Corporate Social Responsibility and Corporate Performance: Some Insights from Indian Public and Private Companies

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Abstract

The provision of Corporate Social Responsibility (CSR) in India is introduced in the Companies Act, 2013. In very simple terminology, Corporate Social Responsibility (CSR) is the sense of belongingness, accountability and obligations of a business corporation towards the society in which it exists. When a firm thinks and acts something, which is not driven by the profit or value maximization objective rather by the sense of humanity and social accountability the said contribution in any form represents corporate social responsibility. It indeed helps a firm to develop and maintain healthy relationship with its stakeholders and the society as a whole. Although the CSR initiatives should not be ethically driven by profit motive but a bunch of empirical studies establish a good relationship between CSR expenditure and performance of firms in perspective of different countries including India. This paper also attempts to establish the way in which CSR is associated with the performance of Indian firms. For the purpose of the study, we use two samples of firms; one is of twenty-nine private sector companies and another of seventeen public sector companies. The study considers employee welfare & training expenses, social & community expenses and environment & pollution control related expenses in constructing the CSR variable. The study employs panel data regression analysis under which it introduces Restricted F Test, Lagrange Multiplier Test and Hausman Test for the selection of best fit model. The result of panel data analysis suggests a significant and positive impact of CSR expenditures on the accounting performance measured by return on capital employed (ROCE) of both the sampled firms. However, the impact CSR expenditure is found to be insignificant to the market performance of both the sampled firms. The study finally suggests the Indian companies of both the sectors to keep on doing CSR expenses and initiatives to maintain strong social bonding and to avail its favourable impact on their financial performance.

Keywords: *Corporate Social Responsibility, Corporate Performance, Panel Data Analysis*
JEL Classifications: *M14; L25; C23*

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Introduction

For last couple of decades, the corporate sector has realized the fact that a corporation should not be simply driven by its profit-maximization criterion and that a business entity and its activities are also the integral parts of the economy, society and environment in which it operates (Herrmann, 2004). In contemporary socio-economic scenario the concept of CSR has become widely integrated with ethical business practices across the world. Since corporations work in society, through society and for society, hence they must recognize themselves as corporate citizens and they must reinvest their profits to mitigate the societal and developmental challenges and threats. They should play socially responsible role for the betterment of the community through active participation for realizing developmental goals set by the government. According to Bowen (1953) a socially responsible business must pursue policies, make decisions and follow lines of action which are desirable in terms of the objectives and values of our society.

Notably, the necessity of corporate social responsibility is much more urgent in an emerging economies (like India) where economic disparities are clearly visible and both ecology and society are vulnerable to human engineered environmental hazards (Doh et al., 2010). Sustainability reporting helps the company build a positive image with its stakeholders, thereby helping it manage the social expectations and reduce legitimacy risks (Ghosh, 2013). Given the situation, the Government of India has tried to inject good governance practices both in administration and business functionaries. It has brought transparency in the form of 'Corporate Governance' in business ethics and accountability among the corporate both by legal and ideological means. The SEBI has set out various clauses in the listing agreement regarding corporate financial reporting (such as Clause 49 on corporate governance reporting and Clause 55 on business responsibility reporting) that have prescribed various provisions with regard to mandatory disclosure.

Moreover, also ethically corporate social responsibility is not supposed to be undertaken with the motive of profit making but of late, the corporate sector realised that the CSR practices can well exert favourable impact on the profitability or overall financial performance of corporations. Sometimes corporate social responsibility in the form of employee welfare activities encourage employees to work harder for the company's goal. Besides, social and community expenses by corporations help to build and maintain a congenial relationship with the society. It encourages customers, local labourers, suppliers and other concerned parties to the business to act in favour of the business corporations. Moreover, practicing CSR ensures a number of competitive advantages to the corporations in terms of reduction in operating cost, lower cost of raising funds, increased productivity; attracting top talents, saving on hiring and training of employees, employees' loyalty,

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customers' loyalty etc. Thus, it increases profitability of the corporations in the long- run and ensures smooth functioning of business operations in a sustainable manner. Conversely, it may have negative implications on firm performance since spending on CSR is exclusively expenses and indicates erosion of firm's capitalization.

In this background, this empirical investigation makes an attempt to examine the empirical association between CSR expenditures by public and private sector corporations and their financial performance in Indian economic context.

Literature Review

Corporate social responsibility has attracted considerable research attention worldwide since last couple of decades. However, in India the issue gets attention just for last two decades. Moskowitz (1972) argues that responsible companies outperform conventional firms. Ullmann (1985) coins 13 studies of social scale for American Companies to find relationship of CSR and CFP and finds no clear relationship between CSR and CFP. Dsilva (2008) argue that the important factors that influence the company to contribute are: customer oriented, ethical oriented, community oriented, humane oriented. Mosaid and Boutti (2012) don't find any significant relationship between performances of Islamic banks and corporate social responsibility. Conversely, Samina and Sagota (2012) document a positive correlation between CSR expenditure and performance of Islamic banks in Bangladesh. Arshad and Othman (2012) assess the impact of CSR on Malaysian Islamic banks' performance and finds that CSR has significant and positive impact on performance of such banks. Palmer (2012) tries to establish the association between CSR and corporate financial performance (CFP) taking 167 companies of S&P 500 Index covering a period from 2001 to 2005. The study incorporates return on assets (ROA), sales and gross margin to examine impact of CSR. The study finally marks existence of direct impact of CSR on bottom line profits and margins because customers are willing to pay premium for those products and services which have contribution towards society though CSR practices. Tilakasiri (2012) in in context also gets a positive relationship between CSR and CFP. Flammer (2013) has shown that the companies that value CSR stood better in terms of financial performance than those don't much concern about CSR. Mishra and Suar (2013) make an attempt to investigate whether salience towards natural environment influences the corporate sustainability towards natural environment. The study also examines the impact of corporate responsibility towards environment upon the financial performances of a size of 150 listed and non-listed manufacturing companies in India for the three years period ranging from 2003-04 to 2005-06. The results of the study indicate that higher the salience of the environment, the more favourable is the corporate responsibility towards the environment. Moreover, it suggests

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that a favourable corporate responsibility towards environment significantly increases the financial performance of the sample companies. Malik and Nadeem (2014) explore the linkage between CSR and financial performance of eight banks operating in Pakistan during 2008 to 2012. They select EPS, ROA, ROE and Net Profit to measure financial performance. Through this study, the authors have expressed their concern about lack of CSR practice in Pakistan and therefore, recommend that banks should discharge their social responsibilities towards society and environment which would be beneficial to the firms as well as promote the sustainable economic development in the country. Kamatra and Kartikaningdyah (2015) make a sincere effort to discern the relationship between CSR and corporate financial performance taking into account 24 companies belonging to mining and chemical industry listed in Indonesia stock exchange during the period 2009 - 2012. The results of the analysis indicate that CSR have only moderately significant implication on ROA and NPM whereas there exist no significant impact on ROE and EPS. Han et al., (2016) investigate how do CSR activities affect the corporate financial performance of 94 companies listed in the Korean Stock Exchange in the period 2008-14. The study reveals that there is no significant impact of CSR performance on firms' financial performance. Ahmadi and Bouri (2017) have examined the association between environmental disclosure and environmental performance by taking a sample size of 40 largest companies operating in France (Index CAC40) over the three years period from 2011-13. The study finally concludes that there is a significant positive relationship between environmental performance proxy and environmental disclosure level. Charumathi and Ramesh (2017) analyze the trends in sustainability reporting practices in India considering a sample size of 144 non-financial companies listed in BSE 100 Index in both pre and post implementation of Business Responsibility Reporting (BRR) period by way of constructing an index called as Social and Environmental Disclosure Index (SEDI) and examines the impact of such disclosures on the said firm performance for the period from 2010 to 2014. They conclude that the levels of such disclosures (SED) have a positive and significant impact on the firm performance which indicates that markets pay a premium for socially responsible companies.

A brief account of the literatures on corporate social responsibility leads us to some inclusive findings. Again, the literatures on Indian economic context are found to be very limited in numbers. Therefore there is enough scope to test the relationship in Indian present economic perspective. In this juncture, the present study sets a broad objective to testify the CSR- financial performance nexus in an emerging market context like India.

Based on the objectives of the present study the following hypotheses are framed to be tested:

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Hypothesis 1:

Null Hypothesis (H_0): Corporate Social Responsibility expenditures do not affect financial performance of Indian Listed Private Sector Companies.

Alternative Hypothesis (H_1): H_0 is not true.

Hypothesis 2:

Null Hypothesis (H_0): Corporate Social Responsibility expenditures do not affect financial performance of Indian Listed Public Sector Companies.

Alternative Hypothesis (H_1): H_0 is not true.

Data and Methodology

The present study has been carried out with data of two groups of companies consisting twenty-nine private sector companies and seventeen public sector companies. The data are collected from annual reports of the sample companies and as well as financial database package 'Capitaline Plus', developed and marketed by Capital Market Publishers Pvt. Ltd, Mumbai. The study uses panel data regression analysis under which it introduces Pooled Regression Model (PRM), Fixed Effect Model (FEM) and Random Effect Model (REM). The study employs Restricted F test, Langrange Multiplier Test suggested by Breusch and Pagan (1980) and Hausman test, suggested by Hausman (1978) for the selection of best fit model of regression among the three models. The study also introduces basic descriptive statistics and checks the presence of Multicollinearity property among the independent variables through Variance Inflation Factor.

The basic econometric model of the study takes the following form:

Performance $_{it}= \alpha + \beta$ (CSR Variables) $+ \gamma$ (Control Variables) $+ \acute{\varepsilon}_{it}$ …………. (1)

Where, Performance $_{it}$ represents the financial performance of ith firm at time period t, CSR Variables represents corporate social responsibility activities of the ith firm, Control Variables refers the variables except CSR Variables affecting the performance of the ith firm and $\acute{\varepsilon}_{it}$ indicate the idiosyncratic Error.

Performance variables include Return on Capital Employed (ROCE) and Market Value to Book Value Ratio (MVBR) and Corporate Social Responsibility Expenditure (CSRE) variable is measured by taking the sum of Employees Training and Welfare Expenses (ETWE), Social Development and Community Welfare Expenses (SDCWE) and Environmental Protection and Pollution Control Expenses (ENPPCE). A range of control variables such as Age (AGE), Firm Size

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(FS), Liquidity Ratio (LQR), Leverage Ratio (LVR) and Assets Utilization Ratio (AUR) have been incorporated in the present study.

Thus, the following two models have been constructed to explore the impact of the CSR performance on corporate financial performance:

Model – 1:

$$ROCE_{it} = \alpha + \beta \ (CSRE) + \gamma1 \ (AGE) + \gamma2 \ (FS) + \gamma3 \ (LQR) + \gamma4 \ (LVR) + \gamma5 \ (AUR) + \acute{\epsilon}_{it}$$
……………………… (2)

Model - 2 :

$$MVBR_{it} = \alpha + \beta \ (CSRE) + \gamma1 \ (AGE) + \gamma2 \ (FS) + \gamma3 \ (LQR) + \gamma4 \ (LVR) + \gamma5 \ (AUR) + \acute{\epsilon}_{it}$$
……………………… (3)

Data Analysis

Descriptive Statistics for Private Companies

Descriptive statistics of the variables used in the study presented in Table – 1 indicate that on an average, the sample companies have spent Rs. 4.178 crore for practicing CSR. Considering the financial performance dimensions of selected private firms we observed that the average accounting performance (ROCE) is moderately adequate as the mean value is 21.553. The mean value of market-based measure (MBVR) is observed to be 5.072 which indicates the market value of the sample private companies is on an average five times of their book value. According to the table value, the sample companies are not too younger as mean age is 41.793 years. The firm size indicates that on an average, the sample companies are high capital based (10.502) and enjoying economies of scale. Furthermore, the descriptive statistics demonstrate that liquidity, solvency and managerial efficiency positions are satisfactory.

Descriptive Statistics for Public Companies

The descriptive statistics of the sample public companies (Table - 8) indicates that they have spent on average 4.233 towards different CSR activities which shows that public companies have spent on an average as compared to private counterparts. Moreover, the CSR expenses do not found to be stable as the range is very high. The accounting performance in terms of ROCE is fairly enough as the mean value is 14.952 but it has very high standard deviation value, specifically, in some cases it has negative value. Furthermore, the market performance considering MBVR reflects that the market value of the sample public companies is on an average 2.392 times of their book value. But,

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in both the cases of corporate performance, private companies exhibit more profitability as compare to public counterpart. According to the table-8, on an average, the companies are matured (43.6471) and assets based (11.4058). They are comparatively more liquid (2.4831) and highly leveraged (3.4592) which indicates that the companies are mainly debt dependent. It further demonstrates that the management is not fully efficient as the mean value of assets turnover ratio is 1.0910 and more importantly, in some companies ATR is 0.01.

Panel Data Analysis

The study analyses the data of two groups of companies. The presence of multicollinearity can lead to erroneous results and findings. Therefore, before going to panel data regression analysis, the study tests the presence of multicollinearity through variance inflation factor. The test of multicolinearity is presented in Table-2 and Table-9 for the private and public companies respectively. However, in both the cases we don't find any significant multicollinearity as the maximum VIF values found are less than 10. It is a commonly accepted criterion, that a VIF of less than 10 signifies no multicollinearity.

In case of Private companies the study through Hausman Test finds REM as the best fit model (Table-3 and Table-4), when ROCE is taken as dependent variable. In this case both the Restricted-F statistic of FEM [F $(28, 51) = 18.95^{*}$] and Breusch-Pagan Lagrange Multiplier test statistic [$\chi 2$ $(1) = 61.48^{*}$] are found to statistically significant at 1 percent level. But, the Hausman test statistics if found to be insignificant [$\chi 2 (8) = 5.33$] and the underlying null hypothesis of the test i.e. fitness of random effect model can't be rejected.

However, following the similar method of testing the best fit model, the FEM model for the same companies is found to be fit when MBVR is taken as the dependent variable (Table-5 and Table-6). In case of public companies, the REM is found to be fit when ROCE is taken as dependent variable (Table-10 and Table-11). However, for the public companies, the PRM model is found to be fit when MBVR as dependent variable (Table-12) as the F-statistic of FEM (0.49) and Wald-$\chi2$ statistic of REM (4.27) are found to be insignificant.

FINDINGS OF THE STUDY

For Private Companies

The summarised regression results shown in Table - 7 confirm that:

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- In case of accounting performance, the table value of the Random Effect Model (REM) indicates that CSR expenditure leads to increase in ROCE thus validates the positive and significant (at 5% level) effect of corporate social responsibility in the form of fair treatment and due diligence towards employees, minimization of negative externalities to the environment etc. The results indicate that increased employees' morale and loyalty, efficient use and conservation of scare resources, recycling of wastage, reducing pollution, due consideration to the community at large etc. exert a favourable impact on the performance of the private corporations. However, the market performance is not improved as a result of CSR expenditure and the absence of significant relationship may be due to incapability of market to perceive such spending.

- The reason behind negative impact of firm size on financial performance can be attributed to large employees' base, inadaptability with new technology and improper monitoring and evaluation of CSR activities.

- The negative relation between corporate performances with firm's age may be due to newly set up company's more attention towards CSR concerns and their pro-active role in this regards.

- Moreover, the AUR is also positively linked with both the dimensions of corporate financial performance measurement. The result indicates efficiency of private companies to utilize their resources for generating revenue.

For Public Companies

The summarised regression results shown in Table - 13 confirm that:

- CSR spending is positively associated with the performance of public companies measured by ROCE. However, we don't find any significant impact of CSRE on the market based measure of financial performance represented by MBVR. The result may be so due to improper communication of different CSR activities to the equity market.

- Size of public companies adversely affect their performance and market valuation. Again, in line with per theoretical supposition liquidity is negatively related to profitability of these companies.

Conclusions

The present research is an endeavour to extend the literatures on the relationship between corporate social responsibility and corporate financial performance for twenty-nine private sector companies and seventeen public sector companies listed in S&P BSE CARBONEX Index of India. The past as

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well as contemporary researches on CSR in India are mainly restricted to the nature and pervasiveness of CSR, ignoring completely inter-relationship between CSR and firm financial performance. However, the studies that attempt to establish such relationship fail to capture other firm characteristics such as firm age, firm size, risk, liquidity etc. The present study aims at filling this crucial gap through testing the linkage between CSR and firm performance empirically taking a set of other control variables. Our study covers the period of 2015 to 2017 considering the fact that the mandatory CSR provision and rules have been enacted in 2013 and it has been applied from 1st April, 2014. 31st March, 2015 was the first year for post mandatory CSR era and here lies the relevancy of the considered study period. Particularly, the study considers the three individual CSR variables namely, employees welfare and training expenses, social and community development expenses and environment and pollution control expenses. Moreover, the study employs greater procedural consistency than other similar literatures and employs two dimensions of corporate financial performance namely, accounting based measure (ROCE) as well as market based measure of firm performance i.e., MBVR. The panel data regression analyses in both the cases of private as well as government- owned Indian companies reveal that CSR expenditures have significantly positive relationship with firm financial performance However, most of the firm characteristics are maintaining significant relationship with corporate performance. The study also reveals that major significant relationship is observed between CSR variables with accounting based financial performance as proxied by ROCE. CSR performance of private companies and its positive as well as significant impact on financial performance discloses that CSR has become an important part of corporate communication due to the enhanced awareness among stakeholders of the companies in recent years. Moreover, to sustain in competitive environment along with diverse stakeholders has forced private companies to super perform in the CSR areas over the study period.

It is therefore recommended that for an increased accounting performance Indian firms should intensify more efforts in carrying out their corporate social responsibilities which can serve as a source of increased financial performance of the firm. Therefore, we may conclude that the corporate social responsibility and corporate performance relationship might be evolving and will reach positive trend in the future as the concept of CSR becomes institutionalized.

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Table 1: Descriptive Statistics (Private Sector Companies)

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
CSRE	4.178	1.183	0.863	6.501
AGE	41.793	25.191	8.000	110.000
SIZE	10.502	1.151	8.090	12.729
LQR	2.017	1.745	0.22	6.890
LVR	0.794	1.575	0.0005	7.020
AUR	1.102	0.783	0.100	4.650
ROCE	21.553	15.734	-5.800	57.140
MBVR	5.072	3.719	0.340	19.960

Source: Calculated by Authors

Table 2: Variance Inflation Factor (Private Sector Companies)

Variable	VIF	1/VIF
CSRE	1.83	0.545052
AGE	1.30	0.769240
SIZE	2.08	0.481195
LQR	1.84	0.543244
LVR	1.23	0.813120
AUR	1.57	0.636254
Mean VIF	1.64	

Source: Calculated by Authors

Table 3: Regression Results Taking ROCE as Dependent Variable(Private Sector Companies)

Ordinary Least Square Model			Fixed Effect Model			Random Effect Model		
Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat	Variable	Coefficient	z-Stat
Intercept	64.800	5.71*	Intercept	73.805	2.56	Intercept	45.082	3.05
CSRE	2.828	1.77***	CSRE	1.848	1.73***	CSRE	1.616	1.99**
AGE	-0.024	-0.42	AGE	-1.169	-1.65***	AGE	-0.050	-0.60
SIZE	-6.282	-5.75*	SIZE	-1.656	-0.95	SIZE	-3.815	-2.83*
LQR	-0.495	-0.59	LQR	-2.512	-1.02	LQR	-0.756	-0.66
LVR	1.726	3.04*	LVR	1.676	0.44	LVR	1.112	0.89
AUR	10.509	6.85*	AUR	9.463	2.80*	AUR	11.367	5.24*
F-Stat	54.37*		F-Stat	3.91*		Wald-$\chi 2$	56.89*	
R^2	0.608		R^2- Within	0.315		R^2- Within	0.267	
			R^2-Between	0.095		R^2-Between	0.609	
			R^2- Overall	0.101		R^2- Overall	0.590	

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

***Statistically signifcant at 10 percent level.

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Table 4: Selection of Model from Regression Results (Private Sector Companies)

Purpose	Null Hypothesis	Test	Test Statistic
Pooled Regression Model Vs Fixed Effect Model	All $u_i = 0$	Restricted F Test	$F(28, 51) = 18.95^*$
Pooled Regression Model Vs Random Effect Model	$\sigma^2_u = 0$	Breusch-Pagan Lagrange Multiplier Test	$\chi 2 (1) = 61.48^*$
Fixed Effect Model Vs Random Effect Model	Difference in coefficients is not systematic	Hausman Test	$\chi 2 (8) = 5.33$

Source: Calculated by Authors * Statistically significant at 1 percent level.

Table 5: Regression Results Taking MBVR as Dependent Variable (Private Sector Companies)

Ordinary Least Square Model			Fixed Effect Model			Random Effect Model		
Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat	Variable	Coefficient	z-Stat
Intercept	25.404	6.26^*	Intercept	25.513	2.87^*	Intercept	14.829	3.29^*
CSRE	0.074	0.23	CSRE	0.259	0.79	CSRE	0.162	-0.63
AGE	0.013	1.01	AGE	-0.562	-2.58^{**}	AGE	0.002	0.11
SIZE	-2.219	-5.90^*	SIZE	-0.023	-0.04	SIZE	-1.160	-2.80^*
LQR	0.358	2.34^{**}	LQR	-0.392	-0.51	LQR	0.299	0.90
LVR	0.570	2.76^*	LVR	0.622	0.53	LVR	0.352	1.00
AUR	0.877	1.68^{***}	AUR	2.417	2.32^{**}	AUR	1.907	2.97^*
F-Stat	9.50^*		F-Stat	4.71^*		Wald-$\chi2$	35.15^*	
R^2	0.489		R^2- Within	0.356		R^2- Within	0.224	
			R^2- Between	0.015		R^2- Between	0.450	
			R^2- Overall	0.019		R^2- Overall	0.425	

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

***Statistically significant at 10 percent level.

Table 6: Selection of Model from Regression Results (Private Sector Companies)

Purpose	Null Hypothesis	Test	Test Statistic
Pooled Regression Model Vs Fixed Effect Model	All $u_i = 0$	Restricted F Test	$F(28, 51) = 14.13$
Pooled Regression Model Vs Random Effect Model	$\sigma^2_u = 0$	Breusch-Pagan Lagrange Multiplier Test	$\chi 2 (1) = 48.63^*$
Fixed Effect Model Vs Random Effect Model	Difference in coefficients is not systematic	Hausman Test	$\chi 2 (8) = 12.75^{**}$

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

***Statistically significant at 10 percent level.

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Table 7: Summarized Regression Results (Private Sector Companies)

Variables	ROCE		MBVR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	45.082	3.05	25.514	2.87*
CSRE	1.616	1.99**	0.259	0.79
AGE	-0.050	-0.60	-0.562	-2.58**
SIZE	-3.815	-2.83*	-0.023	-0.04
LQR	-0.755	-0.66	-0.392	-0.51
LVR	1.112	0.89	0.622	0.53
AUR	11.367	5.24*	2.417	2.32**

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

Table 8: Descriptive Statistics (Public Sector Companies)

Variable	Mean	Standard Deviation	Minimum Value	Maximum Value
CSRE	4.233	1.325	0.095	6.224
AGE	43.647	14.069	22.000	65.000
SIZE	11.406	1.014	9.073	12.668
LQR	2.483	2.322	0.450	7.840
LVR	3.459	4.095	0.000	14.237
AUR	1.091	1.583	0.010	6.520
ROCE	14.952	17.316	-5.980	84.870
MBVR	2.392	2.777	0.450	13.680

Source: Calculated by Authors

Table 9: Variance Inflation Factor (Public Sector Companies)

Variable	VIF	1/VIF
CSRE	1.55	0.646533
AGE	1.97	0.506339
SIZE	1.62	0.616690
LQR	3.00	0.333821
LVR	2.54	0.394113
AUR	2.15	0.465295
Mean VIF	2.14	

Source: Calculated by Authors

Table 10: Regression Results taking ROCE as dependent variable (Public Sector Companies)

Ordinary Least Square Model			Fixed Effect Model			Random Effect Model		
Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat	Variable	Coefficient	z-Stat
Intercept	131.164	2.99*	Intercept	60.718	0.76	Intercept	91.771	2.29**
CSRE	5.582	2.47**	CSRE	1.751	2.69**	CSRE	1.912	3.18*
AGE	-0.039	-0.30	AGE	-0.116	-0.16	AGE	0.091	0.33
SIZE	-12.481	-2.77*	SIZE	-3.554	-0.47	SIZE	-7.566	-2.13**
LQR	2.136	2.22**	LQR	2.422	1.38	LQR	2.207	1.69***
LVR	-0.529	-0.87	LVR	-3.209	-1.78***	LVR	-1.711	-1.72***
AUR	0.714	0.52	AUR	-2.295	-0.94	AUR	-1.963	-1.11
F-Stat	3.78*		F-Stat	2.38**		Wald-χ2	17.78*	
R^2	0.350		R^2- Within	0.337		R^2- Within	0.312	
			R^2-Between	0.072		R^2- Between	0.226	
			R^2- Overall	0.075		R^2- Overall	0.228	

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level. ***Statistically significant at 10 percent level.

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Table 11: Selection of Model from Regression Results (Public Sector Companies)

Purpose	Null Hypothesis	Test	Test Statistic
Pooled Regression Model Vs Fixed Effect Model	All $u_i = 0$	Restricted F Test	$F(16, 28) = 76.61^*$
Pooled Regression Model Vs Random Effect Model	$\sigma^2_u = 0$	Breusch-Pagan Lagrange Multiplier Test	$\chi 2 (1) = 42.86^*$
Fixed Effect Model Vs Random Effect Model	Difference in coefficients is not systematic	Hausman Test	$\chi 2 (6) = 2.48$

Source: Calculated by Authors * Statistically significant at 1 percent level.

Table 12: Regression Results taking MBVR as dependent variable (Public Sector Companies)

Ordinary Least Square Model			Fixed Effect Model			Random Effect Model		
Variable	Coefficient	t-Stat	Variable	Coefficient	t-Stat	Variable	Coefficient	z-Stat
Intercept	21.550	3.07^*	Intercept	-10.888	-0.76	Intercept	12.774	1.90^{**}
CSRE	0.594	1.71	CSRE	0.007	0.06	CSRE	0.069	0.63
AGE	0.021	1.11	AGE	0.017	0.13	AGE	0.019	0.42
SIZE	-2.002	-2.82^*	SIZE	1.059	0.79	SIZE	-1.018	-1.71^{***}
LQR	0.120	0.81	LQR	0.443	1.40	LQR	0.229	1.00
LVR	0.062	0.64	LVR	-0.274	-0.85	LVR	-0.089	-0.52
AUR	-0.230	-1.07	AUR	0.249	0.57	AUR	-0.139	-0.45
F-Stat	2.54^{**}		F-Stat	0.49		Wald-$\chi2$	4.27	
R^2	0.366		R^2- Within	0.095		R^2- Within	0.010	
			R^2- Between	0.172		R^2- Between	0.299	
			R^2- Overall	0.164		R^2- Overall	0.293	

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

***Statistically significant at 10 percent level.

Table 13: Summarized Regression Results (Public Sector Companies)

Variables	ROCE		MBVR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	91.771	2.29^{**}	21.550	3.07^*
CSRE	1.912	3.18^*	0.594	1.71
AGE	0.091	0.33	0.021	1.11
SIZE	-7.566	-2.13^{**}	-2.002	-2.82^*
LQR	2.207	1.69^{***}	0.120	0.81
LVR	-1.711	-1.72^{***}	0.062	0.64
AUR	-1.963	-1.11	-0.230	-1.07

Source: Calculated by Authors * Statistically significant at 1 percent level. ** Statistically significant at 5 percent level.

***Statistically significant at 10 percent level.