An Analysis of the Impact of Corporate Visibility in Print Media and it's Effects on Corporate Social Responsibility

Frank Li

Ivey Business School

Western University, Canada

fli@ivey.ca

Taylor Morris

Department of Economics

Western University, Canada

cyu372@uwo.ca

Abstract

This paper looks to confirm that print media coverage (corporate visibility) effects a firm's Corporate Social Responsibility (CSR) ratings (MSCI database metric), both on its own and through other firm and CEO factors. Correlation, univariate and multivariate regression models were run to confirm the hypothesis. Annualized visibility was found to have a positive significant relationship at all levels of confidence with the annualized CSR rating metric in all three studies. Evidence was also found that suggests this relationship may be causal and working in one direct, visibility to CSR. Visibility was found to have the most significant impact on CSR compared to all other firm and CEO factors studied. Visibility was also found to significant effect the relationship between CSR rating and firm size. CSR rating and firm size relate negatively for the lowest visibility firms and positively for the highest. Therefore, this paper provides evidence for the use of visibility in studies on a firm's level of social responsibility.

Key words: CEO effects, Firm effects, Corporate Social Responsibility, Corporate Visibility

Introduction

There has been a large amount of discussion in the literature on the impact of corporate social responsibility (CSR) to firm financial performance. However, there is less discussion on what motivates a firm to participate in social initiatives. Some common hypothesises include firm attributes such as size (Udayasankar, 2008), profitability and financial performance (Aupperle et al., 1985; McGuire et al., 1988), regulation and tax incentives (Campbell J. L., 2007) executive characteristics and contractual obligations (Manner, 2010; Ikram et al., 2017) and more recently, media exposure or visibility (Campbell & Slack, 2006; Schreck & Raithel, 2018). This paper will explore the topic of visibility further to determine if there is a stronger relationship between visibility and CSR then the other previously mentioned hypothesises (factors). This paper will also look to determine if visibility can affect the strength of the other factors using interaction terms.

Stakeholder theory has long suggested that a corporation may be beholden to members of society other then their share holders (Clarkson, 1995; Cornell & Sharpio, 1987). A stakeholder is any persons or groups that have, or claim, ownership, rights or interests in a corporation and its activities, past, present or future (Clarkson, 1995). This paper will focus on the secondary stakeholder. Secondary stakeholders are those who are influenced or affected by, the corporation but do not engage directly in transactions (Clarkson, 1995). In particular, the media and the public are key secondary stakeholders who are able to mobilize general/public opinion in favour or opposition of a corporation. Prominent examples include the protests and media coverage of

the Dakota Access Pipeline (opposition) and the positive media response to charities such as McDonald's Ronald McDonald house (in favour). Stakeholder theory has suggested for some time that a firm's exposure to external stakeholder claims impacts corporate decision making and strategy (Cornell & Sharpio, 1987). Cornell and Sharpio (1987) argue that a corporation may be beholden to claimants of both implicit and explicit claims. This can be highly relevant to CSR if we presume that the media and public have come to expect a degree of social responsibility from a corporation; social responsibility is an implicit claim. The International Institute for Sustainable Development (IISD) (2013) found that 42% of North Americans care about a company's social responsibility, which implies that CSR is an issue of importance to secondary stakeholders. Media coverage and visibility could increase a corporation's exposure to implicit claims, and failure to comply could lead to negative opinions of the corporation and impact performance and even lead to regulatory intervention (explicit claim). This along with a growing amount of corporate visibility due to increased ease of access to media, makes CSR and visibility an issue of great importance for corporations.

Literature Review and Hypothesis

Visibility and Corporate Social Responsibility

As stated above, corporate social responsibility has become an important topic in the literature and one of concern to both the media and the public. Therefore, studying the impact of the media and public on a corporation's social responsibility initiatives has become a topic of interest. This paper looks to answer the question: does growing public concern for a corporation's social responsibility and media visibility increase a corporation's incentive to be socially responsible? There has been a small amount of discussion on this topic thus far, and there has been some debate as to whether visibility is solely a function of firm size with no power of it's own. It has

been recognized that firm size is a large contributing factor for social responsibility initiatives. Useem (1988) found that the most important single firm characteristic in determining charitable giving (a form of CSR) was size. And it is logical to assume that larger corporations attract higher visibility and public scrutiny. This study will look to test this hypothesis.

There is reasonable support for the effect of visibility on firm decision making in the current literature. Campbell and Slack (2006) found in a size-controlled study of visibility, highly visible firms gave more charitable donations then those with low visibility. Erfle and McMillian (1990) found that firm and product visibility effected oil company's reaction to regulatory and price threats for visible products but not invisible ones. Schreck and Raithel (2018) found that a firm's willingness to disclose sustainability reports with the public (visibility or exposure of business practices) was highly positively related with the firm's CSR score. Therefore, the correlation between CSR and visibility is well known, but it is still debatable as to whether visibility effects CSR or CSR effects visibility. In other words, does a firm's exposure to the popular media effect their social responsibility or is the relationship explained by increased media coverage of the corporate social responsibility initiatives. This study will add to the current literature by testing the direction of causality in the CSR visibility relationship.

The empirical study of visibility has raised many questions regarding the proper measurement of a visibility metric. Campbell and Slack (2006) proposed one method by using name recognition. They preformed their study by providing a list of firms from the FTSE 500 index to 500 surveyors and asking them to tick a box if they had "heard of" the firm. From these results they created a "heard of" metric that was sorted into deciles, the top decile being highly visible and the lowest decile being the least. Erfle and McMillian (1990) proposed an alternative measure by using an index called the Television News Index and Abstracts (TNIA) collected by Vanderbilt

University. This index summarizes the nightly news programs for three major news outlets. They were able to analyze this data and determine, in number of segments, the media visibility of their topic being studied. Schreck and Raithel (2018) went a different direction by redefining visibility as a corporation's willingness to disclose their business practices through voluntary sustainability reports. This provided a metric which was easily quantified: number of sustainability reports filed each year. Abbott and Monson (1979) also used this method. This study will investigate a different measurement of visibility: the number of newspaper publications in a given year, more details are provided in the data description section of this paper.

Firm Performance and Corporate Social Responsibility

The literature up to this point has been contentious in developing the relationship between a firm's past and current financial performance and their CSR initiatives. For instance, there are two schools of thought for how CSR should affect profitability. One hypothesis is that profitability should decline with CSR due to the cost of such initiatives (Abbott and Monsen, 1979) and another argues that some degree of social responsibility will increase profits due to the presence of stakeholders (Cornell & Sharpio, 1987) and regulatory bodies (Bragdon & Marlin, 1972) which insure that not engaging in CSR actually increases a firm's cost through explicit claims. On the other hand, Aupperle et al. (1985) found no relationship been CSR and firm profitability. Looking to other performance metrics, McGuire et al. (1988) found significant correlations between social responsibility and return on assets (ROA), Debt/Assets, Beta and standard deviation of total returns. As a part of this study, these metrics (firm factors) will be investigated to determine if consistent results can be obtained, this will add to the study by providing a point of reference for the strength of the relationship between visibility and CSR.

Given the Arguments for and against the, it may be logical to assume minimal relationships, or at least that CSR and performance metrics are not directly related, but that there may be an indirect causal variable. This paper will look to determine if visibility can be this variable by using interaction terms.

CEO Characteristics and Corporate Social Responsibility

There is also a branch of literature that links a firm's CSR decisions to the characteristics of it's CEO. For example, Manner (2010) found that the type of university education, gender and breadth of experience of a CEO could explain differences in CSR, even when firm and industry effects were controlled for. McGuire et al. (2003) found that there was no link between CEO incentives and CSR. Ikram et al. (2017) found that there was a distinct correlation between CSR clauses in executive contracts and a firm's CSR involvement. This paper will look to determine if a link between CEO characteristics and CSR can be identified as it has with these works and will go farther to ask if their power can be amplified by a visibility instrumental variable.

Hypothesis

This study will examine the relationship between visibility and corporate social responsibility. There are 3 postulates to the argument: (1) visibility increases the firm's exposure to implicit claims made by the media and the general public and therefore will lead to higher CSR, (2) visibility is therefore, a better – more consistent and powerful - predicter of CSR initiatives then other factors previously studied and (3) visibility can work to amplify the impact of firm and CEO characteristics on CSR.

This study hopes to add to the literature by reaffirming the correlation between visibility and CSR and providing evidence on the direction of the relationship. This study also hopes to

solidify visibility as one of the main contributing factors of CSR and provide evidence of it's indirect effects on firm and CEO factors.

Results

Data Description

Data on CSR ratings was collected from the MSCI database on Wharton Research Data Service (WRDS) website. The ratings are determined quantitatively and qualitatively by MSCI. The MSCI database was originally created by KLD Research & Analytics. This same database has been used for empirical research into CSR by McGuire et al. (2003) and Li et al. (2016). Data on a firm's positive (str) and negative (con) involvement in community (com), diversity (div), employee (emp), environment (env), human (hum) and product (pro) social responsibility areas was collected. The firm CSR rating was determined using the equation below:

$$\text{csrrating} = (\text{com\_str\_num} - \text{com\_con\_num}) + (\text{div\_str\_num} - \text{div\_con\_num})$$
$$+ (\text{emp\_str\_num} - \text{emp\_con\_num}) + (\text{env\_str\_num} - \text{env\_con\_num})$$
$$+ (\text{hum\_str\_num} - \text{hum\_con\_num}) + (\text{pro\_str\_num} - \text{pro\_con\_num}).$$

Data points with missing CSR rating variables were then removed from the data set.
Data on firm specific factors - Net Income, Gross Profit, Cash, Total Assets, Total Debt, etc. - in this study was collected from the CRSP database on the WRDS website. The data set was then paired down to only include firms in the S&P 500. Test variables were then calculated in the following manner:

$$size = \log(Total\ Assets)$$

$$Debt\ ratio = \frac{Total\ Debt}{Total\ Assets}$$

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

Gross Profit is used as a profitability measurement, Cash was used as a secondary measure of the firm's financial position and access to liquidity. Firms that were missing Total Assets, and therefore size measurements, were eliminated as size is an important variable in this study in determining the difference between size related effects and those of visibility. All monetary values are reported in millions of US Dollars ($).

CEO data was collected from the Capital IQ Execucomp database on WRDS. Data was filtered to only contain CEO data. This was done because CEOs are considered the primary decision makers in a corporation and are therefore the topic of focus. Variables collected include gender, the date the executive became CEO, and their bonuses. The CEOs tenure was then computed and a dummy variable was assigned for gender.

Data on CSR contracts was provided by Zhichuan (Frank Li) of the Ivey Business School at Western University. This data set was created by Li and associates and was used in the paper *CSR Executive Compensation Contracts* (Ikram et al., 2017). The data set provides information on the CEOs of firms within the S&P 500 and indicates if the CEO contracts contain clauses pertaining to CSR obligations or goals using a dummy variable.

The CSR rating, firm, CEO and contract data sets were merged to ensure that the data set had full CSR rating, size and CEO gender data. This was done to create a more consistent data set and mitigate the amount of visibility metrics that had to be collected due to the time constraints. There was a total of 611 observations in this data set and it spans the time period 1995-2008.

Once all data was processed and merged the final data set was used to collect visibility metrics. As discussed previously there is much debate on how to properly measure visibility, the one used

in this study is similar to that utilized by Erfle and McMillian (1990) (Television and News Index and Abstracts), however, this study focuses on newspaper coverage instead of television news segment coverage. None of the measures of visibility researched for this paper examined print media, which due to the popularization of online print media in the last few decades, has become widely accessible to the public. To create a comprehensive list of the number of newspaper articles documented for a given firm in a given year I used the Western University Summon which is sponsored by SeriesSolutions: a ProQuest Company and includes over 3400 newspaper publications. The large advantage of using this database is the ability to filter search results by company, year, and publication type. When performing the searches the full company name as reported in the CRSP data set was entered into the advanced search and the time bounds were set to January 1 to December 31 of the required year. The search results yielded were then recorded, providing an empirical measure of newspaper coverage or visibility.

A data set with lagged CSR ratings was also created using the same procedure as above and a total of 660 observations were included and it spans the time period of 1994-2008. A dataset of lagged CSR values was used to control for endogeneity that might occur in the study due to the simultaneity of articles published and CSR. For example, a large CSR initiative taken under by a firm may warrant high media coverage, so given that this study looks at annual results, lagged CSR variable is required to separate these effects. Throughout the study the non-lagged (consistent time) and the lagged variables will be used, and the relationships compared throughout the results section.

Basic Statistics:

The basic statistics for the test variables are presented in Table 1 for the consistent time data set. Visibility has a mean of 4832 (number of articles published per year

per firm) and a standard deviation of 9112. This is high but understandable given the diversity of the firms being studied which span dentistry firms to Apple Inc. It is also important to note that there is a large difference in the magnitude of the visibility metric and the CSR rating. To avoid small coefficients in the regression analysis, a standardized variable will be used (Z-score).

The correlations between all test variables are reported below in Table 2 for the consistent time data set. It can be seen here that visibility has high positive correlation with the CSR rating metric. This is promising as it is consistent with the hypothesis that more visibility should create incentives for a firm to engage in social initiatives. This result is also in line with results in the current literature (Schreck & Raithel, 2018; Campbell & Slack, 2006). There is also a significant (p-value <0.0001) positive correlation between visibility and firm size of 0.29959. This is expected as larger firms should have more visibility and access to media, this relationship will be discussed further in the next section. We also see very strong (p-value <0.0001) correlations between visibility and Cash (0.26134) and Profit (0.27865), both measures of a firm's financial viability. This is reasonable given that firms which are financially secure should be more willing to spend on "non-essential" items such as CSR. Interestingly, there is a negative correlation between ROA and Visibility, which, given that visibility is positively related with CSR, contradicts McGuire et al. (1988) who found a positive relationship between ROA and CSR. This relationship implies that firms who are more visibile are also less efficient. A negative, but non-significant relationship was found between visibility and the firm debt ratio which implies that more leveraged firms are less visable.

There was a negative correlation reported between CSR and firm size. This is inconsistent with the literature up to this point which has supported strong positive correlations between size and

CSR (Useem, 1988). However, this result was insignificant and therefore, shouldn't be taken at face value. Positive significant correlations were reported between CSR and ROA at the 1% level of confidence. This finding is consistent with McGuire et al. (1988), but is inconsistent with the negative significant relationship observed between visibility and ROA as previously mentioned. There is a negitive significant correlation between CSR and the debt ratio at the 5% level of confidence. This implies that firms which participate in more CSR initatives are more likely to be less leveraged. This is expected as firms which are highly leveraged should find it more difficult to participate in "non-essential" spending (CSR) and is consistent with McGuire et al. (1988). There is a non-significant negative relationship observed between profit and CSR. This relationship could be presumed to be consistent with the school of thought that believes CSR's only impact to a firm's profitability is an increase in costs (Bragdon & Marlin, 1972). However, given that this relationship is non-significant, conclusions cannot be draw

There are strong correlations seen between visibility and CEO bonuses and CSR clauses in CEO contracts. These relationships imply that more visible firms are more likely to provide bonuses and contractually enforce socially responsible behaviour from CEOs. Unexpected results are seen in the correlations between CSR and CEO characteristics. We would expect to see a positive relationship between CSR contracts and CSR (Ikram et al., 2017), however we see a negative relationship that is significant at the 1% level. This implies that CSR contract clauses are hurtful to CSR initiatives. Gender of the CEO was originally a target for study, however, the data set only included a handful of female CEOs so the variable was removed.

Table 1: Basic Statistics

Variable	N	Mean	Standard Deviation	Minimum	Maximum
CSR rating	611	0.30115	2.70415	-8	8
Visibility	611	4832	9112	0	58839
Size	611	8.95288	1.42058	4.69428	13.26255
Cash	598	1171	2986	0	35283
Gross Profit	596	3454	5410	-3906	42386
Firm Debt Ratio	457	0.19791	0.16917	0	1.32584
ROA	558	0.07011	0.08569	-0.8526	0.34437
Tenure	608	6.21875	7.30732	-12	38
BONUS	611	1165	2350	0	43512
CSR Contract	546	0.24359	0.42964	0	1

Table 2: Correlation Table for all Test Factors

	CSR rating	Visibility	Firm Size (log Total Assets)	Cash	Gross Profit (Loss)	Firm Debt Ratio	ROA	CEO Tenure	Bonus
Firm Specific Factors:									
Visibility	0.20837***								
Firm Size (log Total Assets)	-0.03777	0.29959***							
Cash	0.12117**	0.26314***	0.48711***						
Gross Profit (Loss)	0.01830	0.27865***	0.62043***	0.76107***					
Firm Debt Ratio	-0.09198*	-0.06280	0.19285***	0.17314**	0.21407***				
ROA	0.13134**	-0.09337*	-0.35150***	-0.14555**	-0.09931**	-0.35308***			
CEO Specific Factors:									
Tenure	0.03934	0.06798	-0.04521	-0.05704	0.00706	-0.07744	0.14585**		
Bonus	0.01333	0.31376***	0.20731***	0.10199**	0.20377***	-0.00441	-0.02156	0.05522	
CSR Contract	-0.12413**	0.13598**	0.27629***	0.30083***	0.33083***	0.05505	-0.12986**	0.00404	0.03969

***	Significant (p-value <0.0001)
**	Significant at the 1% level
*	Significant at the 5% level

Univariate Analysis

Table 3a: Univariate Regression Results with CSR rating as the dependent variable

Independent variable:	Coefficient	Intercept	F Statistic	R squared	Adjusted R squared
Firm specific factors:					
Visibility	0.56344*** (0.10717)	0.30115** (0.10708)	27.64 (<0.0001)	0.0434	0.0418
Firm Size (log Total Assets)	-0.07190 (0.07708)	0.94487 (0.69872)	0.87 (0.3513)	0.0014	-0.0002
Cash	1.1000E-4** (3.6870E-6)	0.18741 (0.11817)	8.88 (0.0030)	0.0147	0.013
Gross Profit (Loss)	9.1700E-6 (2.0570E-5)	0.23845 (0.13194)	0.20 (0.6558)	0.0003	-0.0013
Firm Debt Ratio	-1.46510 (0.74360)	0.68383 (0.19351)	3.88 (0.0494)	0.0085	0.0063
ROA	4.21157 (1.34810)	-0.09633 (0.14917)	9.76 (0.0019)	0.0173	0.0155
CEO specific factors:					
Tenure	0.01459 (0.01506)	0.21024 (0.14441)	0.94 (0.3329)	0.0015	-0.0001
Bonus ($)	1.5340E-5 (4.6620E-5)	0.28328* (0.12220)	0.11 (0.7423)	0.0002	-0.0015
CSR Contract	-0.80260** (0.27507)	0.55448*** (0.13576)	8.51 (0.0037)	0.0154	0.0136

*** Significant (p-value <0.0001)

** Significant at the 1% level

* Significant at the 5% level

Note: Univariate regressions are given above for CSR rating with the independent test variables over the time period of 1995-2008. The z score for visibility is used here. Standard errors are given in brackets with coefficients and intercepts. Pr > F is given in brackets with F stat.

Table 3b: Univariate regression results with lagged CSR rating as the dependent variable

Independent variable:	Coefficient	Intercept	F	R squared	Adjusted R squared
Firm specific factors					
Visibility	0.54651*** (0.10395)	0.31365** (0.10387)	27.64 (<0.0001)	0.0403	0.0389
Firm Size (log Total Assets)	-0.05061 (0.07332)	0.76389 (0.66079)	0.48 (0.4902)	0.0007	-0.0008
Cash	1.2151E-4** (3.6920E-5)	0.20030 (0.11404)	10.83 (0.0011)	0.0166	0.0151
Gross Profit (Loss)	1.6610E-5 (0.4012)	0.22982 (0.12702)	0.71 (0.4012)	0.0011	-0.0005
Firm Debt Ratio	-1.27517 (0.71337)	0.65615** (0.18515)	3.20 (0.0745)	0.0064	0.0044
ROA	3.52720** (1.26156)	-0.03851 (0.14319)	7.82 (0.0053)	0.0128	0.0112
CEO specific factors					
Tenure	0.02007 (0.01406)	0.18745 (0.13996)	2.04 (0.1539)	0.0031	0.0016
Bonus ($)	2.5830E-5 (4.6420E-4)	0.28415* (0.11851)	0.31 (0.5781)	0.0005	-0.001
CSR Contract	-0.59764* (0.26509)	0.52018*** (0.13027)	5.08 (0.0245)	0.0086	0.0069

*** Significant (p value <0.0001)

** Significant at the 1% level

* Significant at the 5% level

Standard errors are given in brackets with coefficients and intercepts

Pr > F is given in brackets with F stat.

The univariate analysis for CSR and lagged CSR shown in tables 3a and 3b respectively show that the only predictor of CSR that is significant at all levels is visibility. The coefficients on visibility are 0.56344 and 0.54651 for present and lagged CSR respectively. This roughly corresponds to a positive unit of CSR for every 18,000 articles published annually. Visibility also presents with very significant F statistics indicating that it may be able to explain a large portion of the variation in CSR. This is confirmed by the high relative R - Squared value (0.0434). However, even if the R – Squared is relatively high it should be a point of concern that all the R – squared values in the study are so low (between 0.0002 and 0.0434 for present CSR and 0.0005 and 0.0403 for lagged CSR).

The univariate analysis of Cash and CSR has significant coefficients and F statistics at the 1% level for both the consistent time and lagged data sets (tables 3a and 3b). In the first, Cash has a coefficient of 1.1000E-4 which corresponds to approximately 1 unit of CSR for every 10,000 units of cash (millions ($)) held by a firm in the fiscal year. A positive relationship is expected as it is consistent with the theory that positive cash means a more financially stable firm. If a firm is more financially secure, they should be more likely to take on "non-essential spending". However, given that the amount of cash needed to add one unit of CSR is relatively large compared to the factor's sample mean – 1,171 units, or ~10% of required amount for 1 unit of CSR – this measure cannot be considered economically significant, even if it is statistically significant. The coefficient for cash in the lagged CSR dataset is not significantly different from the non-lagged (1.2151E-4) so even though we see an increase in the F statistic from 8.8 to 10.3 we still must draw the same conclusion of economic insignificance.

The ROA results for the univariate analysis of the lagged CSR data (table 3b) set are found to be positive and significant at the 1% level with a coefficient of 3.5272 (0.035272 CSR units for every 1% of ROA). This finding is consistent with those of McGuire et al. (1988): the magnitude of coefficients cannot be compared as the two studies use different CSR metrics. ROA is the measure of income a firm earns in relation to it's overall resources. In this way it can be considered a measure of efficiency. Therefore, this result indicates that more efficient firms – those that generate more income per unit of asset – are more socially responsible. This is expected because more efficient firms tend to be more profitable which allows for more spending on CSR initiatives. The ROA coefficient in the consistent time dataset (table 3b) is of the same sign and is only slightly larger in magnitude, however, it is insignificant at the 5% level. The

same interpretation can therefore be applied. Given that the mean ROA in this sample is ~7%, this result can also be considered economically significant.

The CSR contract coefficient is found to be significant and negative in both the non-lagged and lagged datasets (tables 3a and 3b respectively). Coefficients are given as -0.80260 (1% level of confidence) and -0.59764 (5% level of confidence). This implies that some of the variance in CSR can be explained by the presence of CSR clauses in CEO contracts. However, the R-squared for both regressions is small - 0.0154 for consistent time and 0.0086 for lagged CSR – so the amount of variance explained is small. Theoretically the negative relationship between CSR contracts and CSR involvement doesn't make sense as it implies that CSR contracts in the current or previous term diminish a firm's CSR involvement in the current period. This finding is inconsistent with results found by (Ikram et al., 2017) but is consistent with correaltions results.

All other insignificant variables have coefficients that are consistent with their correlations with CSR. Descriptions of the theory and implications of these results can be found in the Basic Statistics section of this paper.

It is evident that there is minimal difference between the non-lagged and the lagged data sets. This implies minimal endogeneity issues associated with simultaneous occurrence of CSR and other factor variables. It could also indicate that there is minimal timeseries effects on CSR rating: CSR rating is consistent over time for a given firm, or minimal year-to-year changes are observed and therefore a lag of 1 year is not effectual. Future studies should investigate if further time horizons impact the results.

The results presented thus far are consistent with hypothesis (1): visibility increases the firm's exposure to implicit claims made by the media and the public and therefore will lead to higher

CSR. This is shown by the significant positive visibility coefficient in the univariate regression with CSR. These results are also consistent with hypothesis (2): visibility is therefore, a better – more consistent and powerful - predictor of CSR initiatives then other factors previously studied. This is shown by the high significance and size of the visibility coefficient and relatively high R-squared value. Visibility has the highest R-squared and therefore explains the most amount of the variance in CSR when compared to the other regressors in a univariate analysis.

Multivariate Regression Results and Discussion
GLM regressions were run on the firm and CEO models with the addition of visibility. The models used in the multivariate analysis are given below.

Firm Factors Model:

$$CSR\ rating_t = \beta_1 visibility_t + \beta_2 size_t + \beta_2 Cash_t + \beta_3 Profit_t + \beta_4 Debt\ Ratio_t + \beta_5 ROA_t \qquad (1.1)$$

$$CSR\ rating_t = \beta_1 visibility_{t+1} + \beta_2 size_{t+1} + \beta_2 Cash_{t+1} + \beta_3 Profit_{t+1} + \beta_4 Debt\ Ratio_{t+1}$$
$$+ \beta_5 ROA_{t+1} \qquad (1.2)$$

CEO Factors Model:

$$CSR\ rating_t = \beta_1 visibility_t + \beta_2 tenure_t + \beta_2 Bonus_t + \beta_3 Contract_t \qquad (2.1)$$

$$CSR\ rating_t = \beta_1 visibility_{t+1} + \beta_2 tenure_{t+1} + \beta_2 Bonus_{t+1} + \beta_3 Contract_{t+1} \qquad (2.2)$$

Contributions to visibility:

$$visibility_t = \beta_0 + \beta_1 CSR\ Rating_t + \beta_2 size_t \qquad (3.1)$$

$$visibility_{t+1} = \beta_0 + \beta_1 CSR\ Rating_t + \beta_2 size_{t+1} \qquad (3.2)$$

Table 4a: Firm Factor Model Regression

Variable	Beta	t - statistic
Visibility	1.6728*** (0.40550)	4.13
Size	-0.23055 (0.23098)	-1.00
Cash	3.1595E-4*** (4.7660)	6.63
Profit	-1.5884E-5 (4.5700E-5)	-0.35
Firm Debt Ratio	-1.1977 (0.99537)	-1.2
ROA	2.2463* (0.99918)	2.25
R-Squared	**0.78997**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 5% level
Note: GLM procedure was used for linear regression over the period of 2000-2008, 432 observations were used. Standard errors given in brackets. Model given by equation 1.1. Firm effects controlled for.

Table 4b: Firm Factor Model Regression (lagged CSR variable)

Independent Variable	Beta	t - statistic
Visibility	1.2040*** (0.29800)	4.04
Size	0.14125 (0.20024)	0.71
Cash	2.6779E-4*** (4.4760E-5)	5.98
Profit	-7.8261E-5 (4.632E-5)	-1.69
Firm Debt Ratio	-0.48010 (0.97438)	-0.49
ROA	2.2793* (0.93470)	2.44
R-Squared	**0.775970**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 5% level
Note: GLM procedure was used for linear regression over the period of 1999-2008, 471 observations were used. Standard errors given in brackets. Model given by equation 1.2. Firm effects controlled for.

Table 4c: CEO Factor Model Regression

Independent Variable	Beta	t - statistic
Visibility	0.88179*** (0.32033)	2.75
Tenure	-1.8773E-3 (0.01176)	-0.16
Bonus	-4.9093E-5 (3.2350E-5)	-1.52
Contract	0.32929 (0.28545)	1.15
R-Squared	**0.74539**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 1% level
Note: GLM procedure was used for linear regression over the period of 1995-2008, 544 observations were used. Standard errors given in brackets. Model given by equation 2.1. Firm effects controlled for.

Table 4d: CEO Factor Model Regression (lagged CSR variable)

Independent Variable	Beta	t statistic
Visibility	0.26101 (0.25579)	0.308
Tenure	0.00375 (0.01121)	0.33
Bonus	-4.5794E-5 (3.2090E-5)	-1.43
Contract	0.59848* (0.27974)	2.14
R-Squared	**0.74539**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 1% level
Note: GLM procedure was used for linear regression over the period of 1995-2008, 544 observations were used. Standard errors given in brackets. Model given by equation 2.2. Firm effects controlled for.

Table 5a: Linear Regression: Visibility as the dependent variable		
Independent Variable	**Beta**	**t-statistic**
CSR Rating	0.01802** (0.00610)	2.95
Size	0.04967* (0.02053)	2.42
R-Squared	**0.96151**	

***Significant (p-value <0.0001)

**Significant at the 1% level

*Significant at the 5% level

Note: GLM procedure was used for linear regression over the period of 1995-2008, 611 observations were used. Standard errors given in brackets. Model given by equation 3.1. Firm effects controlled for.

Table 5b: Regression (Visibility as the dependent variable) and lagged CSR)		
Independent Variable	**Beta**	**t-statistic**
CSR Rating	0.00946 (0.00702)	1.35
Size	0.06712** (0.02207)	3.04
R-Squared	**0.94234**	

***Significant (p-value <0.0001)

**Significant at the 1% level

*Significant at the 5% level

Note: GLM procedure was used for linear regression over the period of 1994-2008, 660 observations were used. Standard errors are given in brackets. Model given by equation 3.2. Firm effects controlled for.

Tables 4a and 4b report the results from the firm models in consistent (equation 1.1) and lagged time (equation 1.2) respectively. The visibility metric is found to be significant and positive at all levels of significance (p-value < 0.0001) in the GLM multivariate regressions for CSR rating in both consistent and lagged time. The coefficients for visibility in the consistent time and lagged time are 1.6728 (t-statistic: 4.13) and 1.2040 (t-statistic 4.04) respectively. This is consistent with hypothesis (1) and the findings in the literature (Campbell & Slack, 2006; Schreck & Raithel, 2018) in that it shows a positive relationship between CSR and visibility. As visibility is standardized here, a one unit increase in visibility means an increase of approximately 9,000 articles – one standard deviation – published annually and either a 1.6728 or 1.2040 increase in a firm's CSR rating. This indicates that the coefficients on visibility are not only statistically significant but also economically significant as many firms meet or exceed this amount of tracked publications. It is also interesting to note that the effect is diminished when CSR is lagged to control for endogeneity, as seen by the decline in the coefficient and the t-statistic. This is consistent with the theory that an increase in CSR could warrant media coverage and therefore increase visibility in the same year (variables are determined simultaneously in the model). By utilizing a lagged variable we can control for this effect. However, we do not yet know if this is a causal relationship with visibility as the initiator, this is explored in tables 5a and 5b.

Tables 5a and 5b show the results from a linear regression as given by the models in equations 3.1 and 3.2 respectively where visibility is the dependent variable and the independent variables are CSR rating and size. These variables were chosen to determine (1) if the relationship between CSR and visibility goes both ways, i.e. the direction of the interaction and (2) if size is a significant contributor to visibility as hypothesized by Useem (1988). Table 5a reports significant relationship between visibility and both CSR rating (1% level of confidence) and size (5% level of confidence), coefficients are 0.01802 and 0.04967 respectively. Table 5b reports a positive significant relationship between visibility and size at the 1% level and an insignificant and positive relationship between visibility and CSR rating. The coefficients are 0.06712 (t-statistic 3.04) and 0.00946 (t-statistic 1.35) respectively. First, these results indicate that the direction of the relationship between CSR rating and visibility may be in favour of hypothesis (1): visibility effects CSR. The model in equation 1.1 and the coefficient reported in table 4a indicate that a unit of CSR is added for approximately every 5,380 articles published. The model in equation 3.3 and presented in table 5a indicate that ~162 articles are added for every unit of CSR. Therefore, given that both these models are in consistent time we can infer that because 162 articles are significantly smaller then the mean visibility, visibility should cause CSR. This is because even if CSR were to cause visibility, it does not do so on a large enough scale. This is further seen by the even smaller and less significant coefficient that is presented in 5b. We can infer that because 5b uses lagged CSR data the CSR to visibility effect is eliminated – because this response should be more immediate – and this could be the reason the relationship losses magnitude and significance. Secondly, we can see that from table 5a and 5b that visibility and size are positively related. The model given by equation 3.1 and reported in table 5.1 gives a coefficient on size of 0.04967 significant at the 5% level of confidence (t-statistic of 2.42). The model given by equation 3.2 and reported in table 5b gives a coefficient on size of 0.06712 significant at the 1% level of confidence (t-statistic of 3.04). These results indicate that size is indeed linked to visibility and is therefore consistent with the findings in Useem (1988). This could indicate that size is the factor that truly influences CSR (Udayasankar, 2008) by working through visibility as larger firms are inherently more visible. However, the results presented in tables 4a and 4b – firm factor models for

consistent and lagged time – show non-significant negative and positive relationships between size and CSR and therefore provide some evidence against this theory. If size was the true indicator of visibility we would expect to see that size has positive significant coefficients in the firm factor models, which we do not see here: relationship between CSR and firm size is inconclusive. Therefore, we can say with some degree of confidence that the results presented are consistent with hypothesis (1): visibility effects the CSR involvement of a firm through a causal relationship.

As discussed, visibility has a strong relationship with CSR that may even be causal, but does it do a better job then the other predictors commonly explored in the literature? We can see that in the firm model for both consistent and lagged time (tables 4a and 4b) the only other significant regressors are Cash and ROA. Cash has coefficients for consistent and lagged time of 3.1595E-4 (t-statistic 6.63) and 2.6779E-4 (t-statistic 5.98) respectively, both of which are significant at all levels of confidence. This implies, as was previously discussed in the correlation and univariate analysis sections, that Cash is positively related with CSR. This relationship most likely exists because Cash can be an indicator of financial efficiency which allows for spending on "non-essential" items like CSR. However, as previously discussed, the economic significance of this regressor and coefficient is questionable given the amount of cash units (measured in millions ($)) needed to effect CSR change is quite large. ROA also shows significance in both the consistent and lagged time regressions: coefficients of 2.2463 significant at the 5% level (t-statistic of 2.25) and 2.2793 significant at the 5% level (t-statistic of 2.44) respectively. These results indicate that for every 1% increase in ROA there is approximately a 0.0226 increase in CSR in either the current period or the next. As discussed previously, in the univariate analysis section, given that the mean ROA for this sample is ~7% this result is economically significant, but barely; 7% increase means ~0.16 additional units of CSR. All other factors in the firm models for consistent and inconsistent time are insignificant and have directions that correspond with their correlations in table 2. The CEO models given by equations 2.1 and 2.2 and reported in tables 4c and 4d for consistent and lagged time respectively only show significant results for visibility in consistent time and CSR contract in lagged time. The coefficients

are given as 0.88179 significant at all levels (t-statistic of 2.75) and 0.59848 significant at the 5% level (t-statistic of 2.14) respectively. A positive relationship between CSR contracts and lagged CSR makes sense and is consistent with the findings in the literature (Ikram et al., 2017): as executives become contractually obligated to meet CSR requirements, the CSR rating of the firm should increase in the next period (year). This finding contradicts the correlation result reported in table 2. A positive significant relationship between visibility and CSR rating is consistent with hypothesis (1) and findings of (Campbell & Slack, 2006; Schreck & Raithel, 2018).

The findings discussed here offer support to hypothesis (2): visibility is a better - more consistent and powerful – regressor then other firm or CEO factors studied in the literature. ROA shows both economic and statistical significance, but as discussed, it still lacks the economic power that visibility offers. The variable for CSR contracts offers a large amount of power when using lagged CSR; a CSR contract means an increase in CSR rating of 0.59848. However, as this result is inconsistent with the correlation study and the univariate analysis, further research is required before conclusions can be drawn. Visibility is consistent and significant in all studies except CEO factor model in lagged time. Therefore, of all variables studied it offers the most consistency and strength.

A visibility interaction term (High_vis) is used to test hypothesis (3): visibility may impact the strength of firm or CEO variables. The interaction term was created by sorting data points into quartiles based on their visibility metric, only the top and bottom quartiles were kept. High_vis is a dummy variable equal to 1 for those data points in the highest visibility quartile and 0 to those in the lowest. A t-test was run to determine if CSR rating differed significantly between the groups: significant differences were found with a p-value < 0.0001. Firm effects and CEO effects models were then run with CSR rating in consistent and lagged time as the independent variable; models are similar to those in equations 1 and 2 but each factor also has a visibility interaction term. The models for CEO effects were found to be very insignificant with small coefficients so results are not reported here. Firm models are reported in tables 6a and 6b.

Table 6a: Linear regression on firm factors with high visibility interaction terms

Independent	Beta	t-statistic
Size	-1.3725*	-2.27
	(0.60335)	
Size*High_vis	2.2960**	2.91
	(0.78975)	
Cash	-2.8606E-4	-0.88
	(3.2657E-4)	
Cash*High_vis	5.5356E-4	1.68
	(3.1653E-4)	
Profit	2.9748E-4	0.96
	(3.1100)	
Profit*High_vis	-3.3904E-4	-1.07
	(3.1653)	
Debt Ratio	-1.6438	-0.62
	(2.6432)	
Debt Ratio* High_vis	-5.9916	-1.69
	(2.6432)	
ROA	1.5810	0.93
	(1.6983)	
ROA*High_vis	-3.7279	-1.07
	(3.4714)	
R-squared	**0.75253**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 5% level
Note: GLM procedure was used for linear regression over the period of 1999-2008, 224 observations were used. Standard errors are given in brackets. Firm effects are controlled for. High vis is an interaction term equal to 1 if the data is in the top quantile of visibility and 0 if it's in the bottom.

Table 6b: Linear regression on firm factors with high visibility interaction terms and lagged CSR rating

Independent	Beta	t-statistic
Size	-1.0836*	-2.05
	(0.52980)	
Size*High_vis	2.2687**	3.32
	(0.68324)	
Cash	2.9301E-4	0.09
	(3.2580)	
Cash*High_vis	-6.7563E-5	-0.21
	(3.2929E-4)	
Profit	2.5396E-4	0.84
	(3.0125E-4)	
Profit*High_vis	-3.5146E-4	-1.14
	(3.0747E-4)	
Debt Ratio	-0.84197	-0.32
	(2.6352)	
Debt Ratio* High_vis	-7.1662*	-1.98
	(3.6274)	
ROA	1.6012	0.92
	(1.7450)	
ROA*High_vis	-0.08334	-0.03
	(2.6708)	
R-squared	**0.69925**	

***Significant (p-value <0.0001)
**Significant at the 1% level
*Significant at the 5% level
Note: GLM procedure was used for linear regression over the period of 1994 - 2008, 283 observations were used. Standard errors are given in brackets. Firm effects are controlled for. High vis is an interaction term equal to 1 if the data is in the top quantile of visibility and 0 if it's in the bottom.

Size is significant negative in both tables 6a and 6b. This is consistent with univariate and multivariate regressions conducted in this study. What is interesting to note is that the size and visibility interaction term has a coefficient that is positive significant. Coefficients for the size and visibility interaction term are 2.2960 significant at the 1% level and 2.2687 significant at the 1% level for consistent and lagged time respectively and are greater then their size coefficients. This can be interpreted as size having a negative effect for low visibility firms but being a positive factor for high visibility firms. In other words, when the firm is not visible to the public the size negatively impacts CSR – larger invisible firms are less socially responsible – but when a firm is visible then size positively effects CSR – larger, visible firms are more socially responsible. This is seen by the fact that the coefficient on the interaction term is larger then that on size alone, so the weight given to size when a firm is visible will be the sum of the two terms,

which will be positive. Therefore, when the firm is visible, the relationship between CSR and size is consistent with the finds of Useem (1988). It is evident that visibility changes the way size effects CSR, this is consistent with hypothesis (3).

The remaining results are statistically insignificant but still interesting to look at. We can see that both profit and ROA show positive coefficients for the factor alone and negative interaction coefficients that are larger in absolute magnitude. For profit this trend is consistent in both time models. This relationship between the two terms implies that for low visibility firms, profit is positively related to CSR. This makes intuitive sense as firms with more profits should be able to spend on "non-essential" items such as CSR as previously discussed. However, for visible firms, this effect is outweighed, and profit becomes negatively related with CSR; this is consistent with the school of thought that looks to minimize costs by reducing CSR (Abbott and Monsen, 1979). We see that in the current period (consistent time) ROA is positively associated with CSR for low visibility firms and negatively associated with CSR for high visibility firms. However, looking to table 6b we can see that ROA in the current period is positively related with CSR in the next period, independent of visibility. It is only the magnitude of the relationship that is diminished with higher visibility. It can be seen form the firm debt ratio that high visibility only works to magnify the negative relationship between the debt ratio and CSR. All these results indicate that visibility can impact the effect of firm factor variables, but given the statistical insignificance of the results we should be wary of drawing support for hypothesis (3) beyond it's effects on the size factor.

Conclusion

In conclusion, the study conducted here has been able to provide support for all three postulates of the hypothesis. Hypothesis (1) proposes that visibility increases the firm's exposure to implicit claims made by the media and the public and therefore, will lead to higher CSR. In support of hypothesis (1) this study has shown highly significant positive relationships between visibility and CSR demonstrated in correlations, univariate and multivariate analysis. The coefficients in the univariate and multivariate analysis were found to not only be statistically significant, but economically as well. The significant,

positive results were consistent throughout the study and with findings in the literature (Campbell & Slack, 2006; Schreck & Raithel, 2018). The study is also able to establish evidence of causality and direction consistent with the hypothesis (1). It was shown that the relative economic significance of visibility produced due to CSR is quite small and insignificant, compared to CSR that is caused by visibility (results in tables 4b and 5b). These results still hold when endogeneity is controlled for using lagged CSR rating (tables 4b and 5b). Multiple linear regression models were run using firm and CEO factors studied in previous literature. It could be seen that of all factors considered, visibility was the strongest and most consistent predictor of a firm's CSR rating (results in tables 4a,b). These results are consistent with hypothesis (2). Next, the effects of the visibility interaction term – created to segregate the highest and lowest quantiles of visibility measures – were reported (tables 6a,b) and found to significantly impact the effect of size on CSR. Size is found to negatively impact CSR when the firm is a part of the low quantile for visibility, but positively effect CSR when a part of the highest quantile for visibility. All other interaction terms were found to be insignificant. These findings provide some evidence that visibility can work through other factors to change the relationship between the factor and CSR; hypothesis (3). Therefore, this study has shown that visibility is a significant factor that must be considered when discussing a firm's level of corporate social responsibility involvement. There have also been contributions to the literature: a new method of measuring visibility has been proposed and tested, evidence for causation in the visibility CSR relationship and evidence that visibility can impact the other factors has been presented, something which has not been studied at great length.

Limitations of the Study and Next Steps

There are a few limitations of this study that are associated with the visibility metric. For one, it is unclear as to whether the Summons Database was subject to survivorship bias. This means that the number of articles would be bias in that it only included the ones that were recorded on the Summons Database, not all articles that were ever published. This could have biased the visibility metric downward. However, given that all data points were pulled from the same source, the bias should effect all firms equally. This

still needs more research to determine the possible effect. Secondly, when searching for articles published the "formal" CRSP company name was used, not the common (for example: Amazon.com inc not just Amazon). This again, may have biased the visibility metrics downward. In this case we might assume that this would have a larger effect on companies who are more visible as they are more likely to have a common name in the media. Further work should be done to mitigate this issue in the dataset. Lastly, the size of the dataset is quite small, further work could be done to expand it to improve statistical significance.

In future studies it would be interesting to investigate a combined visibility metric that looked at a variety of visibility factors. Factors to be considered include social media presence, google search hits (google trends), product and name recognition. By looking at these factors as well as print media presence, a more complete measurement of visibility in the modern age could be achieved to allow for more meaningful studies into the impact of visibility on CSR.

References

Abbott, W. F., & Monsen, J. (1979, September). On the Measurement of Corporate Social Responsibility: Self-Reported Disclosures as a Method of Measuring Corporate Social Involvement. *The Academy of Management Journal, 22*(3), 501-515.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985, June). An Empirical Examination of the Relationship between Corporate Social Responsibility and Profitability. *The Academy of Management Journal, 28*(2), 446-463.

Campbell, D., & Slack, R. (2006, January). Public Visibility as a Determinant of Corporate Charitable Donations. *Business Ethics: A European Review, 15*(1), 19-29.

Campbell, J. L. (2007, July). Why Would Corporations Behave in Socially Responsible Ways? An Institutional Theory of Corporate Social Responsibility. *The Academy of Management Review, 32*(3), 946-967.

Clarkson, M. B. (1995). A Stakeholder Framework for analyzing and Evaluating Corporate Social Performance. *Academy of Management Review, 20*(1), 92-117.

Cornell, B., & Shapiro, A. (1987). Corporate Stakeholders and Corporate Finance. *Financial Management, 16*(1), 5-14.

Erfle, S., & McMillan, H. (1990, Febuary). Media, Political Pressure, and the Firm: The Case of Petroleum Pricing in the Late 1970s. *The Quarterly Journal of Economics, 105*(1), 115-134.

Ikram, A., Li, Z. (., & Minor, D. (2017, July 20). *CSR-Contingent Executive Compensation Contracts.* Retrieved April 20, 2018, from SSRN: https://ssrn.com/abstract=3019985

International Institute for Sustainable Development (IISD). (2013). *IISD's Business and Sustainable Developement: A Global Guide*. Retrieved from Corporate Social Responsibility Monitor: https://www.iisd.org/business/issues/sr_csrm.aspx

Joseph H. Bragdon, J., & Marlin, J. A. (1972, April). Is Pollution Profitable? Environmental Virtue and Reward: Must Stiffer Pollution Controls Hurt Profits? *Risk Management*, 9-18.

Manner, M. H. (2010). The Impact of CEO Characteristics on Corporate Social Performance. *Hournal of Business Ethics, 93*, 53-72.

McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate Social Responsiblity and Firm Financial Performance. *Academy of Management Journal, 31*(4), 854-872.

McGuire, J., Dow, S., & Argheyd, K. (2003, July). CEO Incentives and Corporate Social Performance. *Journal of Business Ethics, 45*(4), 341-359.

Schreck, P., & Raithel, S. (2018). Corporate Social Performance, Firm Size, and Organizational Visibility: Distinct and Joint Effects on Volentary Sustainability Reporting. *Business & Society, 57*(4), 742-778.

Udayasankar, K. (2008, December). Corporate SOcial Responsibility and Firm SIze. *Journal of Business Ethics, 83*(2), 167-175.

Useem, M. (1988). Market and Institutional Factors in Corporate Contribution. *California Management Review, 30*(2), 77-88.