The Impacts of Social Responsibility and Ownership Structure on Sustainable Financial Development of China's Energy Industry

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Abstract: In the analysis, we integrated stakeholder and agency theories to explore the connection between corporate social responsibility (CSR) and sustainable financial development by considering the moderating effect of ownership structure. After empirical analysis, we found the following conclusions. First, the short-term and long-term economic performance is positively affected by CSR, which leads to sustainable financial development. Second, ownership circulation has a positive relationship with economic performance in the short run, which short-term profit increases as ownership circulation strengthens. Third, the effect of CSR on short-term economic performance is moderated by ownership structure. Excessive concentrated ownership may lead to decisions that do not satisfy all key stakeholders and may reduce the positive effect of CSR on economic performance. Finally, we suggest that Chinese energy companies should pay more attention to improving corporate social responsibility to maintain good economic performance and develop sustainable competitive advantage. Meanwhile, companies should optimize ownership concentration to avoid weakening the positive effects of social responsibility on short-term economic performance.

Keywords: corporate social responsibility; ownership structure; sustainable financial development; Chinese energy industry

1. Introduction

Due to the deteriorating international economic environment and declining domestic demand, operations of the Chinese energy industry are difficult. Reports of the Chinese energy industry in 2016 noted that loss of traditional energy enterprises grew 36.4% by the end of 2015, although the profitability of renewable energy enterprises improved substantially. Because the industry has declined, companies are challenged to optimize organization and structure as well as improve competitiveness and profitability. Many have begun to build environmentally friendly operations and increase energy efficiency to reduce costs and improve profits. They are also paying more attention to employees, consumers, and commercial partners who can help them to develop a sustainable competitive advantage. Thus, corporate social responsibility (CSR) is generating growing effects on the development of China's energy industry.

In Davis' research (1973) [1], he defined CSR as a company's consideration of and responsibility to create social benefits along with the traditional financial profits. Thus, CSR goes beyond the narrow economic, technical, and legal requirements and is concerned with real value created by the company for its shareholders, employees, customers, creditors, communities, and society. CSR has provided considerable benefits to companies [2]. Wahba and Elsayed (2014) [3] noticed that firms could develop

a competitive edge over rivals by investing in social responsibility. Lambertini and Tampieri (2015) [4] found that compared with other profit-oriented firms, CSR firms can gain more profits and achieve better social welfare. However, Jones et al. (2006) [5] found a negative relationship between CSR and company financial performance (CFP). Peng and Yang (2014) [6] suggested that investment in CSR should divert funds away from production. Scholars believed the uniqueness of different relationships [7,8], which means that the industry should identify its special relationship instead of directly using the conclusions of others. Take the energy industry, for example, Bevan et al. (2004) [9] identified potential benefits such as the enhancement of profit, customer service, brand value, and long-term sustainability. In the global banking sector, Shen et al. (2016) [10] concluded that CSR banks perform much better than non-CSR banks regarding return on assets (ROA) and return on equity (ROE). Due to the distinct theoretical basis, separate industry background, and different indicators of corporate performance, previous empirical studies offered inconclusive evidence on the relationship between social responsibility and economic performance.

Although academics have different opinions on the relationship between CSR and CFP, a company's CSR policy hinges on shareholder and manager decisions in business [11]. CSR and ownership structure have been widely examined. Darus et al. (2013) [12] examined the relationship between CSR and the various forms of ownership structure (such as government-owned, family-owned, foreign-owned, managerial, and concentrated ownership) and revealed that family-owned ownership has a negative influence on CSR, while foreign-owned companies are positively motivated by CSR. Paek et al. (2013) [2] found that managerial ownership has a negative relationship to CSR. Wabash and Elsayed (2015) [13] suggested that there is a negative relationship between social responsibility and institutional owners. Feng et al. (2011) [14] confirmed a positive correlation between government-owned ownership and CSR in listed companies of China. Dam and Scholtens (2013) [15] believed that highly concentrated ownership can result in the degradation of the CSR of firms. It is easy to understand that the prospect of improving profits may motivate some shareholders to increase CSR, but not all owners have positive attitudes towards it. Moreover, the ownership can be classified in various categories from different perspectives; therefore, the general impacts of ownership on CSR are inconsistent.

The property rights theory suggests that a firm's ownership structure influences its performance. While scholars have discussed a relationship between corporate performance and ownership structure, they have found varying correlations: Positive, negative, U-shaped, and inverted U-shaped [16–20].

The relationships between CSR and economic performance, CSR and ownership, and ownership and economic performance have been examined extensively. Few studies have empirically examined the relationship between CSR and economic performance by considering the moderating effect of ownership structure, especially calculating a firm's economic performance by short-term and long-term indexes to widely evaluate sustainable financial development. After employing stakeholder and agency theories as well as collecting panel data from Chinese listed energy companies from 1992 to 2016, we found the following conclusion. First, CSR has a positive relationship with economic performance in both the short and long term. Second, there is a positive relationship between the ownership circulation and short-term economic performance. Third, the ownership structure can moderate the impacts of social responsibility on the short-term economic performance. The positive impact of CSR on economic performance in the short-term decreases as ownership concentration increases. Excessive concentrated ownership may lead to decisions that do not satisfy all key stakeholders and may reduce the positive effect of social responsibility on economic performance in the short run.

This study was designed to add more theoretical and practical contribution to existing CSR literature as follows:

(1)　This study has focused on the energy industry because the effects of CSR on economic performance in different industries is quite unique [8,21,22]. However, current studies mainly focus on industries in developed countries. The emerging market of China was sampled in this paper.

(2)　In addition to the conventional short-term CFP index, this study used sustainable growth rate as a dependent variable to measure sustainable financial development in the long run and represent self-development ability. This indicator is very important for describing market performance and internal sustainable development for stakeholders.

(3)　We introduced an index-social contribution value per share (SCV) as an independent variable to represent CSR. This official index was issued by the Shanghai Stock Exchange (SSE) in 2008 and was introduced to all listed Chinese companies. It provides better CSR information to all stakeholders and gives them a clearer understanding of the real value created by the company.

(4)　Concentration and circulation were used to describe ownership structure. In immature Chinese stock markets, complete circulation is often not realized and listed companies tend to have a concentrated ownership structure. Ownership concentration and circulation are the most representative indexes.

(5)　We have discussed the interactions of ownership structure and CSR on CFP as a multifaceted mechanism to provide a new insight.

This paper is organized as follows. The second section reviews the literature and builds hypotheses. Model design, variable definition and data collection are covered in section three, while the fourth section analyzes empirical results and discusses findings. We conclude the results in section five.

2. Literature Review and Proposed Hypotheses

As the Chinese economy expands, people are paying more attention to company contributions to social stability and sustainable development. To win society's respect, many companies have enhanced their social coordination as well as environmental policies and practices.

Sheldon (1923) [23] first proposed CSR as a concept which does not just maximize profits but also considers ethical aspects. The modern CSR concept dates back to the 1950s and has evolved [24]. Carroll (1979) [25] believed that CSR refers to society's expectations for enterprises with respect to their economic, legal, ethical and philanthropic responsibilities. Frederick (2016) [26] examined the four-stage development of CSR: CSR 1 (1950–1960s) suggested that firm managers must work willingly as public trustees and social servers for the sake of public interests; CSR 2 (1960–1970s) extended firms' legal corporate responses to more social needs; CSR 3 (1980–1990s) called for firms to cultivate ethical corporate cultures to help more stakeholders and communities by means of social contracts; and CSR 4 (1990–2000s) asked firms to be global citizens spotting and rectifying corporate negative effects on the society and environment.

Recently, energy enterprises have implemented CSR widely. The current studies focused on a wide range of CSR subjects such as the financial impacts of socially responsible activities and their calculation or disclosure. Pätäri et al. (2014) [27] examined whether investments in CSR have an effect on CFP. This study implied the diverse effects on financial performance: CSR focuses on both profitability and market value, but CSR strengths only focus on market value. The study of Jones et al. (2016) [5] is illustrated by the construction of a composite index for measuring social outcomes in the electricity utility industry. Wahba and Elsayed (2015) [13] affirmed that institutional environment influences corporate governance mechanisms as well as companies' CSR disclosure. However, there is no article investigating the relationships among CSR, ownership, and CFP.

2.1. The Relationship between CSR and Economic Performance

Although many studies have examined the relationship between CSR and economic performance, no consistent conclusion has been drawn from empirical analyses, showing positive, negative, curvilinear and no effects. Most researchers have argued a positive impact of CSR on CFP based on the social impact theory [28]. Moskowitz (1972) [29] concluded that ROE for companies extremely involved in CSR surpassed the Dow Jones Industrial Average. Similarly, Tsoutsoura (2017) [30] confirmed the positive relationship between CSR and company performance such as ROE, ROA, and

ROS. Conversely, based on Friedman's trade-off theory, some scholars believed CSR had a negative effect on a firm's economic performance when corporate strategies highly considered CSR beyond the financial profits. For example, Vance (1975) [31] believed that CSR and stock price changes are negatively correlated. From other points of view, Aupperle et al. (1985) [32] concluded there was no difference in the relationship between CSR and CFP whether the firm practiced legal and ethical social activities. Nollet et al. (2016) [33] divided the CSR into different sub-components and concluded that there is a U-shaped relationship between the government sub-component and CFP. The mixed empirical results may be attributable to different model specifications, variable measurements, sample selection techniques and theoretical perspectives. Table 1 summarizes the theoretical background and correlation of CSR and CFP.

Table 1. Theoretical background, hypotheses of relationship between CSR and CFP.

Relationship	Theoretical Background or Hypotheses	Correlation
CSR Influence Financial Performance	Social Impact Hypothesis	Positive
CSR Influence Financial Performance	Transaction Cost Theory	Positive
CSR Influence Financial Performance	RBV (Resource-Based View)	Positive
CSR Influence Financial Performance	Trade-Off Theory	Negative
Financial Performance Influence CSR	Available Funds Hypothesis	Positive
Financial Performance Influence CSR	Managers Opportunism Hypothesis	Negative
The Two Factors Influence Each Other	Positive Synergy Hypothesis	Positive
The Two Factors Influence Each Other	Negative Synergy Hypothesis	Negative
The Two Factors Have No Influence		No correlation

Enterprises expecting to have sustainable development should consider market and society simultaneously. Thus, there should be a contractual relationship between enterprise and society. Society supports the company and demands that the company is socially responsible. The key in this contractual relationship is the stakeholder [34]. However, Coase (1937) [35] noted that there were transaction costs. Jones (1995) [36] argued that increasing CSR will help to improve the relationship with stakeholders and realize the decline of transaction costs. Similarly, Barnett (2007) [37] found that increasing CSR improves trustworthiness, thereby reducing transaction costs. We have inferred that corporate social responsibility plays a positive role in corporate profitability and performance.

Hypothesis 1 (H1). *Corporate social responsibility has a positive effect on economic performance.*

2.2. The Relationship between Ownership Structure and Economic Performance

Property rights theory suggests that a firm's ownership structure determines efficiency and performance [11]. The literature has investigated its quantitative and qualitative effects on performance. Qualitative structure refers to the nature of ownership, and can be divided into domestic and public ownership; family-owned, foreign-owned, institutional, and managerial ownership; tradable and non-tradable shares (non-tradable shares are "restricted" and cannot be traded in capital markets). In Chinese listed companies, it is important to distinguish tradable and non-tradable shares from ownership circulation because ownership circulation influences behaviors of shareholders and managers and affects performance. Quantitative structure refers to ownership concentration.

Although the split share structure reform (non-tradable shares reform) has been completed, full-circulation is still difficult to achieve. In our sample the average ratio of non-public shares over total shares is approximately 33%; therefore, the relationship between ownership circulation and corporate performance is still a critical issue. Chen and Jiang's (2000) study [38] used ROE and operation margins as explanatory variables and suggested that the proportion of tradable shares is positively correlated with performance. Liu and Wang (2000) [39] checked the effects of tradable shares ratio on ROA, ROE, and EPS and confirmed a positive relationship. Wu (2002) [40] found a significant U-shaped curvilinear relationship between the tradable shares ratio and CFP, and Zhou (2005) [41] showed that tradable shares had a negative effect on performance. We have inferred that ownership

circulation plays a positive role in corporate governance. High ownership circulation encourages managers to increase profitability and performance.

Hypothesis 2 (H2). *There is a positive relationship between ownership circulation and economic performance.*

The separation of principals and agents causes agency costs between external shareholders and internal managers [42] as well as transaction costs between large and small shareholders [35]. Controlling shareholders can use ownership concentration to monitor management and enhance firm value [43]. They are capable of confining managers' power in case of managers pursuing personal interests rather than the interests of shareholders. [44]. Several studies have focused on the effects of ownership concentration on economic performance and most concluded that there is a positive relationship between ownership concentration and economic performance [45,46]. Some believe that ownership concentration does not enhance performance or that there is an inverted U-shaped relationship [47]. Ownership concentration is a key indicator of ownership stability. Concentrated and stable ownership leads to better efficiency and economic performance.

Hypothesis 3 (H3). *There is a positive relationship between ownership concentration and economic performance.*

2.3. The Interactions of CSR and Ownership Structure on Economic Performance

According to stakeholder theory, the enterprise's success is not only influenced by the shareholders but also by other stakeholders (government, employees, suppliers, customers, and communities). Socially responsible companies try to balance the interests of all stakeholders and may be rewarded with higher profitability. The appropriate ownership structure helps to achieve this goal.

The proportion of untradable shares in Chinese listed companies is greater than in western countries. Tradable shareholders have the right to participate in the shareholders meeting and vote, so they have more access to management and can limit the managers' self-interested behavior. They also have more influence on socially responsible behavior. As a result, some scholars proposed that the ratio of tradable shares positively affects CSR [48,49]. Stefano et al. (2015) [50] found that the level of voluntary environmental disclosure tends to increase with the growth of public partners in the ownership structure. However, based on an empirical analysis in the Chinese electrical industry, Liu (2013) [51] simultaneously verified a negative relationship between CSR and the ratio of tradable shares as well as a positive relationship between CSR and profitability.

Stakeholder theory suggests that enterprises should balance the interests of stakeholders and bear the corresponding economic and social responsibility. High tradable share ratio leads to a diversity of shareholders. Their diversified interests and suggestions can impact corporate management and business decisions.

Hypothesis 4 (H4). *The positive effect of social responsibility on economic performance will increase as the tradable share ratio increases.*

However, concentrated ownership used to have a positive relationship with performance in the governance literature [6,52] because it sought to maximize investment value in the short run. However, a firm with high ownership concentration will exhibit reduced diversity and CSR [53]. Dam and Scholtens (2013) [54] found that more concentrated ownership goes hand in hand with poorer CSR policies because shareholders may feel that they provide public goods at a higher price. Although the findings of Lau et al. (2015) [53] indicated that CSR is positively influenced by ownership concentration in Brazil, most scholars have concluded that there is a negative relationship between concentrated ownership and social responsibility. Cormier et al. (2009) [54] argued that firms with concentrated ownership are not as responsive as others to public questioning because controlling shareholders would not like to share information with others. Autissier et al. (2014) [55] found that firms with decentralized ownership achieved better corporate social performance. Dam and Scholtens

(2013) [15] stated that concentrated ownership is associated with low corporate social performance. Peng and Yang (2014) [6] examined the role of the ownership concentration in CSR and CFP for five high polluting industries in Taiwan and demonstrated that CSR and CFP is negatively moderated by the divergence between control rights and cash flow rights of controlling owners. Yang and Yang (2012) [56] researched the relationship between ownership concentration, social responsibility, and corporate value in Chinese listed companies and found that ownership concentration correlates negatively with enterprise value and social responsibility.

Hypothesis 5 (H5). *The positive effect of social responsibility on economic performance will decrease as ownership concentration increases.*

3. Research Methodology

3.1. Variables Definition

A summary of variable definitions is shown in Table 2.

Table 2. Summary of variable definitions.

Category		Variable	Symbol	Formula
Depended Variable (Y)		Return on Assets	ROA	Net Profits/Total Assets
Depended Variable (Y)		Sustainable Growth Rate	SGR	$PM \times (1 - D) \times (1 + L)/(T - (PM \times (1\text{-}D) \times (1 + L)))$ [a]
Independent Variable	CSR (X_1)	Social Contribution Value Per Share	SCV	EPS + (Total Tax + Staff Expenditure + Interests + Public Welfare Payout − Social Cost)/Total Equity
Independent Variable	Ownership Structure (X_2)	Proportion of Tradable Shares	TR	Tradable Shares/Total Shares
Independent Variable	Ownership Structure (X_2)	Ownership Concentration	H5	Σ (The Shareholding ratio of Top Five Shareholders)^2
Control Variable (Z)		Firm Size	SIZE	Ln (Total Assets)
Control Variable (Z)		Financial Leverage	LEV	Total Liabilities/Total Assets
Control Variable (Z)		Long-term Debt Ratio	LDR	Long-term Debts/Total Assets

Note [a]: PM = existing and target profit margin; D = target dividend payout ratio; L = target total debt to equity ratio; T = ratio of total assets to sales.

3.1.1. Sustainable Financial Development

Economic performance is a firm's ability to produce new resources from daily operations during certain time period, which could be evaluated by net income and cash from operations. Nowadays, stakeholders expect to reach sustainable financial development by not only focusing on income and profits but also on market performance and sustainable development. Then short-term economic performance employs ROA to measure profitability, while long-term economic performance uses sustainable growth rate (SGR) to represent self-development ability. ROA equals net profit divided by average total assets and reflects the ability to produce a profit during a fiscal year [57]. The calculation of ROA is cited from the CSMAR database's user guide (China stock market financial database—financial indices user guide, p43, F050301B) [58]. SGR represents the annual percentage of increase in sales that is in accordance with a certain financial policy [59].

3.1.2. Corporate Social Responsibility

In our article, CSR was measured by social contribution value per share (SCV). Since 2006 the China Securities Regulatory Commission (CSRC), the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) have released guidelines requiring that listed companies issue regular

social responsibility reports. On 14 May 2008, the Shanghai Stock Exchange (SSE) issued the "Notice of Improving Listed Companies' Assumption of Social Responsibilities" (hereinafter referred to as "the Notice") and the "SSE Guideline on Environmental Information Disclosure by Listed Companies", which aimed to guide the listed companies to actively fulfill social responsibilities, attach importance to common interests of stakeholders, and commit themselves to building a harmonious society and promoting sustainable development of the economy and society.

It is noticeable that the Notice first brought up the concept of "social contribution value per share", which shall act as a new important measure for comprehensively and objectively evaluating a company's value creation. Based on earnings per share created for shareholders, the added value created for the society was calculated by integrating tax revenues of the State, salary of employees, loan interest of creditors and other value for stakeholders, and excluding social costs of environmental pollution and other factors [60].

The Notice provides crucial information about the real value created by a company for all its stakeholders, is widely used by listed companies in SSE and SZSE, and has become an important index in Chinese research literature [61,62]. Based on the SSE's guidelines and calculation, in our research we obtained the SCV indicator from CSMAR (China Stock Market and Accounting Research Database, GTA) and used its formula [63] as Table 2 to calculate and replenish some missing values.

3.1.3. Ownership Structure

Ownership structure contains two dimensions: Circulation (the ratio of tradable stocks over total public stocks) and concentration (the sum of the squares of share ratio owned by the largest five shareholders to total shares) (H5).

3.1.4. Control Variables

This study employs several control variables to define the relationship between dependent and independent variables. The proxy for firm size is the natural logarithm of total assets. Financial leverage (LEV) is measured by total debt ratio which may be a good measure of residual value for shareholders. Considering the long operating cycle in energy companies, long-term debt ratio (LDR) is another control variable.

3.2. Models Design and Data Collection

3.2.1. Models Design

This article used the panel data models to simulate the multi-variable regressions [60]. Based on previous hypotheses, we derive these mathematical equations as follows:

$$Y_{i,t} = \alpha_1 + \beta_1 X_{1i,t} + \gamma_1 Z_{i,t} + \varepsilon_{i,t} \tag{1}$$

$$Y_{i,t} = \alpha_2 + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \gamma_2 Z_{i,t} + \varepsilon_{i,t} \tag{2}$$

$$Y_{i,t} = \alpha_3 + \beta_4 X_{1i,t} + \beta_5 X_{1i,t} \times X_{2i,t} + \gamma_3 Z_{i,t} + \varepsilon_{i,t} \tag{3}$$

$$Y_{i,t} = \alpha_4 + \beta_6 X_{1i,t} + \beta_7 X_{1i,t} \times X_{3i,t} + \gamma_4 Z_{i,t} + \varepsilon_{i,t} \tag{4}$$

Here,

$Yi_{i,t}$ = corporate economic performance (ROA and SGR) of company i at year t, constructing two sub-equations by each index;
$X_{1i,t}$ = corporate social responsibility (CSR) of company i at year t;
$X_{2i,t}$ = proportion of tradable shares (TR) of company i at year t;
$X_{3i,t}$ = ownership concentration (H5) of company i at year t;
$X_{1i,t} \times X_{2i,t}$ = interactive term of X_1 and X_2 of company i at year t;

$X_{1i,t} \times X_{3i,t}$ = interactive term of X_1 and X_3 of company i at year t;

$Z_{i,t}$ = control variables of company i at year t;

$\varepsilon_{i,t}$ = error term;

α_n = constant; n = 1, 2, 3, 4;

β_m, γ_n = coefficients to be estimated; m = 1, 2, 3, 4, 5, 6, 7.

3.2.2. Data Collection

This analysis employed unbalanced panel data collected from overall 64 Chinese energy companies listed on the Shanghai and Shenzhen Stock Exchanges from 1992 to 2016. The data were obtained from China's stock market and accounting research database (CSMAR; GTA). After excluding ST firms, incomplete records, and extreme data, we have 957 observation points to guarantee the reliability and avoid measurement error by sampling large data and longer period. The selection of sampling data was guided by data availability. Based on the China Securities Index Co., Ltd.'s (Shanghai, China) recommendation L124/36, all listed energy industry firms have been included. In this article, we used STATA analysis software (version 14, StataCorp, College Station, TX, USA) to process data, and test four hypotheses.

3.3. Statistical Methods

For estimation we performed pooled ordinary least square (OLS) regression model fixed effect and random effect models using Stata. First, our study utilized likelihood and Hausman tests to test which model was consistent. Second, we checked the endogeneity between explanatory variables and stochastic error terms.

If a likelihood test was allowed the FE regression model should be more suitable. After the Hausman test being conducted, the explanatory variables are correlated with the random effects. Neither likelihood nor Hausman tests were accepted, we chose OLS models. Both likelihood and Hausman tests were completed, we ran the FE model because our panel data was not random [64].

We chose a set of instrumental variables and employed the generalized method of moments (GMM) model to solve this problem. When the Hausman specification test was conducted, the instrumental variables were more suitable [65]. In addition, because the panel data is featured with N (the number of enterprises) > T (the number of years), it is reasonable to ignore the problems of serial correlation and panel unit root.

4. Results and Discussion

4.1. Descriptive Statistics

Table 3 lists the descriptive summary of variables. ROA ranges from -6.776 to 8.4414 with a mean value of 0.0471, which means that the listed energy companies have a low average profitability compared to investment. SGR ranges from -3.9340 to 8.1078 with a mean value of 0.0639, which shows that the listed energy companies have a low average growth capacity using current financial strategies and frames of reference. Using the SSE's formula, SCV is calculated from the financial statement data and social responsibility report information. SCV represents CSR and appears to be 1.7736 on average, with a minimum of -6.1378 and a maximum of 10.1128. This average level is higher than expected value, indicating that practical social responsibility may be given more attention in the Chinese energy industry. In the ownership structure index, TR rangs from 0.0846 to 1 with a mean value of 0.6776, while the average H5 is 0.2643 and the high observation is 0.7598. It shows that although comprehensive share structure reform has increased stock liquidity in China, the average ratio of tradable shares is just 67% meaning that ownership circulation is low. The sensitivity analysis test implies that the stability of the model can be enhanced by control variables, while the relationship between dependent and independent variables is not highly influenced. To rule out the heteroscedasticity problem, we used the natural logarithm of the firm assets as a control variable. The financial leverage presents a mean

value of 0.5063, implying that Chinese energy companies use much debt financing to reduce capital costs but face higher financial risks. The long-term debt ratio is approximately 0.2.

Table 3. Summary of descriptive statistics.

Variable	Mean	Std. Dev.	Min	Max
ROA	0.0471	0.3615	−6.7760	8.4414
SGR	0.0639	0.3673	−3.9349	8.1078
SCV	1.7736	1.6114	−6.1378	10.1128
TR	0.6776	0.2916	0.0846	1
H5	0.2643	0.1565	0.0149	0.7598
SIZE	22.6926	1.8499	18.4662	28.5087
LEV	0.5063	0.3394	0.0110	2.0497
LDR	0.1960	1.1633	0	0.8015

4.2. Empirical Results and Analysis

When examining the repeated cross-section of observations, it is better to use the panel data to study the dynamics of change [66]. Panel data sets include two dependent variables (ROA and SGR) and five independent variables (SCV, TR, H5, SCV × TR, SCV × H5). The panel data include fixed effects (FE), random effects (RE) and ordinary least square (OLS) estimators. During the empirical process, a Hausman test was employed to examine which model is better-the fixed effects model or the random effects model. The results are shown in the tables. When the variables pass the Hausman specification test ($p < 0.05$), the models are adopted as the instrumental variable of the GMM regression model. The GMM model is used to reduce the correlation between explanatory variables and stochastic error terms. The cross-section weights are necessary because the number of observations for places is not equivalent to the number of years. The results are shown in Tables 4 and 5.

Table 4. Results of panel data regressions (Model 1 through 4).

Dependent Variables	Model 1		Model 2		Model 3		Model 4	
	ROA		SGR		ROA		SGR	
Independent Variables	FE Coef.	GMM	FE Coef.	GMM	FE Coef.	GMM	FE Coef.	GMM
SCV	0.1015 ***	0.1504 ***	0.0979 ***	0.1219 **				
TR					0.1277 **	0.3859 *	−0.1047 *	−0.3301
H5					−0.2622	−1.1231	0.2465	−0.3335
SCV × TR								
SCV × H5								
SIZE	−0.0889 ***	−0.2370 ***	−0.0327	0.1200 *	−0.0769 ***	−0.2581 **	0.0378	0.2046 ***
LEV	−0.7378 ***	−0.8031 ***	0.8508 ***	0.9208 ***	−0.8329 ***	−0.9804 ***	0.7903 ***	0.8771 ***
LDR	0.5987 ***	0.6802 ***	−1.0305 ***	−1.6717 ***	0.5946 ***	0.5308	−1.1294 ***	−1.6957 ***
Constant	2.1860 ***	5.5619 ***	0.4017	−3.0496 **	2.1225 ***	6.4715 **	−0.9930 *	−4.4466 ***
R^2	0.4257		0.4077		0.3858		0.3667	
F	1.58 ***		3 ***		1.16 **		2.54 ***	
BP-LM test	0.00		53.44 ***		0.00		43.60 ***	
Hausman Test	85.71 ***		85.45 ***		63.38 ***		76.66 ***	
Wald chi^2		29852 ***		278.6***		25,133.95 ***		7997.88 ***

Note: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table 5. Results of Panel data regressions (Model 5 through 8).

Dependent Variables	Model 5		Model 6		Model 7		Model 8	
	ROA		SGR		ROA		SGR	
Independent Variables	FE Coef.	GMM	FE Coef.	GMM	FE Coef.	GMM	FE Coef.	GMM
SCV	0.0845 ***	0.1472 ***	0.1317 ***	0.1810 *	0.2410 ***	0.4199 **	0.0933 ***	0.0417
TR	0.0782	0.4146	−0.1190	−0.2546				
H5					0.4397 **	0.0085	0.4006 *	−0.3089
SCV × TR	0.0176	−0.0178	−0.0361	−0.0594				
SCV × H5					−0.5129 ***	−0.9930 *	0.0220	0.3172
SIZE	−0.1127 ***	−0.3023 **	0.0070	0.1608 ***	−0.0944 ***	−0.2067 ***	−0.0287	0.1106 **
LEV	−0.7475 ***	−0.8623 ***	0.8657 ***	0.9616 ***	−0.6607 ***	−0.6469 ***	0.8567 ***	0.8823 ***
LDR	0.6396 ***	0.6606 **	−1.1001 ***	−1.6610 ***	0.5526 ***	0.5079	−1.0382 ***	−1.6223 ***
Constant	2.6875 ***	6.8355 **	−0.4410	−3.8723 ***	2.1954 ***	4.8777 ***	0.1981	−2.7737 ***
R^2	0.4294		0.4193		0.4639		0.4132	
F	1.63 ***		3.13 ***		2.07 ***		3.12 ***	
BP-LM test	0.00		59.86 ***		0.00		50.85 ***	
Hausman Test	88.35 ***		93.56***		109.43 ***		94.88 ***	
Waldchi^2		26,244.17 ***		4679.7 ***		40,460.09 ***		438.93 ***

Note: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

4.2.1. Tests of Hypothesis 1

We tested the impacts of corporate social responsibility and ownership on firm performance separately and report the evidence in Table 4. In model 1, the coefficient of SCV is β = 0.1504 and the statistical significance is at the level of 1%. In model 2, the coefficient of SCV is β = 0.1219, with a statistical significance at 5% level. The result implies that there is a statistically significant and positive correlation between corporate social responsibility and corporate economic performance (ROA and SGR). The results support Hypothesis 1, saying that corporate performance will increase as social responsibility strengthens. Social responsibility balances the benefits of all stakeholders, not only on owners' current interests. Consequently, the initiative to invest in social responsibility is likely to lead to positive market response, increase the net income and strengthen the stability of overall financial development [67]. Thus, CSR has a positive impact on firm short- and long-term performance.

4.2.2. Tests of Hypothesis 2

To test Hypothesis 2, we designed models 3 and 4. From Table 4, the coefficient of tradable shares ratio in model 3 was β = 0.3859 ($p < 0.1$). The result is consistent with Hypothesis 2, saying that corporate accounting profit will increase as ownership circulation strengthens. However, the coefficient of tradable shares ratio in model 4 is not significant. Therefore, we can infer that the impacts of ownership circulation on economic performance will vary with different performance indexes. Based on property right theory, we can interpret the ownership circulation encourages managers to increase profitability. ROA emphasizes short-term profitability and has a positive influence by ownership circulation. However, in the long run, SGR will reflect internal sustainable growth which is consistent with a defined financial policy. Considering the Chinese stock markets, institutional investors as well as long-term and stable holders of equities are absent. The sustainable growth especially requires long-term stable investment strategies, while short-term profit-chasing behaviors do not fulfill this requirement. Meanwhile, many small and medium shareholders (who are most tradable shareholders) choose speculative action and thus cannot work to improve the firm's long-term sustainable development. To summarize, the tradable shares ratio has a positive impact on ROA and this result supports Hypothesis 2 in some degree.

4.2.3. Tests of Hypothesis 3

In Hypothesis 3, we predicted that ownership concentration has a positive impact on economic performance. In Table 4 the statistical results do not support the hypothesis since the coefficients of H5 and firm performance measured by ROA and SGR are both insignificant. According to the principle of cost-effectiveness, large shareholders will be more motivated to supervise management and maximize

the enterprise value than small shareholders. However, much higher ownership concentration may serve larger shareholder self-interests at the expense of smaller shareholders and other stakeholders. Moreover, in Chinese listed energy companies the ownerships always concentrate on government and have some minor distinctions to degree. Thus, in our samples, the ownership concentration has no effect on either short-term or long-term performance.

4.2.4. Tests of Hypothesis 4

Models 5 and 6 present the statistic interaction of CSR and ownership circulation on CFP. In models 7 and 8, we test the interaction of CSR and ownership concentration on CFP. In models 5 and 6 shown in Table 5, the coefficients of SCV × TR are not significant; the results do not confirm Hypothesis 3. A higher tradable shares ratio usually means more ownership changes and uncertainty, which may harm the stakeholders' interests and result in negative impact of CSR's positive influence on CFP. Moreover, most small and medium shareholders, who are the majority of investors in Chinese listing market, used to not consider holding stocks for a long period of time. Therefore, Hypothesis 3 cannot be proven. In listed Chinese energy companies, the positive effect of social responsibility on short- and long-term economic performance will not be influenced by tradable share ratio.

4.2.5. Tests of Hypothesis 5

From Table 5, we find the coefficient of interactive variable (SCV × H5) in model 7 is $\beta = -0.9930$, with a statistical significance at 10% level. It means the positive effect of social responsibility on ROA will decrease as ownership concentration increases. However, the coefficient of interactive variable (SCV × H5) in model 8 is not statistically significant. Then, the results partly support Hypothesis 4. As previously we mentioned, the relationship of ownership circulation and financial performance are different from ROA and SGR. The impacts of interaction between CSR and ownership concentration on firm performance are not consistent with respect to diverse types of economic performance indexes. When we focus on the stakeholders' interests in the short-term period, the lower ownership concentration may balance all stakeholders' demands and improve the benefits from CSR. However, the higher ownership concentration may motivate the self-interests behavior of big shareholders, and it may invade most stakeholders' interests and reduce the benefits from CSR. In addition, Darus et al. (2014) [68] reveals concentrated ownership structure can hinder CSR as management will disclose less CSR information since the lesser number of shareholders exert pressure. In a long run, the adverse effects do not arise. To sum up, Hypothesis 4 is partly supported.

5. Conclusions and Policy Implications

The objective of this study was to analyze whether social responsibility and ownership structure are related to Chinese energy companies' performance and further evaluate the impact of these variables on economic performance. We found that SCV is positively related to economic performance, and CSR promotes enterprises' short-term profits as well as long-run endogenous growth. Energy industry firms have opted to take on more social responsibility to increase economic performance and strengthen marketing competitiveness. From the stakeholder theory, the survival and success of an enterprise depends on its capacity to respond positively to the stakeholders' demands. Only in this way the enterprise can achieve its economic goals (profit maximization) and non-economic objectives (corporate social responsibility performance) simultaneously. This study suggests that ownership circulation is positively related to short-term economic performance. This is true because a higher weight of tradable shares in Chinese listed companies always means better corporate governance structure and more efficient decision making which will improve the profits. We also found that the interactive effect of ownership concentration with social responsibility on economic performance is negative. As ownership concentration increases, the positive effects of social responsibility on economic performance will decrease. Obviously, when almost all shares are controlled by minority

shareholders, corporate decision making may not benefit the other stakeholders and is more likely to result in poor social responsibility and corporate economic performance.

We employed stakeholder theory to explain social responsibility and firm performance. We found evidence that good social responsibility is more likely to balance the interests of all stakeholders and result in higher corporate performance. We applied agency theory to illustrate the relationship between ownership structure and economic performance. High equity circulation tends to reduce agency costs and improve decision efficiency, resulting in higher corporate performance. We demonstrated that ownership concentration interaction with social responsibility measured by SCV has a negative impact on corporate performance. Shareholders and managers should optimize ownership concentration to satisfy stakeholders' demands, reduce agency costs and improve short-term profits.

In response to government strategy of sustainable development and benefit from related policies to increase economic performance, most energy companies try to fulfill their corporate social responsibility, adjust ownership structure, and benefit stakeholders. To improve social responsibility, energy firms should consider the interests of all stakeholders (customers, suppliers, employers, government, and the environment) when making decisions. Ignoring key stakeholders may damage economic performance. Excessive concentration may lead to decisions that do not instantly satisfy all key stakeholders and may reduce the positive effect of social responsibility on short-term economic performance.

Future studies in this line of research can be performed by investigating other corporate governance indexes such as financing structure, organization structure and CEO features. Studies that link environmental economics analysis to other unique energy factors and corporate performance dynamics may also be of interest.

Finally, further analysis of unlisted energy firms may be warranted. However, finding the required financing data for these firms will be challenging. We argue that this study sheds light on the importance of social responsibility activities within the energy industry in Chinese markets and provides a basis for other related studies.

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