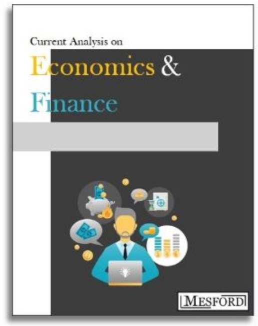


# Should Energy Corporations Participate in Fulfilling Social Responsibility?

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**Abstract:**

This article investigates the relationship between energy corporate social responsibility and corporate financial performance used 50 listed Chinese energy companies from 2006 to 2015. Results indicate that fulfilling the responsibilities to shareholders, creditors, and the government will help an energy enterprise in realizing its financial goals, whereas fulfilling the responsibility to consumers may negatively affect its short-term accounting performance but is beneficial to its market value. Furthermore, fulfilling the responsibilities to the community has no clear relationship with the realization of the financial management target during the period of the 11th Five-Year Plan. However, a significant positive relationship is noted during the period of the 12th Five-Year Plan.

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Corporate Social Responsibility; Corporate Financial Performance; Chinese Energy Corporations; Environmental Contribution; Accounting Performance; Market Performance.

**JEL:** G20; G30; G38.

## 1. INTRODUCTION

The concept of corporate social responsibility (CSR) originated from the United States. During the early 20th century, as the relationship between American enterprises and the economic industrialization process grew increasingly close, people gradually gained awareness of the CSR concept, and enterprises gradually realized that fulfilling their social responsibility is crucial to their development.

In China, problems related to CSR have been gaining increasing attention from both the government and the society. After over 30 years of reform and opening up to the world market, the Chinese economy is developing rapidly and making outstanding achievements. Inevitably, problems related to social responsibility, such as environmental protection, resource conservation, and the promotion of laborer rights and interests, will eventually occur. Enterprises belonging to different industry categories may face varying aspects and degrees of social responsibility problems. Among these problems, the social responsibility of energy companies[1] has been gaining considerable concern, because China is the second largest energy consumer in the world. Therefore, energy enterprises are expected to remain stable in the country. The world environment has been deteriorating in recent years. Meanwhile, concerns for public welfare and worker rights have also been increasing. Given the specificity of the energy industry[2] and focusing on certain issues, such as resource conservation and environmental protection, energy enterprises have begun to consider the relationship between their social responsibility and financial management target. Consequently, after energy enterprises fulfill their social responsibilities, determining whether this practice has a good promotion effect on their financial management target has become a popular issue in society.

Over the years, scholars from various countries have shown interest in the relationship between CSR and corporate financial performance (CFP), and have conducted several studies on this subject. Some pieces of evidence show that the fulfillment of social responsibility and the realization of the financial management target of enterprises are positively correlated, whereas others show that these two variables are negatively correlated or even lack correlation. Hence, what is the outcome of the fulfillment of the social responsibility of Chinese energy enterprises? Is the realization of their corporate

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financial performance negatively affected by the fulfillment of their social responsibility? This study aims to answer these questions.

Considering this objective, this research analyzes the situation in which enterprises fulfill their social responsibility from five aspects, namely, shareholder, creditor, consumer, government, and community. It also investigates the implementation of corporate financial goals from two aspects, namely, accounting and market, based on existing literature and stakeholder theories and through the use of Chinese energy enterprises as research objects. We select panel data of 50 listed Chinese energy corporations from 2006 to 2015 as the study sample and systematically analyze the relationship between the fulfillment of CSR and the realization of the financial goals of Chinese energy corporations by using the ordinary least squares (OLS) method and Stata software.

The result shows that fulfilling CSR of energy enterprises and realizing CFP are not entirely conflicting. They complement and promote each other to a considerable extent. The significance of fulfilling CSR by energy corporations will be enhanced with the development of society and the perfection of the social responsibility system. Therefore, enterprises should focus on fulfilling their social responsibility and realizing their financial management target by selecting which social responsibility to fulfill.

The remainder of this paper is arranged as follows. Chapter II presents the literature review. Chapter III provides the theory and hypotheses of the study. Chapter IV discusses the variables and methods used. Chapter V explains the empirical analysis. Finally, Chapter VI provides the main conclusions drawn from the study.

## 2. LITERATURE REVIEW

The effect of fulfilling the social responsibility of enterprises on their financial performance is one of the objectives of this study. However, significant differences exist among the results of the existing literature. The results can be divided into three categories according to the conclusion i.e. fulfilling the social responsibility of the enterprises and realizing their financial management target are positively, negatively, or not directly related.

Some existing studies consider that fulfilling the social responsibility of enterprises can promote the realization of their financial management target or to say CFP. Stanwick *et al.* (1998) obtained data on 115 enterprises from 1987 to 1992 as samples and analyzed them using the multiple regression analysis method. They adopted the corporate reputation index as a CSR measure and transformed it into a regression equation to be used as the dependent variable. They used sales profit and corporation size as the measures of financial performance. The results of this previous study demonstrated that the size, financial performance, and environmental performance of a firm positively affects its corporate social performance. Brammer and Millington (2008) used the Tobit model, which is based on market performance and sample selection, and found that firms with both unusually high and low CSR had better financial performance than other firms. Wang *et al.* (2014) used a two-stage approach to explore the relationship between the operational performance of US telecommunication companies and their implementation of CSR; they also suggested ways in which corporate policy makers could enhance CSR to improve corporate performance in the US telecommunications industry. Zhu *et al.* (2014) investigated the relationship between CSR and CFP during the rapid globalization of Chinese firms; they found that a positive relationship existed between CSR and CFP when globalization (proxied by dual-listed companies abroad) was used as a moderating effect and incorporated into the analysis. Similarly, Judge and Douglas (1998), Arendt and Brettel (2010), Saeidi *et al.* (2015), Song *et al.* (2015), and Arikan *et al.* (2016) demonstrated that CSR positively affects CFP.

However, irrelevant and negative correlations have also been proposed by some scholars. McWilliams and Siegel (2000) estimated the effect of CSR by regressing firm performance on corporate social performance. They linked Compustat data with information on corporate social performance provided by the firm of Kinder *et al.* and used variables computed as average annual values from 1991 to 1996 to measure financial performance. When the model was properly specified, these researchers found that CSR had a neutral effect on financial performance. Lioui and Sharma (2012) used a sample of approximately 17,465 firm-year observations from 1991 to 2007 and assessed the effect of environmental CSR (ECSR) on CFP measured using the return on assets (ROA) and Tobin's Q. They demonstrated that the relationship between the ROA and ECSR (i.e. strength and concern) of firms was negatively and statistically significant. Moreover, they showed that Tobin's Q and ECSR (i.e. strength and concern) of firms were negatively and significantly correlated. Lee *et al.* (2009) and Soana *et al.* (2009) obtained similar results.

The inconsistency of the results of existing research is attributed to (1) the differences in the specifications and measures of variables; (2) the differences in the views, such as industry, region, size of corporation, and so on; and (3) the differences in the weights given by each dimension.

This research is based on existing literature and corporate finance theories and uses Chinese energy enterprises as research objects. We analyze the situation in which enterprises fulfill their social responsibility from five aspects, namely, shareholder, creditor, consumer, government, and community. We also investigate the implementation of corporate financial goals from two aspects, namely, accounting and market, and systematically determine the relationship between the CSR and the CFP of Chinese energy companies.

## 3. THEORY AND HYPOTHESES

### 3.1. Theory and Definition

This study is based on stakeholder theory[3] and corporate financial goals, and analyzes the effect of CSR on financial management target.

Freeman (1984) published *Strategic Management: A Stakeholder Approach* and proposed stakeholder theory. This theory involves the management activities performed by managers to balance the interests of all stakeholders. Compared with traditional shareholder primacy theory, stakeholder theory states that the development of any corporation will be impossible without the involvement or participation of stakeholders. Moreover, corporations pursue the interests of stakeholders rather than the interests of a particular main body.

A stakeholder[4] is briefly defined as a group or individual that exhibits a relationship with the related activities of a corporation. These groups or individuals, such as shareholders, creditors, consumers, staff members, and so on, significantly influence the short- or long-term financial goals of a corporation, and that the interest relationship among them will directly influence the survival and operation of corporations. In addition, stakeholders include the natural environment and the social environment, which may influence production and operation processes (see Carroll and Buchholtz, 2007). Thus, this paper defines CSR as the responsibility to shareholders, creditors, consumers, the government, public welfare, and social environment (community).

Financial management target refers to realizing CFP. This study explains CFP from two aspects i.e. according to the classification of accounting and market indices. First, accounting indices are obtained from financial statements, because the data in such statements can effectively reflect the corporate operating condition. In this study, we use ROA[5] and return on equity (ROE)[6] to measure CFP. Second, the setting system of the market index is relatively complete, and many scholars select Tobin's Q[7] as the market index to measure CFP in existing research on CSR and corporate value. Meanwhile, other scholars choose the price-to-earnings (P/E) ratio[8]. Both indices are convincing measures. Therefore, we use ROA, ROE, Tobin's Q, and P/E ratio to investigate corporate financial management target from two aspects (i.e. accounting and market).

### 3.2. Hypotheses

Stakeholder theory argues that corporations are members of a society and should assume social responsibilities. The CSR endeavors of listed energy corporations are particularly outstanding. Given that energy corporations assume the social responsibilities of shareholders, creditors, consumers, and the government, their influences on resources and the environment (community[9]) are more remarkable than those of corporations in other industries. Moreover, the disclosure of information of listed corporations is relatively public in nature and more transparent compared with that of non-listed corporations, thereby suggesting that the former considerably values social responsibility. Based on stakeholder theory, corporations, particularly listed energy corporations, are obliged to coordinate the relationship among stakeholders, rationally allocate resources, focus on sustainable development and environmental friendliness, consider undertakings for public welfare, regularly pay the proper taxes, and provide customers with satisfactory products and services. Furthermore, listed energy corporations should fulfill their social responsibility in accordance with company financial goals, and provide stakeholders with the corresponding returns to motivate them to invest actively in business endeavors and promote the development of enterprise value. Consequently, the rapid and effective development of a corporation will be ensured.

Signal transmission theory states that information asymmetry exists between corporations and stakeholders in the market. Corporations understand their own operating and financial conditions, whereas stakeholders have limited knowledge of the situation of the former. Thus, corporations should provide a signal to stakeholders to enable them to gain access to resources, thereby solving the problem of asymmetric information. CSR can be regarded as a signal that transmits positive information about corporations to stakeholders, as well as encourages stakeholders (e.g. shareholders and creditors) to invest in resources, maintain long-term cooperation with corporations, and improve CFP. Thus, we propose two hypotheses.

H1: The fulfillment of the social responsibilities to the shareholders of energy corporations and the realization of corporate financial goals are positively related.

H2: The fulfillment of the social responsibilities to the creditors of energy corporations and the realization of corporate financial goals are positively related.

Reputation effect theory considers that good reputation increases public recognition and confidence in the product of a corporation, affects the purchasing sentiment of consumers, increases consumer loyalty, and subsequently influences the benefits to the corporation. Bhattacharya and Sen (2004) suggested that CSR initiatives are an innovative and less imitable means of strengthening customer relationships. Du *et al.* (2007) determined that the positive CSR beliefs held by consumers are associated not only with greater purchase likelihood but also with longer-term loyalty and advocacy behaviors. Thus, we propose the following hypothesis.

H3: The fulfillment of the social responsibilities to the consumers of energy corporations and the realization of corporate financial goals are positively related.

Resource-based theory stresses that sustained competitive advantage originates from resources of value, rarity, imitability, and substitutability (Barney, 1991); CSR activities enable corporations to acquire the aforementioned characteristics of intangible resources. Good political connections built through the fulfillment of the government's social responsibility are beneficial in obtaining preferential policies, such as financing facility, corporate bailouts (Faccio *et al.*, 2006), tax preference, protection of property rights, and industry access, thereby leading to the improvement of corporate value (Fisman, 2001; Faccio, 2006). Thus, we propose the following hypothesis.

H4: The fulfillment of the social responsibilities to the government by energy corporations and the realization of corporate financial goals are positively related.

The World Economic Forum defines a corporate citizen based on the following four aspects:

- responsibility toward the environment;
- general contribution to social development;
- general contribution to social and economic benefits, which may become part of the core strategy of enterprises in a few industries, as well as a component of corporate social investment; and
- charitable or community services.

Existing research shows that enterprises engaged in charities create potential value for enterprises. Porter and Kramer (2002) explained that corporations can use charitable undertakings to improve their competitive context, that is, the quality of the business environment where they operate. Moreover, philanthropy enhances the competitive context and improves the long-term business prospects of a company. Bruce *et al.* (2003) found a positive relationship between the available cash resources and cash donations of a firm. Chen and Cao (2016) showed that the involvement of private enterprises in philanthropic activities is positively associated with their economic performances. Hence, we propose the following hypothesis.

H5: The fulfillment of the social responsibilities to the community by energy corporations and the realization of corporate financial goals are positively related.

## 4. VARIABLES AND METHODS

### 4.1. Sample Selection and Data Sources

We use data from 50 listed Chinese energy companies from 2006 to 2015 as objects of the study. Most of the sample data are obtained from the Wind database, including the net asset value per share of an enterprise, earnings per share (EPS), financial leverage ratio, turnover ratio of account payable, main business income, main business cost, ROA, ROE, and total assets of an enterprise. The remaining data come from the Chinese Stock Market and Accounting Research database, including Tobin's Q and CSR report[10].

### 4.2. Variables and Model

#### *4.2.1. Specification of Variables*

The explained variable used in this study is the financial management target of a listed energy company. We set four indices Y1–Y4 used as CFP from two aspects (i.e. accounting and market) for measurement, in which Y1 and Y2 are the financial indices of accounting and Y3 and Y4 are the financial indices of market. The explaining variables are the indices of CSR related to the listed energy company. Given that no official social responsibility evaluation index system is currently available in China, we use several observable enterprise indices X1–X8 for measurement. Among these indices, X1 and X2 denote the fulfillment of the social responsibility to shareholders, X3 and X4 denote the fulfillment of the social responsibility to creditors, X5 denotes the fulfillment of the social responsibility to consumers, X6 denotes the fulfillment of the responsibility to the government, and X7 and X8 denote the fulfillment of the social responsibility to the community. In addition, the size[11] of a company and the year are used as control variables. The specific variables are listed in Table **1**.

#### *4.2.2. Model*

To construct a reasonable and rigorous regression model, we first perform stepwise OLS regression on all of the variables and examine whether the effect of explaining variables on the explained variables is significant.[12] The result shows that significant relationships exist between different explained and explaining variables. For example, in the accounting index, both ROA and ROE are insignificantly related to the turnover ratio of account payable and environmental contribution. In the market index, the P/E ratio is only significantly related to the turnover ratio of the account payable and environmental contribution, whereas Tobin's Q is insignificantly related to EPS and public investment.

The aforementioned results may be attributed to the correlation among explaining variables; hence, we need to examine the correlation among similar variables (see Table **2**).[13]

Table **2** shows that a strong correlation exists between the net asset value per share and the EPS, whereas financial leverage and the turnover ratio of the account payable are insignificantly related. Therefore, the net asset value per share and the EPS should serve as the explaining variables of the social responsibility to the shareholders, whereas the financial leverage and the turnover ratio of the account payable can simultaneously serve as the explaining variable of the social responsibility to creditors.

In summary, we establish four kinds of models[14] i.e. Formulas (1) to (6), to empirically test the hypotheses of this study.

Model 1(a)-1(b):

$$Y_{1at} = \lambda_{1a}X_{1t} + \lambda_{3a}X_{3t} + \lambda_{5a}X_{5t} + \lambda_{6a}X_{6t} + \lambda_{7a}X_{7t} + \lambda_{9a}X_{9t} + year + \varepsilon_{1at} \tag{1}$$

$$Y_{1bt} = \lambda_{2b}X_{2t} + \lambda_{3b}X_{3t} + \lambda_{5b}X_{5t} + \lambda_{6b}X_{6t} + \lambda_{7b}X_{7t} + \lambda_{9b}X_{9t} + year + \varepsilon_{1bt} \tag{2}$$

Model 2(a)-2(b):

$$Y_{2at} = \delta_{1a}X_{1t} + \delta_{3a}X_{3t} + \delta_{5a}X_{5t} + \delta_{6a}X_{6t} + \delta_{7a}X_{7t} + \delta_{9a}X_{9t} + year + \varepsilon_{2at} \tag{3}$$

$$Y_{2bt} = \delta_{2b}X_{2t} + \delta_{3b}X_{3t} + \delta_{5b}X_{5t} + \delta_{6b}X_{6t} + \delta_{7b}X_{7t} + \delta_{9b}X_{9t} + year + \varepsilon_{2bt} \tag{4}$$

Model 3:

$$Y_{3t} = \beta_4 X_{4t} + \beta_8 X_{8t} + year + \varepsilon_{3t} \tag{5}$$

Model 4:

$$Y_{4t} = \gamma_1 X_{1t} + \gamma_3 X_{3t} + \gamma_4 X_{4t} + \gamma_5 X_{5t} + \gamma_6 X_{6t} + \gamma_8 X_{8t} + \gamma_9 X_{9t} + year + \varepsilon_{4t} \tag{6}$$

**Table 1. Specification of Variables.**

| Variable | Object | Definition | Category | Formula | Expectant Sign |
|---|---|---|---|---|---|
| $Y_1$ | Accounting index for CFP | ROA | Explained variable | Net profit/total assets | NA |
| $Y_2$ | Accounting index for CFP | ROE | Explained variable | Net profit/average stockholder's equity | NA |
| $Y_3$ | Market index for CFP | P/E ratio | Explained variable | Share price/EPS | NA |
| $Y_4$ | Market index for CFP | Tobin's Q | Explained variable | (Equity market value + net debt market value)/final total assets | NA |
| $X_1$ | Fulfillment of CSR to shareholders | Net asset value per share | Explaining variable | Stockholder's equity /total number of shares | + |
| $X_2$ | Fulfillment of CSR to shareholders | EPS | Explaining variable | Net Earnings/outstanding common stock | + |
| $X_3$ | Fulfillment of CSR to creditors | Financial leverage | Explaining variable | Liabilities/assets | + |
| $X_4$ | Fulfillment of CSR to creditors | Turnover ratio of account payable | Explaining variable | Net value of main business cost/average balance of accounts payable | + |
| $X_5$ | Fulfillment of CSR to consumers | Contribution rate of the consumer | Explaining variable | Main business cost/main business income | + |
| $X_6$ | Fulfillment of CSR to the government | Contribution rate of the government | Explaining variable | (Various taxes and fees− tax return amount)/main business income | + |
| $X_7$ | Fulfillment of CSR to the community | Public investment | Explaining variable | Amount of social donations/main business income | + |
| $X_8$ | Fulfillment of CSR to the community | Environmental contribution | Explaining variable | Whether it follows *Sustainability Reporting Guidelines of China* | + |
| $X_9$ | --- | Size of company | Control variable | Natural logarithm of total assets | - |
| Year | --- | Year | Control variable | 2006–2015 | NA |

**Table 2. Correlation of the Similar Variables.**

| Variable | $X_1$ | $X_2$ | Variable | $X_3$ | $X_4$ |
|---|---|---|---|---|---|
| $X_1$ | 1.0000 | 0.6971 | $X_3$ | 1.0000 | −0.1426 |
| $X_2$ | | 1.0000 | $X_4$ | | 1.0000 |

## 5. EMPIRICAL ANALYSIS

### 5.1. Descriptive Statistics

The results of the descriptive statistics of the sample data are presented in Table **3**. As shown in the table, the standard deviation of fulfilling social responsibility has a larger difference when the standard deviation of company size is only 1.7784. This result indicates a considerable difference between the degree of attention given to social responsibility and the actual performance of social responsibility of the energy companies.

However, we also determine that the number of energy corporations following the *Sustainability Reporting Guidelines*[15] is gradually increasing. Moreover, aggregate investment on the environment also exhibits an evident growth (with an average annual growth rate of 30% in the sample period). This finding shows that energy corporations are gradually realizing the importance of social responsibility in their development, and

**Table 3. Results of the Descriptive Statistics.**

| Variable | Sample Number | Mean | Standard Deviation | Maximum value | Minimum Value |
|---|---|---|---|---|---|
| $Y_1$ | 500 | 9.4703 | 8.1611 | 43.1353 | −26.8357 |
| $Y_2$ | 500 | 11. 4526 | 20. 2329 | 61. 8563 | −192.7261 |
| $Y_3$ | 500 | 60. 5627 | 57. 5720 | 874.3881 | −362.2430 |
| $Y_4$ | 500 | 3.0379 | 1.2667 | 15. 0179 | 0.3793 |
| $X_1$ | 500 | 4. 9631 | 1.8912 | 5.8300 | −2.6520 |
| $X_2$ | 500 | 0.8671 | 1.9843 | 15.6767 | −2.9812 |
| $X_3$ | 500 | 51.8669 | 16.1020 | 143.5538 | 3.6235 |
| $X_4$ | 500 | 656. 6273 | 815.5626 | 1900.8814 | 0.3981 |
| $X_5$ | 500 | 68.1182 | 27.2338 | 185.7016 | 0.1198 |
| $X_6$ | 500 | 10.7215 | 8.0509 | 40.3361 | 0.1272 |
| $X_7$ | 500 | 1.2316 | 6.3170 | 91.2632 | 0.0000 |
| $X_8$ | 500 | 0.1421 | 0.3364 | 1.0000 | 0.0000 |
| $X_9$ | 500 | 25.8714 | 1.9782 | 29.6089 | 18.8933 |

Notes: To facilitate the display of data, the results are obtained after dimensional processing; the units of the data are different. The units of the variables refer to the measurement in Table **1**.

**Table 4. Results of the Empirical Test.**

| **Model 1(a/b)** | **$X_1$/ $X_2$** | **$X_3$** | **$X_5$** | **$X_6$** | **$X_7$** | **$X_9$** | |
|---|---|---|---|---|---|---|---|
| **$Y_{1a}$** | 0.6131*** (4.36) | 0.0939*** (5.27) | −0.0132*** (−7.92) | 0.2137*** (5.69) | 0.0639 (0.78) | −0.3574 (−1.09) | |
| **$Y_{1b}$** | 6.8690*** (17.63) | 0.0734*** (4.38) | −0.0046** (−2.59) | 0.1218*** (4.71) | −0.1034* (−2.07) | −0.6507* (−2.34) | |
| **Model 2(a/b)** | **$X_1$/ $X_2$** | **$X_3$** | **$X_5$** | **$X_6$** | **$X_7$** | **$X_9$** | |
| **$Y_{2a}$** | 1.7898*** (3.27) | 0.1276** (2.82) | −0.0183*** (−6.56) | 0.3425** (2.58) | 0.0034* (1.51) | −0.5139 (−0.89) | |
| **$Y_{2b}$** | 16. 7649*** (10.23) | 0.1007** (2.44) | −0.0017** (−2.11) | 0.1137** (2.27) | −0.2845 (−1.02) | −0.6952 (−1.26) | |
| **Model 3** | **$X_4$** | **$X_8$** | | | | | |
| **$Y_3$** | 0.0053** (2.10) | −163.45 (−0.81) | | | | | |
| **Model 4** | **$X_1$** | **$X_3$** | **$X_4$** | **$X_5$** | **$X_6$** | **$X_8$** | **$X_9$** |
| **$Y_4$** | 0. 1013** (2.01) | 0.0201*** (5.66) | 0.0002* (1.56) | 0.0079*** (6.76) | 0.0245*** (2.83) | 0.0875 (0.69) | −0.1774 (−1.26) |

Notes: *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively. The "(a/b)" means (a) or (b). The "X1/X2" means X1 or X2 in different models for the purpose of robustness. The () shows T values. Adjusted R2 of the four models are approximately 0.36, and P values are 0.

thus, are gradually increasing the degree of attention and investment to social responsibility.

### 5.2. Empirical Results

We adopt the OLS method to perform a regression test on Models 1 to 4 i.e. Formulas (1) – (6), and the results are presented in Table **4**[16].

**Table 5. Regression results during the period of the 11th Five-Year Plan.**

| Model 1(a/b) | $X_1$/ $X_2$ | $X_3$ | $X_5$ | $X_6$ | $X_7$ | $X_9$ | |
|---|---|---|---|---|---|---|---|
| $Y_{1a}$ | 0. 7131*** (3.22) | 0.1229*** (4.62) | −0.0754*** (−3.33) | 0.4306*** (5.10) | −0.0677 (−0.32) | −0.3601 (−1.01) | |
| $Y_{1b}$ | 6.9556*** (10.88) | 0.0945*** (4.68) | −0.0107*** (−2.21) | 0.1971*** (2.65) | −0.5479* (−1.49) | −0.6603** (−2.13) | |
| **Model 2(a/b)** | $X_1$/ $X_2$ | $X_3$ | $X_5$ | $X_6$ | $X_7$ | $X_9$ | |
| $Y_{2a}$ | 1.9275*** (2.83) | 0.0752 (0.77) | −0.0889*** (−2.01) | 0.8943*** (3.56) | 0.0895 (0.32) | −0.8519 (−0.88) | |
| $Y_{2b}$ | 18.4368*** (10.23) | 0.0649* (2.22) | −0.0104 (−0.03) | 0.1816 (0.36) | −1.1378 (−0.51) | −0.1689 (−1.06) | |
| **Model 3** | $X_4$ | $X_8$ | | | | | |
| $Y_3$ | 0.0068 (1.03) | −93.3640 (−0.53) | | | | | |
| **Model 4** | $X_1$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_8$ | $X_9$ |
| $Y_4$ | 0.1108** (1.98) | 0.0122*** (3.54) | 0.0009 (0.38) | 0.0172** (2.16) | 0.0103 (0.11) | 0.1736 (0.53) | −0.0135*** (−2.76) |

Notes: *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively. The "(a/b)" means (a) or (b). The "X1/X2" means X1 or X2 in different models for the purpose of robustness. The () shows T values. Adjusted R2 of the four models are approximately 0.34, and P values are 0.

Table **4** shows that the accounting index ROA functions as the explained variable Y1a, and the net asset value per share functions as the explaining variable X1 in Model 1(a). The net asset value per share, financial leverage, and contribution rate of the government are significantly positive, which is consistent with the expectation. This finding shows that a corporation ensures the net asset value per share of the shareholders and enhances the contribution rate of the government, which facilitates the realization of the financial management target of an energy corporation. Most energy industries are state-owned enterprises, which always have good repayment capability. Within the scope of enterprise repayment capability, the use of financial leverage promotes the performance of an enterprise; hence, a corporation should increase the use of financial leverage to increase its wealth within the scope of repayment capability. However, the contribution rate of the consumers is significantly negative and inconsistent with expectations. This finding may be attributed to the increase in the main business costs, which will lead to a direct reduction in short-term profits. If a company adopts ROA as a measure of its financial goal, then the ROA should be within a reasonable value to control the primary business costs. Furthermore, the signs of the public investment are confused. This finding indicates that increasing the investment of public welfare enterprises may reduce ROA, and that corporations should increase public investment appropriately. EPS functions as explaining variable X2 in Model 1(b), and most of its results are similar to those of Model 1(a). Similarly, the results of Model 2(a/b) are nearly unanimous with those of Model 1(a/b).

The market indices, namely, P/E ratio and Tobin's Q, function as explained variables Y3 and Y4 in Models 3 and 4. According to the examination[17], the P/E ratio only correlates with the turnover ratio of the account payable and environmental contribution, and, thus, we can only consider these two indices in Model 3. The results show that the turnover ratio of the account payable and P/E ratio are significantly and positively correlated, which indicates that the corporate responsibility of creditors is beneficial to the enhancement of an enterprise's market value. The difference between the regression result of Model 4 and the preceding results is that the contribution rate of the consumer is significantly positive, which indicates that fulfilling the responsibility of the consumers can increase the Tobin's Q value of an enterprise and that the finding is consistent with expectations.

The results of four models verify H1 to H4, whereas H5 is not confirmed. The possible reason for this finding is that public investment and environmental contribution, as a type of non-return investment, may negatively affect corporate profits and reduce the short-term market value of enterprises, and thus,

**Table 6. Regression results during the period of the 12th Five-Year Plan.**

| **Model 1(a/b)** | **$X_1$/ $X_2$** | **$X_3$** | **$X_5$** | **$X_6$** | **$X_7$** | **$X_9$** | |
|---|---|---|---|---|---|---|---|
| **$Y_{1a}$** | 0.4821**<br>(2.52) | 0.0732***<br>(2.88) | −0.1956***<br>(−7.39) | 0.0108<br>(0.34) | 0.0801*<br>(1.56) | −0.0526<br>(0.689) | |
| **$Y_{1b}$** | 7.0121***<br>(12.23) | 0.0305*<br>(1.91) | −0.0725***<br>(−4.42) | 0.0795**<br>(2.19) | −0.0403<br>(1.03) | −0.2412**<br>(−1.77) | |
| **Model 2(a/b)** | **$X_1$/ $X_2$** | **$X_3$** | **$X_5$** | **$X_6$** | **$X_7$** | **$X_9$** | |
| **$Y_{2a}$** | 0.9706*<br>(1.69) | 0.2458***<br>(3.67) | −0.4288***<br>(-5.32) | 0.1396*<br>(1.62) | 0.0281<br>(0.24) | −1.4351<br>(−1.22) | |
| **$Y_{2b}$** | 14.9342***<br>(8.17) | 0.2623**<br>(2.24) | −0.1165**<br>(−2.57) | 0.0489*<br>(1.57) | −0.2004*<br>(−1.51) | −0.4589<br>(−0.61) | |
| **Model 3** | **$X_4$** | **$X_8$** | | | | | |
| **$Y_3$** | 0.0412*<br>(1.61) | −198.33<br>(−0.79) | | | | | |
| **Model 4** | **X1** | **X3** | **X4** | **X5** | **X6** | **X8** | **X9** |
| **Y4** | 0.1203**<br>(2.78) | 0.0187***<br>(4.13) | 0.0005*<br>(1.66) | 0.0089*<br>(1.98) | 0.0273***<br>(2.96) | 0.1454*<br>(1.57) | −0.1872***<br>(−3.14) |

Notes: *, **, and *** indicate 10%, 5%, and 1% significance levels, respectively. The "(a/b)" means (a) or (b). The "X1/X2" means X1 or X2 in different models for the purpose of robustness. The () shows T values. Adjusted R2 of the four models are approximately 0.33, and P values are 0.

decrease the accounting and market indices of an enterprise. We need a further test for H5.

### 5.3. Robust Tests

We further divide the sample period to conduct robust tests.[18] Under the division standard of the Five-Year Plan[19] in China, we conduct robust tests by dividing the sample period from 2006 to 2010 and 2011 to 2015, which respectively represent the 11th Five-Year Plan and the 12th Five-Year Plan in China.[20] We further investigate whether the influence of CSR on realizing the CFP has changed in the two Five-Year Plan periods. The results are provided in Tables **5** and **6**.

The comparison of the results in Tables **5** and **6** shows that during the period covered by the 12th Five-Year Plan, the significance of the correlation between the social responsibility of energy corporations and the indices of financial performance is evidently enhanced, as shown in Models 2(a/b), 3, and 4 in Table **6**. Moreover, a significantly positive correlation is observed for the environmental contribution during the period of the 12th Five-Year Plan. This result shows that Chinese energy companies pay more attention to environmental protection following the Sustainability Reporting Guidelines, and those behaviors bring the cost burden of enterprises but promote the decrease in replacement cost of enterprises. In summary, the social responsibility of listed energy companies is promoted during the period of the 12th Five-Year Plan, and the realization of the CFP is clearly enhanced. The results presented in Table **6** verify H5.

## 6. CONCLUSION

We use 50 listed Chinese energy companies as objects of the study and select panel data from 2006 to 2015 as the study sample. More specifically, we systematically investigate the relationship between Chinese energy corporations fulfilling their social responsibility and realizing their financial goals by using the OLS method and regression analysis via Stata software. The main conclusions drawn from the current study are as follows. (1) The fulfillment of the different social responsibilities of energy corporations will have a different effect on the realization of the financial management target. Moreover, selecting different indices to measure financial management goals also has varying effects on the conclusion. (2) When accounting and market indices function as explained variables, fulfilling the social responsibilities of the shareholders, creditors, and the government will help the business in achieving its financial goals. (3) When accounting indices function as explained variables, fulfilling the social responsibility of consumers negatively affects short-term financial performance but positively affects market index. (4) No clear correlation exists between the social responsibility of a community and financial management goals during the period of the 11th Five-Year Plan but exhibits a significantly positive relationship during the period of the 12th Five-Year Plan. (5) In terms of company size, a significantly negative correlation exists between total assets and financial performance, which shows that a bigger enterprise is not necessarily better.

In summary, fulfilling the social responsibility of energy enterprises and realizing their financial management target are not entirely in conflict. They complement and promote each other to a considerable extent. For energy enterprises, the significance of fulfilling their social responsibility in corporate performance will be enhanced with the development of society and the perfection of the social responsibility system. Therefore, enterprises should focus on fulfilling their social responsibility to realize their financial management target by selecting which social responsibility to fulfill.

## ENDNOTES

[1]Energy companies can be divided according to their product: oil, natural gas, coal, solar, wind, water, and so on.

[2]In particular, coal, oil, natural gas, and other one-time traditional energy companies are the focus of this study.

[3]Stakeholder theory was first proposed in the 1960s and considerably challenged traditional "shareholder supremacy."

[4]Freeman proposed a broad definition of stakeholders in Strategic Management: A Stakeholder Approach in 1984. He believed that stakeholders were the individuals and groups who could affect business goals or be able to implement the process of the target, such as government departments, community, environmental protectors, and other entities included in the category of stakeholders.

[5]ROA is typically used to measure the net profit created by per unit of assets; it is the net profit divided by the total assets. When ROA is high, the financial situation of an enterprise is good.

[6]ROE is the index used to measure the efficiency of the utilization of the company's free capital. Usually, it is the average shareholder's equity divided by corporate profits. The higher the index, the greater the ability of its own capital to obtain a net income.

[7]Tobin's Q is the ratio of the market value of the stock to the asset replacement cost represented by the stock of companies. When the market value of the enterprise is high, resetting it is difficult.

[8]P/E ratio is used to assess whether the level of the stock prices is reasonable; it denotes the share price divided by the annual earnings per share. A high P/E ratio indicates that although the stock of an enterprise is not fit for purchase, the enterprise has good prospect for development.

[9]In this study, we use public investment and environmental contribution as measures.

[10]We measure the social responsibility of the environment and public benefit according to whether a corporation follows the *Sustainability Reporting Guidelines* and by using the public investment of a corporation.

[11]When the company is large, the influence of the scale effect is high, access to resources is easy, and the company is likely to benefit. The public is more concerned with whether the company is fulfilling its social responsibility.

[12]Insignificant explaining variables after each regression are rejected.

[13]We also use the White tests for the heteroscedasticity, and we use weighted LS to eliminate heteroscedasticity. Moreover, our variables do not exhibit an endogenous problem.

[14]We select variables by significance and R2 value through stepwise OLS regression.

[15]See Note 11.

[16]Control variable year is not shown in the results, because it is insignificant.

[17]The stepwise OLS regression is presented in Chapter IV.

[18]Different methods can be used to conduct a robust test. These methods include replacing variables, changing samples, dividing the sample period, using an alternative method, and so on. In this paper, we choose the method of dividing the sample period.

[19]The Five-Year Plan is the most important development plan for the national economic and social development of the People's Republic of China every five years.

[20]Given that the 12th Five-Year Plan remains under implementation and only the period from 2011 to 2015 is observable, we select 2006 to 2010 in the 11th Five-Year Plan as the check plot.

## CONFLICT OF INTEREST

The author declares that there are no conflicts of interest.

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