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**The impact of corporate social responsibility on firm performance regarding Chinese
firms**

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for the Bachelor of Science in Finance

by

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ABSTRACT

The concept of corporate social responsibility has been gaining more and more attention in the last decades. Nevertheless, there remains the debate over the legitimacy of doing socially responsible business. In order to prove that being socially responsible can contribute to firm value, lots of research have been done in this area. China, though as a late comer, has also seen a rapid development of CSR in different industries over the years. Using extensive data of firms from different industries for the year of 2013, this thesis attempts to investigate the impact of corporate social responsibility on firm financial performance regarding Chinese firms. The data on corporate social performance was obtained from hexun.com and related financial data was obtained from CSMAR. Multiple regression model is used. The results indicate that the impact of CSR on firm financial performance is significantly positive and there are industrial differences in terms of the impact of CSR on firm performance.

Keywords: corporate social responsibility, firm performance, multiple regression

INTRODUCTION

While the major goal of running a company is profit, there remains a debate on whether a firm should do CSR (corporate social responsibility) at a cost. In order to contribute to the on-going debate, this thesis is trying to investigate the current situation of CSR in China and how CSR influences Chinese firms' performance.

The definition of CSR is not difficult to understand, but there is a wide variety of explanations towards this term. While all the explanations proposed by different scholars are different in detail, in general, CSR refers to the voluntary actions taken by companies to promote society and environment (McWilliams and Siegel, 2000; Frooman, 1997; Davis, 1973; Wood & Jones, 1995). To be more specific, CSR is the company's contribution to the welfare of its stakeholders by implementing a set of socially responsible practices in operation.

By doing CSR, a firm can contribute to the society and environment while getting some other benefits such as good public image, good reputation, customer loyalty and employee commitment and so on. However, due to different views of the role of corporations in society, there is always a debate on the legitimacy of CSR. To be more specific, the question is that whether a company should care about its social impact in the first stage. So, what we want to solve here is that to what extent will the benefits from CSR offset the cost and contribute to the profit and value of the firm. By understanding how CSR impact firm performance, we will hopefully have an answer for whether a firm should care about CSR.

With the increasing attention paid to CSR in business worldwide and the more active role of the Chinese firms in globalization, it is necessary and helpful to see how Chinese firms are doing in terms of CSR, how CSR performance influences Chinese firms' financial performance, and how different industries in China differ in terms of CSR. By understanding these questions,

hopefully we will be able to make suggestions for Chinese firms and gain more of their attentions on CSR.

This thesis mainly aims to assess the impact of CSR on firm performance regarding Chinese firms by using multiple regression model. CSR will be measured by using the scores from a financial information website – Hexun.com. The firm performance will be accounting-based measures including ROA and ROE. The firm performance data and data on other variables will be obtained from CSMAR.

Research Questions

Research Question 1: To explore the history of CSR

To have an understanding of the origin and development of CSR in order to provide a background of this thesis by doing a review of existing literatures.

Research Question 2: To test the impact of CSR on firm financial performance in China

Research Question 3: To investigate the CSR differences in different industries.

- a. To investigate the CSR score differences in different industries
- b. To explore the difference of ICSR and ECSR in difference industries
- c. To compare the level of CSR impact on firm performance in different industries.

The rest of this thesis is organized as follows: Section 2 is the review of the existing literature about CSR. Section 3 and 4 is the explanation of the applied methodology, sample and dataset. Section 5 presents the results and Section 6 will be the discussion of findings.

LITERATURE REVIEW

Having its origin in the industrial revolution, CSR has been discussed a lot in the academic field and practiced a lot in real business world. In order to find out whether a company would be benefit from doing CSR, a sizable number of related topics has been researched on, such as CSR and firm's public image, CSR and firm performance and so on. In this section of thesis, the history of CSR will be briefly discussed, studies about CSR in different industry and CSR's relationship with firm performance will be reviewed. Also, studies about CSR in China will be included.

1. The history of CSR

In order to have a deeper understand about CSR and the debate on whether a company should do CSR, it is needed to look back at the long and wide-ranging history of CSR.

Though the origin of CSR should be traced long back to the period of industrial revolution, the concept of CSR that we are using today is mainly developed after 1950s (Carroll, 2008). And it is since early 1950s that more attention was paid to the effect of business decision in society, but at that time the disclosure of CSR is limited. And in its early stage, CSR usually took the forms of philanthropy donation, employee involvement program and community services (Carroll, 2008). But these seemed not enough to the former executive of Standard Oil Company, Frank Abrams, who spoke out the concerns about the business's responsibility in society. He thought that professional management should contribute to the solutions of many other social problems, it was time for them to think not only about profit, but their stakeholders and society at large (Abrams 1951). In addition, Howard R. Bowen had written a book named *Social Responsibility of the Businessman*, which was published in 1953, that shaped the early future thoughts on CSR. William C. Frederick, who was also a pioneer that stood out in the 1950s, summarized the three core ideas about CSR-- "the idea of corporate

managers as public trustees, the idea of balancing competing claims to corporate resources, and the acceptance of philanthropy as a manifestation of business support of good causes” (Frederick, 2006).

Some scholars were opposing the idea of social responsibility of business. Business executives are hired by their employers, known as the stockholders of the company. As agents of the principle, the sole responsibility of business managers is to conduct business in a way that satisfy the owner of the business, which is to make profit (Friedman, 1970). By arguing that for business to take the so-called social responsibility is the extend of political mechanism to business, Friedman advocated that “the one and only one social responsibility of business is to use its resources to engage in activities designed to increase its profits so long as it stays within the rules of the game” (Friedman, 1970). According to the definition given by Davis, “social responsibility refers to the decisions and actions taken by firms for reasons at least partially beyond the firm’s direct economic or technical interest” (Davis, 1973). As this given definition suggested, the outcome of socially responsible activities might not be aligned with the interest of firm owners. Indeed, firms that conduct social activities, especially those very costly, may find themselves very hard to get access to low-cost capitals, and also face some challenges in market disciplines (Jensen & Meckling, 1976).

Different argument was put forward by Freeman in supporting of stakeholder theory. Freeman argues that: “To maximize shareholder value over an uncertain time frame, managers ought to pay attention to key stakeholder relationships.” (Freeman, 1999) Basically, he believes that all the persons who is involved in or influenced by the firm’s operation should have the right to be taken into consideration when a firm is determining its direction. Also, some other scholars have argued that simply pursuing the profit should not be the only responsibility of business. These scholars believed that when management is solely focusing

on making profit, the other important stakeholders—including employees, suppliers, customers and the society at large—might be ignored. However, sometimes the benefits of other stakeholders should be prioritized in decision making, even it will hurt the economic interest of the firm.

In conclusion, the arguing over the legitimacy of CSR has been long. People who against it say that social problems should be left for other sectors of the society to solve because doing CSR is costly, but people in favor of it argues that firms should take care of its stakeholders. The debate will still be going on, but the trend of taking CSR is inevitable at the current stage.

2. CSR in different industries

Companies differ in how they do CSR. This is influenced by factors such as the firm type, size, corporate culture and core value, level of media disclosure, demands of stakeholder, law regulation and so on.

Usually, different industries would have different distinguishing features in operation, this might also lead to different CSR practices of firms in different industries. Also, firms in different industry would be related to different social and environmental problem, like a crude oil company could be accused of water pollution, a tobacco company could be accused of public health problem, but manufacturing firms like Foxconn would be questioned about treatment of its employees. As a consequence, how these companies in different industries implement there CSR program and the extent of CSR disclosure would also be different.

Grigoris Giannarakis (2013), in his article *The Determinants Influencing the Extent of CSR Disclosure*, by using a sample of 366 firms from the 2011 Fortune 500 list, came to the conclusion that there are significant differences in the level of CSR disclosure among different industries. In his research, he investigated the effect on the extent of CSR disclosure of variables such as CEO duality, size of company, industry's profile and so on. By using multiple

regression, he found the closer the relation with other stakeholders such as the government and consumers, the bigger incentive to disclose more CSR information on their report. For example, in order to convince the customers that maximizing profit is not the unique purpose of the firm, financial companies tend to disclose more information on their CSR initiatives. This implies for healthcare companies that tend to disclose more information on their CSR report.

In the research conducted by Sebastian Arendt and Malte Brettel (2010), production companies and service companies from Europe were compared for the moderating effect of CSR in CIM (corporate identity management) and firm performance. Results showed that CSR were very helpful in corporate identity-building due to its potential in increasing the image attractiveness of firms and consequently increasing the competitive advantage and company performance. "CSR investments are dependent on the respective industry and organizational setting they are facing". And the implication given was that those large and product-based company should be more actively engaged in CSR to help them promote their brand attractiveness and ensure the effectiveness of corporate identity building. For smaller or service-based companies, CSR initiatives that can engage its important stakeholders closer would be more helpful.

3. CSR and Firm Performance

In order to participate in the debate about CSR, the most important topic to discuss is whether CSR can contribute to firm performance and how. Once we can prove that CSR could enhance a firm's performance and contribute to the society and environment at the meantime, why not do CSR?

3.1 The Relationship between CSR and Firm Performance

By using extensive data over five years, the study conducted by Margarita Tsoutsoura (2004) tested the sign between CSR and firm performance of S&P 500 firms from 1996-2000. The results suggest that the sign of the relationship is positive, and the relation is statistically significant.

Jean, Alison and Thomas (1988) investigated the relationship between a firm's social and ethical policies or actions and its financial performance in their article Corporate Social Responsibility and Firm Financial Performance. The CSR data they used are from fortune magazine's annual survey of corporate reputation. They assessed financial performance by both stock-market returns (risk-adjusted return, total return) and accounting-based measures (ROA, sales growth ...). Measure of risk was also assessed. The results suggested that firms low in social responsibility would face lower ROA and stock-market returns when compared to those socially responsible firms. But, accounting-based performance measures were better predictor of CSR. In terms of the risk, one of the benefits of CSR is the reduction of firm risk, which includes lawsuits and fines. One most interesting point given by the writers were "In essence, it may be more fruitful to consider financial performance as a variable influencing social responsibility than the reverse", which was of great significance.

In the meta-analysis done by Marc, Frank and Sara (2003), the relationship between CSP (corporate social/environmental performance) and CFP (corporate financial performance) were investigated. The findings showed that CSP and CFP are positively related, and this relation is likely to be bidirectional and simultaneous. This suggests that a firm's socially responsible actions/programs are likely to pay off. One conclusion made the same with the results in previous study done by Jean, Alison and Thomas (1988), was that "CSP seems to be more significantly correlated with accounting-based measures of CFP than with market-based

indicators” (Marc, 2003). Also, the results suggested that “CSP reputation indices are more highly correlated with CFP than are other indicators of CSP”.

This CSR-firm performance relation was also examined in India. In the research done by Supriti Mishra Damodar Suar (2010), the measurement of firm performance was divided into financial performance (ROA, ROE, etc.) and non-financial performance (internal business process efficiency, innovation, customer satisfaction, improvements from intangible assets, etc.). And CSR programs done by firms were divided according to six different primary stakeholders. The impacts of different CSR program on FP and NFP were examined. The results suggest that favorable CSR programs towards primary stakeholders are profitable and beneficial to Indian firms.

3.2 The Mediators

Sayedeh and his group (2015) researched on the mediators in the relationship between CSR and firm performance. Survey were distributed to 1250 Iranian manufacturing and consumer product firms, and responses were received from 205 firms. They examined the mediating effects of factors including competitive advantage, reputation and customer satisfaction. The results suggest the relationship between CSR and firm performance is mediated rather than direct. It is concluded that CSR plays a role that enhances reputation and strengthens competitive advantage, which all lead to better customer satisfaction, and finally, indirectly promoted firm performance.

3.3 Some Other Voices

Though the majority of results appeared to support the positive relationship between CSR and firm performance, however, there was one voice saying that the results put by scholars are built on a shaky ground, and the models could be mis-specified. Due to the limitation of all the research methodology, it is impossible to control all the variables that may affect the

CSR and firm performance relationship. Abigail and Donald (2000) suggested that CSR has a neutral impact on firm performance. By using regression model, with several variables controlled, they found that investment in R&D is an important determinant of firm performance. Without taking this variable into consideration in the research model, the results in other research lead to the upwardly bias of the effect of CSR.

4. CSR in China

Though the CSR was developed in western society and received more attention in advanced economies, China is catching up in this field. With the advent of globalization and the growing and expanding of Chinese firms, we can see the Chinese market is paying more attention to CSR, many production companies are following the SDGs designed by the United Nations and some other standards made by NGOs such as the ISO. Also, CSR programs are becoming more comprehensive for Chinese firms. However, compare to the increasing attention paid to CSR in China, studies on CSR in China are still very limited.

4.1 CSR Disclosure

Gao Yongqiang (2009) analyzed CSR in China by using a sample of top 100 Chinese firms in 2007 (in terms of revenue). The three objectives of his research were to discuss the overall CSR performance in large Chinese companies, to investigate the social issues that those companies tried to address, and the stakeholders that were focused on. The findings suggests that among the top 100 firms in 2007, only around a fifth issued report to disclose their CSR-related information, and among those companies, SOEs (State owned enterprises) had the more incentive to publish an SSR-like report, which could be partially due to the regulations made by the Supervise and Management Commission of State-Owned Assets. Also, it is suggested that companies in industries like mining, war industry, construction didn't issue any related report for that year, while other industries such as automobile, home electronics,

banking and insurance and so on were more active in issuing SSR-like report, this finding is complaint with the finding made by Grigoris Giannarakis (2013) that the closer the relation with stakeholders, the bigger incentive to disclose more information on CSR. In term of the social issues addressed, the economic issue is the most concerned among those companies, in other categories, product safety, energy saving, and employment were most discussed. And the stakeholders that these companies focused on were stockholders, government, consumers. Overall, the findings suggest that CSR in China was still in the beginning stage.

4.2 Overall Chinese Context

Juelin Yin and Yuli Zhang (2012) did case studies on 16 firms to examine the CSR philosophy and methodology in China. It is implied that that CSR in China is still at a preliminary stage, and the understanding of CSR “was largely grounded in the context of ethical and discretionary actions”. To be more specific, China was still in lack of a conducive social environment and Chinese firms still needed improvements in its organizational design to apply CSR in a more systematic and institutionalized way. Also, in terms of the culture, the Confucianism culture tradition might have a big influence on the conception of CSR.

4.3 Consumer Response

In terms of how consumers in Chinese market responded to CSR, we can refer to the study done by Zhilong Tian, Rui Wang, Wen Yang (2011). They had conducted a multiple product, comparative survey to investigate the consumer response in China. It was found that Chinese consumer tend to be aware of and trust CSR, which would be likely to add to positive corporate evaluation, and better purchase intention. Chinese consumers response to CSR differently for different categories of products. For firms selling experience products, such as search and credence, they are more likely to gain better support. Also, the consumer

demographics matters. The positive response of people in middle levels of ages and with middle level of income tend to be more significant.

METHODOLOGY & DATA

Discussion of Data and Sample

This section will be an introduction of the measurement methods of data and sample, including what data and sample are included, how data were obtained and sorted, and the creditability as well as the limitations of data.

1. Dataset

1.1 Measurement of CSR

CSP, or Corporate Social Performance, is the term used to describe the overall level of how socially responsible a firm is. Though lots of studies have been done in this area, there is still not a universal methodology to measure CSP, and this could be the most troublesome part in doing this thesis. The measurement of CSP used in former studies include both primary data and secondary data. The primary data could be obtained by doing survey. Sometimes surveys were sent to the public and sometimes were sent to the executive managers to get an overall image of the firm's CSR performance. The secondary data to be used could be obtained from some rankings or indices, or data from financial reports and social reports of firms.

In this thesis, in terms of the measurement of CSP, the CSR scores from Hexun.com will be used. Since China is still in a preliminary stage in terms of CSR reporting, there is not much available data in this area. Hexun.com is one of the earliest financial news media in China, it was founded in 1996. Hexun.com has been doing CSR rankings since 2010, the CSR ranking and scoring done by Hexun.com is the most comprehensive that can be obtained so far. Because there is no way of downloading the whole database, the records for top 1000 socially

responsible companies (indicated by CSR scores) for every year from 2010-2018 were collected manually. The score of overall CSP is the sum of the scoring of stockholder responsibility, employee responsibility, supplier and customer responsibility, environment responsibility and community responsibility. The limitation of the data is that as we go further with the data, some firms are missing parts of the scores probably due to the availability of CSR information. Also, in the scores for 2017 and 2018, it seems that suppliers and customers responsibility are missing (probably due to availability of data) for most of the firms. After taking those limitations into consideration and based on the availability of the other related data, the data for the year of 2013 was used in this thesis.

1.2 Measurement of Financial Performance

Although measuring the financial performance seems to be simpler, there is still a headache of choosing the right ones. In the former studies, dozens of measurements of financial performance have been used, including the accounting-based measures such as ROA, ROE, EPS, and the market-based measures such as share price or share price appreciation.

In this thesis, ROA and ROE will be used to measure the financial performance of the companies. According to Marc (2013), accounting based measures are more significantly impacted by CSP than market-based measures. Another consideration is the availability of the data. These data will be obtained from CSMAR, which is a commercial database focusing on Chinese stock market information. The reason for choosing ROA is that ROA is not affected by the leverage of the firm, which means it can imply better the ability of value creation of a firm. So, ROA will be used as the main indicator of financial performance, while ROE will also be tested for reference.

2. Sample

The sample for the data will be companies from a mix of different industries and these companies are from a list of considered socially responsible companies. Some other related data including firm size, leverage ratio and industry type will be obtained from CSMAR. Companies with incomplete related information, financial performance data and CSR data will be kicked out from the sample.

Discussion of Methodology and Model

This section will be an introduction of the model and hypothesis, including the research model used, how it functions, and an explanation of the hypothesis.

1. Methodology

Since the objective of this thesis is to explore the impact of CSR on firm performance, the firm performance (ROA and ROE) will be regressing on CSP with some other variables. Basically, the sign of the relationship between CSR and financial performance is to be tested. The regression model used is adapted from the model developed by Tao Wenjie (2013) .

$$\text{Model1: ROA}=\lambda_0 + \lambda_1\text{CSR} + \lambda_2 \text{Leverage}+ \lambda_3 \text{Size} + \xi$$

$$\text{Model2: ROE}=\lambda_0 + \lambda_1\text{CSR} + \lambda_2 \text{Leverage}+ \lambda_3 \text{Size} + \xi$$

(CSR: the CSR score of firms from Hexun.com; Size: log of total asset of firms; leverage ratio: total liability/total asset)

2. The hypothesis is set as following.

H0: CSR has no impact on firm performance of Chinese firms.

H1: CSR has a significant impact on firm performance of Chinese firms.

The level of significance will be set at 0.05, if the p value of the regression result is smaller than 0.05, the null hypothesis will be rejected, and the alternative will be accepted. Also, some other numbers will also be taken into consideration such as the R square.

ANALYSIS & FINDINGS

1. Descriptive Statistics

A total of 608 companies remained in the sample after eliminating companies that are missing data and companies from industries that took a too small part in the sample, a sample of the dataset is provided as Appendix A. The descriptive statistics of the sample will be discussed in this section.

1.1 CSR performance

The average CSR scores of the firms regarding different industries are presented in the following table. The original results from excel is in Appendix B.

Table 1 Descriptive Statistics: Industries and CSR Scores

Industries	N	Average CSR score	t Stat	P value (two-tail)
Farming	10	54.57	-3.90031	0.00011***
Mining	26	65.94	0.16534	0.86873
Manufacturing	350	64.30	-2.24221	0.02381*
Energy and Water Supply	33	69.84	2.65221	0.00819**
Construction	21	67.63	1.01206	0.31189
Wholesale and Retail	29	66.90	0.74160	0.45859
Logistic	36	66.57	0.61068	0.54162
Information technology	21	60.86	-2.41374	0.01607*
Finance	42	70.76	3.63650	0.00029***
Real Estate	40	70.97	3.67175	0.00026***
ALL	608	65.66		

*p≤0.05; **p≤0.01; ***p≤0.001

Since the research question 3-a is to investigate the industrial differences in CSR, the differences in average CSR score is presented here.

The largest industry in the sample is manufacturing, the amount is 350. The smallest is the firms from farming industry that has only 10 firms in the sample. In terms of the average CSR score, the scores of the farming industry (mean=54.57, p<0.001), IT industry (mean=60.86, p<0.05) and manufacturing firms (mean=65.94, p<0.05) are significantly lower than the overall average. The finance industry (mean=70.76) and real estate industry (mean=70.97)

have significant ($p < 0.001$) higher average scores for CSR. Firms of energy and water supply industry (mean=69.84, $p < 0.01$) also performed better than average.

While the performance of finance firms such as banks or security dealers depends a lot on the services they provide to their customers, the good CSR performance of finance industry might be explained by the finding of Sebastian Arendt and Malte Brettel (2010) that service-based companies would pay more attention to CSR to engage their stakeholders.

1.2 Internal CSR and External CSR

The following table 2 presents the internal and external CSR scores for different industries, which answers research question 3-b. The original results are attached as Appendix C.

In terms of internal CSR, the farming industry (mean=19.75, $p < 0.001$), manufacturing industry (mean=27.038) and wholesale and retail industry (mean=25.089) have significant lower scores than average ($p < 0.05$). Meanwhile, the construction industry (mean=30.919), finance industry (mean=32.586) and real estate industry (mean=31.252) have significant higher scores than the average.

Table 2 Descriptive Statistics: Internal CSR and External CSR Scores

Industry	Internal CSR	P value	External CSR	P value	N
Farming	19.751	4.196E-05***	34.817	0.130	10
Mining	28.846	0.465	37.097	0.602	26
Manufacturing	27.038	0.033*	37.261	0.25	350
Energy and Water Supply	27.212	0.514	42.631	4.420E-06***	33
Construction	30.919	0.029*	36.708	0.445	21
Wholesale and Retail	25.089	0.016*	41.812	0.00032***	29
Logistic	29.417	0.166	37.158	0.585	36
Information technology	29.639	0.216	31.221	1.825E-06***	21
Finance	32.586	2.37E-06***	38.177	0.625	42
Real Estate	31.252	0.001**	39.722	0.042*	40
All	27.937		37.714		608

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; (ICSR=stockholder responsibility score + employee responsibility score, ECSR=supplier, client and customer responsibility score +environment responsibility score + community responsibility score).

In terms of external CSR, the information technology industry (mean=31.22) is significantly lower than the average ($p < 0.001$). On the other hand, the energy and water

supply industry (mean=42.63), wholesale and retail industry(mean=41.81) and real estate industry (mean=39.72) seem to have higher scores than average.

Generally, it seems that industries which treasures its brand image and reputation or that are close to customer tend to have higher scores on external CSR, such as wholesale and retail industry and real estate industry.

1.3 Firm Performance

The following table 3 summarizes the firm performance statistics of the sample.

Table 3 Descriptive Statistics: Financial Performance

Industries	N	Average ROA (%)	S.D. (%)	Average ROE (%)	S.D. (%)
Farming	10	2.91	5.87	4.84	10.82
Mining	26	3.79	3.14	6.73	5.16
Manufacturing	350	4.45	6.45	1.82	111.82
Energy and Water Supply	33	4.10	5.33	4.61	38.02
Construction	21	3.35	2.12	12.56	4.71
Wholesale and Retail	29	3.65	2.36	9.81	5.71
Logistic	36	4.14	3.78	6.80	5.70
Information technology	21	6.36	4.50	10.32	6.85
Finance	42	2.39	2.83	11.84	6.82
Real Estate	40	3.46	2.31	12.34	6.22
ALL	608	4.14	5.44	4.95	85.42

Overall, the ROEs for all industries are higher than the corresponding ROAs, and the standard deviation for ROE is also higher, suggesting that the ROE of the firms in the sample has a higher volatility than the ROA. However, one exception is that the ROE of the manufacturing industry is lower than the ROA, and the standard deviation is very large.

1.4 Other variables

Table 4 Descriptive Statistics: Other Variables

Variables	N	Mean	Max	Min	Standard Deviation
TA	608	1.89777E+11	1.89178E+13	319072454.1	1.34564E+12
Log TA	608	10.056	13.27686953	8.503889313	0.512
Leverage ratio	608	0.7480	1.032533	0.007969	0.218

According to the above statistics, both the firm size and leverage ratio of the sample firms covers a quite wide range. In terms of log TA, the biggest is 12.28 and the smallest is 10.056,

this suggests there is a big difference in firm size of the firms in the sample. The largest leverage is 1.033 and the smallest is 0.748, which suggests the leverage of the firms also varies.

2. Correlation Analysis

Table 5 provides the correlation matrices for the key variables. The original results of correlation analysis and VIF test are attached as Appendix D.

Table 5 Correlation Analysis of Variables

	<i>ROA</i>	<i>ROE</i>	<i>CSR</i>	<i>Log TA</i>	<i>Lev</i>
<i>ROA</i>	1				
<i>ROE</i>	.052	1			
<i>CSR</i>	0.5**	0.093*	1		
<i>Log TA</i>	-0.129**	0.024	0.323**	1	
<i>Lev</i>	-0.450**	-0.035	0.023	0.634**	1

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

According to the table, it is suggested that the relationship between CSR performance and financial performance of the sample firms is significantly positive no matter which one of ROA and ROE is used as dependent variable. In order to further test this relationship, we will use the results from regression model to explain in the following section. In addition, firm size and leverage ratio also have a significant relationship when the ROA is used as dependent variable, while no significant relationship was suggested between ROE and the other variables. It is also suggested that the size of the firm is positively correlated to the CSR performance.

Table 6 Variance Inflation Factors of Independent Variables on the Dependent Variables

Variables	CSR	Log TA	Lev
VIF	1.189	1.985	1.780

To test if the variables in the model has the issue of collineation, the VIF of the independent variables with the dependent variable were analyzed. It turned out that all of them are smaller than 10, which suggests no significant problem of collineation.

3. Regression Analysis

3.1 Overall

Table 7 Multiple Regression Results for the Sample

Dependent Variable	Variables	Coefficients	P value	t Stat	Adjusted R Square	N
ROA	(Intercept)	-0.10297	6.0535E-05***	-4.039258	173.502	608
	CSR	0.0031	6.9348E-47***	15.7103774		
	Log TA	-0.00014	0.964172294	-0.0449371		
	Lev	-0.1152	3.7784E-28***	-11.580991		
ROE	(Intercept)	-1.3710	0.01065*	-2.5618496	0.03426	608
	CSR	0.0140	0.00084***	3.35740443		
	Log TA	0.0780	0.2248	1.21510901		
	Lev	-0.5508	0.0085**	-2.6382424		

*p≤0.05; **p≤0.01; ***p≤0.001

Table 7 presents results from the regression model that test the impact of CSR, firm size and leverage ratio on financial performance. The original results are attached as Appendix E. When using ROA as the indicator of financial performance of firms, there is a significant positive relationship between CSR and firm performance (coefficient=0.0031, p<0.001). This will lead to the reject of H0 and the accept of the H1. So, it can be concluded that CSR has a positive impact on firm performance. Regarding the other variables, the leverage ratio has a significant negative impact on firm performance (coefficient=-0.1152, p<0.001), suggesting that the more debt a firm has, the worse the performance. Firm size seems to have no significant impact on firm performance. And the result is consistent with the results of the research done by Tao Wenjie (2013) who has developed this model.

When using ROE as firm performance indicator, similar findings are suggested. The coefficient of CSR impact on firm performance seems to be larger as well as the coefficient of leverage ratio.

3.2 Different Industries

Table 8 Multiple Regression Results for Firms in Different Industries

Dependent Variable	Industry	λ_1 (CSR)	λ_2 (Size)	λ_3 (Lev)	Adjusted R Square	N
ROA	Farming	0.00256	-0.01944	-0.07984	-0.0730	10
	Mining	0.00348***	-0.00533	-0.05240	0.4053	26
	Manufacturing	0.00384***	0.01365	-0.12630***	0.5211	350
	Energy and Water Supply	0.00280**	0.02100	-0.19836***	0.5775	33
	Construction	0.00033	-0.00018	-0.15511**	0.5801	21
	Wholesale and Retail	0.00159***	-0.00236	-0.0725***	0.5996	29
	Logistic	0.00244***	-0.00302	-0.11224***	0.6818	36
	Information technology	0.00254*	-0.02086	-0.06328	0.2484	21
	Finance	0.00069	-0.00734	-0.05372	0.3250	42
	Real Estate	0.00023	0.00680	-0.11006***	0.2578	40
ROE	Farming	0.00434	-0.01435	-0.04028	-0.2782	10
	Mining	0.00617***	-0.00992	-0.02300	0.4179	26
	Manufacturing	0.01492*	0.16126	-0.96157***	0.0392	350
	Energy and Water Supply	0.02938***	0.11246	-0.76047*	0.4879	33
	Construction	0.00124	-0.00508	-0.09449	-0.0809	21
	Wholesale and Retail	0.00482***	-0.00753	0.07766	0.3815	29
	Logistic	0.00558***	-0.01329	-0.04850	0.5560	36
	Information technology	0.00431*	-0.05001**	0.09861	0.2409	21
	Finance	0.00187	0.00542	0.12393	0.3129	42
	Real Estate	0.00038	0.02017	0.07626	0.0226	40

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Table 8 presents the key statistics of regression results for different industries which will answer the research question 3-c. When using ROA as the dependent variable, strong significant ($p < 0.001$) positive relationships are found between CSR and firm performance in the mining industry, manufacturing industry, wholesale and retail industry and logistic industry. Significant ($p < 0.05$) positive impact of CSR are found in IT industry and energy and water supply industry.

When using ROE as the dependent variable, the results are similar. Strong significant ($p < 0.001$) impact of CSR on ROE are found in the mining industry, energy and water supply industry, wholesale and retail industry and logistic industry. Significant ($p < 0.05$) impact of CSR on ROE are found in manufacturing industry and information technology industry.

4. Discussion of Findings

As the main goal of this thesis is to test whether CSR has an impact on firm performance, it was found that in general CSR has a positive impact on firm performance (when using ROA as the indicator of financial performance) while this impact varies among different industries. This finding is compliant with the findings of most researches, such as the finding in the study done by Jean, Alison and Thomas (1988) that firms scored low in social responsibility would face lower ROA and stock-market returns when compared to those socially responsible firms.

Regarding firms in different industries, though the finance industry and real estate industry have higher overall CSR scores than other industries, the result turned out that there is no significant impact of CSR on firm performance in these two industries, while energy and water supply industry have a significant higher average CSR score and found to have a positive CSR – firm performance relationship. In contrast, though the IT industry and Manufacturing industry have significant lower average CSR scores, the results turned out that CSR still positively affect firm performance. So, it can be suggested these two industries should pay more effort in being socially responsible.

When using ROE as the indicator of firm performance to regressing on the whole sample, though similar findings were found as using ROA, the R square is much lower. This could be due to the much higher volatility of ROE. Also, due to the higher volatility of ROE of firms in the manufacturing industry, the significant level of the impact of CSR in manufacturing industry decreased as we change the indicator of performance from ROA to ROE, though the significant impact still exists.

The positive impact of CSR on the manufacturing industry and wholesale and retail industry were found to be strongly significant, this might be explained by the finding of Zhilong Tian, Rui Wang, Wen Yang (2011) that Chinese consumer tend to be aware of and trust CSR,

which would be likely to lead to better purchase intention, therefore add to positive corporate evaluation.

CONCLUSION

There has been a debate over the legitimacy of firms contributing to the well-being of the society by conducting socially responsible business ever since the origin of the concept of CSR. Different opinions are held by different people. Though there are disagreements of sacrificing business profit to take care of social responsibility, the trend in society has been transforming to be in favor of firms to be more responsible for their behavior.

The main purpose of this thesis is to address the question that whether corporate social performance has a significant impact on firm performance. Using regression model, the relationship between corporate social responsibility and firm performance was tested. The results indicate the impact of CSR on firm performance is significantly positive. Which supports the previous studies that found CSR and firm performance is positively related (Margarita Tsoutsoura, 2004; Jean, Alison and Thomas, 1988; Marc, Frank and Sara, 2003; Supriti Mishra Damodar Suar, 2010).

One significance of this thesis is that industries were also separately analyzed by using regression model and compared, which is different from previous studies such as the one done by (Tao Wenjie, 2013) that was focused on Information Technology Industry.

In terms of the limitations, one is that some of the industry have a sample size that is not really big, such as the farming industry which only has 10. It could be suggested to be improved in further studies. The sample size of the manufacturing industry is too big, it could be separated into smaller categories to get more detailed results. Also, the regression model used in this thesis is still quite simple, a more sophisticated model that takes into more factors into consideration could be used to get a more accurate result, for example, to include R&D

which was tested by McWilliams & Siegel (2000) to have an upwardly bias of the effect of CSR. Since the relationship between CSR and firm performance depends on its causality, and it is suggested by Marc, Frank and Sara (2003) to be bidirectional and simultaneous, yearly data could be used to test with different hypotheses.

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Appendix A - Sample of the dataset

Industry	Name/Code	CSR	Log TA	Lev	ROA	ROE
A01	登海种业(002041)	66.13	9.543	0.258	0.162	0.217896
A01	海南橡胶(601118)	60.89	10.080	0.234	0.013	0.017575
A01	万向德农(600371)	57.07	9.006	0.618	-0.038	-0.099303
A02	永安林业(000663)	46.52	9.132	0.734	0.010	0.038196
A02	平潭发展(000592)	43.76	9.262	0.262	0.027	0.036193
A03	雏鹰(002477)	56.53	9.797	0.644	0.012	0.034061
A03	牧原股份(002714)	53.96	9.510	0.611	0.094	0.241742
A03	圣农发展(002299)	38.96	9.914	0.588	-0.032	-0.077463
A04	好当家(600467)	64.01	9.622	0.297	0.024	0.034765
A04	獐子岛(002069)	57.85	9.726	0.541	0.018	0.039858
B06	中国神华(601088)	74.45	11.706	0.351	0.110	0.169046
B06	冀中能源(000937)	73.02	10.614	0.560	0.027	0.062085
B06	兰花科创(600123)	69.84	10.311	0.488	0.043	0.083627
B06	中煤能源(601898)	69.29	11.332	0.522	0.020	0.041839
B06	潞安环能(601699)	69.15	10.659	0.620	0.026	0.067309
B06	露天煤业(002128)	68.57	9.995	0.358	0.093	0.144247
B06	新集能源(601918)	66.12	10.430	0.676	0.000	0.001494
B06	西山煤电(000983)	65.8	10.664	0.592	0.028	0.067693
B06	昊华能源(601101)	64.71	10.106	0.344	0.042	0.063409
B06	平煤股份(601666)	63.75	10.423	0.545	0.028	0.061184
B06	上海能源(600508)	61.33	10.118	0.362	0.010	0.016166
B06	平庄能源(000780)	59.15	9.748	0.170	0.007	0.007972
B06	兖州煤业(600188)	56.66	11.099	0.661	0.002	0.007031
B07	中海油服(601808)	76.06	10.899	0.530	0.085	0.180528
B07	海油工程(600583)	73.68	10.449	0.410	0.098	0.165856
B08	金岭矿业(000655)	67.17	9.556	0.156	0.073	0.086959
B08	*ST创兴(600193)	62.5	9.089	0.412	0.066	0.111942
B08	西藏矿业(000762)	52.32	9.413	0.188	0.010	0.012863
B09	洛阳钼业(603993)	71.72	10.340	0.411	0.050	0.08415
B09	紫金矿业(601899)	71.25	10.825	0.505	0.043	0.086481
B09	西部矿业(601168)	69.12	10.450	0.574	0.013	0.031614
B09	金铂股份(601958)	66.35	10.190	0.138	0.012	0.013677
B09	湖南黄金(002155)	65.49	9.649	0.298	0.043	0.060625
B09	驰宏锌锗(600497)	65.41	10.473	0.608	0.021	0.052255
B09	盛屯矿业(600711)	58.71	9.593	0.364	0.027	0.042007
B09	中色股份(000758)	52.91	10.228	0.629	0.010	0.02757
C13	双汇发展(000895)	90.24	10.295	0.240	0.206	0.27121
C13	新希望(000876)	67.99	10.470	0.432	0.084	0.148603
C13	金新农(002548)	67.96	9.004	0.187	0.042	0.052044
C13	冠农股份(600251)	67.41	9.437	0.487	0.107	0.208824
C13	洽洽食品(002557)	66.51	9.588	0.303	0.066	0.095033
C13	中粮糖业(600737)	58.91	10.069	0.483	0.006	0.011274
C13	好想你(002582)	56.64	9.187	0.115	0.066	0.074948
C13	保龄宝(002286)	53.98	9.224	0.144	0.025	0.028655
C14	光明乳业(600597)	73.74	10.063	0.566	0.041	0.094453
C14	安琪酵母(600298)	72.12	9.802	0.538	0.029	0.062097
C14	贝因美(002570)	71	9.707	0.232	0.142	0.184268
C14	中炬高新(600872)	68.84	9.568	0.355	0.060	0.092398
C14	三全食品(002216)	64.41	9.569	0.515	0.032	0.065718
C14	梅花生物(600873)	60.64	10.272	0.571	0.022	0.050292
C15	泸州老窖(000568)	90.87	10.138	0.225	0.258	0.332554
C15	山西汾酒(600809)	84.07	9.765	0.334	0.169	0.254224
C15	伊力特(600197)	80.91	9.362	0.353	0.115	0.178324
C15	燕京啤酒(000729)	75.77	10.277	0.315	0.041	0.060372
C15	金枫酒业(600616)	72.92	9.202	0.167	0.072	0.086476
C15	张裕A(000869)	71.35	9.903	0.204	0.131	0.164524
C15	古井贡酒(000596)	71.35	9.765	0.357	0.107	0.166189
C15	舍得酒业(600702)	70.72	9.532	0.343	0.003	0.005259
C15	古越龙山(600059)	67.99	9.555	0.299	0.040	0.057625
C15	洋河股份(002304)	67.33	10.451	0.383	0.177	0.287534
C15	惠泉啤酒(600573)	65.44	9.061	0.071	0.017	0.018465
C15	维信诺(002387)	55.59	9.255	0.243	0.008	0.010692
C15	国投中鲁(600962)	49.9	9.355	0.531	-0.044	-0.093589
C17	航民股份(600987)	80.22	9.538	0.318	0.137	0.201469
C17	联发股份(002394)	74.35	9.604	0.364	0.072	0.113959
C17	鲁泰A(000726)	70.82	9.925	0.237	0.124	0.162101
C17	华孚时尚(002042)	70.59	9.899	0.581	0.024	0.056805
C17	百隆东方(601339)	68.01	9.949	0.301	0.057	0.081667
C17	福能股份(600483)	66.92	9.055	0.323	0.021	0.030458
C17	凤竹纺织(600493)	66.67	9.072	0.468	0.012	0.022308
C17	宏达高科(002144)	62.57	9.338	0.146	0.037	0.043647
C17	众和退(002070)	61.62	9.472	0.437	0.013	0.023071
C18	雅戈尔(600177)	80.2	10.684	0.706	0.028	0.095564
C18	九牧王(601566)	75.85	9.717	0.133	0.103	0.118887
C18	摩登大道(002656)	74.25	9.328	0.377	0.069	0.111528
C18	美邦服饰(002269)	74.2	9.827	0.437	0.060	0.10744
C18	贵人鸟(603555)	68.27	9.440	0.522	0.154	0.321341
C18	七匹狼(002029)	62.77	9.836	0.322	0.055	0.08136
C18	报喜鸟(002154)	62.44	9.661	0.428	0.035	0.060714

Appendix B - Average CSR Score of Different Industries

CSR - t-Test: Two-Sample Assuming Equal Variances					
Farming			Wholesale and Retail		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	54.568	65.6512829	Mean	66.902069	65.6512829
Variance	78.8047067	79.4519199	Variance	63.2333813	79.4519199
Observations	10	608	Observations	29	608
Pooled Variance	79.4424639		Pooled Variance	78.7367718	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	616		df	635	
t Stat	-3.9003144		t Stat	0.74160954	
P(T<=t) one-tail	5.3316E-05		P(T<=t) one-tail	0.22929906	
t Critical one-tail	1.64733103		t Critical one-tail	1.64725679	
P(T<=t) two-tail	0.00010663		P(T<=t) two-tail	0.45859813	
t Critical two-tail	1.96382252		t Critical two-tail	1.96370685	
Mining			Logistic		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	65.9434615	65.6512829	Mean	66.5755556	65.6512829
Variance	39.2652155	79.4519199	Variance	50.1539911	79.4519199
Observations	26	608	Observations	36	608
Pooled Variance	77.862256		Pooled Variance	77.8546808	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	632		df	642	
t Stat	0.16534033		t Stat	0.61068584	
P(T<=t) one-tail	0.43436449		P(T<=t) one-tail	0.27081186	
t Critical one-tail	1.64726821		t Critical one-tail	1.64723055	
P(T<=t) two-tail	0.86872899		P(T<=t) two-tail	0.54162371	
t Critical two-tail	1.96372465		t Critical two-tail	1.96366597	
Manufacturing			Information Technology		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	64.2995143	65.6512829	Mean	60.86	65.6512829
Variance	82.9650046	79.4519199	Variance	96.07751	79.4519199
Observations	350	608	Observations	21	608
Pooled Variance	80.7344163		Pooled Variance	79.9822418	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	956		df	627	
t Stat	-2.2422088		t Stat	-2.4137436	
P(T<=t) one-tail	0.01258824		P(T<=t) one-tail	0.00803757	
t Critical one-tail	1.64644908		t Critical one-tail	1.6472875	
P(T<=t) two-tail	0.02517648		P(T<=t) two-tail	0.01607513	
t Critical two-tail	1.96244853		t Critical two-tail	1.9637547	
Energy and Water Supply			Finance		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	69.8427273	65.6512829	Mean	70.7633333	65.6512829
Variance	53.967358	79.4519199	Variance	50.7465984	79.4519199
Observations	33	608	Observations	42	608
Pooled Variance	78.1756977		Pooled Variance	77.6356882	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	639		df	648	
t Stat	2.65220793		t Stat	3.63650495	
P(T<=t) one-tail	0.00409762		P(T<=t) one-tail	0.00014916	
t Critical one-tail	1.64724172		t Critical one-tail	1.64720851	
P(T<=t) two-tail	0.00819524		P(T<=t) two-tail	0.00029831	
t Critical two-tail	1.96368338		t Critical two-tail	1.96363163	
Construction			Real Estate		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	67.6271429	65.6512829	Mean	70.974	65.6512829
Variance	14.1698914	79.4519199	Variance	69.8019169	79.4519199
Observations	21	608	Observations	40	608
Pooled Variance	77.3695586		Pooled Variance	78.8693346	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	627		df	646	
t Stat	1.01206223		t Stat	3.67175402	
P(T<=t) one-tail	0.15594934		P(T<=t) one-tail	0.00013041	
t Critical one-tail	1.6472875		t Critical one-tail	1.64721581	
P(T<=t) two-tail	0.31189869		P(T<=t) two-tail	0.00026082	
t Critical two-tail	1.9637547		t Critical two-tail	1.963643	

Appendix C - Appendix B - Internal CSR and External CSR of Different Industries

ICSR - t-Test: Two-Sample Assuming Equal Variances					
Farming			Wholesale and Retail		
	<i>Variable 1</i>	<i>Variable 2</i>		<i>Variable 1</i>	<i>Variable 2</i>
Mean	19.751	27.9373026	Mean	25.0896552	27.9373026
Variance	33.2456544	38.8068962	Variance	29.0015606	38.8068962
Observations	10	608	Observations	29	608
Pooled Variance	38.7256443		Pooled Variance	38.3745349	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	616		df	635	
t Stat	-4.1261596		t Stat	-2.418498	
P(T<=t) one-tail	2.098E-05		P(T<=t) one-tail	0.00793248	
t Critical one-tail	1.64733103		t Critical one-tail	1.64725679	
P(T<=t) two-tail	4.1961E-05		P(T<=t) two-tail	0.01586497	
t Critical two-tail	1.96382252		t Critical two-tail	1.96370685	
Mining			Logistic		
	<i>Variable 1</i>	<i>Variable 2</i>		<i>Variable 1</i>	<i>Variable 2</i>
Mean	28.8457692	27.9373026	Mean	29.4175	27.9373026
Variance	30.1059934	38.8068962	Variance	35.9680079	38.8068962
Observations	26	608	Observations	36	608
Pooled Variance	38.4627149		Pooled Variance	38.6521281	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	632		df	642	
t Stat	0.73144695		t Stat	1.38801139	
P(T<=t) one-tail	0.23238865		P(T<=t) one-tail	0.08280753	
t Critical one-tail	1.64726821		t Critical one-tail	1.64723055	
P(T<=t) two-tail	0.46477731		P(T<=t) two-tail	0.16561506	
t Critical two-tail	1.96372465		t Critical two-tail	1.96366597	
Manufacturing			Information Technology		
	<i>Variable 1</i>	<i>Variable 2</i>		<i>Variable 1</i>	<i>Variable 2</i>
Mean	27.0380571	27.9373026	Mean	29.6385714	27.9373026
Variance	40.4363338	38.8068962	Variance	26.5947029	38.8068962
Observations	350	608	Observations	21	608
Pooled Variance	39.4017432		Pooled Variance	38.4173525	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	956		df	627	
t Stat	-2.1351265		t Stat	1.23664582	
P(T<=t) one-tail	0.01650218		P(T<=t) one-tail	0.1083408	
t Critical one-tail	1.64644908		t Critical one-tail	1.6472875	
P(T<=t) two-tail	0.03300436		P(T<=t) two-tail	0.21668161	
t Critical two-tail	1.96244853		t Critical two-tail	1.9637547	
Energy and Water Supply			Finance		
	<i>Variable 1</i>	<i>Variable 2</i>		<i>Variable 1</i>	<i>Variable 2</i>
Mean	30.9190476	27.9373026	Mean	32.5861905	27.9373026
Variance	12.927659	38.8068962	Variance	17.4019705	38.8068962
Observations	21	608	Observations	42	608
Pooled Variance	37.9814022		Pooled Variance	37.4525722	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	627		df	648	
t Stat	2.17982242		t Stat	4.76132691	
P(T<=t) one-tail	0.01482096		P(T<=t) one-tail	1.1871E-06	
t Critical one-tail	1.6472875		t Critical one-tail	1.64720851	
P(T<=t) two-tail	0.02964191		P(T<=t) two-tail	2.3743E-06	
t Critical two-tail	1.9637547		t Critical two-tail	1.96363163	
Construction			Real Estate		
	<i>Variable 1</i>	<i>Variable 2</i>		<i>Variable 1</i>	<i>Variable 2</i>
Mean	30.9190476	27.9373026	Mean	31.252	27.9373026
Variance	12.927659	38.8068962	Variance	23.0476318	38.8068962
Observations	21	608	Observations	40	608
Pooled Variance	37.9814022		Pooled Variance	37.8554855	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	627		df	646	
t Stat	2.17982242		t Stat	3.30045454	
P(T<=t) one-tail	0.01482096		P(T<=t) one-tail	0.00050919	
t Critical one-tail	1.6472875		t Critical one-tail	1.64721581	
P(T<=t) two-tail	0.02964191		P(T<=t) two-tail	0.00101839	
t Critical two-tail	1.9637547		t Critical two-tail	1.963643	

ECSR - t-Test: Two-Sample Assuming Equal Variances					
Farming			Wholesale and Retail		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	34.817	37.7139803	Mean	41.8124138	37.7139803
Variance	37.8849122	35.9108003	Variance	26.0625547	35.9108003
Observations	10	608	Observations	29	608
Pooled Variance	35.9396428		Pooled Variance	35.4765469	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	616		df	635	
t Stat	-1.5157103		t Stat	3.62016444	
P(T<=t) one-tail	0.06505279		P(T<=t) one-tail	0.00015894	
t Critical one-tail	1.64733103		t Critical one-tail	1.64725679	
P(T<=t) two-tail	0.13010557		P(T<=t) two-tail	0.00031788	
t Critical two-tail	1.96382252		t Critical two-tail	1.96370685	
Mining			Logistic		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	37.0976923	37.7139803	Mean	37.1580556	37.7139803
Variance	9.73673846	35.9108003	Variance	21.2568447	35.9108003
Observations	26	608	Observations	36	608
Pooled Variance	34.8754339		Pooled Variance	35.1119086	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	632		df	642	
t Stat	-0.521096		t Stat	-0.5469516	
P(T<=t) one-tail	0.30124123		P(T<=t) one-tail	0.29230104	
t Critical one-tail	1.64726821		t Critical one-tail	1.64723055	
P(T<=t) two-tail	0.60248246		P(T<=t) two-tail	0.58460207	
t Critical two-tail	1.96372465		t Critical two-tail	1.96366597	
Manufacturing			Information Technology		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	37.2614571	37.7139803	Mean	31.2214286	37.7139803
Variance	34.6048245	35.9108003	Variance	65.9478029	35.9108003
Observations	350	608	Observations	21	608
Pooled Variance	35.4340372		Pooled Variance	36.8689184	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	956		df	627	
t Stat	-1.1330094		t Stat	-4.8174957	
P(T<=t) one-tail	0.12874719		P(T<=t) one-tail	9.1252E-07	
t Critical one-tail	1.64644908		t Critical one-tail	1.6472875	
P(T<=t) two-tail	0.25749437		P(T<=t) two-tail	1.825E-06	
t Critical two-tail	1.96244853		t Critical two-tail	1.9637547	
Energy and Water Supply			Finance		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	42.63	37.7139803	Mean	38.1771429	37.7139803
Variance	23.3161875	35.9108003	Variance	25.6248599	35.9108003
Observations	33	608	Observations	42	608
Pooled Variance	35.2800841		Pooled Variance	35.2599923	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	639		df	648	
t Stat	4.63050712		t Stat	0.4888911	
P(T<=t) one-tail	2.2103E-06		P(T<=t) one-tail	0.31254211	
t Critical one-tail	1.64724172		t Critical one-tail	1.64720851	
P(T<=t) two-tail	4.4205E-06		P(T<=t) two-tail	0.62508422	
t Critical two-tail	1.96368338		t Critical two-tail	1.96363163	
Construction			Real Estate		
	Variable 1	Variable 2		Variable 1	Variable 2
Mean	36.7080952	37.7139803	Mean	39.722	37.7139803
Variance	12.3995062	35.9108003	Variance	45.1530472	35.9108003
Observations	21	608	Observations	40	608
Pooled Variance	35.1608387		Pooled Variance	36.4687687	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
df	627		df	646	
t Stat	-0.7642841		t Stat	2.03705009	
P(T<=t) one-tail	0.22249273		P(T<=t) one-tail	0.02102608	
t Critical one-tail	1.6472875		t Critical one-tail	1.64721581	
P(T<=t) two-tail	0.44498546		P(T<=t) two-tail	0.04205215	
t Critical two-tail	1.9637547		t Critical two-tail	1.963643	

Appendix D - Correlation Analysis and VIFs

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CORRELATIONS
/VARIABLES=ROA ROE CSR LogTA Lev
/PRINT=TWOTAIL NOSIG
/MISSING=PAIRWISE.
    
```

Correlations

		Correlations				
		ROA	ROE	CSR	LogTA	Lev
ROA	Pearson Correlation	1	.052	.500**	-.129**	-.450**
	Sig. (2-tailed)		.199	.000	.001	.000
	N	608	607	608	608	608
ROE	Pearson Correlation	.052	1	.093*	.024	-.035
	Sig. (2-tailed)	.199		.022	.557	.395
	N	607	607	607	607	607
CSR	Pearson Correlation	.500**	.093*	1	.323**	.023
	Sig. (2-tailed)	.000	.022		.000	.570
	N	608	607	608	608	608
LogTA	Pearson Correlation	-.129**	.024	.323**	1	.634**
	Sig. (2-tailed)	.001	.557	.000		.000
	N	608	607	608	608	608
Lev	Pearson Correlation	-.450**	-.035	.023	.634**	1
	Sig. (2-tailed)	.000	.395	.570	.000	
	N	608	607	608	608	608

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

		Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.371	.535		-2.562	.011		
	CSR	.014	.004	.146	3.357	.001	.841	1.189
	Log TA	.078	.064	.068	1.215	.225	.504	1.985
	Lev	-.551	.209	-.140	-2.638	.009	.562	1.780

a. Dependent Variable: ROE

Appendix E - Multiple Regression Results for the Sample

CSR and ROA								
SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.6803491							
R Square	0.4628749							
Adjusted R Square	0.46020706							
Standard Error	0.0399865							
Observations	608							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	3	0.83224645	0.27741548	173.501755	4.0676E-81			
Residual	604	0.96574788	0.00159892					
Total	607	1.79799433						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.102971	0.02549255	-4.039258	6.0535E-05	-0.1530358	-0.0529062	-0.1530358	-0.0529062
CSR	0.00311931	0.00019855	15.7103774	6.9348E-47	0.00272938	0.00350925	0.00272938	0.00350925
Log TA	-0.0001374	0.00305697	-0.0449371	0.96417229	-0.006141	0.00586621	-0.006141	0.00586621
Lev	-0.1151635	0.00994418	-11.580991	3.7784E-28	-0.1346928	-0.0956341	-0.1346928	-0.0956341

CSR and ROE								
SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.19757821							
R Square	0.03903715							
Adjusted R Square	0.03426415							
Standard Error	0.83945258							
Observations	608							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	3	17.2902292	5.76340975	8.1787542	2.4144E-05			
Residual	604	425.627107	0.70468064					
Total	607	442.917336						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-1.3710384	0.53517522	-2.5618496	0.01065316	-2.4220687	-0.3200081	-2.4220687	-0.3200081
CSR	0.01399455	0.00416826	3.35740443	0.00083623	0.0058085	0.0221806	0.0058085	0.0221806
Log TA	0.07798106	0.06417618	1.21510901	0.22479929	-0.0480545	0.20401662	-0.0480545	0.20401662
Lev	-0.5507651	0.20876214	-2.6382424	0.0085485	-0.960753	-0.1407773	-0.960753	-0.1407773