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Analysis of Investment Value of New Energy Vehicles

Taking Chang'an Automobile as an Example

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***Abstract*—The new energy automobile industry is of great significance to alleviating energy pressure and reducing environmental pollution. This paper takes the new energy automobile industry as the research object, and takes Chang'an Automobile as an example. Combining the relevant knowledge of industry investment theory and financial statement analysis, this paper deeply analyzes and judges the investment value from the external environment and intrinsic value.**

Keywords—new energy vehicles; investment value; Chang'an Automobile

I. INTRODUCTION

In recent years, China's economy has developed rapidly, at the same time; China has paid a heavy price for environmental pollution. The improvement of people's living standards has gradually increased the demand for cars. However, the global energy shortage and the gradual increase in world crude oil prices are becoming increasingly significant. Then, new energy vehicles that can reduce the demand for oil and reduce the pollution of automobile exhaust to the environment have emerged, and new energy vehicles are the best solution to solve these two problems.

Since 2008, Chang'an Automobile has been involved in the research and development and manufacturing of new energy vehicles and related components. At present, Chang'an Automobile Company has launched a series of classic new energy vehicles, such as CS series, Yidong series, Benben, etc., and Chang'an Automobile adheres to the concept of "energy saving, environmental protection and technology intelligence". This paper takes Chang'an Automobile, a representative enterprise in the new energy automobile industry, as an example to analyze the investment value.

II. DEFINITION AND CLASSIFICATION OF NEW ENERGY VEHICLES

New energy vehicles refer to vehicles that use unconventional vehicle fuels as a power source, integrated advanced technologies in power control and driving, and have advanced technology, new technologies and new structures. New energy vehicles include pure electric vehicles, hybrid vehicles, fuel cell electric vehicles and other new energy vehicles [1].

III. INDUSTRY CHARACTERISTICS OF NEW ENERGY VEHICLES

A. The Policy Orientation Is Obvious

As a strategic emerging industry, the Chinese government has actively guided the new energy automobile industry in terms of policies. Since 2008, the state has successively issued a number of new energy vehicle industry subsidies and preferential policies, and increased the promotion of new energy vehicles, which has greatly promoted the development of new energy vehicles. In November 2013, the Chinese government determined that 28 cities or regions across the country have become the first cities to promote and apply new energy vehicles. This means that the development of new energy vehicles is a formal transition from "demonstration application" to "promotion application".

B. Investment and Operating Costs Are High

As a strategic emerging industry, the new energy automobile industry is a capital-intensive industry, which requires a large amount of capital investment and technology research and development in the early stage of development. However, the rate of capital recovery in the early stage of enterprise construction and operation is also very slow, and there may even be short-term losses, which puts a lot of pressure on the internal capital turnover. Moreover, companies need to constantly follow up the development of core technologies to occupy the new energy market, which also requires a lot of money to support.

C. Investment in New Energy Projects Is Unscientific

With the rise of new energy vehicles, many companies want to take a slice of this market and compete to develop new energy vehicles. However, if only by the subjective intention of enterprise decision makers to invest, not for scientific feasibility study, is likely to lead to cannot obtain the expected return for decision-making errors, and it will bring serious economic burden and unnecessary losses.

D. Cash Flow Is Tight and the Payback Period Is Long

In the initial stage of construction, new energy automobile enterprises have great demand for funds due to the introduction of advanced technology and the purchase of related facilities and equipment. At the same time, the new energy auto industry has a long payback period, which will result in insufficient capital flow for enterprises, which will affect the investment in research and development funds and seriously affect the technological innovation of enterprises.

IV. ANALYSIS OF EXTERNAL MACRO ENVIRONMENT OF CHANG'AN AUTOMOBILE

A. Political Environment

Since 2001, the Chinese government has successively issued a number of policies to assist the development of new energy vehicles. Especially in 2014, the Chinese government has vigorously developed the new energy automobile industry, and has given great support to enterprises from the central to the local. So far, nearly 90 policies have been issued on the promotion and application of new energy vehicles, financial subsidies, regulatory standards, operation management, business models, infrastructure, access management, and charging prices. This is to accelerate the industrialization of new energy vehicles in China. It has reached a critical role.

In September 2001, the Chinese government promulgated the "863" electric vehicle Zhengda special project, which specifically defines and sorts out the electric vehicles in China, puts forward the strategic layout of "three vertical and three horizontal", and understands the new energy vehicles. The industrial structure has launched a grand chapter in the planning of electric vehicles in China. In 2014, a total of nine policies on new energy vehicles were issued, including the “Notice on Further Promoting the Promotion and Application of New Energy Vehicles”, “Notice on Issues Concerning Electricity Price Policies for Electric Vehicles”, and “Exem” New Energy Vehicle Promotion Work Plan for Public Service Fields such as Beijing-Tianjin-Hebei Bus” have helped the construction of new energy vehicles and the development of the market from both positive and side-supporting perspectives. The frequent introduction of new energy policies has cleared the way for the development of new energy vehicles in the future, and has made domestic auto companies feel the determination of the country to promote the promotion of new energy vehicles.

B. Economic Environment

Since the reform and opening up, China's economy has experienced rapid growth. The undeniable fact is that the rapid growth of China's economy in the past was at the expense of the environment. Since China’s “Low Carbon Economy and China Energy and Environmental Policy Seminar” was held in Beijing in 2007, China has made tremendous efforts in the construction of ecological civilization and has made tremendous contributions to promoting the development of low-carbon economy. With the advocacy of low-carbon economy, the development of new energy vehicles has a good economic environment. In addition, with the rapid development of China's economy, people's living standards have been greatly improved, people are no longer satisfied with the solution to the problem of food and clothing, and there is more pursuit of quality of life. People want to get a fast and convenient way of travel, so the demand for automobiles is increasing year by year, so with the implementation of low-carbon economy, people's awareness of environmental protection is getting stronger and stronger, and more people will choose new energy vehicles. Therefore, new energy vehicles have huge potential market.

C. Social Environments

The social environment is a comprehensive environment including population factors, social culture, lifestyle, consumption, cultural traditions and values of the residents in the area. With the continuous development of China's economy, the people's living standards have been continuously improved, and the way of life of the Chinese people has quietly changed. People's lives are not as important as food and clothing issues before reform and opening up. The increase in income and the shift in consumer psychology have made it impossible for a personal car to be out of reach. The absolute index of the population determines the wide expansion of the automobile market in China. In addition, the improvement of people's living standards and the increasing demand for convenient travel conditions will make the automotive industry promising.

In addition, China is a country with thousands of years of history. From the perspective of cultural heritage, China has always been a nation that advocates conservation and promotes frugality. Compared with traditional fuel vehicles, the demand for energy in new energy vehicles is often much lower. For example, from the perspective of mileage, the fuel consumption per kilometer of new energy vehicles is only 30% of that of traditional fuel vehicles, and even lower. . In other words, the use of new energy vehicles not only protects the environment but also saves resources. In this regard, the national central government and local governments are more interested in new energy vehicles. I believe that in the near future, the public will have a deep understanding of new energy vehicles, and there will be a large number of people willing to join the ranks of new energy vehicle users.

D. Technical Environment

Compared with European and American countries, China's new energy electric vehicles started slightly later, both in key components and vehicle technology are at a disadvantage, but China strongly supports the research and development of new energy vehicles in this emerging field, so China and Europe and the United States The gap is not so disparate. At present, from the brand share of new energy electric vehicles, Chang'an Automobile ranks first in the world, surpassing the two foreign auto companies of Tesla and BMW in the United States, and has a relatively strong advantage in the domestic market. The rate is in BYD, Geely, SAICMOTOR and other auto companies. In general, China's local auto companies have certain technological advantages in new energy technologies, and the Chinese government's

strong support for new energy vehicles, including policy and capital, provides a good environment for the research of new energy technologies.

V. ENTERPRISE VALUE ASSESSMENT OF CHANG 'AN AUTOMOBILE

A. Financial Statement Analysis of Chang 'an Automobile

1) Balance sheet: It can be seen from "Table I" that, except for 2012, the annual growth rate of total assets in 2011-2016 is greater than the growth rate of total liabilities, indicating that 2011 Chang'an Automobile invested a lot of money to develop new energy vehicles, which led to 2012. The annual growth rate of total assets is far less than the growth rate of total liabilities. In 2013, although the total asset growth rate of 15.714% was not very high, it exceeded the total debt growth rate of 13.012%. In 2014, Chang'an Motor's first new energy model, Chang'an Benben, was launched in 2014. The total asset growth rate was 30.587%, the total liabilities were 27.379%, and the shareholders' equity growth rate was 36.564%. It can be seen that the new energy vehicle is has brought good returns for Chang'an Automobile Company. The growth rate of total assets in 2015-2016 has declined. The reason may be that more and more auto companies are starting to develop new energy vehicles and seize some market share. But in general, Chang'an Automobile also has a certain leading edge.

TABLE I. GROWTH RATE OF MAJOR ITEMS ON THE BALANCE SHEET

Items	Years					
	2016	***2015***	***2014***	***2013***	***2012***	***2011***
Total assets	19.121	20.387	30.587	15.714	26.238	19.949
total liabilities	14.332	24.888	27.379	13.012	40.410	10.118
Minority equity	4.292	16.318	31.423	13.433	34.654	115.944
Stockholder equity	26.861	34.249	36.564	21.110	5.067	38.409

2) Income statement: "Table II" is the profit statement of Chang'an Automobile Company in 2010-2016, which reflects the operating results of Chang'an Automobile Company during this period. It can be seen from the table that the abnormally low operating profit in 2011 and 2012 is related to economic development and product market demand, and is also related to Chang'an Automobile's own strategy. In 2011 and 2012, the company invested a lot of money in the research and development of new energy vehicles, which greatly increased the cost. 2014 Chang'an Benben 2014 version went on the market, which brought huge profits to the company. The operating profit growth rate in 2014 was 129.24%, indicating that the new energy automobile business developed well, the operating performance of each module was outstanding, and the operating profit increased. Which is also is also a favorable factor for total profit and net profit growth.

TABLE II. MAIN ITEMS OF THE INCOME STATEMENT

Items	Years					
	2016	***2015***	***2014***	***2013***	***2012***	***2011***
Operating income	7854244	6677158	5291333	3848186	2946259	2655185
Operating profit	945817	958746	717652	313053	92248	75275
Total profit	1034982	1001189	753883	331556	132743	94863
Net profit	1027659	992255	751798	346849	141501	92565

Since 2001, the Chinese government has successively issued a number of policies to assist the development of new energy vehicles. Especially in 2014, the Chinese government has vigorously developed the new energy automobile industry, and has given great support to enterprises from the central to the local. So far, nearly 90 policies have been issued on the promotion and application of new energy vehicles, financial subsidies, regulatory standards, operation management, business models, infrastructure, access management, and charging prices. This is to accelerate the industrialization of new energy vehicles in China. It has reached a critical role.

B. Analysis of Chang'an Automobile's Financial Efficiency

1) Solvency ratiot: From "Table III", it can be seen that Chang'an Automobile's solvency is strong in 15 and 16 years, while short-term solvency in 10-14 years is generally weak. It can be seen from the above table that the working capital of the company has been negative for 10 to 14 years. When the working capital is less than zero, Chang'an Automobile is using long-term assets for financing with current liabilities, and its solvency is very poor. According to the data, Chang'an Automobile's solvency has been greatly improved. From the perspective of various ratio indicators, the flow rate of Chang'an Automobile is not much different from the average level of the automotive industry of 1.1. In 16 years, it is just the same as the average level of the industry. The data for 10-15 years is around 0.8, which is less than 1, so that the ratio is very dangerous. Chang'an Automobile may encounter the risk that short-term liabilities will not be paid off in time. Other short-term

solvency indicators performed well in 2014 and 2015, but there was a downward trend in 2016, especially the cash flow ratio suddenly dropped to 3.81%. In the long-term solvency indicator: the ratio of property rights and asset-liability ratio deteriorated year by year. From the above analysis, it can be concluded that Chang'an Automobile's debt has increased significantly in recent years. After analysis, this is mainly due to the vigorous development of new energy vehicles. The large amount of investment at this stage will inevitably lead to an increase in liabilities, which will make the financial situation sluggish, but once the research and development is successful and the listing is made, it will obtain a huge profit.

TABLE III. ANALYSIS OF SOLVENCY RATIO

Items	Years					
	2016	***2015***	***2014***	***2013***	***2012***	***2011***
Working capital	600330	134552	-339253	-717374	-564636	-469332
Current ratio	1.1	1.03	0.91	0.75	0.78	0.77
Quick ratio	0.98	0.87	0.75	0.59	0.58	0.57
Cash ratio	41.31	35.87	24.65	14.9	16.67	23.93
Cash flow ratio	3.81	10.77	9.61	6.38	2.03	1.02
Assets and liabilities	59.3	61.78	63.47	65.07	66.63	59.9
Property ratio	138.43	147.13	154.48	161.03	170.17	138.94

2) Operational capability analysis: Since 2011, Chang'an Automobile's accounts receivable turnover rate, current assets turnover rate, fixed asset turnover rate and inventory turnover rate have been lower than the efficiency of 2010, indicating that the company's operational capacity has declined, and Chang'an's turnover days have increased. The poor liquidity also reflects the short-term solvency problem. In addition, in 2011, Chang'an Automobile introduced a large number of foreign high-tech equipment, which greatly increased the proportion of fixed assets, resulting in a decrease in the turnover rate of fixed assets. As a result, the fixed asset turnover rate has decreased and its turnover days have increased.

TABLE IV. OPERATING CAPACITY RATIO ANALYSIS TABLE

Items	Years					
	2016	***2015***	***2014***	***2013***	***2012***	***2011***
Accounts receivable turnover	66.16	81.71	92.92	94.04	62.41	58.37
Current asset turnover	1.34	1.53	1.84	1.87	1.67	1.65
Turnover of fixed assets	5.03	4.47	3.61	2.94	2.96	4.24
Turnover of total capital	0.8	0.84	0.86	0.77	0.71	0.79
Inventory turnover	8.36	7.27	7.66	6.59	5.31	6.77

3) Profitability analysis: From "Table V", it can be seen that Chang'an Automobile's profitability in 2010-2012 has dropped sharply. In 2011, its main business profit margin was the lowest. The data mining analysis is as follows: By the end of 2011, the "fast train" growth model of the Chinese auto market has ended, the market has become saturated, and the Chinese government has also abolished the favorable policy of small-displacement vehicle purchase tax, coupled with serious environmental problems. In some cities, the policy of restricting purchases was introduced. At that time, people's lack of understanding of new energy vehicles directly led to a sharp decline in sales of Chang'an Automobile. According to preliminary data, in the environment of the government's strong support for new energy vehicles, the sales volume of Chang'an Automobile in 2014 has suddenly increased. It is expected that the overall profitability of Chang'an Automobile will be relatively good.

TABLE V. PROFITABILITY RATIO ANALYSIS TABLE

Years	Items			
	Main business profitability	***Net sales rate***	***Rate of return on assets***	***Gross profit margin***
2016	13.27	13.08	18.7	17.89
2015	15.61	14.86	20.37	20.02
2014	14.33	14.21	20.65	18.23
2013	14.22	9.01	16.7	——
2012	15.83	4.8	12.23	——
2011	12.76	3.49	11.79	——
2010	15.4	6.06	15.73	17.47

4) Compared with the same industry: It can be seen from "Table VI" that although Chang'an Automobile's operating income and business growth are inferior to that of SAIC and BYD, by comparing the growth rates of SAIC

and BYD, it can be seen that Chang'an Automobile's operating growth rate is among the three companies. At a higher level, the above analysis can conclude that BYD's sales growth ability is good.

TABLE VI. COMPARATIVE ANALYSIS OF 2016 REVENUE GROWTH RATES OF COMPANIES IN THE SAME INDUSTRY

Company Name	**Operating income**			
	2016	***2015***	***Growth***	***Income growth rate***
Chang'an	7854244	6677158	1177086	0.176
SAICMOTOR	74623674	66137393	8486281	0.128
BYD	110347000	8000897	2346103	0.293

VI. CONCLUSION

At this stage, new energy vehicles have become an important breakthrough for the country to revitalize the economy, improve the environment and optimize the structure of the automobile industry. Under the continuous stimulation and promotion of the policies promulgated by the state, new energy vehicles began with the "demonstration application" and proceeded to the process of "full promotion". Based on the above analysis of the external environment and intrinsic value of Chang'an Automobile, the paper draws the following conclusions:

From the perspective of the industry, the new energy vehicle has just emerged, which is in its infancy, and it takes a certain amount of time to break through technology, cost and market size. The country's strong support has brought full confidence to the new energy auto industry. With the maturity of technology, the promotion of the market, and the decline of costs, new energy vehicles will surely have great achievements in the future. Judging from the current statistics, the sales volume of Chang'an New Energy Vehicles is very high in the domestic market. I believe that the new energy vehicles owned by Changan Automobile will continue to develop rapidly in the future.

From the perspective of the company itself, Chang'an Automobile started the Chang'an Automobile New Energy Strategy "Shangri-La" on October 19, 2017. It plans to complete the construction of three major energy-specific platforms in 2020; in 2025, Chang'an Automobile will start to stop completely. The sale of traditional fuel vehicles to achieve the electrification of full-spectrum products, the attention of the new energy vehicle industry will be the top priority of the company's development in the future. From the above analysis of Chang'an Automobile's internal financial data, Chang'an Automobile should put the financial crisis in the first place, stabilize cash flow, and provide guarantee for long-term development. Chang'an Automobile's current solvency is extremely weak, its profitability is not optimistic, and various turnovers are relatively slow. Despite the surge in sales of new energy vehicles, the market outlook is not very clear.

Investors are advised to temporarily wait and see the following suggestions for Chang'an Automobile: 1) Actively expand sales channels, try to improve inventory turnover; 2) Optimize funding sources, improve solvency, and resolve debt repayment crisis; 3) Reduce low-cost and profitability as soon as possible The situation is developing positively; 4) Continuously strengthen brand competitiveness and strengthen consumer recognition of Chang'an's new energy vehicles.

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