Corporate Social Responsibility and the Impacts of Product Recall Strategies on Firm Value

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Abstract

Although a firm may intend to convey positive signals by voluntarily recalling the products, prior evidence show voluntary recalls do not experience better abnormal returns than involuntary recalls. This paper investigates the influence of corporate social responsibility (CSR) on stock market reactions to the announcement of voluntary and involuntary product recalls. We argue that a voluntary recall may be associated with greater information uncertainty than involuntary recalls because it involves various incentives and the latitude in recall process allows a firm to act strategically. The engagement in CSR activities certifies the information conveyed by voluntary recalls, and reduces the information uncertainty for investors, and the effect is expected to be stronger for voluntary recalls. Our empirical evidence suggests that firms with good CSR performance receive significantly greater firm value change than those with poor CSR performance upon the announcements of voluntary recalls. On the contrary, the effect of CSR is not significant for involuntary recalls. In addition, we find the effect of CSR is mainly driven by the engagement in technical CSR activities. The evidence suggests that the important contingent effect of CSR in investors' perception of product recall announcements.

Key words: product recall strategy, corporate social responsibility, abnormal returns.
1. Introduction

A common consequence for firms that experience product-harm crises is the initiation of large-scale product recalls. Prior research had shown consistent evidence that product recall announcements are associated with serious firm value loss (Ahmed, Gardella and Nanda, 2002; Hoffer, Oruitt and Reilly, 1988; Jarrell and Peltzman, 1985; Pruitt and Peterson, 1986). Nevertheless, the financial impacts of product recalls can greatly vary for individual firms. For example, Target Corp. recalled 185,000 Firestreet toy scooters on August 17th, and this action incurred an approximate $1.6 billion share value loss in the wake of the national recall. In contrast, Johnson and Johnson experienced a firm value increase by around $5.1 billion when it recalled hepatitis B test kits on January 10th, 2006. As demonstrated in the above examples, product recalls may be associated with heterogeneous valuation impacts across different announcing firms.

Product recalls can be voluntary or involuntary. A normative recall process is that after receiving information of an actual or potential product hazard, firms can voluntarily issue a product recall announcement along with a government agency
(Mullan, 2004). Some firms may even announce recalls with supplemental consumer welfare. Nevertheless, firms may refute any responsibility for a defective product, and likely delay the recall process (Siomkos and Kurzbard, 1994). The government agency will then decide whether to issue a mandatory recall which generally requires a lengthy legal process and detailed investigation of the information available regarding the hazardous product. Once a mandatory recall is enforced, there is little room for a firm to manage the recall process and thus involves less uncertainty on the information contents of recall announcements because the investigation process in mandatory recalls provides information on the nature and details of the hazard products, and attracts media coverage. Accordingly, a mandatory recall may signal a low-quality producer of the recalling firm because they have little incentive to self-monitor product quality (Rupp, 2001).

Relative to a mandatory recall, the information contents of a voluntary recall are not as straightforward. Firstly, voluntary recalls can be motivated by various reasons that may yield very mixed perception. Prior research suggests that managers may voluntarily recall products in order to reduce consumer blame and demonstrate concern for consumers for maintaining their future purchases (Siomkos and Kurzbard, 1994; Laufer and Coombs, 2006). In addition, voluntary recalls can be motivated to show that a firm is cautious with the results from product quality checks and
inspections, sending a signal to consumers that they are diligent in solving quality issues (Hora, Bapuji and Roth, 2011). However, voluntary recalls may sometimes be perceived as negative signals. Chen, Ganesan and Liu (2009) argue that rather than a positive message, a proactive recall strategy may be interpreted as a signal of sufficiently severe product defects so that it forces the firm to act swiftly to deal with a recall on account of pending worse financial consequences. Thus, a voluntary recall per se does not necessarily result in better impacts.

Moreover, the recall process may further complicate the interpretation on signals of voluntary recall announcements. A voluntary recall generally occurs early in the process, and the recall decisions may involve only internal investigation by the recalling firms. In addition, voluntarily recalling firms are not allowed to release their own information before announcements from government agencies (Chen et al., 2009). As a result, the voluntary recall announcements may have greater information uncertainty for investors in evaluating the potential direct and indirect damage and costs to the recalling firms.

The empirical evidence shows that the financial impacts of different product recall strategies are inconclusive. Davidson and Worrell (1992) investigate non-automobile product recalls and find no significant difference between voluntary and government-ordered recalls in firm value change surrounding the announcement
period. Rupp (2001) documents very similar evidence in automobile industry, and further find the results are independent of the hazard composition. Chen et al. (2009) even report that proactive recalls generate significantly more negative stock market reactions than passive recalls. Apparently, the positive information that firms hope to convey through voluntary recalls is not necessarily recognized by investors.

In this paper, we argue that how messages of product recall strategies are perceived by investors is contingent on the performance of corporate social responsibilities (CSR) of the recalling firms. In an environment with limited available information, outsiders will go beyond the disclosed information and search for other signals or proxies in their interpretation of the disclosed messages. The engagement in CSR activities serves an important role of certifying the credibility of information. Prior studies have shown that firms with good CSR performance not only disclose greater amount of information (Gelb and Strawser, 2001), but also have better information quality (Raiborn, Butler and Massoud, 2011) and greater information transparency (Dhaliwal et al., 2011). Moreover, better socially responsible firms have greater reputation and are less likely to act opportunistically toward their stakeholders (McWilliams and Siegel, 2001; Siegel and Vitaliano, 2007; Shleifer, 2004). In product markets, the research has found that firms with more CSR engagement earn stronger consumer confidence and loyalty (Du, Bhattacharya and Sen, 2011), achieve
more favorable stakeholder attitudes and behaviors (Peloza and Shang, 2011; Stanaland, Lwin and Murphy, 2011), and are more able to sustain the competitive advantage among rivals (Branco and Rodrigues, 2006; Wang and Bansal, 2012). Godfrey, Merrill and Hansen (2009) argue that CSR activities lead to positive attributions by offering an insurance-like protection when a firm suffers a negative event.

This study investigates the impacts of product recall strategies on financial performance by focusing on the contingent effect of CSR. We hypothesize that CSR plays an important role in stock market responses to product recall announcements. Because CSR performance certifies a firm’s reputation and credibility, the information content of product recall announcements made by high-CSR firms is expected to be of greater quality, and the conveyed signals be more positively received by outsiders. In contrast, the information of recall announcements from low-CSR firms is not as trustworthy as that from high-CSR firms. It may create greater uncertainty and doubts about the true motives of the announcing firm, and convey messages to outsiders that are very different from what the announcing firm intends to deliver.

Moreover, the influence of CSR is expected to be heterogeneous for different product recall strategies. We hypothesize that CSR has a stronger impact in voluntary
recalls than involuntary recalls. Because voluntary recalls are associated with greater information uncertainty, investors may have to rely more on CSR ratings of the recalling firms in interpreting the disclosed information and evaluating the impacts associated with the voluntary recall announcements. Therefore, voluntary product recalls by high-CSR firms are more likely to deliver positive signals by convincing investors that the recalls are made for ensuring product safety and maintaining consumers’ confidence. In contrast, voluntary recalls by low-CSR firms may be perceived as an intention to hide the severe product hazard and financial damage as argued in Chen et al. (2009). As a result, CSR ratings are expected to be positively related with firm value change for voluntary product recall announcements. However, the effect of CSR for involuntary recalls may be different. Because mandatory recall decisions are reached after a detailed and lengthy government investigation and legal proceedings, the information about the hazard defects, degree of safety concern and the firms’ corrective plan is more certain and available when announcing the product recall decisions are made. In addition, in mandatory recalls firms have little room to manage the recall process. Therefore, the information uncertainty for investors in involuntary recalls is expected be not as severe as voluntary recalls, and the function of information certification of CSR is more limited.
CSR is a set of heterogeneous firm actions (Godfrey et al., 2009). The effects of different CSR activities on stock market reactions to product recall announcements may not be similar. To provide finer evidence, this study further tests the effects of different CSR activities on the financial performance of product recall strategies. Based on the targeted stakeholders, the literature has classified CSR into technical CSR (TCSR) and institutional CSR (ICSR) (Mattingly and Berman, 2006; Godfrey et al., 2009). TCSR activities tie more closely to firm operation, including product quality and safety, corporate governance mechanism and employee relations, and mainly interact with primary stakeholders who have strong power and direct interest in business operation. On the other hand, ICSR activities emphasize the relationship involving environment and community concerns with outside stakeholders who often lack power and urgency to enforce shareholders wealth (Mattingly and Berman, 2006; Parmar, Freeman, Harrison, Wicks, Purnell and de Colle, 2010). With different focuses, TCSR and ICSR may have dissimilar effect on the consequence of product recalls. Emphasizing aspects in business management, TCSR engagement reduces the possibility of opportunistic behaviors toward other stakeholders in the business operation and product quality. In addition, with the needed power and interests, primary stakeholders have strong incentive to monitor the business operation. The emphasis of TCSR on primary stakeholders will help improve the quality of
information transparency for not only primary stakeholders, but also other stakeholders because the power and interest of primary stakeholders make their actions credible signals on the information quality. Therefore, when announcing product recalls, the impacts of TCSR performance is expected to be more important than ICSR in influencing investors’ estimation on the financial impacts of product recalls.

This study contributes to the literature by linking CSR with the financial performance of product recall strategies. While firms may attempt to convey positive signals through voluntary product recalls, we argue that how well investors are convinced by the signals is contingent on the CSR performance. Due to information uncertainty, voluntary recalls per se may not be enough to convince investors of the good motives without other credible information, such as CSR performance. Our arguments also suggest that the ignorance of CSR performance may help explain the reason why previous studies find voluntary/active management in product recalls does not necessarily experience better responses from financial market (Davidson and Worrell, 1992; Chen et al., 2009). In addition, Cheah, Chan and Chieng (2007) find no significant effect of CSR on the abnormal returns of pharmaceutical product recall announcements in both the US and US markets. Our study suggests that the insignificant results may be attributed by not recognizing the heterogeneous effect of
CSR on different product recall strategies. To the best of our knowledge, our work represents the first paper that provides an integrative perspective of CSR and investors’ perception on the financial impacts of product recall strategies. Besides, this paper shows that not all CSR activities are equally relevant to the value assessment of the financial market during product recall events. The CSR activities that are more directly linked to the nature of corporate decisions have stronger impacts. Therefore, to better understand how CSR influences the consequences of corporate events, it is important to distinguish the heterogeneous characteristics of CSR activities.

In the next section of this paper, we provide the theoretical arguments for the proposed hypotheses. The data and methodology are in section 3. The empirical results are presented in section 4. The discussion and future research are provided in section 5.

2. Literature Review and Hypotheses Development

Product recall events have been prevailing for decades due to the upsurge of product safety consciousness and awareness, and in particular have the potential to damage long-developed brand equity, destroy a firm’s reputation, blow up consumers’ quality perception, and in an end lead to market share and revenue losses (Chen et al.,
The substance of recalls can either be for product replacement, withdrawal, or be for simply repair or examination on an available product. Siomkos and Kurzbard (1994) propose four types of corporate responses to a product-harm crisis: denial, involuntary, voluntary and super-effort recall strategies that make up the so-called company response continuum. In a recall event, consumer attitudes toward different types of product recalls can show a great variation because the information content that a firm intends to convey through recall announcements may not be correctly received. The uncertainty in interpreting the information disclosed in product recall announcements may thus result in heterogeneous financial impacts. Given the potentially destructive fallouts for firms involved, a firm’s success in dealing with a product recall event may hinge not only on the type of responses that a firm undertakes, but also how well the intended message can be received by the outsiders.

2.1 CSR and Product Recall Announcement Effect

Corporate social responsibilities are actions that appear to advance social good, beyond the interests of the firm, and can play an important role to enhance competitive advantages to an extent that capture value for firms through participation in social activities (McWilliams and Siegel, 2001 and 2010). The value of CSR often rests in the provision of information for a broad range of stakeholders to rely on
(Feddersen and Gilligan, 2001; McWilliams and Siegel, 2010). CSR thus associates an informational relevance with a form of corporate goodwill or moral capital to outside investors, especially when negative events occur (Godfrey et al., 2009). The messages from social activities of a firm are germane to how investors evaluate the sustainable benefits in preserving economic value (Godfrey, 2005).

A firm's CSR performance conveys positive information on the extent of the firm concerns the interest of various stakeholders. Prior studies suggest that a socially responsible firm is less likely to conduct opportunistic behaviors. For example, Chih, Shen and Kang (2008) find that a firm with social responsibility does not conceal unfavorable realized earnings outcomes to myopically increase current profits, and thus less inclines to conduct earnings management that distorts investors. Firms committed to CSR emphasize the quality of their publicly available financial information and aim at nurturing future relationships with stakeholders. Shleifer (2004) interprets that because ethical norms evolves and promotes social cooperation with a strong commitment to social responsibility that reduces the likelihood of opportunistic earnings manipulation, firms with social responsibility accordingly would not selfishly abuse public trust, and function more efficiently.

Firms actively engaging in CSR generally have better financial transparency and greater information disclosures. Gelb and Strawser (2001) argue that firms
undertaking CSR are for stakeholder engagement. Firms with good CSR performance appear to provide more extensive disclosures than legitimate requirements, and such manner convinces investors to believe in their disclosure quality and transparency. Dhaliwal, Li, Tsang and Yang (2011) find that voluntarily communicating financial information with investors can increase their awareness of a firm’s existence and further reduce their risks because the financial disclosures are informationally value-relevant for investors to decide the investment horizon on a firm.

To product markets, CSR is found to be important in serving a certification role on verifying the information content about a new-launched or an in-the-market product. Siegel and Vitaliano’s (2007) argue that both the credence (ex. mutual funds) and experienced (ex. advertising) services involve a high degree of information asymmetry between buyers and sellers, which cannot be readily evaluated prior to purchase. CSR, as a positive signal regarding a firm’s reputation, assures the future value of credence and experienced services. Because consumers rely heavily on the firm’s reputation for quality, CSR presents to convey relevant information for consumers to gauge their purchase behavior. Peloza and Shang (2010) also point out that CSR provides product-related benefits in terms of quality insurance because it generates certain form of social and environmental good that maintains stakeholder relations as well as creates stakeholder value.
CSR is found to have a significant effect in reducing negative shocks. Janney and Gove (2011) find that CSR initiatives partially buffer a firm against a wrong-doing event and enhance overall corporate reputations from scandal revelations. CSR initiatives as observable behaviors would benefit the firm by differentiating it from its peers and competitors for long run. Because the market reactions to backdating scandal are influenced by prior CSR initiatives pertaining to good governance, the impact of firms’ wrong-doing events is more likely to ameliorate investor concerns. Godfrey et al. (2009) argue that CSR is crucial in the corporate risk management policy. When firms face negative events, the "insurance-like" characteristic of CSR can lead to positive attribution from stakeholders who then temper the unfavorable evaluation and sanctions toward firms. The moral capital resulting from CSR investment can mitigate the negative impacts of product recalls, and thus help reduce the loss of firm value.

Based on the arguments stated above, we argue that CSR performance may alleviate the negative information of a product recall announcement. Managers engaging in CSR activities may send strong signals that the firm is careful about social or moral desires to create potential value for stakeholders. Reciprocally, stakeholders interpret the signals from such moral capital to temper the possible harm from self-serving and self-dealing behaviors (Godfrey et al., 2009). As a result, upon
the announcements of product recalls, firms with better CSR performance are more likely to convince investors that the product recall is primarily motivated by maintaining shareholders' welfare, rather than opportunistically hiding the substantial financial losses. Therefore, we propose the following hypothesis:

*Hypothesis 1: A firm’s CSR performance positively relates to abnormal stock returns upon the announcements of a product recall.*

2.2 *The Contingent Effect of CSR on Product Recall Strategies*

A product recall can be voluntary or involuntary. In the formal product recall process, a firm has the obligation to report safety issues to the government agency when they receive consumer complaints or distribution channel member notices. As long as the impact of the reported product is investigated, the recalling firm may voluntarily make an official recall announcement jointly with the related government agency. Nevertheless, a firm may disagree with the agency’s decision on a warranted recall and thus the government agency needs to decide whether to impose a mandatory (i.e., involuntary) recall, which usually involves a lengthy and costly investigation process with uncertain outcomes (Chen, et al., 2009).
The process of government-ordered recalls is relatively clear and transparent. The main purpose of the recall is to remove the defective products from the consumer market or channel members as quickly as possible to the extent that the public can access to the understandable and accurate information about the defective products. The course of investigation action also provides the public the relevant and detailed information about the hazard products in a timely manner (CPSC, 2012). Once a mandatory recall is decided by the governance agency, there is little room of choices in the recall process. Because of the disclosed information from the government investigation and the standard recall process, the information contents involved in involuntary product recalls announcements is straightforward. An involuntary recall often signals that a firm reluctantly stand behind its products, and offers the clue that the product is so defective that the government has to intervene in to correct the situation (Davidson and Worrell, 1992).

In contrast to a mandatory recall, a voluntary recall may involve more complex information contents. On the one hand, voluntary recalls may be motivated by the attempt to send favorable signals. Siomkos and Kurzbard (1994) argue that if firms respond to a recall event by executing a voluntary recall or super-effort strategy, future purchases will be less negatively influenced by the current crisis because consumers perceive a lower degree of danger in such recalls to an extent that it
sustains positive consumer impressions. Davidson and Worrell (1992) and Laufer and Coomb (2006) suggest that a voluntary recall may reassure consumers that a company willingly takes part in its products as well as appears thinking of shareholder benefits and demonstrates concern for consumers. Voluntary product recalls are more often recognized as responsible because a voluntary manner is indicated as trustworthiness and uprightness to temper stakeholders’ doubt on brand equity and customer loyalty (Dawar and Pillutla, 2000).

On the other hand, while managers may attempt to send a signal of diligence about product quality issues, corporate trustworthiness and integrity by voluntary recalls, investors may actually negatively interpret a voluntary recall as pending worse financial consequences (Chen et al., 2009). A firm acting proactively to deal with defects may signal to investors expensive and uncertain recall costs that indicate future cases of product liability (Hora et al., 2011). Moreover, hazardous recalls are likely to be initiated by firms who know better about the potential impacts on the ensuing losses than outsiders (Rupp and Taylor, 2002). Although a voluntary recall aims at minimizing the damages, investors may worry about the unforeseen losses behind it to an extent that they deconstruct the information in a way of worst-case scenario especially when they are uncertain of the information content released (Epstein and Schneider, 2008). Davidson and Worrell (1992) and Rupp (2001) find no
significant difference in the abnormal stock returns between voluntary and mandatory product recalls. Chen et al. (2009) show that firms with proactive product recalls experience significantly more negative firm value change than passive recalls. The discussion above indicates that the information contents of voluntary recalls involve greater uncertainty than involuntary recalls. Since various factors are involved in voluntary recalls, it can be difficult for investors to distinguish the true underlying motivation in assessing the financial impacts of product recalls based on the recall announcements per se.

Prior research has documented consistent evidence that CSR has an important certification effect on the quality of information when information uncertainty is strong. El Ghoul, Guehami, Kwok and Mishra (2011) show that the CSR performance significantly reduces cost of equity capital because better CSR is able to successfully signal greater level of information disclosure and lower perceived idiosyncratic risks that meet investors’ preference. Chih et al. (2008) find that firms with greater commitment to CSR activities can convince investors that they provide financial information of quality, and engage less in earnings smoothing behavior. Similarly, Shleifer (2004) argues that CSR reduces the possibility of opportunistic earnings management because it augments information transparency and disclosure quality, and hence alleviates the extent to which firms abuse their information advantage over
investors. Ramchander, Schwebach and Staking (2012) indicate that CSR not only uncovers new information about the firm’s performance, but also serves as a communication role in delivering messages to outside investors because CSR is able to mitigate the information uncertainty of investors regarding investment orientation and assessment.

To the extent that CSR has an effective effect in certifying information quality associated with product recalls announcements, the influence should be dependent on the extent of information uncertainty. Since the information uncertainty of voluntary recalls is expected to be greater than involuntary recalls, we argue that, upon the announcements of product recalls, the effect of CSR is expected to be stronger for voluntary recalls than involuntary recalls. Thus, we propose the following hypothesis.

*Hypothesis 2: The effect of a firm’s CSR performance on abnormal stock returns is greater for announcements of voluntary product recalls than for involuntary ones.*

2.3 *The Components of CSR: TCSR and ICSR*

The discussion above suggests that the effect of CSR activities on the financial impacts of product recall announcements rests on how CSR can help investors interpret the information in different product recall strategies by serving as an.
important medium in reducing information uncertainty. Nevertheless, not all CSR activities are alike, and they may target different group of stakeholders. While CSR in general is expected to have a positive effect on the announcement return of product recalls, we believe the impact could be more dependent on the CSR activities that focus more towards stakeholders who are associated with product-related issues.

Mattingly and Berman (2006) categorize CSR activities into technical CSR (TCSR) and institutional CSR (ICSR). A firm’s institutional orientation indicates the source of normative expectations of a firm, whereas the technical orientation is the source of resource exchanges among direct stakeholders. That is, TCSR involves more in business operation, whereas ICSR relates more in community and diversity in treatment of various races, disabled and different genders. As the explicit in a firm’s social activities surrounds managerial preferences for prioritizing stakeholders, firms would likely differentiate the stakeholder groups they interact with. Building on the theoretical characteristics on TCSR and ICSR, we follow Godgrey et al.’s (2009) social action constructs to link stakeholder relationship management. TCSR-oriented firms that concern more about business operation link should be targeting primary stakeholders who are essential to business operation, containing dimensions such as governance, employee and product relations. In contrast, secondary stakeholders who are less urgent and powerless to press their legitimate claims on the firm would be the
Primary stakeholder relationship ties closely with corporate survival where information gap between firms and outside investors are likely to be the most acute (Ramchander et al., 2012). As TCSR activities target primary stakeholders including investors, employees and customers that produce advantageous exchange capital, TCSR-oriented firms may send a credible signal to investors that the recall is made not only to further check product quality and protect the safety of the public, but also exhibits the most prompt socially responsible course of action. As Mattingly and Berman (2006) defined, technical factors in CSR activities are involved in resource exchanges with firms, issues around product quality and safety should be under surveillance of primary stakeholders closely because the inputs and actions of CSR activities are in line with firm value that directly affects primary stakeholder interests. CSR as the mitigating factor in mens rea attribution process is manifest as a TCSR-oriented firm announces a product recall. When the wealth of stakeholders is jeopardized in product safety issues or health violations, the importance of TCSR is thus apparent (Godfrey et al., 2009), particularly for product-related stakeholder group (i.e. primary stakeholders). Primary stakeholders request more useful information that helps them resolve uncertainty. Hillman and Keim (2001) claim that
corporate resources used for social issues signal a positive message to investors that
the participation in social activities are directly related to shareholder value. Therefore,
managing better primary stakeholder relationship may lead to increased shareholder
wealth.

In contrast to TCSR, ICSR targets secondary stakeholders that possess different
profile. The apparent difference between ICSR and TCSR lies in the attribute of direct
or indirect partnership in business operation. Secondary stakeholders generally have
less power and urgency to press their claims on firm value. Thus, they may not have
as strong influence on the valuation effect of product recalls as primary stakeholders.
In addition, secondary stakeholders plea voluntary acts of social beneficence, and
emphasize the community relationship and the other-regarding orientation (Godfrey et
al., 2009). As a result, relative to TCSR activities, the ICSR activity is less directly
related with the financial impacts of product recalls. Because of the differences in
CSR activities targeted stakeholders between TCSR and ICSR, we propose the
following hypotheses.

Hypothesis 3a: A firm’s technical CSR performance is positively associated
with abnormal stock returns upon the announcements of a product recall.
Hypothesis 3b: A firm’s institutional CSR performance is insignificantly associated with abnormal stock returns upon the announcements of a product recall.

2.4 CSR Components and Product Recall Strategies

For similar reasons provided in preceding sections, we further posit that TCSR activities should have a greater impact on a voluntary recall strategy than an involuntary recall strategy because TCSR activities, emphasizing the product-related issues and governance mechanism, are more likely to reduce the information uncertainty associated with voluntary recalls. In addition, TCSR activities relate to more informational relevance for primary stakeholders. The more information that investors obtain, the lower information uncertainty exists and hence lead to better valuation effect. As investors are uncertain of the signals from a voluntary recall strategy, they reply heavier on public information as monitoring tool. Accordingly, TCSR provides the certification effect as a voluntary recall strategy announces, and the monitoring mechanism of primary stakeholders also rests assure outside investors. In contrast, ICSR-oriented firms that target secondary stakeholders involve less acute information gaps and thus experience insignificant stock market reactions.

Relative to a voluntary recall strategy, a firm that announces an involuntary recall strategy obeys more in normative rules that are associated with lower
information uncertainty between firm insiders and outside investors, therefore, the
effects of both TCSR and ICSR on the value assessment of investors are less likely to
be significant. Extensive hypotheses are proposed as below:

_Hypothesis 4a: For voluntary product recall strategies, the impact of TCSR on
abnormal stock market reactions to recall announcements is more pronounced than
that of ICSR._

_Hypothesis 4b: For involuntary recall strategies, neither TCSR nor ICSR affect
the abnormal stock market reactions to product recall announcements._

3. Data and Methodology

3.1 Data

The sample of product recall announcements was collected from *LexisNexis
Academic* during 1991 to 2008. We applied the structured content analysis approach
(Jauch, Osborn and Martin, 1980) to identify if the recall announcements belong to
voluntary or involuntary strategy. Following Siomkos and Kurzbard (1994), we
searched for voluntary product recalls using the keywords “*voluntary*”, “*improve*” and
“*precaution*” in the announced news, and the involuntary product recalls using the
keywords “order”, “mandatory” and ”refuse”. If there are multiple recall announcements for the same product, only the first one is included in the sample. In addition, we deleted the recall announcements when other important news is released around the product recall announcement date to avoid their confounding effects on stock market reactions\(^1\).

To measure the abnormal returns, we require the sample firms to be listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ. The daily stock return data is obtained from the Center for Research Security Prices (CRSP) database. We draw on the Compustat database for a firm’s financial information. The final sample includes announcements of 355 voluntary recalls, and 55 involuntary recalls.

3.2 Event Study Analysis

Event study methodology has been widely applied in marketing and management research (Mathur and Mathur, 2000; McWilliams and Siegel, 1997; Sorescu, Shankar and Kushwaha, 2007). Based on the Market Efficiency Hypothesis (Fama, 1998), the financial impact of product recalls should be quickly reflected in stock price changes when the information is disclosed to the public. Thus, The

\(^1\) The events include announcements of mergers and acquisitions, earnings reports, dividends, and so on.
valuation impacts of an event is measured by the abnormal changes in share prices surrounding the time of the event announcements.

We measure abnormal stock returns by subtracting expected returns from real returns. The expected stock returns are measured by estimating the following equation with the ordinary least squares technique: 

\[ r_{it} = a_i + b_i R_{mt} + e_{it}, \]

where \( r_{it} \) is the stock return for firm \( i \) on day \( t \); \( a_i \) and \( b_i \) are the regression parameters for firm \( i \); \( R_{mt} \) is the return of the market portfolio on day \( t \); and \( e_{it} \) is the residual term. The abnormal returns \( AR_{it} \) associated with recall announcements are measured by the following equation:

\[ AR_{it} = r_{it} - (\hat{a}_i + \hat{b}_i R_{mt}), \]

where \( AR_{it} \) is the abnormal return for firm \( i \) on day \( t \), and \( \hat{a}_i \) and \( \hat{b}_i \) are parameters estimated for the \( a_i \) and \( b_i \) in the preceding equation by using a 140-day estimation period prior to the announcement day (Chen, Ho, Ilk and Lee, 2002). We use the cumulative abnormal returns on the announcement date and one day before the announcement date, CAR (-1,0) as the dependent variable in the empirical analyses.

3.3 Variables

The first independent variable is a binary variable, \( VOLUNTARY \), that takes a value of 1 for voluntary product recalls, and zero for involuntary recalls. The second independent variable, \( CSR \), is a firm’s CSR performance. We collect information of
CSR ratings from KLD STATS. CSR is an indicator variable that equals 1 if a firm’s number of CSR strengths minus the number of weaknesses is nonnegative, and 0 otherwise (Siegel & Vitaliano, 2007). Furthermore, based on the CSR classification in KLD STATS provided in Mattingly and Berman (2006), we measure technical and institutional CSR. Specifically, TCSR is a dummy variable that is 1 if the number of strengths minus the number of weakness in the items of TCSR is nonnegative, and 0 otherwise. The variable ICSR is similarly defined.

We control several important factors on the market reactions to product recall announcements in the regression analyses. REPUTATION measures a firm’s reputation based on the rating scores in the annual America’s Most Admired Companies survey appeared in Fortune magazine in the product recall year (Chen et al., 2009). To capture the effect of serious incidents on the value assessment of investors, we use a dummy variable INJURY that equals 1 if injury is reported in the recall news, and 0 otherwise.

Chen et al. (2009) shows that the stock market reactions to recall announcements may be related to the recalling firm’s size and financial leverage. We thus control those two factors in the analyses. The variable SIZE is measured by the logarithm of book value of total assets for the fiscal year of the product recall announcements (Chen et al., 2002). The financial leverage, LEV, is measured as the
book value of total debt divided by the book value of total assets for the fiscal year preceding the announcement (Lang, Ofek and Stulz, 1996). In addition, product recalls may have a greater impact on firms that have more growth opportunity because the valuable growth options may disappear due to the recall events. Thus, we include the growth opportunity variable, TOBIN’S Q, measured by the ratio of the market to book value of a firm’s assets, where the market value of assets equals the book value of assets minus the book value of common equity plus the market value of common equity (Chen et al., 2002). To capture possible trends of the impact of recalls on returns, a time variable, Year trend effect is included (Chen et al., 2009) in the analyses, measured by the number of years between 1991, the earliest sample year, and the year of the recall. Finally, we control for the industry-specific effects by including the industry dummy variables based on the two-digit Standard Industry Classification (SIC) codes.

4. Results

4.1 Descriptive Statistics

Table 1 illustrates the distribution of the entire sample. The majority of the recall announcements occurred after 2000. For the industrial distribution, the product
recalls in the sample were made by firms operating in 20 industries based on the 2-digit SIC codes. The majority of recalls announcements happened in the manufacturing industries (SIC codes from 20 to 39), and the Transportation equipment industry (SIC code 37) accounts for around 30% of the entire sample.

Panel A of Table 2 presents descriptive statistics for the variables in the analyses. For CSR performance and firm reputation, we find there is no significant difference between the voluntary and involuntary subsamples. The results indicate that injuries occur significantly more frequently for involuntarily recalled products than voluntarily ones. The evidence for TOBIN'S Q suggests that firms involving voluntary recalls have significantly greater growth opportunity than those with involuntary recalls. The non-parametric statistics for the difference in median are very similar. Finally, no significant difference is found in the leverage ratio between voluntary and involuntary recalls. Panel B presents the Pearson correlations among the variables.
4.2 Analyses of Impact of CSR Performance on Recall Strategies

Table 3 presents the comparison in CAR based on the recall strategy and CSR performance. Panel A shows that while voluntary and involuntary recalls are both associated with negative announcement returns, voluntary recalls receive marginally greater abnormal returns than involuntary recalls.\(^2\) Pane B compares CAR based on CSR performance. The results show that high-CSR firms have an insignificant mean CAR of -0.12% \((t = 0.55)\), and, in a sharp contrast, low-CSR firms experience a significantly negative mean CAR of -0.58% \((t = -3.12)\). The difference in CAR is statistically significant at the 10% level. The results suggest a firm’s CSR performance may be considered as a positive signal to investors in their assessment of the valuation impacts of product recalls.

Panel C considers both recall strategy and CSR performance simultaneously. The findings show that for voluntary recalls, the mean CAR for high-CSR firms is positive (0.04%), although statistically insignificant. On the contrary, the CAR for low-CSR firms is significantly negative (-0.54%). The difference in mean CAR between high- and low-CSR firms is statistically significant at the 5% level. For involuntary recalls, firms in both high- and low-CSR groups receive negative mean CAR, and the difference is not statistically significantly different from zero. The

\(^2\) The CAR for the overall sample is -0.35% \((t = -2.49)\). This result is consistent with prior studies and suggests that product recalls are on average considered as bad news by investors.
overall evidence in Panel C suggests that CSR plays an important role in investors’
value assessment for voluntary recalls, but not involuntary recalls.

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In Table 4 we further decompose CSR ratings into TCSR and ICSR
components based on the activity classification in Mattingly and Berman (2006).

Panel A shows that there is no significant difference in the mean CAR between the
high- and low-ICSR subsamples. However, the results show a very different pattern
when focusing on TCSR. The mean CAR for the high-TCSR firms is significantly
positive, but that for the low-TCSR firms is significantly negative, and the difference
is strongly significant at the 1% level (t = 3.27). The results imply that the information
content of product recalls is more related with the involvement in TCSR activity of
the recalling firms.

Panel B presents the impacts of TCSR and ICSR on the abnormal returns of
recall strategy. Consistent with the evidence in Panel A, ICSR rating does not yield
important difference in the mean CAR for both voluntary and involuntary recall
announcements. However, for TCSR rating we find that high-TCSR firms have
significantly greater abnormal returns than low-TCSR firms in the voluntary recall
group, but the difference becomes insignificant in the involuntary group. The
evidence strongly indicates that the result for overall CSR is mainly driven by TCSR performance, rather than ICSR. In sum, the evidence presented in Tables 3 and 4 suggests that how investors perceive and evaluate product recalls does not only rely on the recall strategy per se, it is also dependent on the CSR ratings of the announcing firms, particularly the TCSR performance.

4.3 Cross-sectional Regression Analyses

Table 5 presents the cross-sectional regression analyses of the recall announcement abnormal returns. To control for the possibility of heteroskedasticity in the sample, the t-values reported are computed with heteroskedasticity-consistent standard errors (White, 1980). Model 1 tests the effect of product recall strategy and CSR for the overall sample. The results show that the coefficient of \textit{VOLUNTARY} is insignificantly positive, implying voluntary recalls per se do not necessarily result in better result in firm value change than involuntary recalls. The effect of the \textit{CSR} dummy is positive and statistically significant at the 5% level, suggesting that CSR performance has a strong impact on the value assessment during product recalls announcements. Model 2 further identifies which part of CSR activities creates the influence on recall abnormal returns. The evidence shows that \textit{TCSR} has a
significantly positive impact on abnormal returns, but the effect of ICSR is found to be very weak. The findings indicate that the positive influence of CSR in Model 1 is driven by TCSR performance. The evidence in Models 1 and 2 lends strong support to Hypotheses 1 and 3.

To test the interaction effect of CSR and recall strategy, we stratify the overall sample based on recall strategies. In the subsample of voluntary strategy, Model 3 shows that CSR is strongly positively associated with abnormal returns of product recalls. In contrast, in the subsample of involuntary strategy, Model 5 shows that the effect of CSR is statistically insignificant. Moreover, when considering the component of CSR activities, we find insignificant effects of ICSR for both voluntary and involuntary recalls in Models 4 and 6. The coefficients of TCSR, however, are significantly positive for the voluntary subsample, but statistically insignificant for the involuntary subsample. The overall results in Table 5 are consistent with those in Panels A and B in Table 4.

For the control variables, we find LEV is positively and significantly related to abnormal returns for the whole sample. But the effects of most of the other control variables are statistically insignificant. To test if there is a multicollinearity problem, we use the variation inflation factor (VIF) in all regression models. The values of VIF ranges from 1.06 to 1.96, suggesting there is little problem of multicollinearity.
A number of robustness checks are employed to test the sensitivity of our findings. Firstly, while the choice of event window CAR (-1,0) is not uncommon based on previous studies, it may not completely catch the announcement effect of product recalls. To test if the choice of event window could bias the empirical results, we further test different events windows of CAR (-1,1) and CAR (-2,2) as the alternative independent variables and re-test the regression analyses. We find that for the event window CAR (-1,1), the results of VOLUNTARY (t = 0.83), CSR (t = 2.82), ICSR (t = 0.36) and TCSR (t = 3.26) are all consistent with those presented in Table 5. The evidence for CAR (-2,2) is very similar. Secondly, the measure of CSR dummy is categorical, and thus, may not catch the linear trend of CSR on abnormal returns. We thus also try a continuous variable of CSR performance measured by the number of strength minus the number of weakness of CSR performance in the KLD databank, and re-do Models 1, 3 and 5 in Table 5. The result of the continuous measure of CSR remain the same, significantly positive at the 5% level for Model 1 (t = 2.63) and the 1% level for Model 3 (t = 3.34), and insignificant in Model 5 (t = 0.99). Similarly, we also test the results by the continuous measures of TCSR and ICSR, and find the findings are very similar with those in Table 5. Thirdly, although the market model is
widely used in measuring abnormal returns in the event study approach, prior studies had employed alternative approach to measure abnormal returns. We follow Yermack (1996) and measure a firm’s abnormal return at day t by subtracting market return from the actual return on the same day. We find that the results from this alternative measure of abnormal returns are essentially the same with those reported in Table 5. Thus our findings are not sensitive to different approaches of measuring abnormal returns. Finally, Godfrey et al. (2009) also investigate the influences of TCSR and ICSR with a slightly different measure from our study. In Godfrey et al.’s study (2009), TCSR (ICSR) is measured as a dummy variable that is equal to one if the firm scored greater than zero on any of the positive items related to TCSR (ICSR) in the KLD database, while in this study TCSR is one when the number of strengths is equal to or greater than the number of weakness in the related items. To check if our findings on TCSR and ICSR are sensitive to different measures, we follow the measures of TCSR and ICSR in Godfrey et al. (2009) and redo the analyses in Table 5. The results are very similar. With the alternative measures, the results for voluntary recalls show that the coefficient of TCSR is positive and significant (t = 1.82), and that of ICSR is insignificant (t = -0.22); for involuntary recalls, both TCSR and ICSR are statistically insignificant. Thus, our findings are robust to the alternative measures

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3 The related items of TCSR are those under the governance, employee relations, or product relations in the KLD database. The related items of ICSR are those under the community or diversity dimensions.
5. Discussions and Implications

The nexus of this paper emphasizes the important effect of information certification on investors' reactions to product recall strategies. While managers may intend to convey positive messages through voluntary product recalls, the messages, however, may not be well received. Voluntary recalls involve different motivations and thus result in greater information uncertainty that increases the difficulty for investors in interpreting the signals. Our findings suggest that CSR performance positively affects investors' valuation on the financial impacts of voluntary product recalls. The effect of CSR, however, becomes insignificant for involuntary recalls since the underlying information is more straightforward in involuntary recall announcements.

To the best of our knowledge, this paper is the first one in the literature to link CSR performance with the financial impacts of product recall strategies. Chen et al.’s study (2009) investigates the differences in financial value changes around the announcements of product recalls comparing proactive and passive recall strategies. Our study differs from Chen et al. (2009) in several important respects. First, this
paper examines voluntary and involuntary product recalls, while Chen et al. (2009) measure proactive and passive recall strategies by whether the recalls involve any incidents or not. The different focus may explain why our sample size of voluntary recalls is much larger than proactive recalls in their study. Second, our study considers the contingent effect of CSR on product recall strategies, while Chen et al. (2009) does not. Finally, the sample in our study includes more product recall announcements, and covers a longer time period.

This study is related with Cheah et al.’s (2007) that investigate the effect of CSR on the abnormal returns of product recall announcements. They find that CSR does not have a significant effect on the abnormal returns of product recall announcements in both the U.K. and U.S. samples. While with similar focus on CSR effect, their analyses does not consider that recall strategies may receive heterogeneous impacts from CSR performance. In contrast, our study emphasizes the characteristics of information uncertainty associated with voluntary and involuntary recalls that can yield different impacts of CSR on investors' perception about the financial impacts of product recalls.

Godfrey et al. (2009) investigate the risk management hypothesis by studying the effect of CSR on shareholder wealth for a sample of negative events involving lawsuits and regulatory actions. While their findings show that ICSR plays a more
important role in mitigating the unfavorable impacts of negative events, they also suggest that social initiatives targeting a firm's primary stakeholders may yield the insurance-like benefits when the negative events affect primary stakeholders. Our evidence is consistent with the predictions. Product recalls involve the manufacturing process of business operation, and the consequence has strong impacts on the welfare of primary stakeholders, including customers, suppliers, employees and shareholders. Since TCSR activities target primary stakeholders, it is actually not surprising that our findings show that TCSR indeed are more effective in reducing the impacts of product recalls, particularly for voluntary recalls. This paper, together with Godfrey et al. (2009), provides strong evidence that not all CSR activities are alike. The effect of CSR on firm value change is critically dependent on whether the nature of the events is consistent with the types of CSR activities. TSCR performance is expected to be more effective when the events have strong impacts concerning primary stakeholders, while ICSR is more important when the shocks have greater influences on secondary stakeholders.

Managerial Implications, Limitations and Future research

Our results suggest an important implication for managers in recall strategies along with the factors that lead investors to choose socially responsible investment
products. A growing body of literature has indicated that the strategic use of CSR positively links with firm performance (McWilliams et al., 2006), yet, how CSR can benefit a firm in negative corporate events may closely hinge on target stakeholders’ behavior. Our findings suggest that the certification role of TCSR germane to direct stakeholder relationship may nurture practical knowledge to invest functional CSR as future assets under budgetary concerns. Furthermore, this paper accentuates the qualitative usage of CSR that signifies the novelty and nature of the research in CSR area. Managers can help reduce the negative impact of a product recall by effectively developing and communicating the intangible values created from the CSR engagement. In doing so, managers would more align investor expectations with insurance property. In conclusion, managers had better march to the beat of different stakeholder preferences in a given market.

The study sheds light on the informational attribute of socially responsible activities for investors to evaluate a product recall strategy. As the debate if the CSR investment in companies links to firm value remains a puzzle (see a systematic review in Taneja, Taneja and Gupta, 2011), this study attends to find the value proposition in CSR engagement upon a product recall announcement that helps resolve investor uncertainty to an extent that influences stock market reactions. By means of CSR investment preceding a corporate crisis, investors’ tolerance for operational mistakes
may heighten to an optimal level on the premise that the financial loss is acceptable. In other words, as messages from the recall strategies are ambiguous to outside stakeholders, it is the informational attribute of CSR activities publicly obtained from third parties that decrease investor doubts on the consequences. While the empirical results show a negative effect of both voluntary and involuntary recall strategies, the certification role of CSR has been shed more lighted on differentiating the potential impact on different recall strategies. Finally, the study encourages managers to concern more on investment horizon in CSR in terms of business operational viability that is conducive to long-term value creation. The investment in CSR initiatives has cumulated more governance role of monitoring and disciplining corporate behavior to the significance (Bhattacharya, Korschun and Sen, 2009). As a TCSR-oriented activity relates more with governance, employees and product aspects (Mattingly and Berman, 2006), firms can choose a favorable investment policy to maintain target stakeholder.

There are some limitations in our research. Firstly, the event study methodology is usually constrained as it goes to detect the long-run effects. Our study provides evidence surrounding the announcement of a product recall strategy which may not necessarily predicts long-term effects. Research on whether CSR activities could recover the financial losses in the future is thus encouraged. Secondly, as the sample
in KLD database are S&P1500 publicly listed firms, our results may not be
generalized to privately-held firms. The information uncertainty ought to be much
higher for private firms, and hence the certification role of CSR activities should have
a greater impact. It would be interesting to explore the impact of CSR activities on
privately held firms in future research. Finally, the evidence in this study suggests the
certification function of CSR is important in voluntary recalls. CSR, however, is
certainly not the only mechanism that a firm can use to certify information. Other
mechanisms, such as reputations and corporate governance can also perform the
certification function. It is thus interesting to see if our findings also exist in other
mechanisms of information certification.
References


