

# Financial Analysis of New Energy Vehicle Companies in the Context of "Double Carbon"

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**Abstract:** With the national goal of "carbon neutrality and carbon peaking", new energy vehicles have become the trend of automobile industry development. BYD is recognized as the strongest new energy vehicle company in China, so the article takes BYD as an example, analyzes its problems and proposes improvement suggestions with the company's 2018-2021 annual report.

**Keywords:** BYD; "Double Carbon" background; Financial analysis; New energy vehicles.

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## 1. Introduction

Low-carbon economy and sustainable development are the general direction and main features of the current economic development and innovative reform of enterprises in China, and they are also the basic requirements for promoting sustainable economic and social development (Ningjin Chen,2023). Low-carbon green development is an important part of high-quality socio-economic development, which is in line with the basic laws of socio-economic development (Lanqi S et al.,2021). Under the background of "double carbon" and the guidance of the national strategic plan, it is necessary to study the new energy vehicle industry at the right time. On the one hand, people's demand for quality of life is increasing, road construction is gradually improving, and the consumer demand for cars as a means of transportation is also rising. On the other hand, domestic air pollution is very serious, and people realize that human activities have caused serious pollution and damage to the environment. In this predicament, new energy vehicles have become synonymous with environmental protection and greenness and are sought after by the public, and with affordable prices and low purchase thresholds, making it easier for people to accept and have the opportunity to try new energy vehicles (Zihui Hu,2022). In the emerging market, new energy vehicle companies should pay more attention to themselves, pay attention to financial issues, make scientific decisions and propose improvements to promote the high-quality development of our economy and the sustainable development of society.

## 2. Literature Review

In November 2020, the State Council released the New Energy Vehicle Industry Development Plan, which pointed out that by 2025, China's new energy vehicle power batteries, drive motors, vehicle operating systems and other key technologies will have made major breakthroughs. New energy vehicles are a strategic path for China to achieve carbon peak carbon neutrality, and a necessary path for China to transform from a large automotive country to a strong automotive country (Chen Li,2022). In recent years, BYD has actively seized the opportunity to strategically strengthen its business planning and investment in the automotive industry in the face of the rapid development of the new energy vehicle industry, continuously launching new models with high cost

performance, expanding battery capacity, and catering to the market and consumer demand for new energy vehicles, which have been greatly developed (Xingdong Zhang et al.,2022). Empirical studies and case studies have found that it is common for new energy vehicle companies to rely too much on government subsidies, and that government subsidies have a certain role in promoting the value of new energy vehicle companies (Anqi Qiao et al.,2022). Government subsidies are realized in BYD's financial statements as promoting the growth of corporate revenue, but also masking the actual operating conditions of BYD.

## 3. BYD Company Profile

BYD is a typical private high-tech listed company and one of the leaders in China's new energy vehicle industry, founded in 1995 by Wang Chuanfu with 20 start-up members from scratch. BYD quickly developed into one of the world's top battery manufacturers, becoming the first Chinese supplier of lithium-ion batteries for Motorola and Nokia respectively, and developing its battery business first and foremost. BYD then formally entered the automotive market and introduced talents to set up a professional research team to increase the research and development of new energy vehicles. In the past decade, BYD has continued to improve its expertise in the fields of battery, electric control and motor, which has led it to grow into one of the leaders in the field of new energy vehicles.

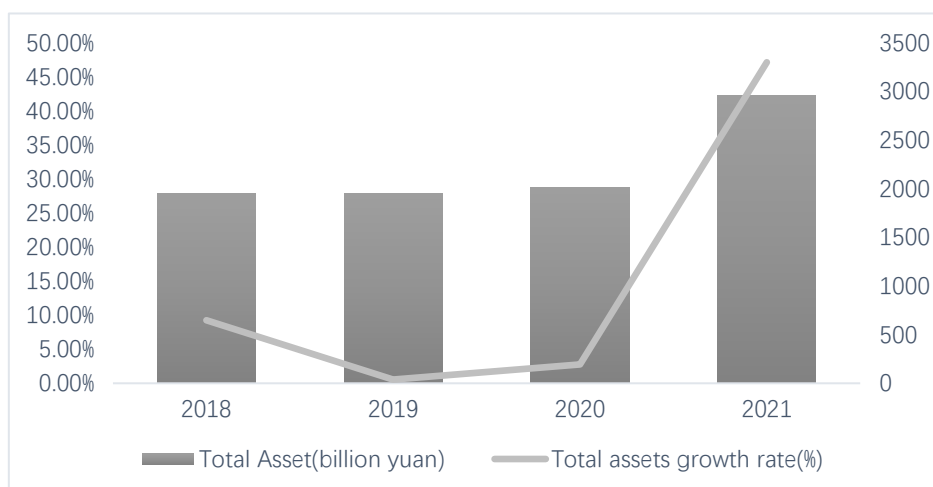
BYD has a wide business layout and diversified synergistic development around the main automotive business. BYD's business is mainly involved in three major segments, including the automotive business, cell phone components and assembly business, secondary battery and photovoltaic business. The automotive business has two sales networks (Dynasty Network and Ocean Network) and two technology platforms (DM Platform and E Platform); the cell phone parts and assembly business includes new material development, product design and development, component and complete machine manufacturing, supply chain management and other services for global famous customers; the battery business, the company is a well-known domestic power battery manufacturer, while the products include ternary batteries, lithium batteries, etc. The three business segments develop synergistically (BYD annual report,2021).

## 4. BYD Financial Analysis

### 4.1. Asset Analysis

BYD's 2021 annual report shows a veritable trend of continuous growth. As shown in Figure 1, from FY2018 to FY2020, BYD's assets fluctuated less, maintaining an asset

size of around 195 to 200 billion yuan, and in FY2021 its asset size increased significantly, rising to 295.780 billion yuan. The growth rate of BYD's total assets in the past 4 years are 9.25%, 0.55%, 2.75% and 47.14% respectively. The amount of total assets shows a trend of increasing year by year, but the growth rate fluctuates greatly.



**Figure 1.** BYD Corporation Total Assets and Total Assets Growth Rate 2018-2021

Monetary capital reflects a company's ability to cope with risk. Generally, good companies have a ratio of monetary capital to total assets greater than 25%. BYD's monetary cash ratio reaches 17% in 2021, a significant increase relative to 2020, indicating that BYD's ability to withstand risk is improving in 2021, but it has not yet reached the standard of a good company with a significant moat. As can be seen from

the graph, from 2018 to 2020, the amount of interest-bearing liabilities are greater than monetary funds, but 2021 BYD monetary funds grew more, compared with 2020, an increase of 249.30%, while interest-bearing liabilities have continued to decline in recent years, in 2021 monetary cash is 50.45 billion, interest-bearing liabilities are 36.333 billion, no risk of debt service.



**Figure 2.** BYD's Monetary Funds 2018-2021

According to Figure 2, BYD's monetary funds rose significantly in 2021, up 349.3% year-over-year. The main sources of BYD's monetary funds surge are shown in the table below.

In FY2021, BYD's net cash flow from operating activities not only has a very good growth trend, but also has a large balance after covering the net cash flow from investing activities. In addition, BYD has also raised a large amount of funds for subsequent development by issuing shares. In addition, BYD's net cash flow from operating activities has been at a very good level and much higher than net profit (as shown in Table 1), net cash flow from investing activities has been expanding, net cash flow from financing activities shows that its financing channels are open, and cash flow shows a very good development status.

**Table 1.** Sources of BYD's monetary funds

| Years   | 2018    | 2019    | 2020    | 2021    |
|---|---------|---------|---------|---------|
| Net cash flows from operating activities (billion yuan) | 125.23  | 147.41  | 453.93  | 654.67  |
| Net cash flows from investing activities (billion yuan) | -142.31 | -208.81 | -144.44 | -454.04 |
| Net cash flows from financing activities (billion yuan) | 39.17   | 36.40   | -289.07 | 160.63  |

## 4.2. Accounts Receivable Analysis

As shown in Table 2, BYD's accounts receivable declines by nearly \$5 billion in 2021, and BYD's rising accounts receivable turnover ratio in Table 4 demonstrates its increasing operational capacity and rising bargaining power

over customers. Although it can be seen that the speed of accounts receivable recovery is improving, the overall value is high, the company's funds have bad debt potential, and the accounts receivable over 1 year in Table 3 accounts for about 40% of the total accounts receivable, with a higher risk of payback.

**Table 2.** BYD Accounts Receivable 2018-2021

| Year                                   | 2018   | 2019   | 2020   | 2021   |
|--|--------|--------|--------|--------|
| Accounts Receivable (billion yuan)     | 492.84 | 439.34 | 412.16 | 362.51 |
| Accounts Receivable Turnover Ratio (%) | 2.7525 | 2.7407 | 3.6782 | 5.5802 |

**Table 3.** BYD 2021 Accounts Receivable Aging Disclosure

| Age of accounts                  | Book balance (in billions) |
|----------------------------------|----------------------------|
| Within 1 year (including 1 year) | 215.83                     |
| 1-2 years                        | 84.59                      |
| 2-3 years                        | 51.84                      |
| Over 3 years                     | 31.79                      |
| Subtotal                         | 384.05                     |

## 4.3. Debt analysis

The growth rate of total liabilities in 2021 is 40.25%, which is more than 30%, because BYD is short of funds and has increased the accounts payable by about 30.18 billion yuan. It

can be seen that the growth of BYD's assets in this year did not come from the growth of performance, but from the increase of liabilities and financing. BYD's debt structure, based on its proportional structure and variability, its main items of concern are listed below.

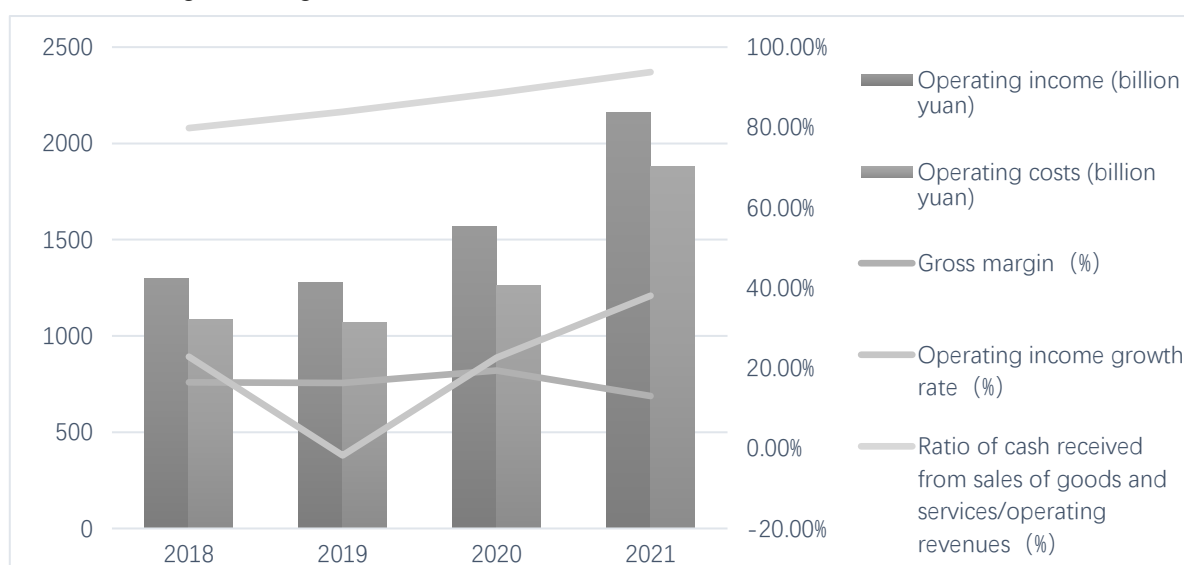
**Table 4.** BYD's liability structure 2018-2021

| Year                                    | 2018  | 2019  | 2020  | 2021  |
|---|-------|-------|-------|-------|
| Percentage of short-term borrowings (%) | 19.42 | 20.62 | 8.16  | 3.45  |
| Percentage of long-term borrowings (%)  | 3.52  | 6.11  | 7.34  | 2.96  |
| Interest-bearing debt ratio (%)         | 30.42 | 36.57 | 26.01 | 11.97 |

Short-term borrowings accounted for 20.62% in 2019 to 3.45% in 2021, decreasing year by year; long-term borrowings accounted for a rapid decline to 2.96% in 2021; interest-bearing debt ratio from 36.57% in 2019 to 11.97% in 2021, it can be seen that BYD's debt service pressure is reduced year by year. Secondly, it can be seen from the balance sheet that short-term borrowing, long-term borrowing and other interest-bearing borrowing items are reduced; notes

payable, accounts payable, other payables and other external funding items are increased, which generally shows the characteristics of reduced debt service pressure and more external funding, which is the performance of BYD's increasing bargaining power in the industry chain.

## 4.4. Profitability Analysis



**Figure 3.** BYD Revenue and Gross Margin 2018-2021

In 2018, BYD's operating income increased by 22.79% year-on-year, a significant growth rate, due to BYD's active expansion of urban rail transit business, operating income

increased. 2019 BYD achieved operating income of 127.73 billion yuan, the growth rate is negative because of the new energy vehicle sales by subsidies and some regions to switch

to the national six standards in advance, the second half of the year showed a significant decline trend. By 2020 and 2021, new energy vehicle production and sales gradually pick up, BYD revenue growth rate is greater than 10%, good performance. BYD's "cash received from sales of goods and services / operating income" ratio for the past four years has been below 100% each year, with an average value of 87.02%

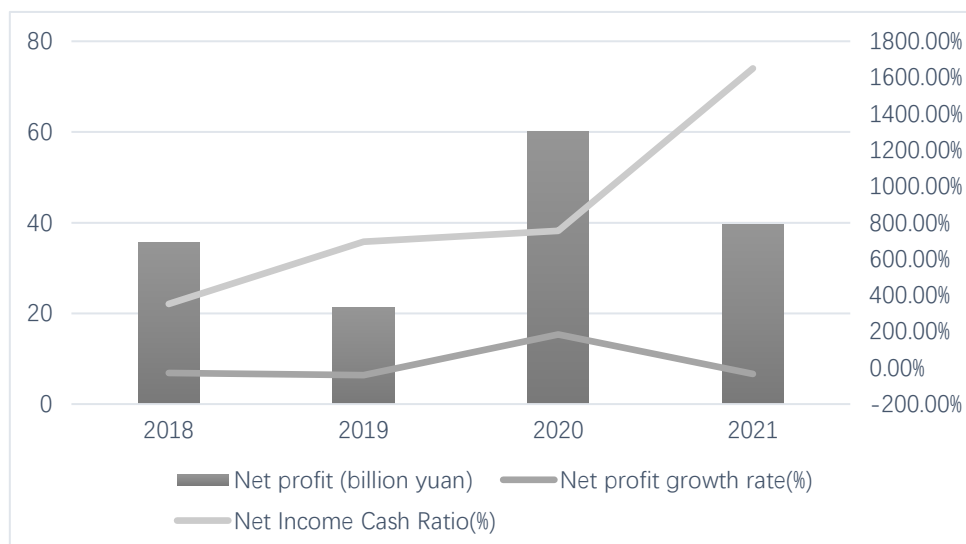
in the past five years, indicating that BYD's cash generated from sales of goods and services is very low, and is related to the high amount of accounts receivable. The average gross margin of BYD in the past four years is 16.82%, which is less than 40%, indicating that the profitability of BYD's products is not strong.

**Table 5.** BYD's main business composition by product in 2021

| Product Categories              | Secondary Charging Battery & Photovoltaic | Cell phone parts, assembly and other products | Automotive, Automotive Related Products and Others | Other |
|---------------------------------|---|---|--|-------|
| Operating income (billion yuan) | 164.71                                    | 864.54  | 1124.89  | 7.27  |
| Operating Costs (billion yuan)  | 145.05                                    | 799.07  | 929.27   | 6.60  |
| Operating profit (billion yuan) | 19.66                                     | 65.47   | 195.62   | 0.67  |
| Gross margin                    | 11.94%                                    | 7.57%   | 17.39%   | 9.31% |

As can be seen from Table 5, automobiles, auto-related products and other products are the main source of revenue for BYD, and the profit margin is also the highest, and several other types of products have less revenue and low gross profit,

dragging the leg for BYD's profitability. 2021 BYD's comprehensive gross profit margin is 12.97%, ranking fourth in the same industry, the first is 19.85%, all of which show that BYD's product profitability The space for progress.



**Figure 4.** BYD 2018-2021 net profit and its growth rate

BYD's net profit growth rate for 2018-2021 is -27.67%, -40.42%, 183.83% and -34.03%, respectively, with great fluctuations. 2018-2020 BYD's net profit decreases year by year because the sales of new energy vehicles in these three years are affected by the subsidy withdrawal and the early switching of the national six standard in some areas. The net profit of BYD has been decreasing year by year due to bad debt loss and inventory loss in recent years. 2020, the new

energy vehicle production and sales volume will gradually pick up, and BYD's operating income and net profit will increase significantly due to the industry development dividend. 2021, the industry growth rate will slow down, the sales growth rate will decrease, and BYD's net profit growth rate will decrease accordingly. Overall, the amount of BYD's net profit shows an overall downward trend and poor growth.

**Table 6.** BYD 2018-2021 government subsidies as a percentage of net profit

| Year                                | 2018    | 2019   | 2020   | 2021    |
|-------------------------------------|---------|--------|--------|---------|
| Net profit (billion yuan)           | 35.56   | 21.19  | 60.14  | 39.67   |
| Government subsidies (billion yuan) | 36.32   | 14.84  | 20.47  | 58.67   |
| Government subsidies/net income     | 102.14% | 70.03% | 34.04% | 147.90% |

After the inflow of government subsidies, it will directly bring the increase of corporate profit. Government subsidies have a long-term positive effect on BYD's earnings, but also from the side to reflect BYD's dependence on government subsidies, and even from the statements show a negative to positive trend. However, the subsidy retreat policy, BYD need to have a sense of crisis, clear government subsidies is only a

temporary measure, the enterprise should be reasonable use of subsidies to ensure its normal operation, but also actively looking for other sustainable and effective ways to fundamentally improve the profitability of the enterprise.

## 5. Problems of BYD

Product profitability is not strong. BYD's revenue growth

in the past two years is very good, the revenue strength is very strong, and the products are easy to sell. However, the cash content of BYD's operating income is very low, and the profitability of the products is not strong. Cars, auto-related products and other products are the main source of revenue for BYD, and the profit margin is also the highest, several other types of products have low revenue and low gross profit, dragging the leg for BYD's earnings. However, compared with the same industry, the gross profit of its auto-related products is not high. The primary profit of BYD's earnings comes from the subsidies given by government departments for so many years. The proportion of financial subsidies in BYD's main business income is too large, and the profitability is still insufficient.

BYD's accounts receivable turnover rate and current assets turnover rate are low, lower than other companies of the same scale. Therefore, BYD's operating efficiency and operating capacity is low, with slow recovery of accounts receivable, weak liquidity, possible bad debt risk, low liquidity, and a more likely risk of breakage of the capital chain, which can easily lead to operating risks such as poor capital turnover and the inability of liquid assets to cope with unexpected situations.

## 6. Countermeasures and Suggestions

Enhance the profitability of the enterprise. BYD is now operating income is very considerable, but profits are difficult to improve, first of all, should abandon those high cost, low gross profit of low-yield products; secondly, we should also focus on technology research and development innovation, reduce the cost rate, to create a profit-oriented products; finally, we must also increase the marketing promotion efforts, break innovative marketing methods, strengthen marketing management, when marketing and collection management and product sales are improved, it will be able to Promote the company's current assets acquisition and accumulation.

The policy support system for new energy vehicles is relatively complete. Early purchase subsidies and tax incentives soon made a part of the enterprises advanced in the new energy vehicle industry "rich", but this subsidy policy in the second half of 2019 will start a full retreat, local subsidies

will also be completely abolished, BYD suffered a large impact. In order to cope with this crisis, BYD should maximize the use of policy support part, increase the investment in independent R & D design, focus on technological innovation, especially the core technology and key components technology research and development.

Due to the slow turnover of accounts receivable, BYD should improve its accounts receivable management system by focusing on customers' performance evaluation and operating ability, and analyzing the company's reputation and operating behavior, so as to improve its accounts receivable management capability. Firstly, pay attention to the ageing analysis, pay attention to the abnormal arrears in time, and do a good job in reminding the collection of customers with bad reputation evaluation results or turn bad to ensure timely collection. Secondly, innovative sales model. In addition to sales, salesmen have to track sales payments and recover accounts.

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