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企業社會責任對於股東價值之風險管理效果

The Risk Management Effect of Corporate Social Responsibility on Shareholder Value

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摘 要

本文探討企業善盡社會責任，對於股東價值是否具有風險管理的效果。即當企業被披露負面事件消息時，其平日所盡之社會責任，是否有助於減緩股價之下跌？本文採用台灣上市櫃公司資料，利用事件研究法進行實證分析。結果顯示：企業平日善盡社會責任所建立之形象，的確有助於企業在面臨不利報導時之股價的維持，意即「善有善報」。就負面消息類型而言，企業社會責任形象，對於與安全相關的負面消息，有較顯著的保護效果；對於與倫理道德相關的負面事件則不明顯；而對於與市場競爭有關的負面消息，企業之善盡社會責任形象，並無助於降低股價下跌的風險。此外，研究結果亦顯示企業之社會責任形象具有長期效應，有助於降低股價之波動性。

【關鍵字】企業社會責任、風險管理、股東價值

Abstract

Using an event study and data of publicly traded firms in Taiwan from 2005 through 2010, we examine the impact of corporate social responsibility (CSR) on mitigating the declines in shareholder value when firms are disclosed of negative events, i.e., the risk management effect. Our results show that firms engaging in CSR activity have less stock price declines when negative news are disclosed. We also find that this effect is significant for safety-related negative events, but not for market-competition and integrity-related events. Furthermore, the empirical results show that CSR has a long-term effect on reducing stock volatility.

【Keywords】corporate social responsibility (CSR), risk management, shareholder value

1. Introduction

Over the years, firms have been greatly encouraged to engage in CSR activity. However, the value of corporate social responsibility (CSR) for a firm has been debated. Numerous studies have examined the relation between CSR and corporate financial performance (CFP). The empirical evidence is inconclusive, as indicated by Margolis and Walsh (2001). McWilliams and Siegel (2001) as well as Konar and Cohen (2001) suggest a positive link between CSR and CFP because CSR can serve a function of advertisement for increasing product demand or CSR can reduce production cost through controlling environmental wastes. In contrast, Aupperle, Carroll, and Hatfield (1985) and Surroca, Tribo, and Waddock (2010) do not find a relation between CSR and CFP. Furthermore, Brammer and Millington (2008) find that firms with unusually higher and lower CSR engagement have better CFP than other firms; besides, they also find that unusually poor CSR firms have best CFP in the short run and unusually good CSR firms have best CFP in the long run.

Business plays an important role in the modern society for both economic and social functions (McGuire, 1963). The firms make profits through manufacturing products or providing services, but these productions sometimes cause negative externality to the society such as environmental pollutions and ecological impairments. It appears unfair for the society to be loaded with these extra costs of negative externalities. Therefore, consumers and investors have more concerns on a firm's social performance than before, in addition to their products and profitability. The businesses which take into consideration of stakeholders' interest and CSR usually gain better reputation and respect.

The responsibility of a business has been evolving during the past decades, from making profits for the shareholders only (Friedman, 1970) to including other non-economic obligations. Carroll (1979) provides a three-dimensional conceptual CSR model, which defines CSR should include four aspects of performance: economic, legal, ethical, and discretionary. Although the wordings for CSR definition may be diverse in literature, today most people agree that businesses have some non-economic responsibilities to the society in addition to the duty of profitability for the shareholders since they make profits from the society. As CSR becomes more and more concerned in business practice, the academics also devote numerous studies related to CSR.

Prior work has argued that firms are motivated to engage in CSR activity for two main reasons. First, social responsibility arises from an altruistic desire to contribute to the advancement of society (Young and Burlingame, 1996). The second reason is that social

responsibility is to improve relation with a firm's stakeholders such as customers and investors. For instance, a firm's CSR engagement may motivate customers to buy more products and therefore enhance sales, which contribute to business operations or performance (Mill, 2006; Choi, Kwak, and Choe, 2010; Soana, 2011). However, other studies (Godfrey, 2005; Brammer and Pavelin, 2005; Peloza, 2006; Godfrey, Merrill, and Hansen, 2009; Minor and Morgan, 2011) look at CSR effects in a different way. They argue that corporate social performance can create insurance value for the firm. Investors will sell fewer shares when negative events occur.

People in Taiwan have also paid extensive attention to the issue of CSR in recent years. For example, the leading business magazines *Global Views Monthly* and *Common Wealth* initiated the CSR evaluations in 2005 and 2007 respectively. Furthermore, Taiwan Stock Exchange Corporation announced the "Corporate Social Responsibility Best Practice Principles for TWSE/GTSM-Listed Companies" in 2010. Wide engagement of CSR in recent decade has generated several studies (Chen, 2009; Chang, 2011). As far as we understand, however, most of domestic studies are focused on the relation between CSR and CFP. The risk management and protection effect of CSR have not yet been investigated.

Consistent with our predictions and Godfrey et al. (2009), we find that CSR engagement has a risk management effect on stock prices of the firm when a negative event occurs. This indicates that CSR engagement can provide insurance value to preserve corporate stockholders' wealth. Moreover, our finding implies that investors in Taiwan do concern corporate social performance.

One prior paper that has a close connection to ours is Godfrey et al. (2009). However, a number of major differences exist. First, Godfrey et al. (2009) use data from the KLD dataset consisting of US firms, while we hand collect data on firms which win CSR awards from two major mainstream magazines in Taiwan or are listed on a CSR securities investment trust fund. As far as we understand, our paper is the first study to use data on Taiwan companies to examine whether the risk management effect found in a developed market also exists in an emerging market. Second, Godfrey et al. (2009) calculate expected returns using only the Capital Asset Pricing Model (CAPM). In our paper, we not only use the CAPM but also the Market-Adjusted Returns Model (MARM) and Fama-French three-factor model. Third, Godfrey et al. (2009) find that CSR engagement provides a risk management effect for negative events related to integrity, but not for those related to safety. In contrast, we find that this effect exists for safety-related rather than integrity-related issues, which we partly attribute to the specific regulatory, legal, and cultural environment that exists in Taiwan.

Furthermore, we examine not only the effect of long-term CSR engagement (LCSR) but the long-term effect of LCSR on stock returns. We find that LCSR has a long-term effect on reducing stock volatility.

The remainder of this paper is organized as follows. The following section reviews previous literature and develops our hypotheses. The data and research methodology are presented in the subsequent section. The empirical results are discussed in the penultimate section, whereas the last section offers our concluding remarks.

2. Literature Review and Hypotheses Development

Lee, Fairhurst, and Wesley (2009) find that more and more top 100 retailers in the US have been contributing to social performance and integrating CSR into their business operations in recent years. However, the definitions of CSR vary in literature. Davis (1973) defines CSR as the responsibility of a business to realize the societal benefits in addition to the economic, technological, and legal requirements. McWilliams and Siegel (2001) define CSR as the favorable behaviors to the society besides the immediate interests for shareholders. Steiner (1972) regards CSR as a continuum of responsibility ranging from "economic production" to "expectations beyond reality." Mackey, Mackey, and Barney (2007) emphasize CSR involving only voluntary acts and thus above economic and legal criteria.

Many prior studies examine the impact of CSR on CFP. However, the results are mixed. For instance, Waddock and Graves (1997) find that both past and current CSR engagement were found to have a positive correlation with the return on the assets of a firm. Using data on South Korean firms, Choi et al. (2010) find a positive relationship between CSR and CFP.

However, CSR engagement involves costs. Some studies therefore argue that CSR may have a negative association with CFP. For instance, Mishra and Suar (2010) and Surroca et al. (2010) find that CSR adversely affect CFP. Other studies find no relation between CSR and CFP. For example, Soana (2011) documents no evidence regarding the CSR-CFP relation for Italian Banks. Using the sample of firms in Taiwan that earned CSR awards from *Global View Monthly* during the period of 2005-2009, Liu (2009) finds that the CSR-awarded firms do not perform significantly better than their counterparts in returns. Based on a sample of 30 Taiwanese publicly listed firms with CSR awards from *Common Wealth* magazine in 2007, Chang (2011) finds that CSR does not have either short-term or long-term effect on stock returns.

Another strand of research is to investigate the impact on its short-term stock prices

when a firm violates social norms. Davidson and Worrell (1992) find a negative abnormal stock returns on firms whose product recalls news were published in *Wall Street Journal* during 1968-1987. Using the cases of plant closings during 1980-1988, Clinebell and Clinebell (1994) find that these associated firms had negative stock returns when they announced plant closings. Does CSR engagement mitigate the financial impairments in these negative events? Peloza (2006) supports the notion that CSR has insurance value in protecting financial performance for the firms with good CSR but encountering negative events. Godfrey et al. (2009) also argue that CSR can create moral capital, which provides insurance value for businesses.

Negative events undoubtedly would result in harmful consequences for the firm (e.g., reputation loss, indemnity to consumers, extra operational cost, and funding difficulty). These consequences may reduce a firm's net cash flows and raise its risk level. Investors may expect that firms with more CSR engagement respond to negative events more effectively and incur less expected losses (cash outflows). In the meanwhile, we also expect that negative events may lead to increase of equity risk premium due to greater information risk or cash flow risk, thus increasing discount rate. However, it should be added that equity risk premium normally will not change significantly due to single negative event, unless the event was extreme and permanent in nature. We anticipate that the risk management effect of CSR engagement comes from both less expected losses and less increase in equity risk premium. In summary, these arguments lead to the following hypothesis:

H1: Firms with CSR will have less reduction in shareholder value than those without when they encounter negative events.

Godfrey et al. (2009) indicate that the magnitude of insurance value of CSR may depend on the firm's intangible assets and size. Firms with more intangible assets may face higher pressure in financial performance and thus value CSR's insurance value more (Stulz, 2002). Therefore, it is expected that CSR can generate higher insurance value for the firms with more intangible assets. Besides, large firms are more known to the public and usually involve more activities in the society (Godfrey, 2005). They will receive more attention when negative events occur. Thus, the risk management effect of CSR is expected to be higher for large firms. From the previous arguments, we can hypothesize the following two hypotheses.

H2: CSR provides more protection in shareholder value for firms with higher intangible assets when negative events happen.

H3: CSR provides more protection in shareholder value for larger firms when negative events happen.

Moreover, the risk management effect of CSR may vary with types of negative events (Godfrey et al., 2009). Shareholders' decision regarding whether to sell their shares or not depends on their judgment on a firm's intention or morality involved in negative events. We therefore classify negative events into three types: (1) competitive events, (2) safety events, and (3) integrity events.

Competitive events generally are aggressive actions adopted by the firm for market competition. These actions probably are on or even beyond the bounds of the law, such as unfair business transactions and patent infringements. Since the interpretations of regulations are sometimes ambiguous and competitive actions are necessary for businesses, shareholders might not connect these competitive events with their judgment on the firm's morality. That is, business competitive actions usually are not regarded as immoral or "bad-mind." Thus, it is expected that the moral capital value of CSR is irrelevant to the decline in shareholder value, and we propose:

H4: When the competitive-type negative event occurs, there is no difference in the declines of shareholder value between firms with CSR and those without.

The safety-related negative events are the events such as injuries due to defective products or unsafe workplace. In these cases, the well-being of stakeholders could be harmed and their decision of punishment highly depends on their judgment about the firm's motivation behind the act. If the case is regarded as a deliberate act of malevolence, then the firm probably will face more severe punishment than in unintentional cases. Good CSR performers that encounter negative events would obtain weaker punitive responses if they are regarded as good-morality but just unintentionally or negligently cause these events to happen. Therefore, the following hypothesis is proposed.

H5: When the safety-related negative event occurs, the decrease in shareholder value is less for firms with CSR than those without.

The negative events of integrity are the negative events related to the integrity or morality of the firm, such as violating business ethics and management frauds. Shareholders' response to these events also depends on how they determine the intention of the firm. Firms' engagement in CSR is viewed as evidence of good character and their negative events are

interpreted as lack of bad intentions. CSR may mitigate punitive responses from stakeholders. Given this logic, we propose:

H6: When the integrity-related negative event occurs, firms with CSR will suffer less reduction in shareholder value than those without.

3. Sample and Research Methodology

3.1 Sample and Data

The data on listed and OTC firms are retrieved from the Taiwan Economic Journal (TEJ) for the years 2005-2010. We search the CSR database of TEJ for the negative events to our sample firms. We eliminate the negative events associated with other events (e.g., earning, new product, merger/acquisition announcements) because these associated events may have confounding effects on our results. The resulting sample includes 790 events.

We obtain the daily stock prices and firm-specific characteristics of the sample firms from TEJ. Firms are then categorized into two groups: "firms with CSR" and "firms without CSR." The firms with CSR are those companies which were either awarded CSR prizes from the *Common Wealth* magazine/*Global Views Monthly* or listed on the Fubon's Taiwan CSR Securities Investment Trust Fund. In total, we have 204 negative events related to the firms with CSR and 586 events related to firms without CSR.

Following Godfrey et al. (2009), we also classify these 790 negative events into competition, safety, and integrity-based events.[1] We then obtain 24 competitive behaviors, 689 safety violations, and 77 integrity-related events. Table 1 shows the distribution for event types.

Table 1 Distribution for Event Type

Event type	Firms with CSR	Firms without CSR	Total Observations
Competitive events	8	16	24
Safety events	183	506	689
Integrity events	13	64	77
Total observations	204	586	790

1 Competitive events include competition conspiracy, anti-trust claims, patent infringements, and price manipulations. Safety-related events include consumer injuries, product safety problems, quality control issues, and environmental pollutions. Integrity-related events include discrimination, fraud, false claims and dishonesty, fidelity duty, and bribery allegations.

3.2 Variables

In this paper, we use percentage returns (*SVar*) and cumulated abnormal returns (*CAR*) to examine the event's effects on stock prices during the event period. As shown in equation (1), *SVar* is a straightforward measure which directly reflects stock price fluctuations before and after the disclosure of negative event.

$$SVar_i^k = (P_{t+k,i} - P_{t-1,i})/P_{t-1,i} \tag{1}$$

where, $P_{t+k,i}$ = stock price of firm *i* at the end of date $t+k$, $k = 0,1,2,..$

$P_{t-1,i}$ = stock price of firm *i* at the end of date $t-1$,

t = the date of disclosure of negative event.

Following Campbell, Lo, and MacKinlay (1997), we calculate abnormal returns based on the risk-adjusted return model (RARM). The abnormal return is the difference between actual return and expected return. The expected return is first estimated using the capital asset pricing model, as shown below.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{2}$$

where R_{it} and R_{mt} are the actual returns of firm *i* and market returns at time *t*. The parameter $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated within an estimation period and then plugged into Equation (3) to compute the expected return.

$$E(R_{it}) = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \tag{3}$$

where $E(R_{it})$ = the expected stock return of firm *i* at time *t*;

R_{mt} = the actual market return at time *t*.

According to Peterson (1989), the estimation period should be around 100 to 300 days if daily data are used for an event study. We therefore use a period of 120 days. This period covers 125 to six trading days prior to the negative event disclosure, i.e., [t-125, t-6]. The market return is the return of market portfolio which includes all the listed firms if firm *i* is a listed firm, or which includes all OTC firms if firm *i* is an OTC firm. For robustness check, we also use the market-adjusted returns model (MARM), under which the expected return is simply the market return. Additionally, the Fama-French 3-factor model (Fama and French,

1993) is applied to calculate expected returns to consider market risk factor and risk factors related to size and book-to-market-equity.

3.3 Model Specification

We use a multiple regression analysis to examine whether firms with CSR perform better than their counterparts when negative events occur.

$$CAR_i = \lambda_0 + \lambda_1 CSR_i + \lambda_2 MTB_i + \lambda_3 \ln Asset_i + \eta_i \quad (4)$$

$$CAR_i = \beta_0 + \beta_1 CSR_i + \beta_2 MTB_i + \beta_3 \ln Asset_i + \beta_4 MTB_i * CSR_i + \beta_5 \ln Asset_i * CSR_i + \varepsilon_i \quad (5)$$

where λ_j, β_j = regression coefficients;
CAR_i = the cumulated abnormal returns of firm *i*;
CSR_i = the dummy variable for CSR, 1 = firm *i* with CSR, and 0 otherwise;
MTB_i = intangible assets, proxied by market-to-book value of asset of firm *i* at the event date;
$\ln Asset_i$ = firm size, proxied by natural logarithm of total assets of firm *i* at the event date;
η_i, ε_i = error terms.

Equation (4) is a baseline model which only includes the CSR variable and two control variables. We follow Godfrey et al. (2009) to control for firm size (measured by logarithm of assets, ln*Asset*) and intangible assets (measured by market to book value of asset, *MTB*). Equation (5) is used to test the moderating effects of intangible assets and firm size on the relation of CSR and stock returns.

4. Empirical Results

4.1 Univariate Analysis

Table 2 presents descriptive statistics for the variables. The mean values of $Svar^1$, CAR^1, CAR^{1M}, and CAR^{1F} of the firms without CSR are negative, but those of the firms with CSR are positive. Firms with CSR have higher mean values of *MTB* and *Assets* than firms without CSR. At first glance, it seems that the positive mean returns for CSR firms facing negative events are against our intuitive judgments. One of the possible reasons why this is the case is that during our sample period average daily stock returns are generally positive, as shown

later in Table 12. These CSR firms may have built good reputation and/or they have competitive advantages over their competitors. The reader is cautioned when interpreting this result. The reputation of CSR may mitigate the negative impacts of bad news on stock prices. However, CSR alone will not turn bad news into good news. Our result does not imply that negative news will produce positive returns for CSR firms.

Table 2 Descriptive Statistics

	Data Set	N	Mean	Std. Dev.	Minimum	Maximum
SVar[1]	All firms	790	-0.261	4.689	-13.491	14.310
	Firms with CSR	204	0.489	3.614	-12.909	11.458
	Firms without CSR	586	-0.522	4.986	-13.491	14.310
CAR[1]	All firms	533	-0.819	5.655	-24.621	22.284
	Firms with CSR	104	0.468	3.209	-8.116	13.149
	Firms without CSR	429	-1.131	6.064	-24.621	22.284
CAR[1M]	All firms	782	-0.642	5.401	-25.374	22.398
	Firms with CSR	203	0.377	3.404	-14.423	14.185
	Firms without CSR	579	-0.999	5.906	-25.374	22.398
CAR[1F]	All firms	766	-0.506	5.338	-24.638	23.054
	Firms with CSR	200	0.469	3.433	-13.884	14.656
	Firms without CSR	566	-0.851	5.829	-24.638	23.054
MTB	All firms	790	1.270	0.769	0.353	13.431
	Firms with CSR	204	1.410	0.486	0.653	3.222
	Firms without CSR	586	1.221	0.841	0.353	13.431
Asset (NTD million)	All firms	790	154965	395261	127	3764333
	Firms with CSR	204	380478	604848	3732	3764333
	Firms without CSR	586	76458	244649	127	2422060

Notes: *SVar*[1] is the stock price change rate between one day before and after the event disclosure. *CAR*[1] is the cumulated abnormal returns based on RARM for three days, from one day before the event disclosure to one day after the event disclosure, i.e., event window [-1,1]. *CAR*[1M] is the cumulated abnormal returns based on MARM for the event window [-1,1]. *CAR*[1F] is the cumulated abnormal returns based on Fama-French 3-factor model for the event window [-1,1].

Table 3 shows the Pearson correlation coefficients between variables. We find that, consistent with our expectations, *CAR* is positively correlated with CSR at the 0.01 level. *CAR*s based on three different models of expected returns are highly correlated to each others ($\rho > 0.96$).

Table 3 The Pearson Correlation Coefficient Matrix

	CAR^{1}	CAR^{1M}	CAR^{1F}	*CSR*	*MTB*	ln*Asset*
CAR^{1}	1.000					
CAR^{1M}	0.963 (< .001)***	1.000				
CAR^{1F}	0.964 (< .001)***	0.999 (< .001)***	1.000			
CSR	0.112 (0.009)***	0.112 (0.002)***	0.109 (0.003)***	1.000		
MTB	-0.199 (< .001)***	-0.0939 (0.009)***	-0.065 (0.070)*	0.108 (0.002)***	1.000	
ln*Asset*	0.154 (0.004)***	0.145 (< .001)***	0.132 (< .001)***	0.537 (< .001)***	-0.076 (0.034)**	1.000

Significance level: * = 10%, ** = 5%, *** = 1%.

Table 4 shows the univariate t-test for *CAR*s, from the day of event disclosure to five days after the disclosure. We find that firms without CSR have significantly negative *CAR*s when negative events occur. However, this is not the case for firms with CSR. This finding indicates that the market responds differently for the two groups of firms when they are faced with negative events. We further divided firms into listed and OTC firms, and the result shows a similar picture. The *CAR*s of listed and OTC firms without CSR are negative and statistically significant at the conventional levels. Except for CAR^{3} marginally significant, the *CAR*s of listed firms with CSR are positive, though insignificant. The t-tests for $CAR^{kM} = 0$ (market model) and $CAR^{kF} = 0$ (Fama-French 3-factor model) are very close to those in Table 4 and thus the discussion is omitted.

Table 5 presents the results of one-sample and two-sample t-tests for difference in means and Mann-Whitney U test for difference in medians. The one-sample t-test results show that the percentage returns of the firms with CSR are positive and significant, but those of the firms without CSR are negative and significant. The *CAR* of the firms with CSR is positive (though insignificant), while negative and significant for firms without CSR. Moreover, both of the two-sample t-test and U test results show a significant difference in stock returns. These results support Hypothesis 1 that CSR engagement serves as moral capital, which can produce insurance-like effects on stock prices when negative events occur.

Table 4 t-Tests of $CAR^k = 0$ for Firms with and without CSR

Data set	N	CAR^0 (p-value)	CAR^1 (p-value)	CAR^3 (p-value)	CAR^5 (p-value)
All Firms with CSR	104	0.372 (0.195)	0.468 (0.140)	0.651 (0.098)*	0.300 (0.464)
All Firms without CSR	432	-0.731 (0.001)***	-1.131 (0.0001)***	-1.754 (< .001)***	-1.983 (< .001)***
Listed Firms with CSR	104	0.372 (0.195)	0.468 (0.140)	0.651 (0.098)*	0.300 (0.464)
Listed Firms without CSR	278	-0.494 (0.063)*	-0.897 (0.011)**	-1.367 (0.003)***	-1.619 (0.005)***
OTC Firms without CSR	154	-1.159 (0.007)***	-1.544 (0.004)***	-2.457 (0.001)***	-2.636 (0.004)***

Notes: Significance level: * = 10%, ** = 5%, *** = 1%. All the firms with CSR are listed firms. None of the OTC firms wins CSR award or is listed on the Taiwan CSR Securities Investment Trust Fund. The total observations of *CAR* used in the tests range from 536 to 532 due to the estimation period requirement for the RARM. The sample size N shown in this table are those for k = 0.

Table 5 Tests of Means and Medians for All Firms

	Data Set	N	Mean (Std. Dev)	One-sample t-test (p-value)	Two-sample t-test (p-value)	Mann-Whitney U Test (p-value)
$SVar^0$	With CSR	204	0.321 (2.327)	1.969 (0.050)**	-2.69 (0.007)***	2.521 (0.012)***
	Without CSR	586	-0.349 (3.276)	-2.578 (0.010)***		
$SVar^1$	With CSR	204	0.489 (3.614)	1.934 (0.055)**	-2.66 (0.008)***	2.741 (0.006)***
	Without CSR	586	-0.522 (4.986)	-2.533 (0.012)***		
$SVar^3$	With CSR	204	0.802 (4.934)	2.320 (0.021)**	-3.25 (0.001)***	3.707 (< .001)***
	Without CSR	586	-1.053 (7.614)	-3.348 (0.001)***		
$SVar^5$	With CSR	204	0.710 (5.787)	1.752 (0.081)*	-2.40 (0.017)***	2.779 (0.005)***
	Without CSR	586	-1.062 (9.982)	-2.575 (0.010)***		
CAR^1	With CSR	104	0.468 (3.209)	1.486 (0.140)	-2.60 (0.009)***	2.949 (0.003)***
	Without CSR	429	-1.131 (6.064)	-3.863 (< .001)***		

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
CAR^{1M}	With CSR	203	0.377 (3.404)	1.579 (0.116)	-3.14 (0.002)***	3.851 (< .001)***
	Without CSR	579	-0.999 (5.906)	-4.073 (< .001)***		
CAR^{1F}	With CSR	200	0.469 (3.4326)	1.931 (0.055)*	-3.02 (0.003)***	3.979 (< .001)***
	Without CSR	566	-0.851 (5.829)	-3.473 (< .001)***		

Notes: Significance level: * = 10%, ** = 5%, *** = 1%. $SVar^{k}$ is the percentage returns for period k = 0, 1, 3, 5, as shown in equation (1). CAR^{1} is the cumulated abnormal returns for three days, from one day before the event to one day after the event, i.e., [-1,1]. CAR^{1M} and CAR^{1F} are alternative measures of cumulated abnormal returns.

Tables 6a, 6b, and 6c show the results for different types of negative events.[2] Our analysis fails to find a significant effect of CSR engagement when the negative event is related to competitive or integrity issues. However, we find that for safety-related negative events the percentage returns and CAR are significantly positive for firms with CSR, but negative for firms without CSR. These results imply that CSR has a risk-mitigation function in the safety-related negative events.

Table 6a Tests of Means and Medians for Competitive Events

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
$SVar^{0}$	With CSR	8	-0.354 (3.377)	-0.296 (0.776)	-0.58 (0.565)	0.827 (0.408)
	Without CSR	16	-1.139 (2.968)	-1.535 (0.146)		
$SVar^{1}$	With CSR	8	-0.148 (4.790)	-0.088 (0.933)	-0.55 (0.590)	1.01 (0.312)
	Without CSR	16	-1.411 (5.571)	-1.013 (0.327)		

2 We also conduct a univariate analysis for high/low intangible assets and large/small firm size. The results are inconsistent. Moreover, the multivariate results presented below show no moderating effects. To save space, the univariate results are not reported but available upon request from the authors.

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
CAR^{1}	With CSR	5	-2.087 (2.098)	-2.224 (0.090)*	0.10 (0.922)	-0.784 (0.433)
	Without CSR	16	-1.695 (8.614)	-0.787 (0.444)		
CAR^{1M}	With CSR	8	-1.965 (6.421)	-0.865 (0.416)	0.03 (0.979)	-0.214 (0.830)
	Without CSR	16	-1.883 (7.299)	-1.032 (0.318)		
CAR^{1F}	With CSR	7	-1.870 (6.844)	-0.723 (0.497)	0.03 (0.973)	-0.3007 (0.764)
	Without CSR	16	-1.758 (7.190)	-0.978 (0.344)		

Significance level: * = 10%, ** = 5%, *** = 1%.

Table 6b Tests of Means and Medians for Safety-related Events

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
$SVar^{0}$	With CSR	183	0.336 (2.265)	2.007 (0.046)**	-2.70 (0.007)***	2.555 (0.011)**
	Without CSR	506	-0.382 (3.325)	-2.587 (0.010)**		
$SVar^{1}$	With CSR	183	0.485 (3.570)	1.839 (0.068)*	-2.64 (0.009)***	2.447 (0.014)**
	Without CSR	506	-0.572 (4.974)	-2.588 (0.009)***		
CAR^{1}	With CSR	88	0.599 (3.275)	1.715 (0.090)*	-2.67 (0.008)***	3.016 (0.003)***
	Without CSR	367	-1.178 (6.038)	-3.738 (< .001)***		
CAR^{1M}	With CSR	182	0.454 (3.282)	1.866 (0.064)*	-3.22 (0.001)***	3.925 (<.001)***
	Without CSR	501	-1.049 (5.967)	-3.935 (< .001)***		
CAR^{1F}	With CSR	180	0.534 (3.312)	2.165 (0.032)**	-3.04 (0.003)***	3.9224 (< .001)***
	Without CSR	489	-0.877 (5.882)	-3.285 (0.001)***		

Significance level: * = 10%, ** = 5%, *** = 1%.

Table 6c Tests of Means and Medians for Integrity-related Events

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
$SVar^0$	With CSR	13	0.519 (2.597)	0.720 (0.485)	-0.46 (0.645)	0.143 (0.886)
	Without CSR	64	0.114 (2.927)	0.312 (0.756)		
$SVar^1$	With CSR	13	0.938 (3.706)	0.913 (0.379)	-0.58 (0.566)	1.421 (0.155)
	Without CSR	64	0.101 (4.956)	0.163 (0.872)		
CAR^1	With CSR	11	0.582 (2.752)	0.701 (0.499)	-0.69 (0.493)	1.143 (0.253)
	Without CSR	46	-0.561 (5.294)	-0.719 (0.476)		
CAR^{1M}	With CSR	13	0.746 (2.144)	1.255 (0.233)	-0.79 (0.433)	1.155 (0.248)
	Without CSR	62	-0.371 (4.988)	-0.586 (0.560)		
CAR^{1F}	With CSR	13	0.816 (2.219)	1.326 (0.209)	-0.87 (0.386)	1.463 (0.144)
	Without CSR	61	-0.430 (5.027)	-0.669 (0.506)		

Significance level: * = 10%, ** = 5%, *** = 1%.

4.2 Multivariate Analysis

Table 7 shows the results of CAR^1 for all firms. Consistent with our predictions and the univariate results presented earlier, all the models show that CSR has significantly positive effects on CAR^1 at conventional levels, which supports the view that CSR engagement provides risk management effects on preserving shareholders' value.[3] We also document no moderating effects of intangible assets and firm size on the relation between CSR and CAR^1.[4]

3 The regression results presented in Tables 7 and 8 are based on RARM. The results based on MARM and Fama-French model are similar to those based on RARM and thus omitted in the paper, which are available upon request.

4 The interaction terms are also insignificant in the following analyses for different types of events and thus omitted in Table 8.

Table 7 The Regression Results of CAR^1 for All Firms

	Model 1	Model 2	Model 3	Model 4
Intercept	-1.131	0.613	-3.073	-4.788
	(< .001)***	(0.171)	(0.150)	(0.043)**
CSR_i	1.599	1.745	1.141	11.343
	(0.009)***	(0.004)***	(0.099)*	(0.065)*
MTB_i		-1.427	-1.322	-1.238
		(< .001)***	(< .001)***	(< .001)***
$\ln Asset_i$			0.225	0.327
			(0.077)*	(0.021)**
MTB_i*CSR_i				-0.360
				(0.754)
$\ln Asset_i*CSR_i$				-0.542
				(0.103)
Adjusted R^2	0.011	0.051	0.055	0.056
N	533	533	533	533

Notes: The *p*-values are reported in parentheses. Significance level: * = 10%, ** = 5%, *** = 1%.

Table 8 shows the regression results for three types of negative events.[5] Consistent with our univariate results, we find that the firm's CSR involvement and CAR^1 is significantly positive only for events relating to safety. Our results are different from those of Godfrey et al. (2009) who find that CSR engagement of U.S. firms can mitigate the risk of shareholder value declines for the integrity-related events but not the safety events. However, both studies document no effect for competitive events.

5 As shown in Table 1, there are only 24 observations for the competitive events. The reader is cautioned while interpreting the results.

Table 8 The Regression Results of CAR^{1} for Three Types of Event

	Competitive Event		Safety Event		Integrity Event	
Intercept	-1.695	6.776	-1.178	0.436	-0.561	-6.413
	(0.391)	(0.071)*	(< .001)***	(0.356)	(0.444)	(0.320)
CSR_i	-0.392	1.916	1.777	1.817	1.143	1.032
	(0.922)	(0.593)	(0.008)***	(0.006)***	(0.493)	(0.608)
MTB_i		-6.577		-1.303		-0.423
		(0.014)**		(< .001)***		(0.813)
ln$Asset_i$						0.351
						(0.257)
Adj-R^2	-0.052	0.214	0.013	0.050	-0.009	-0.015
N	21	21	455	455	57	57

Notes: The *p*-values are reported in parentheses. Significance level: * = 10%, ** = 5%, *** = 1%. Due to the high correlation coefficient (ρ (*CSR*, ln*Asset*) > 0.6) for competitive and safety events, their regression models do not include ln*Asset* to avoid multicollinearity.

Prior studies (e.g., Godfrey, 2005; Vanhamme and Grobben, 2009) indicate the importance of long-term CSR engagement, which can be better used to counter the adverse influence of negative events than short-term CSR engagement. In this study, we also consider the effects of long-term CSR engagement on stock returns and volatility. The long-term CSR engagement (LCSR) is defined in Equation (6), which simultaneously takes into consideration not only CSR of current year but CSR of the previous two years. It is worthwhile to note that we assign higher weight to CSR in the more recent year and lower weight to CSR in the earlier year and the weights sum to one. We argue that the protection effect of CSR engagement decreases as time goes by. The $CSR_{i,y}$ is a dummy variable which equals one if firm i was awarded CSR prize or included in the CSR Fund during year y, and zero otherwise.

$$LCSR_{i,y} = (1 / 2)\ CSR_{i,y} + (1 / 3)\ CSR_{i,y\text{-}1} + (1 / 6)\ CSR_{i,y\text{-}2} \tag{6}$$

Appendix 1 presents the results for the correlation analysis and t-tests for means based on LCSR, which are similar to those based on CSR presented in the previous section. The t-test results show that firms with LCSR have better stock returns. As shown in Tables 9 and 10, however, the effect of LCSR on *CAR* is positive but insignificant.[6]

6 The results of CAR^{IM} and CAR^{IF} are similar to those presented in Tables 9 and 10, and are thus omitted in the paper but can be requested from the authors.

Table 9 The Regression Results of CAR^1 for All Firms with LCSR

	Model 1	Model 2	Model 3	Model 4
Intercept	-0.962	0.821	-4.328	-5.335
	(< .001)***	(0.085)*	(0.060)*	(0.026)**
$LCSR_i$	1.276	1.655	0.575	18.251
	(0.261)	(0.137)	(0.633)	(0.116)
MTB_i		-1.432	-1.289	-1.271
		(< .001)***	(< .001)***	(< .001)***
ln$Asset_i$			0.314	0.375
			(0.022)**	(0.009)***
MTB_i* $LCSR_i$				0.407
				(0.820)
ln$Asset_i$* $LCSR_i$				-0.999
				(0.106)
Adjusted R^2	0.001	0.044	0.053	0.054
N	459	459	459	459

Notes: The *p*-values are reported in parentheses. Significance level: * = 10%, ** = 5%, *** = 1%.

Table 10 The Regression Results of CAR^1 for Three Types of Event with LCSR

	Competitive Event		Safety Event		Integrity Event	
Intercept	-4.875	12.880	-0.912	0.763	-0.470	-3.817
	(0.105)	(0.121)	(0.003)***	(0.119)	(0.611)	(0.626)
$LCSR_i$	2.002	0.046	1.167	1.410	3.005	5.576
	(0.820)	(0.995)	(0.329)	(0.229)	(0.439)	(0.252)
MTB_i		-11.078		-1.338		-1.697
		(0.037)**		(< .001)***		(0.444)
ln$Asset_i$						0.290
						(0.456)
Adj-R^2	-0.104	0.302	-0.0001	0.041	-0.0098	-0.026
N	11	11	407	407	41	41

Notes: The *p*-values are reported in parentheses. Significance level: * = 10%, ** = 5%, *** = 1%. Due to the high correlation coefficient (ρ (*LCSR*, ln*Asset*) > 0.5) for competitive and safety events, their regression models do not include ln*Asset* to avoid multicollinearity.

The insignificant results shown above are possibly due to the fact that the effect of LCSR may take a long time to appear. We therefore examine whether LCSR has long-term effect on the stock volatility of firm *i* in year *y*. We conduct the regression analyses on stock volatility $TR_{i,y}$, which is the standard deviation of daily stock returns of firm *i* during year *y*.

In these analyses, firm *i* is counted only as one observation in year *y* no matter how many negative events are disclosed for the firm.[7] Table 11 shows that LCSR has a significant and negative impact on stock volatility, implying that long-term CSR engagement may have a long-term effect on stabilizing stock prices.

The stock volatility is further distinguished into systematic risk ($SysR_{iy}$) and idiosyncratic risk ($IdioR_{iy}$). Systematic risk ($SysR_{iy}$) is the beta (β_{iy}) on market portfolio, while idiosyncratic risk ($IdioR_{iy}$) is the standard deviation of residual errors of the forecasting model for stock returns. Both risk variables are based on CAPM. Table 12 shows that the total risk (*TR*) and idiosyncratic risk (*IdioR*) are significantly lower for firms with LCSR. The systematic risk (*SysR*) is significantly higher for firms with LCSR. Besides, the average daily stock return (*AvgR*) in year *y* is not significantly different between two groups of firms. These results imply that CSR has a long-term effect on reducing stock volatility, especially the volatility from individual risk; however, LCSR does not reduce systematic risk or increase stock returns.

Table 11 The Regression Results of *TR* for All Firms with LCSR

	Model 1	Model 2	Model 3	Model 4
Intercept	2.970	2.807	5.822	5.780
	(< .001)***	(< .001)***	(< .001)***	(< .001)***
$LCSR_i$	-0.918	-0.956	-0.313	0.113
	(< .001)***	(< .001)***	(0.082)*	(0.948)
MTB_i		0.131	0.055	0.071
		(0.007)***	(0.226)	(0.127)
ln$Asset_i$			-0.184	-0.184
			(< .001)***	(< .001)***
MTB_i* $LCSR_i$				-0.451
				(0.087)***
ln$Asset_i$* $LCSR_i$				0.0140
				(0.880)
Adjusted R^2	0.053	0.066	0.201	0.202
N	459	459	459	459

Notes: The *p*-values are reported in parentheses. Significance level: * = 10%, ** = 5%, *** = 1%.

7 Compared with the previous analyses of short-term effect, there each negative disclosure is counted as one observation in the sample.

Table 12 Tests of Means and Medians of Stock Volatility for All Firms with LCSR

	Data Set	N	Mean (Std. Dev)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
TR	With LCSR	62	2.335 (0.707)	5.07 (< .001)***	-5.1686 (< .001)***
	Without LCSR	397	2.976 (0.954)		
SysR	With LCSR	62	0.993 (0.256)	-2.10 (0.036)**	2.5765 (0.010)**
	Without LCSR	397	0.872 (0.440)		
IdioR	With LCSR	62	1.850 (0.613)	5.61 (< .001)***	-5.810 (< .001)***
	Without LCSR	397	2.5891 (1.008)		
AvgR	With LCSR	62	0.0620 (0.188)	-0.60 (0.549)	0.808 (0.419)
	Without LCSR	397	0.0343 (0.354)		

Significance level: * = 10%, ** = 5%, *** = 1%.

5. Conclusions

In this paper, we examine whether CSR engagement has a risk management effect on stock prices in the face of negative events. Using an event study and TEJ data from 2005 through 2010, we find that CSR appears to produce a risk management effect on stock prices. This effect is especially significant for events relating to safety. However, the protection effect does not significantly favor firms with higher intangible assets or larger size.

Our results support the view that CSR engagement serves as the moral capital of the firm, ultimately mitigating any adverse assessment by stakeholders of its bad acts and thereby creating a case for leniency in any punishment that may be considered. Furthermore, the empirical result also shows that CSR has a long-term effect on reducing stock volatility, especially the volatility from individual risk.

Our findings imply that the investors in Taiwan are concerned with a firm's social performance, which lends support to the notion that CSR engagement is a beneficial strategy for company management to use. When negative events occur, prior CSR engagement would

motivate existing stockholders not to sell their shares.

This paper provides an initial investigation for the risk management function of CSR using Taiwan data. The inconsistency in empirical findings about integrity and safety events between Taiwan and the U.S. can be partly attributed to the differences in culture, accounting systems, and institutional factors such as law and regulations of the two countries, which are worthy of future study.

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Appendix 1: Long-term CSR Engagement

Table 13 The Pearson Correlation Coefficient Matrix with LCSR

	CAR[1]	*CAR*[1M]	*CAR*[1F]	*CSR*	*LCSR*	*MTB*	ln*Asset*
CAR[1]	1.000						
CAR[1M]	0.963 (< .001)***	1.000					
CAR[1F]	0.964 (< .001)***	0.999 (< .001)***	1.000				
CSR	0.112 (0.009)***	0.112 (0.002)***	0.109 (0.003)***	1.000			
LCSR	0.053 (0.261)	0.069 (0.071)*	0.065 (0.093)*	0.759 (< .001)***	1.000		
MTB	-0.199 (< .001)***	-0.0939 (0.009)***	-0.065 (0.070)*	0.108 (0.002)***	0.136 (< .001)***	1.000	
ln*Asset*	0.154 (0.004)***	0.145 (< .001)***	0.132 (< .001)***	0.537 (< .001)***	0.458 (< .001)***	-0.076 (0.034)**	1.000

Significance level: * = 10%, ** = 5%, *** = 1%.

Table 14 Tests of Means and Medians of *CAR* for All Firms with LCSR

	Data Set	N	Mean (Std. Dev)	One-sample t-test (*p*-value)	Two-sample t-test (*p*-value)	Mann-Whitney U Test (*p*-value)
$SVar^0$	With LCSR	129	0.315 (2.317)	1.5431 (0.125)	-1.97 (0.049)**	2.180 (0.029)**
	Without LCSR	562	-0.296 (3.348)	-2.098 (0.036)**		
$SVar^1$	With LCSR	129	0.647 (3.909)	1.881 (0.062)*	-2.46 (0.014)**	2.936 (0.003)***
	Without LCSR	562	-0.520 (5.054)	-2.439 (0.015)**		
$SVar^3$	With LCSR	129	0.887 (5.148)	1.957 (0.053)*	-2.74 (0.006)***	3.067 (0.002)***
	Without LCSR	562	-1.062 (7.683)	-3.277 (0.001)***		
$SVar^5$	With LCSR	129	0.839 (5.774)	1.651 (0.101)	-2.12 (0.035)**	2.390 (0.017)**
	Without LCSR	562	-1.105 (10.060)	-2.602 (0.009)***		
CAR^1	With LCSR	58	0.239 (3.154)	0.578 (0.566)	-1.54 (0.124)	1.860 (0.063)
	Without LCSR	401	-1.014 (6.068)	-3.346 (< .001)		
CAR^{1M}	With LCSR	128	0.241 (3.612)	0.7536 (0.453)	-2.01 (0.044)**	2.529 (0.012)**
	Without LCSR	560	-0.853 (5.888)	-3.426 (< .001)***		
CAR^{1F}	With LCSR	127	0.346 (3.616)	1.077 (0.284)	-1.88 (0.060)*	2.599 (0.009)***
	Without LCSR	547	-0.668 (5.807)	-2.689 (0.007)***		

Notes: Significance level: * = 10%, ** = 5%, *** = 1%. $SVar^k$ is the percentage returns for period k = 0,1,3,5, as shown in equation (1). CAR^1 is the cumulated abnormal returns for three days, from one day before the event to one day after the event, i.e., [-1,1]. CAR^{1M} and CAR^{1F} are alternative measures of cumulated abnormal returns.

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