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Cause-related marketing of products with a negative externality

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ABSTRACT

Firms increasingly develop partnerships with non-profit organizations (NPO) to support a cause and improve their corporate image. This type of Corporate Social Responsibility, called cause-related marketing, commits firms to fund associations that encourage environmental protection, international development, and other causes by donating part of their profits. In this article, we argue that when cause-related marketing is applied to products with a negative externality, these a priori win–win arrangements can generate adverse and unexpected effects. We consider a vertical differentiation model integrating two assumptions. First, consumers may perceive the firm's contribution to be higher than the actual donation. Second, consumers who value highly socially responsible behavior may prefer not to consume rather than consuming products that aren't socially responsible. In this set-up we identify several possible counter-productive effects such as the likelihood of increase of the externality and the crowding out of direct contributions. We also draw policy and managerial implications.

1. Introduction

In everyday shopping decisions, consumers are increasingly confronted with "cause-related" products. In cause-related marketing (CRM), firms "join with charities or 'causes' to market a product or service for mutual benefit" (Krishna, 2011). In this context, a purchase by consumers triggers a donation by the firm to a non-profit organization. Well-known examples are the Yoplait "Save Lids to Save Lives" campaign, which promises to donate 10 cents to the Susan G. Komen for the Cure foundation for each yogurt lid returned by consumers; the Endangered Species Chocolate corporation, which donates 10% of its net profits to environmental organizations that help endangered species; and the 'Drink 1, Give 10' campaign of the French mineral-water bottler Volvic in partnership with UNICEF, for which each liter of bottled water purchased triggers a donation equivalent to ten liters of drinking water to people in African countries. Consumers typically respond favorably to cause-related product — "80% [of Americans] are likely to switch brands, about equal in price and quality, to one that supports a cause" (Cone, 2010). Furthermore, 47% of consumers report frequently or occasionally purchasing products based on the causes they support (Bonetto, 2014).

These partnerships have raised significant funds for non-profit organizations and increased bottom-line profits for businesses. Although it is difficult to quantify cause-marketing spending, IEG's numbers put corporate-cause sponsorship at $1.92 billion in 2015, predicted to grow to $2.00 billion in 2016 (Cause Marketing Forum). The literature on cause-related products include studies on emblematic programs (e.g., Pink Ribbon, RED) and has investigated reasons motivating businesses and not-for-profit organizations (NPO) to engage in these partnerships and their consequences for each partner, including consumers (e.g., Varadarajan & Menon, 1988; Strahilevitz & Meyers, 1998; Berglind & Nakata, 2005). Considerable attention has been devoted to practical dimensions shaping the effectiveness of these business deals such as the 'fit' between causes and businesses (e.g., Pracejus & Olsen, 2004).

The work of Fraser et al. (1988) suggests that cause-related products could provide an "anchor price" for donations in cases where people refrain from donating to charities because they have difficulties estimating a socially acceptable donation amount and fear donating an inappropriate amount (Dhar, 1996). Briers et al. (2007) argue that a low-priced exchange product may signal a donation price that is lower than the perceived donation price in mere donation settings and may legitimize small contributions. This strategy renders most excuses for noncompliance (e.g., "We can't afford to help.") inappropriate and make refusal socially embarrassing (see also Cialdini & Schroeder, 1976).

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Departing from the usual win–win perspective of these arrangements (but without negating it), we argue that, in some cases and for a subset of products, cause-related products can lead to adverse and unanticipated effects. While the positive effects of cause-related marketing for causes and firms and several success stories have been well documented (e.g., Basil et al., 2008; Berglind & Nakata, 2005), we focus our analysis on the less well documented cases of cause-related marketing with adverse effects. Some unintended effects of cause-related marketing (e.g., the privatization of charities that are most attractive to consumers without being the most important ones) have been developed by Stole (2008), but the analysis is mainly conducted at a macro-level. The author argues that these practices are mainly "window dressing, a way to improve public image while detracting attention from a business's own role in undermining the public safety net." If firms improve their image and increase sales of the product itself, and also the sale of their other products by carrying a cause-related product, consumers may consume more than initially, leading, under some circumstances, to an increase of overall consumption: this possible effect seems to be strongly related to the kind of product marketed (Bougherara et al., 2005). Another side effect concerns global donations. Using experimental evidence, Krishna (2011) shows that "cause related marketing doesn't always increase total money raised for the cause". Buying a cause-related product is seen as a charitable act allowing consumers to buy more and donate less overall. When consumers care about signaling their altruistic behavior through purchase rather than through direct donations, firms may overinvest in Corporate Social Responsibility practices and related publicity, leading to lower overall donations and social welfare (Ghosh & Shankar, 2013).

In the framework developed below, we show that under some plausible circumstances, initiatives by firms to connect socially-responsible projects to their products might have negative side-effects when the product has a socially irresponsible aspect. For example, it contributes to pollution. The positive effect of the donation can be negated, for example, by the environmental degradation that may result from an excessive purchase of the cause-related product, and by a reduction in global donations. Indeed, because of cognitive and behavioral biases, consumers can behave in ways that can lead to counter-intuitive results.

The remainder of the paper is organized as follows. In the next section, we set up a model of vertical differentiation to explore the possible effect of crowding out of donations and the possible impacts on the environment due to cause-related products. As such, our model is unique in three ways. First, it is adapted to a product generating a negative externality, for example, polluting. This negative quality of the product is partially offset by a donation to a charity. Thus, in this model consumers with a high aversion for socially irresponsible products, do not consume. Second, consumers' perception of the donation associated with the product may differ from the actual donation made by the firm. This feature accounts for the different ways to label the donations on product packages, for example, as a percent of profits or revenues, as an item donated per product, etc. Third, it considers both direct and indirect donations to charity, and allows the possibility to crowd out direct donations through the purchase of cause-related products (indirect donations). We provide anecdotal and empirical evidence supporting the relevance of our behavioral assumptions. Section 3 discusses the circumstances under which the previously identified adverse effects are more likely to arise and stresses some policy implications. Section 4 concludes and suggests directions for future research.

2. A theoretical framework

Cause-related (CR) products establish new relationships between three categories of agents: manufacturers, NPOs and consumers. In our model, manufacturers and NPOs seek to maximize respectively profits and the cause they support under budget constraints. Consumers seek to maximize their utility under budget constraints.

We model CR products as creating a vertical differentiation from rival firms. There is vertical differentiation when, at the same price, all consumers agree that a product is preferable to another. For instance, according to Edelman's annual Goodpurpose study, "when quality and price of a product are deemed equal, social purpose has consistently been the leading purchase trigger for global consumers since 2008, design and innovation and brand loyalty aside" (Greene, 2012). Thus, we make the assumption that at the same price all consumers prefer a CR product to an otherwise identical product that is not bundled with a donation. We model two firms, firm 1 and 2. In the benchmark scenario, both firms sell an identical standard product. In the second scenario, firm 1 bundles a cause to its product.

We assume that the product (with or without the donation) has an inherent component that causes a negative externality, that is, the product has a socially irresponsible impact on society. The impact of the negative externality can worsen if the donation creates an increase in overall consumption. For example, CR marketing that encourages the purchase of plastic water bottles rather than drinking tap water, the purchase of small plastic containers of yogurt rather than larger ones, the purchase of paper towels rather than reusable ones, and the purchase of unhealthy products (e.g., fatty food, cigarettes, alcohol, etc.).

2.1. Demand side

According to a modified model of vertical differentiation (Mussa & Rosen, 1978), consumers maximize utility from a product and a numeraire good (i.e., a direct donation to a charity) subject to a budget constraint R:

$$\max U = u(x) + u(d) s.t. R = p \cdot x + v \cdot d.$$

x is the quantity of the product, $u(x)$ the utility derived from the product, d the quantity of the numeraire good, p the price of the product, and v the price of the numeraire (see also Ghosh & Shankar, 2013). Products can either be cause-related (x_1) or standard (x_2), and the numeraire d is a direct donation to a NPO. We assume that consumers buy one unit of either the CR or standard product ($x = 1$), or purchase nothing. The price per unit of direct donation is normalized to 1, i.e., $v = 1$. Thus, the budget constraint simplifies to $R = p + d$ and in the case of no consumption, the entire budget R is directly donated to the NPO. In this article, we focus on the case where consumers budget a donation to charity, and where cause-related products might crowd out these direct donations. We should notice that this negative side-effect of CRM will not occur for consumers who don't budget direct donations.

We assume the following functional forms: $u(x) = (A - \theta\alpha)x$ and $u(d) = d$. The marginal utility from consumption of the product has a component A that is constant and identical for both standard and cause-related products and across consumers. However, consumers are aware of the irresponsibility of their consumption. The term α, where $\alpha > 0$, represents the extent to which the product is socially irresponsible and decreases the marginal utility of the product. We will also refer to a socially irresponsible product as "polluting" henceforth.

Consumers are heterogeneous in their aversion for socially irresponsible products. The parameter θ measures the strength of consumer aversion for the socially-irresponsible quality of good. We assume that consumers are uniformly distributed on the interval $\theta \in [0,1]$ and the total number of consumers is assumed to be one. In contrast to the typical characterization of consumer preferences of Mussa & Rosen (1978) where a positive quality is assumed, θ can be interpreted as a willingness to accept a compensation for consuming a product with negative quality. The higher the θ, the higher the "compensation" needed for the consumer to buy. For example, the consumer with $\theta = 1$ has the highest degree of aversion and must experience a monetary compensation equivalent to α to buy a socially irresponsible product.

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The consumer with $\theta = 0$ does not care about the social responsibility of the product consumed and does not need to be compensated.

The indirect utility of the consumer with parameter θ takes the following form when only the standard product is available:

$$V(p,R,\theta) = \begin{cases} R & \text{if s/he buys nothing} \\ A - \theta\alpha + R - p & \text{if s/he buys the standard product} \end{cases}. \quad (1)$$

We consider a partially-covered market, that is, consumers with the greatest aversion for socially-irresponsible products do not buy. In this context, the consumer $\tilde{\theta}$, who is indifferent between buying a standard product or nothing at all, corresponds to: $\tilde{\theta} = \frac{A-p}{\alpha}$. Thus, consumers with $\theta \epsilon [0; \frac{A-p}{\alpha}]$ will buy the standard product and consumers with $\theta \epsilon \frac{A-p}{\alpha}; 1]$ will not buy the product. The demand for the standard product is thus:

$$D(p) = \frac{A-p}{\alpha}. \quad (2)$$

The cause-related product causes less disutility than the standard product because the warm-glow from the indirect donation offsets, at least partly, the socially irresponsible nature of the product. As such, we model the marginal utility of the CR product as $A\text{-}\theta(\alpha\text{-}f(z))$, where $f(z)$ can be interpreted as the consumers' perception of the quality or the importance of the dollar amount z donated by firm 1, that is, the firm marketing the CR product. All consumers have the same perception of the donation and the "net pollution" effect caused by the CR product, however they differ in their willingness to accept a compensation θ to consume this product. We assume that the perception of the donation only partially offsets the polluting factor, that is, $f(z)<\alpha$. Thus, the overall socially-responsible quality of the product is negative.

We also assume that the quality level adopted by the firm (i.e., the actual amount donated z) does not necessarily match the quality perceived by consumers (i.e., the perception of the donation $f(z)$) given the different presentations of the donation on product packages. In some cases, one product purchased equals one item donated, in others one product purchased results in a specific amount donated or in a percentage of profits or revenue donated. In addition, the donation can either be automatic or require an additional action for the donation to occur, for example, going on a website or mailing a proof of purchase (Vlachos et al., 2016). Our model allows the examination of the effect of three types of consumer perception of the firm's donation, that is consumers perceive the firm's donation to be less, equal or greater than what is actually donated (i.e., $f(z)<z, f(z)=z$, or $f(z)=z$).

The mismatch between the donation offered by the firm and the consumers' perception of the amount actually donated is well supported by several empirical investigations (Olsen et al., 2003; Pracejus et al., 2004) and anecdotal or case studies evidence (Horne, 2013; Dadush, 2010; Stole, 2008). Using a web search, Olsen et al. (2003) found that on 3414 websites with a cause-related campaign, about 70% of the formats was completely abstract in nature, 25.6% of the formats was estimable, and only 4.5% was calculable. A cap on donations also contributes to the vagueness of the donation because once the company partner's cap is reached, the company stops contributing (Horne, 2013). In fact, Olsen et al. (2003) states that consumers tend to overestimate donations, especially when expressed as a percentage of profits and Pracejus et al. (2004) argue that current business practices frequently encourage consumers to overestimate money donated to a cause because of vague and abstract quantifiers (see also Newsweek, 2007).

According to Pracejus et al. (2004), when the claim states "a portion of the proceeds will be donated…" consumers' estimates of donation varied between $0 and $25 for a hypothetical $49.98 product and between $0 and $300 for a hypothetical $499.98 product (see also Horne, 2013). Similarly, Harvey & Strahilevitz (2009) highlight the different impact of two cause-related products in the personal care category:

> "Avon has a Breast Cancer Crusade lip balm that comes in a pink container with a ribbon logo. One hundred percent of the proceeds from the sales of this lip balm go to the Avon Breast Cancer Crusade. In contrast, Dial had a campaign in which 10 cents per sale were donated on selected products, with a maximum total donation of only $150,000. This obviously represents a huge difference in how much is given to the cause." (Harvey & Strahilevitz, 2009).

In addition to a misperception about the actual donation, consumers are likely uncertain about the exact pollution generated by the product. They may be well aware of their ignorance and decide to give up taking these issues into consideration. It is likely that some consumers may give "pollution" the benefit of the doubt, but many more may let it benefit their own desire for the product, exhibiting the perennial self-serving bias (Pieters et al., 1998).

Thus, the indirect utility of the consumer with parameter θ takes the following form when a cause-related and a standard product are available:

$$V(p,R,\theta) = \begin{cases} R & \text{if s/he buys nothing} \\ A - \theta(\alpha - f(z)) + R - p_1 & \text{if s/he buys the cause}-\text{related product}, x_1 \\ A - \theta\alpha + R - p_2 & \text{if s/he buys the standard product}, x_2 \end{cases}. \quad (3)$$

We can identify the consumer indifferent between buying a standard product and a cause-related one, $\theta = \frac{(p_1-p_2)}{f(z)}$, and the consumer indifferent between buying a cause-related product and no product at all, $\theta = \frac{A-p_1}{\alpha-f(z)}$. Indeed consumers who attach a high value to environmental and social issues might prefer to consume nothing to have no impact on society. However, if $A \geq \alpha\text{-}f(z) + p_1$ the market in the CR scenario is covered. The demand for the CR and standard products are:

$$D_1(p_1,p_2) = \bar{\bar{\theta}} - \bar{\theta} = \frac{Af(z) - \alpha(p_1-p_2) - p_2 f(z)}{f(z)(\alpha - f(z))}, \text{ and} \quad (4)$$

$$D_2(p_1,p_2) = \bar{\theta} = \frac{(p_1-p_2)}{f(z)}. \quad (5)$$

Introducing a cause-related product may allow consumers who initially refused to buy a standard product to buy as the CR product has a higher socially-responsible quality than the standard product. We are interested in the conditions under which the increase in overall consumption of the entire product category is more likely to occur. An increase in overall consumption and its side effects (pollution increase) might be problematic for socially irresponsible or polluting products. However, it is possible that consumers increase the consumption of the cause-related brand without increasing consumption of the product category. In this case, a successful cause-related campaign generates a brand switch, without impacting the overall pollution generated due to product consumption.

Several studies argue that cause-related marketing can cause more than brand switch and lead to an increase of consumption of the product category (see Bougherara et al., 2005) for some kinds of products. They include polluting or otherwise socially irresponsible goods, luxury or hedonic products where the cause reduces the consumption guilt (Strahilevitz & Myers, 1998; Strahilevitz, 1999).

The risk of increase in consumption of the overall product category has been mentioned in several studies. Harvey & Strahilevitz (2009) and Eikenberry (2009) analyze the emblematic case of some pink ribbon products where the claims on the outside "promote breast cancer awareness and research," while chemicals on the inside "cause the disease in the first place." Consumers may not realize that a product supporting a cancer-fighting cause – perhaps even a frivolous item –

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may in fact be a product that creates the toxins and other environmental hazards that help cause cancer (Eikenberry, 2009).

2.2. Supply side

We examine two scenarios; a benchmark scenario in which both firms market the standard product at price p and a CR-product scenario where firm 1 adopts CRM and firm 2 continues marketing the standard product. In each scenario we consider two levels of competition, i.e., Cournot competition where firms compete in quantity and Bertrand competition where firms compete in prices. Without loss of generality, we assume that marginal production costs of firms are equal to zero. We examine in turn the results under Cournot and Bertrand competition.

In the Cournot benchmark scenario (respectively Bertrand), two identical firms maximize their profit (π) by choosing quantity (respectively price), where $\pi_i = p(Q)q_i$, $i = 1, 2$, $Q = q_1 + q_2$, and $p(Q)$ is the inverse demand function corresponding to Eq. (2). In the CR product scenario, to optimize profits, we first solve (4) and (5) for the inverse demand functions and note that firm 2 incurs no costs whereas firm 1 has to pay z per unit sold to the NPO. The profit functions become $\pi_1 = (p_1(q_1,q_2)\text{-}z)q_1$ and $\pi_2 = p_2(q_1,q_2)q_2$. The equilibrium quantities and price for both scenarios are presented in Table 1.

Tables 2 and 3 present the conditions necessary for a viable equilibrium in Cournot and Bertrand competition respectively, i.e., positive prices and quantities, the conditions under which the market is uncovered in the benchmark scenario, as well as the necessary condition for firm 1 to adopt CRM. We also examine in Tables 2 and 3 the conditions under which there is an overall increase in consumption of the product category and an increase or decrease in consumption of each product with the adoption of CRM. The conditions are expressed in terms of the threshold expression of A, the inherent utility of the product, for the condition to hold. For example, in Table 2, the condition under which some consumers will not buy in the benchmark scenario is $A < I = 3\alpha/2$. To ensure that some consumers purchase nothing, the disutility brought by the socially irresponsible quality of the product, α, must be large enough relative to A to make the product unattractive for consumers with the greatest aversion toward socially irresponsible goods.

As shown in the last column of Tables 2 and 3, the ranking of the various threshold values of A in some cases depend on threshold values for $z/f(z)$, i.e., the value of the firm's donation to the NPO, z, relative to the consumers' perception of the donation, $f(z)$. On the basis of the conditions developed in Tables 2 and 3, Tables 4 and 5 summarize the possible ranges of A for viable equilibrium solutions and for firm 1 to find it profitable to adopt CRM in context of Cournot and Bertrand competition respectively.

3. Cause-related products: more harm than good?

When a product causes a negative externality, introducing cause-related marketing (CRM) can lead to an increase of consumption and counter-productive outcomes such as, more environmental and/or social degradation, and/or, a decrease in total donations. In the following sections, we determine conditions for which these perverse outcomes are likely to occur (proofs available by request) and draw some policy implications.

3.1. Social and/or environmental impact of introducing cause-related products

According to Andrews et al. (2014), the existing literature on CRM "attests that CM boosts consumer liking and purchase intentions." There are several examples suggesting an increase in consumption as a result of CRM (Cone, 2010). For instance, the Cone study reported a 74% increase in actual purchase for a shampoo brand when associated with a cause (see also Varadaraja & Menon (1988) for the effect of a cause-related marketing program launched in 1983 by American Express) Another example is in the context of a field experiment with close to 12,000 consumers who were given the opportunity to buy an IMAX movie ticket. Andrews et al. (2014) report that the treatment with cause marketing "induced almost two times the purchase incidence" than the treatment without.

Our model considers both the change in the overall product category, i.e. $\Delta Q^{PC} = q_1^* + q_2^* \text{-} Q_B^*$ (i.e., entry of new consumers to the market) and a brand switch $\Delta Q^{BC} = q_{2B}^* \text{-} q_2^*$ (i.e., number of consumers switching products). A brand switch does not change the amount of pollution in our model because the two products are identical except for CR marketing. An increase in the overall product category is a pure increase in pollution because the consumers that enter the market with CRM are consumers with no prior purchase. The actual increase in pollution or social degradation depends on the product itself — the life cycle of some products being more damaging than others. While the magnitude of the impact is important for public policy, our focus here is to identify the conditions that will likely result in an increase in pollution or social degradation.

Using the results of Tables 2 and 4, we can examine the impact on consumption of introducing CRM. Figs. 1 and 2 illustrate the impact of CRM on market shares in Cournot and Bertrand competition respectively.

Under Cournot competition, cases a., b. and d. in Table 4 represent possible equilibrium solutions where firm 1 finds it profitable to use CRM. The following general observations can be made:

- There is always an increase in the consumption of the product category when it is profitable for firm 1 to adopt CRM (i.e., increase in $Q = q_1 + q_2$).
- It is profitable for firm 1 to adopt CRM when the perception of the donation is larger than the actual donation. Case d. contains the minimum value that the perception can take relative to the actual donation, $f(z) > 1.14z$. That is, the consumer must believe that the donation is at least 1.14 times larger than what it actually is for CRM to be profitable.
- The consumption of the CR product always increases (i.e., increase in q_1).

Intuitively, the increase in overall consumption occurs because the cause adds utility to the product (or decreases the "pollution" disutility) and this added value more than offsets the increase in the product's price. The price increases for two reasons; the additional expense caused by the donation z and the softening of competition that occurs with the introduction of CRM. Under the benchmark scenario the products are homogeneous and the price competition is high. When one firm introduces CRM, the products become vertically differentiated and price competition softens, which puts upward pressure on prices.

The introduction of CRM by firm 1 can either decrease or increase consumption of the standard products. In case a., when the inherent utility of the product, A, is relatively large ($A > V$) and the donation is

Table 1
Equilibrium under Cournot and Bertrand competition.

	No CRM	Firm 1 adopts CRM
Cournot competition	$p_B^* = \frac{A}{3}$ $Q_B^* = \frac{2A}{3\alpha}$ $q_{1B}^* = \frac{A}{3\alpha}$ $q_{2B}^* = \frac{A}{3\alpha}$	$p_1^* = \frac{(A+z)(\alpha+f(z))}{3\alpha+f(z)}$ $p_2^* = \frac{\alpha(A+z)}{3\alpha+f(z)}$ $q_1^* = \frac{A(\alpha+f(z))-2\alpha z}{(\alpha-f(z))(3\alpha+f(z))}$ $q_2^* = \frac{A+z}{(3\alpha+f(z))}$
Bertrand competition	$p_B^* = 0$ $Q_B^* = \frac{A}{\alpha}$ $q_{1B}^* = \frac{A}{2\alpha}$ $q_{2B}^* = \frac{A}{2\alpha}$	$p_1^* = \frac{2(Af(z)+\alpha z)}{3\alpha+f(z)}$ $p_2^* = \frac{Af(z)+\alpha z}{3\alpha+f(z)}$ $q_1^* = \frac{\alpha[Af(z)+z(\alpha+f(z))]}{f(z)(\alpha-f(z))(3\alpha+f(z))}$ $q_2^* = \frac{Af(z)+\alpha z}{f(z)(3\alpha+f(z))}$

Table 2
Conditions for Cournot equilibrium and effect of CRM on consumption.

	Condition	Holds if	Definition	Implication	Ranking
Conditions for feasible equilibrium	$\theta_B^*<1$	$A<I$	$I=3\alpha/2$	Non-covered market in benchmark scenario	
	$\overline{\overline{\theta}}^* \geq \overline{\theta}^*$	$A\geq II$	$II=\frac{2\alpha z}{\alpha+f(z)}$	Quantity CR product is positive.	II < I if $\frac{z}{f}<\frac{3}{4}(\frac{\alpha+f(z)}{f(z)})$ II < III if $\frac{z}{f}<\frac{\alpha+f(z)}{f(z)}$ II < IV: always true
	$\overline{\overline{\theta}}^* \leq 1$	$A\leq III$	$III=\frac{(\alpha-f(z))(3\alpha+f(z))+z(\alpha+f(z))}{2\alpha}$	Total quantity of product sold does not exceed one.	III < I if $\frac{z}{f}<\frac{2\alpha+f(z)}{\alpha+f(z)}$ III > IV if $\frac{z}{f}<\frac{3}{2}$
	$\pi_1^*>\pi_B^*$	$A>\pi^*$	$\pi^*=\frac{6\alpha z}{3(\alpha+f(z))-x(3\alpha+f(z))}$ where $x=\sqrt{\frac{\alpha-f(z)}{\alpha}}$	Firm 1 adopts CRM if profits are larger than without CRM.	$\pi^*<I$ if $\frac{z}{f}<\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{4f(z)}$ $\pi^*>II$ $\pi^*<III$ if $\frac{z}{f}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}$
Conditions for increase or decrease in consumption of product category	$\overline{\overline{\theta}}^*>\theta_B^*$	$A>IV$	$IV=\frac{3\alpha z(\alpha+f(z))}{2f(z)(2\alpha+f(z))}$	Increase in consumption	IV < I if $\frac{z}{f}<\frac{2\alpha+f(z)}{\alpha+f(z)}$
	$\overline{\overline{\theta}}^*<\theta_B^*$	$A<IV$	$IV=\frac{3\alpha z(\alpha+f(z))}{2f(z)(2\alpha+f(z))}$	Decrease in consumption	$IV<\pi^*$
Conditions for increase or decrease in consumption of individual products with CRM	$q_{2B}^*<q_2^*$	$A<V$	$V=\frac{3\alpha z}{f(z)}$	Quantity of standard product increases.	$V<I$ if $\frac{z}{f}<0.5$
	$q_{2B}^*>q_2^*$	$A>V$		Quantity of standard product decreases.	$III<V$ if $\frac{z}{f}>\frac{\alpha-f(z)}{2\alpha-f(z)}$ $IV<\pi^*<V$: always true
	$q_{1B}^*<q_1^*$	$A>VI$	$VI=\frac{6\alpha^2 z}{f(z)(5\alpha+f(z))}$	Quantity of product 1 (CR) increases.	$IV<VI<\pi^*<V$: always true
	$q_{1B}^*>q_1^*$	$A<VI$		Quantity of product 1 (CR) decreases.	$VI<I$ if $\frac{z}{f}<\frac{5\alpha+f(z)}{4\alpha}$ $VI<III$ if $\frac{z}{f}<\frac{5\alpha+f(z)}{4\alpha+f(z)}$

low relative to what is perceived by consumers ($z/f(z)$ low), the introduction of the CR product results in a decrease in consumption of the standard product. In other words and as shown in Fig. 1, the product of firm 1 becomes sufficiently attractive that some consumers buying the standard product switch to the CR product and some consumers who were not buying the product, now buy the CR product. In the other cases, when either the inherent utility of the product is not as high (i.e., $A<V$ in case a.) or the perception of the donation relative to the donation itself is not as high (i.e., cases b. and d.), there is an increase in the consumption of the standard product. In these cases, some of the consumers who were buying the product of firm 1 prior to CRM prefer to continue buying a standard product. For those consumers, the increase in utility provided by the cause does not offset the price increase, i.e., their aversion for the socially irresponsible aspect of the good (Θ) is not high enough. As a result, some consumers switch brands and firm 2 gains market share, i.e., CRM creates a positive spillover to firm 2.

Under Bertrand competition, cases a. and b. in Table 5 represent the viable equilibrium solutions. Unlike the Cournot model, adoption of CRM by one firm does not necessarily imply an increase in overall consumption of the product category and an increase in consumption of the CR product. The difference in result occurs because the increase in market power with CRM is more important under Bertrand competition. Without CRM the products are homogeneous and firms exercise no market power under Bertrand competition, i.e., price is set at marginal cost. When one firm introduces CRM, the products become vertically differentiated and price competition softens, which puts upward pressure on prices.

Under Bertrand competition, an increase in consumption of the product category is possible when the inherent utility of the product (A) is relatively large and consumers' perception of the donation is greater than the actual donation (case a., Table 5). The increase in consumption of the product category occurs because the increase in the consumption of product 1 (CR product) offsets a decrease in consumption of product 2. That means that some consumers, who were consuming product 2 and some who were not buying anything prior to CRM, switch to consuming the CR product (see Fig. 2). There is a switch in consumption toward the CR product.

Table 3
Conditions for Bertrand equilibrium and effect of CRM on consumption.

	Condition	Holds if	Definition	Implication	Ranking
Conditions for feasible equilibrium	$\theta_B^*<1$	$A<I$	$I=\alpha$	Non-covered market in benchmark scenario	
	$\overline{\overline{\theta}}^* \geq \overline{\theta}^*$	$A\geq II$	$II=\frac{z(\alpha+f(z))}{2f(z)}$	Quantity CR product is positive.	II < I if $\frac{z}{f}<\frac{2\alpha}{\alpha+f(z)}$
	$\overline{\overline{\theta}}^* \leq 1$	$A\leq III$	$III=\frac{(\alpha-f(z))(3\alpha+f(z))+2\alpha z}{(3\alpha-f(z))}$	Total quantity of product sold does not exceed one.	III < I if $\frac{z}{f}<\frac{\alpha+f(z)}{2\alpha}$ II < III if $\frac{z}{f}<2$
	$\pi_1^*\geq\pi_B^*$	$A\geq II$		Firm 1 adopts CRM if profits are larger than without CRM.	
Conditions for increase or decrease in consumption of product category	$\overline{\overline{\theta}}^*>\theta_B^*$	$A>IV$	$IV=\frac{2\alpha^2 z}{f(z)(\alpha+f(z))}$	Increase in consumption	$IV<III<I$ if $\frac{z}{f}<\frac{\alpha+f(z)}{2\alpha}$ $IV>II$: always true
	$\overline{\overline{\theta}}^*<\theta_B^*$	$A<IV$		Decrease in consumption	
Conditions for increase or decrease in consumption of individual products with CRM	$q_{2B}^*<q_2^*$	$A<IV$		Quantity of standard product increases.	
	$q_{2B}^*>q_2^*$	$A>IV$		Quantity of standard product decreases.	
	$q_{1B}^*<q_1^*$	$A>IV$		Quantity of product 1 (CR) increases.	
	$q_{1B}^*>q_1^*$	$A<IV$		Quantity of product 1 (CR) decreases.	

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Table 4
Definition of Possible Equilibrium Solutions under Cournot Competition.

The results below are based on the following inequalities (see Table 2)
$\frac{\alpha-f(z)}{2\alpha-f(z)}<\frac{1}{2}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}<\frac{5\alpha+f(z)}{4\alpha+f(z)}<\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{4f(z)}<\frac{5\alpha+f(z)}{4\alpha}<\frac{3}{2}<\frac{2\alpha+f(z)}{\alpha+f(z)}<\frac{3}{4}(\frac{\alpha+f(z)}{f(z)})<\frac{\alpha+f(z)}{f(z)}$ for $\frac{f(z)}{\alpha}\in[0;0.9282$, and
$\frac{\alpha-f(z)}{2\alpha-f(z)}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}\leq\frac{1}{2}<\frac{5\alpha+f(z)}{4\alpha+f(z)}<\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{4f(z)}<\frac{5\alpha+f(z)}{4\alpha}<\frac{3}{2}<\frac{2\alpha+f(z)}{\alpha+f(z)}<\frac{3}{4}(\frac{\alpha+f(z)}{f(z)})<\frac{\alpha+f(z)}{f(z)}$ for $\frac{f(z)}{\alpha}\in[0.9282;1]$.

Case	Ranking of threshold values of A	Holds when	Range of possible solutions	Effect of CRM
a.	$II<IV<VI<\pi^*<V<III<I$	$\frac{z}{f}<\frac{\alpha-f(z)}{2\alpha-f(z)}<\frac{1}{2}$	$\pi^*<A<III$	• Increase in consumption of product category • When $\pi^*<V<A<III$: Increase in q_1 and decrease in q_2 • When $\pi^*<A<V<III$: Increase in q_1 and q_2
b.	$II<IV<VI<\pi^*<III<V<I$	$\frac{\alpha-f(z)}{2\alpha-f(z)}<\frac{z}{f}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}\leq\frac{1}{2}$ and $\frac{f(z)}{\alpha}\in[0.9282;1]$	$\pi^*<A<III$	• Increase in consumption of product category • Increase in q_1 and q_2
c.	$II<IV<VI<III<\pi^*<V<I$	$\frac{\alpha-f(z)}{2\alpha-f(z)}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}<\frac{z}{f}<\frac{1}{2}$ and $\frac{f(z)}{\alpha}\in[0.9282;1]$	No CRP in feasible range ($II<A<III$)	
d.	$II<IV<VI<\pi^*<III<I<V$	$\frac{\alpha-f(z)}{2\alpha-f(z)}<\frac{1}{2}<\frac{z}{f}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}$ and $\frac{f(z)}{\alpha}\in[0;0.9282$	$\pi^*<A<III$	• Increase in consumption of product category • Increase in q_1 and q_2
e.	$II<IV<VI<III<\pi^*<I<V$	$\frac{1}{2}<(\frac{\alpha-f(z)}{f(z)})\frac{3(\alpha+f(z))-x(3\alpha+f(z))}{3(\alpha-f(z))+x(\alpha+f(z))}<\frac{z}{f}<\frac{5\alpha+f(z)}{4\alpha+f(z)}$ and $\frac{f(z)}{\alpha}\in[0;0.9282$	No CRP in feasible range ($II<A<III$)	
f.	$II<IV<III<VI<I<V$	$\frac{5\alpha+f(z)}{4\alpha+f(z)}<\frac{z}{f}<\frac{5\alpha+f(z)}{4\alpha}$	No CRP in feasible range ($II<A<III$)	
g.	$II<IV<III<I<VI<V$	$\frac{5\alpha+f(z)}{4\alpha}<\frac{z}{f}<\frac{3}{2}$	No CRP in feasible range ($II<A<III$)	
h.	$II<III<IV<I<VI<V$	$\frac{3}{2}<\frac{z}{f}<\frac{2\alpha+f(z)}{\alpha+f(z)}$	No CRP in feasible range ($II<A<III$)	
i.	$II<I<III<IV<VI<V$	$\frac{2\alpha+f(z)}{\alpha+f(z)}<\frac{z}{f}<\frac{3}{4}(\frac{\alpha+f(z)}{f(z)})$	No CRP in feasible range ($II<A<III$)	

If the inherent utility of the product is not high enough (case a., $A<IV$), or if the perception of the donation is lower (and potentially lower than the actual donation, case b.), it may still be profitable to adopt CRM even though there is a decrease in the consumption of product 1 with CRM and an overall decrease in consumption of the product category. It is still profitable for firm 1 to adopt CRM because of the market power it affords. In this case, some consumers, who were buying product 1 in the benchmark scenario, give up consumption and some switch to the standard product once CRM is adopted (Fig. 2). Here, there is a switch in consumption away from the CR product.

In summary, an increase in overall consumption of the product category, and thus a possible increase in "pollution," can occur as a result of the adoption of CRM by one firm and under the following conditions (not all must hold at the same time, refer to Tables 4 and 5):

- A large enough inherent utility of the product.
- The perception of the donation is large relative to the actual donation, i.e., small $z/f(z)$.
- A small increase in market power or CRM is not the only source of market power.

Increase in consumption of the product category occurs because new consumers are drawn to the market by the cause. However, for this to occur, our results show that valuation of the product (A) by consumers, independent of the socially irresponsible quality, must be high enough for more consumers to buy the CR product when it is introduced. This result occurs because in equilibrium, as A increases, the market share of the CR product rises faster than the market share of the standard product (i.e., $\partial q_1^*/\partial A>\partial q_2^*/\partial A>0$). Also, the more the donation is perceived by consumers to offset the polluting aspect of the product, the more attractive the product is to consumers with a high aversion for socially irresponsible products and the more likely an increase in consumption will result.

When consumers' perception of donation exceeds the actual amount donated by the firm (at least greater than $1.14z$ in Cournot, and at least greater than z in Bertrand), it is profitable for the firm to introduce a CR product and, an increase in overall consumption of the product category occurs. This result is reinforced by our earlier observation that firms often don't communicate clearly the amount donated and that this lack of clarity can be strategic. While $f(z)$ is exogenous to our model, equilibrium Cournot profits of firm 1 rise with $f(z)$ (for a given z), and thus it is profitable to influence consumers' perception of the donation.

Table 5
Definition of possible equilibrium solutions under Bertrand competition.

The results below are based on the following inequality (see Table 3), which always holds: $\frac{\alpha+f(z)}{2\alpha}<\frac{2\alpha}{\alpha+f(z)}<2$.

Case	Ranking of threshold values of A	Holds when	Range of possible solutions	Effect of CRM
a.	$II<IV<III<I$	$\frac{z}{f}<\frac{\alpha+f(z)}{2\alpha}<\frac{2\alpha}{\alpha+f(z)}<2$	$II<A<III$	When $II<IV<A<III$: • Increase in consumption of the product category • Increase in q_1 and decrease in q_2 When $II<A<IV<III$: • Decrease in consumption of the product category • Decrease in q_1 and increase in q_2
b.	$II<I<III<IV$	$\frac{\alpha+f(z)}{2\alpha}<\frac{z}{f}<\frac{2\alpha}{\alpha+f(z)}<2$	$II<A<I$	• Decrease in consumption of the product category • Decrease in q_1 and increase in q_2
c.	$I<II<III<IV$	$\frac{\alpha+f(z)}{2\alpha}<\frac{2\alpha}{\alpha+f(z)}<\frac{z}{f}<2$	No possible equilibrium solutions	
d.	$I<III<II<IV$	$\frac{\alpha+f(z)}{2\alpha}<\frac{2\alpha}{\alpha+f(z)}<2<\frac{z}{f}$	No possible equilibrium solutions	

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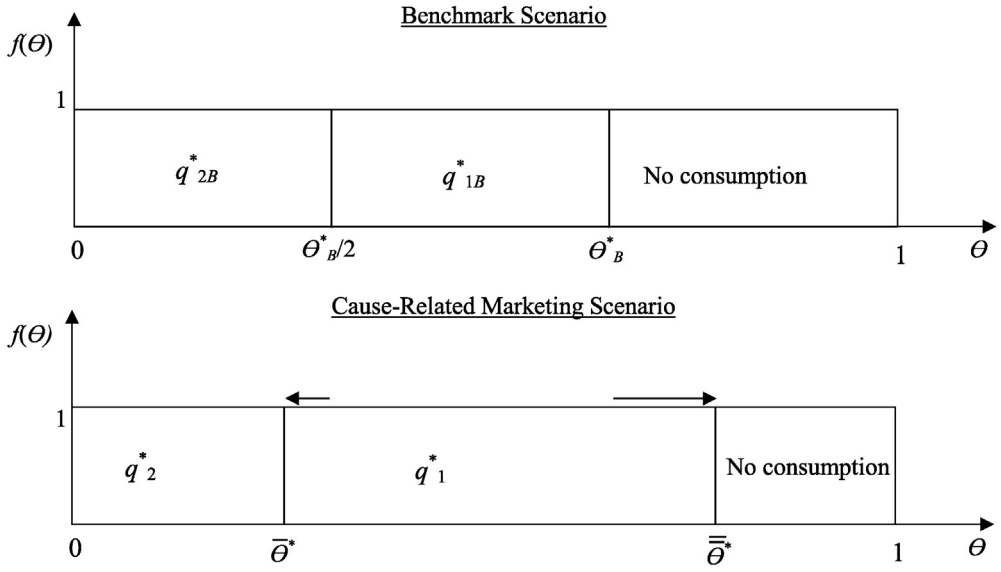
Case a. with $\pi^* < V < A < III$ (from table 4)



Case a. with $\pi^* < A < V < III$, case b., and case d. (from table 4)

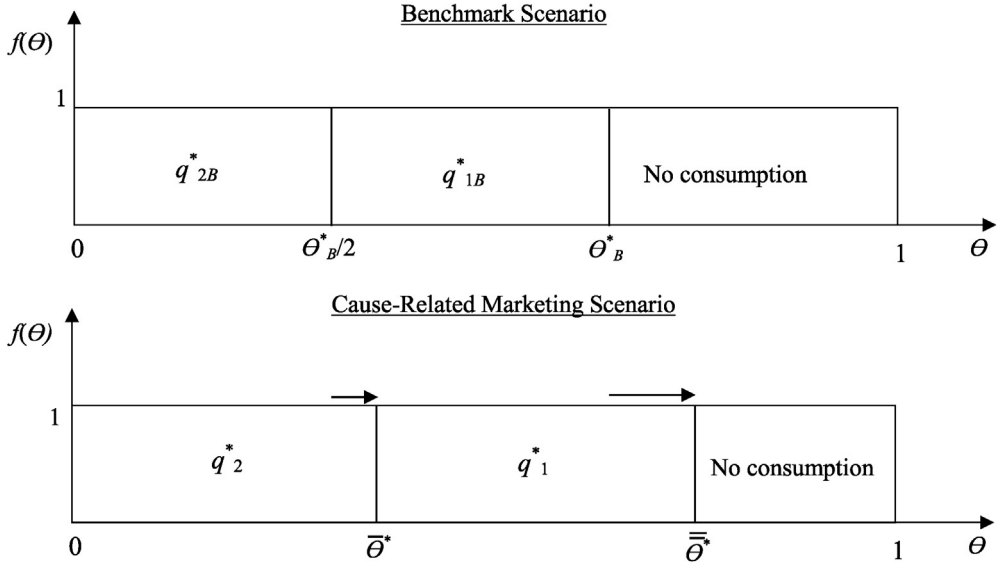


Fig. 1. Impact of cause-related marketing on consumption levels under Cournot competition.

Our results also show that the level of competition before and after the introduction of CRM is important in determining the effect on overall consumption. If CRM provides an important increase in market power, such as in Bertrand competition, the increase in price of the CR product may overwhelm the increase in utility provided by the cause. As a result some consumers may stop buying the product entirely and some consumers may switch to the standard product resulting in a decrease in consumption and "pollution." Thus, practically, CRM may cause a decrease in consumption of the product category when different brands of a product are considered nearly perfect substitutes by consumers. However, increase in consumption of the product category is more likely with market power already present in the market such as with few competitors or differentiated brands.

Cone (2010) points out that many consumers are likely to switch from one brand to another when it is associated to a cause. Thus, an important question is the extent to which CRM brings to the market more consumers ($\theta^* - \theta_B^*$) and to what extent it results in brand switching ($q_{2B}^* - q_2^*$).

Under Cournot competition, we demonstrate that the dominant explanation for an increase in consumption of the CR product is the entry of new consumers, whereas for Bertrand competition it is brand switching. When a product with a socially irresponsible component is marketed, the new customers are those with the highest aversion toward pollution. To convince those consumers to purchase, the perception of the donation must be sufficiently high. Indeed, in the Cournot model, minimum value of $f(z)/z$ is higher than under Bertrand. In other words, for CRM to be profitable, firms must work harder to influence positively the consumers' perception of the donation than under Bertrand. If they are successful, the dominant effect of CRM adoption is the entry of new consumers rather than a brand switch. Under more intense competition, as in the Bertrand model, the opposite occurs with the dominant effect of CRM adoption being a brand switch.

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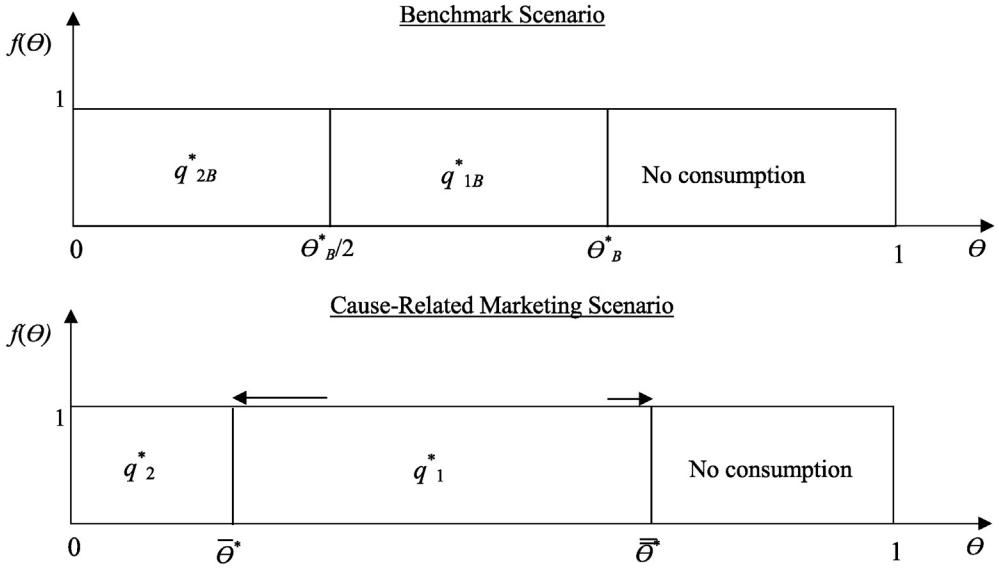
Case a. with $II < IV < A < III$ (from table 5)



Case a. with $II < A < IV < III$, and case b. (from table 5)

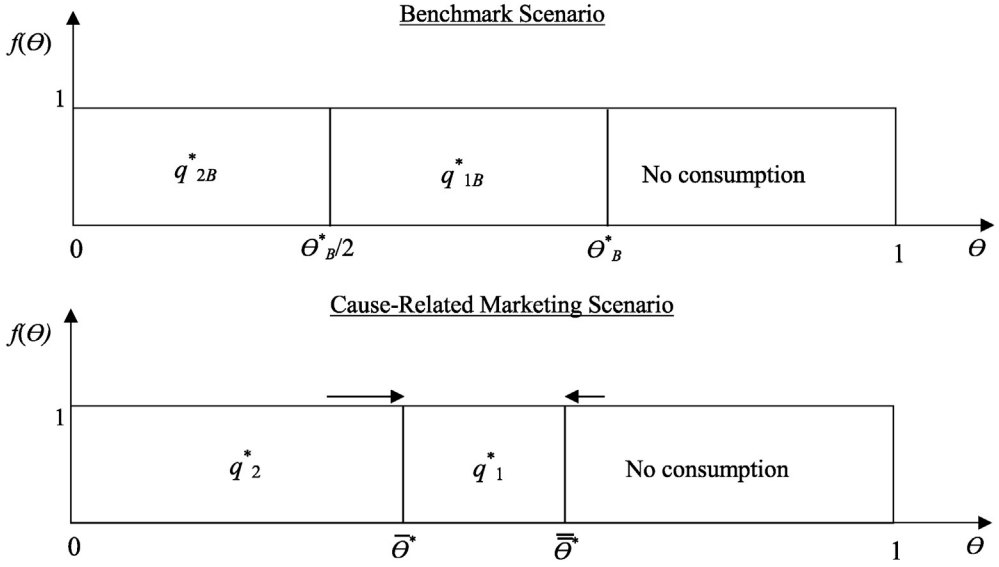


Fig. 2. Impact of cause-related marketing on consumption levels under Bertrand competition.

3.2. The impact on the global amount of donations

Relating a cause to a product allows the collection of indirect donations. *A contrario*, as consumers devote already a part of their budget to direct donations, the consumption of CRP changes their direct donation decision. Donations to the NPO are the numeraire in our model. Thus, prior to the introduction of the CR product, consumers who buy nothing donate R and consumers who buy the product donate $R\text{-}p_B^*$, that is, total donations before the introduction of the CR product are $(1\text{-}Q_B^*)R + Q_B^*(R\text{-}p_B^*) = R\text{-}p_B^*Q_B^*$. Following the same logic, donations after the introduction of the CR product are $R\text{-}p_1^*q_1^*\text{-}p_2^*q_2^* + zq_1^*$. Thus, for the overall donations to be reduced, the following must hold:

$$zq_1^* + p_B^*Q_B^* < p_1^*q_1^* + p_2^*q_2^*. \tag{6}$$

We show that this inequality holds in Cournot competition for all values of A when $\alpha/f(z) \in]1;2[$. In other words, global donations decrease for all value of A when consumers perceive the firm's donation to offset at least half of the socially-irresponsible quality of the product. This means that the higher the consumers' perception of the donation, the more likely it is that a decrease in direct donations will be under-compensated by indirect donations, leading to a decrease of overall funds raised by the NPO. This crowding out of donation is likely given that, most of the time, indirect donations are relatively small compared to direct donations (Briers et al., 2007). Often, the exact amount pledged to the cause supported by the NPO is not clearly communicated to consumers or 'exploit' the consumer inexperience in computing it (e.g., 'for each product sold, a tree is planted' or 'a portion of the proceeds will be donated') (Pracejus et al., 2004). Thus, the higher the consumer's perception of the donation relative to the actual amount donated and the higher the perception of the "pollution damage" that is offset by the donation in the mind of consumers, the higher the likelihood of crowding out of direct donations.

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Under Bertrand competition, the inequality (6) always holds because price equals marginal cost (i.e., zero in our case), and consequently, donations correspond to R in the benchmark scenario. CRM results in product differentiation and a way to obtain market power. The increase in prices, and the loss of direct donations as a result, is not compensated by the cause-related donations. We conclude that for products characterized by a socially irresponsible feature and sold in markets that are highly competitive and/or characterized by low product differentiation, CRM is more likely to result in crowding out of donations if consumers view the CR product as contributing to the overall donation to NPOs.

Our analysis emphasizes that consumers consider the purchase of a cause-related product as contributing to their need to donate. Indeed, Flaherty & Diamond (1999) found that cause-marketing campaigns impede future donations to charities because consumers view their purchases as donations (see also Lichtenstein et al., 2004 and Eikenberry, 2009). However, this does not mean that all consumers will systematically reduce direct donations because of purchase of cause-related products. Some consumers may consider direct donations and the purchase of cause-related products as two independent decisions. Cause-related products and direct donations may also generate synergies at the consumer level (see Gneezy et al., 2012). And finally, some consumers may not budget for direct donations, yet may buy CR products.

3.3. Discussion and implications

In sum, we have shown that initiatives by firms to connect socially-responsible project to their products may have negative side-effects in some circumstances when the product is characterized by a socially irresponsible feature: the positive effect of the donation can be negated through an increase in consumption of the entire product category leading to environmental degradation (for example) and through a reduction in global donations. The crowding-out effect may apply to the overall budget devoted to various causes and an increase in donation to a cause can imply a disproportionate decrease in donation for other causes. In addition, the crowding-out effect may be particularly strong if cause-related products are directed at consumers who were previously offering direct donations. Several parameters can help in estimating the potential effects of cause-related products on overall funds raised, such as the proportion of 'direct' donors in the population, the average donation amount and the donors' sensitiveness to crowding out.

A natural managerial implication for NPOs, in their association with for-profit firms, is to negotiate optimal contracts (i.e., defining the type of indirect donation by the firm and the communication of the donation to consumers) to minimize the likelihood of a decrease in overall donation. Moreover, NPOs could also target consumers who are not direct donors. Rather than adopting a one-size-fits-all strategy, companies and NPOs may need to negotiate which subsets of the population should be targeted to avoid a crowding-out effect.

Another potential area of action for policymakers would be in the labeling of cause-related products. While accurate labeling is beneficial to consumers generally, our results show it is especially important when the product has a socially irresponsible component because inaccurate labeling can have adverse effect on the environment and on donations to NPOs. Our results suggest that the more consumers perceive the donation to be important (and, in fact, greater than the actual amount donated by the firm to the NPO) 1) the more likely there will be an increase in consumption of the overall product category, which potentially generates environmental degradation or other negative socio-economic impacts, 2) the greater will be the increase in consumption, and 3) the more likely there will be a crowding-out of donations to the NPO. Thus, labeling that portrays accurately the dollar impact of the product purchase on the cause will contribute to mitigate these effects. There are several regulatory proposals in this direction (Dadush, 2010; Horne, 2013).

4. Conclusion

Departing from the conventional or popular wisdom that cause-related products are a win–win–win strategy, we showed that, under some circumstances, they can lead to counter-productive results when the product in question has a socially irresponsible feature. Environmental degradation (or other detrimental effects) may occur as well as a decrease in the efficacy of NPOs because of lower funds. These outcomes can be due to various combinations of several effects, namely increase in consumption of the entire product category, crowding-out of direct donations and the labeling of cause-related products that confuse consumers and create an inflated perception of the donation. Market power is also an important feature for the occurrence of negative side effects after introduction of CRM. Our results show that increase in consumption of the product category and increase in "pollution" are more an issue when CRM is introduced in a market without a high level of competition, i.e., a market with few competitors or with brand allegiance. While the positive effects of cause-related marketing for causes and firms and several success stories have been well documented, we argue that they deserve more academic attention, especially on dimensions that can appear as minor features but can generate first-order effect.

Our results suggest that one potential area of action for policymakers would be in the labeling of cause-related products. Current labels may create a different, and often inflated, perception of the actual amount donated by the firm to the NPO. Labeling that portrays more accurately the dollar impact of the product purchase on the cause would contribute to mitigate the potential negative effects of cause-related products when they are characterized by a socially irresponsible feature. Standardization of cause-related claims could also help inform consumers more accurately but this mechanism itself is not immune to deficiencies.

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