



BYD (1211.HK)

Driving A Green Revolution

Stock Pitch Report

1 Industry Overview

Mainland China is the key market for EVs, and it accounted for 59% of total market share in 2022 (Low & Jones, 2023). With a CAGR of 34.0% (Zhejiang Leapmotor Technology Co., Ltd. – hkexnews, 2022), the industry is projected to continue its growth trajectory.

Opportunities and Challenges: At the macro level, China's economy is rebounding after its reopening and is creating huge local demand. There are environmental policies in China and export opportunities to foreign countries. Meanwhile, there is price war in the EV market. At the micro level, 50.6% of penetration rate is forecasted in 2026 (Zhejiang Leapmotor Technology Co., Ltd. – hkexnews, 2022) due to shifts in consumer preference. EVs' sales volume may soon exceed fuel vehicles. Moreover, technological advancement of EVs' batteries (Han & Lu, 2023), and the downtrend of lithium carbonate price, have had significant impacts on the industry. These not only enhance the competitive advantage but lower EVs' production costs and prices. Thus, we anticipate the EV industry will keep its growth path.

2 Company Overview

BYD is a multinational company which devotes to create a better living environment by setting up a complete, clean energy ecosystem, thereby reducing the world's dependence on fossil fuels (BYD Europe). There are 3 reasons leading BYD to be outstanding in the industry: strong product development, vertical integration, and sustainability practises.

2.1 Strong Product Development: BYD excels in sustainable innovation. There are 5 important technologies (See Appendix) that provide BYD with competitive advantages. BYD diversified its business by setting out a '7+4 Full Market Strategy' and developing side-business¹ apart from its major business areas like EVs and semiconductors. Its products cover 7 conventional types of transportation² and 4 specialized fields³ aiming to replace all fossil fuel consumption in the road transport field. Furthermore, BYD collaborates with environmental-friendly technology firms such as NVIDIA (BYD, 2023), Shell (BYD, 2023) and UzAuto (BYD Europe, 2022) for product R&D to achieve carbon neutrality, which is part of China's 'dual carbon' goal.

¹ including consumer electronics and mobile handset components

² which are bus, coach, taxi, sanitation vehicle, construction vehicle, logistic vehicle, and passenger vehicle

³ which are mining sites, harbours, warehouses, and airports

2.2 Vertical Integration: BYD's vertical integration brings competitive advantage against other EV competitors. It manufactures its own semiconductors and batteries. It is the world's third largest⁴ manufacturer and Tesla is one of its customers. While the popularity for EVs creates huge demand for lithium⁵ (Lee, 2022), BYD is continuously investing in the upstream lithium producers. Its self-reliance helped it avoid supply chain bottlenecks that have hindered other Chinese, as well as the global EV automakers. In 2022, only BYD recorded a consistent sales increase in China, while others have been affected by supply chain issues like chip shortages. Together with its continuous expansion of global assembly lines and its well-established overseas retail network, a streamline vertical integration was adapted. Such a self-developed and self-produced management style helped BYD build a resilient supply chain that other EV automakers cannot compete with.

2.3 Sustainability Practises (BYD CSR Report, 2022): BYD invested >500 million RMB in environmental projects and adopts different management practises⁶. It initiated 48 energy-saving projects⁷. These measures reduce greenhouse gas emission intensity by 28% compared to 2020.

3 Investment thesis

There are 3 directions leading to the positive forecast of BYD:

- The China reopening after pandemic created an anticipated strong local demand for EVs and export opportunities to foreign countries
- BYD has successfully utilized its vertical integration and product diversification strategy⁸
- BYD has established a well-structured sustainability framework aligns with China's 'go-green' ambition and 'dual carbon' goal

4 Catalysts

Although these catalysts are non-discriminate, with BYD's cutting-edge product offerings and vertical integration, it can get the most out of them while minimizing the impacts of any potential demand or supply shortages, which other competitors may not have enough capacity to handle.

⁴ with 14% of global market share

⁵ a critical raw material for production of EV batteries

⁶ including setting up dedicated energy consumption management departments at every organization level, and real-time monitoring and optimization of the operating parameters to reduce energy consumption

⁷ They saved >8000 tons of coal and reduced CO₂ emission by >21000 tons

⁸ The corresponding practices include self-manufacturing of rechargeable batteries and automobiles, setting up different model series, and cooperating with environmental-friendly tech firms.

4.1 Favourable Policies in China: Chinese government issued notice on ‘Organizing the Pilot Project for the Full Electrification of Vehicles’, extended the period of ‘Exemption of vehicle purchase tax on EVs’ to the end of 2023, and issued ‘Energy Conservation and Emissions Reduction Subsidies in 2023’ (Chinese Government, 2023). The government fully supports the EV industry and encourages green travel.

4.2 Favourable Policies in Overseas Markets: In Spain, from Jan 2023, low emission zones and Eco-stickers are enforced⁹ (Ourspanishadventures, 2023). Europe imposed stricter CO₂ emission performance standards for new vehicles in Mar 2023 (Europa, 2023). In Australia, the Emissions Reduction Law will be enforced in Jul 2023¹⁰ (The Guardian, 2023). All these are BYD important overseas markets.

4.3 Continuous Expansion of EV Infrastructure: Domestic charging stations increased by 63 thousand units, and public and private charging piles increased by ~90% and ~16% year on year respectively (TMT Post, 2023). At China's 'Two Sessions', the government emphasised to increase the availability of charging infrastructure.

5 **Risks and Mitigation**

We identified potential risks associated with this investment and the mitigation strategies that have been put in place.

5.1 Price war in China’s automotive industry perpetuates (Industry): BYD has been involved and offered around 20000-yuan discounts on its Dynasty series since April (Ren & Zhao, 2023), which may lower its profitability. Fortunately, the reduced price in lithium carbonate and the policy support from the Chinese government can help offset the loss in profit margin.

5.2 BYD’s internal business activities may accelerate climate change (Company): According to MSCI (ESG Ratings & Climate Search Tool), its implied temperature rise is 3.1 °C. As this is misaligned with the global climate goal and BYD’s value proposition, its reputation will be tarnished. Yet, BYD has discontinued the production of fossil-fuel vehicles since March (Times, 2022). We believe the implied temperature rise will be lowered.

⁹ BYD Pure-Electric Vehicles debuted in Spain in Mar 2023

¹⁰ BYD has exported Yuan Plus to Australia since Feb 2022

5.3 BYD’s reputation and sales may deteriorate with its 3.36% product recall rate (2022 annual results announcement – hkexnews, 2023) in 2022¹¹ (Company): Product defects and recalls exacerbate waste disposal and lower customers’ confidence on BYD. To improve its public image, BYD has established robust recall and quality management systems. It further eliminated potential safety hazards by replacing battery packs. BYD’s product qualities will be consistently enhanced.

6 Valuation

We applied the sum-of-the-parts approach by separating BYD’s main business and its equity stake in BYD Electronics. By estimating BYD’s value using P/E multiples, and BYD Electronics' values based on forecasted market capitalization, we obtained the implied share price for the company after considering its stake proportion in BYD Electronics. P/E multiple is used as BYD is mature enough to generate profit. Referencing to industry trends and past averages, we projected BYD’s net income growth in 2023 H1. We then calculated an estimated EPS and derived the forward P/E (6 months) for BYD. With the current and forward PE ratios, we applied the following price target formula: **Price target = (Current PE ratio / Forward PE ratio) x Current Price**. The obtained price target is multiplied by shares outstanding to get the target market capitalization for BYD’s main business. We then took consensus estimates to calculate the forecasted market capitalization of BYD Electronics and multiplied it by BYD’s stake in it (34%). We got the total target market capitalization by summing up the two (from BYD’s main business and BYD Electronics) and divided it by total number of shares outstanding to derive the final target price of 304 HKD.

7 Conclusion

For the above reasons, we would like to reiterate our confidence in our long thesis for BYD at a six-month target price of 304 HKD, which implies a 29% upside from its current price.

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¹¹ For instance, close to 10,000 EVs were recalled due to battery pack safety concern last year.

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9.1 BYD's 5 Important Technologies

‘Dual-Mode; Dual-Drive’ Technology: vehicles can automatically switch between the electric and hybrid modes to save fuel and increase their energy efficiency.

e-Platform 3.0: it increases vehicles’ thermal efficiency by up to 20% while reducing energy loss and largely improve the noise, vibration and harshness (NVH) performance.

Blade battery: it has a prolonged battery life with over 5000 charge and discharge cycles and its volume utilization rate being at least 50% higher than the traditional battery system.

DM-i Super hybrid technology: it improves thermal efficiency conversion and fuel saving compared to ordinary car engines.

Bi-directional charging discharging technology: it creates a crosslinked system between BYD’s vehicles and other vehicles, power grid, or electrical appliances. It allows their vehicles to be part of a greater network which optimizes power grid’s efficiency.¹²

9.2 Sustainability Practices Examples

Water management: BYD conducts regular maintenance to lower leakage rate and sets up reclaimed water recycling systems and wastewater treatment stations. The treated wastewater is used for washroom rinsing and road cleaning. BYD also follows regulations strictly. These measures optimize water consumption structure to reduce water pollution.

Waste gas management: The pollution control measures must be designed, constructed and put into use simultaneously with the production projects, which optimizes waste gas pollution control. The vehicle coating process is upgraded to B1B2, reducing waste gas emission. New treatments like capping the pool of wastewater stations to reduce gas escape are applied to reduce VOC compounds emissions. BYD will continue to upgrade its emission collection and treatment procedures.

¹² Innovation at BYD. BYD SINGAPORE. (n.d.). <https://sg.byd.com/company-profile/core-technology/>

Switching from electricity to clean energy: BYD have its own green power supply and solar energy storage systems. It bought 100000 GEC green certificates, reducing CO₂ emissions by more than 91000 tons, and more certificates will be purchased.

9.3 Stock Data



Source: Google Finance

Stock Data	
Mkt Cap	768.99B HKD
Shares Outstanding	2,907,928,000
52Wk High/Low	333/161.70
3M Average Volume	7663837
Dividends yield (FY)	0.58%
Return on Equity TTM (%)	16.12

9.4 Key Assumptions and Reasons

Item	Assumption	Reasons
Automobiles and related products sales revenue	+49%	<p>Approach 1: Revenue in the Electric Vehicles market is projected to reach CN¥1,144000mn in 2023. By February 2023, BYD owned a 31.7% EV share in the Chinese market. By the existing strong market influence of BYD, we predict that BYD is resilient enough to face with prevailing market competitors and will continuously enlarge its market share. We predict that the Automobiles and related products sales revenue (CNYmn) would be around 484000 CNYmn which increases by 49%.</p> <p>Approach 2: The global electric vehicle sales volume is expected to grow by 34%. As BYD being the second largest ev firm in the world with around 16% of total market share, we predict its sales revenue of EV would lead against other market competitors. Thus, we predict</p>

		the Automobiles and related products sales revenue (CNYmn) would increase by around 49% to 484000 CNYmn.
Mobile handset components, assembly service and other products sales revenue	+22%	The nature of this business segment is a supplemental role to BYD's main business for its product diversification purpose, therefore, with reference to industry growth trend and past average, we estimate this segment will grow by 22% in 2023 H1.
R&D Expenses	+98%	BYD is keen on developing and exploring technological advancements to strengthen its product development and competitive edge. The 2021 to 2022: y-o-y growth of R&D expense is over 133%. We predict that BYD would continue its ambitious development and would likely to raise its spending on R&D.
Selling, general and admin expenses	+95%	The 2021 to 2022 y-o-y growth for SG&A expense is over 112% mainly due to the increase in sales service fees and employee remuneration.
Income tax expenses	15% of operating profit	According to BYD's annual report 2022, BYD had to comply with the requirements for the national high-tech enterprises and the related preferential tax policies, therefore subsidiaries under the Group enjoy a preferential enterprise income tax rate of 15%.

9.5 Financial Projection for 1H2023E

Valuation with Forward P/E	1H2023E	2H2022A	Change
Revenue (CNYmn)	605023.85	424,061	43%
Automobiles and related products sales revenue (CNYmn)	483807.81	324,703	49%
Mobile handset components, assembly service and other products sales revenue (CNYmn)	121216.04	99,357	22.00%
COGS (CNYmn)	481987.92	351816	37%
Gross Profit (CNYmn)	123035.93	72,245	59%
R&D Expenses (CNY mn)	-36935.82	-18,654	98%
Selling, General & Admin Expenses (CNYmn)	-48882.69	-25,068	95%
Other Expenses (CNYmn)	-9494.16	-6,981	36%
Operating profit (CNYmn)	27723.26	21,542	28.70%
Non-operating income (CNYmn)	779.92	527	48.00%
Non-operating expenses (CNYmn)	-1899	-989	92.00%
Total profit (CNYmn)	26604.18	21,080	26.21%
Income tax expenses (CNYmn)	-4158.489	-3,367	23.52%
Net Profit (CNYmn)	22445.691	17713.104	27%
Number of Shares Outstanding	2,907,928,000	2,907,928,000 /	
EPS	7.718791868	6.091314503	26.70%
P/E	30.44517899	38.57952169 /	
Curr/Fwd	1.267179993		
Target Price	297.7872983		
Target Market Cap	8.65944E+11		

9.6 Valuation from BYD Electronic (International) Company Limited (0285.HK)

Valuation from BYD Electronic (International) Company Limited (0285.HK)		
Percentage Owned by BYD Company Ltd (1211.HK)		34.24%
Average Target Price (HKD)		24.94
Number of ordinary shares issued		2,253,204,500
Market Capitalization (HKD)		56194920230
BYD's stake in BYD Electronic (International) Company Limited		19241140687

9.7 Combined valuation of BYD's main business and BYD Electronic

Valuation with P/E	
Target Mkt Cap from BYD (HKD)	8.65944E+11
Target Mkt Cap from BYD Electronic (HKD)	19241140687
Total Mkt Cap(HKD)	8.85185E+11
Total Number of Shares Outstanding	2,907,928,000
Target Price Per Share (HKD)	304.4040855
Upside	29.53%

9.8 Financial performance comparison of BYD and industry peers (FY22A)

Company Name	Peer Comparison					
	Revenue (CNYmn)	Net Income (CNYmn)	Trailing P/E	P/S	Beta (5Y Monthly)	Gross Profit Margin
BYD Company Ltd (1211.HK)	424,060.64	16,622.45	34.18	1.34	0.66	17.04%
Changan (000625.SZ)	121,252.86	7,848.09	16.32	0.27	0.89	20.49%
Great Wall Motor (2333.HK)	137,339.99	4,834.35	9.87	0.59	1.27	19.37%
Geely (0175.HK)	147,964.65	2,150.47	19.77	0.68	1.21	14.12%
GAC Motor (2238.HK)	110,006.44	7,982.93	6.04	0.44	0.44	4.05%
SAIC Motor Corporation Limited (600104.SS)	744,062.90	9,714.70	12.26	0.22	-	11.79%
Average	280,781.24	8,192.16	16.41	0.59	0.89	14.48%
Median	142,652.32	7,915.51	14.29	0.52	0.89	15.58%

9.9 Peer comparison metrics interpretation

Metrics	Interpretation
Revenue	BYD's has a higher revenue than its industry peers, indicating the company's high profitability and solid revenue streams.
Net Income	BYD enjoys a higher net income than its industry average, which implies the company's high profitability and capability in cost control.
Trailing P/E	BYD has a higher historical PE multiple compared with its peer (16.41), rendering higher growth expectations from the market.
P/S	The 1.34x PS multiple indicates BYD is at a fast- growing stage as investors bid up the price in expectation of future sales growth.
Beta	BYD has a lower historical beta (0.66) compared to its peer (0.89) implying a lower historical volatility.
Gross Profit Margin	BYD enjoys a higher gross profit margin compared to its peers (14.48%), demonstrating the company's outstanding cost control and booming revenue.