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When and how is corporate social responsibility profitable?☆

Pradeep Bhardwaj[a,1], Prabirendra Chatterjee[b,*,1], Kivilcim Dogerlioglu Demir[b,1], Ozge Turut[b,1]

[a] College of Business Administration, University of Central Florida, 12744 Pegasus Dr., Orlando, FL 32816, USA
[b] School of Management, Sabanci University, Orhanlı, Tuzla, 34956 Istanbul, Turkey

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ABSTRACT

Firms in various markets such as health care, financial services, software, consumer goods, etc. spend a significant amount of money on corporate social responsibility (CSR) activities. The literature suggests that consumers take into consideration firms' CSR activities when making purchase decisions, noting that and doing so either increases their purchase intention or makes them willing to pay higher prices for the firms' products and services.

Unfortunately, notwithstanding its strategic benefits, the empirical findings regarding the impact of CSR on firms' financials are mixed. In this paper we explore when and why investing in CSR can have positive or negative impact on a firm's profitability. In doing so, we model two types of CSR (i.e., company ability relevant CSR (CSR-CA) and company ability irrelevant CSR (CSR-NCA)). We allow firms to choose which one to pursue if they decide to invest in CSR, and we incorporate the indirect effect of CSR through expectancy disconfirmation on consumers' utility, which has been ignored by the extant literature. Our analysis reveals the conditions under which it is optimal to invest in CSR and of what type. Then, we extend our analysis by investigating how the increase in consumers' appreciation of CSR and increase in consumers' sensitivity to evaluative context affect firms' optimal CSR strategies.

1. Introduction

Firms in various markets such as health care, financial services, software, consumer goods etc. spend significant amount of money on corporate social responsibility (CSR) activities. Recently Financial Times (2014) reported that the Fortune 500 companies have spent more than $15 billion on CSR, and the publication indicates that this spending has come in various forms, which include: donating free drugs (Johnson & Johnson), giving free software (Oracle), investing in educational programs in developing countries (Prudential) or creating a more productive work environment for various minority groups (Chicago Fed).

The literature suggests that consumers take into consideration firms' CSR activities when making purchase decisions, noting that doing so may either increase their purchase intention or make them willing to pay higher prices for the firms' products and services (Bhattacharya & Sen, 2004; Creyer & Ross, 1997; Pen Schoen Berland, 2010). In a recent global survey conducted by Nielsen,[2] 50% of 29,000 respondents across 58 countries were found to have had an intention of paying a higher price for the products and services developed by companies that invest in CSR.

CSR programs can be costly and also they can compete for firms' limited financial resources for marketing activities such as new product development and advertising. Naturally, firms are concerned about the financial impact of CSR. Unfortunately, notwithstanding its strategic benefits, the empirical findings regarding the impact of CSR on firms' financials are mixed (Margolis, Elfenbein, & Walsh, 2009; Margolis & Walsh, 2003). Given this confusion in the empirical findings, Margolis et al. (2009) suggested that future research needs to establish the causal mechanism between CSR and a firm's financials, and characterizing the conditions under which firms should engage in CSR and how to do it effectively.

In this paper we propose a much more nuanced explanation for when and why investing in CSR can have positive or negative impacts on a firm's profitability, which also provides a roadmap to the managers for investing efficiently in CSR. First, there are mainly two types of

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* Corresponding author.
E-mail addresses: pradeep.bhardwaj@ucf.edu (P. Bhardwaj), prabirendra@sabanciuniv.edu (P. Chatterjee), kivilcimdd@sabanciuniv.edu (K.D. Demir), ozget@sabanciuniv.edu (O. Turut).
[1] All the authors contributed equally to this work.
[2] http://www.nielsen.com/us/en/press-room/2013/nielsen-50-percent-of-global-consumers-surveyed-willing-to-pay-more-fo.html.

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CSR[3]: company ability relevant CSR (CSR-CA) and company ability irrelevant CSR (CSR-NCA). An example of CSR-CA would be Ben & Jerry's implementation of fair trade norms in their production and creating a dairy farm sustainability program that might eventually enhance the company's performance and bring in better quality products. Another example would be the introduction of the Tide Coldwater brand by Procter and Gamble (P&G), an investment in green technology that helped P&G to offer a better quality product that can save 395 pounds of carbon di-oxide per household per year.[4] On the other hand, an example of CSR-NCA would be a company like Tom's shoes which donates a pair of shoes to a child every time a customer purchases its product – clearly this is a CSR strategy that, would not improve company ability per se.[5] Since consumers appreciate firms engaging in CSR they become willing to pay a higher price for a firm's products when they observe the firm invest in CSR, of either type. But, when a firm invests in CSR-CA, doing so helps the firm to improve its product development and manufacturing capabilities (Sen & Bhattacharya, 2001). On the other hand, CSR-NCA does not influence corporate ability. A recent article by Rangan, Chase, and Karim (2015) discussed how one firm's activities were divided among different 'theatres of practice' - while some firms use the CSR activities to focus on philanthropy; others utilize the CSR opportunity to improve their operational effectiveness.

When a firm invests in CSR-CA, the investment improves the process of new product development and/or increases manufacturing capability. As a consequence, consumers expect the firm's new product to be of higher quality. In fact Green and Peloza (2014) found that consumers' expectations were one of the two most important antecedents that strongly affect the success or failure of a CSR investment. Due to this increased quality expectation consumers derive less utility from the firm's new product. This effect is explained by the expectancy disconfirmation framework. The expectancy disconfirmation model (Churchill & Surprenant, 1982; Oliver, 1980; Oliver & Swan, 1989) states that consumers have expectations about the performance of the product/service, compare and contrast the actual performance to their formed expectations, and then experience a positive or negative disconfirmation that in turn affects satisfaction and purchase intentions. More specifically, performance above the standard has been termed positive disconfirmation, while performance below is referred to as negative disconfirmation. The degree of incremental (dis)satisfaction is a direct function of positive (negative) disconfirmation. Therefore, unlike CSR-NCA, CSR-CA has two conflicting effects on consumer utility. While the direct effect (i.e., the extra utility from buying a product that is produced by a firm that invests in CSR) is positive, the indirect effect (due to expectancy disconfirmation) is negative. Hence, when a firm is deciding whether to invest in CSR, it should also consider what kind of CSR to pursue.

We construct an analytical model in which there are two identical firms, working on developing a new product. There is an R&D uncertainty; a firm's new product can be of high quality or low quality. Each firm receives an additional fixed budget to spend either on pure R&D to improve its product development and manufacturing capabilities or on a CSR activity. We will refer to the former investment as NCSR (in short for non-CSR type of investment). If a firm chooses to invest in CSR then it also has to choose whether to pursue CSR-CA or CSR-NCA.

Once the firms decide on their CSR strategies, new product development outcomes are resolved and firms launch their new products. Then, firms optimally set their prices. If a firm chooses to invest in CSR, consumers' utility from the new product increases. Furthermore, if a firm chooses to invest in either CSR-CA or in NCSR then its product development and manufacturing capabilities improve and, given the uncertain nature of new product development, the probability of the new product being of high quality increases. The investment in NCSR is not observable to consumers, but the investment in CSR-CA by the firm is observable to consumers because in real life the investments in CSR are highly advertised and publicly shared. Hence, when the firm invests in CSR-CA, consumers become aware of this improvement in the firm's product development and manufacturing capabilities and expect the quality of the firm's new product to be higher.

We find that both firms prefer to invest in CSR-CA if consumers' appreciation of CSR is high (i.e., the extra utility consumers derive from buying a product from a company that invests in CSR) and only one firm prefers to pursue CSR and that is of NCA type if consumers' appreciation of CSR is low. If consumers' appreciation of CSR is in medium range then the firms' optimal CSR strategies depend on consumers' sensitivity to evaluative context-i.e., consumers' sensitivity to expectancy disconfirmation. For high sensitivity, the firms are better off pursing asymmetric CSR strategies-i.e., one firm investing in CSR-CA, while the other firm investing in CSR-NCA. For low sensitivity, only one firm prefers to invest in CSR and that is of CA type.

We conduct our analysis for two cases: the case in which firms sequentially choose their CSR strategies and the case in which firms simultaneously choose their CSR strategies. Our analysis shows that firms' CSR strategies are robust to the timeline of the game. However, when firms sequentially set their CSR strategies, our results also reveal that the firm can strategically use CSR to alter both the consumers' and its rival's behavior (i.e., the decision of whether to invest in CSR and if so, in which type of CSR) and hence it is advantageous to be a first mover in setting CSR strategy. Furthermore, first mover's profits are higher when consumers are highly sensitive to evaluative context. When firms simultaneously set their CSR strategies, we find that if consumers' appreciation of CSR is high the outcome is a prisoners' dilemma. In equilibrium firms choose to invest in CSR-CA, but they would be better off if they could coordinate on investing in CSR-NCA.

Finally, we conduct two behavioral experiments which provide support for the existence of expectancy disconfirmation in the CSR-context and show that consumers' new product evaluations are lower when a company engages in company ability related CSR than when it engages in company ability irrelevant CSR. In line with the extant literature, these experiments make it clear that firms should not ignore the indirect effect of CSR on consumers' utilities when deciding whether to invest in CSR.

2. Literature review

In recent years a number of papers have shown that CSR may lead to many commercial benefits for the business organizations. For example, CSR activities would have positive influence on brand/company evaluations, brand choice, brand recommendations, customer satisfaction and loyalty, customer-firm identification, and consumers' attributions in a product-harm crises situation (Berens, Riel, & Bruggen, 2005; Brown & Dacin, 1997; Klein & Dawar, 2004; Luo & Bhattacharya, 2006; Sen & Bhattacharya, 2001). Some existing work even claims that CSR may directly influence consumers' purchase intention, for example according to Mohr and Webb (2005) CSR activity would have a stronger effect than price on consumers' purchase intentions.

However, the empirical findings regarding relationship between CSR and financial performance are mixed. Some find positive relationship between CSR and firm financials (Beurden & Gossling, 2008; De Velde, Vermier, & Corten, 2005; Gregory, Tharyna, & Whittaker, 2014; Maron, 2006; Orlitzky, Schmidt, & Rynes, 2003; Wu, 2006), some find negative relationship (Brammer, Brooks, & Pavelin, 2006; Griffin & Mahon, 1997; Wright & Ferris, 1997), and some find no significant relationship (McWilliams & Siegel, 2000; Moore, 2001; Seifert, Marris, & Bartkaus, 2003, 2004; Soana, 2011). As summarized in the review paper Margolis et al. (2009), across a total of 251 papers there is a

[3] See Sen and Bhattacharya (2001).

[4] Please see http://www.pg.com/en_US/downloads/sustainability/reports/PG_2014_Sustainability_Report.pdf.

[5] Please see http://www.businessnewsdaily.com/4679-corporate-social-responsibility.html.

mildly positive relationship such that the median and weighted average effect size of CSR on firm financials is lower than the mean effect size. Thus, the mean is inflated by large effect sizes of a small number of studies that used relatively small sample of companies. It has been suggested that this conflicting outcome in the literature may be caused by: 1. focusing on different dimensions of CSR and 2. omitting important control variables. Regarding the former issue, there exist a substantial number of papers which differentiate between company ability relevant CSR and company ability irrelevant CSR. Bauman and Skitka (2012) suggest that some form of CSR can provide employees with sense of security, feelings of belongingness, self-esteem and a deeper sense of purpose at work, all of which would eventually make them more productive. Similarly, Shen and Benson (2014) claim that companies purposefully bring in skill-enhancing CSR elements, which enhance employee performance. Given the importance of CSR dimensions, these papers clearly justify further categorization of CSR activities (i.e. CSR-NCA vs. CSR-CA). Regarding the latter issue, McWilliams and Siegel (2000) and Surroca, Tribo, and Waddock (2010) show that when one includes firms' R&D capabilities into the analysis the relationship between CSR and firm financials becomes insignificant. Similarly, Surroca et al. (2010) empirically show that there is no direct effect of CSR on a firm's financials. Firms' intangible assets such as R&D, human resources, and brand value mediate the relationship between CSR and the firm's financials. Specifically, when a firm invests in CSR, this may either improve (sometimes even destroy) its R&D capability, human resources, and brand value, which in turn affects positively (or negatively) its financials.

There are few analytical papers that study when and why investing in CSR is profitable. Becchetti, Palestini, Solferino, and Tessitore (2014) suggest that when consumers' care for social responsibility does not grow enough the optimal strategy for the firms would be to compete on price and not on CSR investment. Baron (2001) finds that when competition is high (i.e., product differentiation is low) few firms would invest in CSR at the equilibrium. Similarly, Bagnoli and Watts (2003) find that when the degree of price competition is quite high, CSR would invariably reduce the profitability of the firms. In more recent studies, Garcia-Gallego and Georgantzis (2009) find that mostly when consumers' own social consciousness increases, the profit of a socially responsible firm goes up. Krishna and Rajan (2009) show that without spillover effect firms will have both products on cause marketing unless the cost of cause marketing is too high. However, with spillover effect firms will have only one of their products on cause marketing and hence, avoid head-to-head competition in cause marketing. By using a dynamic model, Wirl, Feichtinger, and Kort (2013) investigate how firms should plan their CSR activities over time in a competitive setting and find that history dependence can occur (i.e., whether CSR is an optimal strategy in the long run depends on the initial level of CSR activities). Ghosh and Shankar (2013) provide a rationale for why it is profitable for firms to donate a part of their profits to a charitable cause. They analytically show that consumers may prefer to donate to a public good through their purchase of linked private goods rather than directly donating out of their income so that their donation becomes visible. Very recently Iyer and Soberman (2016) investigate the relationship between consumers' social comparison benefits/costs and firms' incentive to invest in R&D that makes their product more socially responsible. A consumer derives a social comparison benefit when he interacts with another consumer who consumes less socially responsible product and incurs a social comparison cost when he interacts with someone who consumes more socially responsible product. Authors show that when economic value of the product is low (high), incentive to innovate in order to make the product more socially responsible decreases (increases) as social comparison effects increase.

In this paper, different from the extant analytical work, we develop an analytical model which incorporates the two types of CSR activities (company ability relevant CSR and company ability irrelevant CSR), the indirect effect of CSR on consumers' utility (i.e., expectancy disconfirmation), and the link between CSR and the firm's product development and manufacturing capabilities (i.e., the mediating role of product development and manufacturing capabilities between CSR and profitability).

As suggested by the literature (see Surroca et al., 2010) when a firm engages in a CSR activity that improves the working conditions, it in turn improves the employees' productivity and hence the firm's product/process innovation capabilities as well. Furthermore, prior research has shown that one's level of expectations about a service or product is affected by brand connotations, symbolic elements and marketing communications (Oliver, 1980; Oliver & Swan, 1989). CSR activities a firm engages in are excellent ways to communicate a company's identity and such activities have a direct bearing on product and service expectations. Any deviation from the adaptation level or the reference point that the marketing communications set are thought to be caused by the degree of disconfirmation (i.e. the product or service may exceed, meet, or fall short of one's expectations leading to positive, zero, or negative disconfirmation). Satisfaction, product/service evaluations and purchase intentions can be seen as a combination of the expectation level and the resulting disconfirmation (Oliver, 1980). In a CSR context, we suggest that CSR-CA yields high consumer expectations about product performance; as such activities eventually contribute to company productivity. When such high expectations are paired with disparate performance, consumers' satisfaction (Oliver, 1980) and purchase intentions will be adversely impacted (Oliver, 1993), leading to negative disconfirmation.

Therefore, we believe that our model, by incorporating the recent findings of the empirical literature on CSR, enables us to perform a more comprehensive analysis of when firms should invest in CSR and if so then which type of CSR they should pursue.

In the following we will first present our aforementioned experiments and then we layout our model set up.

3. Experiment

We designed two experiments to support a key assumption in our model regarding the existence of expectancy disconfirmation in CSR context. The main objective of our experiments was to test the impact of CSR-CA and CSR-NCA on consumers' target product evaluations. In our model, we assume that consumers assess a new product developed by a firm that has invested in CSR-CA less favorably than a product developed by a company with CSR-NCA activities due to expectancy disconfirmation.

3.1. Pretest

A pretest was conducted to validate our manipulation of CSR type. One hundred and forty-five MTurk participants from North America were randomly assigned to one of the following conditions.

In the CSR-CA condition, the scenario read “ZENET Corporation develops and manufactures electronic testing equipment. The company offers several consumer and industrial products. ZENET has recently initiated the Skill Enhancement Initiative for its women and minorities employees. This initiative provides training for the CURRENT employees in the use of the latest production and manufacturing technologies. This has made the female and minority employees more comfortable in their work environment. The turnover rate in this group has dropped to a meager 3%, as compared to industry average of 20%.”

In the CSR-NCA condition, participants saw the following scenario about the company. “ZENET Corporation develops and manufactures electronic testing equipment. The company offers several consumer and industrial products. ZENET has recently undertaken the Feed the Children Initiative in Bangladesh in an effort to provide breakfast and lunch at schools in major cities. In the schools where the initiative has been implemented, attendance has improved by 50% (as compared to a mere 40% in schools that do not have such initiatives) and over 70% of

the children have gone ahead to High School." (scenarios adapted from Brown & Dacin, 1997).

Next, participants rated the following three statements about the expected company productivity as a result of CSR investments on a 7-point scale. "I believe that such social responsibility actions have direct implications for the company's ability.", "I believe that such social responsibility efforts will improve the company's productivity.", "I believe that such social responsibility efforts will improve the firm's technological innovativeness." (1 = Strongly Disagree; 7 = Strongly Agree). These measures were highly correlated ($\alpha = 0.84$) and we combined them into a productivity index. Finally, we assessed our respondents' expectations from a new product by ZENET with the following item. "If ZENET launches a new product, I would expect it to be of a high quality" (1 = Strongly Disagree; 7 = Strongly Agree).

As we expected, participants in the CSR-CA condition rated the productivity of the company to be significantly higher than those who were in the CSR-NCA condition, demonstrating that our manipulation works as intended

$$(M_{CSR-CA} = 5.25, SD = 1.14; M_{CSR-NCA} = 4.69, SD = 1.24; F(1,143) = 8.32, p < 0.01; \eta^2 = 0.05)$$

Moreover, participants anticipate a significantly higher quality product from a firm who invests in CSR-CA rather than CSR-NCA

$$(M_{CSR-CA} = 5.20, SD = 1.33; M_{CSR-NCA} = 4.71, SD = 1.45; F(1,143) = 4.48, p = 0.04; \eta^2 = 0.03)$$

3.2. Study 1a

One hundred and fifty-two MTurk participants from North America were randomly assigned to one of the scenarios tested in the above pretest (CSR-CA vs. CSR-NCA). Next, all participants read a description about QUANTEK A25, a new product developed by ZENET Corporation. "QUANTEK A25 is a device that can measure and monitor basic vital statistics, including respiration, heart rate, blood pressure, and temperature. QUANTEK A25 has been examined in independent tests by Consumer's Union, Consumer's Digest magazine, and Underwriter's Laboratory. Unit was rated as average. Users noted some convenience with the unit as it combines several functions into one small unit. Next we asked our respondents to take a moment and imagine they are on the market to buy such a product and rate the extent to which they agree with the following three statements on a 7-point scale. "My attitude towards QUANTEK 25 is bad/good; negative/positive; unfavorable/favorable." These items were highly correlated ($\alpha = 0.83$). Therefore, we combined them into a new product evaluation index.

Results reveal that participants in the CSR-CA condition evaluated the new product less favorably than participants in the CSR-NCA condition demonstrating the expected expectancy disconfirmation (negative disconfirmation)

$$(M_{CSR-CA} = 3.38, SD = 1.24; M_{CSR-NCA} = 4.27, SD = 1.22; F(1,150) = 20.83, p < 0.01; \eta^2 = 0.1)$$

3.3. Study 1b

In Study 1b, we used a different context to examine the role of expectancy disconfirmation. One hundred and twenty-six MTurk participants from North America were randomly assigned to one of the following scenarios (CSR-CA vs. CSR-NCA). In the CSR-CA condition, the scenario read "A cosmetics company is undertaking a corporate social responsibility (CSR) program. With this initiative, annual check-ups are fully covered for all the employees and their families. The company also works with several on-site experts (organizational psychologists) to design and constantly improve workplace environment to boost employee engagement". In the CSR-NCA condition, the scenario reads "A cosmetics company is undertaking a corporate social responsibility (CSR) program. With this initiative, the company has invested in protecting rainforests in Brazil. The firm developed projects and activities that promote sustainable development in the Amazonian region."[6]

Next, all participants read the following description about a new product developed by the company. "The company has been working on a new product: An Antioxidant Age Reverse Day Lotion and Night Cream. Studies demonstrate the power of topical antioxidants existent in this cream (particularly CoQ10 and vitamins C and E) to significantly rejuvenate and protect skin. However, this new product has received only average ratings from consumer reports". Next we asked our respondents to take a moment and imagine they are on the market to buy such a product and evaluate it using the same procedure as in study 1. We also assessed individuals' likelihood to purchase the new product by the following item 'I would purchase this new product" on a 7-point scale (1 = Strongly Disagree; 7 = Strongly Agree).

Results demonstrate that participants in the CSR-CA condition evaluated the new product less favorably than those in the CSR-NCA condition

$$(M_{CSR-CA} = 4.76, SD = 1.34; M_{CSR-NCA} = 5.14, SD = 1.15; F(1,124) = 2.96, p = 0.08; \eta^2 = 0.02)$$

Moreover, participants' likelihood to purchase the product in the CSR-CA condition is significantly less than that in the CSR-NCA condition

$$(M_{CSR-CA} = 4.48, SD = 1.60; M_{CSR-NCA} = 5, SD = 1.52; F(1,124) = 3.43, p = 0.06; \eta^2 = 0.03),$$

once again showing the expectancy disconfirmation that CSR-CA induces.

3.4. Discussion

In line with the literature on the contextual influence on target product evaluations, we have documented expectancy disconfirmation as a result of a discrepancy between the judgment standard and actual performance (Herr, 1986; Herr, Sherman, & Fazio, 1983; Lynch, Chakravarti, & Mitra, 1991; Oliver, 1980). Our experiment shows that if a firm invests in CSR-CA, consumers believe that its productivity and manufacturing capabilities will improve; therefore a new product by the firm will be of a better quality than a product by a company with a CSR-NCA investment. When the new product is an average item, however, consumer evaluations are significantly less favorable when the product is by a firm that invests in CSR-CA. Note that expectancy disconfirmation occurs only after some deliberation that is needed to correct for the assimilatory power of the context (Herr, 1986; Meyers & Tybout, 1997). Exposure to extreme exemplars induces expectancy disconfirmation (in this case, negative disconfirmation as the product performance is lower than expected) since such exemplars alert participants and diminish the biasing influence of the context (Herr et al., 1983). When such high expectations triggered by the CSR context are paired with incongruent product performance, consumers' purchase intentions are lowered as suggested by previous work (e.g., Oliver, 1993).

[6] The scenarios are created using the Dahlsrud (2008) framework and pre-tested to ensure company evaluations are the same across conditions. We randomly assigned eighty Mturk users to one of the two scenario conditions (CSR-NCA vs. CSR-CA) and asked them to rate the following item: "what is your overall evaluation of the company?" (1-very negative/7-very positive). An independent samples *t*-test shows that there is not a significant difference in company evaluations across conditions ($M_{CA} = 4.95$, SD = 1.55; $M_{CA} = 5.20$, SD = 1.71,t(78) = 0.68, p = 0.49).

4. Model setup

There are two identical firms (Firm 1 and Firm 2) working on developing a new product. With probability $\frac{1}{2}$ the quality of the new product will be equal to θ, where $\theta > 0$ and with probability $\frac{1}{2}$ the quality of new product will be zero (i.e., the new product will not be good enough for consumers to consider buying). We normalize the manufacturing cost of the new product to zero. Consumers are in the market to buy at most one unit of product and their willingness to pay for quality is equal to one. If a consumer decides not to buy then the utility of his outside option is zero.

Each firm receives an extra fixed budget (B) to spend either on pure R&D or to invest in CSR (either in company ability relevant CSR (CSR-CA) or in company ability irrelevant CSR (CSR-NCA)):

- When a firm spends this extra budget for pure R&D, its product development and manufacturing capabilities improve and as a result, the probability of the firm's new product quality being equal to θ increases from $\frac{1}{2}$ to 1. This strategy is called NCSR.
- If a firm chooses to invest in CSR-CA then it improves its product development and manufacturing capabilities as well. As a result, the probability of the new product's quality being equal to θ increases from $\frac{1}{2}$ to $\frac{3}{4}$.[7] Furthermore, consumers derive extra utility from buying a new product that is developed by a firm engaging in CSR.[8]
- If the firm pursues CSR-NCA strategy then its product development and manufacturing capabilities do not change. But, consumers derive extra utility from buying a new product that is developed by a firm engaging in CSR.

Next, we explain how we model consumers' utility functions under each strategy (i.e., CSR-CA, CSR-NCA, and NCSR). We build our utility function based on the findings of the experimental work in the consumer behavior literature and CSR literature, which establish both direct and indirect effects of CSR on consumers' evaluation of a product. The direct effect is positive, i.e., consumers become willing to pay a higher price for the product due to CSR activity being performed by the firm. On the other hand, CSR can also have a negative indirect effect on consumers' product evaluation via 'expectancy disconfirmation'. In their work on the effect of CSR on company and product evaluation, Brown and Dacin (1997) demonstrate that when consumers evaluate a product in the context of low perceived company ability (i.e., consumers expect lower quality products from the firm), the product evaluation tends to be high compared to a situation when the company is perceived to have high ability (i.e., consumers expect higher quality products from the firm). This means that if a company pursues product irrelevant-CSR activities then these activities would not affect consumers' perception of the firm's ability to develop and manufacture new product and hence, only induce positive direct effect on the product evaluations (i.e., this type of CSR activities will not induce expectancy disconfirmation in consumers' product evaluations). However, if the company invests in CSR activities that will also increase its ability to develop and manufacture new product then the indirect effect will be negative. Sen and Bhattacharya (2001) claim that as the company's CSR performance increases so does the evaluation of the company among the consumers who highly support the CSR domain and think that the firm's CSR activities are highly relevant to the product evaluations. The authors experimentally show that as the evaluation of the company becomes more favorable and consumers expect more from company's new product, as a result of its CSR activities, the purchase intentions of these consumers for even a high quality new product may decrease. In the light of these experimental works and also our own experimental results we model consumers' utility function such that it has two components.

First component is the absolute utility consumers derive from the product. If firm i, where i = {1,2}, invests in CSR then the absolute utility consumers derive from buying its new product with quality θ is equal to:

$$\theta + \gamma - p_i, \tag{1}$$

where p_i is the price of the new product from firm i, where i = {1,2} and γ is the increase in consumers' utility from buying a product from a firm investing in CSR. In a way γ represents consumers' appreciation of a firm's CSR activity; as consumers appreciate more the firm investing in CSR they will become willing to pay a higher price for the firm's product.

If firm i does not invest in CSR then the absolute utility consumers derive from buying its new product with quality θ is equal to $\theta - p_i$.

The second component is the relative utility with respect to consumers' expectation of the new product quality. This is equal to $\lambda(\theta - pre - launch\ expected\ new\ product\ quality)$, where λ is consumers' sensitivity to the evaluative context, θ is the realized quality of the new product, and $pre - launch\ expected\ new\ product\ quality$ is consumers' expectation of quality of the new product before the actual product is developed and launched. Note that as consumers' expectation of new product quality decreases consumers evaluate the actual new product with realized quality of θ more favorably. After the new product is launched when consumers are making their purchase decision, there is no uncertainty regarding the quality of the new product; consumers become aware of the actual quality of the new product and will not consider buying the new product if the actual quality is zero. Therefore, in our model $\lambda(\theta - pre - launch\ expected\ new\ product\ quality)$ represents the expectancy disconfirmation. Naturally, as consumers' expectation of new product quality increases they will derive less utility from the new product and hence their evaluation of new product will be lower.[9]

As a result, consumer utility from buying a new product with actual quality of θ is equal to

$$\begin{aligned} &\theta + \gamma \cdot I(firm\ invests\ in\ CSR) - p_i \\ &\quad + \lambda(\theta - pre - launch\ expected\ new\ product\ quality) \\ &\text{where } I(firm\ invests\ in\ CSR) = 1\ if\ firm\ invests\ in\ CSR\ and \\ &I(firm\ invests\ in\ CSR) = 0\ otherwise. \end{aligned} \tag{2}$$

Therefore, if firm i pursues CSR-CA then before the actual product is developed and launched consumers think that with probability $\frac{3}{4}$ the quality of the new product will be equal to θ and with probability $\frac{1}{4}$ the quality of the new product will be equal to zero. Therefore, pre-launch consumers' expectation of new product quality is equal to $\frac{3}{4}\theta$. As a result, after the new product is launched when making purchasing decision, consumers' utility from firm i's new product with quality θ will be equal to

[7] Note that $\frac{3}{4}$ comes from $\frac{\frac{1}{2}+1}{2}$. We would like to thank an anonymous reviewer for suggesting this simplification.

[8] When a firm engages in NCSR or CSR-CA, the increase in its product development and manufacturing capabilities increases not just the firm's chances to successfully develop a working condition new product, but it may also allow the realized quality of the firm's new product to be higher. We conduct a robustness check to investigate how this additional effect of NCSR and CSR-CA strategies impacts our results and discuss the results of the robustness check in Section 5.3. We would like to thank an anonymous reviewer for pointing this out.

[9] In our model at the time of purchase there is no uncertainty regarding the quality of the new product. Hence, if a firm were allowed to engage in advertising that promotes its abilities this would only increase consumers' pre-launch expectation of new product quality, which in turn would decrease its profitability. However, in cases that consumers cannot be sure about the quality of the new product without using it, advertising firm's capabilities may make consumers believe that the firm's new product is of higher quality, which in turn may increase the firm's profits.

$$\theta + \gamma - p_i + \lambda\left(\theta - \frac{3}{4}\theta\right) \tag{3}$$

On the other hand, if firm i pursues CSR-NCA strategy then before the actual product is developed and launched consumers think that with probability $\frac{1}{2}$ the quality of the new product will be equal to θ and with probability $\frac{1}{2}$ the quality of the new product will be equal to zero. Therefore, pre-launch consumers' expectation of new product quality is equal to $\frac{1}{2}\theta$. As a result, after the new product is launched when making purchasing decision, consumers' utility from firm i's new product with quality θ will be equal to

$$\theta + \gamma - p_i + \lambda\left(\theta - \frac{1}{2}\theta\right) \tag{4}$$

When firm i does not pursue CSR and invests its money in NCSR, this does not become as public as investing in CSR, which is specifically done to improve the public opinion about the company and promoted by the company.[10] Firms constantly invest in improving their product development and manufacturing capabilities, by hiring more employees or finding more efficient ways to manufacture their products, and unless the act of investing in these capabilities is public by its nature, such as merging with or acquiring another company, consumers do not become aware of the investment. In fact, even a merger or an acquisition may not attract attention of an ordinary consumer, as a CSR action would do, unless it is done with a high profile company. This means that companies' NCSR type of investments (i.e., our R&D investments) is much less observable than their CSR type of investments. Therefore, in our model we simply assume that NCSR investment is not observable to the consumers and if consumers do not observe the firm investing in any type of CSR, they do not update their expectation of new product quality. This means that when firm i pursues NCSR, pre-launch consumers' expectation of new product quality is equal to $\frac{1}{2}\theta$. As a result, when firm i pursues NCSR, after the new product is launched when making purchasing decision, consumers' utility from firm i's new product with quality θ will be equal to

$$\theta - p_i + \lambda\left(\theta - \frac{1}{2}\theta\right) \tag{5}$$

Armed with consumers' utility under each strategy, we next will write firm i's profit function. Let π_i denote firm i's expected profit, $Prob_i$ denote the probability of the quality of firm i's new product being equal to θ, $Prob_j$ denote the probability of the quality of the rival firm j's new product being equal to θ, U_i denote the utility of a consumer from buying firm i's new product with quality θ at zero price ($p_i = 0$), and U_j denote the utility of a consumer from buying the rival firm j's new product with quality θ at zero price ($p_j = 0$). Then,

$$\pi_i = Prob_i \cdot Prob_j \cdot I(U_i - U_j)\cdot(U_i - U_j) + Prob_i \cdot (1 - Prob_j)\cdot U_i$$
$$I(U_i - U_j) = 1 \; if \; U_i > U_j \; and \; I(U_i - U_j) = 0 \; otherwise \tag{6}$$

We know that $Prob_i = 1$ if firm i pursues NCSR, $Prob_i = \frac{3}{4}$ if firm i invests in CSR-CA, and $Prob_i = \frac{1}{2}$ if firm i invests in CSR-NCA. The first part of profit function (6) is when both firms develop the new product with quality θ (this happens with probability $Prob_i \cdot Prob_j$). When both firms successfully develop the new product with quality θ, firm i receives positive profits only if consumers receive higher utility from its new product than they receive from the rival j's product-i.e., if $U_i > U_j$. In this case, the price of firm i (p_i) is equal to ($U_i - U_j$). The second part of the profit function (6) is when firm i is the only firm which is able to develop the new product with quality θ (this happens with probability $Prob_i \cdot (1 - Prob_j)$). This means that the actual quality that rival firm j's new product has realized is zero and hence, consumers will not even consider buying it. In that case, firm i becomes a monopolist and its price (p_i) is equal to U_i.

We would like to note that since we normalize the manufacturing cost to zero, in profit expression (6) there is no manufacturing cost parameter.

Therefore, in our model after deciding whether to invest in CSR and if so of what kind, firm i chooses the optimal price p_i that maximizes its expected profit function π_i. Similarly, the rival firm j also chooses its optimal price p_j that maximizes its expected profit function π_j.[11]

Finally, one may wonder what happens if a firm does not want to spend the extra budget B. Recall that in our model firms started working on developing the new product before they receive the extra budget. Thus, if a firm does not spend the extra budget B it receives, either on NCSR or on CSR, then the probability of new product quality being equal to θ will stay as $\frac{1}{2}$. We assume that B is less than the minimum expected gain from spending B for any of the three strategies (NCSR, CSR-CA, and CSR-NCA). Therefore, firms would always find it profitable to spend the extra budget. Otherwise, firms' decision would be trivial and our analysis will not be meaningful.

Next, we will proceed with the analysis of our model. We first investigate the case in which only Firm 1 invests in CSR. Then, we analyze the case in which both firms can invest in CSR. You may find all the proofs in the Appendix A.

4.1. Benchmark case: Firm 2 cannot invest in CSR

In this section we analyze the benchmark case in which Firm 2 cannot respond to Firm 1 by investing in CSR-i.e., only one firm invests in CSR. In the benchmark case, Firm 1 affects consumers' willingness to pay for its product through its CSR strategy. Later, in Section 5 we extend our analysis to the case in which Firm 2 can invest in CSR as well. In this case, Firm 1 (i.e., the first mover) can use CSR investment strategically to affect both consumers' willingness to pay for its product and its rival's CSR investment decision. By investigating these in stages, we will able to disentangle how the demand-side considerations and competitive considerations of CSR strategy affect a firm's decision whether to pursue CSR and if so, what type of CSR.

The game proceeds as follows. At $t = 1$ Firm 1 decides whether to do CSR and if so what kind of CSR. At $t = 2$ firms' new product development outcomes are realized and they simultaneously set their prices. Finally, at $t = 3$ consumers make their purchasing decision and the game ends.

Proposition 1. Firm 1 chooses to pursue CSR-CA if $\gamma > \frac{3}{4}\lambda\theta$ and CSR-NCA otherwise.

According to Proposition 1, if the consumers' extra utility from a product manufactured by a firm investing in CSR is high enough (i.e., consumers' appreciation of firm engaging in CSR is high enough) Firm 1 prefers to invest in CSR-CA and otherwise, Firm 1 prefers to invest in CSR-NCA. The intuition for this outcome is as follows. First, note that if Firm 1 pursues NCSR it receives zero profits. Remember that the rival is also doing NCSR, hence both firms will develop and manufacture the new product with quality θ with probability one and the new product will be identical. As a result, Firm 1 will have no competitive advantage when it launches the new product. Thus, Firm 1 never prefers to pursue NCSR.

When Firm 1 invests in CSR rather than NCSR, it will be able to enjoy the gain from CSR (γ) when it develops the new product with quality θ. If Firm 1 chooses to invest in CSR-CA then with a higher probability the new product's quality will be equal to θ (i.e., probability

[10] For example, every year Lee jeans celebrates Lee national denim day on first Friday of October and invites companies to have their employees wear jeans to work one day and donate for breast cancer fund. Procter & Gamble's Oly brand skin-care line partnered with American society for Dermatologic surgery, and it was widely covered in tv, print and online media. Coca-Cola India Inc.'s recent "Drops of Joy" campaign features an emotional narrative from one of the 80 men of the Benares Deaf and Dumb Institute who have been given employment as bottle inspectors at Coca-Cola's bottling plant.

[11] This means that in our model prices are not exogenous; firms set their own prices.

of $\frac{3}{4}$ rather than probability of $\frac{1}{2}$). This means that with higher probability Firm 1 will be able to enjoy the gain from CSR (γ) when it pursues CSR-CA. On the other hand, if Firm 1 invests in CSR-NCA it benefits more from the expectancy disconfirmation. We know that consumers' expectation of the quality of the firm's new product is equal to $\frac{3\theta}{4}$ when Firm 1 invests in CSR-CA and equal to $\frac{\theta}{2}$ when Firm 1 invests in CSR-NCA. This means that if Firm 1 pursues CSR-NCA rather than CSR-CA consumers' gain from expectancy disconfirmation will be higher by $\lambda\theta\frac{1}{4}$. Thus, Firm 1 needs to make a tradeoff between increasing the probability of enjoying the gains from investing in CSR by increasing its chances of developing a new product with quality θ and increasing the gain from expectancy disconfirmation. As a result, Firm 1 prefers to invest in CSR-CA if the gain from CSR relative to the gain from expectancy disconfirmation is high enough (i.e., $\gamma > \frac{3}{4}\lambda\theta$) and prefers to invest in CSR-NCA otherwise.

5. Both firms can invest in CSR

Recall that in Section 4.1, we have investigated the case in which the firm (i.e., Firm 1) can strategically use CSR to increase the consumers' utility from its new product and assumed that the rival (i.e., Firm 2) cannot respond by investing in CSR. In this section, we relax this assumption and modify our timeline as follows. At $t = 1$ Firm 1 decides whether to invest in CSR and if so what kind of CSR. At $t = 2$ Firm 2 decides whether to invest in CSR and if so what kind of CSR. At $t = 3$ firms' new product development outcomes are realized and they simultaneously set their prices. Finally, at $t = 4$ consumers make their purchasing decision.

One may question the sequential move of firms investing in CSR. In the sequential game, the firm (i.e., the first mover) will be able to use CSR to alter the rival's CSR strategy as well as the consumers' purchase intention, which in turn affects the firm's incentive to invest in CSR. Thus, the sequential structure helps us identify whether there is any first mover advantage in CSR. Many managers believe that CSR helps the corporations to be seen as industry leaders,[12] and some even argue that with a sustainable CSR strategy the first movers can achieve higher market share[13] or take control of their profits.[14] In a recent article on CSR, Forbes magazine has vouched for such gains from CSR investment, “The risk now is for the laggards. If indeed sustainability pays and is now core to successful strategy, the first movers are gaining advantages every day”.[15]

Later in Section 5.1 we will solve for the case in which firms simultaneously decide whether to pursue CSR and what type of CSR as well. By doing this we will be able to investigate how firms' CSR decisions being simultaneous or sequential changes their equilibrium CSR strategies.

The following proposition characterizes the firms' optimal CSR strategies in the sequential game.

Proposition 2. There exist γ_1, γ_2, and γ_3 such that

- For $\lambda > 1$:
  Firm 1 invests in CSR-CA and Firm 2 invests in CSR-CA if $\gamma > \gamma_3$
  Firm 1 invests in CSR-CA and Firm 2 invests in CSR-NCA if $\gamma_3 > \gamma > \gamma_2$
  Firm 1 invests in NCSR and Firm 2 invests in CSR-NCA if $\gamma_2 > \gamma$
- For $\lambda < 1$:
  Firm 1 invests in CSR-CA and Firm 2 invests in CSR-CA if $\gamma > \gamma_2$
  Firm 1 invests in NCSR and Firm 2 invests in CSR-CA if $\gamma_2 > \gamma > \gamma_1$
  Firm 1 invests in NCSR and Firm 2 invests in CSR-NCA if $\gamma_1 > \gamma$

The expressions for cut off points (γ_1, γ_2, γ_3) are given in the Appendix A. First, we observe from Proposition 2 that unlike when only Firm 1 can invest in CSR, when both firms are capable of investing in CSR, the first mover (i.e., Firm 1) never prefers to invest in CSR-NCA. This means that the *competitive considerations* change the firm's CSR strategy.

When both firms can invest in CSR, Firm 1 prefers to pursue either CSR-CA or NCSR depending on consumers' appreciation of firms engaging in CSR and consumers' sensitivity to the evaluative context. Firm 1 prefers to pursue CSR-CA if consumers' appreciation of CSR, hence the extra utility consumers receive from a new product produced by a firm investing in CSR, is high (i.e., γ is high) and prefers to pursue NCSR if γ is low. However, if consumers' appreciation of CSR is in medium range Firm 1's optimal strategy changes from CSR-CA to NCSR if consumers' sensitivity to evaluative context is low (i.e., $\lambda < 1$). How is this possible?

When consumers' extra utility from a product that is produced by a firm investing in CSR is high, both firms would like to engage in CSR-CA because by doing so firms will be able to charge higher prices and will also increase their ability to develop the new product with quality θ. When consumers' appreciation of CSR is low, for Firm 1 it does not make sense to invest in CSR; by pursuing NCSR Firm 1 makes sure that it will develop the new product with quality θ and also gains from expectancy disconfirmation by keeping the consumers' expectation of the quality of its new product low. For low γ values, when Firm 1 engages in NCSR, Firm 2 is better off pursuing CSR-NCA. If Firm 2 pursues NCSR then it will receive zero profits because the two firms will be undifferentiated when they launch their product with quality θ. If Firm 2 invests in CSR-CA it loses from expectancy disconfirmation by increasing consumers' pre-launch expectation of the quality of its new product. As a result, Firm 2 is better off investing in CSR-NCA.

When consumers' appreciation of CSR is in medium range, if Firm 1 invests in CSR-CA Firm 2's optimal strategy depends on the consumers' sensitivity to the evaluative context (i.e., λ). If λ is low then Firm 2 prefers to engage in NCSR. Note that since consumers' sensitivity to evaluative context is low if Firm 2 invests in CSR-NCA then its competitive advantage over Firm 1 will be low. Thus, Firm 2 is better off pursuing NCSR and increasing the probability of developing the new product with quality θ from $\frac{1}{2}$ to 1. In that case, since consumers' appreciation of CSR is in medium range Firm 1's gain from CSR will not be high. However, since consumers are not much sensitive to evaluative context if Firm 1 pursues NCSR then Firm 2 prefers to invest in CSR-CA so as to increase its chances to develop the new product with quality θ from $\frac{1}{2}$ to $\frac{3}{4}$. Given Firm 2's optimal CSR strategies for medium γ and low λ values, Firm 1 is better off changing its strategy from CSR-CA to NCSR so that it can increase its chances to develop the new product with quality θ to one.

Firm 1 never prefers to invest in CSR-NCA. Why is that so? If Firm 1 invests in CSR-NCA, regardless of consumers' sensitivity to evaluative context (λ) being high or low, Firm 2 prefers to pursue CSR-CA if consumers' appreciation of CSR is high (i.e., $\gamma > \gamma_2$) and NCSR otherwise. For $\gamma > \gamma_2$ Firm 1 will be better off investing in CSR-CA so to increase its chances to develop the new product with quality θ to $\frac{3}{4}$ and be able to charge higher prices when it is the only firm to develop the new product. Note that for $\gamma > \gamma_2$ if Firm 1 invests in CSR-CA then Firm 2 never prefers to pursue NCSR because Firm 2 would also like to enjoy the gain from engaging in CSR (i.e., through γ). Since Firm 2 does not prefer to pursue NCSR the probability of its new product's quality being equal to θ is less than one. This gives a chance to Firm 1 to be the only firm to develop the new product with quality θ. On the other hand, for $\gamma < \gamma_2$ consumers' appreciation of CSR is low so is Firm 1's gain from CSR. Thus, for $\gamma < \gamma_2$ Firm 1 will be better off engaging in NCSR

[12] http://www.forbes.com/sites/csr/2011/04/26/the-five-elements-of-the-best-csr-programs/#1621cfa833fd.
[13] http://www.wsj.com/articles/SB120491426245620011.
[14] http://business.time.com/2012/05/28/why-companies-can-no-longer-afford-to-ignore-their-social-responsibilities/.
[15] http://www.forbes.com/sites/csr/2011/05/16/why-csr-is-countercyclical/#ba99df130d13.

so to make sure that it will develop the new product with quality θ and also gain from expectancy disconfirmation.

In the appendix using numerical values, we show the plots of equilibrium regions. Please see Figs. A and B in the Appendix A.

Observation: Based on the equilibrium outcome in Proposition 2, the first mover's profits are higher than the follower's unless $\gamma > \max\{\gamma_2, \gamma_3\}$. This happens because Firm 1 can manipulate Firm 2's CSR strategy with its own CSR decision to its favor. However, if consumers' appreciation of CSR is high enough (i.e., $\gamma > \max\{\gamma_2, \gamma_3\}$) then both firms prefer to invest in CSR-CA and hence their expected profits are the same. As a result, for such high γ values, being a first mover in CSR strategy will not provide any advantage to the firm.

Given that being a first mover in setting the CSR strategy is advantageous and firms' CSR strategies differ depending on whether consumers are highly sensitive to evaluative context ($\lambda > 1$) or not ($\lambda < 1$), one naturally wonders whether Firm 1 is better off when $\lambda > 1$ than when $\lambda < 1$.

Proposition 3. Firm 1's profits are higher when consumers are highly sensitive to evaluative context ($\lambda > 1$) than when consumers' sensitivity to evaluative context is low ($\lambda < 1$).

From Proposition 2 we observe that when consumers' appreciation of CSR is high ($\gamma > \max\{\gamma_2, \gamma_3\}$) and when its low ($\gamma < \min\{\gamma_1, \gamma_2\}$), regardless of how sensitive consumers are to evaluative context (the magnitude of λ) firms' optimal CSR strategies are the same; both firms invest in CSR-CA when $\gamma > \max\{\gamma_2, \gamma_3\}$ and Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA when $\gamma < \min\{\gamma_1, \gamma_2\}$. Therefore, for these γ values Firm 1's profits are the same for $\lambda > 1$ or for $\lambda < 1$.

However, for medium values of γ, firms' optimal CSR strategies differ depending on $\lambda > 1$ or $\lambda < 1$. For $\lambda > 1$, if $\gamma < \gamma_2$ then Firm 1 pursues NCSR and Firm 2 engages in CSR-NCA. For $\lambda < 1$, firms' optimal strategies are the same if $\gamma < \gamma_1$, where $\gamma_1 < \gamma_2$. However, Firm 2's optimal CSR strategy differs if $\gamma_1 < \gamma < \gamma_2$; this time Firm 2 prefers to invest in CSR-CA. In this case, since the probability of the quality of Firm 2′ new product being equal to θ is higher Firm 1 becomes worse off. For $\lambda < 1$, if $\gamma > \gamma_2$ then both firms invest in CSR-CA. For $\lambda > 1$, firms' optimal strategies are the same if $\gamma > \gamma_3$, where $\gamma_2 < \gamma_3$. However, Firm 2's optimal strategy differs if $\gamma_2 < \gamma < \gamma_3$; this time Firm 2 prefers to invest in CSR-NCA. In this case, the probability of the quality of Firm 2' new product being equal to θ decreases and as a result, Firm 1 becomes better off.

This result implies that for the first mover it would be profitable to increase the consumers' sensitivity to the evaluative context through its marketing activities. The Italian luxury car manufacturer Maserati for example had created an advertisement where a representative customer insisted “my car has to be fast, smooth, and give me a sense of control”. This ad[16] was created to enhance consumers' sensitivity to the evaluative context by introducing new benchmarks for the product evaluation. In another example, Anheuser-Busch was the first beer brewer to use ‘freshest before’ with a date to advise consumers when the beer was brewed. Budweiser lists a “Freshest Before” date, which is approximately 110 days after the beer is brewed.[17] By highlighting a new attribute in a product category, Budweiser increased consumers' sensitivity to the evaluative context.

Given the firms' optimal CSR strategies in Proposition 2, next we will investigate the impact of new product quality (θ) and consumers' sensitivity to expectancy disconfirmation (λ) on firms' profits.

Proposition 4. The first mover's (i.e., Firm 1) profits increase in θ and λ. The follower's (i.e., Firm 2) profits increase in θ and λ unless $\lambda < 1$ and $\gamma_1 < \gamma < \gamma_2$ or $\gamma < \min\{\gamma_1, \gamma_2\}$:

- If $\lambda < 1$ and $\gamma_1 < \gamma < \gamma_2$ then Firm 2's profits decrease in θ and λ
- If $\gamma < \min\{\gamma_1, \gamma_2\}$ then Firm 2's profits are independent of θ and λ.

This result is quite surprising. One would expect that a firm's profit would increase in θ and λ. Higher θ implies the better quality of the new product. Therefore, for higher θ values consumers derive higher utility from the new product and become willing to pay a higher price, which in turn would increase a firm's revenue. When λ is high, consumers are more sensitive to evaluative context. Since under any strategy (NCSR, CSR-CA, and CSR-NCA) pre-launch consumers never expect the firm's new quality to be equal to θ, firms always gain from expectancy disconfirmation and this gain increases as consumers' sensitivity to evaluative context increases. Then, how cannot Firm 2's profit increase in θ and λ?

Note that for $\lambda < 1$ and $\gamma_1 < \gamma < \gamma_2$ in equilibrium Firm 1 pursues NCSR and Firm 2 invests in CSR-CA. In this case, consumers' expectation of quality of Firm 1's new product is equal to $\frac{\theta}{2}$, while their expectation of quality of Firm 2's new product is equal to $\frac{3\theta}{4}$. This means that when a consumer buys Firm 1's new product, he gains $\frac{\lambda\theta}{4}$ more from expectancy disconfirmation than when he buys Firm 2's new product. We also know that since Firm 1 pursues NCSR it will be able to develop the new product with quality θ with probability one. Thus, when both firms develop the new product with quality θ, Firm 2's competitive advantage over Firm 1 will be equal to $\left(\gamma - \frac{\lambda\theta}{4}\right)$. Naturally, as θ and λ increases Firm 2's competitive advantage will decrease, which in turn will reduce its profits. This result has two implications. First, facing a rival preferring not to invest in CSR, if the optimal strategy for the firm is to invest in CSR-CA (this happens if $\lambda < 1$ and $\gamma_1 < \gamma < \gamma_2$) then interestingly the firms is better off when the new product is more of an incremental type than when it is an innovative one. Second, the firm is also better off if it can take marketing actions to reduce the consumers' sensitivity to evaluative context. Avis for example created an ad campaign which highlighted the number two position of the firm in the car rental industry and promised that the firm would try harder.[18] In this case the firm tried to reduce consumers' sensitivity to evaluative context by posing as an industry follower.

We also know from Proposition 2 that when $\gamma < \min\{\gamma_1, \gamma_2\}$, Firm 1 invests in NCSR and Firm 2 invests in CSR-NCA. In this case, since consumers' expectation of the quality of either firm's new product is equal to $\frac{\theta}{2}$ a consumer's gain from expectancy disconfirmation is same regardless of whether he buys Firm 1's new product or Firm 2's new product. This means that when Firm 2 develops its new product with quality θ, its competitive advantage over Firm 1 will be equal to γ. Therefore, Firm 2's profits are independent of θ and λ.

5.1. Firms set their CSR strategies simultaneously

One may wonder what happens if the firms are symmetric in recognizing the CSR opportunities and in their ability to invest in CSR. Therefore, in this section we will allow firms to simultaneously set their CSR strategies. The new timeline of the game is as follows. At $t = 1$ both firm decides whether to invest in CSR and if so what kind of CSR. At $t = 2$ firms' new product development outcomes are realized and they simultaneously set their prices. Finally, at $t = 3$ consumers make their purchasing decision.

Proposition 5. When firms simultaneously set their CSR strategies, their optimal strategies are as follows:

- For $\lambda > 1$:
  Both firms invest in CSR-CA if $\gamma > \gamma_3$
  One firm invests in CSR-CA and the other firm invests in CSR-NCA if

[16] https://www.youtube.com/watch?v=QvPvw6MQw48&amp=.
[17] https://www.youtube.com/watch?v=4rAODFE05ak.
[18] http://www.slate.com/articles/business/rivalries/2013/08/hertz_vs_avis_advertising_wars_how_an_ad_firm_made_a_virtue_out_of_second.html.

$\gamma_3 > \gamma > \gamma_2$
One firm invests in NCSR and the other firm invests in CSR-NCA if $\gamma_2 > \gamma$

- For $\lambda < 1$:
  Both firms invest in CSR-CA if $\gamma > \gamma_2$
  One firm invests in NCSR and the other firm invests in CSR-CA if $\gamma_2 > \gamma > \gamma_1$
  One firm invests in NCSR and the other firm invests in CSR-NCA if $\gamma_1 > \gamma$

Comparing the firms' optimal CSR strategies in Proposition 2 with the ones in Proposition 5, one can conclude whether firms set their CSR strategies sequentially or simultaneously does not make a difference for the equilibrium outcome. Therefore, we understand that firms' CSR strategies are robust to the timeline of the game.

Observation: We know from Proposition 5 that if consumers' appreciation of CSR is high enough (i.e., $\gamma > \max\{\gamma_2, \gamma_3\}$) then both firms invest in CSR-CA. However, unlike in sequential game, in this case firms are worse off; they would receive higher profits if both invest in CSR-NCA. Consequently, when consumers' appreciation of CSR is high, both firms choosing CSR-CA strategy becomes a *prisoner's dilemma equilibrium*. This result implies that when rival firms are aware that both of them will be investing in some kind of CSR activity around more or less the same time, for these firms coordinating their CSR strategies to be NCA type will be more profitable. One of the prominent examples in this regard involves FMCG behemoths Unilever and P&G. In 2012, Procter and Gamble launched a CSR campaign named 'Thank you mom' to celebrate mothers' roles in raising great kids. Unilever followed the suit by introducing their own CSR campaign named 'Project Sunshine' which appealed to the parents to make the world a better place for the kids.

5.2. Testable implications of the model

Our theoretical model has two parameters that affect the normative predictions. First, we have γ, the increase in consumers' utility from buying a product produced by a firm investing in CSR. The measure for this can be attained either by a direct survey like a conjoint study or by observing average prices before and after CSR activities have been initiated. A dummy variable for CSR activity can capture the impact of CSR on price beyond attributes like advertising, product quality, etc. Second, we have λ which measures sensitivity to evaluative context. The sensitivity to expectancy disconfirmation will be greater in less turbulent industries (those which do not often see innovations). This is because λ captures how sensitive consumers are to a product/production innovation surprise. In more turbulent industries, where innovations (both in product and production sides) are more frequent, the expectancy disconfirmation will be smaller. So λ for consumer packaged goods will be more than that for tech industries. Hence it is fair to assume that λ, the measure of sensitivity to evaluative context, is specific to an industry. Thus, we suggest that one can measure λ as the ratio of the number of innovations to the number of companies in an industry. The sensitivity to expectancy disconfirmation can however vary because of other factors, too. Anderson and Sullivan (1993) suggest that ease of evaluating quality and reputation of companies are two important factors in this regard. Johnson and Fornell (1991) argue that products with different maturity (i.e. products at the different stages of product life cycle) may induce differences in sensitivity to expectancy disconfirmation.

Once the values of these two parameters are measured one can test the following hypotheses:

1. Firms will be better off in investing in CSR-CA when consumers' appreciation of CSR is high.
2. When consumers' appreciation of CSR is low, firms will be better off if only one firm is pursuing CSR and that is of NCA type.
3. When consumers' appreciation of CSR is in medium values, firms will be better off if they pursue asymmetric CSR strategies in industries with low ratio of the number of innovations to the number of companies. If that ratio is high then only one firm should pursue CSR-CA.

We would like to note that the empirical analysis should be done by controlling for the cost of not investing in CSR. Specifically, in some industries/markets there might be legal requirements to invest in CSR or investing in CSR may be a general norm and hence it may not be feasible for a firm not to engage in CSR at all. India for example has recently passed a law, which requires companies to spend 2% of their net profit on activities related to CSR. Indonesia also has a law for companies carrying out activities in the natural resources sector to participate in environmental social responsibility program. In those cases, when testing the hypotheses 2 and 3 above, one should test whether investing more than the minimum required amount in CSR is better or not.

5.3. Robustness check - improvement in firms' capabilities affects the realized quality as well

When a firm invests in NCSR or CSR-CA, it improves its product development and manufacturing capabilities. In our basic model due to this increase in the firm's product development and manufacturing capabilities the probability of developing a working condition new product with quality θ increases. One may wonder what happens if the increase in the firm's product development and manufacturing capabilities enables the firm to develop a new product with realized quality higher than θ. To investigate this issue we modified our basic model such that when a firm engages in NCSR or CSR-CA and develops the new product successfully, the realized quality of the new product is equal to $\bar{\theta}$, where $\bar{\theta} > \theta$. We find that as in Proposition 2, the first mover (i.e., Firm 1) never prefers to engage in CSR-NCA; instead it engages in CSR-CA for high γ values and engages in NCSR for low γ values. However, as investing in CSR-CA has become more advantageous the follower (i.e., Firm 2) naturally has a higher tendency to invest in CSR-CA than CSR-NCA. Specifically, for $\bar{\theta} \geq 2\theta$, CSR-NCA becomes dominated strategy. As a result, for $\bar{\theta} \geq 2\theta$ and for $\theta < \bar{\theta} < 2\theta$ and low λ values (i.e, when firms' gain from expectancy disconfirmation is low) Firm 2 never prefers to invest in CSR-NCA.[19]

6. Conclusion

Our study was motivated by the fact that firms in various markets spend significant amounts of money on CSR activities. However, it is not clear from the current literature if that is always profitable for the firm to invest in CSR activities. Therefore we address this fundamental question.

Broadly, there are two main types of CSR activities, company ability relevant (CSR-CA) and company ability irrelevant CSR (CSR-NCA). Consumers' willingness to pay for a firm's product increases when they observe that the firm invests in CSR of either type. But when a firm invests in CSR-CA, doing so helps to improve the firm's new product development and manufacturing capabilities, which in turn increases the consumers' expectation of quality of the firm's new product. On the other hand, CSR-NCA does not influence corporate ability. Unlike CSR-NCA, CSR-CA has two conflicting effects on a consumer's utility. While the direct effect (i.e., the extra utility consumers receive from buying a product is produced by a firm that invests in CSR) is positive, indirect effect (i.e., expectancy disconfirmation) is negative due to the increase in consumers' pre-launch expectation.

[19] We thank an anonymous reviewer for encouraging us to consider this possibility. Due to space constraint, the detailed proof of the result is available from the authors.

Further, our analysis demonstrates that both firms should invest in CSR-CA if consumers' appreciation of CSR is high. However, if consumers' appreciation of CSR is low then only one firm should pursue CSR-NCA. If consumers' appreciation of CSR is in the medium range then both firms' optimal CSR strategies would depend on consumers' sensitivity to the evaluative context. If consumers' sensitivity to the evaluative context is high then the firms will be better off pursing asymmetric CSR strategies-i.e., one firm investing in CSR-CA, while the other firm investing in CSR-NCA. On the other hand, if consumers' sensitivity to the evaluative context is low, it will be better if only one firm invests in CSR-CA. Below, we summarize both firms' optimal CSR strategies.

Firms' CSR Strategies: Decision Tree

The gain from CSR: very high → Both firms invests in CSR-CA

The gain from CSR: medium →
- If $\lambda > 1$, Firm 1 invests in CSR-CA and Firm 2 invests in CSR-NCA
- If $\lambda < 1$, Firm 1 invests in NCSR and Firm 2 invests in CSR-CA

The gain from CSR: low → Firm 1 invests in NCSR and Firm 2 invests in CSR-NCA

Our analysis also reveals that being a first mover in setting CSR strategy is advantageous and a first mover's profits are higher when consumers are more sensitive to evaluative context. Therefore, we advise the firms to beat their rivals in implementing CSR strategies and also to amplify consumer sensitivity to the evaluative context through their marketing communications. On the other hand, in cases in which firms are planning to invest in CSR around the same time, we advise the firms to coordinate their CSR investment as being NCA type when consumers' appreciation of CSR is high.

We have looked at the positive utility that consumers derive from a firm's CSR activities. However, excessive levels of CSR activities can lead to a perception of "greenwashing", which means that firms are doing CSR activity to cover up vested corporate interests. It would be interesting to look at how these two opposing forces influence the extent of CSR activity in a competitive scenario. In our current model firms make a onetime decision regarding their CSR activity. In a dynamic setting firms could be deciding repeatedly on the type of CSR activity. In such a setting, would it be better for firms to adopt same type of CSR activity that consumers have begun to associate it with or should they choose a different type of CSR activity to provide variety that may help catch consumer attention? The importance of CSR decision as a strategic tool can be better understood once future researchers address such questions analytically.

Appendix A

A.1. Proof of Proposition 1

First, let π_1 and π_2 denote Firm 1's and Firm 2's profits respectively. Recall that Firm 2 can only pursue NCSR and consumers' utility from buying Firm 2's product is equal to $-p_2 + \lambda\frac{\theta}{2}$. Therefore, if Firm 1 also pursues NCSR then both firms will be able to develop the new product with quality θ with probability one and the firms' new products will be undifferentiated from each other (i.e., consumers' utility from buying Firm 1's product will be equal to $\theta - p_1 + \lambda\frac{\theta}{2}$). As a result, if Firm 1 pursues NCSR then $\pi_1 = \pi_2 = 0$. This means that Firm 1 will never prefer to pursue NCSR.

If Firm 1 pursues CSR-CA, then Firm 1 will be able to develop the new product with quality θ with probability $\frac{3}{4}$. Consumers' utility from Firm 1's product is equal to $\theta + \gamma - p_1 + \lambda\frac{\theta}{4}$. In this case, if $\gamma < \frac{\lambda\theta}{4}$ then $\pi_1 = 0$ and $\pi_2 = \frac{3}{4}\left(\frac{\lambda\theta}{4} - \gamma\right) + \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$. Otherwise, $\pi_1 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$ and $\pi_2 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$.

If Firm 1 pursues CSR-NCA then Firm 1 will be able to develop the new product with quality θ with probability $\frac{1}{2}$. Consumers' utility from Firm 1's product is equal to $\theta + \gamma - p_1 + \lambda\frac{\theta}{2}$. In this case, $\pi_1 = \frac{\gamma}{2}$ and $\pi_2 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$.

Thus, if $\gamma < \frac{\lambda\theta}{4}$ then Firm 1 will prefer to invest in CSR-NCA. In this case $\pi_1 = \frac{\gamma}{2}$ and $\pi_2 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$. For $\gamma > \frac{\lambda\theta}{4}$, if Firm 1 pursues CSR-CA then $\pi_1 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$ and if Firm 1 pursues CSR-NCA then $\pi_1 = \frac{\gamma}{2}$. As a result, if $\gamma > \frac{3\lambda\theta}{4}$ then firm 1 prefers to invest in CSR-CA and $\pi_1 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$ and $\pi_2 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$. If $\gamma < \frac{3\lambda\theta}{4}$ then firm 1 prefers to invest in CSR-NCA and $\pi_1 = \frac{\gamma}{2}$ and $\pi_2 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$.

A.2. Proof of Proposition 2

We know from the proof of Proposition 1 consumers' utility from buying Firm 1's product when it engages in any of the three strategies (NCSR, CSR-CA and CSR-NCA). We also know their utility from buying Firm 2's product when Firm 2 pursues NCSR.

Now, Firm 2 is allowed to invest in CSR-CA and CSR-NCA as well. If Firm 2 engages in CSR-CA then Firm 2 will be able to develop the new product with quality θ with probability $\frac{3}{4}$ and consumers' utility from buying Firm 2's new product with quality θ is equal to $\theta + \gamma - p_2 + \lambda\frac{\theta}{4}$. If Firm 2 engages in CSR-NCA then Firm 2 will be able to develop the new product with quality θ with probability $\frac{1}{2}$ and consumers' utility from buying Firm 2's new product with quality θ is equal to $\theta + \gamma - p_2 + \lambda\frac{\theta}{2}$.

Armed with consumers' utilities, next we solve for firms' profits for every possible scenario and find out firms' optimal investment decision.

A.2.1. Firm 1 pursues NCSR

If Firm 2 invests in CSR-CA: $\pi_1 = \frac{3}{4}\left(\frac{\lambda\theta}{4} - \gamma\right) + \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$ and $\pi_2 = 0$ if $\gamma < \frac{\lambda\theta}{4}$ and $\pi_1 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$ and $\pi_2 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$ otherwise.

If Firm 2 invests in CSR-NCA: $\pi_1 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$ and $\pi_2 = \frac{\gamma}{2}$.

We know from the proof of Proposition 1 that if Firm 2 engages in NCSR then both firms' profits will be equal to zero. Thus, for Firm 2, NCSR is dominated strategy.

One can show that if $\gamma > \frac{3\lambda\theta}{4}$ Firm 2 prefers to invest in CSR-CA and $\pi_1 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$ and $\pi_2 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$. Otherwise, Firm 2 prefers to invest in CSR-NCA and $\pi_1 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$ and $\pi_2 = \frac{\gamma}{2}$.

A.2.2. Firm 1 pursues CSR-CA

If Firm 2 pursues NCSR: $\pi_1 = 0$ and $\pi_2 = \frac{1}{4}\left(\theta\left(1 + \frac{5\lambda}{4}\right) - 3\gamma\right)$ if $\gamma < \frac{\lambda\theta}{4}$ and $\pi_1 = \frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right)$ and $\pi_2 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$ otherwise.

If Firm 2 invests in CSR-CA: $\pi_1 = \pi_2 = \frac{3}{16}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$.

If Firm 2 invests in CSR-NCA: $\pi_1 = \frac{3}{8}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$ and $\pi_2 = \frac{1}{8}\left(\gamma + \theta\left(1 + \frac{5\lambda}{4}\right)\right)$.

One can show that Firm 2 prefers to pursue NCSR if $\gamma < \frac{\lambda\theta}{4}$. If $\frac{\lambda\theta}{4} < \gamma < \frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$ and $\lambda < 1$ Firm 2 pursues NCSR, $\gamma > \frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$ and $\lambda < 1$ Firm 2 invests in CSR-CA, if $\frac{\lambda\theta}{4} < \gamma < \theta\left(1 - \frac{\lambda}{4}\right)$ and $\lambda > 1$ Firm 2 pursues NCSR, if $\theta\left(1 - \frac{\lambda}{4}\right) < \gamma < \theta\left(\frac{7\lambda}{4} - 1\right)$ and $\lambda > 1$ Firm 2 invests in CSR-NCA, and if $\gamma > \theta\left(\frac{7\lambda}{4} - 1\right)$ and $\lambda > 1$ Firm 2 invests in CSR-CA.

A.2.3. Firm 1 pursues CSR-NCA

If Firm 2 invests in CSR-CA: $\pi_1 = \frac{1}{8}\left(\gamma + \theta\left(1 + \frac{5\lambda}{4}\right)\right)$. and $\pi_2 = \frac{3}{8}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$.

If Firm 2 invests in CSR-NCA: $\pi_1 = \pi_2 = \frac{1}{4}\left(\gamma + \theta\left(1 + \frac{\lambda}{2}\right)\right)$.

If Firm 2 pursues NCSR: $\pi_1 = \frac{\gamma}{2}$ and $\pi_2 = \frac{\theta}{2}\left(1 + \frac{\lambda}{2}\right)$.

One can show that Firm 2 prefers to pursue NCSR if $\gamma < \frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$ and invests in CSR-CA otherwise.

Before we proceed with solving the equilibrium outcome, we would like to show what happens when firm does not spend its extra budget B to invest in any of the three strategies. When Firm 1 pursues NCSR, if Firm 2 does not spend B then $\pi_2 = 0$. When Firm 1 invests in CSR-CA, if Firm 2 does not spend B then $\pi_2 = \frac{1}{8}\left(\theta\left(1 + \frac{5\lambda}{4}\right) - 3\gamma\right)$ if $\gamma < \frac{\lambda\theta}{4}$ and $\pi_2 = \frac{\theta}{8}\left(1 + \frac{\lambda}{2}\right)$ otherwise. When Firm 1 invests in CSR-NCA, if Firm 2 does not spend B then $\pi_2 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$. When both firms do not spend their extra budget B, $\pi_2 = \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$. By comparing Firm 2's profits from investing in NCSR, CSR-CA, and CSR-NCA, one can see that in any case Firm 2 would earn higher profits if it invests in one of the three strategies than if it does not spend B. Since firms are identical, this means that there exist small enough positive values of B for which both firms prefer to spend B.

Next, armed with Firm 2's optimal strategy when Firm 1 pursues NCSR, CSR-CA, and CSR-NCA, next we will solve for Firm 1's optimal strategy. We find that:

If $\gamma < \frac{\lambda\theta}{4}$ then Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA.

For $\lambda < 1$

If $\frac{\lambda\theta}{4} < \gamma < \frac{3\lambda\theta}{4}$ then Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA.

If $\frac{3\lambda\theta}{4} < \gamma < \frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$ then Firm 1 pursues NCSR and Firm 2 invests in CSR-CA.

If $\frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right) < \gamma$ then both firms invest in CSR-CA.

For $\lambda > 1$

If $\frac{\lambda\theta}{4} < \gamma < \frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$ then Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA.

If $\frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right) < \gamma < \theta\left(\frac{7\lambda}{4} - 1\right)$ then Firm 1 pursues CSR-CA and Firm 2 invests in CSR-NCA.

If $\theta\left(\frac{7\lambda}{4} - 1\right) < \gamma$ then both firms invest in CSR-CA.

Let $\gamma_{1=}\frac{3\lambda\theta}{4}$, $\gamma_{2=}\frac{\theta}{3}\left(1 + \frac{5\lambda}{4}\right)$, and $\gamma_{3=}\theta\left(\frac{7\lambda}{4} - 1\right)$.

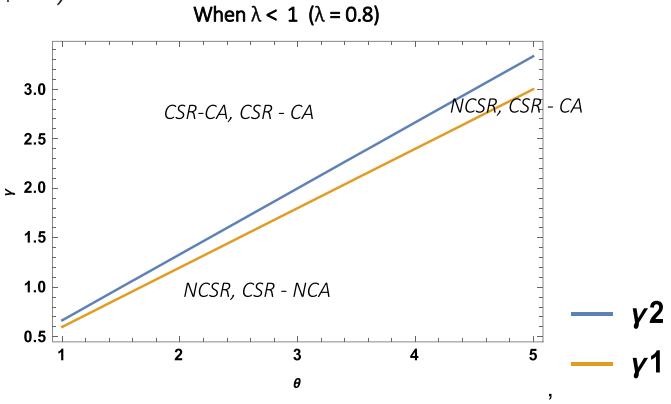

Fig. A.

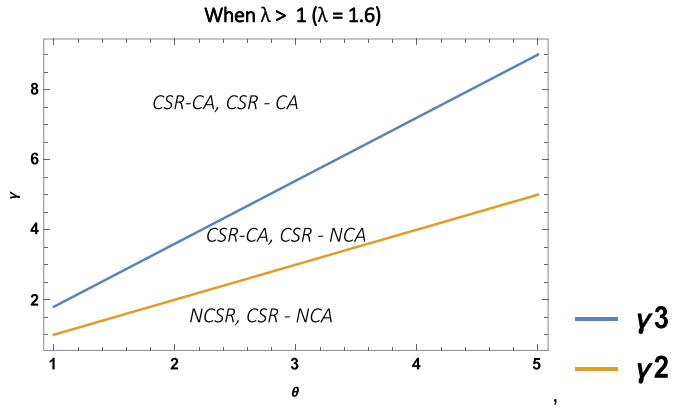

Fig. B.

A.3. Proof of Propositions 3 and 4

When $\lambda > 1$ and $\gamma < \gamma_2$, Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA, and $\pi_1 = \frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$. When $\lambda < 1$ and $\gamma_1 < \gamma < \gamma_2$, Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA, and $\pi_1 = \frac{\theta}{4}\left(1+\frac{\lambda}{2}\right)$. One can see that $\frac{\theta}{2}\left(1+\frac{\lambda}{2}\right) > \frac{\theta}{4}\left(1+\frac{\lambda}{2}\right)$.

When $\lambda < 1$ and $\gamma > \gamma_2$, both firms invest in CSR-CA, and $\pi_1 = \frac{3}{16}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$. When $\lambda > 1$ and $\gamma_2 < \gamma < \gamma_3$, Firm 1 invests in CSR-CA and Firm 2 invests in CSR-NCA, and $\pi_1 = \frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$. One can see that $\frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right) > \frac{3}{16}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$.

When both firms invest in CSR-CA, $\pi_1 = \pi_2 = \frac{3}{16}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$. $\frac{\partial\pi_1}{\partial\theta} > 0$ and $\frac{\partial\pi_1}{\partial\lambda} > 0$.

When Firm 1 invests in CSR-CA and Firm 2 invests in CSR-NCA, $\pi_1 = \frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$ and $\pi_2 = \frac{1}{8}\left(\gamma+\theta\left(1+\frac{5\lambda}{4}\right)\right)$. $\frac{\partial\pi_1}{\partial\theta} > 0$, $\frac{\partial\pi_1}{\partial\lambda} > 0$, $\frac{\partial\pi_2}{\partial\theta} > 0$ and $\frac{\partial\pi_2}{\partial\lambda} > 0$. Note that $\pi_1 > \pi_2$.

When Firm 1 pursues NCSR and Firm 2 invests in CSR-CA, $\pi_1 = \frac{\theta}{4}\left(1+\frac{\lambda}{2}\right)$ and $\pi_2 = \frac{3}{4}\left(\gamma-\frac{\lambda\theta}{4}\right)$. $\frac{\partial\pi_1}{\partial\theta} > 0$, $\frac{\partial\pi_1}{\partial\lambda} > 0$, $\frac{\partial\pi_2}{\partial\theta} < 0$ and $\frac{\partial\pi_2}{\partial\lambda} < 0$. Note that $\pi_1 > \pi_2$.

When Firm 1 pursues NCSR and Firm 2 invests in CSR-NCA, $\pi_1 = \frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$ and $\pi_2 = \frac{\gamma}{2}$. $\frac{\partial\pi_1}{\partial\theta} > 0$, $\frac{\partial\pi_1}{\partial\lambda} > 0$, $\frac{\partial\pi_2}{\partial\theta} = 0$ and $\frac{\partial\pi_2}{\partial\lambda} = 0$. Note that $\pi_1 > \pi_2$.

A.4. Proof of Proposition 5

We solve for the following game,

if $\gamma < \frac{\lambda\theta}{4}$

Firm 1/Firm 2 (π_1, π_2)	NCSR	CSR-NCA	CSR-CA
NCSR	(0,0)	$\frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$, $\frac{\gamma}{2}$	$\frac{1}{4}\left(\theta\left(1+\frac{5\lambda}{4}\right)-3\gamma\right)$, 0
CSR-NCA	$\frac{\gamma}{2}$, $\frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$	$\frac{1}{4}\left(\gamma+\theta\left(1+\frac{\lambda}{2}\right)\right)$, $\frac{1}{4}\left(\gamma+\theta\left(1+\frac{\lambda}{2}\right)\right)$	$\frac{1}{8}\left(\gamma+\theta\left(1+\frac{5\lambda}{4}\right)\right)$, $\frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$
CSR-CA	0, $\frac{1}{4}\left(\theta\left(1+\frac{5\lambda}{4}\right)-3\gamma\right)$	$\frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$, $\frac{1}{8}\left(\gamma+\theta\left(1+\frac{5\lambda}{4}\right)\right)$	$\frac{3}{16}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$, $\frac{3}{16}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$

if $\gamma > \frac{\lambda\theta}{4}$

Firm 1/Firm 2 (π_1, π_2)	NCSR	CSR-NCA	CSR-CA
NCSR	(0,0)	$\frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$, $\frac{\gamma}{2}$	$\frac{\theta}{4}\left(1+\frac{\lambda}{2}\right)$, $\frac{3}{4}\left(\gamma-\frac{\lambda\theta}{4}\right)$
CSR-NCA	$\frac{\gamma}{2}$, $\frac{\theta}{2}\left(1+\frac{\lambda}{2}\right)$	$\frac{1}{4}\left(\gamma+\theta\left(1+\frac{\lambda}{2}\right)\right)$, $\frac{1}{4}\left(\gamma+\theta\left(1+\frac{\lambda}{2}\right)\right)$	$\frac{1}{8}\left(\gamma+\theta\left(1+\frac{5\lambda}{4}\right)\right)$, $\frac{3}{8}\left(\gamma+\theta\left(1+\frac{\lambda}{4}\right)\right)$

CSR-CA	$\frac{3}{4}\left(\gamma - \frac{\lambda\theta}{4}\right), \frac{\theta}{4}\left(1 + \frac{\lambda}{2}\right)$	$\frac{3}{8}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$, $\frac{1}{8}\left(\gamma + \theta\left(1 + \frac{5\lambda}{4}\right)\right)$	$\frac{3}{16}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$, $\frac{3}{16}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$

Equilibrium outcome:

For $\lambda < 1$

If $\gamma < \gamma_1$ then (NCSR, CSR-NCA) and (CSR-NCA, NCSR).

If $\gamma_1 < \gamma < \gamma_2$ then (NCSR, CSR-CA) and (CSR-CA, NCSR).

If $\gamma_2 < \gamma$ then (CSR-CA, CSR-CA).

For $\lambda > 1$

If $\gamma < \gamma_2$ then (NCSR, CSR-NCA) and (CSR-NCA, NCSR).

If $\gamma_2 < \gamma < \gamma_3$ then (CSR-NCA, CSR-CA) and (CSR-CA, CSR-NCA).

If $\gamma_3 < \gamma$ then (CSR-CA, CSR-CA).

When both firms invest in CSR-NCA, $\pi_1 = \pi_2 = \frac{1}{4}\left(\gamma + \theta\left(1 + \frac{\lambda}{2}\right)\right)$ and when both firms invest in CSR-CA, $\pi_1 = \pi_2 = \frac{3}{16}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$. It is obvious that $\frac{1}{4}\left(\gamma + \theta\left(1 + \frac{\lambda}{2}\right)\right) > \frac{3}{16}\left(\gamma + \theta\left(1 + \frac{\lambda}{4}\right)\right)$.

References

Anderson, W. E., & Sullivan, W. M. (1993). The antecedents and consequences of customer satisfaction for firms. *Marketing Science, 12*(2), 125–143.

Bagnoli, M., & Watts, S. G. (2003). Selling to socially responsible consumers: Competition and the private provision of public goods. *Journal of Economics and Management Strategy, 12*(3), 419–445.

Baron, D. P. (2001). Private politics, corporate social responsibility, and integrated strategy. *Journal of Economics and Management Strategy, 10*(1), 7–45.

Bauman, C. W., & Skitka, L. J. (2012). Corporate social responsibility as a source of employee satisfaction. *Research in Organizational Behavior, 32*, 63–86.

Becchetti, L., Palestini, A., Solferino, N., & Tessitore, M. (2014). The socially responsible choice in a duopolistic market: A dynamic model of ethical product differentiation. *Economic Modelling, 43*, 114–123.

Berens, G., Riel, C., & Bruggen, G. (2005). Corporate associations and consumer product responses: The moderating role of corporate brand dominance. *Journal of Marketing, 69*(3), 35–48.

Berland, P. S. (2010). *Corporate socai responsibility perceptions survey*. Pen Schoen Berland.

Beurden, P. V., & Gossling, T. (2008). The worth of values- a literature review on the relation between corporate social and financial performance. *Journal of Business Ethics, 82*, 407–424.

Bhattacharya, C. B., & Sen, S. (2004). Doing better at doing good: When, why, and how consumers respond to corporate social initiatives. *California Management Review, 47*(1), 9–24.

Brammer, S., Brooks, S., & Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial Management, 35*(3), 97–116.

Brown, T. J., & Dacin, P. A. (1997). The company and the product: Corporate associations and consumer product responses. *Journal of Marketing, 61*(1), 68–84.

Churchill, G. A., & Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. *Journal of Marketing Research, 19*, 491–504.

Creyer, H. E., & Ross, T. W. (1997). The impact of firm behavior on purchase intention: Do consumers really care about business ethics? *The Journal of Consumer Marketing, 14*(6), 421–432.

Dahlsrud, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management, 15*(1), 1–13.

De Velde, E. V., Vermier, W., & Corten, F. (2005). Finance and accounting: Corporate social responsibility and financial performance. *Corporate Governance, 5*(3), 129–137.

Garcia-Gallego, A., & Georgantzis, N. (2009). Market effects of changes in consumers' social responsibility. *Journal of Economics and Management Strategy, 18*(1), 235–262.

Ghosh, S., & Shankar, K. (2013). Red, white and pink: Linking public good contributions to private good sales. *Journal of Economic Behavior and Organization, 88*, 96–108.

Green, T., & Peloza, J. (2014). How do consumers infer corporate social responsibility? The role of organization size. *Journal of Consumer Behaviour, 13*(4), 282–293.

Gregory, A., Tharyna, R., & Whittaker, J. (2014). Corporate social responsibility and firm value: Disaggregating the effects on cash flow, risk and growth. *Journal of Business Ethics, 124*(4), 633–657.

Griffin, J. J., & Mahon, J. F. (1997). The corporate social performance and corporate financial performance debate: Twenty-five years of incomparable research. *Business and Society, 36*(1), 5–31.

Herr, P. M. (1986). Consequences of priming: Judgment and behavior. *Journal of Personal and Social Psychology, 51*(6), 1106–1115.

Herr, P. M., Sherman, S. J., & Fazio, R. H. (1983). On the consequences of priming: Assimilation and contrast effects. *Journal of Experimental Social Psychology, 19*(4), 323–340.

Iyer, G., & Soberman, D. (2016). Social responsibility and product innovation. *Marketing Science, 35*(5), 727–742.

Johnson, D. M., & Fornell, C. (1991). A framework for comparing customer satisfaction across individuals and product categories. *Journal of Economic Psychology, 12*, 267–286.

Klein, J., & Dawar, N. (2004). Corporate social responsibility and consumers' attributions and brand evaluations in a product harm crisis. *International Journal of Research in Marketing, 21*(3), 203–217.

Krishna, A., & Rajan, U. (2009). Cause marketing: Spillover effects of cause related products in a product portfolio. *Management Science, 55*(9), 1469–1485.

Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. *Journal of Marketing, 70*(4), 1–18.

Lynch, J. G., Chakravarti, D., & Mitra, A. (1991). Contrast effects in consumer judgments: Changes in mental representations or in the anchoring of rating scales? *Journal of Consumer Research, 18*(3), 284–297.

Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2009). *Does it pay to be good and does it matter? Meta analysis of the relationship between corporate social and financial performance. Working Paper*.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly, 48*(2), 268–305.

Maron, I. Y. (2006). Toward a unified theory of the csp-cfp link. *Journal of Business Ethics, 67*(2), 191–200.

McWilliams, A., & Siegel, D. (2000). Research notes and communications – Corporate social responsibility and financial performance: Correlation or misspecification. *Strategic Management Journal, 21*(5), 603–609.

Meyers, J. L., & Tybout, A. M. (1997). Context effects at encoding and judgment in consumption settings: The role of cognitive resources. *Journal of Consumer Research, 24*(1), 1–14.

Mohr, L. A., & Webb, D. J. (2005). The effects of corporate social responsibility and price on consumer responses. *Journal of Consumer Affairs, 39*(1), 121–147.

Moore, G. M. (2001). Corporate social performance: An investigation in the UK supermarket industry. *Journal of Business Ethics, 34*(3).

Oliver, R. L. (1980). A cognitive model of the antecedents and the consequences of satisfaction decisions. *Journal of Marketing Research, 17*, 460–469.

Oliver, R. L., & Swan, J. E. (1989). Equity and disconfirmation perceptions as influences on merchant and product satisfaction. *Journal of Consumer Research, 16*, 372–383.

Oliver, R. L. (1993). Cognitive, affective, and attribute bases of the satisfaction response. *Journal of Consumer Research, 20*(December), 418–430.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies, 24*(3), 403–441.

Rangan, K., Chase, L., & Karim, S. (2015). *The truth about csr*. Harvard Business Review.

Seifert, B., Marris, S. A., & Bartkaus, B. R. (2003). Comparing big givers and small givers: Financial correlates of company philanthrophy. *Journal of Business Ethics, 45*(3), 195–211.

Seifert, B., Marris, S. A., & Bartkaus, B. R. (2004). Having, giving, and getting: Slack resources, corporate philanthropy, and firm financial performance. *Business and Society, 43*(2), 135–161.

Sen, S., & Bhattacharya, C. (2001). Does doing good always lead to doing better? Consumer reactions to corporate social responsibility. *Journal of Marketing Research, 38*(2), 225–243.

Shen, J., & Benson, J. (2014). When CSR is a social norm: How socially responsible human

resource management affects employee work behavior. *Journal of Management, 20*(10), 1–24.
Soana, M. G. (2011). The relationship between corporate social performance and corporate financial performance in the banking sector. *Journal of Business Ethics, 104*(1), 133–148.
Surroca, J., Tribo, A. J., & Waddock, S. (2010). Corporate responsibility and financial performance: The role of intangible resources. *Strategic Management Journal, 31*(5), 463–490.
Wirl, F., Feichtinger, G., & Kort, P. (2013). Individual firm and market dynamics of CSR activities. *Journal of Economic Behavior and Organization, 86*, 169–182.
Wright, P., & Ferris, S. (1997). Agency conflict and corporate strategy: The effect of disinvestment on corporate value. *Strategic Management Journal, 18*(1), 77–83.
Wu, M. L. (2006). Corporate social performance, corporate financial performance, and firm size: A meta-analysis. *Journal of American Academy of Business, 8*(1) (163-17).

Pradeep Bhardwaj is Carl H. Galloway associate professor of Marketing at University of Central Florida. He received his doctoral degree in Marketing from University of Toronto in 1998.

Prabirendra Chatterjee is an assistant professor of Marketing at Sabanci University in Istanbul. He received his doctoral degree in Marketing from Foster School of Business (University of Washington) in 2013.

Ozge Turut is an assistant professor of Marketing at Sabanci University in Istanbul. She received her Doctoral of business administration degree in Marketing from Harvard Business School in 2006.

Kivilcim Dogerlioglu Demir is an assistant professor of Marketing at Sabanci University in Istanbul. She received her doctoral degree in Marketing from Washington State University in 2010.