



## Empirical Research on the Relationship between Social Responsibility and Enterprise Performance of New Energy Automobile Enterprises in China

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### Abstract

*In China, new energy auto companies are important strategic emerging industries that promote the sustainable development of Chinese economy. They are also the important breakthrough for the auto industry to cope with energy security, climate change, environmental protection and structural upgrading. Therefore, we intend to objectively analyse the relationship between corporate social responsibility and corporate performance in different periods of the enterprise. Based on the characteristics of the new energy automobile industry and related stakeholders, the social responsibility of new energy vehicle companies refers to the responsibility of all enterprises engaged in the manufacture and production of new energy vehicles to all stakeholders. We select 103 observations from 2013 to 2017, construct a panel data model between social responsibility and financial performance and market performance, and use the Stata software to perform Pearson correlation on each variable of 103 sample data from 2013 to 2017. The irrelevant estimation method is used to estimate. The regression equation results show that the current corporate social responsibility has a positive impact on the later enterprise performance. And the current financial performance has a positive impact on the later corporate social responsibility. We find that there is a synergistic relationship between social responsibility performance and corporate performance of new energy vehicle companies in China.*

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## 1. Introduction

In recent years, as global energy has become increasingly tense, the ecological environment has deteriorated. Energy shortages and environmental evils turned into the major international issues. New concepts such as new energy, low-carbon economy, energy conservation and emission reduction are getting global attention. The environmental pollution has become a prominent problem that restricts human development and progress.

Currently, the phenomenon of social responsibility neglect in Chinese auto industry deserves our reflection. As a symbolic industry, the new energy automobile enterprise has given birth to a huge new impetus and is the key to Chinese economic transformation and upgrading to achieve sustainable development. It is a tool to optimize resource allocation. The innovative, strategic and systematic industry characteristics of the new energy automobile industry indicates that if the industry has a credit crisis and a responsibility crisis, it will bring unimaginable consequences to Chinese automobile industry economy and even the whole society. In particular, the problem of battery disposal is a huge challenge faced by new energy auto companies. Many customers are worried about whether new energy vehicles are truly environmentally friendly, and the purchase of new energy vehicles is also on the sidelines. In other words, new energy auto companies that perform well in CSR can gain more customer trust, thereby increasing their willingness to purchase and ultimately improving their market performance. Therefore, it is very important for new energy auto companies to take social responsibilities actively.

At present, there are few studies on the relationship between business operations and CSR in China. In a few quantitative studies, empirical research only confirms the relationship between CSR and corporate performance in the current period. The impact of CSR on the performance of late-stage enterprises and the impact of current corporate performance on CSR in the later period needs further study. Our research intends to explore the impact of current CSR commitment on the company financial performance and whether the market performance and company financial performance can practice of CSR. It will contribute to find the internal motivation for Chinese enterprises to undertake their social responsibility.

## **2. Literature Review**

### *2.1. CSR Notion Development*

With the acceleration of the process of economic globalization, increasing organizations and scholars generally attach importance to CSR theory and practice (Carroll, 1979; Freeman, 1984; Gular & David, 2012; Lu, 2002; Tian, 2006; Wood, 1991). The business goal is to transform the profit maximization for shareholders into wider social responsibility while the reasonable needs of stakeholders are taken into consideration.

### *2.2. CSR Assessment in China*

The early research on CSR assessment by western scholars mainly focused on how to solve social problems and realize social responsibility. As various organizations and government agencies pay growing attention to CSR development, the construction of evaluation indicators is becoming mature. At present, there are many social responsibility standards and indicators in the international community. For example, the SA8000 Social Responsibility Standard, the G3 Index System and the KLD Index all play active roles in assessing CSR performance. Chinese scholars' research on CSR assessment system is relatively late. On this basis, the current Chinese CSR assessment needs to be supplemented and expanded accordingly. For example, Runkins Global (RKS)'s social responsibility report rating on listed companies and the publication of Chinese Top 100 Corporate Social Responsibility Development Index in 2009 reflect Chinese increasing emphasis on CSR. However, due to the uneven level of CSR management in China and the performance of each enterprise, some enterprises have not yet been able to provide all the content required by the guidelines. Therefore, the overall research and CSR management in China is still marching toward the international advanced level.

### *2.3. Research on the Relationship between CSR and Corporate Performance*

Moskowitz (1972); Lin, Yang, and Liou (2009); Chen and Jia (2003); Tian (2006); Liu and Liu (2016); believes that corporate social responsibility is positively related to corporate performance; Vance (1975); Brammer (2006); Li, Lv, Hu, and Zhu (2006); and Shao (2016) have drawn negatively relevant conclusions Bernadette, Muralidhar, Brown, Janney, and Paul (2001); Hong (2011) argue that there is no clear relationship between corporate performance and corporate social responsibility Lankoski (2000); Huang (2016) believes that there exists U Type relationship between CSR and corporate performance; Waddock and Graves (1997); Preston and O' Bananon (2015) and Shi (2017) have a synergistic relationship between corporate performance and corporate social responsibility. The reasons for this situation are as follows: First, there is a bias in understanding the definition of CSR, and each scholar's understanding of its internal meaning is not uniform, thus affecting the research results; second, the lack of CSR unified evaluation indicators. There is no relatively comprehensive and authoritative assessment method in the academic world, so the specific evaluation methods adopted by scholars in research are also different. Therefore, the final conclusions of the study are also different. Third, due to the one-sidedness of some researchers, some are only concerned with the short-term relationship between the two, while others focus on the issues related to long-term relationships. Therefore, when the researcher's concerns are different, the results obtained are naturally different. Moreover, even if the same researcher has the same research focus, in the face of different countries or companies in different industries, the selection of data must be subjective and cannot be strictly objective. The level of industry and the policies implemented between countries and countries will also be different. Finally, in the research, scholars are limited to the disclosure of social responsibility of selected companies, so the results from different markets and at different time points may not be the same. In general, most of the conclusions believe that CSR has a positive impact on corporate value, which also laid a foundation for our research.

### *2.4. Stakeholder Theory*

Stakeholders refer to certain contributions to the business during the business process, and the company's earnings are closely related to the benefits of these stakeholders. Satisfying the interests of these stakeholders is a top priority for companies to develop a series of development plans.

In 1984, Freeman proposed the stakeholder theory and explained the benefits in the theory. He pointed out that the profits of enterprises had two parts: first, operating income; second, cost. Senior leaders in the enterprise will consider how to meet the requirements of the environmental protection department with the lowest expenditure, and some enterprises will find ways to escape environmental governance and reduce their

own costs. However, a successful business must form a positive interaction with the surrounding environment.

From perspective of stakeholder theory (Freeman, 1984) the social responsibility of new energy auto companies is different from that of non-new energy auto companies, in the following eight aspects:

**Responsibility to shareholders:** Shareholders are investors in the enterprise. New energy auto companies should ensure that every shareholder is treated fairly and equally. Most of the new energy auto companies such as vehicle, motor electric control and charging piles in China have been listed. Therefore, it is necessary to ensure that the company provides complete and reliable business information, such as financial statements, to ensure that the investor's business status, profitability. The enterprise needs to ensure that the investor has a timely and accurate understanding of the company's business status, profit or loss and other information, and protect the shareholders' right to know.

**Responsibility to employees:** Companies must be accountable to their employees and always pay attention to the survival and development of their employees. New energy auto companies should increase the consistency between enterprises and employees, and provide safe and healthy accommodation or housing subsidies for employees with family difficulties. At the same time, it is necessary to provide reasonable remuneration packages for employees, to ensure that the company can pay employees' wages on time, and to provide overtime pay for overtime work as compensation. New energy auto companies also avoid discrimination based on gender, age, ethnicity and beliefs.

**Responsibility to customers:** The quality of products and services is directly related to the immediate interests of customers. New energy auto companies need to operate in good faith, provide a good test drive experience and safe and secure car quality, then the sales volume will continue to increase with the recognition of consumers, and corporate profits will increase due to the increase in sales. Consumers buy new energy vehicles in order to reduce travel costs and the pressure on life. But if consumers suffer from the safety problems caused by the safety of the cars produced by the company, or even personal injury, is it not worth the loss? Enterprises should properly price the cars they produced and ensure that they do not commit fraud or profit.

**Responsibility to the community:** The development of the enterprise is inseparable from the good community environment. BYD Auto is one of the best brands in Chinese domestic cars. In the past ten years, it has been continuously improving and paying attention to the specific needs of community development. It is a pioneer in new energy vehicles. Therefore, new energy auto companies can also give priority to the employment of people in their communities within a reasonable range. While solving the employment of community members and improving the living standards of community residents, enterprises also have a better external environment for production.

**Responsibility of resources and environment:** The environment is the condition for companies to survive. New energy vehicles mainly use batteries as the power transmission of the whole vehicle, which has reduced the pressure on oil resources. Reduce the pressure on the air environment by zero-emission of vehicle exhaust. New energy auto companies are leaders in the field of environmental protection. They should always adhere to the development concept of green values, green production and green management.

**Responsibility to the government:** Chinese Ministry of Finance, the Ministry of Science and Technology and other four ministries jointly stated that the government will encourage enterprises to produce and develop new energy vehicles by subsidizing consumers. Enterprises have received strong support from the Chinese government and relevant departments, so they should better fulfill their social responsibilities to the government, give back to the government, and return to society. While realizing long-term rapid growth of the industry, we strictly abide by the government's corresponding legal rules and implement them conscientiously.

**Responsibility to creditors:** Creditors are an important source of funds for enterprises. New energy auto companies earnestly take their social responsibilities to creditors and improve their credibility. It is easier to get more financing when companies expand their scale. On the contrary, if the enterprise fails to pay dividends to creditors on time, or even refuses to repay, the credibility of the enterprise will be wiped out, resulting in the final creditor applying for bankruptcy, the corporate capital chain breaking, and losing the motivation and ability to continual development.

**Responsibility to suppliers:** In terms of responsibilities to suppliers, new energy auto companies should respect suppliers, reach fair and reasonable agreements with suppliers, strictly implement purchase and sales contracts, ensure timely payment, and conduct fair and impartial attitudes with suppliers to implement common management standards. At the same time, it should also abide by the credibility, which helps companies reduce safety stocks and reduce inventory costs, and ensure and improve product quality when using lower cost raw materials.

### *2.5. Theory of Sustainable Development*

In 1987, Harlem Brundtland formally proposed the concept of sustainable development of the World Commission on Environment and Development. Welford proposed resource-based theory in 1997 as an important factor in achieving sustainable development. A company with the vision of sustainable development

needs to invest in all stakeholders, and it will benefit from this investment. Zwetsloot (2003) found through research that if companies want to have a sustainable competitive advantage, they can only achieve this through a combination of CSR and continuous innovation to improve technology and productivity.

Nowadays, with the rapid development of the economy, enterprises have a series of environmental problems in their economic growth. Source depletion, environmental degradation, and global warming are closely watched by the people and the country. Therefore, the state must encourage enterprises to care for the natural and social environment. In addition to gaining economic benefits, they have to assume social responsibility. The game between the environmental impact of production and management and the sustainable development of enterprises is the focus of a series of work. The theory of sustainable development requires that enterprises must consider the issue of environmental protection while creating their own economic value. The development model of new energy automobile enterprises has injected new vitality into the market of Chinese automobile industry. The social responsibility fulfilment will improve the company's financial performance, the market performance, and environmental performance. And the sustainable development can be achieved. The goal of the company should not be a short-term interest. Enterprises must take up social responsibility for the community, the environment, suppliers, creditors, and the government. Only in this way will the company achieve good financial performance and unite its strength for more long-term development. With the vigorous development of Chinese economy, the income level of social citizens has risen steadily, and the needs of the people have also been sublimated, from simple material needs to spiritual needs, such as fairness and justice, social welfare, environmental protection and so on. It also puts forward higher expectations for the growth of Chinese enterprises. The target of enterprises is not only to operate in good faith but also to contribute to society, and benefit all society. New energy auto companies are the operating capital for providing services and goods to the society. Therefore, corporate reputation and brand image are the best embodiment of their market performance. And new energy auto companies should always be self-reflecting whether they are responsible for the society, the resources, the environment and other stakeholders, which is helpful to improve their market performance. At the same time, new energy auto companies should improve the after-sales system, so that consumers feel the company's sincerity, and at the same time take responsibility for other companies with business relations. This will help new energy auto companies to win a good reputation in the market, enhance market reputation and promote the corporate market performance. Chinese new energy vehicle industry is booming due to the national "sustainable development" strategic policy support. Achieving sustainable development is the core to improve the environmental performance of Chinese new energy companies. If new energy vehicles place environmental protection at an important position in the development of enterprises, it is conducive to the innovation breakthroughs of core technologies such as energy conservation, cruising range and energy utilization rate of new energy vehicle enterprises, promoting the optimization and upgrading of the automobile industry, and gradually adopting policy guidance and market cooperation. With the government's strong support for the research and development and marketing of new energy vehicles, new energy vehicle companies will effectively take their corporate responsibilities to the environment, government and the community, which will help improve the efficiency of new energy vehicle production and help accelerate the new production. The process of industrialization of energy vehicles is also conducive to technological progress and energy conservation and emission reduction, thereby improving the environmental performance of new energy vehicle companies and achieving sustainable development. In the long-term economic, social and environmental pursuit of a fair corporate development, this study focuses on the issues related to the performance of new energy vehicles under the theoretical guidance of the above analysis: First, whether the current CSR has the impact on the later corporate performance; Second, the relationship between the current corporate performance and the later CSR performance will be explored. It is hoped that this research will enable enterprises to pay attention to two issues: First, the enterprise attaches importance to the impact of CSR on corporate performance in the development process; Second, enterprises should pay attention to sustainable development, and reflect fairness in business.

### **3. Empirical Study**

On the surface, the implementation of CSR by new energy auto companies directly increases the cost of materials for the current period. Where does the motivation of new energy auto companies consciously taking their social responsibilities come from? An empirical analysis of the relationship between social responsibility and corporate performance of new energy vehicles gives an accurate answer. Will new energy auto companies take their social responsibilities in development, and will they promote the development of enterprises? If the empirical results show that it is true, we think that the social responsibility of new energy vehicle companies and corporate performance have a mutual promotion effect.

#### **3.1. Design Principles**

The principle of comprehensiveness: New energy automobile companies have a wide range of social responsibility and corporate performance, and need to be fully expressed from different aspects. They cannot only examine their profitability unilaterally; The principle of independence: There should be no collinearity

between the indicators examined. Only in this way, it is meaningful to select multiple indicators for research, otherwise the value of the research will be lost; The principle of practicability: When conducting research on the subject, the data we select are all readily available data, and the data itself is data that is beneficial to the calculation process, which will improve the efficiency of our model establishment.

### *3.2. Indicator Selection*

#### *3.2.1. Measurement Indicators of CSR*

We will introduce the listed batteries, motors, electric controls, complete vehicles, charging piles, and other core parts companies in the new energy automotive industry as disclosed in the Corporate Social Responsibility Development Index (hereinafter referred to as the CSR Index) published by Rankins CSR Ratings (RKS). The CSR index serves as an evaluation indicator for the performance of CSR in the new energy vehicle industry. The CSR index is the most authoritative and comprehensive CSR evaluation indicator in China today. The index can comprehensively analyse the stage characteristics of social responsibility of listed companies in China, and comprehensively evaluate the status of social responsibility management system and social and environmental information disclosure of listed companies in China. The CSR Index uses the ISO26000 International Social Responsibility Index, the World Top 500 Corporate Social Responsibility Reporting Indicators and the Domestic Social Responsibility Initiative documents as a reference. It collects social responsibility information of enterprises in various industries through CSR reports and annual reports, and then the company's social responsibility information is analysed and scientifically evaluated, and then the initial score is obtained. Then, adjustments such as responsibility awards, lack of responsibility and innovation are considered to form the final score and ranking. Among them, the CSR index listed companies ranked in the A-share market, which is a large-scale, representative and highly liquid CSI 300 index constituent company, and then comprehensively integrated its information disclosure level and social responsibility management system. The CSR index can clearly assess the social responsibility of Chinese companies and has the highest status in their field. Through the CRS index, we can easily understand the entire development process of the company from its inception to the present, from which we can obtain the part of the social responsibility of the company. The CRS index is not an isolated evaluation system. Its calculations also refer to many other industry data, such as the international social responsibility index, combined with the social welfare projects and other social activities in which enterprises participate, to assess the performance of corporate responsibility. Ultimately, the total score of the company will be formed.

#### *3.2.2. Measurement of Corporate Performance*

As mentioned above, domestic and foreign scholars usually have three methods to measure the performance of the company: the market-based measures, accounting-based measures and perceptual measures. The main indicator used in the first performance evaluation method is the Tobin Q value. The second evaluation method mainly uses the commonly used ROA and ROE indexes, which can better reflect the performance level. The third method of performance evaluation is to place the research objects in the market for horizontal comparison. The indicators of the evaluation methods for research performance selected in our study are ROE and Tobin Q values. ROE refers to the return on equity. The role of this indicator is to directly reflect the profitability of the company. The Tobin Q value is another important indicator. The indicator reflects the value of the company. For a company, its market value determines the company's development.

#### *3.2.3. Control Variables*

There are five control variables in our empirical study: equity checks and balances, the proportion of independent directors, the size of the firm, the nature of the firm, and the ability of the firm to develop. When conducting research on CSR, we must consider the level of corporate governance, because the level of corporate governance directly affects the implementation of CSR. For companies with lower governance levels, it is foreseeable that lack of awareness or execution in social responsibility will lead to insufficient social development potential, and enterprises will not achieve good development results. In this research, we examine the level of corporate governance. The level of governance examined is mainly depicted in two aspects. The first is the company's shareholding structure, and the other is the board of directors closely related to the company's strategic direction.

The equity Check and Balance (CB) is used as the control variable. The largest shareholder in the enterprise is the largest contributor in terms of capital, but the management model adopted by the joint-stock company is a form of separation of management and capital, so shareholders should not be allowed to participate too much in the decision-making of major issues of the company. Because shareholders tend to be profit-seeking, the over-consideration of profit strategy is not conducive to the long-term development of enterprises, and the real managers who really care about the growth and development of enterprises are the actual managers of enterprises. Therefore, the rights of the first major shareholder should be limited and cannot be allowed to develop.

The Independent Directors' Share (IDP) also serves as a control variable. The purpose of the independent directors is to have the right to disobey the board of directors, thus they make independent resolutions. Only in this way can the company's correct direction be firmly grasped in the long-term interests of the company.

Enterprise Size (SIZE) is another control variable. The size of the company will also affect the results of our research. Companies with good development will make the increasing scale, which will form a positive feedback effect. The larger the size, the more direct impact on the public's attention, and the social response of the public will consider the company's layout and social participation.

The Owner of the enterprise (OWNER) is also a control variable. China is a socialist type of state. The nature of enterprises is also divided into various forms. We are most concerned about state-owned enterprises or private enterprises. These are different from fulfilling in CSR. There are also differences in other aspects. At the same time, due to differences in nature, state-owned enterprises and private enterprises are treated differently in national policies, which will also affect the development of enterprises.

Enterprise Development Capability (GROWTH) is also an important control variable. It will affect the survival and development of the enterprise, and thus the social responsibility will certainly be concerned by the operators of the enterprise, because if you want to achieve good development all the time, it will inevitably involve in social activities, which means carrying out the corresponding social responsibilities of the enterprise.

### 3.2.4. Hypothesis

According to the above analysis, most scholars believe that CSR is responsible for the performance of stakeholders. Waddock and Graves (1997) use Good Management Theory and Slack Resources Theory has overturned the previous one-way research conclusions and proposed that there is synergy between the two. Enterprises actively assume social responsibility can establish a good corporate brand image and increase market share in a subtle way, thereby improving corporate performance, while companies with strong corporate performance are capable to better implement CSR. Therefore, there is a synergy between new energy auto companies in fulfilling social responsibility and corporate performance.

In order to comprehensively assess corporate performance, this paper divides corporate performance into financial performance and market performance. Enterprise performance is measured by return on equity (ROE), and market performance is assessed by Tobin Q. The following two research hypotheses are proposed:

*Hypothesis 1: The current social responsibility performance of new energy auto companies has a positive impact on the financial performance in the later period.*

*Hypothesis 2: The current social responsibility performance of new energy auto companies has a positive impact on the market performance in the later period.*

At the same time, this paper also believes that under the new economic era of reform and opening up, enterprises with a long history of development and large scale have stronger comprehensive strength to have higher and better CSR practice. In other words, the performance of new energy auto industry enterprises can promote CSR. Taking into account the lag of the impact, we propose the following research hypotheses:

*Hypothesis 3: The current financial performance of new energy auto companies has a positive impact on the performance of CSR in the later period.*

*Hypothesis 4: The current market performance of new energy auto companies has a positive impact on the performance of CSR in the later period.*

### 3.3. Empirical Design

#### 3.3.1. Model Design

Based on the assumptions presented above, the following simultaneous equation model is established:

$$ROE_{t+1} = \beta_0 + \beta_1 CSR_t + \beta_2 CB_t + \beta_3 IDP_t + \beta_4 SIZE_t + \beta_5 OWNER_t + \beta_6 GROWTH_t + \epsilon \quad (1)$$

$$TQ_{t+1} = \beta_0 + \beta_1 CSR_t + \beta_2 CB_t + \beta_3 IDP_t + \beta_4 SIZE_t + \beta_5 OWNER_t + \beta_6 GROWTH_t + \epsilon \quad (2)$$

$$CSR_{t+1} = \beta_0 + \beta_1 ROE_t + \beta_2 CB_t + \beta_3 IDP_t + \beta_4 SIZE_t + \beta_5 OWNER_t + \beta_6 GROWTH_t + \epsilon \quad (3)$$

$$CSR_{t+1} = \beta_0 + \beta_1 TQ_t + \beta_2 CB_t + \beta_3 IDP_t + \beta_4 SIZE_t + \beta_5 OWNER_t + \beta_6 GROWTH_t + \epsilon \quad (4)$$

t: represents the current period □ t+1: represents the later period

Table-1. Significance of variables and parameters in the model.

Variable Name	Variable Meaning	Variable Name	Variable Meaning
$\beta_0$	Intercept term	CB	Equity check and balance
$\beta_1 - \beta_6$	Regression coefficients	IDP	Percentage of independent directors
$\epsilon$	Random error	SIZE	Business scale
CSR	New energy vehicle enterprise social responsibility	GROWTH	Enterprise development capability
ROE	Roe	OWNER	Nature of the company
TQ	Tobin Q value		

The significance of variables and parameters in the model is shown in Table 1.

### 3.3.2. Selection of Samples and Sources of Information

We adopt the new energy automobile industry index of the listed company CSR index published by Run Ling Global from 2013 to 2017 as the evaluation index of social responsibility performance of new energy automobile enterprises. Excluding listed companies with missing data, a total of 103 valid samples were obtained. Among them, 19 in 2013, 21 in 2014, 21 in 2015, 21 in 2016, and 21 in 2017. In total, there are 21 A-share listed new energy auto industry related companies, including 8 complete vehicle companies, 11 batteries, motors, electric controls, complete vehicles, charging piles, and other core parts related companies. See Table 2 for details.

Table-2. Sample statistics of corporate responsibility index.

Stock Code	Company Name	Number	Stock Code	Company Name	Number
002239	Otto	5	600104	SAIC	5
002249	Ocean motor	5	000868	Ankai bus	5
300304	Yunyi Motor	5	600166	Foton Motor	5
002196	Founder motor	5	002594	BYD	4
600699	Junsheng Electronics	5	600418	Jianghuai Auto	5
002284	Asia Pacific shares	5	600006	Dongfeng Motor	5
601311	Camel shares	5	000625	Changan Auto	5
600970	Sinoma International	4	600066	Yutong Bus	5
300040	Kyushu Electric	5	600733	Beiqi Blue Valley	5
002632	TD Optical	5	300648	Nebula shares	5
002407	Polyfluoride chemical	5			

### 3.3.3. Descriptive Statistics of Variables

This section first describes the sample features using common indicators such as mean, standard deviation, median, maximum, and minimum. Then use SPSS V23.0 and STATA 14.0 software to compare Chinese CSR index, return on equity (ROE), Tobin Q (TQ), equity balance (CB), and independent directors from 2013 to 2017. The sample data of (IDP), company size (SIZE), enterprise nature (OWNER), and enterprise development capability (GROWTH) were analysed, and finally the conclusion was drawn based on the regression results.

Table-3. Descriptive statistics of variables.

Variable Name	Average	Maximum	Minimum	Median	Standard deviation	Number
CSR	44.54	69.7	29.17	41.38	9.63	103
CB	0.63	1.99	0.01	0.934	0.51	103
GROWTH	9.65	1873.14	-1257.87	0.375	281.73	103
IDP	0.41	0.75	0.29	0.632	0.1	103
OWNER	0.67	1	0	13.46	0.47	103
ROE	13.21	36.13	-12.41	15.52	7.5	103
SIZE	5.66	8.89	3.21	1	1.21	103
TQ	1.38	7.06	0.24	5.526	1.38	103

Analysis of the indicators of new energy vehicle CSR shows that the maximum score of social responsibility performance indicators of new energy auto companies is 69.70, the minimum is 29.17, and the average score is 44.54. From the average point of view, the passing line of less than 60 points indicates that the performance level of social responsibility of new energy auto companies in China is still low, and there is a lot of room for development. Looking at the direct and maximum direct differences, there is a big difference between the two extremes, which means that there is a huge difference between the performance levels of different companies in the same industry. Some companies perform well, but some companies do not pay much attention to this issue see Table 3.

Analysis of the equity balance (CB) indicator shows that the average value of this indicator in the industry has reached 0.63, which means that in the shareholding structure of new energy listed companies, the top five shareholders share the shareholding, the latter four add up to be much lower than holding. There are also large differences between the most stocks, minimum of 0.01 and the maximum of 1.99, which means that there is a big gap in the governance level of different companies in the industry.

Analysis of the company's development capability (GROWTH) shows that the maximum profit growth rate in the sample is 873.14, and the minimum value is only -1257.87, indicating that there is a significant difference in the growth level of the listed new energy auto companies. It is uneven. Because some companies

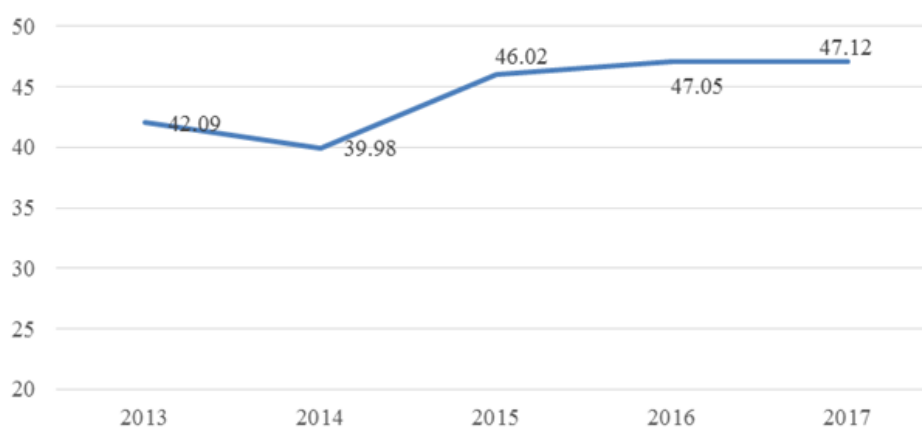
have huge development potential, while some in serious losses. This is the result of many factors, such as the stage of development, business conditions, market environment or management of the company, which will lead to this.

Analysis of the index of independent directors (IDP) shows that the average value of this indicator in the industry has reached 0.41, meaning that among the listed companies of new energy vehicles, the proportion of independent directors of most enterprises can reach 1/3, which is in full compliance with the request of the CSRC.

Analysis of the nature of the enterprise (OWNER), 14 of the 21 companies in this study are state-owned direct or indirect holding companies, which means that most of the new energy auto companies that have issued social responsibility performance reports are State-owned enterprises (up to 66.99%).

Analysis of the return on equity (ROE) indicator shows that in the sample of enterprises in this study, this indicator has a maximum of 36.13 and a minimum of -12.41. The difference between the sample data is very large. That is to say, the research on the financial performance of the sample companies does show a big difference.

Analysis of the enterprise size (SIZE) indicator shows that this enterprise's sample of this study has a maximum of 8.89 and a minimum of 3.21, which is also very different, which means that the scale of listed companies in Chinese new energy vehicles is very different. Analysis of Tobin's Q value (TQ) shows that the average value is 1.38, indicating that the value of listed new energy auto companies in China is generally recognized in the stock market.



**Figure-1.** Trends in the average CSR of new energy auto companies in 2013-2017.

From [Figure 1](#), in recent years, the social responsibility of Chinese listed new energy auto companies has increased from 42.09 in 2013 to 47.12 in 2017. The main reason is related to the rating of Runkins Global on the company. Run Ling Global Responsibility Ratings include Macrocosm, Content and Technical. Among them, the macrocosm (M value) represents whether the overall structural framework of the social responsibility report is normative, the content (C value) represents whether the social responsibility report is informative in terms of content, and the technical (T value) represents whether the social responsibility report is mature. The sum of the three represents the quality level of the social responsibility report. The rating uses a structured expert scoring method with a score of 100. The overall (M value) and content (C value) weights are 40%, the full score is 40 points, and the technical (T value) weight is 20%. It is 20 points. From the above CSR score preparation process, the CSR score should increase with the growth of the year. This is because the integrity (M value) represents whether the overall structural framework of the social responsibility report is normative, and technical (T value) for the preparation of social responsibility reports will be improved over time and the scores should be continuously improved. But determining the CSR score and other indicator content (C value) means that the social responsibility report is informative but not growing over time. Around 2014, there have been many new energy vehicle frauds, which have challenged the authenticity of corporate accounting information. During the same period, the famous new car company Yaxing Bus was exposed to fraudulent incidents. It indicates that Chinese new energy automobile industry has a long way to go in fulfilling its CSR.



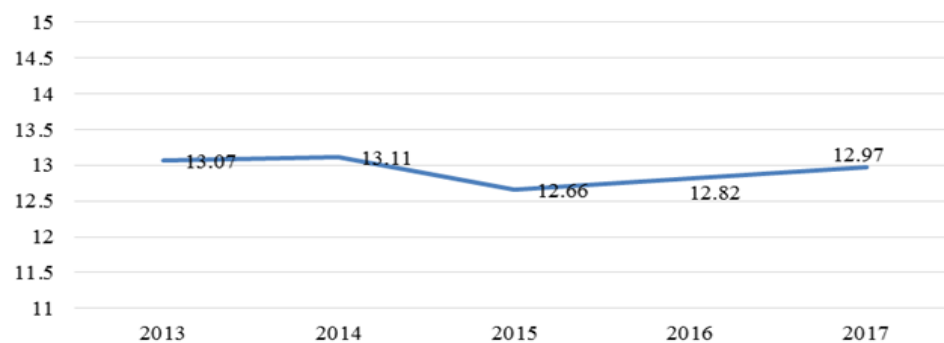


Figure-2. Trend of the ROE on net assets of new energy auto companies from 2013 to 2017.

According to Figure 2, the overall return on net assets has been stable, with a slight decline in 2015, but the average return on equity in 2015–2017 has shown a steady upward trend. Since the Chinese government has greatly subsidized the purchase of passenger cars in 2014–2015, the sales of new energy vehicles have grown rapidly, but the good times have not been long. The media has exposed the fraudulent behavior of various speculators. The government has strengthened this. The subsidy of supervision has made speculators no longer available, so the growth rate in 2016 has slowed down. The subsidy policy began to adjust in 2015, which caused the net profit of the company to fall sharply. This is the net asset income of the company. The direct cause of the rate changed out of the trend. In 2016, the number of applications for new energy vehicles was 238,000, and the number of subsidies approved was 228,000. The application for funding is 29.6 billion yuan. The approval passed was 28.8 billion yuan. Among them, the passenger car is 21.5 billion yuan and the passenger car is 7.17 billion yuan. From the perspective of capital structure, the subsidy for new energy vehicles of passenger cars is 75%, and the subsidy amount is 27%. The subsidy for passenger cars accounted for 73%, and the subsidy amount was 25%, which formed a more obvious contrast. Policy adjustments have reduced subsidies for passenger car companies. The impact on new energy vehicles is evident.

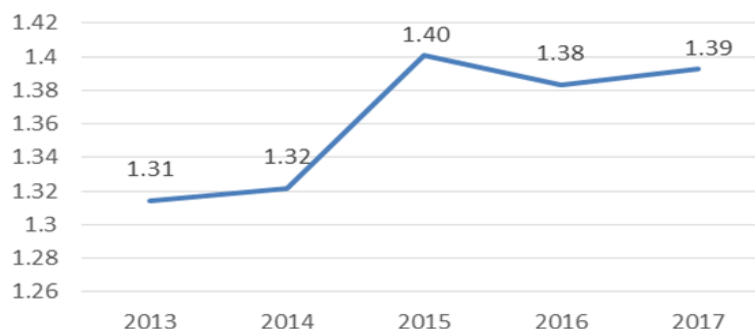


Figure-3. 2013-2017 new energy automobile enterprise Tobin Q average trend chart.



Figure-4. Weekly chart of the securities index from January 2012 to January 2019.

According to Figure 3, the average value of the Tobin Q of new energy auto companies from 2013 to 2017 has shown a trend of rising, then decreasing and continuing to rise, but the overall trend is still on the rise. Comparing Figure 4, it shows that the reason for the fluctuations around 2015 is that Chinese A-share market

experienced a short period of bull market in 2015. In 2015, the overall valuation of the A-share market was higher, and the market value was too large, so the 2015 Tobin appeared. The abnormality of Q's departure trend turned out. Combined with the trend chart of the average score of social responsibility of new energy auto companies in Figure 1, it is not difficult to see that both of them maintain an upward trend within five years. It is initially proved that there is a positive correlation between market performance of new energy auto industry and CSR.

### 3.3.4. Relevance Test

Based on the assumptions and models presented in this paper, this section uses the Stata software to perform a Pearson correlation test on each variable of 103 sample data from 2013 to 2017.

**Table-4.** Pearson correlation test of each variable.

	CSR	TQ	IDP	CB	ROE	Growth	Owner	Size
CSR	1							
TQ	0.331**	1						
IDP	0.288**	-0.020	1					
CB	0.064**	0.433**	0.292**	1				
ROE	0.078**	-0.004	0.007	0.035**	1			
Growth	0.052	0.091	0.010*	0.188	0.391*	1		
Owner	0.071	-0.409**	-0.155	-0.676**	-0.076	-0.185	1	
Size	0.706**	-0.521	-0.281**	-0.177	0.155**	0.159	0.097**	1

Note: \*\* At the 0.01 level (two-tailed), the correlation is significant.

\* At the 0.05 level (two-tailed), the correlation is significant.

According to the results of Table 4, the CSR and the ROE, the Tobin Q, the equity balance CB, the independent director (IDP) and the company size (SIZE) are all significantly positively correlated. The preliminary explanation shows that the performance of the research sample CSR is positively related to its market and financial performance. The new energy automobile company has a higher level of corporate governance (including the ownership structure and board characteristics), and the social responsibility performance is better; The larger the scale, the better the performance of the sample companies in terms of social responsibility. At the same time, there is no correlation between the development capabilities of listed new energy auto companies and the social responsibility index. In addition, the implementation of social responsibility and the nature of the enterprise is not really strong, and the nature of the new energy vehicle enterprise is not related to the CSR fulfillment.

### 3.3.5. Regression Analysis

In addition, the paper carries out further test analysis. The estimated results of the simultaneous equation model are shown in Table 5.

**Table-5.** Synchronous results of the simultaneous equation model.

	(1)	(2)	(3)	(4)
Variables	F_roe	F_tq	F_csr	F_csr
csr	0.564**	0.0120**		
	(0.258)	(0.0052)		
roe			0.00513***	
			(0.00184)	
tq				0.457
				(0.551)
cb	-2.708	0.278	3.103	2.739
	(5.635)	(0.307)	(2.218)	(2.206)
idp	23.49	-4.142***	11.91	13.96
	(23.39)	(1.159)	(8.894)	(8.853)
size	7.591***	-0.640***	6.198***	6.505***
	(2.696)	(0.128)	(0.720)	(0.717)
owner	10.19**	-0.860**	1.522	1.852
	(4.809)	(0.335)	(2.227)	(2.214)
growth	-0.0600*	0.000873	-0.00515	-0.00486
	(0.0311)	(0.00118)	(0.00998)	(0.00993)
Constant	-6.371	6.487***	3.532	0.357
	(16.74)	(0.907)	(6.598)	(6.574)
Observations	82	82	82	82
R-squared	0.154	0.467	0.556	0.561

Note: Standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

From Table 5, the current social responsibility of the new energy automobile company has a significant positive impact on the financial performance of the latter stage at the 5% level, indicating that the higher the social responsibility of the current period, the better the financial performance of the latter stage will be. Assume that one is verified. It is not difficult to see from the analysis that there is a significant positive correlation between the regression analysis of the enterprise size parameter. That is to say, the enterprises have larger size, they will have higher the financial performance. The nature of the enterprise and the subsequent financial performance have a significant positive impact on the 5% level, which means that the financial performance of the state-owned enterprise is more prominent in the later stage. In this issue, the social responsibility performance of new energy auto companies has a significant positive impact on the market performance of the new energy auto companies at the 5% level, indicating that fulfilling social responsibility has a positive effect on the enhancement of the market performance of Chinese new energy auto companies. Hypothesis 2 has been verified. The current financial performance at the 1% level has a significant positive impact on the later social responsibility index, indicating that the higher the current financial performance of the new energy auto companies, the more likely they can fulfill their social responsibilities in the later period, and the hypothesis 3 is verified. In addition, we can see that the current scale of the enterprise at the 1% level has a significant positive impact on the later social responsibility, indicating that the enterprise with a large scale has a better level of social responsibility implementation. It can also be seen that the current Tobin Q value has no significant relationship with the late social responsibility. It means the degree of recognition of the market value of the enterprise has no significant relationship with the quality of the social responsibility of the enterprise, and the hypothesis 4 has not been verified. At the same time, the proportion of independent directors in the current period, the nature of the enterprise, and the ability to develop the enterprise are not significantly related to the later social responsibilities.

#### *3.4. Regression Analysis Findings*

Through the above multiple linear regression analysis, we find out the following results:

1) The implementation of social responsibility of new energy auto companies will positively affect their financial performance. Enterprises currently have a higher awareness and better performance in fulfilling social responsibility. It does not necessarily mean that high costs have a good effect on their financial performance. Therefore, this paper finds the internal motivation for new energy auto companies to take their social responsibilities.

2) The implementation of social responsibility of new energy auto companies will positively affect their market performance. The better CSR performance can help enterprises establish a better image and win the recognition and win the trust of consumers and investors. Therefore, they can better obtain funds through the capital market at a lower cost and expand the scale of enterprises.

3) New energy auto companies with better financial performance perform better in social responsibility. The high income level of new energy auto companies has enabled new energy auto companies to have more disposable resources. Managers do not have to pay excessive attention to financial data, so the focus of enterprise management is brand building and social responsibility management of new energy auto companies. Therefore, such enterprises will further take their social responsibilities in order to obtain more economic and social resources.

#### **4. Conclusion**

Under the new era of reform and opening up, Chinese economy has developed rapidly and has achieved outstanding results. China has become the world's second largest economy, and the global impact of Chinese economic and social development has gradually increased. In the 19th National Congress, General Secretary Xi Jinping formally proposed that the main contradictions in our society have changed. The main goal of national development is to promote the balance of economic development as much as possible and to meet people's needs for life improvement. The balance of economic development is not limited to government responsibility, but also the common responsibility of society.

This study mainly discusses the relationship between the performance of social responsibilities of listed companies in Chinese new energy vehicles and their performance. The empirical analysis based on data samples leads to the following conclusions:

##### *4.1. New Energy Companies Bear Different Corporate Social Responsibilities.*

The CSR of listed new energy auto companies in China is still in an unbalanced state, and there are obvious differences between enterprises of different types and sizes. For example, in the new energy automobile industry, vehicle companies perform better in fulfilling CSR, while related companies such as motors, electric controls, and charging piles perform slightly. In addition, new energy auto companies lack short-term planning for social responsibility, CSR disclosure is imperfect, and small and medium-sized new energy auto companies have a weak sense of responsibility. Therefore, we should not be satisfied with the status quo. There is a long way to go for the awareness of CSR, especially in the new energy automobile industry. The future development of new energy auto companies also needs to adhere to the leadership of the

Chinese government, promote industrial development, and explore automotive products and related services in line with Chinese national conditions. The charging service system will be further optimized, and the proportion of new energy vehicles in various fields will be continuously improved.

#### *4.2. There is a Synergy between CSR and Corporate Performance*

The research analysis shows that the performance level of new energy auto companies is significantly positively correlated with their performance of social responsibility performance. The regression results of simultaneous equations show that if such enterprises are more prominent in the performance of social responsibility, the level of corporate income and market performance will be higher. The financial performance is better and it is more likely to take better social responsibilities. Enterprises with better financial performance should combine business civilization and public welfare civilization in their operations, which is a new trend in the development of international public welfare undertakings. This is the inevitable result of the gradual integration of charity and economy and productivity development. It is also the core of corporate charity or other ways to assume social responsibility.

The research proves that there is a significant positive correlation between the performance of Chinese new energy auto companies in fulfilling their social responsibilities and their corporate performance. If such companies can actively assume social responsibility, they are likely to create better corporate performance. The better performance of the company, the stronger capacity of CSR performance. In the new journey of “building a modern economic system”, new energy automobile enterprises should take the goal of building a modern economic system as their own responsibility to “achieve higher quality, more efficient, fairer and more sustainable development”. This is business philosophy, and also the pursuit of all companies in China. “Higher quality, higher efficiency” refers to the way the company develops itself; “fairer and sustainable development” means that enterprises should fully consider the interests of all stakeholders in the development process. It is expected that Chinese new energy automobile enterprises play a leading role in the social responsibility and sustainable development through their high-quality growth.

### **5. Recommendation**

#### *5.1. Clarify the Role of the Government*

Chinese automobile industry system is mature, and the development of new energy automobile enterprises can neither be independent of Chinese mature automobile industry system, nor can it be separated from the market mechanism of Chinese characteristics. The Chinese government decides to enhance the planning and supervision of new energy automobile enterprises with the aim at improving the efficiency of transformation and upgrading of the automobile industry. At present, the development of Chinese automobile industry is more and more mature. The government’s guidance for enterprise operation is a basic feature of modern social system, and the government’s intervention of CSR is an important mechanism for implementing public choice. Therefore, the government should clearly define the role of CSR.

#### *5.2. Establish Social Responsibility Incentive Mechanism.*

China should further strengthen the internal motivation of CSR performance and formulate targeted incentive mechanisms. In the process of CSR development, the government should not only establish a sound legal system to constrain corporate behavior, but also improve the driving factors for new energy auto companies to undertake social responsibility, reduce the influencing factors affecting the development of social responsibility, and formulate policies. Encourage enterprises to assume social responsibilities in areas such as taxation, credit, subsidies, and socially responsible investment priorities. At present, Chinese new energy auto companies have not formed the habit of compiling and publishing social responsibility reports. At present, only a small number of enterprises have published this report, and there are problems such as insufficient coverage and depth of information disclosure and incomplete coverage. Therefore, it is difficult to communicate with stakeholders, and it is necessary to continuously improve, so that the social responsibility of the enterprise can follow the rules and laws. At the same time, the development of social responsibility certification institutions should be promoted as soon as possible, and the CSR evaluation database and enterprise credit evaluation data should be taken together as a measure of corporate reputation evaluation.

#### *5.3. Improve Social Responsibility Evaluation Criteria*

The number of CSR reports issued by new energy auto companies in China is still small. The content of disclosure is relatively simple and has many limitations. It cannot explain the interests of enterprises and various stakeholders well and needs to be extended in information disclosure. The government should establish a set of systemic standards and a unified social responsibility assessment mechanism in line with Chinese national conditions, and promote the healthy development of new energy automobile enterprises. The state should carefully absorb the essence of the foreign evaluation system and abandon the standards that are not suitable for Chinese national conditions; so that the company’s social responsibility construction has rules and laws to follow. At the same time, the development of CSR certification institutions should be promoted as

soon as possible, and the CSR evaluation database and enterprise credit evaluation data should be taken together as a measure of corporate reputation evaluation.

#### *5.4. Strengthen CSR Awareness*

Chinese new energy auto companies should strengthen their CSR awareness and establish a social responsibility start-up mechanism. In response to the national “sustainable development” policy, companies should be fully aware that corporate responsibility is not limited to economic and legal aspects, but should also be used to assume responsibility for ethics and charity. The social capital of the enterprise in turn leads to positive financial performance for the company. At the same time, enterprises with better financial performance should adhere to the business philosophy of “coming from society, giving back to the society” and taking the initiative to undertake more CSR. Therefore, not only the managers themselves should strengthen their sense of social responsibility, but also the employees should get sufficient training and education, constantly innovate the concepts and methods of social responsibility, and strive to set up corporate values and corporate culture, which promotes social responsibilities.

#### *5.5. Take Care of Stakeholders*

Chinese new energy automobile enterprises should always adhere to the principle of sustainable development. In the process of development, we must adhere to the interests of all stakeholders, and always focus on meeting the sustainable requirements of all aspects of development, through continuous innovation in industry and technology. With cleaner and green products and technologies, we hope that human beings will be able to completely get rid of environmental pollution problems and traffic congestion problems in the future. Within the framework of Chinese current economic background and characteristic system, the performance of new energy auto companies in fulfilling their social responsibilities has a huge impact on the financial performance of enterprises. Both private enterprises and state-owned enterprises should actively undertake the social responsibilities, and regard them as an important strategic component of enterprise development. Therefore, companies should develop business strategies that balance economic and non-economic goals and integrate economic and social benefits. Full consideration should be taken in the impact of macroeconomic environment such as economic factors, social factors, political factors and technological factors on the strategic development of enterprises, so as to minimize the negative effects of various threat factors, fully grasp the development opportunities, and achieve sustainable development of enterprises.

#### *5.6. Pay Attention to the Effect of Social Capital*

Chinese current huge environmental pressures clearly provide a good opportunity for development and motivation for Chinese development of new energy sources. Compared with traditional cars, new energy vehicles still have some disadvantages, such as high price, short cruising range, incomplete charging facilities and low battery life. Chinese new energy vehicle R & D staff should work hard to solve these problems, so that it has long-distance driving range and excellent product performance, such as 100 km acceleration and humanization within 4 seconds. And the moral and charitable performance is also an important aspect. Therefore, under the policy of “Chinese sustainable development”, the new energy automobile enterprises can fully take corporate responsibility economically, legally and ethically. These responsibilities will eventually translate into the company’s social capital, which turns into the company’s positive financial performance. At the same time, enterprises with better financial performance should adhere to the business philosophy which closely relates to society. Therefore, the managers themselves must strengthen their sense of social responsibility, and the employees should be cultivated in a corporate culture that actively facilitates CSR.

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