Available Online: 27 August 2026 DOI: 10.54254/2977-5701/2026.36426

Diversified financing modes of BYD in the new energy vehicle industry

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Abstract. The expanding new energy vehicle industry requires manufacturers to finance R&D, capacity construction, supply chain integration and overseas operation simultaneously. This paper investigates BYD's diversified financing modes and evaluates their effects on enterprise growth, liquidity and risk control. It adopts the research method combining case study, literature review, financial statement analysis and structural comparison. It also analyzes internal financing, bank loans, bond financing, equity financing, trade credit and policy-based green finance, focusing on financial data from 2022 to 2025. The results demonstrate that operating cash flow and retained earnings remain the foundation of BYD's financing system, while external financing becomes more significant during the accelerated globalization stage. BYD's shift from self-financed development to a more balanced but more complex capital structure in 2025 is marked by delayed operating cash generation, significant private placement, and rapid loan growth. Diversification improves financing capacity and term flexibility, but also raises higher requirements for liquidity management, refinancing, exchange rate and governance.

Keywords: diversified financing, capital structure, new energy vehicle, BYD, financial risk

1. Introduction

Internal combustion technology is giving way to electrification, intelligence, and reduced carbon emissions in the global automotive sector. In 2025, China continued to be the world's largest market for electric vehicles, accounting for almost six out of ten global sales [1]. This expansion creates major financing demand because New Energy Vehicle (NEV) enterprises must invest simultaneously in batteries, vehicle platforms, software, production bases, logistics, and overseas distribution. The investment cycle is long, technological uncertainty is high, and price competition can compress operating margins. Financing structure therefore affects not only the cost of capital, but also the speed of innovation and the capacity to survive industry volatility.

Capital structure research provides several explanations for corporate financing choices. The Modigliani-Miller framework establishes the analytical starting point for debt and equity decisions [2]. Pecking-order theory emphasizes the preference for internal funds, followed by debt and then equity when information asymmetry exists [3]. Research and Development (R&D) investment is especially sensitive to financing constraints because intangible assets provide limited collateral [4]. Green bonds can support credible environmental investment, while trade credit can supplement formal finance through supplier relationships [5,

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6]. Existing studies provide strong general theories, but fewer undergraduate case studies integrate operating cash flow, debt maturity, equity placement, and supply-chain credit within one vertically integrated NEV enterprise.

By analysing BYD Company Limited (BYD) as the case enterprise, this paper reviews the structure, effects, and risks of its diversified financing modes. It also develops practical optimization proposals. The study provides a reference for other technology-intensive manufacturing enterprises seeking a balance among growth, solvency, and shareholder value.

2. Theoretical foundations and industry context

2.1. Capital structure theory

Capital structure theory holds that financing decisions should be evaluated from four dimensions: cost, risk, information and control. Although taxes, bankruptcy expenses, agency conflicts, and asymmetric knowledge complicate actual decision-making, under ideal circumstances, the funding mix does not alter firm value. [2]. Pecking-order theory is particularly applicable to BYD: sufficient operating cash flow can reduce dependence on external capital and avoid adverse market signals [3]. Market-timing theory further points out that equity issuance is more attractive when valuation and investor demand are good [7].

Liquidity reserves also have strategic value. Cash protects investment plans when external financing becomes expensive, but excessive cash will reduce capital efficiency [8]. Financial constraints will force enterprises to delay employment, investment and production decisions during market pressure [9]. Therefore, for NEV manufacturers, the financing goal is not just minimum debt. A more appropriate goal is to form a resilient combination of internal funds, debt, equity and transaction-based finance, which can support investment without bringing excessive refinancing or control risks.

2.2. Financing characteristics of new energy vehicle enterprises

NEV enterprises require substantial fixed investments in manufacturing and technology, including vehicle factories and R&D for intelligent systems. Relevant studies show that when debt is not suitable for intangible projects, internal cash flow and external equity can jointly support R&D growth [10]. This feature explains why mature NEV companies with profitable core businesses still need diversified external capital.

Environmental attributes also bring special financing opportunities. When green bond funds are used for verifiable environmental projects, they can expand the investor base and bring pricing advantages [11]. China's green finance policy encourages financial institutions and capital markets to support low-carbon industries [12]. Supply chain finance is also very important, because vehicle production involves a huge supplier network. Trade credit reduces immediate cash pressure, but excessive reliance on payment will transfer liquidity risk to suppliers [6]. Therefore, a sustainable financing model must coordinate enterprise growth with creditor protection, supplier stability and transparent capital use.

3. BYD financing structure

3.1. Internal financing

Internal financing includes retained earnings, depreciation funds and operating cash flow. This case analysis mainly draws financial data from BYD's annual reports from 2022 to 2025 [13-16]. As shown in Table 1, BYD's revenue increased from RMB 424.061 billion in 2022 to RMB 803.965 billion in 2025. Owner-

attributable profit continued to grow strongly until 2025, when it fell to RMB 32.619 billion. Net assets more than doubled in four years, building a stronger equity foundation for subsequent financing. Figure 1 further shows the rapid growth of revenue and the profit decline in 2025.

Table 1. Key financial indicators of BYD, 2022-2025 [13-16]

Indicator, RMB billion	2022	2023	2024	2025
Revenue	424.061	602.315	777.102	803.965
Profit attributable to owners	16.622	30.041	40.254	32.619
Total assets	493.861	679.548	783.356	883.730
Net assets excluding non-controlling interests	111.029	138.810	185.251	246.275

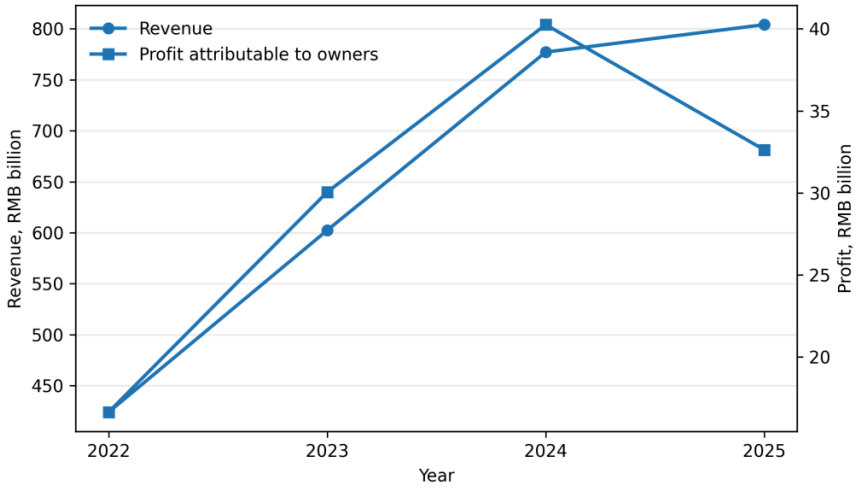

Figure 1. BYD revenue and profit attributable to owners, 2022-2025 [13-16]

Operating cash flow served as the core financing source during the high-growth stage. Net operating cash inflow reached RMB 140.838 billion in 2022 and RMB 169.725 billion in 2023. This cash supported production expansion and reduced net leverage. The decline to RMB 59.136 billion in 2025 did not eliminate internal financing capacity, but it reduced the margin available for self-funded capital expenditure. The 2025 annual report attributes the decline mainly to higher cash payments for goods and services [16]. Although internal funding is still the preferred foundation, the requirement for supplemental external capital is growing due to increased globalization.

3.2. Debt financing

BYD uses short-term and long-term bank loans, bonds, perpetual instruments, and other interest-bearing liabilities. Debt financing is suitable for projects with identifiable cash flows because it avoids immediate ownership dilution and can match the useful life of factories, equipment, vessels, and distribution facilities. Borrowing also provides flexibility when capital expenditure must be completed before operating cash is realized.

Table 2. Financing and liquidity indicators of BYD, 2022-2025 [13-16]

Indicator	2022	2023	2024	2025
Operating cash inflow, RMB billion	140.838	169.725	133.454	59.136
Total borrowings, RMB billion	18.517	36.545	28.584	113.435
Gearing ratio, percent	-26	-44	-36	25
Current ratio, times	0.72	0.67	0.75	0.79

As shown in Table 2, the debt profile changed significantly in 2025. Total borrowings rose from RMB 28.584 billion in 2024 to RMB 113.435 billion in 2025, while the reported gearing ratio changed from negative 36 percent to positive 25 percent [15, 16]. Repayment was due in one year for around RMB 47.732 billion and in years two through five for about RMB 65.703 billion [16]. This maturity distribution is more balanced than purely short-term borrowing, but the scale of the increase raises interest-rate and refinancing exposure. Therefore, rather than being used as a broad replacement for lower operating cash generation, debt should be connected to project cash-flow estimates.

3.3. Equity financing

Equity financing provides permanent capital and improves debt capacity, which is useful for technology projects and international expansion with uncertain early cash flows. BYD has access to both mainland and Hong Kong capital markets. In March 2025, the company completed a United States Dollar (USD) 5.6 billion top-up placement involving long-term global investors, sovereign wealth funds, and strategic investors [16]. The placement expanded the shareholder base and supplied capital without fixed repayment obligations.

The main advantage of equity is risk sharing. It can finance R&D, overseas factories, and market development without increasing short-term liquidity pressure. The main disadvantages are dilution, issuance cost, and the possibility that funds are raised when expected project returns are insufficient. Market-timing theory supports equity issuance when valuation and investor demand are favorable, but agency theory requires management to disclose project selection and capital allocation clearly [7, 17]. Therefore, rather than being a regular reaction to operational pressure, equity funding should be sporadic and project-oriented.

3.4. Supply chain and policy-based financing

BYD's vertically integrated production system creates substantial transaction-based finance. Trade payables and bills payable delay cash outflow and function as short-term operating finance. At the end of 2025, trade payables were RMB 186.742 billion and bills payable were RMB 22.464 billion [16]. The annual report states that trade payables are non-interest-bearing and normally settled within one year [16]. This structure lowers explicit interest cost, but it requires stable supplier relationships and predictable settlement practices.

Policy-based and green finance offer another avenue. NEV production, battery technology, energy storage, and low-carbon transport are consistent with China's green-finance framework [12]. Grants, tax support, green credit, and labelled bonds can reduce funding constraints, but these sources should remain supplementary because eligibility and policy intensity are subject to change. A stronger model would connect each green financing instrument to a defined asset pool, measurable emissions benefits, and regular external disclosure. Such discipline would improve credibility and limit greenwashing risk.

4. Financing effects and risk assessment

4.1. Growth and innovation support

Diversified financing has supported BYD's simultaneous expansion in products, production capacity, technology and overseas markets. The revenue growth, asset growth and net asset enlargement in Table 1 show that financing capacity has been converted into a broader operating platform. Internal cash supports routine expansion, debt accelerates investment progress, equity strengthens permanent capital, and trade credit reduces working-capital pressure. For vertically integrated manufacturers, this combination works better than relying on a single source.

The financing system also guarantees the continuity of innovation. Since R&D projects bring uncertain and delayed returns, the mix of retained earnings and equity is more appropriate than pure short-term debt [4, 10]. Thus, BYD's financing diversity supports technological persistence. This effect stays positive only when investment discipline is maintained and new capital generates cash flow, productivity or strategic capability.

4.2. Cost and maturity matching

Each financing mode has different costs. Retained earnings avoid issuance and interest costs but carry opportunity cost. Bank loans and bonds offer tax-deductible interest in many cases but create fixed payment obligations. Equity has no contractual maturity but requires returns for shareholders. Trade credit may seem interest-free, but suppliers can include financing costs in prices or reduce cooperation if payment periods are too long.

Thus, maturity matching is crucial. Short-term borrowing should finance inventories and receivables, while long-term borrowing and equity should support factories, research platforms and overseas production bases. BYD's 2025 debt schedule extends a large part of borrowings to the second to fifth years [16]. This structure aligns with long-term investment, but the rapid growth of total borrowing requires continuous monitoring of interest coverage and project-level cash generation.

4.3. Liquidity and leverage exposure

Liquidity risk became more visible in 2025. As Figure 1 shows, operating cash inflow fell, total borrowings rose sharply, and the current ratio stayed below one. For high-turnover manufacturing enterprises, a current ratio below one does not equal distress, but it raises dependence on inventory conversion, customer collections, supplier credit and continuous access to external financing. Inventory turnover also lengthened in 2025 due to expanded overseas operations and shipping cycles [16].

4.4. Governance and dilution exposure

Diversification increases financial flexibility but raises governance complexity, since multiple funding sources bring different reporting obligations, covenants, maturity schedules and stakeholder expectations. Large equity issues dilute existing shareholders, while abundant external funds encourage overinvestment. Agency theory predicts that weak monitoring may separate managerial expansion objectives from shareholder value [17]. Therefore, governance quality becomes part of financing efficiency. Major financing decisions need to disclose expected use of proceeds, investment horizon, performance indicators and exit or adjustment rules.

5. Financing optimization

5.1. Operating cash flow management

The first priority is strenghten operating cash-flow management by evaluating sales growth alongside collection quality, inventory turnover, supplier payments and warranty obligations. Rolling cash forecasts should cover normal, cautious and stress scenarios. Capital expenditure should be divided into mandatory, strategic and deferrable categories to adjust investment without interrupting core technology programs.

Retained earnings should remain the foundation of financing. The enterprise should establish a minimum internal funding ratio for routine R&D and domestic capacity upgrades, and arrange separate financing plans for overseas projects with long recovery periods.

5.2. Debt portfolio management

Debt optimization focuses on maturity, currency, interest type and project linkage. Long-term facilities should be deployed for overseas plants, logistics assets and production lines, while short-term credit shall be matched with working capital. Enterprises should balance fixed-rate and floating-rate debt according to interest-rate expectations and cash-flow stability, and adopt local-currency borrowing to reduce exchange-rate mismatch in overseas markets.

Green bonds and sustainability-linked instruments can broaden funding sources when proceeds are traceable, for eligible projects including battery efficiency, clean production, energy storage and low-carbon transport infrastructure.

5.3. Equity financing discipline

Equity issuance should be based on strategic need, market valuation and expected project return. Large placements are reasonable when proceeds finance high-growth projects that cannot be efficiently funded by short-maturity debt. The expected return on invested capital should exceed the long-term cost of equity, and dilution effects should be reported under conservative scenarios. Investor structure also matters: long-term institutional and strategic investors can bring market access, governance oversight and international credibility.

5.4. Supply chain and international finance

Supply-chain finance should protect both BYD's liquidity and supplier stability. Digital receivables confirmation, transparent payment schedules and differentiated credit terms improve smaller suppliers' financing access. Payment periods should reflect transaction risk and product quality rather than only bargaining power, and a stable supplier network reduces production interruption and supports long-term cost control.

International expansion requires a layered funding model combining parent-company capital, local bank credit, export credit, project finance and selected joint-venture capital. Enterprises should match funding currency to local operating cash flow where possible, and include tariff, logistics, exchange-rate and regulatory scenarios in overseas project appraisal.

6. Conclusion

This paper examines BYD's diversified financing modes via capital structure theory, financial statement comparison and case analysis. It finds that BYD's financing system developed from a strong internal financing base to a combination of operating cash flow, bank loans, bonds, equity placement, trade credit and policy-

based green finance. From 2022 to 2024, rapid growth of revenue and profit, large operating cash inflow and negative net gearing brought BYD strong self-financing capacity. In 2025, its revenue growth slowed, owner-attributable profit declined, operating cash inflow fell to RMB 59.136 billion, total borrowings rose to RMB 113.435 billion, and the USD 5.6 billion equity placement strengthened permanent capital. These changes indicate a transition to a more external financing stage driven by globalization and large capital expenditure.

The diversified model has distinct advantages: it expands funding capacity, supports continuous R&D, distributes risks among different capital providers and improves maturity flexibility. Meanwhile, it also brings new risks: higher borrowing increases interest and refinancing pressure, a current ratio below 1 raises dependence on working capital turnover, overseas expansion brings currency and regulatory uncertainty, and equity issuance causes dilution and raises higher governance requirements. Besides, trade credit reduces explicit financing cost, but it should not damage supplier stability.

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