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CORPORATE SOCIAL RESPONSIBILITY AND CORPORATE FINANCIAL PERFORMANCE: EVIDENCE FROM INDIAN CAPITAL MARKET

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Abstract

The concept of corporate social responsibility (CSR) is welcomed with more enthusiasm in recent years. The present study, is a four phase investigation of the corporate financial performance of socially responsible firms relative to other firms, listed in Bombay Stock Exchange. We start with a comparative analysis of financial performance of CSR and non-CSR firms and then proceed to explore industry-specific effects. After identification of significant factors contributing to financial performance, we conduct an analysis to check for the feed-back effect on CSR using Probit model. We also compute the probability with which a firm is more likely to adopt CSR due to improvement in any of the significant factors.

1. INTRODUCTION

Corporate social responsibility, otherwise termed corporate citizenship or voluntary over compliance, is a concept in existence ever since industrialization. However, academic debates on it spurred only a few decades ago. This occurred as rapid development generated high rate of depletion of natural resources and widening social inequality as its byproducts. Companies adopt corporate social responsibility as the best way to change the caustic nature of industrialized growth. Some corporations were forced to adopt corporate social responsibility (CSR) as they faced protests and boycotts by consumers due to their socially irresponsible and environmentally unfavorable strategies whereas some other firms voluntarily incorporated it as a self-regulating mechanism.

In economic literature discussions on CSR are based on two approaches. Arguments against CSR are based on Neo-classical school of thought (Friedman, 1970). Neo-classical economists argue that production can be done as efficiently as possible when corporations maximize its profit. While the behavioral economists argued that in addition to making profit, business should help to solve social problems whether or not business helps to create those problems even if there is no short run or long run profit potential (Holmes, 1976). The theoretical debate on impact of corporate social responsibility on a firm's financial performance (corporate financial performance - CFP) seldom reached any consensus. Hence researchers drifted towards empirical studies in early 1970s. The results of these studies are heterogeneous. Researchers such as Moskowitz (1972), Bragdon and Martin (1972), Bowman and Haire (1975), Heinze (1976), Sturdivant and Ginter (1977), Cochran

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and Wood (1984) etc. argued that there exists a positive correlation between CSR and CFP while research by Parket and Eilbirt (1975), Ullmann (1985) etc. proved otherwise.

The present study tries to explore the impact of corporate social responsibility on stock market performance of the firms using a risk-adjusted proxy for financial performance. Industry specific analysis is also done to capture difference in financial performance after instigating CSR among industry-specific groups. The feedback effect of financial dynamics on CSR is tested and the marginal effects of significant variables on CSR is computed. What we observe is that incorporation of CSR as a part of business strategy has a positive impact on corporate financial performance. Firms in service sector benefit more by involving in CSR compared to their counterparts in manufacturing sector. The volume of trade and age of the company generates positive feedback effect on CSR.

The rest of the paper is organized in four sections. Section II provides extensive review of literature apropos to CSR and financial performance. Section III explains the research design. Empirical findings are summarized in Section IV. Section V consists of concluding remarks.

2. REVIEW OF LITERATURE

Literature on the impact of corporate social responsibility on financial performance of firms are in abundance. The first of its kind was initiated by Moskowitz (1972) by analyzing the common stock price of 14 firms which he believed to possess good social responsibility credential. It was observed that the value of these stocks increased compared to popular indices.

Apart from the studies mentioned in Section I, there are a number of studies that produced results in favor of positive impact of CSR on CFP. Porter and Kramer (2006) criticized the perception of separating business' objectives from society's aspirations, saying that they are strongly interrelated. Hill *et al.* (2007) examined the stock market performance of socially responsible firms across Europe, United States of America and Asia. The study found a positive relation between CSR and stock market performance in American and European markets. Firm size and CSR intensity were found to be positively related with respect to stock markets of developing countries (Aras *et al.,* 2010). The study by Peloza and Papania (2008) confirms positive linkage between CSR and CFP.

While an extent of literature suggests that CSR and CFP are positively related, there are studies which proved otherwise. Alexander and Buchholz (1978) checked the correlation between CSR ratings and stock price increases and concluded that CSR has no effect on stock market performance. Abbott and Monsen (1979) made use of social involvement disclosure (SID) scale to determine CSR firms which are then subjected to comparison based on investment yield. The study indicated that CSR has no effect on total return to investors. Brammer *et al.* (2006) quoting financial performance of U.K based firms arrives at a conclusion that firms with higher social performance scores tend to achieve lower returns but socially less responsible firms happen to experience abnormal returns. Giannarakis *et al.* (2011) observed that financial crisis has prompted companies to move away from the socially responsible behavior as it costs a lot to satisfy stakeholder expectations.

Vasal (2009) is a pioneer in analyzing the effect of CSR on Indian stock markets. He empirically examined performance of portfolio of socially screened stocks and observed that there are signals of positive excess returns though not statistically significant for shareholders of socially responsible companies. Gupta and Sharma (2009) identify CSR as a hard commercial factor linked directly to profits and brand value.

Studies on the impact of CSR on CFP in Indian context are few and most of them fail to incorporate a risk adjusted parameter to measure CFP. This paper contributes to the existing literature by analyzing the relation between CSR and CFP of firms listed in the Bombay stock exchange by making use of a risk adjusted proxy for financial performance. It involves an industry-specific

analysis as well as thrives to find the magnitude of feedback effect on CSR due to improved financial performance.

3. RESEARCH DESIGN

3.1. Data
The sample chosen for preliminary analysis consists of twenty-five CSR and non-CSR firms.[2]

To examine the industry specific effects these firms are segregated to 'manufacturing' and 'service' heads and some companies were added to the list to keep the standard size of sample unchanged.

Data regarding closing price, total number of shares, number of trade and total turnover from January 2009 to January 2015 were obtained from the official website of the Bombay stock exchange. [3] We referred the official websites of the companies in the sample in order to confirm their age.[4]

4. METHODOLOGY

We consider returns per unit of risk (standardized excess returns), volume of trade and beta value of stock as indicators of corporate financial performance (CFP). We also intend to examine the impact of "age of the company" on CFP. A dummy variable (D) incorporates non-existence of CSR practices. The definitions of variables under consideration are given below.

4.1. Standardized excess returns (γ)
Excess returns are designed by subtracting market return for a specific month from return of the company during the same month. The variance of excess on stocks has been found out to deduce standard deviation which is a proxy for measure of risk. General formula for standardized excess returns is:

$$\gamma = \frac{\left[\frac{1}{n}\sum_{i=0}^{n}(\theta i - \mu i)\right]}{\sigma}$$

Where n = total number of months, θi = return in i^{th} month, μi = market return in i^{th} month σ = standard deviation of excess return

4.2. Volume of trade (δ)
Volume of trade is the factor that indicates velocity with which a share is traded in the stock market. It is calculated as:

$$\delta = \frac{number\ of\ trades}{number\ of\ shares}$$

4.3. Beta Value (β)
Beta is the measure of stock's volatility with respect to market. Market has beta value of 1 by definition. A stock that swings more than market is said to have beta value greater than one. They are riskier but provide potential for higher returns in future. Low beta stocks possess less risk as well as less return. To arrive at beta value of stock, monthly returns on it is initially calculated which is then regressed upon monthly market return for period under study. The co-efficient of the regression is obtained which is the beta value of the stock. When,

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[2] The corporations adapted to corporate social responsibility are recognized from www.csridentity.com. This website is India based CSR inter-net-works portal platform. It provides data on country-wise CSR, industry-wise CSR, solutions to CSR issues and identifies resources for CSR. It comprises of data collected from over 3000 NGOs across 75 countries

[3] www.bseindia.com

[4] List of companies in the sample as well as their official web addresses will be made available upon request

$\beta > 1$: Aggressive shares (active than market; preferred when bullish)
$\beta = 1$: Passive shares
$\beta < 1$: Defensive shares (less active than market; preferred when bearish)

4.4. Age of the company (A1)
Age of the company is taken as an explanatory variable in this study for checking its impact on performance of stocks. The year of establishment of the firm is obtained from which age of the company is calculated.

4.5. CSR (D1)
A dummy variable is used to represent the CSR status of the firm. It is defined as follows.
D1 = 1; when the firm has incorporated CSR in its strategy
D1 = 0; otherwise

5. EMPIRICAL ANALYSIS

The study is structured in four phases[5]. The first phase comprise of examining the impact of age as well as CSR status on financial performance of firms. Second phase checks for industry specific pattern in CFP by making use of explanatory variables considered in phase one. The impact of indicators of financial performance on decision to incorporate CSR is analyzed in the third phase using Probit model. The marginal probability of adopting CSR when there is an improvement in financial indicators is computed in fourth phase. We use E-views to carry out regressions and R-console to test the Probit model and to find marginal effects. Detailed discussion of these four stages is provided below.

Phase 1: General analysis
The basic model is defined as:

$$\gamma_i = \alpha_1 + \alpha_2(A1) + \alpha_3(D1) + \varepsilon_i \qquad \text{------------------------ (1)}$$

This regression captures the effect of age and CSR on standardized average excess returns of different firms.

$$\delta_i = \pi_1 + \pi_2\,(A1) + \pi_3\,(D1) + \rho_i \qquad \text{------------------------ (2)}$$

In order to examine the effect of age and CSR on Beta of stock the equation used is:

$$\beta_i = \tau_1 + \tau_2\,(A1) + \tau_3\,(D1) + \epsilon_i \qquad \text{------------------------ (3)}$$

[$\varepsilon_i, \rho_i, \epsilon_i$ represents random errors and α_i, π_i, τ_i (i= 1, 2, 3) characterizes regression co-efficient.]

Phase 2: Industry specific analysis
Firms in the sample are categorized as manufacturing sector and service sector firms. Some additions are made to each derived samples to meet the required sample size. Separate regressions are done for each industry groups so as to capture industry-specific effects. For manufacturing sector the equations employed are:

$$\gamma_i = M_1 + M_2(D1) + \varphi_i \qquad \text{------------------------ (4)}$$

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[5] We duly checked for serial correlation in variables and goodness of fit of the models across all phases of study. Durbin Watson d statistic was used to check for serial correlation and R square for checking the goodness of fit. Only satisfactory results are incorporated in the study.
To scrutinize the effect of the same explanatory variables on volume of trade the following equation is estimated.

$$\delta_i = M_3 + M_4\,(D1) + \omega_i \qquad\qquad \text{------------------------ (5)}$$

Equations to investigate effects on standardized average excess returns and volume of trade for industries in service sector are:

$$\gamma_i = S_1 + S_2(D1) + \varphi_i \qquad\qquad \text{------------------------ (6)}$$

$$\delta_i = S_3 + S_4\,(D1) + \omega_i \qquad\qquad \text{------------------------ (7)}$$

[$S_3, S_4, S_1, S_2, M_3, M_4, M_1, M_2$ are coefficients of regression. φ_i, ω_i represents random error.]

Phase 3: Test for feedback effect
After estimating the effect of CSR on factors indicating financial performance of the firm, Probit analysis is done to check the feedback effect of variables such as standardized average excess returns, volume of trade on implementation of CSR. Probit model is employed because CSR could only be represented as a latent variable. Age of the firm is also taken as an explanatory variable. The probit model, we follow is:

$$D1 = \beta_0 + \beta_1\gamma + \beta_2\delta + \beta_3 A1 + u_t \qquad\qquad \text{------------------------ (8)}$$

Phase 4: Estimation of marginal effects
First off, we identify variables that produce a significant feedback effect on CSR in phase 3. Then, we calculate the marginal effects of those variables on CSR. By marginal effects we mean, the probability by which a firm is more likely to follow corporate social responsibility with a percentage improvement in the significant factor.

6. EMPIRICAL FINDINGS

The results of general analysis (Phase 1) is summarized in Figure 1 and Table 1. We observe that that firms following CSR perform better in regard of excess returns per unit of risk.
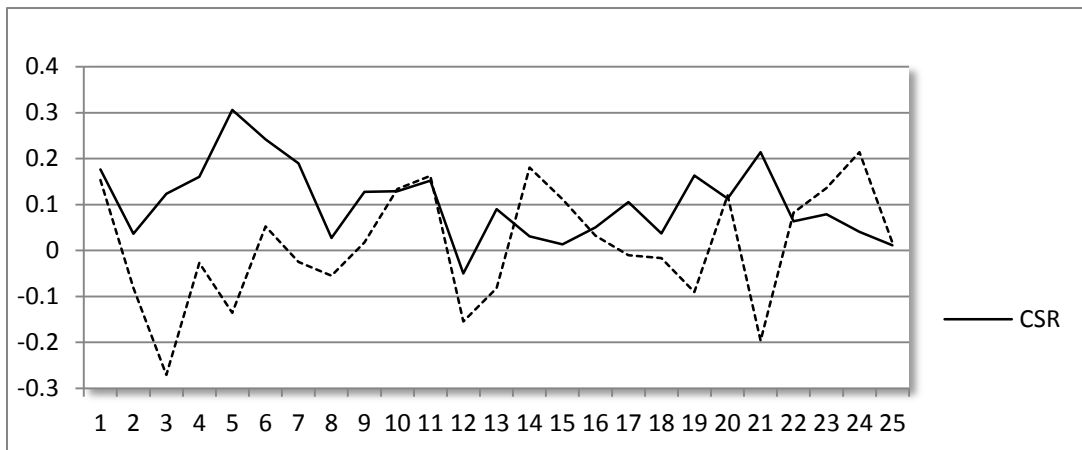

Figure 1: Standardized average excess return

Note: The X axis represents *i-th* firm (i=1, 2, 3 ....25) and Y axis is for standardized average excess returns (γ). It shows the patterns of standardized average excess returns enjoyed by CSR and non-CSR firms during the sample period (Jan 2009 – Jan 2015).

Table 1: Result of general analysis (equation 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
α_1	0.0061	0.0297	0.2055	0.8381
α_2	0.0001	0.0007	0.2227	0.8247
α_3	0.0897	0.0373	2.4028	0.0203***

*** indicates significant at 5% level
Note: The regression results of general analysis (1) are summarized here

The regression result indicates that CSR does have a significant impact on excess return per unit of risk at 5 % level of significance. The result points out that age of the corporation has no role in improving the return per unit of risk enjoyed by a firm. The results of analysis checking for impact of CSR on volume of trade and beta values are summarized in the following tables.

Table 2: Result of general analysis (equation 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
π_1	0.0088	0.0056	1.5638	0.1246
π_2	-1.66E-05	0.0001	-0.1215	0.9038
π_3	0.0256	0.0071	3.6091	0.0007***

*** indicates significant at 5% level
Note: The regression results of general analysis (2) are summarized here

Table 3: Result of general analysis (equation 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
τ_1	1.2604	0.1325	9.5110	0.0000***
τ_2	-0.0059	0.0031	-1.8524	0.0702***
τ_3	-0.0162	0.1664	-0.0977	0.9225

*** indicates significant at 5% level
Note: The regression results of general analysis (3) are summarized here

The regression results of equation (2) shows that the impact of age of corporation on volume of trade is insignificant (Table 2). But incorporation of CSR in business strategy has a significant impact on volume of trade at 1% level of significance. This indicates that the velocity of stocks of CSR firms is higher compared to that of non-CSR firms. Table 3 contains the results of estimation of equation (3). It indicates that CSR does not have any impact on market responsiveness of shares.

In short, the result of general analysis is that the incorporation of CSR has positively contributed in enhanced financial performance of the firms with regard to average standardized excess returns and volume of trade.

On carrying out industry-specific analysis, only standardized average excess returns and volume of trade were examined. Beta values were omitted when found insignificant in earlier analysis. Also, age of the firm is not considered an explanatory variable as it was found insignificant in previous results. The regression result for equation 4 and 5 is summarized in Table 4 and Table 5 respectively.

Table 4: Result of industry specific analysis for firms in manufacturing sector (equation 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M_1	0.0185	0.0316	0.5868	0.5617
M_2	0.0643	0.0433	1.4831	0.1485

Note: The regression results of industry specific analysis (4) with respect to firms in manufacturing sector are summarized here

Table 5: Result of industry specific analysis for firms in manufacturing sector (equation 5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M_3	0.0094	0.0034	2.7691	0.0095***
M_4	0.0153	0.0046	3.2800	0.0026***

*** indicates significant at 5% level
Note: The regression results of industry specific analysis (5) with respect to firms in manufacturing sector are summarized here

In case of corporations in manufacturing sector, CSR doesn't have any significant impact on excess return per unit of risk which is contradictory to output of general analysis. However CSR does have a significant positive effect on volume of trade (at 5% level of significance). This indicates that there exists an industry-specific pattern in correlation between corporate social responsibility and corporate financial performance of the firms. Within the industry, impact of CSR on different measures is found to be varying. The positive correlation between volume of trade and corporate social responsibility can be the factor that motivates firms in manufacturing sector to adopt CSR despite the fact that there is no significant change in excess return per unit of risk experienced by the firms.

The same analysis has been extended to firms in service sector as well. Table 6 and Table 7 explains estimation of equation 6 and equation 7. These tables indicate results of regressing D1 (dummy for CSR) on standardized average excess returns and volume of trade respectively.

Table 6: Result of industry specific analysis for firms in service sector (equation 6)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
S_1	-0.0110	0.0320	-0.3456	0.7322
S_2	0.1056	0.0392	2.6957	0.0117***

*** indicates significant at 5% level
Notes to Table 6: The regression results of industry specific analysis (6) with respect to firms in service sector are summarized here.

Table 7: Result of industry specific analysis for firms in service sector (equation 7)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
S_3	0.0062	0.0076	0.8074	0.4262
S_4	0.0264	0.0094	2.8165	0.0088***

*** indicates significant at 5% level
Note: The regression results of industry specific analysis (7) with respect to firms in service sector are summarized here

Unlike firms in manufacturing sector, industry-specific analysis for firms in service sector is in consensus with result of general analysis. It clearly shows that CSR firms in service sector outperform non-CSR firms in case of excess returns per unit of risk and volume of trade. CSR has a significant impact on standardized excess return at 5% level of significance (Table 6). Also volume of trade is significantly positively affected by CSR (α=0.01, Table 7). The result confirms the existence of industry-specific effects in implementation of CSR.

Probit model was employed to test for the feedback effect of financial performance on socially responsible activities of corporations. CSR represented by D1, a qualitative variable was dependent variable and measures of financial performance such as volume of trade, standardized average excess returns were explanatory variables. Also age of the firm was taken as an explanatory variable. The result of estimation of equation 8 is summarized in Table 8.

Table 8: Feedback effect deviance residuals

Min	1Q	Median	3Q	Max
- 2.0437	-0.4073	-0.0522	0.4724	1.7627

Co-efficient	Estimate	Std. Error	z value	Pr(>|z|)
β_0	-2.5339	0.6569	-3.857	0.0001 ***
β_1	3.2975	2.9794	1.107	0.2683
β_2	0.5524	0.2197	2.514	0.0119 *
β_3	0.0322	0.0122	2.633	0.0084 **

*, **, *** indicates significant at 10, 5 and 1% level
Note: The results of test for feedback effect (8) to find how enhanced financial performance contribute to CSR are summarized here

The results indicate that co-efficient of standardized average excess return (β_1) is not statistically significant. But coefficient of volume of trade (β_1) and age (β_1) respectively are significant. This explains that with an increase in age of a corporation as well as volume of trade of its stocks it is more likely for a firm to adopt CSR. Whereas improvement in standardized average excess returns has no feedback effect on CSR.

To quantify the probability of a firm to adopt CSR based on improvement in financial factors, marginal effect of volume of trade and age on D1 were calculated. The variable standardized average excess returns was omitted as it was found to be insignificant in earlier analysis. The results obtained are tabulated below.

Table 9: Marginal effects

Intercept	Volume of trade (δ)	Age (A1)
-0.3924	0.0951	0.0054

Note: The results of test for marginal effect (9) to find the probability of a firm to adopt CSR based on improvement in financial factors are summarized here

The result specifies that if volume of trade for firm increases by 1%, then there is 9.512% chance that the firm will implement CSR (keeping the effect of age constant). Likewise if age of the firm increase by one year there is 0.542% to incorporate CSR in its business strategy (keeping the effect of volume of trade constant). In short marginal impact of volume of trade on CSR is 9.512% and that of age of firm is 0.542%.

7. CONCLUSION

The study reveals that the existence of economic incentives for a firm to follow CSR is obvious. Though excess return produced by stocks of CSR and non-CSR firms is comparable, socially screened stocks experience less risk. This could encourage investors to prefer stocks of firms that adopt CSR. This is as an economic bonus for the social obligation of the firm.

The volume of trade also improves by incorporation of CSR as a business objective. The study asserts that corporate financial performance of firms that follow corporate social responsibility is better, relative to financial performance of non-CSR firms. This improvement is statistically significant. Socially responsible firms in service sector perform better than those in manufacturing sector. Besides it is also found that an improvement in financial performance could also motivate a firm to adopt CSR. This means that as financial performance improves, the firms are in a better position to manage the costs incurred in instigating CSR. In other words the benefits from following CSR are ample to cover the costs incurred. Thus the experience of corporations in India justifies that CSR does have a significant positive impact on the performance of its shares thereby indicating a better financial performance.

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