

## **DETERMINANT OF CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE: EVIDENCE FROM PAKISTAN**

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### **ABSTRACT**

*In this study panel data in standard and natural log form from year 2013 to 2017 of 100 Pakistani listed non-financial firms is analyzed through fixed effect regression model to investigate effect of size of firm, profitability, leverage, and liquidity on corporate social responsibility disclosure by firms. In line with the explanation of legitimacy theory, it is found that large and profitable firms disclose more information than small and less profitable firms. The results show that return on asset and size of firm are persistently positively related to corporate social responsibility disclosure. However, net profit margin, and return on equity fails to support the findings. Leverage and liquidity are found to have negative but insignificant association with corporate social responsibility disclosure; where result of liquidity is in line with the explanation of stakeholder theory.*

*Keywords: Corporate Social Responsibility Disclosure, fixed effect, Pakistan stock exchange*

### **INTRODUCTION**

In today's world corporation's responsibility goes beyond mere production of some products or services. Corporations are expected to contribute to solve social problems in the society and as a result corporation goes beyond serving the economic value. Due to globalization, businesses have become more influential with more effect on society; moreover, the recent global financial crisis has alerted the societies to demand more from the businesses to show responsibility towards solution of social problems. Therefore, we observe that voluntary disclosure of corporate social activities in the annual reports of firms is increasing with time. There are two different theoretical views. According to stakeholder theory of organization management all corporate entities are responsible to the well-being of both internal and external stakeholder such as shareholder, employees, management and customers, suppliers, creditors, competitors, and government.

Another theory i.e. the legitimacy theory explains that activities of an organization are limited to the boundaries set by the society. Contrary to these views, the agency moral theory suggests that profit maximization is the primary source of a business and hence a business could not be held responsible for the corporate social responsibility (CSR) activities due to associated costs. This theory further explains that social activities are the job of government. CSR is defined as the way a corporation achieves a balance among its economic, social and environmental responsibilities in its operations so as to address shareholder and other stakeholder expectation. CSR activities are expected to increase reputation of firms and hence its financial performance due to resultant improved customer loyalty, public image and goodwill of the corporations. Moreover, disclosure of information by firms could also serve to mitigate the issue of information asymmetries.

This study is an endeavor to identify characteristics of Pakistani listed non-financial firms that are associated with corporate social responsibility disclosures (CSR D). The study uses CSR models for analysis of five years (2011 – 2015) data of 100 non-financial firms from different sectors listed on Pakistan stock exchange (PSX). Review of the literature reveals that liquidity of firm is one neglected variable. We expect that liquid firms' have greater stake to preserve their repute and image than firms which are illiquid or lesser liquid. Therefore, we conduct this study and include liquidity as an explanatory variable of primary interest. Moreover, relative to other countries in the world few studies are conducted in Pakistan. Hence, the current study is expected to add to the body of knowledge and provide empirical evidence to practitioners and other large body of stakeholders. In Pakistan, there is room to investigate about the factors that influence CRSD.

Next section presents review of relevant literature, Section 3 introduces data, sample and research methodology, Section 4 presents results and analysis. Section 5 concludes the study.

## **REVIEW OF LITERATURE AND HYPOTHESIS DEVELOPMENT**

In today's world, to sustain and survive and reassure stakeholders of observing transparency and being concerned about community issues, businesses need to furnish information about their social activities to general public. According to Gray, Owen, and Maunders (1987) communication of social and environmental effects of firms' economic activities to stakeholders by businesses is called disclosure of social information. Firms in petroleum, gas, and chemical sectors in 1980 started providing information about their social activities. At the present, GRI-G3 published in 2006 under the aegis of Coalition for Environmentally

Responsible Economies (CERES) and the United Nations Environmental Programme (UNEP) provides guidelines to firms to report their economic, social and environmental performance. According to Gray et al. (1995) legitimacy theory and the stakeholder theory are the most efficient in explaining the behavior of firms with respect to social and environmental information disclosures by them. These two theories suggest that social and environmental information by firms are provided to maintain repute and identity (Hooghiemstra, 2000). Among the two, legitimacy theory is considered more predictive in explaining corporate social disclosure (Guthrie & Parker, 1990). Perrow (1970) defines legitimacy as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, value, beliefs, and definitions”. Deegan (2002) argue that being part of a wider social system, corporations act to assure stakeholders to perceive their activities as legitimate. The Legitimate theory guides managers to achieve the goal of long-term existence of firms by addressing community expectations and concerns and thus establish link between corporate social disclosure and stakeholders’ concerns. Whereas according to Suchman (1995), legitimacy theory explains that an entity actions are appropriate according to the beliefs, values, and norms of its socially constructed system. According to this theory, actors may disclose information for demonstrating that their behavior is according to the requirements of the social system. Organizations must appear taking care of the interest of general public. This end can be achieved using the disclosure of financial information in annual reports. Deegan (2001) opines that societies influence companies. Hence, it is expected that firms would respond to any changing concerns of a community and if companies fail to address these concerns then these might be penalized. Extant literature reveals that many research studies on corporate social disclosures support the explanation of legitimacy theory (see e.g. Patten, 1991; Deegan & Rankin, 1996; Woodward et al., 2001). According to this theory, corporations not only focus on interest of shareholders but also the interest of other stakeholders associated with corporation. Samy, Odemilin, and Bampton (2010) opine that in order to gain long-term returns, firms in accordance to the view of stakeholder theory, perform CSR activities. Another, the institutional theory attempts to explain that firms’ actions are guided by societal values and thus attain homogeneity in their practices (Deegan & Jeffry, 2006). The current research studies on the topic of corporate social disclosures and organizations are in general guided by these theoretical approaches.

Extant literature on the topic reveals that *CSR* is dependent on several corporate attributes (see e.g. Macarulla & Talalweh, 2012; Magness, 2006; Brammer & Pavelin, 2008; and Da Silva Monteiro & Aibar-Guzman, 2009). Empirical research studies show that firm-specific characteristics affect corporate social disclosures and that the information is reported on a voluntary basis. Number of studies around the globe (Jordan, France, Egypt, Spain, Greece, Taiwan etc) report existence of differences with respect to type of industry, location, amount and methods of social information disclosure (see e.g. Abu-Baker, 2000; Wang et al., 2012; Bayoud et al., 2012; Papaspyropoulos et al., 2010; Ahmad et al., 2003; Uwalomwa & Uadiale, 2011; Ismail & Ibrahim, 2009; Echave & Bhati, 2010; Ayadi, 2004; Rizk et al., 2008; Suttipun & Stanton, 2012). In an earliest study in US by Ernst and Ernst (1978) size of firm is reported to be associated with disclosure of *CSR* information. Later Gray et al. (1996) confirmed the effect of size on *CSR*. In the developing and emerging markets, relative to smaller firms, larger firms are found to report more social information (Motta, 2003; Ismail & Ibrahim, 2009; Alawi & Rahman, 2011; Desoky & Mousa, 2012; Akrouf & Othman, 2013). Yao, Wang and Song (2011) analyzed data of over 800 listed Chinese firms on the Shanghai Stock Exchange for the time period of 2008-2009. They reported that firm size has a positive and significant effect on the levels of various *CSR* indicators. However, Hackston and Milne (1996) argued that along with the size of firm there is probability of other corporate attributes to consider in explaining *CSR* of firms. Accordingly, more profitable firms are observed to report more information about their social activities than less profitable ones (Moneva & Llana, 2000; Suwaidan, Al-Omari & Haddad, 2004; Hossain, Islam & Andrew, 2006; Khasharmeh & Suwaidan, 2010; Lassaad & Khamoussi, 2012; Setyorini & Ishak, 2012; Andrikopoulos & Krikilani, 2013). Juhmani (2014) documented significant effect of leverage on level of social information disclosure. Similarly, Naser, Al-Hussaini, Al-Kwari and Nuseibeh (2006) reported that business risk influences corporate social disclosure. They used leverage as a measure of business risk. Alturki (2014) in a sample of Saudi corporations found that firm size and profitability are positively association with level of corporate social disclosure, but leverage is found to be statistically insignificant. Majeed, Aziz and Saleem (2015) studies 100 Pakistani companies for the time period of 2007–2011 to examine the relation between *CSR* and independent variables board size, board composition, ownership structure, company size and performance. They reported significant impact of various factors on *CSR* including firm size, ownership concentration, institutions ownership, and board size.

Review of the literature reveals that liquidity of firm is one neglected variable. We expect that liquid firms are more concerned about continuity of performance and survival (subject to acceptance by the community) and therefore have greater stake to preserve their reputation and image than firms which are illiquid or lesser liquid. Therefore, we conduct this study and include liquidity as an explanatory variable of primary interest. Corporate Social Responsibility Disclosure Index (*CSRDI*) is used as dependent variable and this is calculated for all firms in the sample for the period of study from 2013 to 2017. Following the extant literature, corporate attributes such as size of firm, profitability, leverage, and liquidity are used as explanatory variables in this study. The rationale of expecting association between these corporate attributes and *CSRDI* is given in the following text.

### **Size of Firm**

There are number of theoretical reasons that explain that relative to smaller sized firms, larger firms would more likely disclose corporate social and environmental information in annual reports. Consistent with the light of legitimacy theory, Watts and Zimmerman (1978) argue that public is more concerned about activities of large firms and these firms, in general, face more legitimacy issues. Due to their sheer size these firms are expected to play leading role in setting examples to improve general business environment. Large firms would have earned more legitimacy and reputation. However, according to agency theory, large size firms are more prone to political costs. Therefore, to reduce these costs and to mitigate its negative effects on wealth of firm, larger firms are expected to provide more information about their CSR activities.

The existence of this theoretical direct association is confirmed in number of empirical studies around the globe. Majeed, Aziz and Saleem (2015) analyzed data of 100 Pakistani companies for period of 2007–2011 and reported that size of firm has direct and statistically significant impact on CSR reporting. Uyar and Kilic (2012) analyzed data of 131 manufacturing Turkish companies for the time period of 2010 and reported that firm size has positive relation with forward looking information disclosure by firms. Similarly in a sample of 800 listed Chinese firms Yao, Wang and Song (2011) find statistically significant and direct relationship between size of firm and social information disclosure by firm. Other studies that confirm this positive relationship includes Haniffa and Cooke (2005), Ponnu and Okoth (2009), Branco and Rodrigues (2008), Hossain, Islam, and Andrew (2006) and Macarulla and Talalweh (2012), Al-Ajmi, Al-Mutairi and Al-Duwaila (2015), Alkababji (2014). However, contrary to these in few studies it is reported that size of firm does not

exhibit any significant association with *CSRDI* (see e.g., Maheshwari & Kaura, 2016; Roberts, 1992; Ng, 1985; and Davey, 1985).

H<sub>1</sub>: The larger the size the more will be the CSR disclosure by a firm.

### **Profitability**

Reporting on social activities is not without cost. However, profitable firms might actively participate in reporting social activities with the aim to put less profitable firms in a disadvantageous position and make impression on creditors so to acquire debt at lower price. In the light of legitimacy theory, profitable firms are expected to involve more in corporate social disclosure as compared to lesser profitable firms in order to continue with their performance and survive. Alsaeed (2006) stated that profitable firm may also tend to disclose more information to the public for gaining repute and goodwill. Similar prediction is made by signaling theory as well. It predicts that profitable firms are expected to signal their quality to investors relatively more readily than poor performing firms (Inchausti, 1997, Watson, Shrives, & Marston, 2002). Hossain, Islam, and Andrew (2006) used data of 150 firms from 2002 to 2003 and reported that relative to unprofitable or lesser profitable, profitable (net profit margin) firms provide information about their social activities. Majeed, Aziz and Saleem (2015) in their study on CSR used number of variables such as firm performance in terms of return on assets, foreign directors, size of firm, institutions ownership, ownership concentration, and women directors.. The sample consists of 100 Pakistani companies for the time period of 2007–2011. They reported significant impact of board size, institutions ownership, ownership concentration and firm size on CSR reporting. Al-Ajmi, et al (2015) used data of 211 non-financial firms and reported that profitability has direct association with CSR. Contrary to these findings, however, Alkababji (2014) found that firms' profitability do not influence corporate social responsibility in the case of a sample of 48 firms in the year 2012. He used Spearman Rank Correlation Co-efficient, ANOVA and content analysis model. It is hypothesized in this study that:

H<sub>2</sub>: There is a positive relationship between profitability and the level of CSR disclosure.

### **Leverage**

According to agency theory, increase in level of debt also increases the need of more financial information (Jensen & Meckling, 1976). Richardson and Welker (2001) explain that determinants of financial and social information are similar. According to legitimacy theory if a firm increases level of debt, it will also increase level and reporting of social activities, provided that creditors are assumed to be concerned about societal expectations. This positive association is predicted by agency theory as well. Alsaeed (2006) stated that agency costs of firms increase with increase in level of debt. Therefore, to mitigate both agency costs and information asymmetries, firms with

high leverage might provide more information to satisfy variety of stakeholders (Inchausti, 1997; Uyar and Kilic, 2012). Another view suggest that due to financial constrained, highly levered firms are least expected to provide more information due to its associated costs. Hence, it is an empirical phenomenon and both positive and negative relationship could be expected between leverage and CSR disclosure.

Juhmani (2014) analyzed data of 48 non-financial firms to document that social and environmental information disclosures increases with increase in financial leverage. Al-Ajmi, et al (2015) used data of 211 non-financial firms and reported that leverage has no statistically significant relationship with CSR. Chek (2013) used a sample of 120 consumer product and 34 plantation companies for the time period of 2008-2010. The study considered *CSRDI* as dependent variable and size of the company, profitability, and leverage as independent variables. He reported that leverage does not correlate with level of CSR disclosure. Similar results are reported by Razak (2015) in a sample of 166 companies for the year 2013 who found insignificant relation between leverage and *CSRDI*. It implies that debt is not the main influence for CSR disclosure. Contrary to the expected positive relationship between leverage and CSR disclosure, Sukcharoensin (2012) found in a sample of 50 non- financial firms that firms with high level of financial leverage have low level of CSR disclosures. Similarly, Uyar, and Bayyurt (2013) used data of 138 manufacturing companies to examine the relationship between few variables including leverage and CSR. They used Ordinary Least Square (OLS) and Two-Stage Least Squares (2SLS) regressions and documented negative significant association between leverage and voluntary disclosure. Habbash (2016) in a sample of 267 firms for the time period of 2007-2011 reported that leverage is a negative determinant of CSR disclosure. Hence, the following hypothesis is formulated:

H<sub>3</sub>: There is inverse relationship between leverage and CSR disclosure.

### **Liquidity**

If liquid firms are assumed to be profitable as well then in the light of both legitimacy and signaling theory it could be expected that higher liquid firms would publish more information on CSR activities. However, contrary to this view the stakeholder's theory explains that lower liquid firms might report more information for the satisfaction of the stakeholders.

However, empirical evidences about the association of liquidity and corporate social disclosure are inconclusive.

Samaha and Dahawa (2010) reported that level of voluntary disclosure increases with increase in liquidity of firms. But Aly, Simon and Hussainey (2010) documented absence of any significant relationship of liquidity with corporate social disclosure. Similarly, in a sample of 111 Egyptian

listed firms for the period from 2005 to 2010, Hussainey, Elsayed and Razik (2011) found no correlation between liquidity and CSR disclosure. Whereas, Al- Ajmi, et al (2015) used data of 211 Kuwaiti firms and reported that liquidity has negative but statistically insignificant relationship with corporate social responsibility disclosure.

We expect that relative to signaling theory, stakeholder's theory might have more influence on behavior of firms towards CSR disclosure in Pakistan. We assume that in Pakistan debt market with respect to number of customers is shallow and there are more suppliers of funds. Moreover, due to security, political, and energy issues, economic situation of Pakistan is not offering promising growth opportunities to businesses. Therefore, firms do not face any hard challenge with respect to availability of needed capital. In addition, in general, there is no evidence that CSR is in the priority list of any major player in socio-economic or socio-political sphere. Therefore we expect that lower liquid firms might resort to report more information to earn repute, build image, and attract stakeholders. Hence, we hypothesize that: H<sub>3</sub>: There is inverse relationship between liquidity and CSR disclosure.

## **DATA AND METHODOLOGY**

The data of 100 non-financial randomly selected listed firms from different sectors of Pakistan is downloaded from the official website of Pakistan stock exchange for a period of five years from the year 2011 to 2015. We also use natural log form of data and estimate regressions to cater for the larger values of standard deviations of some of the variables. Both descriptive and correlation statistics of log form of variables are therefore reported as well. Following the extant literature, the dependent variable corporate social responsibility disclosure index (*CSRDI*) is calculated for each company in the sample. The twenty-two corporate social responsibility items reported by companies in their annual reports are categorized into six sub-classes i.e., health sector, education sector, natural disaster, environmental sector, activities for employees, and product & services (see for example, Rouf (2011), Majeed, Aziz and Saleem (2015), Hossain, Islam and Andrew (2006). The twenty two CSR items are shown in Appendix - A. Without prejudice to any of user-groups and to treat all equally we resort to unweighted disclosure approach for the measurement of the CSR items (Cooke, 1989; Akhtaruddin, Hossain, Hossain, & Yao, 2009). More specifically, CSR index (*CSRI*) is calculated as the value of the number of items a company discloses divided by total value that it could disclose multiplied by 100. If information on an item is disclosed, it is given a value of one and zero otherwise. In the Eq. [1] below  $d$  is 1, if the item is disclosed by firm  $i$  and zero otherwise and  $n$  refers to total number of items that a firm could report.

$$CSRDI = \sum_{t=0}^n \frac{d_t}{n} \quad [Eq: 1]$$

Relative to smaller firms, large firms are under more public scrutiny, hence large firms are expected to disclose more corporate social responsibility information. Results reported by Yao, Wang and Song (2011), Al-Ajmi, Al-Mutairi & Al-Duwaila (2015), and Alkababji (2014) in their research studies support the above stated relationship. However, Rouf (2011), Maheshwari and Kaura (2016), and Bayoud, Kavanagh and Slaughter (2012) found that size of firm is not significantly associated with the CSRDI. Size (SIZ) of firm is measured as natural logarithm of total assets. The literature reveals that different measures of profitability used in different studies produce variation in results. Hence, we use three different proxies i.e., return on asset (ROA), return on equity (ROE), net profit margin (NPM). This will also help to find if the results of these different measures of profitability vary in the same sample or not. ROA is measured as ratio of income after tax to total assets. ROE is measured as net income divided by total shareholders' equity. Previously, Uyar and Kilic (2012), Rouf (2011), Pan, Sha, Zhang, and Ke (2014) report significant relation between return on equity and the level of corporate social responsibility disclosure. NPM is the percentage of revenue left after all expenses have been deducted from sales. Al-Ajmi et al. (2015) and Islam, et al. (2006) document that firms with relatively higher NPM disclose more information about their corporate social responsibilities' actions. NPM is calculated by dividing net sales by total sales. Firms with relatively higher leverage ratio are likely to share more information to reduce agency costs. Juhmani (2014) argue in support of direct association between leverage and CSRDI. However, Sukcharoensin (2012) report that firms with high level of financial leverage has low level of CSR disclosures. Similarly, Uyar et al. (2013), Razak (2015) also opine that leverage has negative significant association with the extent of voluntary disclosure. In this study, leverage is measured as the ratio of total debt to total equity. Finally, liquidity describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. Previous research findings show mix results about the association between liquidity and CSRDI. For example, Al-Ajmi et al. (2015) report negative relationship between liquidity and level of CSRDI, however, Samaha and Dahawa (2010) document existence of direct association between them. Liquidity is measured as the ratio of current assets to current liabilities.

### **Regression Model**

Following is the general form of the fixed effect regression model used to find the relationship between *CSRDI* and the included independent variables. Fixed effect model is used in the light of hausman test statistics.

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it} \quad [\text{Eq 2}]$$

In Eq 2 above, Y represents the dependent variable *CSRDI* and X is the vector of all other independent variables. Where the subscripts *i* and *t* stands for each firm and year.  $\beta$  is the coefficient,  $\alpha$  is the intercept term and  $\mu_{it}$  is the regression error term. The specific model is as under:

$$CSRDI_{it} = \alpha_i + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 NPM_{it} + \beta_4 LEV_{it} + \beta_5 LIQ_{it} + \beta_6 SIZ_{it} + \mu_{it} \quad [\text{Eq 3}]$$

In Eq 3 above, *CSRDI* is the symbol of dependent variable corporate social responsibility disclosure, *ROA* is return on assets, *ROE* is return on equity, *NPM* is net profit margin, *LEV* is leverage, *LIQ* is liquidity and *SIZ* is size of firm. Where the subscripts *i* and *t* stands for each firm and year.  $\beta$  is the coefficient,  $\alpha$  is the intercept term and  $\mu_{it}$  is the regression error term.

## RESULTS AND DISCUSSION

### Descriptive Statistics

Table 2 presents descriptive statistics for the sample firms. The highest score of *CSRDI* achieved by a firm is 72.73% and the lowest score is 0% with a standard derivation of 17.22%. So the firms are widely distributed with regard to voluntary disclosure. The mean value of *SIZ* is 15.48 and a standard deviation of 1.44. The mean of the return on asset is 9.01% with standard deviation 14.82%. The mean of return on equity is 23.22% with standard deviation of 51.81% and the mean of net profit margin is 4.58%, standard deviation is 43.91% with minimum and maximum sizes of -426.26 and 551.91. As these two variables have very large values of standard deviation, therefore we take natural log of all variables. The mean of liquidity is 1.29% with standard deviations 0.92% respectively. To cater for the very large values of standard deviation particularly in the case of *ROE* and *NPM*, we take natural log of all variables. Descriptive statistics of log values of the variables are reported in Panel – B of Table 2.

Table 1  
*Descriptive Statistics*

Variable	Obs.	Mean	Std. Dev.	Min	Max
Panel – A					
CSRDI	481	26.2688	17.2224	0	72.7273
LEV	481	1.7789	16.6655	-292.3200	175.8000
LIQ	481	1.2889	0.9201	0.0000	7.6517
ROA	481	9.0077	14.8240	-46.7300	63.7200
ROE	481	23.2247	51.8081	-513.0800	277.6900
NPM	481	4.5800	43.9114	-426.2600	551.9100
SIZ	481	15.4796	1.4381	12.2904	19.3864
Panel - B					

LnCSRDI	462	3.0820	0.7291	1.5141	4.2867
LnLEV	452	0.3383	0.9786	-2.8134	5.1694
LnLIQ	470	0.0806	0.6434	-2.7334	2.0349
LnROA	381	2.1412	1.1134	-1.6094	4.1545
LnROE	399	3.0604	1.0929	-1.0216	5.6265
LnNPM	380	1.9458	1.0945	-1.9661	6.3134

The sample consists of 100 non-financial Pakistani listed firms for a period of 2011-2015. *CSRDI* is corporate social responsibility disclosure index calculated based on the twenty two corporate social responsibility items for each company. *SIZ* refers to size of firm and is measured as natural logarithm of total assets. *ROA*, return on assets; *ROE*, return on equity; and *NPM*, net profit margin are the three different measures of profitability. *ROA* is the ratio of income after tax to total assets; *ROE* is net income divided by total shareholders' equity; and *NPM* is calculated by dividing net sales by total sales. *LEV* is leverage and it is measured as the ratio of total debt to total equity. Whereas, *LIQ* stands for liquidity which is the ratio of current assets to current liabilities. In panel-B of the table data of all variables is in natural log form.

### Correlation

The correlation matrix shows that the highest positive correlation exists between *ROA*, *ROE* & *NPM*. *ROA* and *ROE* has a correlation of 0.82 and *ROA* and *NPM* has a correlation of 0.59. *ROA* and *CSRDI* has a correlation of 0.40. The correlation between *SIZ* and *CSRDI* is positive 0.39; while, *LEV* and *CSRDI* has weak negative relation (-0.15). *LIQ* has negative but weak (0.0006) correlation with *CSRDI*. Whereas, the relation between *SIZ* and *LEV* (0.20) is typical of Pakistani firms. In addition to the highest correlations of *LnROA* with both *LnROE* and *LnNPM*, in the case of natural log form data of variables, *LnLIQ* & *LnLEV* and *LnROE* & *LnNPM* show very correlations of magnitudes -0.64 and 0.57 respectively. Regression analyses are used to assess these relationships under more restrictive framework.

Table 2: *Correlation Matrix*

	CSRDI	SIZ	LEV	LIQ	ROA	ROE	NPM	LOG
<b>CSRDI</b>	1	(0.2919)	(-0.0987)	(0.1777)	(0.3249)	(0.1738)	(0.1228)	<b>LnCSRDI</b>
<b>SIZ</b>	0.3884	1	(0.0488)	(-0.0139)	(0.0662)	(0.1170)	(0.2257)	<b>SIZ</b>
<b>LEV</b>	0.1478	0.1986	1	<b>(-0.6356)</b>	(-0.2037)	(0.1612)	(-0.3233)	<b>LnLEV</b>
<b>LIQ</b>	-0.0006	-0.0546	-0.1738	1	(0.2590)	(-0.0643)	(0.3135)	<b>LnLIQ</b>
<b>ROA</b>	0.3950	0.1377	0.2405	0.2202	1	<b>(0.8929)</b>	<b>(0.7537)</b>	<b>LnROA</b>
<b>ROE</b>	0.3575	0.1351	0.1460	-0.0367	<b>0.8209</b>	1	<b>(0.5686)</b>	<b>LnROE</b>
<b>NPM</b>	0.1676	0.2747	0.2411	0.3753	<b>0.5901</b>	0.2903	1	<b>LnNPM</b>

The sample consists of 100 non-financial Pakistani listed firms for a period of 2011-2015. *CSRDI* is corporate social responsibility disclosure index calculated based on the twenty two corporate

social responsibility items for each company. *SIZ* refers to size of firm and is measured as natural logarithm of total assets. *ROA*, return on assets; *ROE*, return on equity; and *NPM*, net profit margin are the three different measures of profitability. *ROA* is the ratio of income after tax to total assets; *ROE* is net income divided by total shareholders' equity; and *NPM* is calculated by dividing net sales by total sales. *LEV* is leverage and it is measured as the ratio of total debt to total equity. Whereas, *LIQ* stands for liquidity which is the ratio of current assets to current liabilities. Correlation of variables in natural LOG data form is shown in brackets in the upper right-angle triangle of the table.

### Regression Results and Hausman Fixed and Random Effect Test

Prior to estimation of the model we run diagnostic tests to ensure reliability of the results. For the data to be used in regression analysis it is assumed that data is normal. We remove outliers and extreme values from the given set of data if the value of a variable cook's d statistic is greater than 4. Another assumption of the regression analysis is that there is no relation between any two independent variables. We use VIF (Variance Inflation Factor) test to check for multicollinearity. The test results in Table 4, in case of data without transformation (original data) show that mean values of VIF are less than 10 and suggest that there is no statistical relation between the independent variables. However, in case of LOG form of data VIF values are indicative of presence of multicollinearity for *LnROA* and *LnROE*. In addition, p values of Breusch-Pagan / Cook-Weisberg test are greater than .05 suggestive of absence of heteroskedasticity.

Table 3: *VIF Test of Multicollinearity*

Original Data		LOG Data	
Variable	VIF	Variable	VIF
<b>ROA</b>	1.71	<b>LnROA</b>	21.81
<b>ROE</b>	1.43	<b>LnROE</b>	16.62
<b>NPM</b>	1.24	<b>LnNPM</b>	3.47
<b>LIQ</b>	1.19	<b>LnLIQ</b>	3.12
<b>LEV</b>	1.08	<b>LnLEV</b>	1.89
<b>SIZ</b>	1.04	<b>LnSIZ</b>	1.09
<b>Average VIF</b>	1.28	<b>Average VIF</b>	8.00

Table 5 presents results of nine different models. The columns' headings are so stated to show the form of data of variables, estimation technique used, and variables excluded from the model. In both cases of models i.e., 2a and 2b, *ROA* is dropped due to its high correlation with *ROE*, whereas in model 3 *ROE* is not included. Models 4 to 8 are based on log form of data of variables and *LnROA* & *LnROE*, *LnLEV* & *LnLIQ* are dropped due to their correlation with each others. It is a critical issue in panel data-based regression models to determine appropriate estimation technique given that fixed or random effects (FE & RE) might influence results. Hence, Hausman test is used to determine if FE or RE estimation technique will be appropriate. The test suggests

that FE estimation technique shall be used if p-value of the test is less than 0.05, and otherwise RE estimation shall be used. Except in model 2, test statistics in all cases are well below 0.05 and therefore results of FE model are preferred and discussion of results is based on them. However, in model 2 its value is 0.071 and therefore, we report results of both FE and RE. Values of R<sup>2</sup> and number of total observations are also reported.

Table 4  
*Regression Results of CSRDI and Explanatory Variables*

VARIABLES	(1)	(2a)	(2b)	(3)	(4)	(5)	(6)	(7)	(8)
	Original FE	Original Excl ROA FE	Original Excl ROA RE	Original Excl ROE FE	LOG FE	LOG Excl ROA FE	LOG Excl ROE FE	LOG Excl LEV FE	LOG Excl LIQ FE
<b>LEV</b>	-0.0096 (0.0236)	-0.0218 (0.1491)	-0.0045 (0.1360)	-0.0232 (0.1490)	0.0193 (0.0615)	-0.0884* (0.0506)	-0.0545 (0.0484)		0.0311 (0.0634)
<b>LIQ</b>	-0.0955 (0.7549)	0.3250 (0.8219)	0.3390 (0.7620)	0.1408 (0.8267)	-0.0926 (0.0859)	-0.0432 (0.0833)	-0.0658 (0.0852)	-0.0970 (0.0846)	
<b>ROA</b>	0.1036** (0.0495)			0.1873** (0.0767)	0.4904*** (0.1647)		0.2141*** (0.0812)	0.4607*** (0.1346)	0.4720*** (0.1680)
<b>ROE</b>	-0.0025 (0.0091)	0.0749*** (0.0280)	0.0921*** (0.0248)		-0.3034* (0.1577)	0.1166 (0.0768)		-0.2726** (0.1231)	-0.2555 (0.1625)
<b>NPM</b>	0.0002 (0.0113)	-0.0984 (0.0979)	-0.0665 (0.0768)	-0.1157 (0.1035)	- (0.0926)	-0.1631* (0.0885)	- (0.0924)	- (0.0921)	- (0.0964)
<b>SIZ</b>	6.9328*** (1.2664)	7.5070*** (1.4137)	5.9346*** (0.8733)	7.7811*** (1.4262)	0.3634*** (0.0692)	0.3233*** (0.0684)	0.3564*** (0.0694)	0.3621*** (0.0689)	0.4031*** (0.0712)
<b>Constant</b>	-81.7835*** (19.7447)	- 89.6732*** (22.1491)	- 66.6227*** (13.6702)	- 93.5619*** (22.3063)	-2.0551* (1.0844)	-1.8189* (1.0878)	-2.2133** (1.0871)	-2.0544* (1.0824)	-2.7638** (1.1108)
<b>Hausman Stat</b>	24.84	10.17	10.17	15.73	26.30	20.02	26.36	26.68	25.20
<b>(P Value)</b>	(0.0004)	(0.0706)	(0.0706)	(0.0077)	(0.0002)	(0.0012)	(0.0001)	(0.0001)	(0.0001)
<b>Observations</b>	481	379	379	383	338	342	338	338	344
<b>R-squared</b>	0.0850	0.1056	0.0932	0.1024	0.1244	0.0914	0.1112	0.1240	0.1257
<b>Number of id</b>	100	89	89	91	85	85	85	85	86

Results of regressions are based on the sample of 100 non-financial Pakistani listed firms for the period 2011-2015. Dependent variable *CSRDI* is corporate social responsibility disclosure index calculated based on the twenty two corporate social responsibility items for each company. *SIZ* refers to size of firm and is measured as natural logarithm of total assets. *ROA*, return on assets; *ROE*, return on equity; and *NPM*, net profit margin are the three different measures of profitability. *ROA* is the ratio of income after tax to total assets; *ROE* is net income divided by total shareholders' equity; and *NPM* is calculated by dividing net sales by total sales. *LEV* is for leverage and it is measured as the ratio of total debt to total equity; whereas, *LIQ* stands for liquidity which is the ratio of current assets to current liabilities. Standard errors are reported in the brackets with coefficients values. \*significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

In Table 5, results show that leverage is negatively related to *CSRDI* and *LnCSRDI*, but it is significant at 10% only in model 5. However, in model 8, when *LnLIQ* is dropped due to its

correlation (-0.64) with *LnLEV* then *LnLEV* shows insignificant positive association with *LnCSRDI*. Moreover, inclusion or exclusion of *LnROA*, *LnROE*, and *LnNPM* do not change these results and therefore we include these variables in the regression. Thus, as hypothesized, high leveraged firms face difficulty to involved themselves in corporate social responsibilities and its disclosure, however, these results are statistically insignificant. Consistent with the stakeholders' theory that lower liquid firms might report more information for the satisfaction of the stakeholders, liquidity is inversely related to corporate social disclosure in five of the nine cases. But it is statistically significant in none of the regressions. Moreover, these findings are in contrast to the explanation of both legitimacy and signaling theory which suggest that higher liquid firms would publish more information on CSR activities. These findings on Pakistani sample of firms do not match with the results of Sukcharoensin (2012), Al-Ajmi et al. (2015), Uyar, Kilic and Bayyurt (2013), Razak (2015), Uyar and Kilic (2012), and Samaha and Dahaw (2014) who reported positive association between the overall level of voluntary disclosure and liquidity. Among the three measures of profitability, *ROA* (*LnROA*) shows persistent positive and statistically significant association with the dependent variable. This means that more profitable firms disclose relatively more information about their corporate social activities than lesser profitable firms in Pakistan. *ROE* shows positive and significant association with *CSRDI*; but *LnROE* then is inversely associated with *LnCSRDI*. In addition, significance level of *LnROE* also decreases.

The third measure of profitability is persistently inversely related to corporate social disclosure and this relationship becomes the stronger in the case of regressions with log values of the variables. From the behaviors of these different measures of profitability, we conclude that *ROA* is the most appropriate and robust measure of profitability with respect to determining corporate social disclosure by firms in Pakistan. In fact, the other two measures are not reliable due to its varying behaviors either due to inclusion (exclusion) of other variables in a model or due to use of different forms of data of variables in a regression. Among the variables selected in this study, size is the most stable of all. As hypothesized, *SIZ* is significantly positively related to *CSRDI* (*LnCSRDI*). This implies that relative to smaller firms, large size firms disclose relatively more information about their corporate social activities. The positive association of return on assets and size of firm is in line with the explanation of legitimacy theory. Moreover, these results of *ROA* and *SIZ* are parallel to the findings of prior studies (see e.g., Majeed et al., 2015; Yao et al., 2011; Hossain et al., 2006; Al-Ajmi et al., 2015; Mukhtaruddin et al., 2014; Rouf, 2011; Alkababji, 2014). In general, result of *ROE* is similar to those reported by Uyar and Kilic (2012), Rouf (2011), Pan et al., (2014). The negative and statistically significant results of *NPM* are in

contradiction to the findings of prior studies (see e.g., Chek, 2013; Rouf, 2011). The lower values of  $R^2$ , ranging from 8.5% to 12.6% suggest that there are some other explanatory factors that might explain variation in corporate social disclosure by firms in Pakistan.

## CONCLUSION

In this study panel data from year 2011 to 2015 of 100 Pakistani listed non-financial firms is analyzed through fixed effect regression model to investigate effect of size of firm, profitability, leverage, and liquidity on corporate social responsibility disclosure by firms. Fixed effect regression technique is used in the light of results of Hausman fixed effect and random effect test. It is found that return on asset and corporate size is significantly and positively associated with corporate social responsibility. Leverage and liquidity are found to have inverse but insignificant association with corporate social responsibility disclosure; where result of liquidity is in line with the explanation of stakeholder theory. Moreover, among the three different measures of profitability, return on asset is observed as the most robust determinant of corporate social disclosure by firms in Pakistan.

It is suggested that future research on the topic shall use corporate governance as potential explanatory variable. Moreover, future research studies shall also consider managers' ethics, and beliefs, etc. within the internal environment of a firm that can impact the social activities performance of firms. Similarly, in the external environment of firms such as political, social, and economic influences and/or influence of pressure groups, general public, and competitors etc. could also affect firms' social activities.

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