Working Paper Series

Consumer driven market mechanisms to fight inequality: the case of CSR/product differentiation models with asymmetric information

Leonardo Becchetti
Luisa Giallonardo
Elisabetta Tessitore

ECINEQ WP 2006 – 50

ECINEQ 2006-50
July 2006

www.ecineq.org

Consumer driven market mechanisms to fight inequality: the case of CSR/product differentiation models with asymmetric information*

Leonardo Becchetti
Luisa Giallonardo
Elisabetta Tessitore†

University of Rome Tor Vergata,

Abstract

The bottom up pressure of "concerned" consumers and the rise of "socially responsible" products represents a new market mechanism to fight inequality and promote social inclusion. To analyze the new phenomenon of competition in corporate social responsibility (CSR) amid doubts on consumer tastes and of the effective corporate SR stance we adopt a horizontal differentiation approach in which the Hotelling segment is reinterpreted as the space of product SR characteristics and consumer tastes are uncertain. We find equilibria of the pure location and of the price-location games and show what changes when we move from a duopoly of profit maximizing producers to a mixed duopoly. Our findings illustrate that a nonzero degree of CSR is the optimal choice of profit maximizing corporations under reasonable parametric intervals of consumers' "costs of ethical distance", corporate cost of CSR and uncertainty about consumer tastes.

Keywords:
JEL Classification:

* 1The authors thank Fabrizio Adriani, Simon Anderson, Michele Bagella, Kaushik Basu, Roberto Cellini, Luca Debenedectis, Benedetto Gui, Massimo Fenoaltea, Bruno Frey, Iftekhar Hasan, Luca Lambertini, Steve Martin, Ned Phelps, Gustavo Piga, Pasquale Scaramozzino and Paul Wacthel and all participants to the seminars held at the XV Villa Mondragone Conference, at SOAS in London and the University of Catania, Copenhagen, Forlì, Macerata, Pisa and Milano-Bicocca for comments and suggestions received. The usual disclaimer applies.

† **Address of Correspondance:** University of Rome Tor Vergata, via di Tor Vergata snc, 00133 Roma.

1 Introduction

The traditional scheme of welfare economics problems of negative externalities generated by the productive units, inequality of opportunities and underprovision of public goods where tackled by the action of "enlightened" domestic institutions. In this old model a system of checks and balances among corporations, domestic institutions and trade unions ensured the joint pursuit of economic development and social cohesion, thereby avoiding socially disruptive levels of inequality. The global integration of labour and product markets has significantly weakened the bargaining power of domestic institutions and trade unions. Corporation can now operate globally with the risk of generating a "race to the bottom" among domestic fiscal authorities and workers representatives in order to attract job opportunities and direct investment. In this perspective the rise of bottom-up pressure of "concerned" consumers and investors may therefore be seen as a sort of endogenous reaction of the socioeconomic system facing the excess bargaining power of global corporations: consumers and investors vote with their portfolio by looking not just at price and quality, but also at the social value incorporated in the products. Corporate social responsibility (CSR) is an increasingly debated issue in contemporary market economies.[3] KPMG (2005) reports that, in the year 2005, 52 percent of the top 100 corporations in the 16 more industrialized countries published a CSR report. In a recent survey the "2003 Corporate social responsibility monitor"[4] finds that the amount of consumers looking at social responsibility in their choices jumped from 36 percent in 1999 to 62 percent in 2001 in Europe.

A simple way of modeling this novel feature of the economic environment is within differentiation models[5] by reinterpreting the space of product characteristics as the space of both firm CSR behavior and heterogeneous consumers' CSR beliefs. On the corporate side, since CSR is not a "free lunch" and implies a shift of focus from the maximization of shareholder wealth to the maximization of the interest of a wider set of stakeholders, we can model it as the payment of a variable premium over input costs.

This generalization may include various cases of compensation to stakeholders different from shareholders such as efficiency wages (Shapiro-Stiglitz, 1984), other types of monetary and non monetary benefits for workers, the adoption of environmental friendly but more costly productive processes, the introduction of code of conducts on labour conditions in subcontracting companies, etc. Within this framework we are interested to evaluate whether firms may find it optimal to choose CSR, even when it is modelled as a pure cost.[6] To do so we investigate three specific problems: i) the optimal location choices in a duopoly in which firms maximize profits under uncertainty of consumer tastes; ii) the price-location equilibrium of the problem in i); iii) the price-location equilibrium in a mixed duopoly in which a profit maximizing producer competes with a non profit organization.

The original contribution of our model consists of the introduction in the classical product differentiation literature of the novel feature of CSR competition under consumer taste uncertainty. The introduction of uncertainty acknowledges that one of the main problems in CSR is that of asymmetric in-

[3] For a reference on the most relevant positions in the historical debate evaluating causes and consequences of CSR see Friedman (1962) and Freeman (1984), while on the methodological problems arising when pursuing the goal of maximization of multiple stakeholders interests see Jensen (1986) and Tirole (2001).

[4] Downloadable at http://www.bsdglobal.com/issues/sr.asp.

[5] For a reference to the traditional literature on horizontal product differentiation see Hotelling, (1929); D'Aspremont, Gabsewicz and Thisse (1979); Economides (1984); Dasgupta and Maskin (1986), while for vertical differentiation the seminal paper is Shaked-Sutton (1983). In a synthesis of the two perspectives Craemer and Thisse (1991) show that location horizontal differentiation models can be considered as special cases of vertical differentiation models.

[6] As it is well known CSR costs may be compensated by potential benefits (beyond the increased demand of concerned consumers) such as the minimisation of conflicts of interest with stakeholders (Freeman, 1984), an improved signal on product quality in a framework of asymmetric information, increased workers motivation (Frey, 1997), etc. In spite of these potential benefits, CSR is likely to generate a reduction of corporate profits and therefore a model in which it is considered as a pure cost (compensated by the increased demand of concerned consumers)has sound foundation.

formation. The latter is relevant in two respects. On the one side, consumers can not observe the true CSR stance of producers and have to rely on their declaration, or on the signal produced by various product certification entities. On the other side, producers may not know exactly consumers ethical tastes. Both ingredients create an inevitable element of uncertainty which renders impossible to evaluate with precision the effect of CSR on producer market shares. Given our hypotheses, the closer reference in the literature to our model is that of De Palma, Ginsburgh, Papageorgiou and Thisse (1985), who calculate optimal location in a simple location horizontal differentiation model à la Hotelling in presence of uncertainty about consumer tastes.

With respect to this paper (a part for the economic motivation and the relevance of the new phenomenon of CSR explained above) our approach represents an original contribution also on a purely analytical point of view. Consider in fact that, in our case, location has consequences on (CSR) costs (moving rightward is costly for producers as it implies paying higher SR costs) and therefore we may conceive the Hotelling segment of the CSR product differentiation model as "upward sloped" for producers.

The paper is divided into five sections (introduction and conclusion included). In the second section we shortly describe model characteristics. In the third section we outline the pure location equilibrium. In the fourth the price-location equilibrium, while in the fifth section we examine departures from the latter when we move from a duopoly to a mixed oligopoly.

2 The model

In our "CSR product differentiation" model the two producers locate on the point ($x \in [0, 1]$) of the market segment according to their degree of SR. On the right boundary of the SR space the duopolists pay the maximum amount of SR costs s, with non SR costs being set to zero - as in De Palma et al. (1985) - without lack of generality. Hence, as far as producers move rightward, they become more SR and pay a higher x-portion of the maximum cost s. The product is sold at a given price p. Consumers have inelastic unit demands and are uniformly distributed along the [0,1] interval of the SR space X. Consumer locations are denoted by $x \in X$ and measured as distances from the origin of the segment. More specifically, we formulate the utility function of a consumer located in x and purchasing from firm i as follows:[7]

$$v_i[x] = b - p - f\,|x - x_i| \tag{1}$$

where b is the consumer's reservation value of the product when his ethical standards coincide with those incorporated in the product and f is the weight given to the disutility of consuming a product whose ethical standards are below one's own standards.[8]

Firms can not predict consumers' behavior *a priori*, but they can determine the utility of a consumer located in x up to a probability distribution:

$$u_i[x] = v_i[x] + \mu\varepsilon_i \tag{2}$$

where ε_i is a random variable with zero mean and unit variance and μ is a positive constant. Heterogeneity in consumer tastes is indicated by μ, which gives different weight to the unknown terms of the probabilistic utility function. The higher is μ, the larger is the stochastic term of the utility function. Differently from De Palma et al. (1985), in our model uncertainty concerns consumer ethical beliefs which can not be observed with precision by producers.

2.1 The location model

In this first simplified version of the model we assume that two profit maximizing producers have unit prices and compete in the market, with location being their only choice variable.

Following De Palma et al. (1985) and Manski et al. (1981), we assume that the terms ε_i are identically, independently Weibull-distributed, so that the probability that a consumer located in x will buy from firm i is:

$$P_i[x] = \frac{e^{(b-p-f|x-x_i|)/\mu}}{\sum_{j=1}^{2} e^{(b-p-f|x-xj|)/\mu}} \tag{3}$$

[7] Empirical support for our hypothesis on the heterogeneity of individual attitudes toward social responsibility (implied by the symmetric cost of SR distance) is confirmed by descriptive evidence from the World Value Survey database - 65,660 (15,443) individuals interviewed between 1980 and 1990 (1990 and 2000) in representative samples of 30 (7) different countries-. In both surveys around 45 (49) percent of sample respondents declare that they are not willing to pay in excess for the environmentally responsible features of a product. The same survey documents that the share of those arguing that the poor are to be blamed is around 29 percent in both surveys. This simple evidence confirms heterogeneity in the willingness to pay for social and environmental responsibility, rejecting the assumption that more of SR may be better for all individuals.

[8] The cost of ethical distance has a clear monetary counterpart. When the producer is located at the left of the consumer this cost represents the distance in monetary terms between the CSR engagement (measured by the CSR cost in our model), which is considered fair by the consumer (indicated by his location on the segment) and the CSR cost suffered by the producer (indicated by producer's location on the segment). The coefficient t maps this objective measure into consumers preferences indicating whether its impact on consumers utility is proportional (t=1), more than proportional (t>1) or less than proportional (t<1) than its amount in monetary terms.

When both producers choose their locations, we identify three regions on the ethical segment (the first at the left of the less ethical producer, the second in between the two producer locations and the third at the right of the more ethical producer). We therefore define the probability of purchasing from producer 1 for consumers respectively located in regions 1, 2 or 3 as follows:

$$P_1^1 = \frac{1}{1+H}, \qquad P_1^2 = \frac{1}{1+e^{-(f/\mu)(\delta+2(x_1-x))}}, \qquad P_1^3 = \frac{1}{1+K} \tag{4}$$

where $\delta = |x_1 - x_2|$, $H = \exp(-f\delta/\mu)$ and $K = \exp(f\delta/\mu)$. So the first and the last probabilities are invariant in x, while the second is decreasing in x since $\frac{\partial P_1^2}{\partial x} < 0$. By evaluating the second derivative we can find the inflexion point $\overline{x} = x_1 + \frac{\delta}{2}$.

For $x_1 < x < x_1 + \frac{\delta}{2}$ the probability function is concave and, for $x_1 + \frac{\delta}{2} < x < x_2$, it is convex, its shape depending also on the amount of μ.The higher is μ, the flatter is the function as it is shown in figure 1 ($\mu_2 > \mu_1$). The figure clearly shows that a higher weight on the stochastic term has the effect of reducing "location rents" of the two producers.

Let us define as Agglomerated Nash Equilibrium (ANE) a Nash equilibrium in which both locations coincide. By using this definition we can formulate the following proposition.

Proposition 1: A location maximization problem of two competing producers in a market with ethical consumers has a unique Agglomerated Nash Location Equilibrium given by $x_1 = x_2 = \frac{1}{2} - \frac{2\mu s}{f}$.

Proof:

Given assumptions 1 and 2, and letting $p = 1$, we can evaluate the profit of firm 1 as follows:

$$\begin{aligned} \pi_1(x_1) &= \int_0^{x_1} P_1^1[x]dx + \int_{x_1}^{x_2} P_1^2[x]dx + \int_{x_2}^{1} P_1^3[x]dx - sx_1 = \\ &= \frac{x_1}{1+H} + \frac{\delta}{2} + \frac{1-x_2}{1+K} - sx_1 \end{aligned} \tag{5}$$

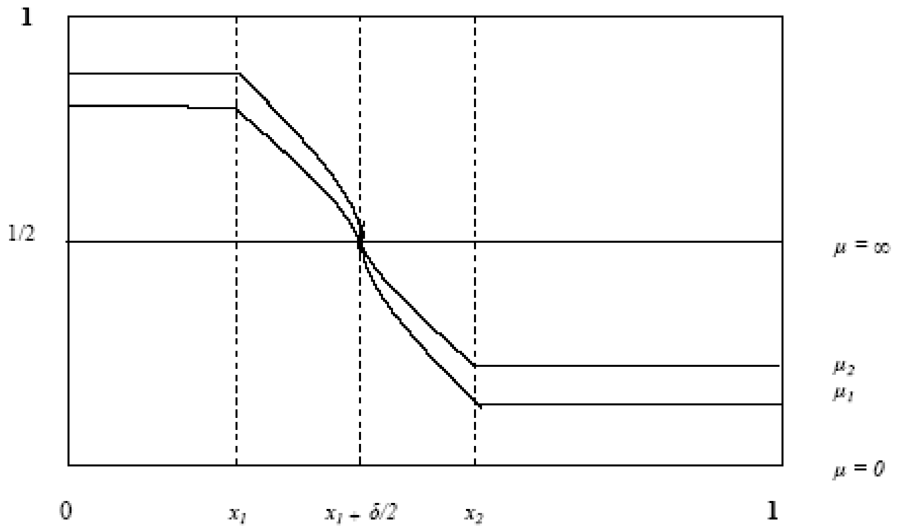

Figure 2.1.1. Legend: on the horizontal axis we measure the market segment in which the two producer locations x_1 and x_2 delimit three consumer regions. On the vertical axis we measure the probability that the consumer located in the corresponding point of the market segment buys from firm 1.

We can consider s as a parameter which defines, in the context of figure 2.1.1, the rectangle of ethical costs. The problem can be solved by considering $x_2 > x_1$ and, symmetrically, the same results can be obtained when $x_2 < x_1$. To analyze the best location reply (BLR) of firm 1 given the location of firm 2 we evaluate the following derivative:

$$\frac{d\pi_1(x_1)}{dx_1} = \frac{\mu(K-H) + 2f(1-x_1-x_2)}{2\mu(1+K)(1+H)} - s = 0 \tag{6}$$

symmetrically, the BLR of firm 2 relative to firm 1 is

$$\frac{d\pi_2(x_2)}{dx_2} = \frac{\mu(H-K) + 2f(1-x_1-x_2)}{2\mu(1+K)(1+H)} - s = 0 \tag{7}$$

As the two functions are symmetric, they intersect on the line $x_1 = x_2 = x^*$. Thus it is easy to show that the Nash equilibrium of the game is given by the following location on the ethical segment:

$$x^* = \frac{1}{2} - \frac{2\mu s}{f}. \tag{8}$$

The solution in (8) can be a Nash equilibrium if it is positive, or if the following condition on parameters holds:

$$s < \frac{f}{4\mu}$$

The second order conditions are respected, since the second derivatives, evaluated in $x = 1/2 - 2\mu s/f$, are always negative:[9]

$$\left.\frac{d^2\pi_1}{dx_1}\right|_{x_1=x_2=\frac{1}{2}-\frac{2\mu s}{f}} = \frac{-2f\left[K(1-s)+H(1+s)+2\right]}{\mu(1+K)^2(1+H)^2} < 0. \tag{9}$$

$$\left.\frac{d^2\pi_2}{dx_2}\right|_{x_1=x_2=\frac{1}{2}-\frac{2\mu s}{f}} = \frac{-2f\left[K(1+s)+H(1-s)+2\right]}{\mu(1+K)^2(1+H)^2} < 0.\square \tag{10}$$

The interpretation of our proposition is that profit maximizing firms will choose CSR if the ratio between consumer sensitiveness to CSR and uncertainty on the heterogeneity of consumer tastes is above a given threshold.

To compare our results with the standard one of Hotelling (1929) consider that the minimum differentiation principle applies also here but it is quite evident that the optimal location of the two producers is shifted to the left with respect to the standard case without SR, when they locate in $\frac{1}{2}$. This is because the duopolists find their Nash equilibrium choosing the same location but their segment is "upward sloping" since they feel the increasing effects of the ethical costs as far as they move to the right.

As expected, the optimal location depends positively on the consumer sensitiveness to CSR (f) and negatively from the precision with which the producer may identify consumer CSR tastes (measured by the μ parameter). Finally, the optimal location obviously depends from the "inclination of the slope", or from the amount of transfers s: the higher is s, the more expensive is locating on the right of the segment.

We provide a parametric example of the Agglomerated Nash Equilibrium in Figure 2 eq. (6) and eq. (7) when $f = 1$, $s = 0.25$ and $\mu = 0.5$. The two reaction functions are symmetric and intersect on the diagonal in the point (0.25;0.25), which is the Nash equilibrium of the problem.

---

[9] The numerator of $\frac{d^2\pi_1}{dx_1}$ is
$\{2f\mu\left[-K-H-2\right](1+K)(1+H)-$
$-2\left[-fK(1+H)+fH(1+K)\right]\left[\mu(K-H)+\right.$
$+2f(1-x_1-x_2)/4\mu^2(1+K)^2(1+H)^2$. Since the denominator is always positive we consider the numerator, which is $\left\{-8f\mu\left(K+H+2\right)+4f^2(1-x_1-x_2)(K-H)\right\}$, and, substituting $x = \frac{1}{2} - \frac{2\mu s}{f}$, we have the expression in (9).

The numerator of $\frac{d^2\pi_2}{dx_2}$ is
$2f\mu\left[-K-H-2\right](1+K)(1+H)-$
$-2f\left[K(1+H)-H(1+K)\right]\left[\mu(H-K)+\right.$
$\left.+2f(1-x_1-x_2)\right] =$
$= \left\{-8f\mu\left(K+H+2\right)+4f^2(1-x_1-x_2)(H-K)\right\}$, and, substituting $x = \frac{1}{2} - \frac{2\mu s}{f}$, we have the expression in (10).

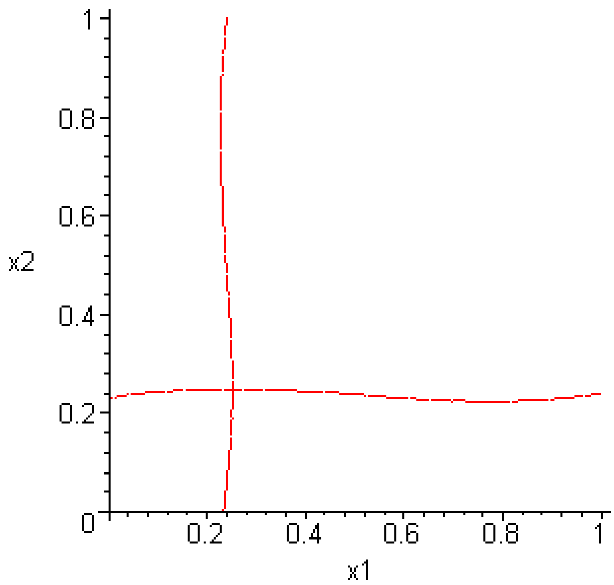

Figure 2.1.2

A graphical inspection of the solution (8) is provided in figure 2.1.2 where it is shown that, for a given level of s and f, the optimal CSR location in equilibrium depends from the degree of uncertainty on consumer tastes. If uncertainty is very high the two competitors find it optimal not to pay the cost of CSR even for low levels of s .

We also observe that s influences producers' location in proportion to μ: the larger the uncertainty about consumer tastes and reaction to CSR, the higher the risks related to the CSR cost paid and the lower the CSR stance chosen in equilibrium. A higher f reinforces this effect, as it is shown in Figure 2.1.4, thereby making (*coeteris paribus*) equilibrium loci less step. This is because, if the ethical concern of consumers increase, producers choose to be more ethical independent of s.

On the contrary, when μ is high, s is crucial in the decision of x^*, because consumers are more heterogeneous and so distributed along the whole segment and this effect is reinforced when f is lower, as shown in Figure 2.1.5, because firms can give less importance to consumers ethical opportunity costs.

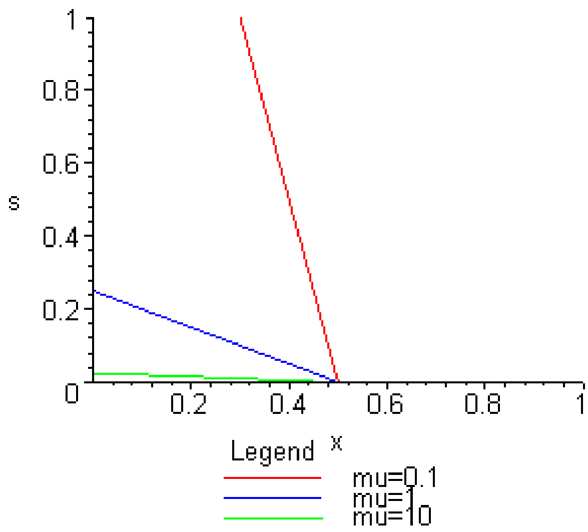

Figure 2.1.3. $f = 1$

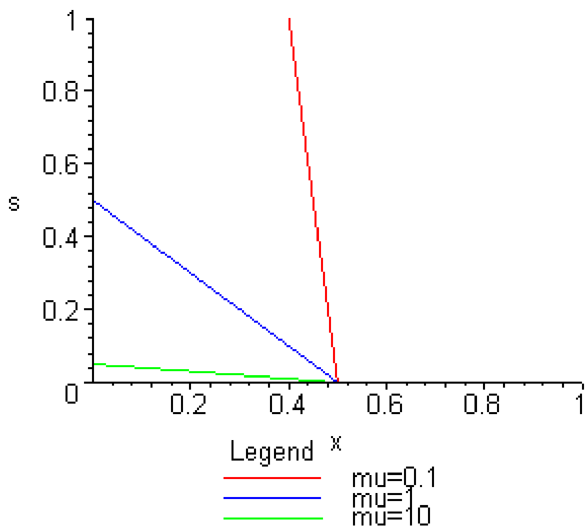

Figure 2.1.4. $f = 2$

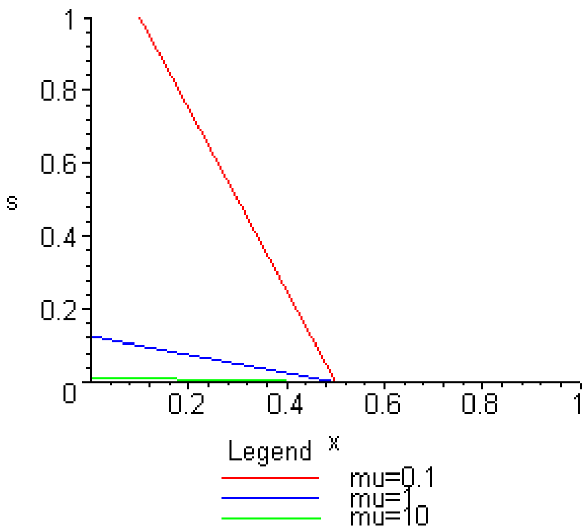

Figure 2.1.5.$f = 0.5$

2.2 The price model

In this section we want to investigate what happens in our model when the two producers have fixed location and compete in prices. The analysis of the model under these assumptions may be considered unrealistic, but is a preliminary tool necessary, as we will see in the following section, to illustrate the equilibrium when the two producers compete in both location and prices.[10]

The model under the above described characteristics leads us to formulate the following proposition.

Proposition 2: In a market with SR concerned consumers a price maximization problem of two competing PMPs has a unique Agglomerated Nash Price Equilibrium given by $p_1 = p_2 = 2\mu$.

Proof:

Since producer locations coincide we do not have three regions anymore. Thus, the probability that a consumer located in x will buy from firm i will be simply:

[10] The stronger justification for the price model is that the two producers may decide to collude. In this case their optimal choice may be zero (or a minimal common level of) CSR and a common price policy with a commitment to avoid price undercutting strategies à la Bertrand. All other rationales for an exogenous level of CSR (prohibitive costs of implementation of CSR standards in some specific industries or discontinuities in the choice of the CSR cost which prevent firms to move from a unique discrete choice) may also contribute to justify the price model in itself, beyond its instrumental role for explaining the price-location model which follows.

$$P_i = \frac{e^{-p_i/\mu}}{\sum_{j=1}^{2} e^{-p_j/\mu}} \tag{11}$$

As a consequence, profits of firm 1 and firm 2 will be

$$\pi_1(p_1) = p_1 \int_0^1 \frac{1}{1+e^{(p_1-p_2)/\mu}} dx = \frac{p_1}{1+e^{(p_1-p_2)/\mu}} \tag{12}$$

$$\pi_2(p_2) = p_2 \int_0^1 \frac{1}{1+e^{(p_2-p_1)/\mu}} dx = \frac{p_2}{1+e^{(p_2-p_1)/\mu}} \tag{13}$$

with the following first order conditions

$$\frac{d\pi_1}{dp_1} = \frac{\left(1+e^{(p_1-p_2)/\mu}\right) - \frac{1}{\mu} p_1 e^{(p_1-p_2)/\mu}}{\left(1+e^{(p_1-p_2)/\mu}\right)^2} = 0 \tag{14}$$

$$\frac{d\pi_2}{dp_2} = \frac{\left(1+e^{(p_2-p_1)/\mu}\right) - \frac{1}{\mu} p_2 e^{(p_2-p_1)/\mu}}{\left(1+e^{(p_2-p_1)/\mu}\right)^2} = 0 \tag{15}$$

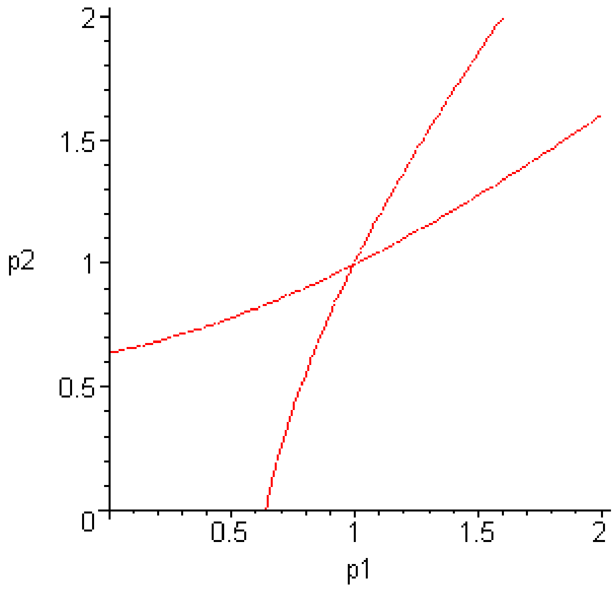

Figure 2.2.1

This means that the two price reaction functions $\frac{d\pi_1}{dp_1}(\cdot)$ and $\frac{d\pi_2}{dp_2}(\cdot)$ are symmetric in the p_1, p_2 plan with respect to the bisector, so they cross on the bisector itself, as shown in Figure 2.2.1. For this reason we can easily find a unique price Nash equilibrium $p_1 = p_2 = p$:

$$2\mu - p = 0 \Rightarrow p = 2\mu$$

We check second order conditions by evaluating the second derivative for firm 1 in the solution:

$$\frac{d\pi_1}{dp_1}(p_1) = \frac{\frac{1}{\mu}\left\{-\frac{p_1}{\mu}e^{\lambda}(1+e^{\lambda}) - 2e^{\lambda}(1+e^{\lambda}) + 2e^{2\lambda}\frac{p_1}{\mu}\right\}}{(1+e^{\lambda})^3}$$

Substituting $p_1 = 2\mu$ we have

$$\left.\frac{d\pi_1}{dp_1}\right|_{p_1=2\mu} = -\frac{1}{2\mu} < 0$$

In the same way we can derive the second order conditions for firm 2, obtaining

$$\left.\frac{d\pi_2}{dp_2}\right|_{p_2=2\mu} = -\frac{1}{2\mu} < 0.\square$$

To interpret the equilibrium of the model consider that, in the price model, a reduction in the capacity to identify consumer CSR tastes leads to an increase in prices when firms are located in the same point of the interval. The interpretation is that consequences of the magnification of the random component in the consumer utility function are asymmetric. More specifically, a higher μ implies that consumers may accept to buy at higher price, while the negative consequences of higher prices for the producer, as far as μ grows, are bounded. In other words, the marginal benefit of a price rise for a producer is always positive as far as μ grows, while, on the other direction, the consumer may simply decide not to buy the product without determining increasing losses to the producer as far as μ grows.

2.3 The location-price model

In this section we analyze the model under the assumption that producers compete by choosing both CSR location and prices. Thus, producer 1 will face the following probabilities that a consumer located in the regions 1, 2 or 3 will purchase his product:

$$P_1^1 = \frac{1}{1+e^{\lambda}H}, \qquad P_1^2 = \frac{1}{1+e^{\lambda-(f/\mu)(\delta+2(x_1-x))}}, \qquad P_1^3 = \frac{1}{1+e^{\lambda}K} \quad (16)$$

where $\lambda = \frac{p_1-p_2}{\mu}$. Again, the first and the last probabilities are constant, while the second is decreasing in x, being $\frac{\partial P_1^2}{\partial x^2} < 0$.

Within this framework it is possible to formulate the following proposition:

Proposition 3: In a location-price maximization problem of two competing PMPs in a market with ethical consumers whose ethical concerns are such that $f > \max\left(\frac{s^2}{2\mu}, 2s\right)$, *there is an Agglomerated Nash Equilibrium given by* $x_1 = x_2 = \frac{1}{2} - \frac{s}{f}$ and $p_1 = p_2 = 2\mu$.

Proof:
We can write firm 1 and firm 2 profits respectively as:

$$\begin{aligned}
\pi_1(x_1,p_1) &= p_1\left\{\int_0^{x_1} P_1^1[x]dx + \int_{x_1}^{x_2} P_1^2[x]dx + \int_{x_2}^{1} P_1^3[x]dx\right\} - sx_1 = \\
&= p_1\left\{\frac{x_1}{1+e^{\lambda}H} + \delta - \frac{\mu}{2f}\ln\left(\frac{1+e^{\lambda}K}{1+e^{\lambda}H}\right) + \frac{1-x_2}{1+e^{\lambda}K}\right\} - sx_1
\end{aligned} \tag{17}$$

and:

$$\begin{aligned}
\pi_2(x_2,p_2) &= p_2\left\{\int_0^{x_1} P_2^1[x]dx + \int_{x_1}^{x_2} P_2^2[x]dx + \int_{x_2}^{1} P_2^3[x]dx\right\} - sx_2 = \\
&= p_2\left\{\frac{x_1}{1+e^{-\lambda}K} + \delta + \frac{\mu}{2f}\ln\frac{1+e^{-\lambda}H}{1+e^{-\lambda}K} + \frac{1-x_2}{1+e^{-\lambda}H}\right\} - sx_2
\end{aligned} \tag{18}$$

The optimal choice for firm 1 is given by evaluating first order conditions when $x_2 > x_1$ (symmetrically the opposite case gives the same solutions):

$$\begin{aligned}
\frac{\partial\pi_1(x_1,p_1)}{\partial p_1} &= \frac{x_1\left(1+e^{\lambda}H(1-p_1/\mu)\right)}{(1+e^{\lambda}H)^2} + \frac{(1-x_2)(1+e^{\lambda}K(1-p_1/\mu))}{(1+e^{\lambda}K)^2} + \\
+ \quad & \delta - \frac{\mu}{2f}\left\{\ln\left(\frac{1+e^{\lambda}K}{1+e^{\lambda}H}\right) + \frac{e^{\lambda}(K-H)p_1/\mu}{(1+e^{\lambda}K)(1+e^{\lambda}H)}\right\} = 0
\end{aligned} \tag{19}$$

$$\begin{aligned}
\frac{\partial\pi_1(x_1,p_1)}{\partial x_1} &= -s + p_1\left\{\frac{1+e^{\lambda}H\left(1-\frac{f}{\mu}x_1\right)}{(1+e^{\lambda}H)^2} - 1 + \right. \\
& \left. + \frac{e^{\lambda}}{2}\frac{K(1+e^{\lambda}H)+H(1+e^{\lambda}K)}{(1+e^{\lambda}H)(1+e^{\lambda}K)} + \frac{f}{\mu}e^{\lambda}K\frac{1-x_2}{(1+e^{\lambda}K)^2}\right\} = 0
\end{aligned} \tag{20}$$

Firm 2 first order conditions are:

$$\begin{aligned}
\frac{\partial\pi_2(x_2,p_2)}{\partial p_2} &= \frac{x_1\left(1+e^{-\lambda}K(1-p_2/\mu)\right)}{(1+e^{-\lambda}K)^2} + \frac{(1-x_2)(1+e^{-\lambda}H(1-p_2/\mu))}{(1+e^{-\lambda}H)^2} \\
+ \quad & \delta + \frac{\mu}{2f}\left\{\ln\left(\frac{1+e^{-\lambda}H}{1+e^{-\lambda}K}\right) + \frac{e^{-\lambda}(H-K)p_2/\mu}{(1+e^{-\lambda}K)(1+e^{-\lambda}H)}\right\} = 0
\end{aligned} \tag{21}$$

$$
\begin{aligned}
\frac{\partial \pi_2(x_2,p_2)}{\partial x_2} &= -s+p_2\left\{\frac{-\frac{f}{\mu}e^{-\lambda}Kx_1}{(1+e^{-\lambda}K)^2}+1+\right.\\
&\quad -\frac{e^{-\lambda}}{2}\frac{H(1+e^{-\lambda}K)+K(1+e^{-\lambda}H)}{(1+e^{-\lambda}H)(1+e^{-\lambda}K)}-\\
&\quad \left.+\frac{1+e^{-\lambda}H\left(1-\frac{f}{\mu}(1-x_2)\right)}{(1+e^{-\lambda}K)^2}\right\}=0 \qquad (22)
\end{aligned}
$$

If an agglomerated Nash equilibrium exists, the following equality $x_1 = x_2 = x$ should hold in it. Hence, as a first step, we can easily turn back to the price problem where we fixed both locations and found solutions for prices. As a second step, we may use the price problem result ($p_1 = p_2 = 2\mu = p$) in eq. (20) to find an agglomerated location solution ($x_1 = x_2 = x$). The common location has to verify the necessary condition to be a Nash equilibrium, given by eq. (20) and (**??**):

$$
-s+2\mu\left\{\frac{1}{2}-\frac{fx}{4\mu}-1+\frac{1}{2}+\frac{f(1-x)}{4\mu}\right\}=0 \qquad (23)
$$

By adopting the above mentioned approach we have the following solution

$$
x' = \frac{1}{2}-\frac{s}{f}. \qquad (24)
$$

and we can easily verify that the last solution x satisfies also first order conditions of firm 2.

The sufficient condition is given by the Hessian matrix of the problem for firm 1 and for firm 2 evaluated at x':

$$
HES_1 = HES_2 = \begin{bmatrix} -f & \frac{s}{2\mu} \\ \frac{s}{2\mu} & -\frac{1}{2\mu} \end{bmatrix}
$$

$$
\det(HES_1) = \det(HES_2) = \frac{f}{2\mu}-\frac{s^2}{4\mu^2};
$$

This means that solution (24) is a Nash equilibrium if $f > \frac{s^2}{2\mu}$ holds. By combining this condition with the one which ensures a positive solution ($f > 2s$), we finally have the more general condition of $f > \max\left(\frac{s^2}{2\mu}, 2s\right)$.□

Remark: Proposition 3 ensures that an ANE exists, but we don't know if it is the unique Nash equilibrium of the problem.

This result can be obtained also by considering this problem as a location problem with price $p \neq 1$. Just by multiplying the first term in eq. (6) and in eq. (7) by 2μ, we have the same result as in (24).

A computation using particular values of parameters can help us to see if that agglomerated equilibrium is unique. In particular, when $\mu = 1$ and $f = 1$, we can easily verify that, after a few steps, all variables converge to their theoretical value, as shown in Table 2.3.1.

In Table 2.3.1 we have two different sets of initial parameters. In the first one $s = 0.25$; starting by all variables null, we suppose that the two competitors maximize their profits observing values of each other variables. In this case firm 1 maximizes first triggering firm 2 optimal reaction and so on. After 9 steps all values stabilize and reach solutions (x', p). In the second scenario $s = 0.45$ and, proceeding in the same way, variables converge after 12 steps to the solution (x', p).

$s = 0.25;\ \mu = 1;\ f = 1;\ x' = \frac{1}{2} - \frac{s}{f} = 0.25;\ p = 2$						
Step	x_1	x_2	p_1	p_2	π_1	π_2
1	0	0	0	0	0	0
2	0		1.28		0.278464	
3		0.213		1.75		0.69089
4	0.235		1.88		0.825927	
5		0.242		1.945		0.88218
6	0.25		2		0.912038	
7		0.25		2		0.9375
8	0.25		2		0.9575	
9		0.25		2		0.9575
$s = 0.45;\ \mu = 1;\ f = 1; x' = \frac{1}{2} - \frac{s}{f} = 0.05; p = 2$						
Step	x_1	x_2	p_1	p_2	π_1	π_2
1	0	0	0	0	0	0
2	0		1.28		0.278464	
3		0		1.67		0.674208
4	0		1.84		0.841988	
5		0.035		1.938		0.922144
6	0.044		1.973		0.953526	
7		0.047		1.987		0.966748
8	0.048		1,994		0.972362	
9		0.049		1.998		0.975402
10	0.05		2		0.976951	
11		0.05		2		0.9775
12	0.05		2		0.9775	

Table 2.3.1

If we compare the optimal level of CSR in the location and in the price-location game we find that CSR is higher in the latter. More specifically, the parameters s and f influence the optimal location choice as in the pure location model, but this time the result does not depend on the uncertainty on consumer tastes. This is because, with the price variable, producers may get also benefits from uncertainty on consumer tastes since they may loose some customers but also pick up some others with high reservation price. The opportunity to use prices together with location allows them to choose relatively more CSR than in the pure location model for a given level of uncertainty on consumer tastes.

3 Fair Trader entry

In many cases CSR competition originates from the market entry of a SR, non profit maximizing, "pioneer" with reaction of the incumbent profit maximizing producer through partial CSR imitation. To check whether the presence of the pioneer has some relevance with respect to a duopoly of two profit maximizing firms we find it useful to analyze what happens in terms of CSR when we move from our previous model to a mixed oligopoly in which one of the two producers is profit maximizing and the other is not.

A typical example of a zero profit producer may be that of the Fair Trader (FT).[11] His ethical stance consists of transferring the whole profit to the subcontractee. As a consequence his profit will be zero and his maximization problem concerns transfers instead of profits. Thus the FT has to choose a location in the ethical segment by maximizing total transfers T.This last is given by the sum of the PMP's transfer plus the FT's profit, which will be totally transferred:

$$T(x_2, p_2) = p_2 \left\{ \frac{x_1}{1 + e^{-\lambda} K} + \delta + \frac{\mu}{2f} \ln \left(\frac{1 + e^{-\lambda} H}{1 + e^{-\lambda} K} \right) + \frac{1 - x_2}{1 + H} \right\} + s x_1 \quad (25)$$

We are going to investigate what happens on player 2 if player 1 becomes "closer" to a FT, or if it decides to maximize CSR costs (transfers). We will study the behavior of variables around the initial optimal solution (x', p) found in the two PMP case. We have the following proposition.

Intuitively, becoming a FT, the firm will move to the right in the ethical segment. This happens because the function of transfers grows when location

[11] Fair traders compete with traditional producers and distributors by selling food and textile products which incorporate social and environmentally responsible characteristics and have to goal of fostering inclusion of marginalised producers in the South. The 2005 European Fair Trade Report illustrates that fair trade sales have grown by 20 percent per year in the last five years and have reached significant market share in some specific segments (i.e. 49 percent of bananas in Switzerland and 20 percent of ground coffee in the UK). After fair traders' entry on the market large transnationals have partially imitated them by introducing similar products in their product range. According to BBC news, on October the 7th, 2000 Nestle has launched a fair trade instant coffee as it looks to tap into growing demand among consumers. The BBC comments the news saying that "Ethical shopping is an increasing trend in the UK, as consumers pay more to ensure poor farmers get a better deal." and reports the comment of Fiona Kendrick, Nestle's UK head of beverages arguing that "Specifically in terms of coffee, fair trade is 3 percent of the instant market and has been growing at good double-digit growth and continues to grow." One of the world's biggest players in the coffee market, the US consumer good company Procter & Gamble, announced it would begin offering Fair Trade certified coffee through one of its specialty brands. Following Procter & Gamble's decision to start selling a Fair Trade coffee, also Kraft Foods, another coffee giant, committed itself to purchasing sustainably grown coffee. On the theoretical debate of the role and impact of Fair Trade at micro and aggregate level see also Becchetti and Solferino (2004), Hayes (2004), Leclair (2002) and Moore (2004).

x_2 increases from the initial point, as its derivative with respect to x_2 evaluated in (x', p) is positive:

$$\left.\frac{\partial T_2}{\partial x_2}(x_2, p_2)\right|_{x',p} = 2\mu\left(-\frac{f}{8\mu} + \frac{s}{4\mu} + \frac{f}{8\mu} + \frac{s}{4\mu}\right) = s > 0 \qquad (26)$$

Proposition 4: In a market with ethical consumers with parameters such that $f > \max\left(\frac{s^2}{2\mu}, 2s\right)$, *and two competing PMPs maximizing their profit in the location in* $x' = \frac{1}{2} - \frac{s}{f}$, *if firm 2 moves slightly to the right on the ethical segment, there will be a small reduction of location and price of firm 1.*

Proof:

To analyze the effects of this increase in x_2 with the second producer moving from the initial point to the right, we consider the first order conditions with respect to the other variables, recalling eq. (20) and (19) for firm 1:

$$\begin{aligned}
\pi_{1_{p_1}}(x_1, p_1) &= \frac{x_1\left(1 + e^{\lambda}H(1 - p_1/\mu)\right)}{(1 + e^{\lambda}H)^2} + \frac{(1 - x_2)(1 + e^{\lambda}K(1 - p_1/\mu))}{(1 + e^{\lambda}K)^2} + \\
&+ \delta - \frac{\mu}{2f}\left\{\ln\left(\frac{1 + e^{\lambda}K}{1 + e^{\lambda}H}\right) + \frac{e^{\lambda}(K - H)p_1/\mu}{(1 + e^{\lambda}K)(1 + e^{\lambda}H)}\right\} = 0
\end{aligned}$$

$$\begin{aligned}
\pi_{1_{x_1}}(x_1, p_1) &= -s + p_1\left\{\frac{1 + e^{\lambda}H\left(1 - \frac{f}{\mu}x_1\right)}{(1 + e^{\lambda}H)^2} - 1 + \right. \\
&\left. + \frac{e^{\lambda}}{2}\frac{K(1 + e^{\lambda}H) + H(1 + e^{\lambda}K)}{(1 + e^{\lambda}H)(1 + e^{\lambda}K)} + \frac{f}{\mu}e^{\lambda}K\frac{1 - x_2}{(1 + e^{\lambda}K)^2}\right\} = 0
\end{aligned}$$

$$\begin{aligned}
T_{2_{p_2}}(x_2, p_2) = &\frac{\partial}{\partial p_2}\pi_2(x_2, p_2) = \frac{x_1\left(1 + e^{-\lambda}K(1 - p_2/\mu)\right)}{(1 + e^{-\lambda}K)^2} + \\
+ &\frac{(1 - x_2)(1 + e^{-\lambda}H(1 - p_2/\mu))}{(1 + e^{-\lambda}H)^2} + \delta + \\
+ &\frac{\mu}{2f}\left\{\ln\left(\frac{1 + e^{-\lambda}H}{1 + e^{-\lambda}K}\right) + \frac{e^{-\lambda}(H - K)p_2/\mu}{(1 + e^{-\lambda}K)(1 + e^{-\lambda}H)}\right\} = 0
\end{aligned}$$

As these derivatives are null in the initial point (optimum for the two PMP case), we can apply the Implicit Function Theorem and evaluate the effects of variables with respect to each other in that point. So we have

$$\begin{aligned}
\left.\frac{\partial x_1}{\partial p_1}\right|_{x',p} &= -\left.\frac{\frac{\partial \pi_{1_{x_1}}}{\partial p_1}}{\frac{\partial \pi_{1_{x_1}}}{\partial x_1}}\right|_{x',p} = \frac{s}{2f\mu};\ \left.\frac{\partial p_2}{\partial p_1}\right|_{x',p} = -\left.\frac{\frac{\partial T_{2_{p_2}}}{\partial p_1}}{\frac{\partial T_{2_{p_2}}}{\partial p_2}}\right|_{x',p} = \frac{1}{2};\\
\left.\frac{\partial x_1}{\partial p_2}\right|_{x',p} &= -\left.\frac{\frac{\partial \pi_{1_{x_1}}}{\partial p_2}}{\frac{\partial \pi_{1_{x_1}}}{\partial x_1}}\right|_{x',p} = 0;\ \left.\frac{\partial p_1}{\partial p_2}\right|_{x',p} = -\left.\frac{\frac{\partial \pi_{1_{p_1}}}{\partial p_2}}{\frac{\partial \pi_{1_{p_1}}}{\partial p_2}}\right|_{x',p} = \frac{1}{2};\\
\left.\frac{\partial p_1}{\partial x_1}\right|_{x',p} &= -\left.\frac{\frac{\partial \pi_{1_{p_1}}}{\partial x_1}}{\frac{\partial \pi_{1_{p_1}}}{\partial p_1}}\right|_{x',p} = s;\ \left.\frac{\partial p_2}{\partial x_1}\right|_{x',p} = -\left.\frac{\frac{\partial T_{2_{p_2}}}{\partial x_1}}{\frac{\partial T_{2_{p_2}}}{\partial p_2}}\right|_{x',p} = -s;\\
\left.\frac{\partial x_1}{\partial x_2}\right|_{x',p} &= -\left.\frac{\frac{\partial \pi_{1_{x_1}}}{\partial x_2}}{\frac{\partial \pi_{1_{x_1}}}{\partial x_1}}\right|_{x',p} = 0;\ \left.\frac{\partial p_1}{\partial x_2}\right|_{x',p} = -\left.\frac{\frac{\partial \pi_{1_{p_1}}}{\partial x_2}}{\frac{\partial \pi_{1_{p_1}}}{\partial p_1}}\right|_{x',p} = -s;\\
\left.\frac{\partial p_2}{\partial x_2}\right|_{x',p} &= -\left.\frac{\frac{\partial T_{2_{p_2}}}{\partial x_2}}{\frac{\partial T_{2_{p_2}}}{\partial x_2}}\right|_{x',p} = s;
\end{aligned} \tag{27}$$

As we can see a higher x_2 generates a price change (p_1 decreases and p_2 increases). A reduction of p_1 makes x_1 decrease too and so prices change again. If we organize this process in sequential steps, given the FT decision to move x_2 slightly to the right ($\Delta x_1 = h$) we can define as a_i, b_i and c_i respectively $\Delta x_1, \Delta p_1$ and Δp_2 in the step i. Hence we have

$$\begin{aligned}
a_1 &= 0,\ \ b_1 = -sh,\ \ c_1 = sh\\
a_2 &= \frac{s}{2f\mu}b_1,\ \ b_2 = sa_1 + \frac{1}{2}c_1,\ \ c_2 = -sa_1 + \frac{1}{2}b_1\\
&\vdots\\
a_n &= \frac{s}{2f\mu}b_{n-1},\ \ b_n = sa_{n-1} + \frac{1}{2}c_{n-1},\ \ c_n = -sa_{n-1} + \frac{1}{2}b_{n-1}
\end{aligned} \tag{28}$$

By defining the following vector

$$y_n = \begin{pmatrix} a_n \\ b_n \\ c_n \end{pmatrix} \tag{29}$$

we have

$$y_n = Fy_{n-1} \tag{30}$$

where

$$F = \begin{pmatrix} 0 & \frac{s}{2f\mu} & 0 \\ s & 0 & \frac{1}{2} \\ -s & \frac{1}{2} & 0 \end{pmatrix} \tag{31}$$

If F has 3 distinct real eigenvalues then every solution y_n of the system of linear difference equation (30) tends to 0 as $n \to \infty$ if and only if all the eigenvalues of F have absolute value less than 1.

In fact the eigenvalues solve

$$\det(\lambda I - F) = 0 \tag{32}$$

they are $\lambda_1 = \frac{1}{2}$; $\lambda_2 = \frac{1}{4}\frac{-f\mu+\sqrt{f^2\mu^2+8f\mu s^2}}{f\mu}$; $\lambda_3 = \frac{1}{4}\frac{-f\mu-\sqrt{f^2\mu^2+8f\mu s^2}}{f\mu}$, which are real distinct and $|\lambda_i| < 1$, $i = 1, ..., 3$.

We are going to evaluate the following series

$$\sum_{n=1}^{\infty} y_n$$

To this aim we consider

$$\sum_{n=2}^{N} y_n = F \sum_{n=2}^{N} y_{n-1} = F \sum_{n=1}^{N-1} y_n \tag{33}$$

We add $y_1$to both sides and can rearrange it as

$$y_N + (I - F) \sum_{n=1}^{N-1} y_n = y_1 \tag{34}$$

and

$$(I - F)^{-1} y_N + \sum_{n=1}^{N-1} y_n = (I - F)^{-1} y_1 \tag{35}$$

For $N \to \infty$, $(I - F)^{-1} x_N \to 0$.

Since by (31)

$$\det(I - F) = \frac{-s^2 + 3f\mu}{4f\mu} \left(\frac{1}{4}\right) \neq 0 \tag{36}$$

therefore we can evaluate $(I - F)$ and we can write

$$\sum_{n=1}^{\infty} y_n = (I - F)^{-1} y_1 = \begin{pmatrix} \frac{3f\mu}{3f\mu-s^2} & \frac{2s}{3f\mu-s^2} & \frac{s}{3f\mu-s^2} \\ \frac{2sf\mu}{3f\mu-s^2} & \frac{4f\mu}{3f\mu-s^2} & \frac{2f\mu}{3f\mu-s^2} \\ \frac{-2sf\mu}{3f\mu-s^2} & \frac{2(f\mu-s^2)}{3f\mu-s^2} & \frac{2(2f\mu-s^2)}{3f\mu-s^2} \end{pmatrix} y_1 \tag{37}$$

The final increments around the point (x', p) are

$$\sum_{n=1}^{\infty} a_n = \Delta x_1 = -\frac{s^2 h}{3f\mu - s^2} \tag{38}$$

$$\sum_{n=1}^{\infty} b_n = \Delta p_1 = -\frac{2f\mu sh}{3f\mu - s^2} \tag{39}$$

$$\sum_{n=1}^{\infty} c_n = \Delta p_2 = \frac{2f\mu sh}{3f\mu - s^2} \tag{40}$$

Hence, after a small variation of x_2 to the right, the PMP moves slightly to the left, reducing his price and so conquering a greater market share of less ethical consumers. The FT increases his price to cover the added costs due to ethicity (sx_2).□

$s = 0.25;\ \mu = 1;\ f = 1;\ x = \frac{1}{2} - \frac{s}{f} = 0.25;\ p = 2$					
x_1	x_2	p_1	p_2	π_1	π_2
0.25	0.25	2	2	0.9375	0.9375
	1		2		0.97291
0.261		2.158		1.033169	
	1		2.0422		1.04766
0.265		2.18		1.054757	
	1		2.0512		1.05832
0.2654		2.1848		1.059389	
	1		2.0533		1.06065
0.2656		2.186		1.060472	
	1		2.054		1.061234
0.2656		2.186		1.060832	
$s = 0.45;\ \mu = 1;\ f = 1; x = \frac{1}{2} - \frac{s}{f} = 0.05; p = 2$					
x_1	x_2	p_1	p_2	π_1	π_2
0.05	0.05	2	2	0.9775	1.0225
	1		2.058		1.001176
0.049		2.134		1.030588	
	1		2.14		1.065875
0.061		2.179		1.071489	
	1		2.141		1.08818
0.061		2.18		1.071993	
	1		2.142		1.088676
0.061		2.18		1.042798	

Tabel 3.1

However, when facing greater variation of x_2, the PMP decides to move to the right as well and increases his price. For example recalling the scenarios described in the previous section, we suppose that the FT decides to locate in

$x_2 = 1$ from the initial point (x', p). The reaction of the PMP from the initial point (x', p) is indicated in Table 3.1.

As we can see this time the PMP has to move to the right, otherwise he would lose his market share. To cover the higher costs of CSR he has to increase his price too.

The tables show that when a firm become a FT locating at the right extreme of the segment, even the other firm become more ethical and moves to the right.

4 Conclusions

The last decade witnessed a significant expansion of CSR practices of the most important corporations, with many of them advertising their advances in this field in order to conquer the increasing share of "concerned" consumers. CSR, as many other aspects of economic reality, suffers from the typical problem of asymmetric information. Many consumers wonder whether ethical firms really do what they advertise, while the same firms try to understand whether consumers will give weight to CSR in their demand functions and/or believe to their declared CSR stance. For these reasons we argue that a product differentiation model in which the traditional Hotelling segment is reinterpreted as the space of CSR product characteristics in presence of uncertainty on consumer tastes is the best candidate to analyze this emerging form of competition.

What we learn within this theoretical framework is that the minimum differentiation principle, the standard result in location games without uncertainty, applies also here except that location is not in the middle of the segment but shifted to the left. The rationale is that moving to the right (becoming more SR) entails costs for producers which may be recovered only if consumer have sufficiently strong preferences for CSR. The higher these costs and the higher the uncertainty on consumer preferences, the more difficult it is that producers will choose a nonzero level of CSR. More interestingly, we find that also the price-location model has an agglomerated Nash equilibrium when consumer preferences for CSR are sufficiently high. CSR will be higher in the price-location than in the pure location game since producers may remunerate with higher prices their CSR stance. A final result of the model is that when we move from the duopoly of profit maximizing firms to a mixed oligopoly in which one of the two behaves as a "social market enterprise" (as fair trade producers do) the level of CSR of his competitor becomes also higher. This final result is consistent with the history of CSR competition among fair traders and big transnationals which started imitating the former by introducing fair trade products in their product range.

References

Becchetti L., Solferino N, 2004, "The dynamics of ethical product differentiation and the habit formation of socially responsible consumers", Working Paper AICCON-Università di Bologna.

Cremer, H. and J.-F. Thisse (1991), "Location Models of Horizontal Differentiation: A Special Case of Vertical Differentiation Models", *Journal of Industrial Economics*, 39, 383-90.

Dasgupta, P. and E. Maskin, 1986, "The Existence of Equilibrium in Discontinuous Economic Games, I: theory; II:
applications", *Review of Economic Studies*, 53, 1-41.

D'Aspremont, C., Gabsewicz , J.J., Thisse, J.-F., 1979, "On Hotelling's Stability in Competition", *Econometrica*, 47, 114-1150.

De Palma, A., Ginsburgh, V., Papageorgiou Y. Y., Thisse J.-F., "The Principle of Minimum Differentiation Holds under Sufficient Heterogeneity", *Econometrica,* 53, pp. 67-78.

De Palma A., Ginsbugh V., Thisse J.-F., "On Existence of Location Equilibria in the 3-Firm Hotelling Problem", *Journal of Industrial Economics,* Vol. XXXVI, 1987.

Economides, N., 1984, "The Principle of Minimum Differentiation Revisited", *European Economic Review*, 24(3), pages 345-368.

Freeman R.E., (1984), "Strategic Management: a Stakeholder approach", *Pitman*, Boston.

Frey, B.S. (1997), "On the relationship between intrinsic and extrinsic work motivation", *International Journal of Industrial Organization* , Vol. 15, pp. 427- 439

Hayes, M., 2004, "Strategic management implication of the ethical consumer", http://www.fairtraderesearch.org.

Hotelling H., "Stability in Competition", *Economic Journal,* 39 (1929), 41-57.

Jensen M.C., (2001), "Value Maximization, Stakeholder Theory, and the Corporate Objective Function", *Journal of Applied Corporate Finance*, Vol. 14, No 3, Fall.

KPMG International Survey of Corporate Responsibility Reporting 2005 www.kpmg.com/Rut2000prod/Documents/9/Survey2005.pdf.

Leclair, M. S., 2002, "Fighting the tide: Alternative trade organizations in the era of global free trade", *World Development 30*
(7): 1099-122.

Manski C.F., McFadden D., "Structural Analysis of Discrete Data with Econometric Applications", Cambridge, Massachusetts MIT Press, 1981.

Moore, G., 2004, "The Fair Trade Movement: parameters, issues and future research", Journal of Business Ethics, 53, 73-86.

Shapiro C., Stiglitz J.E, (1984),. "Equilibrium unemployment as a worker discipline device", *American Economic Review*, *American Economic Association*, vol. 74(3), pp. 433-44.

Tirole J., (2001), "Corporate Governance", *Econometrica*, 69 (1).