Market Effects of Changes in Consumers’ Social Responsibility

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Abstract

In a duopoly model of vertical differentiation, we study market equilibrium, market structure and the resulting social welfare consequences of increases in the consumer’s willingness to pay (WTP) for products sold by socially responsible manufacturers. Different types of such increases emerge from the fact that heterogeneity of consumers may increase, decrease or remain unchanged. We show that, generally speaking, increases in the consumers’ social consciousness yield higher profits to socially responsible firms and may lead to higher levels of social welfare, provided that the market structure is left unchanged. On the contrary, when a change in the consumer’s willingness to pay for socially responsible firms’ products implies a change of the market structure, increasing the consumer’s social responsibility may lower social welfare. This tension between private and social interest calls for a cautious attitude towards information campaigns aimed at increasing the consumer’s social consciousness.

Key words: WTP changes, vertical differentiation, social responsibility

JEL: A13, L13, D43, D62

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1. Introduction

In recent years, consumers have become increasingly aware of the role firms play within the social context. For example, when faced with a choice between an ecological and a standard variety of the same product, an environmentally conscious consumer will reveal some preference for the former. Among other things, this preference will result in a higher willingness to pay (WTP) for the ecological than for the standard variety. In fact, all other things being equal, the extra amount of money a consumer would like to spend on the ecological variety, can be seen as a measure of her ecological awareness.

It is beyond the scope of this article to exhaustively review the extensive empirical literature reporting results on hypothetical and revealed measures of WTP for products with a positive externality to the society. However, a look at the most recent studies confirms two broadly accepted facts which are central to our analysis. First, there is an increasing trend among consumers world-wide to prefer products manufactured by socially responsible firms over their standard substitutes. Second, consumers are heterogeneous with respect to their WTP for products manufactured by socially responsible firms. Such increasing trends are usually modeled as increases in the consumers’ WTP for the products of socially responsible firms. In this paper, we pay special attention to the effects of such changes on consumer heterogeneity. Unlike previous studies on social responsibility mostly framed as ecological consciousness, we assume that increases in the consumers’ WTP for the products of socially responsible firms may have different effects on different types of consumers. In our stylized framework, such changes may affect more (less) those consumers who were initially willing to pay more for the products of socially responsible firms.

We present a model of vertical product differentiation and obtain the conditions for profitability and social desirability of increasing the consumer’s WTP for the products of socially responsible firms. We show that private profitability is, generally speaking, enhanced by changes in the consumer’s social consciousness, if such changes do not drive one of the firms out of the market. The society also benefits from such changes. But if a given increase in
consumers’ consciousness changes the structure of the market, it may benefit the firm which survives, but reduces total welfare. For example, real-world campaigns targeted towards increasing the most socially responsible consumers’ awareness will benefit the society if they encourage the less socially responsible firm to engage also in socially beneficial activities. We show that socially undesirable types of WTP changes will often harm at least one of the producers. The policy implications of this argument are straightforward. The state cannot rely upon private campaigns aiming at increasing the consumer’s social awareness, because socially responsible firms could use such campaigns in their favor. The extent of the aforementioned incompatibility is the main theme of this paper.

Although many real-world examples of socially responsible behavior concern markets with an environmental externality, Bagnoli and Watts (2003) adopt a more broadly applicable framework in which a socially responsible manufacturer links his product to a public good, while in the absence of any pro-social concerns, the manufacturer does not link the product to such a public externality. Following Baron (2001), such a strategy is a form of strategic corporate social responsibility. Examples include cause-related marketing, eco-labeling, and corporate donations to “worthy” causes. Recently, Innes (2006) used a product differentiation model which is similar to ours to address the issue of consumer boycotts. Like in many papers on environmental product differentiation, consumers are assumed to be heterogeneous with respect to their attitudes towards social issues. Thus, even identical products are perceived as different, provided that consumers have some preference for the product sold by a firm whose objective, productive process, or production factors imply a positive externality to the society. As we will see below, the role of consumer heterogeneity is crucial when assessing the market effects of socially responsible behavior by private firms. In the light of this result, we show that increasing the consumer’s WTP for a socially responsible firm’s products may be undesirable, if it increases consumer heterogeneity. This finding contradicts the widespread view that selling to a market with more socially responsible consumers monotonically enhances social welfare.
Various authors, like for example Endres (1997), propose the use of state campaigns as a means of increasing people’s ecological awareness. However, there seems to be no systematic recognition of the effect such campaigns may have on consumer heterogeneity and its effects on the economic and overall performance of the market. An example of heterogeneity-reducing changes in elicited degrees of environmental consciousness is provided by Tsagarakis and Georgantzis (2002), who present results from a survey responded before and after an informative session on the use of recycled water for irrigation. It is found that the informative session significantly increases the respondents’ willingness to use recycled water. Heterogeneity among respondents is reduced, given that the information provided during the session is more effective among those who had initially reported a lower willingness to use recycled water. Suzuki et al. (2004) present evidence for the contrary effect of information contingent on people’s initial environmental consciousness. In their study, the informative session is more effective among those who were initially more environmentally conscious. Thus, in terms of our framework, their reported information-led change in environmental consciousness is of the heterogeneity-enhancing type. Harris (2006) recognizes the effectiveness of environmental awareness campaigns in China among university students and the urban population. However, it is suggested that more satisfactory results would be reached if state campaigns were targeted towards those who have lower environmental knowledge and consciousness (old people and rural populations).

In all of the aforementioned studies, the social desirability of increasing a population’s environmental consciousness seems to be taken for granted. Our analysis shows that this is not necessarily true without relying on the argument, used for example by Conrad (2005), that the social value of products manufactured by socially responsible firms may be overestimated by the consumer. Obviously, if this were true, an information campaign aimed, for example, at increasing the consumer’s willingness to pay for ecological products would be socially undesirable. A more similar argument to ours calling for a cautious attitude towards increasing the consumer’s environmental consciousness is presented in a more recent study by Rodriguez-
Ibeas (2006), modeling changes in environmental awareness by considering changes in the proportion of green consumers. Although some of his findings are qualitatively similar to ours, the origin of the welfare-reducing social responsibility result is different to the one identified here. In our study, this is shown by considering the welfare effects of a change in the consumer’s willingness to pay for the product of a socially responsible firm which, at the same time, affects the heterogeneity of the consumer population. The need for such an approach is dictated by the plausibility of the hypothesis that consumers with different initial attitudes towards social issues may be affected in different ways by external shocks like advertising or social trends.

The issue of taste heterogeneity has been captured by most theoretical models studying the role of consumers’ ecological consciousness on market equilibrium. Approaches adopted by different authors vary in many ways, especially depending on whether consumer heterogeneity concerns their WTP for the ecological attribute itself, as in Moraga-González and Padrón Fumero (2002), or some other feature like their income, as in Arora and Gangopadhyay (1995) and Bansal and Gangopadhyay (2003), or their ideal product variety, as in Conrad (2005). The theoretical framework which has been most frequently used to reach economic and environmental policy recommendations is that of vertical product differentiation attributed to Mussa and Rosen (1978). However, all these studies take the distribution of tastes as given, in order to reach recommendations concerning other more orthodox policy instruments, like minimum environmental quality standards, taxes and subsidies. To our knowledge, ours is the first normative approach to the issue of consumer heterogeneity in the context of a vertical differentiation model with application to markets with a positive externality to society.

In our model we consider two manufacturers of a product which is differentiated with respect to a single characteristic, representing a manufacturer’s social responsibility. We adopt a vertical product differentiation framework, assuming an exogenous change in the distribution of consumer tastes. Adopting the terminology in Bagnoli and Watts (2003), consumers are
heterogeneous in the sense that they have different reservation prices for a unitary increase in the quantity of the public good contained in the product they purchase.

We model WTP changes as infinitesimal variations in a consumer’s social consciousness parameter. We study the effects of such changes on firms’ equilibrium profits, consumer surplus and overall social welfare. As one would expect, we find that, ceteris paribus, the socially responsible producer always prefers selling to a market with more responsible consumers. Interestingly, we find that the less socially responsible manufacturer may also benefit from selling to a market with more socially responsible consumers. A sufficient condition for this to happen is that the most responsible consumer’s WTP for the difference in the two firms’ social responsibility, is higher than the extra costs borne by the socially responsible firm. On the contrary, changes in consumers’ socially responsibility leading to lower consumer heterogeneity can be profitable only for the socially responsible firm and under very restrictive conditions. Therefore, increases in consumers’ social responsibility followed by increased consumer heterogeneity may benefit both firms, but they will be undesirable from a social perspective.

The paper is organized in the following way: Section 2 presents the model and the main results. Section 3 concludes.
2. The model

Let 1 and 2 be producers of a homogeneous good. Firm 1 has a contribution to a public good and firm 2 has a $s_2$ contribution. Contributions are fixed, like are their associated costs which are convex in the level of the firm's social responsibility as indicated by the properties of the cost function: $C(s_j) > 0, C' > 0, C'' > 0 \quad \forall s_j > 0, \quad j \in \{1, 2\}$. We assume that consumers buy a maximum of one product unit aiming at maximizing their utility given by $\max \{\nu, s_j - p_j, 0\}$. This specification of utility implies that consumers value the contribution in a heterogeneous way according to a consumer specific valuation parameter $\nu_j$ uniformly distributed between $m$ and $n = m + h$. We normalize the population of consumers to $N = 1$.

In that case the density of consumers along the interval $[m, n]$ is straightforward: $d = \frac{1}{n - m}$.

Figure 1 presents the types of changes in the consumers’ social consciousness which can be studied within this framework.

![Figure 1: Types of increases in consumers’ WTP for socially responsible firms’ products.](image)
Contrary to Arora and Gangopadyhay (1995) who assume a less general specification of the support of consumers’ willingness to pay for quality showing that we must focus on the case in which prices and qualities are such that the market is not fully covered, the present version of the vertical differentiation model allows for three different candidates for the market equilibrium. We consider three cases: Incomplete Market Coverage (Case 1), Complete Market Coverage by a duopoly (Case 2) and Complete Market Coverage by a monopoly (Case 3). Figure 2 shows each firm’s demand under each case.

![Figure 2: Market partitions under the three cases studied.](image)

Without loss of generality we assume \( s_1 > s_2 \). Then, there will be boundary values of \( \nu_i \),

\[
x_1 = \frac{P_1 - P_2}{s_1 - s_2} \quad \text{and} \quad x_2 = \frac{P_2}{s_2},
\]

which give, respectively, the valuation parameter of a consumer who is indifferent between buying from firm 1 and buying from firm 2, and a consumer who is indifferent between buying product 2 and not buying the product at all. Then, all consumers whose valuation of \( s_j \) is above \( x_1 \) buy firm 1’s product. All consumers with \( \nu_i \in (x_1, x_2) \) buy
product 2, while consumers with \( v_i < x_2 \) do not buy at all. With this in mind, we can write the two firms’ demand functions:

\[
q_1 = (n - x_i) \cdot d = \frac{1}{n-m} \cdot \left[ n - \frac{p_1 - p_2}{s_1 - s_2} \right]
\]

\[
q_2 = (x_1 - x_2) \cdot d = \frac{1}{n-m} \cdot \left[ \frac{p_1 - p_2}{s_1 - s_2} - \frac{p_2}{s_2} \right]
\]

(1)

Firms play a two-stage game, choosing \( s_j \) first and then \( p_j \), acting simultaneously in each one of the stages. In the price setting stage, they take \( s_j \) choices as given and

\[
C(s_j) = \frac{1}{2} k s_j^2 = \text{as fixed. Then, the equilibrium prices satisfy the f.o.c: } \frac{\partial r_1}{\partial p_1} = 0 \quad \text{and} \quad \frac{\partial r_2}{\partial p_2} = 0
\]

where \( r_1, r_2 \) are revenues from the price-setting stage, given by:

\[
r_1 = p_1 \cdot q_1 = p_1 \cdot \frac{1}{n-m} \left( n - \frac{p_1 - p_2}{s_1 - s_2} \right)
\]

\[
r_2 = p_2 \cdot q_2 = p_2 \cdot \frac{1}{n-m} \left( \frac{p_1 - p_2}{s_1 - s_2} - \frac{p_2}{s_2} \right)
\]

(2)

yielding the reaction functions:

\[
p_1(p_2) = \frac{p_2 + n \cdot (s_1 - s_2)}{2}
\]

\[
p_2(p_1) = \frac{p_1 \cdot s_2}{2s_1}
\]

(3)

whose solution gives the unique Bertrand equilibrium:

\[
p_1^* = \frac{2 \cdot n \cdot s_1 \cdot (s_1 - s_2)}{4s_1 - s_2}
\]

\[
p_2^* = \frac{n \cdot s_2 \cdot (s_1 - s_2)}{4s_1 - s_2}
\]

(4)

Substitution of \( p_1^*, p_2^* \) into \( r_1, r_2 \) gives revenues:
\[ r_1^B = \frac{4 \cdot n^2 \cdot s_1^2 (s_1 - s_2)}{(n - m) \cdot (4s_1 - s_2)^2} \]
\[ r_2^B = \frac{n^2 \cdot s_1 \cdot s_2 (s_1 - s_2)}{(n - m) \cdot (4s_1 - s_2)^2}. \] 

(5)

We can analyze how changes in \( s_j \) affect revenue by looking at the derivatives:

\[ \frac{\partial r_1^B}{\partial s_1} = \frac{4 \cdot n^2 \cdot s_1 \cdot (4s_1^2 - 3s_1s_2 + 2s_2^2)}{(n - m) \cdot (4s_1 - s_2)^3} \]
\[ \frac{\partial r_2^B}{\partial s_2} = \frac{n^2 \cdot s_1^2 (4s_1 - 7s_2)}{(n - m) \cdot (4s_1 - s_2)^3} \] 

(5.1)

\[ \frac{\partial^2 r_1^B}{\partial s_1^2} = \frac{-8 \cdot n^2 \cdot s_2^2 \cdot (5s_1 + s_2)}{(n - m) \cdot (4s_1 - s_2)^4} \]
\[ \frac{\partial^2 r_2^B}{\partial s_2^2} = \frac{2 \cdot n^2 \cdot s_1 \cdot (8s_1 + 7s_2)}{(n - m) \cdot (4s_1 - s_2)^4} \] 

(5.2)

\[ \frac{\partial r_1^B}{\partial s_1 \cdot s_2} = \frac{8 \cdot n^2 \cdot s_1 \cdot s_2 \cdot (5s_1 + s_2)}{(n - m) \cdot (4s_1 - s_2)^4} \]
\[ \frac{\partial r_2^B}{\partial s_2 \cdot s_1} = \frac{2 \cdot n^2 \cdot s_1 \cdot s_2 (8s_1 + 7s_2)}{(n - m) \cdot (4s_1 - s_2)^4} \] 

(5.3)

Expressions in (5.1) are such that the former is higher than the latter showing that for any convex cost function associated with the provision of \((s_1, s_2)\) lead to an equilibrium with \(s_1 > s_2\).

Expressions in (5.3) are both positive, which implies that \(s_1, s_2\) are strategic complements.

Substitution of \( P_1^B, P_2^B \) in other relevant magnitudes gives:

\[ \lambda_1^B = \frac{(2s_1 - s_2) \cdot n}{4s_1 - s_2} \]
\[ \lambda_2^B = \frac{(s_1 - 2s_2) \cdot n}{4s_1 - s_2}. \] 

(6)
<table>
<thead>
<tr>
<th>Case 1: Incomplete Coverage Duopoly</th>
<th>Case 2: Complete Coverage Duopoly</th>
<th>Case 3: Complete Coverage Monopoly</th>
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<th>$p_1 - p_2\over s_1 - s_2$</th>
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</tr>
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<tbody>
<tr>
<td>$x_2$</td>
<td>$p_2\over s_2$</td>
<td>$m$</td>
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<th>$p_1^B$</th>
<th>$2 \cdot n \cdot s_1(s_1 - s_2)\over 4s_1 - s_2$</th>
<th>$(2n - m)\cdot(s_1 - s_2)\over 3$</th>
<th>$p_1$: $m \cdot s_1 - p_1 = 0 \Rightarrow p_1 = m \cdot s_1$</th>
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</thead>
<tbody>
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<td>$p_2^B$</td>
<td>$n \cdot s_2(s_1 - s_2)\over 4s_1 - s_2$</td>
<td>$(n - 2m)\cdot(s_1 - s_2)\over 3$</td>
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<th>$(2n - m)^2 (s_1 - s_2)\over 9(n - m)$</th>
<th>$m \cdot s_1$</th>
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<tr>
<td>$r_2^B$</td>
<td>$n^2 s_1 (s_1 - s_2) s_2\over (n - m)(4s_1 - s_2)^2$</td>
<td>$(n - 2m)^2 (s_1 - s_2)\over 9(n - m)$</td>
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<tr>
<th>$s_1^e$</th>
<th>$\lambda^3(4\lambda - 7)\cdot n^2\over k(4\lambda - 1)^3(n - m)$</th>
<th>$(2n - m)^2\over 9k(n - m)$</th>
<th>$m\over k$</th>
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<tr>
<td>$s_2^e$</td>
<td>$\lambda^2(4\lambda - 7)n^2\over k(4\lambda - 1)^2(n - m)$</td>
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<th>$m^2\over k$</th>
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<th>$n + m\over 3(n - m)$</th>
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<td>$\lambda \cdot n\over (4\lambda - 1)(n - m)$</td>
<td>$2(n - 2m)\over 3(n - m)$</td>
<td>$\Rightarrow n \geq 2m$</td>
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<td>$2m \leq n &lt; 4.7056765174333 \cdot m$</td>
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| $\pi_1^e = \frac{\lambda^4 n^4 (4\lambda - 7)(4\lambda - 1)(4\lambda - 1)(4\lambda - 1)\lambda^2}{2(4\lambda - 1)^6(n-m)^2 k}$ | $\frac{(2n-m) \cdot m}{54k(n-m)^2}$ | $\frac{m^2}{2k}$ |
| $\pi_2^e = \frac{\lambda^3 n^4 (4\lambda - 7)(2\lambda - 1)(4\lambda - 1)(4\lambda - 1)\lambda}{2(4\lambda - 1)^6(n-m)^2 k}$ | $0$ | $0$ |
| $SW^d = \frac{n^2}{(n-m)k} \left( \frac{0.0691842 \cdot n^2}{n-m} + 0.30155 \right)$ | $\frac{(2n+m)(18+n) + m(8n-18) - 2m^2}{162 \cdot k(n-m)^2}$ | $\frac{nm}{2k}$ |

**TABLE 1:** Definitions and equilibrium magnitudes for each case studied.

These expressions determine whether one or the other scenarios emerge. Equilibrium within each one of the scenarios implies the magnitudes provided in Table 1.

### 2.1. The First-Best Solution in the Externality Provision

We consider this scenario as a benchmark. In the first best solution, the social planner regulates the market aiming at maximizing total social welfare.

#### 2.1.1. With one plant

One firm contributes with quantity $s$ to a public good. Social Welfare is expressed as:

$$SW_1 = \frac{1}{n-m} \int_{m}^{n} v \cdot s \cdot dv + s - \frac{1}{2} \cdot k \cdot s^2$$ (7)

The first part represents the gross utility generated by the fact of consuming from a firm who’s contribution the public good is $s$. The second part accounts for firm’s total contribution to
the public good. The last part represents the total cost supported by firms due to their contribution to a public good. Note that \( \frac{1}{n-m} \int_{m}^{n} \nu \cdot s \cdot d \nu = \frac{m+n}{2} \cdot s \), which is mean satisfaction. This means that heterogeneity does not matter in the first best situation. The optimal level of \( s \) is:

\[
\frac{\partial SW_1}{\partial s} = 0 \implies \frac{1}{2} \left[ \frac{\nu^2}{2} \right]_{m}^{n} + 1 - k \cdot s = 0 \implies s^* = \frac{2 + m + n}{2k} \quad (8)
\]

The level of social welfare that corresponds to the level \( s^* \) is then:

\[
SW_1^* (s^*) = \frac{(2 + m + n)^2}{8k} \quad (9)
\]

2.1.2. With two plants

Each firm’s contribution to the public good is independent of the quantity consumed of each product. This means that we have two firms contributing with quantity \( s \) to a public good. Social Welfare is expressed as:

\[
SW_2 = \frac{1}{n-m} \int_{m}^{n} \nu \cdot s \cdot d \nu + 2 \cdot s - 2 \cdot \frac{1}{2} \cdot k \cdot s^2 \quad (10)
\]

The optimal level of \( s \) is obtained as follows:

\[
\frac{\partial SW_2}{\partial s} = 0 \implies \frac{1}{2} \left[ \frac{\nu^2}{2} \right]_{m}^{n} + 2 - 2 \cdot k \cdot s = 0 \implies s^0 = \frac{4 + m + n}{4k} \quad (11)
\]

The level of social welfare that corresponds to the level \( s^0 \) is then:

\[
SW_2^0 (s^0) = \frac{(4 + m + n)^2}{16 \cdot k} = k \cdot (s^0)^2 \quad (12)
\]

In the first best solution each consumer is able to buy the product. Then, the maximum price that guarantees full coverage will be:

\[
p^0 = m \left( \frac{4 + m + n}{4k} \right) = m \cdot s^0 \quad (13)
\]
Of course, since firms would earn zero profits, this could not be an equilibrium of the non cooperative quality-then-price game described in the previous section.

Comparing the monopoly and duopoly first best solution, note that the condition under which social welfare is higher under monopoly than under duopoly is the following:

\[ SW^* > SW^0 \Rightarrow m + n > 2\sqrt{2} \]  

(14)

2.2. Comparing the Market and the First Best Solutions

One important question to ask is under which market conditions the maximum social welfare will be reached. That means that, for example, we should look for the conditions under which the complete coverage monopoly reaches the first best. Figure 3 depicts the areas of the parameters \( m \) and \( n \) in which the first best and the actual equilibrium market structure coincide.

FIGURE 3: Comparison of equilibrium and socially optimal market structures.
However, this does not imply that there is some area in which the first best solution and market equilibrium in the quality stage game coincide. This would happen if $s_{CM} = s^*$ which implies that $\frac{m}{k} = \frac{2 + m + n}{2k} \Rightarrow n - m = -2$ and this can never happen.

![Diagram](image)

**FIGURE 4:** Comparison of duopoly socially optimal and the more responsible firm’s level of CSR in Case 1 (incomplete coverage duopoly).

Figures 4 and 5 depict the result of comparing the quality chosen by the more responsible firm’s quality choice and that of the first best solution. Both in the full market coverage and the incomplete market duopoly cases, the responsible firm’s choice may coincide or lie above or below the first best level of corporate social responsibility, while the less responsible firm will be invariantly below the socially optimal level (being zero in the complete coverage case). In the monopoly case, the firm’s social responsibility is below the socially optimal level.
FIGURE 5: Comparison of duopoly socially optimal and the responsible firm’s level of CSR in Case 2 (complete coverage duopoly).

2.3. Profitability and welfare effects of changes in the consumers’ social responsibility

From equilibrium profits it is easy to check that any type of increase in the consumer’s social consciousness have a positive effect on socially responsible firms’ profits. This means that both firms engaged in socially beneficial activities will benefit in the incomplete coverage case from selling to a market of more socially responsible consumers, while in the complete coverage duopoly and the monopoly cases the only responsible firm will gain. Also, the more responsible firm survives in all equilibrium market structures and benefits from transitions leading from Incomplete market duopoly to Monopoly. We summarize the related findings in the following result:

RESULT 1: Any increase in the consumer’s social responsibility increases the responsible firms’ profits (firms 1 and 2 in Case 1 and firm 1 in Cases 2 and 3).
While the consequences of changes in the consumers’ social responsibility are straightforward, studying the consequences for social welfare is a less straightforward task. Figure 6 presents the directions of changes along which social welfare is improved. We summarize the related findings in the following result (a detailed proof is given in a mathematical appendix under revision, which will be soon available upon request from the authors):

RESULT 2: Any increase in the consumer’s social responsibility along any given ray defined by a positive $t$ such that $n=t\cdot m$ which leaves the industry structure unaffected enhances welfare. Infinitesimal changes in $m$ or $n$ which shift the market along different industry structures are welfare improving if we shift from:

1. Monopoly to full coverage duopoly
2. Full coverage duopoly to incomplete coverage duopoly for $(m, n)$ beyond (upward and on the right of) the point $(0.505, 2.376)$
3. Incomplete coverage duopoly to complete coverage duopoly otherwise.
3. Conclusions

We model changes in the consumers’ social awareness, paying special attention to changes affecting consumer heterogeneity. We argue that increasing the consumer’s WTP for the products of socially responsible firms is far from a trivial equivalent to ‘throwing money into the market’, especially, when increases in the WTP for socially responsible firms’ products cause market structure to change.

The framework is appropriate for assessing, in terms of private profitability and social welfare, the effects of exogenous factors which are perceived in different ways by consumers with different attitudes towards social issues. A rather generic result concerns the fact that, in most cases, changes in consumers’ WTP that are privately profitable are not the most desirable in terms of social welfare. In fact, it is neither easy to obtain interest compatibility between competing manufacturers nor compatibility between one of the firms’ profitability and enhancement of social welfare. An apparently counterintuitive result emerging from the similarity between consumer heterogeneity and product differentiation is that even the less socially responsible manufacturer may find it profitable to sell to a more socially responsible consumer population. Therefore, provided that they are active in the market, less socially responsible firms are also likely to benefit from increases in the consumer’s social awareness.

Although we would not like to exaggerate the possibilities of state intervention in such detailed qualitative aspects of social trends and targeted awareness campaigns, it should be clear that firms’ attempts of providing the consumer with more information on the quality of their products and their corporate strategies regarding socially desirable objectives should be challenged against our main finding concerning the incompatibility of private and social interests. Thus, an immediate policy implication of our main result is that governments should be favorable towards awareness-enhancing campaigns targeted towards the least socially conscious consumers, provided that some heterogeneity is preserved for both firms to survive in order to avoid monopoly, which is the least favorable among all structures. On the contrary,
privately profitable campaigns targeted towards the creation of a monopolized “socially responsible market” should be seen as mere market-power enhancing devices. Therefore, the widespread optimism inspired by the worldwide tendency of consumers to increasingly favor ecological products is justified only under very specific conditions.

As Comanor and Wilson (1979) have already pointed out, advertising undertaken by firms may increase the consumers’ WTP for a more expensive product and relax price competition. This unambiguous result concerning the relation between changes in WTP and market power becomes less easy to apply by policy makers in the real world, if the effect of those changes on consumer preferences and the resulting utility is taken into account.\(^8\) That is, more information about a firm’s social objectives may result in higher prices, but people paying higher prices for those products may be happier because this information makes them like the products they consume more. Then, the comparison of pre- and post-information prices under the assumption that pre- and post-information products are essentially the same may yield misleading conclusions. It would seem that, when products have an externality that can be objectively evaluated in terms of social welfare, the effects of changes in the consumers’ WTP become easier to assess. Contrary to this conjecture, we find that the same factors which increase the consumer’s WTP for the product of a socially responsible manufacturer may lead to lower levels of social welfare.

Several aspects regarding firms’ corporate social responsibility are omitted from our approach because of our focus on the effects of changes in the consumer’s social responsibility on market competition and the resulting overall market efficiency. Different approaches to the aspects omitted here are discussed by Windsor (2006). Nevertheless, the robustness of our results with respect to further generalizations apart from the ones considered here and the numerous applications of this very simple framework to study other issues related with changing the consumers’ attitude towards quality, leave a lot of space for future research.
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Notes

1. For example, Camacho et al. (2004) compare revealed and hypothetical/stated measures of the consumer’s higher WTP for a recyclable office table as compared with the standard (non-recyclable) variety. They find that survey data are a good predictor of a consumer’s median WTP for an improvement in the environmental performance of a marketed good.

2. Pham and Rambo (2003), Harris (2006), Suzuki et al. (2004) and Tsagarakis and Geogantzis (2002) use very different approaches to document the increasing trend of ecological consciousness in four different countries: Vietnam, China, Japan and Greece, respectively. In fact, the last two explicitly deal with the role of information as a means of increasing people’s willingness to accept costlier options favoring environmentally friendlier market outcomes.

3. Explicit references to the existence and the causes of such heterogeneity can be found, for example, in Blamey (1997) where willingness to pay depends on personal attributes like awareness of environmental need, consequences of and responsibility for personal action and acceptance of policy initiatives. Loureiro and Lotade (2005) identify different factors which may be responsible for heterogeneous valuations of products with an eco-label. At a theoretical level, Nyborg’s (2000) framework could be used to explain different levels of social consciousness as different combinations of *homo oeconomicus* and *homo politicus* in the consumers’ utility functions.

4. Due to their focus on environmental quality standards, taxes and subsidies, these papers are rather weakly related to our main argument concerning the role of changes in consumers’ WTP. Nevertheless, due to the similarity between ours and their underlying theoretical frameworks, it is worth mentioning the studies by Constantatos and Sartzetakis (1995) on environmental taxes, Motta and Thisse (1999) on environmental quality standards and Nadaï and Morel (1999) on eco-labeling. Apart from Conrad’s (2005) model, Deltas et al. (2004) also develop a horizontal differentiation model with some vertical differentiation flavor, but as stated before both papers’ objectives are different to that pursued here. On these standard policy instruments Lyon and Maxwel (2006) provide a very insightful overview with special emphasis on the existing empirical findings and Lutz et al. (2000) who use a fairly general vertical product differentiation framework to show that if the high quality firm can commit to a quality level before regulations are promulgated, it induces the regulator to weaken standards, and welfare falls. This last study highlights the dangers of lengthy delays between legislative mandates for new regulations.
and their implementation. The key difference between their model and earlier models of minimum quality standards (Ronen, 1991, and Arora and Gangopadhyay, 1995) is the timing of firm and government actions: now the high-quality firm has the leadership role. Finally, Crampes and Hollander (1995) rule out sunk costs and show that a low-quality producer benefits from a mildly restrictive quality standard whereas a high-quality producer suffers from it. Consumers’ welfare increases if the firm producing the higher quality does not increase its quality significantly in response to the increase in quality by its rival.

5. This assumption relates to similar ones adopted by von der Fehr and Stevik (1998) and Bloch and Manceau (1999) to model persuasive advertising in a framework of horizontal differentiation.

6. Arora and Gangopadhyay (1995) also give a detailed proof why firms will never choose $s_1=s_2$, which also holds in our case.

7. Note that prices are strategic complements and that $I$’s reaction function is increasing in $(s_1-s_2)$, while $2$’s is increasing in $s_2$ and decreasing in $s_1$.

8. Becker and Murphy (1993) analyze advertising as a product jointly sold together with other conventional products, suggesting that a changing tastes framework is not necessarily the only way of dealing with changes in consumers’ attitudes towards advertised products.

References


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