The association between corporate social responsibility index and performance of firms in industrial products and resources industries: empirical evidence from Thailand

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Abstract

Purpose – *This study aims to focus on the industrial products and resources industries due to the environmental impacts caused by both industries. To convince both industries to increase investment in corporate social responsibility (CSR) activities, the authors have presented the results on the relationships between investment in CSR programs and the financial-based and market-based performances.*

Design/methodology/approach – *The study focuses on the data during 2010-2011 of the listed Thai firms in industrial products and resources industries due to the environmental impacts caused by both industries. The findings show that firms receiving a higher CSR index score also have a higher return on assets (ROA), indicating efficient use of the assets. In addition, investment in CSR programs produces a positive outcome within two years, on average, after the investment. As the study period is two years (2010-2011), no relationships are found between the CSR index and return on equity (ROE) and between the index and Tobin'Q.*

Findings – *The findings show that firms with a higher CSR index have higher ROA, thereby indicating a more efficient use of the assets. In addition, the positive outcome of investment in CSR programs can be realized within a relatively short-time period, i.e. two years on average after investment. As the study data cover only two years (2010-2011), no relations are detected between the CSR index and ROE and Tobin'Q.*

Research limitations/implications – *Not many research papers have been studied by using emerging market evidence. The interest in CSR in Thailand is just in its early stage. The study examines the association between multicollinearity by using variance inflation factors (VIF), and it shows no defect on the matter. In addition, the data have been checked for the defects in the outliner, which is very variable. It could be affected to the regression coefficient analysis. The table of casewise diagnostics shows that the outliner containing standard residual diversifies regression equation, and it could also misconceive the variable of Y; therefore, the researcher would exclude the mentioned area before analyzing the data. Durbin–Watson statistic is used to do the error check of ROA, ROE and Tobin's Q, which were found to be 1.938, 1.817 and 1.931, respectively. The mean varies between 1.5 and 2.5, which means covariance. Additionally, association of independent variable could be checked to ensure that the independent variable has no relationship. It could be noticed from Tolerance and VIF, if Tolerance is close to zero or VIF is over 10.0, it means that one of independent variables has associated with other variables. It implies that there is no multicollinearity problem in this study.*

Originality/value – *This is the first study in Thailand that looks into the effects of CSR activities of industrial products and resources sectors of the industry due to the pollution-prone nature of both industries.*

Keywords *Firm performance, Corporate social responsibility, Industrial products industry, Resources industry*

Paper type *Research paper*

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Introduction

Today businesses are required to pay attention to the changing expectations and needs of their customers to attain the business goals of profit maximization and wealth creation. In addition, today consumers are encountered with many social and environmental issues, e.g. environmental degradation, natural disasters, crime and social changes. The issues influence their selection of products and services and their preferences to acquire the products from socially and environmentally responsible organizations (CSR Moving and Social Movement, 2012).

Many global businesses attempt to form a close tie with the public through their socially and environmentally responsible acts. The goals are to become a preferred brand, to raise the entry barrier and to achieve sustainable long-term growth. Currently, more consumers are concerned with the issues of product safety and environment and prefer a socially responsible firm to an irresponsible one. Thus, businesses have to adopt a new business practice that emphasizes the creation of a balance between economy, society and environment, leading to sustainable long-term growth.

A 2005 study by the Research Center of Dhuraki Pundit University in Thailand titled "Survey on Consumer's Behavior and Attitude toward Corporate Social Responsibility of the Business Organizations in Bangkok" reported that quality of goods is not the single factor in the buying decision. The respondents also take into consideration whether the operators are socially responsible.

In Thailand, the corporate social responsibility (CSR) goal of most organizations is to create a good reputation or a good brand image. It is reported that the majority of CSR programs in Thailand depend heavily on the initiatives of the company's top management. However, many executives do not realize the connection between the CSR programs and the increased sales and earnings in the long term. Some executives do not allow the implementation of CSR programs because it increases the operating cost and impairs the competitiveness. This situation could be rectified by providing the executives with a correct understanding that CSR programs are an investment not an expense item, which is similar to employee training. Thus, they are meant for a long-term result not a short-term result (Kenan Institute Asia, 2005).

The slow adoption of the CSR concept is attributable to many organizations' perception of CSR as a cost item that benefits only the society (Porter and Kramer, 2006). For this reason, if a positive association between the engagement in CSR programs and the firm's success could be shown, more businesses would adopt and implement the CSR programs. This study focuses on the industrial products and resources industries due to the environmental impacts caused by both industries. To convince both industries to increase investment in the CSR activities, the authors have presented the results on the relationships between investment in CSR programs and the financial-based and market-based performances.

Theory, literature review and hypotheses development

Stakeholder theory

The stakeholder theory is a theory of organizational management and business ethics that takes into consideration all stakeholders of an organization. The theory states that the expectations of the shareholders may be different from those of other stakeholders, i.e. the customers, employees, competitors, government agencies and the community. Hence, businesses should also pay attention to the other stakeholders' needs and interests. In addition, firms should determine possible impacts of their policy implementation and operations and take corrective actions. (Freeman and McVea, 1984).

Slack resources theory

The slack resources theory states that a business with slack resources would be able to divert the excess resources to improve its operations and/or to help the society. Thus, investment in the socially responsible programs, e.g. an activity to improve the relationship between the company and the community, depends on the firm's excess resources. According to the theory, if a business performs well financially and thereby has excess resources, it could be expected that the firm would engage in many socially responsible programs (Waddock and Graves, 1997).

Corporate citizenship

Carroll (1979) proposed the classification of an organization's CSRs as follows: the economic, legal, ethical and discretionary responsibilities. The discretionary responsibilities were changed to the philanthropic responsibilities in 1991.

The economic responsibilities. The first group involves economics, as businesses are the basic building blocks of an economy and they exist to make profits. However, it is a responsibility of the businesses to a society to supply quality goods and services. In addition, they are responsible for generating a maximum return for the investors' money.

The legal responsibilities. An economy that allows an individual or a group of individuals to hold a business monopoly would be in violation of the social contracts. To prevent this, laws and regulations are required to guarantee compliance with the society's expectations. Examples of the laws and regulations are the Consumer Protection Act, the Labor Protection Act, the Sarbanes–Oxley Act and other regulations that are in compliance with international laws.

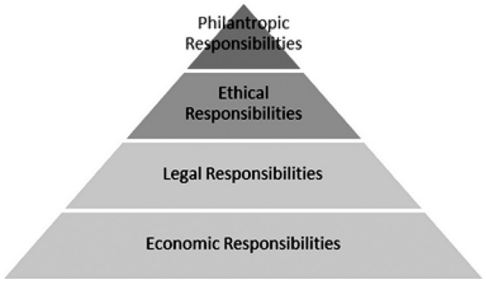
The ethical responsibilities. The third group is directly related to the society's expectations of an organization. That is, members of a society expect the organization not only to operate in full compliance with the laws and regulations but also to do it in a transparent and fair manner.

The philanthropic responsibilities. The last group is concerned with the expectations of society members that businesses voluntarily contribute or "give back" to the society (Figure 1).

Corporate social responsibilities and firms' performance

Freeman and McVea (1984) proposed the stakeholder approach to strategic management and developed the stakeholder theory in relation to appropriate investment. Jones (1980) reported that, in addition to the financial returns on investment, businesses have a commitment as a society member to contributing or "giving back" to the society in which they operate. The same author reasoned that stakeholders consist of stockholders, customers, employees, society and environment. Friedman (1970) suggested that the goal

Figure 1 The pyramid of corporate social responsibility



Source: Carroll (1979)

of a business should not be only for the shareholders' profit maximization, a view that gathered wide support. In addition, he is recognized as a leader in the field of business ethics and the stakeholder approach to strategic management.

A study by Khanthavit (2012) titled "A CSR-implement model for value creation" detailed an enterprise governance framework that consists of value-based management, good governance (CG) and CSR. The study noted that an enterprise that has adopted and implemented CG and CSR without the value-based management could still exhibit good performance and value maximization.

Three possibilities of the relationships between CSR and firms' performance are a positive, a negative or no relationship. The positive relationships between CSR and firms' performance were reported in research based on the slack resources theory and the stakeholder theory. The slack resources theory states that a business with slack resources would be able to divert the excess resources to improve its operations and/or to help the society. In the stakeholder theory, the main cost components are the company's explicit costs (e.g. salary) and implicit costs (e.g. environment cost, production costs of high-quality goods or services). According to the stakeholder theory, most socially irresponsible companies attempt to reduce the implicit costs. The practice could give rise to large litigation costs and damages as well as a loss of competitive advantage in the future.

Waddock and Graves (1997) examined the relationship between CSR and firms' performance. Consistent with the slack resources theory, the authors found a positive relationship between CSR and the firms' performance. In addition, they reported that CSR has a positive impact on the firms' future performance. Prior studies showed a positive association between CSR and the operational performance (McGuire *et al.*, 1988; Shiu and Yang, 2012). Preston and O'Bannon (1997) reported that CSR enhances a firm's operational efficiency in the long term. Waddock and Graves (1997) examined the association between CSR and the financial performance based on the firms' return on assets (ROA) and return on equity (ROE). The authors documented a positive relationship between CSR and the financial performance, indicating that the firms that engaged in CSR activities would produce the higher financial returns. Tsoutsora (2004) also reported a positive relationship between CSR and the long-term financial performance based on analysis of a five-year data set.

On the other hand, Friedman (1970) documented that CSR incurred additional operating costs and, thereby, impaired the firm's competitiveness. Prior studies reported that the benefits of CSR programs were limited and generated little returns for the firms from their CSR investment (Walley and Whitehead, 1994; Schmidt *et al.*, 2003; Barnet and Salomon, 2006). Brammer *et al.* (2006) found a negative association between CSR and the financial performance. Consistent with Friedman (1970), the firms' financial performance worsens because of misuse of resources in the CSR activities. In the case of no relationship, Ullmann (1985) reported no relationship between CSR and the firms' performance using a sample of US firms.

Previous studies examined the relationship between CSR and firms' financial performance in both the short term and the long term. The results showed that the relationship between CSR and the short-term financial performance was mixed, i.e. positively correlated, negatively correlated or not correlated. Other prior studies reported that the association between CSR and the long-term financial performance could be either positively correlated or not correlated. Aupperle *et al.* (1985) investigated the relation between CSR and the short-term financial performance (one year) and between CSR and the long-term financial performance (five years). His results indicated that CSR has a positive effect on the firms' financial performance in the long term, which is consistent with Mullen (1997), who reported that a firm with philanthropic programs improved its financial performance within three to five years. Shiu and Yang (2012) examined the relationship between CSR and firms'

performance using Tobin's Q, a market-based performance measure. They found that those firms that invested in the short-term CSR programs showed a better short-term financial performance, i.e. two years, on average, after investment. They also noted that the firms that engaged in the CSR activities increased their market value within eight years due to increased operational efficiency and decreased numbers of competitors.

Waddock and Graves (1997) reported that CSR programs that were aimed at the employees, community, environment and diversity produced a positive effect on the firms' financial performance. Inoue and Lee (2011) reported that the CSR programs that were oriented toward the employees, community and environment increased the firms' financial performance. The CSR programs have a positive effect on the firms' performance because they encompass the mechanisms which are intended to improve the firms' competitiveness and to reduce the likelihood that the stakeholders take legal action for damages. Therefore, it is hypothesized that there exists a positive association between the CSR index and firms' performance:

H1. Firms with higher CSR index are expected to have better performance.

Research design

Sample selection

This research study examines 204 listed companies in the Stock Exchange of Thailand (SET). It focuses on the data during 2010-2011 of the listed Thai firms in industrial products and resources industries. In addition, this research is the first to investigate the effects of the CSR programs of the industrial products and resources industries due to the environmental impacts caused by both industries. However, the data for analysis of CSR index were of 2008-2009. The CSR index was collected from the annual reports of the firms under study and the annual registration forms (Form 56-1) in the SET Market Analysis and Reporting Tool ("SETSMART"). The accounting data were gathered from the Datastream and the SETSMART.

Measuring firm's performance (performance)

This study investigates the relationship between the CSR index and the firms' performance in terms of ROA, ROE and Tobin's Q.

Return on assets

ROA measures a firm's performance in terms of its profitability prior to financing effects. By separating the financing effects from the operating effects, ROA provides a better measure of the profitability of these assets. ROA is calculated by dividing the earnings before interests and tax expenses by average book value of total assets:

$$ROA\ (\%) = \frac{EBIT}{Average\ Total\ Assets} \times 100$$

where:

EBIT = Earnings before interests and tax expenses.
Average Total Assets = $(Assets_{j,t} + Assets_{j,t-1})/2$.

Return on equity

ROE measures a firm's performance in terms of its profitability after the effects of financing and tax expenses. ROE gives a good measure of net income in relation to shareholders' equity. ROE is computed by dividing net income by average shareholders' equity:

$$ROE\ (\%) = \frac{NI}{Average\ Shareholders'\ Equity} \times 100$$

where:

NI = Net income.
Average Shareholders' Equity = $(Shareholders'\ Equity_{j,t} + Shareholders'\ Equity_{j,t-1})/2$.

Tobin's Q

Tobin's Q is a ratio of the market value of a firm's assets to the replacement value of its assets. Tobin's Q is also a comparison of the marginal efficiency of capital and the required rate of return of capital. Tobin's Q is a performance measurement in terms of investment opportunity. Tobin's Q of >1 denotes that the market value of the firm's assets exceeds the replacement cost. In other words, the marginal efficiency of capital is greater than the required rate of return of capital. This also implies that investors are willing to pay a premium over the firm's assets, as the current management is expected to perform well in the future (Jiamsagul, 2007):

$$Tobin's\ Q = \frac{MVE + PS + DEBT}{TA}$$

where:

MVE = Market value of equity computed by multiplying the closing price of stock with the number of common shares outstanding.
PS = Preferred stock calculated by multiplying the net number of preferred shares at year-end with the stated value per share.
DEBT = Total liabilities.
TA = Total assets.

Corporate social responsibility index (CSRInd)

The CSR index reflects a firm's responsibility toward the community, employees and environment. The CSR index is constructed based on the KLD Rating Data (Kinder *et al.*, 2003) and the Corporate Social Responsibility Guideline of the Corporate Social Responsibility Institute of the Stock Exchange of Thailand. The criteria cover three parts of CSR and consist of 25 items: community (8 criteria), employees (8 criteria) and environment (9 criteria).

The firms' CSR practices were scored using the data from public information sources, which are readily accessible by investors. Examples of the information sources are firms' annual registration forms (Form 56-1) and corporate annual reports. In scoring, firms receive a "0" actual score for any criterion omitted or failed to comply and an actual score of "1" for meeting a criterion. Then, the CSR index figures are calculated by dividing the total sum of actual scores of each category by the maximum total score of the corresponding category. The CSR index figure of each category is in the range of 0 to 1. Table I shows the computation of the CSR indexes:

$$CSRInd_t = \frac{AS_t}{MS}$$

where:

CSRInd = Corporate social responsibility index.
AS = Actual score.
MS = Maximum score.

Table I Measurement of CSR index

CSR category	*Maximum total score*	*Total actual score*	*Computation*	*CSR index*
Community index	8	7	7/8	0.88
Employee index	8	5	5/8	0.63
Environment index	9	5	5/9	0.56
CSR index	25	17	17/25	0.68

Regression model

We use the following cross-sectional regression model to investigate the relations between all variables to test the hypothesis:

$$Performance_{i,t} = \beta_0 + \beta_1\, CSRInd_{i,t-2} + \beta_2\, Company\ Size_{i,t-2} + \beta_3\, Capital\ Structure_{i,t-2} + \beta_4\, Risk_{i,t-2} + \varepsilon_i \quad (1)$$

where:

Performance	= ROE, ROA and Tobin's Q.
CSRInd	= Corporate social responsibility index.
Company Size	= Total assets.
Capital Structure	= Debts to equity ratio.
Risk	= Long-term debts to total assets ratio.
ε_i	= Error term from OLS regression.

Results

Descriptive statistics

Table II presents the descriptive statistics for the 204 observations, including the minimum, maximum, mean and standard deviation values. The means of ROA, ROE and Tobin's Q are 8.0302, 9.7316 and 1.1085, respectively. With respect to the CSR index (CSRInd), its mean is 0.3886. The figure indicates that the SET-listed companies in the industrial products and resources industries scored very low in their CSR engagement. In addition, the mean of company size (Company Size) is Thai Baht 1,209.50 million (approximately USD 40.32 million). The mean of capital structure (Capital Structure) is 3.4725, indicating a high financial leverage of the firms, while the mean of risk (Risk) is 0.11, meaning that 11 per cent of the sampled firms' assets are financed with long-term debts.

Regression results

As presented in Table III, the *F*-statistic of the ROA regression model is significant at the 1 per cent level, indicating that this model is statistically valid. The adjusted R^2 of the ROA model is 14.3 per cent, meaning that the explanatory variables are able to explain and predict the dependent variables by 14 per cent. On the other hand, the *F*-statistic of the ROE regression model is significant at the 5 per cent level and the adjusted R^2 of the ROE model is 4 per cent. Table III also shows that the *F*-statistic of the Tobin's Q model is significant at the 10 per cent level. The adjusted R^2 of the Tobin's Q model is 2.5 per cent, indicating that the model is statistically valid.

Table III also presents the results of the ROA, ROE and Tobin's Q models. The coefficient of CSRInd is significantly positive at the 1 per cent level in the ROA model. The finding shows that firms with higher CSR index have higher ROA, indicating better use of the assets. In addition, a positive outcome of investment in CSR programs can

Table II Descriptive statistics on firms' performance and CSR index

Variables	*Minimum*	*Total observations (n = 204)* *Maximum*	*Mean*	*SD*
ROA	−48.9900	65.1500	8.0302	12.5069
ROE	−31.7400	46.5100	9.7316	12.3214
Tobin's Q	0.4877	2.3874	1.1085	0.3379
CSRInd	0.0800	0.9200	0.3886	0.2073
Company size	0.0679	7.3454	1.2095	0.9128
Capital structure	−2.7074	448.4579	3.4725	31.6221
Risk	0.0001	0.5397	0.1100	0.1336

Table III Multiple linear regression analysis for all observations ($n = 204$)

Model 1	Expected sign	ROA		ROE		Tobin's Q	
		β	t-statistic	β	t-statistic	β	t-statistic
Intercept		3.339	1.565	4.303	1.874*	0.997	13.48***
CSRInd	+	11.105	2.833***	3.88	0.914	0.059	0.435
Company Size	+	1.323	1.46	2.567	2.688***	0.044	1.41
Capital Structure	+	0.128	4.939***	−0.308	−1.576	0.000	0.481
Risk[a]	−/+	−14.912	−2.371**	10.527	1.491	0.586	2.714***
F-value		9.488		2.989		2.28	
P-value		0.000		0.02		0.062	
R^2		0.16		0.061		0.045	
Adjusted R^2		0.143		0.04		0.025	

Notes: $Performance_{i,t} = \beta_0 + \beta_1\ CSRInd_{i,t-2} + \beta_2\ Company\ Size_{i,t-2} + \beta_3\ Capital\ Structure_{i,t-2} + \beta_4\ Risk_{i,t-2} + \varepsilon_i$; [a]A negative expected sign of risk is financial-based, while a positive sign is market-based; ***indicates significance at 1% level; **indicates significance at 5% level; *indicates significance at 10% level

be realized within two years, on average, after the investment. Consistent with Waddock and Graves (1997) and Tsoutsora (2004), the authors have found a positive association between CSR and firms' performance. This finding is supported by the stakeholder theory that states that firms with greater involvement in CSR are more likely to possess competitive advantages but less likely to incur litigation costs. As the data cover only two years (2010-2011), no relations are detected between the CSR index and ROE and between the index and Tobin'Q. However, previous studies reported that CSR programs have a positive effect on the market-based performance in the long run.

The coefficient of company size (Company Size) is positively significant at the 1 per cent level in the ROE model, implying that large firms have a higher ROE than do small firms. This is consistent with Waddock and Graves (1997), who reported that small firms were unable to engage in the same CSR activities initiated by large firms to meet the requirements of stakeholders. The coefficient of capital structure (Capital Structure) is positively significant at the 1 per cent level in the ROA model, indicating that firms with a higher debts-to-equity ratio have higher ROA. The coefficient of risk (Risk) is negatively significant at the 5 per cent level in the ROA model. Firms with a higher proportion of long-term debts to total assets have lower ROA because the long-term debts carry a cost of debts. However, the coefficient of risk (Risk) in the Tobin's Q model is positively significant at the 1 per cent level. This means that the more the long-term financing used by the firms to finance their assets, the higher the value of Tobin's Q. In addition, companies that are willing to accept calculated risk would have a better market-based performance in the long term and an increase in the market value. For example, CPF, a Thai food processing conglomerate, has switched from petroleum diesel fuel to biodiesel, which requires major investment to modify the production machinery. The switch has reduced dependence on petroleum diesel and cut down on 2,000 tons of carbon dioxide annually. In addition, it saves the company on fuels of Thai Baht 5 million (approximately USD 167,000) per year. The greatest positive impact of the switch is a favorable attitude of the public toward the company.

Summary

This research study examines the association between the CSR index and the firms' performance in terms of ROA, ROE and Tobin'Q. This study is the first to investigate the effects of CSR activities of the industrial products and resources industries.

The results show that the SET-listed companies in the industrial products and resources industries have a low score on CSR. It is found that firms with a higher CSR index have a higher ROA, indicating a better use of the assets. The positive outcome of investment in CSR programs becomes materialized within two years, on average, after the

investment. However, there is no relationship between the CSR index and ROE and between the index and Tobin's Q. This finding is consistent with prior studies which documented that CSR is positively correlated with firms' performance in the long term, i.e. five to eight years, on average, after investment. This could be because firms that are more engaged in CSR activities are regarded favorably by consumers, which in turn strengthens their competitive advantages in the long term. This fact is supported by Aupperle *et al.* (1985), who investigated the relationship between CSR and the short-term financial performance (one year) and between CSR and the long-term financial performance (five years). His results indicated that CSR has a positive effect on firms' financial performance in the long term, which is consistent with Mullen (1997), who noted that firms with philanthropic programs improve their financial performance within three to five years. Consistent with Schreck (2011), Shiu and Yang (2012) examined the relationship between CSR and the firms' performance using the market-based performance measure of Tobin's Q. They also reported that CSR activities increase firms' market value within eight years because of increased operational efficiency and deceased competition in the marketplace.

The scoring of the CSR index of this research work is, however, based on only two scoring guidelines: the KLD Rating Data and the Corporate Social Responsibility Guideline. Another limitation is that this research examines the relationship between the CSR index and the firms' performance in a short period of two years and focuses only on the industrial products and resources industries. Thus, the use of other scoring guidelines, an extension of study period and inclusion of different industries are encouraged in future research works.

Limitation of the study

Not many research papers have been studied by using emerging market evidence. The interest in CSR in Thailand is just in its early stage. The study examines the association between multicollinearity by using variance inflation factors (VIF), and it shows no defect on the matter. In addition, the data have been checked for the defects in the outliner, which is very variable. It could be affected to the regression coefficient analysis. The table of casewise diagnostics shows that the outliner containing standard residual diversifies regression equation, and it could also misconceive the variable of Y; therefore, the researcher would exclude the mentioned area before analyzing the data.

Table IV shows that Durbin–Watson statistic is used to do the error check of ROA, ROE and Tobin's Q, which were found to be 1.938, 1.817 and 1.931, respectively. The mean varies between 1.5 and 2.5, which means covariance. Additionally, association of independent variable could be checked to ensure the independent variable has no relationship. It could be noticed from tolerance and VIF, if Tolerance is close to zero or VIF is over 10.0, it means that one of independent variables has associated with other variables. It implies that there is no multicollinearity problem in this study.

Table IV Association of independent variable Model 1 by using tolerance and VIF

	Collinearity statistics					
	ROA		*ROE*		*Tobin's Q*	
Variables/statistic result	*Tolerance*	*VIF*	*Tolerance*	*VIF*	*Tolerance*	*VIF*
CSRInd	0.963	1.039	0.948	1.055	0.964	1.037
Company size	0.965	1.037	0.969	1.032	0.965	1.036
Capital structure	0.99	1.010	0.998	1.002	0.99	1.010
Risk	0.935	1.069	0.919	1.088	0.937	1.067
Durbin–Watson	1.938		1.817		1.931	

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