maintains a low financial leverage, which aligns with its governance philosophy of preserving strategic autonomy. Alibaba's leadership places a premium on control retention and tends to avoid both debt obligations and external equity dilution. This "strong surplus, low leverage, high control" profile fits precisely within the framework of the Pecking Order Theory.

4. Comparative analysis of financial structure and indicators

4.1. Indicator system and analytical dimensions

To systematically compare the capital structures of JD.com and Alibaba, this chapter adopts an indicator framework across three dimensions: asset-liability structure, interest coverage and leverage, and cash flow and financing capacity.

Following Rajan and Zingales, this study adopts leverage, profitability, and asset tangibility as core financial indicators to assess capital structure [4]. The first asset-liability structure dimension includes the debt-to-asset ratio, debt-to-equity ratio, and long-term debt ratio, which reflect the firm's capital reliance and debt stability. The second dimension examines interest coverage and return on equity (ROE) to assess solvency and the effectiveness of leverage in enhancing returns. The third dimension focuses on operating cash flow, free cash flow, and the ratio of free cash flow to

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total liabilities, supplemented by a qualitative judgment of external financing dependence. This indicator system provides a comprehensive foundation for evaluating the firms' financing strategies, risk profiles, and structural preferences, serving as the empirical basis for the theoretical applicability analysis in Chapter 5. Titman and Wessels identify asset structure and profitability as key determinants of leverage decisions, validating the use of our indicator framework [5].

4.2. Calculation and comparison of financial indicators

Table 2. Asset-liability structure and debt composition [6, 7]

Indicator	JD.com	Alibaba Group
Total Assets (billion RMB)	4,016.9	16,956.0
Total Liabilities (billion RMB)	2,221.4	6,133.6
Shareholders' Equity (billion RMB)	1,682.9	9,484.8
Debt-to-Asset Ratio	55.3%	36.2%
Debt-to-Equity Ratio (D/E)	1.32	0.65
Long-term Debt as % of Total Debt	53.9%	43.5%

As shown in Table 2, JD.com has a significantly higher debt-to-asset ratio than Alibaba, indicating heavier reliance on debt financing. JD's higher share of long-term liabilities suggests an emphasis on funding stability and financial flexibility. In contrast, Alibaba maintains a conservative capital structure with a high equity ratio, reflecting a preference for internal funding aligned with its asset-light model.

Table 3. Interest coverage and leverage

Indicator	JD.com	Alibaba Group
EBIT (estimated, billion RMB)	171.3	1,003.5
Interest Expense (billion RMB)	24.6	59.2
Interest Coverage Ratio	6.97	16.95
Return on Equity (ROE)	5.89%	7.67%
Capital Structure Stability	Moderate	Very High

According to Table 3, Alibaba's interest coverage ratio is more than twice that of JD.com, indicating minimal financial leverage pressure. JD's coverage ratio remains within a safe range, suggesting its moderate leverage is manageable. While Alibaba enhances stability through high profitability and low debt, JD strategically employs leverage to raise capital efficiency, consistent with the Trade-off Theory in practice.

Table 4. Cash flow and financing capacity

Indicator	JD.com	Alibaba Group
Operating Cash Flow (billion RMB)	486.0	1,997.5
Free Cash Flow (billion RMB)	245.5	1,716.6
Free Cash Flow / Total Liabilities	11.1%	28.0%
Short-term Debt Coverage	Moderate	High

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As shown in Table 4, Alibaba's free cash flow is significantly stronger, enabling it to self-fund operations with minimal reliance on external financing. JD's cash flow is adequate to meet interest payments and support long-term debt structure, contributing to financing stability. JD adopts a mixed funding approach combining internal and external sources, whereas Alibaba operates with a self-sufficient financing model driven by cash generation.

5. Applicability of capital structure theories in practice

While both the Trade-off and Pecking Order theories offer plausible explanations for capital structure decisions, empirical evidence by Shyam-Sunder and Myers suggests that firms tend to follow a pecking-order logic in real-world financing behavior, particularly under conditions of information asymmetry and internal capital sufficiency [8].

5.1. Applicability of the trade-off theory to JD.com

The Trade-off Theory suggests that firms balance the tax advantages of debt against the potential costs of financial distress to determine an optimal capital structure. This theory is particularly relevant for firms with stable earnings, tangible assets, and strong financial planning capabilities. JD.com, as a capital-intensive enterprise, actively manages its financing structure to optimize cost and risk. Its strategic use of debt reflects a practical alignment with the Trade-off Theory.

5.1.1. Motivation for utilizing the tax shield

One of the central mechanisms of the Trade-off Theory is the tax shield effect, where interest payments on debt are tax-deductible, thereby reducing the firm's effective tax burden and improving capital efficiency. According to Graham, tax savings from interest deductions can contribute significantly to firm value, providing strong incentives for debt usage under the Trade-off Theory [9]. Firms intend to increase leverage so long as the marginal tax benefit exceeds the marginal expected cost of financial distress.

JD.com demonstrates a consistent motivation to capture tax benefits through debt while maintaining financial prudence. Its stable profitability and positive operating cash flows provide a reliable foundation for interest payments, ensuring that the tax shield is both usable and sustainable. The company's financial disclosures show a moderate and manageable level of tax burden relative to earnings, confirming the effectiveness of tax deduction without compromising solvency.

Compared with equity financing, which may dilute shareholder control and be subject to market volatility, debt offers JD a targeted and efficient funding mechanism. The firm's strong asset base, derived from logistics infrastructure, further enhances its borrowing capacity and reduces lenders' risk. As a result, JD's debt decisions reflect not only the pursuit of tax optimization but also a broader commitment to financial soundness—both of which align closely with the logic of the Trade-off Theory.

5.1.2. Strategic design of debt structure

According to the Trade-off Theory, firms deliberately design their capital structure by balancing the benefits of the tax shield against the costs of financial distress, thereby aiming for an optimal leverage ratio. This involves careful decisions about the type of debt, maturity structure, and currency composition to minimize risk-adjusted financing costs.

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JD's debt financing behavior closely aligns with this theoretical logic. The company has repeatedly issued U.S. dollar-denominated long-term bonds, leveraging its international credit standing and favorable offshore interest rates to reduce capital costs. Its debt portfolio is dominated by unsecured long-term liabilities, reducing short-term refinancing risk and supporting financial stability. JD also adjusts its debt maturity structure in response to interest rate fluctuations, showing a strong capability in dynamic capital management. In addition, JD diversifies its financing tools across bank loans, public bonds, and private placements, enhancing its funding flexibility and cost control. This strategy of proactive design, risk diversification, and cost minimization exemplifies the optimization path encouraged by the Trade-off Theory.

5.1.3. Financial soundness under controlled risk and centralized governance

JD Group's strategic leverage management under the Trade-off Theory framework demonstrates a rigorous real-world application of value-maximizing principles with several advantages.

First, enhanced capital efficiency and returns amplification. By proactively deploying debt within controllable thresholds, JD systematically magnifies returns on equity while harnessing tax shields to reduce effective tax burdens. This leverage-driven efficiency enables sustained reinvestment into core competitive assets, translating debt costs into strategic growth accelerators.

Second, strategic resilience through asset-liability matching. JD aligns long-term debt instruments with heavy-asset investment cycles, ensuring uninterrupted funding for warehouse networks and R&D initiatives. This deliberate synchronization immunizes strategic projects against capital market volatility, transforming fixed obligations into enablers of operational continuity.

Third, market credibility via risk-calibrated governance. JD's centralized decision-making and tangible collateral base signal disciplined risk containment to capital markets. This governance credibility maintains investment-grade credit ratings and secures dual-track financing access, reducing refinancing uncertainty even during sector downturns.

5.2. Applicability of the pecking order theory to alibaba group

The Pecking Order Theory posits that firms prefer internal financing first, followed by debt, and consider equity issuance only as a last resort due to concerns over information asymmetry and control dilution. This theory fits firms with strong cash flows and centralized governance, such as Alibaba.

5.2.1. Preference for internal financing

The pecking order concept can be traced back to Donaldson, who noted that firms typically prefer internal finance before seeking external capital [10]. Alibaba generates strong and consistent free cash flow, a result of its platform-based model and high operating leverage. The company does not engage in direct inventory management or logistics, instead earning revenue through transaction facilitation, advertising, and cloud services. This asset-light approach leads to minimal capital expenditures and a highly efficient asset turnover ratio, giving Alibaba sufficient internal resources to support its growth without relying on external financing.

From a governance perspective, Alibaba's partnership system ensures centralized control over strategic decisions. The firm prioritizes strategic autonomy and managerial flexibility, maintaining a conservative attitude toward debt. This is partly due to its limited tangible collateral and partly due

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to the indirect costs of debt—such as credit rating scrutiny, increased disclosure requirements, and external monitoring—which are incompatible with its current governance philosophy.

Overall, Alibaba's financing behavior aligns with the Pecking Order Theory's logic of internal capital preference.

5.2.2. Reluctance toward equity financing

A core assumption of the Pecking Order Theory is that when firms face high information asymmetry, they tend to avoid equity issuance. This is due to the risk of undervaluation by external investors, which can harm existing shareholders and dilute managerial control. Alibaba's actual behavior strongly aligns with this theoretical logic. Frank and Goyal find that firms with high profitability and limited investment needs tend to rely heavily on internal funds, supporting Alibaba's financing strategy [11].

As a data- and technology-driven firm, Alibaba holds extensive "soft, non-public information" that is not easily conveyed through conventional financial disclosures. This makes its true intrinsic value difficult for the market to assess, increasing the risk of under-pricing in equity issuance.

In practice, Alibaba has rarely conducted secondary offerings or equity-based refinancing since its IPO, reflecting a deliberate aversion to public equity issuance. Additionally, Alibaba exhibits a high degree of sensitivity toward control dilution. Its partnership governance model ensures that founders and senior management retain core decision-making power, avoiding governance shifts that may arise from broader shareholder diversification. Moreover, amid rising policy uncertainty and market volatility, Alibaba has consistently opted to finance operations through internally generated funds, foregoing even low-cost financing options to preserve autonomy and protect soft information advantages.

5.2.3. Effects of the pecking order financing strategy

Alibaba's long-term commitment to an internal capital-first strategy demonstrates a real-world application of the Pecking Order Theory. This financing approach has delivered several practical benefits:

First, enhanced financial stability and strategic flexibility. By relying primarily on internally generated funds, Alibaba minimizes exposure to financial risk and avoids the repayment pressure that comes with external debt. This allows the company to maintain operational flexibility and strategic continuity even in volatile market or regulatory environments.

Second, preservation of control structure. Avoiding equity issuance helps protect Alibaba's partnership system and shields it from shareholder dilution or governance disruption, which could dilute internal authority or shift strategic direction. This stability supports long-term innovation, technology investment, and ecosystem development without compromising internal authority.

Third, clear market signals and investor confidence. In contrast to companies that frequently tap capital markets, Alibaba's minimal reliance on external financing sends a message of sustainable operations and strong internal discipline. This consistency fosters investor trust, potentially reduces equity risk premiums, and supports long-term valuation.

5.3. Comparative analysis and summary of theoretical applicability

In practice, capital structure theories are not universally applicable but should be matched to firm-specific traits such as asset structure, governance, risk preference, and strategic goals. The contrast

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between JD.com and Alibaba shows how different financing behaviors reflect different theoretical logic. Only by aligning theory with internal realities can firms balance capital cost, control, and financial stability.

5.3.1. Alignment between firm characteristics and capital structure theories

The practical applicability of capital structure theories relies on systematic alignment between firm attributes and theoretical prerequisites. JD Group's asset-intensive profile, stable tax base, and centralized governance structure enable its capital structure decisions to precisely reflect the Trade-off Theory's core mechanism—balancing debt tax shield benefits against financial distress costs through proactive leverage management. Conversely, Alibaba Group's asset-light operation and control preservation mechanisms fully conform to the Pecking Order Theory's internal financing hierarchy. This alignment underscores that a firm’s underlying business model fundamentally shapes the applicability of any given capital structure theory.

5.3.2. Theoretical boundaries and practical implications

As Moradi and Paulet point out, macroeconomic shocks significantly alter the validity of capital structure theories, making empirical applicability highly context-dependent [12].

Trade-off Theory exhibits defined applicability boundaries: First, it fails during technological disruption cycles (e.g., retail digitalization) due to unquantified bankruptcy costs. Second, severe profit volatility undermines tax shield sustainability. Third, dispersed governance erodes proactive leverage management capacity. JD's case confirms the theory functions only when tangible collateral capability, predictable cash flows, and centralized decision-making coexist.

Pecking Order Theory breaks down in specific scenarios: Internal funds become insufficient during market-share battles; Cash flow shortages disrupt financing hierarchy; Equity valuation troughs force financing delays. Alibaba's operations verify the theory's dependence on sustained free cash flow generation, acute information asymmetry, and control sensitivity.

Market Timing Theory applies only during sharp valuation fluctuations, while Agency Theory loses explanatory power under strong supervision or controlling shareholders. These theories serve complementary roles but cannot independently decipher JD or Alibaba's capital structure logic.

6. Conclusion

Capital structure decisions are not merely about optimizing financial cost or maximizing leverage efficiency; they also shape a firm’s strategic flexibility and long-term value creation. This paper, through a comparative case study of JD.com and Alibaba, analyzes how two foundational theories—Trade-off Theory and Pecking Order Theory—apply in practice and how their relevance depends on firm-specific characteristics.

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