

A Study of 4 Automobile Companies in China through DuPont Analysis

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Abstract: The automobile sector is one of the sectors that can influence the Chinese economy. The profitability of the automobile companies mainly depends on the sales amount of the automobiles. On the other hand, the quick development of the electric vehicle industry and the support policies for electric vehicles in China are the other factors that can increase the profitability of these companies. The relevant research questions of this study are: (1) Which automobile company has the best profitability in the peer group during the period of pandemic? (2) The amount of sales of electric vehicles is the key factor in the influence of profitability of automobile companies? The DuPont analysis was used in this study. The relevant finding is that the amount of sales of electric vehicles is positive for the net profit of automobile companies. BYD COMPANY and GAC GROUP have a better performance in net profit because their market share of BEV pure electric vehicles is high in the global market of BEV pure electric vehicles.

1. Introduction

The Chinese automobile industry's sales depend on China's economic situation. The cost of making the automobile or the demand for the automobile in the market can influence the profitability of the automobile companies.

Furthermore, in these years, the economy of the automobile industry experienced the evolution of the development of electric vehicles. When people pay more attention to the concept of green energy, the Chinese government also wants to promote the use of electric vehicles. Many companies of automobiles try to increase the proportion of sales of electric vehicles, instead of traditional vehicles because the market of sales of electric vehicles will be big in the future.

The targets of this study are BYD COMPANY, GEELY AUTO, GWMOTOR, and GAC GROUP because these four automobile companies are famous in the Chinese automobile sales market.

The objectives of the study are below:

(1) Analyzing the performance of BYD COMPANY, GEELY AUTO, GWMOTOR, and GAC GROUP.

(2) Using the Du Pont model to evaluate the performance of BYD COMPANY, GEELY AUTO, GWMOTOR, and GAC GROUP.

(3) Identifying the relationship between Du Pont analysis indicators and profitability.

I compared the profitability of these four automobile companies in China in 2020-2022. After that, I tried to find the most profitable automobile company during the pandemic. The proportion of sales

of electric vehicles is the key factor for the net profit of these four automobile companies.

According to the DuPont analysis, BYD COMPANY has the highest net profit among these 4 automobile companies and focuses more on the development and sales of electric vehicles. The data analysis of automobile companies will illustrate more relevant information about this phenomenon.

2. Literature review

Financial ratios are used very commonly in the areas of academics, financial analysis, or loan relationships. Financial ratios can be a reference to the financial position of a company. Moreover, it can compare with the profit of a company in different periods. The financial analysis can help a company determine its sales strategy according to the relevant analysis results. How to use the resources of a company to create more profit? (Maranville and Liesz, 2008).

There are many models for the analysis of the operation of private companies. In these different models, the model of DuPont analysis is a useful model for the assessment of the companies' profitability. It is not common to use the DuPont analysis model for the companies' risk analysis. However, from the perspective of business companies, it is very valuable for financial analysis (S. Christina Sheela and Dr. K. Karthikeyan, 2012).

DuPont analysis is a methodology of ratio analysis for the return and profitability of a company. The result of a company's profitability ratios can provide useful information about the company's operation. Additionally, the ratios of the return on equity (ROE) and return on assets (ROA) can give a clear understanding of the return of owners and profitability of companies. Sometimes managers may not easily have a deeper understanding of the relationship between investment and profit but the methodology of DuPont analysis can help them in the relevant understanding (Maranville and Liesz, 2008). [1, 2]

In DuPont analysis, return on equity (ROE), return on asset (ROA), and return on sales (ROS) (also named as net profit margin) are the three indicators for measuring the profitability of companies (Herciu and Ogrea, 2010).

DuPont analysis is a common analysis in financial statements. Net profit margin and asset turnover are the two multiplicative components of return on assets (B. McClure). Some research reveals that there is a positive relationship between the change in asset turnover and the change in earnings in the future (M. Soliman).

The DuPont analysis includes some equations below:

(1) Return on equity=Net profit margin x Asset turnover x Financial leverage

(2) Return on assets=Net profit margin x Asset turnover

(3) Net profit margin=Net income/Sales

(4) Asset turnover=Sales/Total assets

(5) Financial leverage=Total assets/Stockholder's equity

Because of the relationship between ROE, ROA, and ROS in the equation, the increase of ROA or ROS is an important condition for the increase of ROE (Herciu and Ogrea, 2010). [3, 4]

Return on assets (ROA) provides different views about management efficiency and it also shows the profit that the companies earn in every dollar of the companies' assets (S. Ross, J. Jaffe, B. Jordan, and R. Westerfield). [5]

Return on equity (ROE) can show the growth of companies at an acceptable rate or not for the management of companies. Additionally, it can be a ratio of measuring the effectiveness of using investors' money from the management perspective of companies. According to the content of the equation, it also illustrates the return rate for the companies that earn on the stockholder's equity. Since the denominator is the stockholder's equity in the equation, this ratio is affected by the debt of the financing assets (B. McClure). The ratio of ROE can know the companies' profitability through

the measure of the return of investors (J.F. Mahon and J. J. Grif-fin). [6, 7, 8]

3. Methodology

The four automobile companies in China, BYD COMPANY, GEELY AUTO, GWMOTOR, and GAC GROUP are selected in this study. I analyzed the performance of these four companies through DuPont analysis. Net profit margin, asset turnover, and financial leverage are the three parts of ROE.

To compare the performance of these four companies more easily, I ranked the relevant data of ROE, ROA, ROS, and net profit. The main sources of data are the data in the year 2020-2022 from AAstocks.

In these relevant data, I try to find the company with the best profitability in these four companies through DuPont analysis.

4. Data and results

I organized the data of BYD COMPANY, GEELY AUTO, GWMOTOR, and GAC GROUP in the year 2020-2022. Tables 1, 2, and figure 1 show the items of net profit, ROE, ROA, and ROS according to the DuPont analysis.

Table 1: Four automobile companies in China

Rank	The name of automobile companies	Net Profit (thousand)	ROE	ROA	ROS
1	BYD COMPANY	7,886,567RMB	8.58	2.16	2.69
2	GAC GROUP	7,152,671.67RMB	7.48	4.41	8.88
3	GWMOTOR	6,784,875.33RMB	10.95	3.92	5.38
4	GEELY AUTO	5,079,836.67RMB	7.78	3.88	4.66

Source: AAstocks. The average value of the relevant data in the year 2020-2022 is calculated by the author. [11]

Note: Net Profit in RMB. Thousand, ROE, ROA, and ROS in percentage.

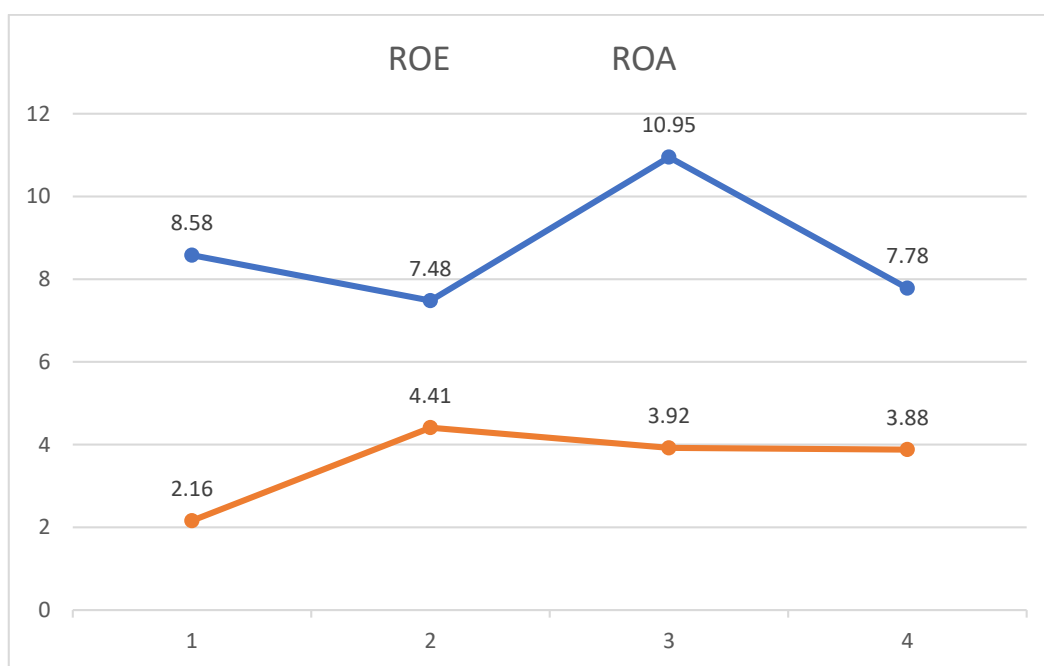
Table 1 illustrates automobile companies' financial performance. BYD COMPANY had the largest amount of net profit among these four automobile companies. It not only had the greatest performance of net profit but also had a leadership position in the Chinese electric vehicle industry. Its amount of sales of electric vehicles is the largest among these 4 companies and it made its net profit becomes largest.

However, BYD COMPANY had different performances in other performance indicators. It ranked number 2 in ROE, and number 4 in ROA and ROS. The relevant performance indicators of BYD COMPANY indicate that its ROA and ROS are relatively low in the peer group. Although it had a high net profit, its efficiency in using assets or profitability can be improved. Furthermore, its efficiency in creating more returns for shareholders can also be improved. [9, 10]

Table 2: Ranking data of automobile companies

Net Profit	ROE	ROA	ROS
BYD COMPANY	GWMOTOR	GAC GROUP	GAC GROUP
GAC GROUP	BYD COMPANY	GWMOTOR	GWMOTOR
GWMOTOR	GEELY AUTO	GEELY AUTO	GEELY AUTO
GEELY AUTO	GAC GROUP	BYD COMPANY	BYD COMPANY

Source: The data in the year 2020-2022 from AAstocks. [11]



Blue line: ROE		Yellow line: ROA	
1.		BYD COMPANY	
2.		GAC GROUP	
3.		GWMOTOR	
4.		GEELY AUTO	

Source: AAstocks. The average value of the relevant data in the year 2020-2022 is calculated by the author. This figure is made by the author. [11]

Figure 1: ROE and ROA

According to the information in table 2 and figure 1, the ROE of BYD COMPANY ranked number 2 and, its ROA ranked number 4. Although the high sales of electric vehicles brought a high net profit for BYD COMPANY, the increased sales of electric vehicles cannot give the greatest performance in its ROE and ROA in the peer group. Compared with the other three automobile companies, BYD COMPANY's ability to generate net income using its total assets is relatively low and its ability to generate net income using its equity is average level.

There may be a strong relationship between the high sales of electric vehicles and high net profit in the situation of BYD company. The supporting policies of electric vehicles in China and the quick development of electric vehicles in the global market are the other reasons for its high net profit to some extent.

The ROE of GAC GROUP ranked number 4 and, its ROA ranked number 1. GAC GROUP not only had a good net profit but also had a great performance in its ROA in the peer group. Compared with the other three automobile companies, GAC GROUP had an upper-medium level of net profit and ROA. Moreover, GAC GROUP's ability to generate net income using its total assets is the best.

The ROE of GWMOTOR ranked number 1 and, its ROA ranked number 2. Although GWMOTOR had a great performance on ROE and ROA, its net profit is not very high among these 4 companies. Its low market share of electric vehicles may harm its net profit.

The ROE and ROA of GEELY AUTO ranked number 3. GEELY AUTO had a weak performance on ROE and ROA. Additionally, its net profit is the lowest in the ranking of net profit of these 4 companies. Generally, its financial performance is the worst.

In the development of the market of pure electric vehicles, the sales volume of pure electric

vehicles in the global second quarter had increased to 2.15 million units. Compared with the relevant data from last year, the sales volume of pure electric vehicles this year grew significantly. We can check the market share of BEV pure electric vehicles in the global second quarter of 2023 in table 3.

Table 3: The market share of BEV pure electric vehicles in the global second quarter of 2023

Ranking	Brand	Market share (%)
1	Tesla	21.7
2	BYD	16.2
3	GAC Aion	6
4	Volkswagen	4.7
5	SGMW	4.4
6	Hyundai	3.6
7	BMW	3.6
8	Mercedes-Benz	2.8
9	Kia	2.0
10	Audi	1.9

Source: Trendforce [12]

In light of the data in table 3, in the market share of BEV pure electric vehicles in the global second quarter of 2023, the market share of BYD COMPANY is 16.2% and ranked number two. On the other hand, the market share of GAC Aion is 6% and ranked number three.

In the background of the trend of development of electric vehicles, since the market share of BEV pure electric vehicles of BYD COMPANY and GAC Aion is high, their net profit is also high. On the contrary, the net profit of GWMOTOR and GEELY AUTO is lower than the net profit of BYD COMPANY and GAC GROUP because their market share of BEV pure electric vehicles is low.

5. Conclusion

After analyzing the relevant data above, I summarized three points according to Dupont's analysis.

(1) The amount of sales of electric vehicles had an impact on the net profit of the automobile companies. If the amount of sales of electric vehicles is enormous, the net profit of the automobile companies will be more prominent. The result of the data shows that the net profit of BYD COMPANY and GAC GROUP is high in the background of their high market share of BEV pure electric vehicles in the global market.

(2) BYD COMPANY has the highest net profit during the pandemic period and its large sales amounts of electric vehicles provide it a good revenue. The sales amounts of electric vehicles are the key factor for the profitability of automobile companies in the future. The development of electric vehicles in the global market is important for the growth of the net profit of automobile companies.

(3) BYD COMPANY has the greatest performance of net profit and market share of BEV pure electric vehicles but the performance of its ROA and ROS is the worst. GAC GROUP has good performance in net profit, ROA, and ROS, however, its performance of ROE is the worst. Although the ROE of GWMOTOR is the highest, it has a normal performance in net profit, ROA, and ROS. GEELY AUTO has a weak performance in net profit, ROE, ROA, and ROS.

On the other hand, it needs to pay attention to the cost of making electric vehicles. The trend of development of electric vehicles would give an optimistic net profit for the automobile industry in the future. Nevertheless, the relevant net profit is affected by the cost of making electric vehicles. The cost of making electric vehicles is influenced easily by the market of raw materials.

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