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Corporate social responsibility, media attention and firm value: empirical research on Chinese manufacturing firms

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Abstract Alongside the ever-increasing development of the global economy, firms worldwide have gradually realized the importance of corporate social responsibility (CSR) in business practices. But there are hot debates on whether CSR pays off, and how does CSR contribute to firm value remains unclear. The direct test of the relationship between CSR and firm value seems to be imprecise and spurious since it may be influenced by many indirect factors. This study aims to demonstrate whether corporate social responsibility is positively or negatively associated with firm value, and to specify the mechanisms of the relationship from a media attention perspective. The manufacturing industry in China provides the background for this study. To test the proposed hypotheses, data was gathered for manufacturing firms listed on the Shanghai Stock Exchange from 2011 to 2013. Empirical results indicate that CSR performance is positively related to firm value, and that media attention has a mediating effect between CSR and firm value.

Keywords CSR performance · Firm value · Media attention · Manufacturing listed firms · China

1 Introduction

As economies boom and businesses expand across many countries worldwide, there is growing concern regarding the social and environmental impact of individual firms' business practices. Many firms tend to maximize their profitability without considering their social responsibilities, which can cause quite serious problems—wasting of resources,

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infringement of consumer rights, neglect of employee health or safety, or problematic environmental impact. According to Xinhua, the state news agency of China, the PM2.5 level had hit a record high in China. For example, the PM2.5 level was 1.4 mg/m^3 in north-eastern city of Shenyang in 2015, 56 times the level considered safe by the WHO (Xinhua Net 2015). As is known to all, PM2.5 is a major measure of pollutants in the air. The record-breaking level of PM2.5 in China mainly resulted from factory pollution, which indicated serious environmental problems within the manufacturing industry and a general lack of awareness in business managers. To this effect, corporate social responsibility (CSR) has become a major concern for government bodies as well as the general public. Undoubtedly, CSR has also became an inalienable part of successful business operation and management (Murphy and Schlegelmilch 2013). As Li and Foo (2016) suggested, CSR is emerging internationally as a management practice. As more and more Chinese firms (such as Alibaba and Xiaomi) get involved in the global community, top managers are becoming aware of their firms' socially responsible behaviors with the purpose to stand a better chance in the fierce competition.

Over the past decade, more and more firms worldwide have begun to issue regular CSR reports. Though China lags behind many countries in CSR awareness and information disclosure, the number of Chinese firms that issue CSR reports has increased over time (KPMG 2013). According to *RKS CSR Ratings*, an authoritative rating of corporate social responsibility in China, the number of Chinese listed firms that issued CSR reports in 2010, 2011, 2012 and 2013 were 482, 487, 582 and 645, respectively, which showed that awareness of Chinese firms to improve responsibility management is enhancing. The rise in the number of firms issuing CSR reports may be the result of the *Environmental Information Disclosure of Listed Companies Guide (exposure draft)*, issued by the Ministry of Environmental Protection of China in 2010, requiring listed firms to disclose environmental information (Li et al. 2016). Meanwhile, since 2006, Chinese governments and legislations have launched dozens of regulations and laws to encourage corporate social responsibility, and the publics are becoming more and more aware of firms' social behaviors, which forces firms to pay more attention on social issues and communicate with stakeholders through social reports and other channels.

Despite the considerable research attention CSR has received, a fundamental question remains unresolved: does CSR pay off? Several researchers have found a strong, positive relationship between CSR and firm value (Peloza 2006; Lee and Heo 2009; Ammann et al. 2011), but others indicate the negative (Aupperle et al. 1985; Barnea and Rubin 2010). The controversial relationship between CSR performance and firm value is partially attributed to methodological differences and model misspecification in these studies, but more importantly, to limited understanding of the exact mechanism through which CSR performance influences firm value (Servaes and Tamayo 2013; Saeidi et al. 2015).

This study focuses on Barnett's view (Barnett 2007), where the impact of CSR on firm value depends on the extent to which CSR influences the stakeholders of a firm. Typically, stakeholders favor (and are more likely to financially support) firms that show better CSR performance (Mahoney et al. 2013). However, stakeholders firstly must be aware of the CSR performance of certain firms—information typically disseminated by media. Generally, media attention not only decreases information asymmetry for stakeholders who lack direct interaction with firms, but also influences public opinion. To this effect, increased media attention regarding CSR performance allows stakeholders to make more sensible and informed decisions when dealing with certain firms, thereby affecting firm value.

This research makes several distinct contributions. First, to the ongoing debate regarding the value of CSR—the empirical results of this study support a positive relationship between CSR performance and firm value. Second, theoretical and empirical gaps are filled by considering the effect of media attention on the CSR/firm value relationship. Third, the proposed relationship is examined specifically as it applies to China. Previous studies in this area mainly focus on firms operating in Western developed markets and little is known about the relationship between CSR performance and firm value in transition economies. Since there are many differences between developed markets and transition economies (Han and Li 2015), this narrow focus limits theoretical completeness and is a significant gap in the literature. Thus, the study uses China as a testing ground, where social and environmental regulations may be lacking or poorly enforced.

The remainder of the paper is organized as follows. The next section summarizes relevant literature and develops the study's main hypotheses, followed by sections that outline the methodology, empirical results, and robustness testing process. The last section provides a discussion and conclusion.

2 Literature review and hypothesis development

2.1 CSR performance and firm value: the stakeholder theory perspective

There have been numerous efforts to establish a clear and unbiased definition of CSR (Dahlsrud 2008). One rather well-known definition was put forward by Carroll in 1979, which claimed that CSR is the aggregation of corporate obligations expected by the whole society (Carroll 1979). Subsequent researchers proposed relevant dimensions of CSR and examined them in various perspectives. Among these, the development of stakeholder theory is highly significant, as it was the impetus of modern corporate governance theory. It firstly decided the objectives of CSR initiatives and specified the content of CSR (Clarkson 1995; Harrison and Freeman 1999).

Freeman and Reed defined stakeholders as those related to the realization process of organizational goals, including corporate owners, investors, customers, employees, suppliers, environmentalists and the government (Freeman and Reed 1983). They noted that the primary goal of an organization is satisfying the conflicting demands of different stakeholders. Stakeholder theory is an important theoretical basis for research on corporate social responsibility. It goes beyond the traditional view of maximizing shareholder equity to provide a new platform for the analysis of CSR performance. This study centers around stakeholder theory in effort to analyze the impact of CSR performance on firm value.

Nowadays, firms have become increasingly aware of the reputational risks and opportunities linked to corporate social responsibility, since CSR performance is a key factor when stakeholder decide whether or not to input resources to the firms (Du et al. 2010). Consequently, CSR is a priority for those firms that align corporate activity with the expectations of their stakeholders (Qi et al. 2013). Vaiman et al. (2012) suggested that socially responsible activities of a firm are becoming increasingly important. Grimmer and Bingham (2013) found that consumers were more willing to buy products from firms that have higher CSR performance. Mohr and Webb (2005) pointed out consumers would even pay a premium price for the products and services of these firms. Becker-Olsen et al. (2006) found that consumers are more loyal and give more positive word-of-mouth to firms assumed greater social responsibility. Investors tend to grant investment opportunities on firms perceived as good citizens (Ioannou and Serafeim 2014), which are more stable and sustainable in development. Governments likewise offer more subsidies and policy support for good corporate citizens, and creditors (especially banks) are more likely to fund firms that have a higher level of financial stability (Babiak and Trendafilova 2011; Flammer 2014). Conversely, as Lyon and Maxwell (2011) suggested, if a firm fails to prioritize social responsibility, it is likely to become the target of regulators and environmentalists, thereby negatively impacting its image and brand value.

Despite all this, controversy regarding corporate social responsibility yet exists (Kang and Liu 2014). Though there is a wealth of research on the topic, conclusions are divided. Barnea and Rubin (2010), for example, claimed that CSR initiatives are a waste of valuable resources if they do not maximize firm value. Granted, the mainstream argument is that CSR performance influences firm value positively (Peloza 2006; Lee and Heo 2009; Ammann et al. 2011). Godfrey (2005) noted that CSR is a positive moral capital that creates economic value for firms in the long term. Schnietz and Epstein (2005) found that higher levels of CSR performance protect firms from stock declines when crises arise. The most effective conclusion to make here is that firms should take appropriate actions to satisfy stakeholders' social and moral expectations so as to gain their recognition and support, which are crucial for the long-term development of a firm. In this study, CSR performance is considered a powerful asset that plays a vital role in firm competitiveness and exerts a decisive influence on firm value.

Accordingly, the following hypothesis is proposed:

H1 CSR performance is positively related to firm value.

2.2 The mediating role of media attention

One of the primary issues concerning executives is finding methods that enhance stakeholder awareness and reduce stakeholder skepticism of CSR performance, which are critical prerequisites for firms to reap CSR's strategic benefits (Du et al. 2010). As Amaladoss and Manohar (2013) pointed out, firms might prioritize CSR but fail to successfully communicate with their stakeholders and thus fail to impact their business accordingly. It is therefore imperative for firms to find effective communication channels to spread information regarding CSR initiatives. Among available communication channels, media is highly valuable (Grafström and Windell 2011). However, the relationship between media attention, CSR performance and firm value is far from being reasonably resolved by current research and deserves further development.

Media attention refers to the awareness of a particular object by the media (Kiousis 2004). In this paper, the "object" is a firm. Media attention is typically quantified by the total number of stories concerning the object in newspapers, television, the Internet, and other forms of media. Along with the development of WEB 2.0, new digital tools of communication (e.g., Facebook, Twitter, Weibo and Wechat) have enabled and accelerated the knowledge-sharing process (Zyglidopoulos et al. 2012), and the use of the Internet and social media by stakeholders has made information about CSR activities increasingly transparent (Capriotti 2011). As indicated by a sizeable body of research (Siegel and Vitaliano 2007; Freeman 2010), media attention can not only decrease information asymmetry for investors, consumers and other corporate stakeholders who lack direct interaction with firms, but also influence public opinion. Thanks to in-depth reports on firms' behavior covered by the media, stakeholders are able to form more rational expectations and judgments of corporate activity (Du et al. 2010).

Generally, media tend to report news with more covering value and the news of CSR performance happen to fall into this category, and firms with better CSR performance receive more media attention (Ioannou and Serafeim 2014). Moreover, Yoon et al. (2006) showed that consumers react more positively to a firm's CSR initiatives when information is provided by an unbiased and independent source, such as public media. As a consequence, firms that assume social responsibilities often actively seek media cooperation and positive media coverage, which help to enhance a firm's CSR associations (Grafström and Windell 2011). In brief, firms with better CSR performance receive (and benefit from) more media attention.

In addition to information dissemination, the media plays a positive role in improving corporate governance as well as dredging and widening the appeals channel of minority shareholders (Dyck et al. 2008; Joe et al. 2009; Grafström and Windell 2011). As Craven and Marston (1997) noted, media attention surrounding CSR offers information to the capital market and enhances external supervision of firms' behavior. Fiss and Zajac (2006) found that firms that receive more media attention are under higher levels of scrutiny from stakeholders, and are more likely to become campaign targets (Ettenson and Klein 2005). Klapper and Love (2004) further suggested that media attention visualizes corporate behaviors and brings relevant problems into the public eye. As a result, media attention helps the supervisory departments to be aware of the misdeeds of firms, and urges them to effectively amend (or, hopefully, avoid altogether,) any illegal or unethical activity (Dyck et al. 2008; Joe et al. 2009). Therefore, media attention contributes positively to the value of a firm by enhancing corporate governance level (Klapper and Love 2004).

Media attention also helps shape the image of a firm and exerts large influence on many aspects of its performance, including management, stock prices, and access to financial support. When firms attract media attention for behaving responsibly, they are perceived to be "good citizens" and their enhanced image increases their investment value (Branco and Rodrigues 2008).

According to the above analysis, a second hypothesis is proposed as follows:

H2 The relationship between CSR performance and firm value is mediated by media attention.

3 Research methodology

3.1 Data collection and samples

The manufacturing industry in China provides the background for this study. It is based on two main reasons: first, manufacturing is one of the pillar industry in China, closely related to the national economy and the livelihoods of many individuals. Second, there are severe social problems in the manufacturing industry currently, including tax evasion, corruption, and severe health and safety concerns (Jia and Zhang 2014). For example, in March 2016, it was reported that more than $88 million worth of illegal vaccines was sold in dozens of provincial-level regions across China and prompted a wave of anger around the country. The authorities had pledged to crack it down and tighten grips on vaccine safety (Xinhua Net 2016).

To test the proposed hypotheses, data was gathered for manufacturing firms listed on the Shanghai Stock Exchange from 2011 to 2013. Firms excluded were (1) Firms with special treatment (ST) or preferential treatment (PT), as their finance status are abnormal, (2) those issuing B shares (subscribed, bought and sold in foreign currencies) or H shares (denominated in Hong Kong dollar), as their stock prices are vert difference from the common ones, and (3) those with missing data. The resultant sample consists of 304 firms with 912 observations. Table 1 is the industry composition of the sampled manufacturing firms. The distribution of the sample is based on the latest revision of *Industry Classification Guidance of Listed Companies* provided by the China Securities Regulatory Commission (CSRC) in 2013. It shows that 25 out of the 32 sub-industries published CSR reports, and the pharmaceutical manufacturing firms issued the most (with 38 samples).

This study collected data primarily from three sources: the CSMAR database, RESSET database and annual reports of the sampled firms on http://www.cninfo.com.cn, the designated information disclosure website of the CSRC.

3.2 Measurements of variables

3.2.1 Dependent variable: CSR performance

The metric for firm value is Tobin Q, which is defined as the market value of a firm divided by the replacement value of its assets. The advantage of using Tobin Q is that it is based on firm market value, and thus is less susceptible to accounting-based distortions (David et al.

Table 1 Industry composition of sampled firms

Industry	Firms	Percentage
Computer equipment manufacturing	3	0.99
Petroleum refining and coking	3	0.99
Rubber manufacturing	3	0.99
Household electronic appliances manufacturing	4	1.32
Biological products	4	1.32
Plastics products	4	1.32
Apparel and other finished products made from fabrics	5	1.64
Chemicals and allied products	5	1.64
Fabricated metal products	6	1.97
Food manufacturing	7	2.30
Paper and allied products	8	2.63
Machinery equipment	8	2.63
Beverage manufacturing	9	2.96
Ferrous metal smelting and rolling processing industry	10	3.29
Miscellaneous manufacturing industries	10	3.29
Food processing	11	3.62
Textile mill products	14	4.61
Electrical machinery and equipment manufacturing	15	4.93
Non-ferrous metal smelting and rolling processing industry	16	5.26
Non-metallic mineral products	17	5.59
Electronic components manufacturing	22	7.24
Special equipment manufacturing	22	7.24
Chemicals and allied products	30	9.87
Transportation equipment	30	9.87
Pharmaceutical manufacturing	38	12.5
Total	304	100

2010). Tobin Q is often used in the field of financial economics (Bergstresser and Philippon 2006) and management literature (Chung et al. 2005).

In accordance with the Chinese capital market (Bai et al. 2004), Tobin Q is calculated: [(market value of common stock + book value of long-term debt + book value of current liabilities)/book value of total assets]. Consistent with previous literature, the market value of a firm's common stock consists of both the value of free-floating stocks and the value of non-circulating stocks.

3.2.2 Independent variable: CSR Performance

Compared with developed countries, the computation of CSR peformance may not be as standardized or as comprehensive in China (Noronha et al. 2013). Currently, the indicator based measurement of CSR has played an important part in defining the level of CSR, but the choice of indicators and weights assigned to them is still controversial (Maricic and Kostic-Stankovic 2016). To avoid subjectivity, social contribution value per share (SCVPS), a quantified index introduced by the Shanghai Stock Exchange of China in *Notice on Strengthening Listed Companies' Assumption of Social Responsibility* in 2008, is served as the metric for CSR performance instead of random assessment. SCVPS allows the public to understand the value firms create for their main stakeholders (Shanghai Stock Exchange 2008). SCVPS is generally computed as the total social contribution of a firm divided by its total number of shares. After calculating earnings per share (EPS), SCVPS takes into account the taxes paid to the government, salaries paid to employees, loan interests paid to creditors (including banks), and donations to stakeholders, while deducting social costs that result from environmental pollution and other negative factors. Consequently, SCVPS is altogether comprised of corporate social responsibility toward shareholders, the government, employees, creditors, communities and society as a whole (Noronha et al. 2013). SCVPS is widely applied by Chinese firms on their CSR reporting (Marquis et al. 2011; Dong et al. 2014). Therefore, SCVPS is employed as the metric for CSR performance in the paper.

3.2.3 Mediating variable: media attention

When quantifying media attention (MA), researchers typically collect data on the number of news articles that mention sampled firms in locally influential newspapers (Reverte 2009). This study used the China Core Newspaper Database (CCND), which tracks more than 500 influential newspapers and wire services in China, to search for reports on the sample firms. To ensure normal distribution of data, the annual media attention of any specific firm was operationalized as the natural logarithm of one plus the number of annual news reports on the firm.

3.2.4 Control variables

Regression analyses utilized three variables to control the effects of the CSR-MA-FV link: size, top 5, and ownership. Firm size, the first variable, influences the risk level faced by a firm; large firms typically have higher profiles than their smaller counterparts and thus face more scrutiny from the media and stakeholders, and tend to take more socially responsible actions (Rindova et al. 2006; Lopez-Gamero et al. 2008). Similarly to previous literature, size was measured in this study as the natural logarithm of a firm's year-end total assets (Smith and Watts 1992).

Substantial research has demonstrated that ownership concentration influences firm value (De Miguel et al. 2004; Bai et al. 2004). Meanwhile, Mohd and Nazli (2007) found that ownership concentration was negatively associated with the extent of social activities. In order to control for this effect, top 5, the second variable, was introduced to the model. Top 5 is the estimated percentage of shares owned by a firm's top five most active shareholders.

This study also takes into account the effect of ownership type. State-owned firms in China bear some social functions and are under direct supervision and regulation of the government, so they tend to be more socially responsible (Jia and Zhang 2014). Consistent with previous studies (Dinç 2005), a dummy variable is introduced here: 1 for firms that are state-owned, and 0 otherwise. Definitions and operations of all variables are shown in Table 2.

3.3 Model

This section details econometric models for empirical tests of the proposed hypotheses, arguing that CSR performance enhances the value of firms and that media attention serves as a mediator for that relationship.

In order to test the hypotheses, we follow the suggestion of Baron and Kenny (1986), who made clear that the independent variable must affect the mediator and the dependent variable respectively in the first place, and then both the mediator and the independent variable must have an impact on the dependent variable. As a consequence, the econometric models employed to test the hypotheses are shown below (Eqs. 1–3). To verify the hypothetical relationships of variables, the coefficients β_{11}, β_{21}, β_{31}, and β_{32} should be significantly positive (Baron and Kenny 1986).

$$\mathrm{MA} = \alpha_1 + \beta_{11}\mathrm{SCVPS} + \beta_{12}\mathrm{Size} + \beta_{13}\mathrm{Top5} + \beta_{14}\mathrm{Ownership} + \varepsilon_1 \tag{1}$$

$$\mathrm{Tobin\ Q} = \alpha_2 + \beta_{21}\mathrm{SCVPS} + \beta_{22}\mathrm{Size} + \beta_{23}\mathrm{Top5} + \beta_{24}\mathrm{Ownership} + \varepsilon_2 \tag{2}$$

$$\mathrm{Tobin\ Q} = \alpha_3 + \beta_{31}\mathrm{SCVPS} + \beta_{32}\mathrm{Size} + \beta_{33}\mathrm{Top5} + \beta_{34}\mathrm{Ownership} + \varepsilon_3 \tag{3}$$

Table 2 Definition and operation of variables

Variables	Symbols	Computing method
CSR Performance	SCVPS	(Net profit + income tax expense + business tax and surcharges + cash spent on employees + current payroll payable − previous payroll payable + financial costs + donations − discharge fees on pollution and cleanup)/number of shares
Firm Value	Tobin Q	(Firm share price × the number of common stocks outstanding + net asset per share × the number of non-circulating stocks + book value of long-term debt + book value of current liabilities)/book value of total assets
Media Attention	MA	The natural logarithm of (1 + the number of annual news reports covering sampled firms)
Control Variables	Size	The natural logarithm of a firm's year-end total assets
	Top5	The percentage of shares owned by a firm's top five shareholders
	Ownership	The dummy variable, i.e.,1 for firms that are state-owned, and 0 otherwise

where: SCVPS is social contribution value per share, Tobin Q is market value/replacement value of assets, MA is ln (1 + the number of annual news reports), Size is ln (total assets), Top 5 is percentage of shares owned by a firm's top 5 shareholders, Ownership is dummy variable, 1 for firms that are state-owned, 0 otherwise, α_1 to α_3 is intercept, β_{11} to β_{35} is coefficients, ε_i is error term.

4 Results

4.1 Descriptive statistics and correlations

Table 3 provides a descriptive summary of the variables. The mean value of SCVPS is 1.158 and the standard deviation is 1.472, indicating that the general level of corporate social performance is not high and that obvious variation exists across firms. Besides, the standard deviations of MA, Tobin Q, and Size are 1.029, 1.239, and 1.086 respectively, suggesting that media attention, firm value and size of sampled firms significantly vary. In contrast, the standard deviation of Top5 is 0.147, which means relatively less variation exists for the firms concerning the shareholding rate of top 5. As for the dummy variable Owner, which reflects ownership type of firms, the table shows that 43.1 % of sampled firms are state-owned.

Table 3 also presents the Pearson correlation matrix for the variables. Tobin Q is positively correlated to both SCVPS and MA at the 10 % significance level, and significant and positive correlations exist between SCVPS and MA ($p < 0.01$), as expected. According to Anderson et al. (2013), if correlation coefficients among variables are below the critical value of 0.65, there are no significant multicollinearity problems. As shown in Table 3, all correlation coefficients are smaller than 0.5, which meets multiple linear regression analysis requirements.

4.2 Regression results

The results for the multiple linear regression are provided in Table 4. F values of the three models are significant ($p < 0.0001$), suggesting that linear fitting of the models is notable. Adjusted R^2 of the Models are 0.181, 0.299, and 0.362 respectively. Comparing to Model 2, adding media attention in Model 3 explains significant incremental variance in CSR performance (ΔAdj-$R^2 = 0.063$).

Table 3 Descriptive statistics and correlations analysis

	Mean	SD	SCVPS	Tobin Q	MA	Size	Top5	Ownership
SCVPS	1.158	1.472	1.000					
Tobin Q	1.881	1.239	0.061*	1.000				
MA	1.511	1.029	0.259***	0.062*	1.000			
Size	22.123	1.086	0.350***	−0.474***	0.412***	1.000		
Top5	0.464	0.147	0.202***	0.020	0.126***	0.244***	1.000	
Ownership	0.431	0.496	0.086***	−0.061*	0.045	0.046	0.178***	1.000

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Two-tailed

Table 4 Multiple linear regression results

Dependent variable	MA	Tobin Q	
	Model 1	Model 2	Model 3
SCVPS	0.090***	0.209***	0.178***
MA			0.336***
Size	0.345***	−0.672***	−0.787***
Top5	0.055	1.074***	1.056***
Ownership	0.032	−0.196***	−0.206***
Adj-R^2	0.181	0.299	0.362
F	51.455	97.994	104.180
Sig	<0.0001	<0.0001	<0.0001

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Two-tailed

Model 1 shows a positive relationship between MA and SCVPS at the 1 % significance level, consistent with previous empirical studies (Ioannou and Serafeim 2014). Size also has a significant and positive association with MA, implying that bigger firms receive more media attention. Coefficients for top 5 and ownership are positive but statistically insignificant, showing no support to the relatons between these two variables and MA, which means that there may be more complicated machanism among these variables.

Hypothesis 1 argued that CSR performance is positively related to firm value. For this proposal, the statistical result provides supporting evidence, as the coefficient for SCVPS is found to be both positive and significant in Model 2. Among the control variables, Tobin Q is negatively related to size ($\beta_{22} = -0.672$, $p < 0.01$), implying that lagger firms have less firm value. This relationship might occur because growth potential of large firms is limited, while stock prices of small firms are higher due to scale effect. The coefficient for top 5 is positive and statistically significant ($\beta_{23} = 1.074$, $p < 0.01$), in line with the findings of Xu and Wang (1999). Besides, ownership shows a negative association with Tobin Q at the 1 % significance level, suggesting that state ownership may have an adverse impact on firm value.

Model 3 includes media attention (MA) as a mediator variable between firm value and CSR performance. Results show that both SCVPS and MA are positively related to Tobin Q. In addition, the independent variable SCVPS has less impact on the dependent variable Tobin Q in Model 3 than it does in Model 2, namely a significant reduction of coefficient from 0.209 to 0.178, which confirms the mediating effect of media attention (Baron and Kenny1986). Combining the results of the three models, where the coefficients β_{11}, β_{21}, β_{31}, and β_{32} are all significantly positive, hypothesis 2 is supported. Additionally, the coefficient magnitudes and statistical significance of size, top 5 and ownership in Model 3 are nearly identical to those shown in Model 2.

4.3 Robustness test

In order to ensure the reliability of the results, a supplemental analysis was conducted. Instead of SCVPS, a comprehensive scoring method was used to measure CSR performance. Considering the availability of data, comprehensive CSR scores (CSRCS) of the sampled firms were gathered from Hexun (http://www.hexun.com), where professional evaluation of CSR performance of listed firms is released. According to the evaluation system, the CSR performance of listed firms is characterized by five separate categories: (1) responsibilities to shareholders, (2) legal obligations to consumers and suppliers, (3) employee relations, (4) environmental issues and (5) social responsibility. Each category consists of detailed second- and third-class indicators, as well. CSRCS covers the aspects of firms' CSR performance as SCVPS does, and the former adopts the hundred-mark system to assess the social performance professionally while the latter use more direct financial data to form the measurement. The evaluation system features specialization and accuracy, and resolves research discrepancies that may otherwise emerge in data processing. To ensure normal distribution of data, CSRCS was operationalized as the natural logarithm of the comprehensive CSR scores. The mean value of CSRCS is 1.862 and the standard deviation is 0.952.

The regression models were re-run using the comprehensive CSR scores (CSRCS) instead of SCVPS. The results of the robustness test, exhibited in Table 5, are roughly the same as the prior regression model results (Table 4) concerning the magnitude and significance of the coefficients. Therefore, the relationships hypothesized in this study can be considered robust to the alternative measurements of CSR performance.

5 Discussion and conclusion

The purpose of this research is twofold: both a thorough examination of CSR performance as it impacts firm value, and investigation of the mechanism of this relationship with media attention as a mediator. To test the proposed hypotheses, data for manufacturing firms listed on the Shanghai Stock Exchange from 2011 to 2013 was gathered and analyzed. The findings are summarized as follows.

CSR performance has a significantly positive impact on firm value, in line with findings of previous studies conducted by Peloza (2006), Lee and Heo (2009), and Ammann et al. (2011). This relationship likely exists due to the fact that manufacturing industry have close relationship with internal and external stakeholders (Torugsa et al. 2012), and better CSR helps firms build favorable reputations, gain the trust of investors and consumers, establish steady relationships with suppliers and employees, and enjoy preferential government policies. As a consequence, manufacturing firms with higher CSR performance have higher firm value and are more sustainable and competitive.

The mediating role of media attention between CSR performance and firm value was also proven in this study. News reports influence stakeholders' perception of firms, and help them to form more reasonable expectations of firms. Under external pressure from

Table 5 Robustness tests

Dependent variable	MA	Tobin Q	
	Model 4	Model 5	Model 6
CSRCS	0.311*	0.336***	0.239**
MA			0.311***
Size	0.446***	−0.422***	−0.561***
Top5	−0.037	1.694***	1.705***
Ownership	0.019	−0.247*	−253**
Adj-R^2	0.283	0.250	0.321
F	16.165	13.863	15.554
Sig	<0.0001	<0.0001	<0.0001

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Two-tailed

stakeholders, firms are more likely to commit to improving their CSR performance, thereby enhancing firm value.

Firm size is positively related to media attention, indicating that larger firms have a greater chance to attract media attention (Godfrey 2005). Media tend to focus on news stories that most accurately reflect public interest, therefore, they pay more attention to larger firms where demand for information is higher. The fact that media are inclined especially to expose misdeeds of large firms helps to explain the reason why firms with larger size have lower firm value measured by Tobin Q.

These findings have several implications. First of all, the results reinforce an important conclusion of previous studies (Mahoney et al. 2013; Du et al. 2010)—that firms with better CSR performance are more likely to stay better chance in firm value creation process. Effective CSR is crucial for the long-term development of firms as it improves the level of firm value. Consequently, manufacturing firms should attach more importance to social responsibility and actively engage in CSR activities. By means of strategic social responsibility management, manufacturing firms should change or improve their mode of production and business operation, such as building ecological supply chain system in order to safeguard the rights and interests of clients and consumers, adopting green technologies so as to increase the efficiency of resources utilization and reduce environmental pollution.

Second, the results presented here demonstrate that overall CSR performance of the sample firms is far from satisfactory (the standard deviation of SCVPS is 1.472, suggesting that significant variation exists). The development of CSR theory and practice is still in its early stages in China (Moon and Shen 2010), and supervision of government departments is inadequate (Tang and Li 2009), giving rise to firm engagement in socially irresponsible activities. As a result, government regulations must be established in a timely fashion. Law enforcement must be strengthened so as to increase the entry threshold of industries and standardize corporate social responsible behavior.

Third, these findings recognize the influence of media attention in the CSR-FV link. Admittedly, public consciousness of corporate social responsibility is fairly weak, which impairs the external supervision capability of the media. Therefore, public awareness should be enhanced accordingly with the supervisory role of the media in corporate social behaviours. Meanwhile, since the misplacement and absence of channels for stakeholders to express and communicate their interests, the media plays an indispensable role in facilitating the exertion of stakeholders' legal right. With the help of media attention, the government should establish more targeted administrative planning and supervision so stakeholders can jointly promote firms to actively fulfill their social responsibility.

This study was subject to several limitations. First, it focused solely on the manufacturing industry in China, so the results may not extend to other industries or other countries. Additionally, only the mediating role of media attention was considered, neglecting other likely mediating and moderating mechanisms that affect the CSR-FV link. The discussion begun here opens up several avenues for future research. A promising direction is exploring the role of CSR management, as well as the impact of perceived CSR performance on stakeholder behavior.

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