

## **A virtuous interaction between pressure groups, firms and institutions: a subsidiarity principle in a horizontal differentiation model <sup>♦</sup>**

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In this paper we analyse the relationship between producers' ethical responsibility and consumers' welfare in a duopoly with horizontal (ethical) differentiation. We show that the entry of an ethically concerned (socially and environmentally responsible) producer generates a Pareto improvement for all (both ethically and non ethically) concerned consumers in the North in a Hotelling game in which the incumbent and the ethical entrant compete over prices and ethical features of their products. We also show that the price reaction of the incumbent when his location is fixed has additional positive welfare effects and that - when we remove the fixed location hypothesis - incumbent's ethical imitation adds to this even though it is compensated by reduced price competition.

We also analyse the relative efficiency of tax financed direct aid to the South vis à vis a policy of duty exemption for i) the socially and environmentally responsible producer, ii) both producers. We therefore show under different games how changes in costs of ethical distance, ethical location of the incumbent and amount of the duty affect the relative welfare-dominance of these three different policies.

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## 1. Introduction

The ongoing process of globalisation and economic integration generated by the technological advancement of electronics and telecommunications has reduced distances among different countries and cultures.<sup>1</sup> Globalisation has increased interdependence among countries and made more urgent the problem of the insufficient provision of global public goods. This may be one of the reasons why the sensitiveness of the public opinion toward ethical issues such as the preservation of the environment and the fight to poverty in less developed countries is growing.

This increased awareness has generated a series of "bottom-up" welfare initiatives, usually classified under the general definition of socially responsible (or socially concerned) saving and consumption.

One of the most known among them is promoted by zero profit importers, distributors and retailers (called *fair traders*) of food and textile products which have been partially or wholly manufactured by poor rural communities in developing countries under specific social and environmental criteria.

These criteria, defined by the Fair Trade Federation (FTF), are: i) paying a fair wage in the local context; ii) offering employees opportunities for advancement (including investment in local public goods); iii) providing equal employment opportunities for all people, particularly the most disadvantaged; iv) engaging in environmentally sustainable practices; v) being open to public accountability; vi) building long-term trade relationships; vii)

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<sup>1</sup> Some interesting (non strictly economic) definitions of globalisation are "death of distance" (Cairncross, 1997) "intensification of social relationships linking distant places in the world so that what happens locally is affected by what happens thousands of kilometers away" Giddens (2000), "intensification of the conscience of the world as a whole" (Robertson, 1992). It is also well known that the process of global integration is not new, was intense at the beginning of the 20th century, experienced a sudden inversion between the two world war and had a sudden acceleration in the last thirty years.

providing healthy and safe working conditions within the local context; viii) providing technical and financial assistance (price stabilisation insurance services and anticipated financing arrangements which reduce financial constraints) to producers whenever possible.

Fair trade products are beginning to achieve non negligible market shares. They captured around 2% of the ground coffee market in the EU and about 15% of the banana market in Switzerland in the year 2000. The existence of positive market shares for these products, whose price is often higher than that of traditional products, is a revealed preference argument for the relevance of ethically concerned consumption and for the introduction of ethical arguments in consumers' utility function.<sup>2</sup>

A typical critique to the fair trade products is that they are a distortion of market mechanisms, create distorted incentives to producers in the South and have a negligible impact on welfare. Answering to these critiques Adriani-Becchetti (2002) show that, using prices as a policy instrument to transfer resources to the South, cannot be considered a market distortion but a market creation since fair traders open in the North a new market where

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<sup>2</sup> There is a growing interest for socially responsible savings and consumption also in the institutions. In 1999 the United Nations launched the Global Compact is a coalition of large businesses, trade unions and environmental and human rights groups, brought together to share a dialogue on corporate social responsibility. In the same year the European Commission issued a document on Fair Trade (29.11.1999 COM(1999) 619. In its introduction it is stated that *"Fair trade" is an example of development occurring through trading relationships and improved commercial opportunities to bridge the gap between developed and developing countries and to facilitate the better integration of developing countries in the world economy. "Fair trade" initiatives give consumers the opportunity to contribute towards sustainable economic and social development in developing countries through their purchasing preferences.* The Commission provided financial support for research and education on *fair trade* to NGOs within the EU (3,7 millions of Euros in 1998). More recently, in July 2001, the Commission issued a Green Book COM(2001) 366 to promote firm social responsibility in the European framework. Large part of the Green Book deals with fair trade.

“contingent ethical” products (combining physical products and values) are sold.

In addition, Adriani-Becchetti (2002) show that most of fair trade criteria may be seen as bottom-up solutions to specific market failures and that they are superior in terms of welfare effects to the purchase of a good on the traditional market and a devolution of an equivalent sum of money to charities.<sup>3</sup> The fair wage/price criterion states that, in the price paid to producers in the South, a much higher share of the value of the product must be transferred to them than what is usually the case. If we assume, as it often is, that raw or intermediate material producers in the South have very low bargaining power and are in a quasi-monopsonistic market, the fair trade price can be related to the market price which would prevail if the two counterparts would have equal bargaining power. In this respect, it may become a non governmental minimum wage provided by private citizens in developed countries. The above mentioned data on the diffusion of fair trade products show that there is a relevant share of consumers which regard social and environmental responsibility of the whole production process as one of the factors affecting their consumption choice.<sup>4</sup>

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<sup>3</sup> Intuitively there are at least five reasons for such superiority: i) only the fair trade purchase generates the positive indirect effects on social responsibility of traditional producers under the conditions explained in this paper; ii) fair trade channels provide learning through export, price stabilization services and promote inclusion of traditional workers in market channels; iii) charity does not reward more productive people; iv) only the fair trade, and not charity, may be the minimum wage measure needed to solve market failures in case of monopsonistic markets; v) fair trade contribute with production anticipated financing to reduce uncollateralised producers' credit constraints.

<sup>4</sup> In a recent survey the “2003 Corporate social responsibility monitor” 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. In addition, more than one in five consumers reported having either rewarded or punished companies based on their perceived social performance and that more than a quarter of share-owning Americans took into account ethical considerations when buying and selling stocks. The Social Investment Forum reports that in the US in 1999,

The aim of this paper is to provide a theoretical background for analyzing a crucial issue of socially and environmentally responsible consumption, i.e. its welfare effects. We do so by adopting a horizontal differentiation approach and by reinterpreting the well known Hotelling line segment in terms of ethical instead of geographical space.

The paper is divided into five sections (including introduction and conclusions). In the second section we show, in a game in which the incumbent's ethical location is fixed, how the entry of a socially responsible producer (transferring part of his revenues to raw material producers in the South or raising his production costs to increase the environmental sustainability of his production) generates positive welfare effects in two ways: i) it raises satisfaction of ethically concerned consumers; ii) it triggers a price undercutting strategy from the incumbent, thereby raising consumer surplus. This result is obtained both when the entrant location is considered endogenous or when it is exogenously set at the extreme of the ethical segment.

In the third section we show how a third positive welfare effect adds up when the assumption of the incumbent fixed location is removed. This third effect is caused by incumbent's ethical imitation. The extent of ethical imitation is limited though by the different (profit maximizing and zero profit/transfer maximizing) attitudes of the two competitors. This is why the incumbent finds it optimal to imitate partially the entrant only when consumers marginal costs of distance (which also represent producer marginal benefits of added market share through ethical imitation) are higher than incumbent's marginal costs of imitation.

The paper shows conditions under which consumers welfare is higher under joint price-ethical location than under incumbent's fixed ethical location.

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there was more than \$2 trillion worth of assets invested in portfolios that used screens linked to the environment and social responsibility.

In view of these results we wonder in the fourth section whether government support for socially responsible (from now on also SR) producers in terms of duty reduction or exemption may increase social welfare. Our results outline conditions under which an exemption on import of intermediate inputs of socially responsible products may increase social welfare more than direct government aid to the South.

We finally analyse the relative convenience of different government policies in a more complex three-stage model in which the profit maximising producer is Stackelberg leader in location. We solve the game by backward induction and find that the equilibrium behaviour of the incumbent has three features: i) minimum price differentiation; ii) ethical imitation; iii) non minimal ethical differentiation. We also show, though, that, in this game, the exemption should be extended to the (eventual) share of socially responsible production of the profit maximising producer to avoid negative effects on his propensity to imitate.

## **2. Competition on ethical location and consumers' welfare**

The ethical horizontal differentiation model combines standard assumptions of the horizontal differentiation literature with some original features which are given by the specific nature of ethical competition. The model proposed here closely follows in his basic assumptions that described in Becchetti-Solferino (2003).

A monopolist not concerned with ethical issues sells a good to consumers which are uniformly distributed along a line segment  $[0,1]$  which represents ethical and not geographical distance. Consumers have inelastic, unit demands. The monopolist transforms raw materials received from unskilled producers in the South, pays them with a monopsony wage ( $w$ ) and sells the final product to consumers in the North. He also pays a duty ( $d$ ) to import raw materials, has operating costs ( $g$ ) proportional to the wage paid and, finally, maximizes profits by fixing a price ( $P_A$ )

for his product. Since he has no ethical concerns we assume for simplicity, and without lack of generality, that the incumbent is set at the extreme of the ethical segment (or has a position  $a=0$ ).

We assume that: i) consumers' utilities are decreasing in product price and in the distance between consumer's ethical stance and the ethical value incorporated in the purchased product;<sup>5</sup> ii) the psychological cost of buying a product which is below one's own ethical standards is  $t$  times the ethical distance so that consumer's utility is

$$U_c = R_p - P_i - t(x-a) \text{ if } x-a \geq 0^6$$

or

$$U_c = R_p - P_i \text{ if } x-a < 0$$

where  $(P_i)$  is the price of the product sold by the  $i$ -th seller,  $(R_p)$  is the common consumers' reservation price and  $x$  denotes generic consumer location.

In this model, differently from the traditional Hotelling model, a different position in the interval for consumers does not imply

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<sup>5</sup> We do not enter here in the debate on the misrepresentation of altruism. The "self-centered" approach to altruism, on the one side, argues that it is enough to represent it by introducing the utility of other individuals in one's own utility function (Becker, 1974). The relational approach to altruism, replies saying that this is insufficient since altruistic people should be modelled as taking their decision also on the basis of their impact on the network of relationship in which they are involved (Zamagni, 2002). We just analyse the effects of altruistic preferences on the choice of goods which incorporate different levels of social values. In this case the two approaches are observationally equivalent since both the self-centered and the relational altruist would prefer, *coeteris paribus*, a more socially responsible product. Therefore our analysis is compatible with both perspectives.

<sup>6</sup> The way we design consumers preferences is consistent with empirical evidence and consumers surveys in which values are shown to be a determinant of choices together with prices (see footnote 3 on 2003 Corporate social responsibility monitor). From a theoretical point of view this point has been remarkably analysed, among others, by Sen (1993) showing that people choose also on the basis of their values and, for this reason, they do not always choose what they would strictly prefer on the basis of prices. Lexicographic preferences are ruled out here but may be considered a limit case of our model when costs of ethical distance go to infinity.

variation in physical distance but in the psychological perception of the ethical value of the good.<sup>7</sup> This makes a difference in at least two ways. First, consistently with our concept of ethical distance, the cost of moving along the line segment is positive only for those going from a more ethical to a less ethical point (Figure 1). As a consequence, by considering the extreme right of the segment as the most ethical position, consumers move without costs to the right, while they incur in costs proportional to the “ethical” distance anytime they move to the left.<sup>8</sup>

*Proposition 1. The entry of an ethically concerned producer competing over price and ethical location in a Hotelling-like model is Pareto improving for consumers in the North under enough high consumers costs of perceived ethical distance.*

Under the assumption of incumbent fixed location exogenously set at  $a=0$ , consumers reservation utility is  $R_p - tx$ . The monopolist faces a trade-off since, the higher the price he fixes, the lower the number of consumers to whom he can sell. He therefore fixes a price  $P_a = R_p - tx^*$  where  $x^*$  is the marginal consumer with surplus equal to zero. Therefore, the monopolist market share is also equal to  $x^*$  and he maximises the following profit function.

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<sup>7</sup> In this model we abstract from considerations of asymmetric information and divergences between consumers and sellers perception of the ethical value of the good by assuming that they coincide. It may be interesting to analyse market equilibria under asymmetric information and with the presence of ethical labeling institutions in an extension of this model.

<sup>8</sup> The rationale for these assumptions is that moving to the left implies choosing a product below one’s own ethical standards (and therefore is psychologically costly) while moving to right implies choosing a product above one’s own ethical standards (and therefore does not yield any added psychological value to the buyer).

$$\text{Max } \pi = [P_A - w(1+g+d)][x^*] = [R_p - tx^* - w(1+g+d)][x^*] \quad (1)$$

(x\*)

under the following two constraints: i)  $x^* \leq 1$  and ii)  $w(1+g+d) < R_p - tx^*$  (margin nonnegativity constraint).<sup>9</sup>

The first order condition yields respectively the following optimal incumbent's share  $x^* = [R_p - w(1+g+d)]/2t$  (2)

and price

$$P_A^* = [R_p + w(1+g+d)]/2 \quad (3)$$

The incumbent market share is increasing in the reservation price and decreasing in the producer costs and in the consumers costs of perceived ethical distance (if  $t$  is higher, more consumers have reservation price higher than the incumbent price).

The optimal price is increasing in the reservation price and in the monopolist production costs. It is decreasing in the consumers costs of ethical distance because, if consumers become more ethically concerned, the incumbent reduces his price to preserve market shares.

North consumers' welfare after monopolist price decision is

$$\int_0^{x^*} [R_p - P_A^* - tx] dx + \int_{x^*}^1 0 \quad (4)$$

Assume now that an ethical producer enters the market. This producer, exactly as the fair traders described in the introduction, (this is the reason why we call him from now on also FT) is zero profit and his goal is to maximise transfers to raw material producers in the South to raise their wage from monopsony to competitive levels and to transfer resources which can be invested in local public goods to improve future market opportunities for these producers.<sup>10</sup>

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<sup>9</sup> This constraint is added to rule out the possibility positive values generated by the product of negative margins and negative market shares

<sup>10</sup> Since environmental responsibility is one of the main features of fair trade products the reasoning of our model also applies in case we replace the socially responsible (transfer to the South) with an environmentally responsible

The ethical features of the entrant consist of selling his product at zero profit and transferring a “free margin”  $s$  (obtained after paying the monopsony wage, the duty and operating costs) to finance investment in public goods and education in the South. The zero profit condition of the entrant is:  $P_B = w(1 + g + d + s)$ .<sup>11</sup>

After the FT's entry consumers face two products which differ in prices and ethical features.

Consider that  $R_p$  is the price upper bound for the ethical producer if he want to have nonzero sales. Consider also that, if he sets a price higher than  $P_A^* + tx^*$  (where  $P_A^*$  is given by (2) and  $x^*$  by (3)) he will not sell to any of the consumers previously buying the incumbent product. The worst possible case for consumers welfare is when the entrant sets the price to  $R_p - \epsilon$ . But, even in this case, all consumers whose reservation price was lower than  $P_A^* + tx^*$  - not buying anything before FT entry if  $x$  in the monopolist market was lower than one as happens if  $t$  is high enough or  $t > (R_p - w(1 + g + d))/2$  - now buy the ethical product.

Under such circumstances consumers welfare becomes

$$\int_0^{x^*} [R_p - P_A^* - tx] dx + \int_{x^*}^1 \epsilon dx . \quad (5)$$

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(adoption of a more environmentally sustainable product or process) feature of the ethical entrant. In this case we should assume a trade-off between environmental sustainability and production costs assuming that the producer chooses a technique with an added marginal cost  $s$  for any unit sold generated by the adoption of environmentally sustainable practices.

<sup>11</sup> With the specification of the FT's behaviour and of consumer's position on the segment the cost of ethical distance has a clear monetary counterpart. When the producer is located at the right of the consumer this cost represents the distance in monetary terms between the transfer which is considered fair by the consumer (indicated by his location on the segment), and the transfer provided 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.

Therefore, even in the worst case scenario, there is a Pareto improvement for consumers in the North with respect to the situation ex ante. Producers in the South are also better off as they receive higher transfers. ■

Consider that, whenever the entrant sets his price such as  $R_p > P_B > P_A^*$  we obtain again a Pareto improvement which does not change price and market share of the incumbent. In this case consumer's welfare is ex post equal to

$$\int_0^{x^*} [R_p - P_A^* - tx] dx + \int_{x^*}^1 [R_p - P_B^*] dx . \quad (6)$$

### 3.1 The welfare effects of ethical consumer's entry when the behaviour of the entrant is endogenised and the incumbent's location is fixed.

In the example of the previous section we did not endogenise the choice of the ethical entrant in order to show that, even in the worst case scenario for consumers, the FT's entry generates a welfare improvement for consumers in the North as well as producers in the South.

We now want to evaluate welfare in a three step model in which the behaviour of the FT is endogenised. In the first step the incumbent is alone and maximizes profits. In the second the ethical producer enters the market. He maximizes transfers to the South and chooses his optimal ethical location on the segment. In the third the incumbent, whose ethical location is assumed to be invariant, reacts to the new entry by changing his prices.

We start by considering the optimal choice of the entrant which maximizes transfers to the South.

*Proposition 2 The optimal price reaction of the incumbent to the ethical producer's entry generates an additional welfare improvement for consumers.*

We start from the new indifference condition for consumers (consequence of FT's entry) when  $s$  is unknown:

$$Pa^* + tx^* = w(1+g+d+s) \quad (7)$$

This condition yields the following market share for the incumbent

$$x_{NEW}^I = [w(1+g+d) + 2sw - Rp] / 2t \quad (8)$$

To analyse this value we must first replace in the formula the optimal location of the ethical producer.

To do so consider that the fair trader maximises transfers by choosing  $s$  such that:

$$\text{Max } T = s[L - x_{NEW}^I] = s[1 - (w(1+g+d) + 2sw - Rp) / 2t] \quad (9)$$

(s)

where  $L$  is the length of the ethical line.

The FT's optimal location becomes

$$s^* = [2tL + Rp - w(1+g+d)] / 4w \quad (10)$$

or  $s^* = [2t + Rp - w(1+g+d)] / 4w$  when  $L=1$ .

The FT's ethical location is increasing in the consumer reservation price (because a higher  $(Rp)$  allows the ethical entrant to raise the transfer at the margin) and in the consumers' perceived costs of ethical location.

Considering the ethical entrant price structure  $P_B = w(1+g+d+s^*)$ , and replacing for his optimal location, we get

$$P_B^* = [3w(1+g+d) + 2t + Rp] / 4 \quad (11)$$

This price meets the margin nonnegativity constraint and is higher, the higher are consumer's ethical preferences, the higher their reservation price, and the higher the production costs which do not include the transfer to the South.

By replacing in (8) the optimal entrant location  $s^*$  in (10) we get

$$x_{NEW}^I = 1/2 + [w(1+g+d) - Rp] / 4t \quad (12)$$

Consider that there may be some parameter values, for the gap between consumers' reservation price and producers production costs, such that the incumbent share hits the nonnegativity constraint and therefore becomes equal to zero. This result is not

strange if we consider that we are not incorporating the incumbent's reaction to the FT's entry but we are considering, in a sequential game, his ex ante price which was optimal when he was alone in the market.

We now analyse the third step. The incumbent now reacts to this price and maximises

$$\text{Max } \pi_A = [P_A - w(1+g+d)][(P_B^* - P_A)/t] \quad (13)$$

(P<sub>A</sub>)

The first order condition yields

$$P_A^{**} = [2t + R_p + 7w(1+g+d)]/8 \quad (14)$$

By considering the optimal s found in the FT's problem we get:

$$P_A^{**} = w(1+g+d) + sw/2 \quad (15)$$

By replacing in the condition of consumer's indifference we get

$$x^{**} = \frac{2t + R_p - w(1+g+d)}{8t} \quad (16)$$

Remembering that P<sub>A</sub><sup>\*\*</sup> and x<sup>\*\*</sup> (P<sub>A</sub><sup>\*</sup> and x<sup>\*</sup>) represent the optimal incumbent price and market share after (before) fair trader entry the change in welfare may be written as

$$\int_0^{x^{**}} [P_A^* - P_A^{**} - tx] dx - \int_{x^{**}}^{x^*} t(x^* - x) dx + \int_{x^{**}}^{x^*} (R_p - P_p) dx + \int_{x^*}^1 (R_p - P_p) dx \quad (17)$$

It is easy to see that  $x^{**} < x^*$  and that  $P_A^{**} < P_A^*$  if  $R_p > w(1+g+d+s)$ , which is always true for the existence of positive market share of the fair trader.

The welfare change in (17) has four components. The first regards those still buying the incumbent product. They are better off since they now pay a lower price. The second and the third is for those moving from the incumbent to the entrant. They are better off by revealed preferences since they prefer the entrant to the incumbent even though their welfare would be higher by just remaining with the incumbent. The extent of their welfare improvement is measured by the second and the third term. The fourth term is for those who were not buying before and now buy

from the fair trader. The difference between the reservation price and the fair trader price measures their welfare improvement.

As a consequence, welfare is definitely higher after the incumbent reaction than before. This is because the PMP's reaction is an increased competition in prices which improves welfare of customers buying from the incumbent and leaves unchanged welfare of customers buying from the entrant. The move also generates a shift of consumers from the entrant to the incumbent but these consumers are, by definition, better off if they decide to change product (see Figure 2). ■

### 3.2 Ethical imitation and consumers welfare

We assume here that, after his optimal price reaction to the ethical entrant, the incumbent optimally chooses a new location at given prices. The assumption that the location choice comes after the price choice relies on the higher adjustment costs in changing ethical location (i.e. moving to a more environmentally compatible production process, organizing a transfer to producers in the South) with respect to varying prices. The assumptions of this game may be seen as more realistic in the case in which the incumbent is conceived as a cartel of incumbents which collude in prices. This may make easier for the incumbent(s) to respond with changes in location than with changes in price. This model is also a useful benchmark to analyse the different behaviour of the incumbent in more realistic games in the rest of the paper.

In this version of the model we reasonably assume that there are no “free lunches” in ethical responsibility and, in order to move right in the ethical location, the incumbent must transfer a positive sum to producers in the South exactly as the fair trader does. Since  $a \in [0,1]$  we argue that  $(as)$  is the total incumbent transfer, where  $(s)$  is the fair trader transfer and  $(a)$  the

incumbent's location choice. This parametric choice ensures that, if the incumbent chooses an ethical location identical to that of the fair trader ( $a=b=1$ ), he transfers exactly the same amount to the South.

*Proposition 3 If the incumbent is free to change his ethical location after his price maximization we obtain an additional Pareto improvement for consumers in the North from the entry of the ethical producer when consumers marginal costs of buying below their ethical standards are higher than producer's marginal costs of ethical imitation*

In this proposition we want to verify whether the incumbent, after his price reaction to the ethical producer's entry, finds it optimal to change his ethical location and to imitate his competitor. The profit maximising incumbent therefore chooses ethical location under his optimal price (15) and under the optimal price of the incumbent  $P_B^*$  (11)

$$\text{Max } \pi_A = [P_A^{**} - w(1+g+d+as)][(P_B^* - P_A^{**})/t] \quad (18)$$

(a)

the first order condition is

$$[P_A^{**} - w(1+g+d)] - sw[(P_B^* - P_A^{**})/t] = 0 \quad (19)$$

and yields the following optimal location

$$a^{**} = (1/4t)(t - sw) \quad (20)$$

The incumbent optimal location is higher than zero when consumers marginal costs of buying a product below their ethical standard ( $t$ ) are higher than incumbent marginal costs of ethical imitation ( $sw$ ).<sup>12</sup> If the contrary occurs, the nonnegative locational constraint is hit and the incumbent finds it optimal not to change his location.

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<sup>12</sup> Marginality is intended here in terms of ethical distance and not of the amount of production.

Substituting in (20) for the entrant optimal location ( $s^*$ ) we obtain

$$a^{**} = (1/4t)[2t - R_p + w(1+g+d)]/4 \quad (21)$$

It is clear that the possibility of ethical imitation after setting one's own optimal price strategy generates an additional Pareto improvement for consumers in the North when  $t > sw$ . Those buying from the incumbent have lower costs of ethical distance, those moving from the entrant to the incumbent product after the ethical imitation of the latter are better off by revealed preferences. Producers in the South are also better off as they receive higher transfers. ■

A clear limit of this version of the model is the two-step incumbent strategy: setting an optimal price reaction and after, given this price reaction, choosing the optimal ethical imitation. A more realistic assumption is that the incumbent may simultaneously choose price and ethical location. This case will be analysed in the following section

### 3.3 Joint price and ethical location choice of the incumbent and consumers welfare

In his simultaneous price-location choice the incumbent maximizes:

$$\text{Max } \pi_A = [P_A - w(1+g+d+as)][(P_B - P_A)/t+a] \quad (22)$$

(a, Pa)

under i) the nonnegative location constraint  $a \geq 0$ ; <sup>13</sup> ii) the positive mark-up constraint and iii) the nonzero sales price constraint  $P_B > P_A$ . <sup>14</sup>

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<sup>13</sup> This constraint is added to rule out positive values generated by the product of negative margins and negative market shares

First order conditions show that the problem has no interior optimum. We therefore look for a maximum along the border of the *feasible set* - which is a rectangle delimited by the constraints rewritten as i)  $1 \geq a \geq 0$  and ii)  $P_B > P_A > w(1+g+d+as)$ .

By comparing profit function in the optimal points we find that, when the marginal cost of ethical distance is lower than the marginal cost of ethical imitation ( $t < sw$ ), the incumbent chooses maximum ethical differentiation (Becchetti and Solferino, 2003) with  $a^* = 0$ . On the contrary, when  $t > sw$ , we obtain the following solutions for the optimal price and location of the incumbent:

$$P_A^{**} = P_B - \varepsilon$$

$$a^{**} = \frac{2t + R_p - w(2 + g + d)}{8sw} - f(\varepsilon) = \frac{1}{2} - f(\varepsilon) \quad (23)$$

where  $f(\varepsilon) = \varepsilon(1 + sw/t) / (2sw)$ . These solutions yield the following equilibrium market share for the incumbent:

$$x^{**} \rightarrow a^{**} = \frac{2t + R_p - w(1 + g + d)}{8sw} \quad (24)$$

Again, also in this case, we have a Pareto improvement with respect to the situation before FT's entry. Net gain may be written as:

$$\int_0^{x^{**}} [R_p - P_A^{**} + t(x - a^{**})] dx - \int_0^{x^*} [R_p - P_A^* - tx] dx + \int_{x^{**}}^1 (R_p - P_B) dx \quad (25)$$

The welfare change has two main components. The first, given by the algebraic sum of the two first terms of (25), regarding those still buying the incumbent product. It's easy to see that these consumers pay a higher price but they gain from their reduced

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<sup>14</sup> This last constraint is justified by the fact that, to be competitive the PMP must have a price at least slightly lower than the FT in order to conquer all consumers located at his left.

ethical distance. The last component, or the third term, is for those who were not buying before and now buy from the fair trader. The difference between the reservation and the fair trader price measures their welfare improvement.

*Proposition 4. North consumers welfare is higher under the joint price-location maximisation with respect to the fixed location case*

To compare welfare between this and the fixed location case consider that the incumbent has a relatively higher price but has reduced ethical distance with the entrant in this case with respect to fixed location.

The welfare change under joint location with respect to the fixed location case is equal to:

$$\int_0^{x'_J} [R_r - P'_a - t(x-a)]dx + \int_0^{x'_F} [R_r - P_n]dx - \int_0^{x'_F} [R_r - P'_a - tx]dx - \int_0^{x'_F} [R_r - P_n]dx \quad (26)$$

where superscript J (F) indexes market share, ethical location and incumbent price under the joint price-ethical location (fixed ethical location) choice

This expression may be simplified, after some algebraic passages, into

$$\int_0^{x'_J} (P'_a - P'_a + ta)dx + \int_0^{x'_F} (P_n - P'_a - tx)dx + \int_0^{x'_F} tadx > 0 \quad (27)$$

This inequality holds if costs of ethical distance are high enough, or  $t > [Rp - w(1+g+d)]/2$ . Consider that this condition always holds when  $x^* < 1$  or the PMP market share is less than one before FT's entry.<sup>15</sup> Therefore consumers are better off when the incumbent can contemporarily choose new price and ethical location than when ethical location is fixed. ■

This is because, even though the incumbent price is lower under fixed location, the reduction in ethical distance more than

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<sup>15</sup> The demonstration for this condition is provided in an Appendix available upon request.

compensates those still buying from the entrant under the joint price-ethical location case (first part of the expression), while those moving from the fair trader to the incumbent are better off by revealed preferences and their gain is represented by the second and third part of the expression.

#### **4.1 Fair trade, consumers welfare and government intervention: duty exemption on the socially responsible producer in the game with fixed location**

In the former section we found that the entry of a SR producer in a previously monopolistic market creates a welfare improvement for consumers in the North (and also a welfare improvement for producers of raw materials in the South). We also show that this result is obtained even in the limiting case in which we assume that the price of the entrant is exogenous and set at the highest level compatible with nonzero sales. We showed that the Pareto improvement is larger if we endogenise the behaviour of the SR entrant and consider price and location reaction of the PMP.

Being aware of the positive welfare effects of the entry of SR producers (both for consumers in the North and producers in the South) the government might decide to support FT's initiative by reducing duties he has to pay on imported products.

Therefore in this section we want to analyse the potential effect of this compared to other feasible government policies.

By inspecting optimal prices and market shares under fixed location (equations 10,11,15 and 16) we immediately find that an increase in duties for imported products rises prices of both duopolists without effects on market shares. As a consequence, consumers welfare is decreased if there are government expenditure spillovers (the money collected with the duty does not translate completely into a provision of public goods).

Assume now that the government decides to support SR production and recognises the social value of FT activity by eliminating the duty for the fair trader only.

The consumers indifference condition when the FT has duty exemption becomes:

$$\frac{R_p + w(1 + g + d)}{2} + tx = w(1 + g + s) \quad (30)$$

and the incumbent market share changes into

$$x = \frac{w(1 + g) + 2sw - dw - R_p}{2t} \quad (31)$$

The Fair trader therefore maximises:

$$\text{Max}_s T = s \left[ \frac{2t - w(1 + g) - 2sw + dw + R_p}{2t} \right] \quad (32)$$

and his optimal location becomes

$$s(d) = \frac{2t - w(1 + g) + dw + R_p}{4w}. \quad (33)$$

It is possible to show that the relationship between the new price and the old one is

$$P_B(d) = P_B^{old} - \frac{dw}{2}. \quad (34)$$

This shows that part of the duty is transferred into lower prices and part into higher transfers to the South.

In the fixed location game the incumbent reacts only by changing prices. His new optimal price is clearly lower than without the exemption since it becomes :

$$P_A(d) = \frac{7w(1 + g) + 2t + R_p + 5dw}{8} \quad (35)$$

The incumbent market share shrinks to  $x^*(d) = \frac{sw - (dw/2)}{2t}$ .

The comparison with the policy of duty exemption for the FT

with that of direct government aid leads us to formulate the following proposition

*Proposition 5 (subsidiarity principle): in the fixed location game a policy of duty exemption for the fair trader only may be welfare improving for consumers in the North with respect to a policy of duty collection from both players and destination of part of them to the South. The relative preference for the first policy is increasing in the FT transfer to the South and decreasing in the ex ante duty/unit cost ( $d/w$ ) ratio. Under reasonable conditions the indirect policy increases the amount of resources transferred to the South.*

To demonstrate this proposition consider that the welfare effect for consumers in the North without the subsidy is

$$\int_0^{\frac{w-d}{2}} [R_p - P_A^* - t(x-a)] dx + \int_{\frac{w-d}{2}}^1 [R_p - P_B] dx + \int_0^1 d(1 - \xi - \tau_A) dx \quad (36)$$

where  $P_A^*$  is the optimal incumbent price in the fixed location game without the duty exemption. The first (second) part of the (36) is welfare of consumers of the incumbent's (FT's) product, the third part is welfare arising from resources collected by the state with the duty and redistributed to citizens after tax withhold ( $\tau$ ) and spillover wastes determined by inefficiency of the public sector ( $\xi$ ).

The welfare of consumers in the North after the subsidy is:

$$\int_0^{(s-d/2)w/2t} [R_p - P_A^* + wd/4 - t(x-a)] dx + \int_{(s-d/2)w/2t}^1 [R_p - P_B(d)] dx + \int_0^{(s-d/2)w/2t} d(1 - \xi - \tau_A) dx \quad (37)$$

As a consequence net gains after duty exemption will be given by the difference between (36) and (37). Rearranging the net gain expression we find that welfare under the two scenarios is the same when:

$$\xi = H, \text{ where } H = \frac{16t + 7d - 12s}{16(2t - s + d/2)} - \tau \quad (38)$$

Under this condition, if  $\xi > H$  consumers are better off under the duty exemption for the fair trader.

The expression shows that the equilibrium government inefficiency which makes consumers indifferent between the two options must be higher if the duty is higher ( $\partial H / \partial d > 0$ ) and smaller, the larger the transfer to the South (if  $t$  is not too low) and the tax withhold on duty revenues.

The formula also shows that both the duty and the transfer have a dual (positive and negative effect) on the right hand side of the inequality. This is because, if the duty is high, the reduction of the incumbent market share after FT's exemption is stronger but this has both a positive and the negative effect on welfare. The positive effect is the reduced costs of ethical distance paid by consumers and higher price competition from the incumbent due to the increased competition in both prices and ethical location from the entrant. The negative effect is the reduced amount of resources collected by the government and transferred (after direct aid and spillovers) to consumers.

In the same way, a higher transfer to the South also has a dual effect. It implies a higher ex ante share for the incumbent with a positive and a negative effect related again to the costs of ethical distance and to the resources collected by the state (remember that ex post these resources are collected only from the incumbent).

The effect on the relative preference between the two policies of the consumers perceived marginal costs of ethical distance ( $t$ ) is ambiguous. On the one side, it raises the ex ante FT's share and therefore government budget losses for the exemption, on the other side, it raises consumers appreciation for the increased ethical stance of the FT's after the exemption.

Therefore, when conditions expressed by equation (38) hold,<sup>16</sup> the policy of duty exemption to the FT has two positive effects. It improves welfare of consumers in the North and increases resources transferred to the South if  $s > \tau d$  as it is reasonable to assume. ■

#### **4.2 Fair trade, consumers welfare and government intervention: duty exemption for both producers in the game with fixed location**

The results obtained in the previous section lead us to wonder whether it would not be better to remove duties on both producers.

In this case consumers' indifference condition turns into:

$$\frac{R_p + w(1 + g)}{2} + tx = w(1 + g + s) \quad (39)$$

and incumbent market share becomes

$$x = \frac{w(1 + g) + 2sw - R_p}{2t} \quad (40)$$

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<sup>16</sup> A simulation with reasonable parameters ranges for (s) and (d), consistently with our comments on the dual effect of (d), shows that the transfer range needed to obtain values of  $\epsilon$  compatible with the possibility that the duty exemption results Pareto superior ( $\epsilon < .3$ ) is progressively higher as far as d grows. For  $d=.5$  we need  $s \in [2.6, 1.3]$ , for  $d=.8$   $s \in [2.8, 1.4]$  and so on (in this example the share of government resources directed to aid is assumed to be 1 percent and  $t=1$ ). The rationale is that for an high s the FT's market, and subsequently the reduction of the amount of resources collected by the government (through the duty paid by FT), is small enough. Anyway the transfer must be neither too low nor too high to make FT's exemption Pareto preferred to the old policy. If it is too high the FT moves too much to the right and the incumbent may actually rise prices reducing benefits for consumers, if it is too low the FT's share ex ante is higher and therefore the costs of reduced resources collected by the state after the exemption are higher.

The entrant optimal location becomes:

$$s(d) = \frac{2t - w(1 + g) + R_p}{4w} \quad (41)$$

while his price turns into

$$P_B(d) = w(1 + g) + sw + \frac{dw}{4} = P_B^* - \frac{3dw}{4} \quad (42)$$

where  $P_B^*$  is given by (11). Notice that the higher competitive pressure when also the incumbent is exempted from the duty leads the entrant to transfer more of the duty into lower prices (than into more ethical location) with respect to the previous case. The incumbent reaction is such that his optimal price turns into

$$P_A(d) = \frac{7w(1 + g) + 2t + R_p}{8} \quad (43)$$

while his market share becomes

$$x^* = \frac{sw + (dw/4)}{2t} \quad (44)$$

and his higher than before.

*Proposition 6 (the selective subsidiarity principle): in the fixed location game a policy of duty exemption for the fair trader only may be welfare improving for consumers in the North with respect to a policy of duty exemption for both players. The relative preference for the first policy is increasing in the FT transfer to the South and in the marginal costs of ethical distance perceived by consumers.*

The welfare difference between a policy of duty exemption for the FT's only and for both players is

$$\begin{aligned}
& \int_0^{x_3} (R_P - P_A + \frac{7dw}{8} - tx) + \int_{x_3}^1 \left( R_P - P_B + \frac{3dw}{4} \right) dx - \int_0^{x_2} \left( R_P - P_A + \frac{dw}{4} - tx \right) dx - \\
& - \int_{x_2}^1 (R_P - P_B) dx - \int_0^{x_2} d(1 - \xi - \tau_A) dx
\end{aligned}
\tag{45}$$

By solving this expression we find that, for  $\xi < H'$ , where

$$H' = -\tau_A + \left[ \frac{40s - 29d - 32t}{64(s - d/2)} \right]
\tag{46},$$

a duty exemption for the fair trader only is better than one for both players.

As we can clearly see the impact of different factors on the relative preference of the two policies is reversed.<sup>17</sup>

When the duty/wage ratio is .5 we need a  $s$  lower than 1.5 to make FT only exemption preferred, when it is .6,  $s$  must be lower than 1.4 and so on. If  $s$  is too high, a duty exemption for the FT's only is not preferred by consumers since the incumbent may increase his prices reducing benefits for consumers. If it is low, a FT only exemption is always preferred because resources lost for the government are always more when both are exempted.

#### **4.2 The effects of FT's duty exemption when the incumbent jointly chooses price and ethical location**

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<sup>17</sup> Note that a high cost of ethical distance increases the convenience of a duty exemption for both players. The rationale is that, with high  $t$ , the FT has a larger market share and the incumbent is forced to more price competition. A duty exemption for both, differently from an exemption for the FT's only, maintains this strong price competition with positive effects on consumers welfare.

In this section we analyse how welfare changes when the entrant obtains duty exemption in the model in which the incumbent jointly chooses price and ethical location

Consider that, in this case, the incumbent maximises

$$\text{Max}_{P_A, a} \pi_A = [P_A - w(1 + g + d + as)] \left[ \frac{P_B - P_A}{t} + a \right] \quad (47)$$

under i) the nonnegative location constraint  $a \geq 0$ ; ii) the positive mark-up constraint; iii) the nonzero sales price constraint  $P_B > P_A$ .

The optimal incumbent price function in this case turns into

$$P_A = w(1 + g) + \frac{sw + at + asw}{2} + \frac{3dw}{4} \rightarrow P_A(d) = P_A^* - \frac{dw}{4} \quad (48)$$

and is clearly lower than in the case in which the entrant pays the duty.

By replacing the incumbent optimal price as a function of his own ethical location into the profit function we get

$$\frac{\partial \pi_A}{\partial a} = (t - sw) \left[ \frac{sw + at - asw - dw/2}{2t} \right] \quad (49)$$

From the inspection of this derivative it is clear that, if  $t < sw$ , ethical location reduces incumbent profits.

When looking for the solution of the problem, by substituting the price reaction function and solving for (a), we find that there are not internal optimal points.

As in section 3.3 we find that the optimum is along the border of the *feasible set*, (the rectangle delimited by the constraints rewritten as i)  $1 \geq a \geq 0$  and ii)  $P_B > P_A > w(1 + g + d + as)$ ).

Consistently with the analysis of the relationship between profits and ethical imitation we find that, when  $t < sw$ ,  $a^* = 0$ , while, when  $t > sw$ ,  $P_A = P_B - \varepsilon$  and

$$a^* = \frac{1}{2} - \frac{dw}{2} \left( \frac{1}{2sw} \right) - \frac{\varepsilon}{2sw} \left[ \frac{sw}{t} + 1 \right] \quad (50)$$

therefore the incumbent will chose to compete only in prices if marginal costs of ethical distance perceived by consumers are lower than marginal costs of ethical imitation. If the inequality is reversed, he will choose to imitate up to the point in which his price is slightly lower than the entrant price (minimum price differentiation). Since the price of the entrant is lower without the duty, also the incumbent price and ethical imitation will be lower. Note that, when  $t > sw$ , the duty exemption reduces incumbent ethical imitation since gains from this strategy are reduced.

The solution of the model shows that, when  $t < sw$ , the problem reduces to that of fixed location. When  $t > sw$  - to understand whether the combination of lower prices relatively more (less) ethical location of the entrant (incumbent) increase consumers welfare with respect to the situation without duty exemption - we must compare welfare when both players pay the duty:

$$\int_0^{x_1} [R_P - P_A - t(x - a_1)] dx + \int_{x_1}^1 [R_P - P_B] dx + \int_0^1 d(1 - \xi - \tau_A) dx \quad (51)$$

and welfare when only the incumbent pays it:

$$\int_0^{x_2} [R_P - P_A + wd/4 - t(x - a_2)] dx + \int_{x_2}^1 [R_P - P_B(d)] dx + \int_0^{x_2} d(1 - \xi - \tau_A) dx \quad (52)$$

with

$$a_1 = \frac{1}{2} - \frac{\varepsilon}{2sw} \left( 1 + \frac{sw}{t} \right) \quad (53)$$

$$a_2 = \frac{1}{2} - \frac{dw}{2} \left( \frac{1}{2sw} \right) - \frac{\varepsilon}{2sw} \left[ \frac{sw}{t} + 1 \right] \quad (54)$$

We can clearly see that these two expressions are similar to those we obtain in the case of fixed location. The main difference is in the reduction of incumbent ethical imitation when he is the only one to pay the duty. Therefore a higher  $\varepsilon$  will be required to make the fair trade exemption convenient.

The threshold value to make FT's duty exemption superior to the direct government aid is in this case

$$\xi = -\tau + \frac{4ts + 8ds - dt}{8s(2s + d)} \quad (55).$$

Reasonable parameters values for the Pareto preference of the FT's exemption policy are, with  $d=.5$ ,  $s \in [.4, 0]$ , while, with  $d=1$ ,  $s \in [.3, 0]$ . Therefore, with a large  $s$ , the FT's only exemption is no more preferred to the old policy as it was in the fixed location case.<sup>18</sup>

Consider also that exemption for both players is preferred to exemption for the FT's only when  $H' < \varepsilon$  where

$$H' = -\tau_A + \frac{32s - 24t - 32d + (3dt / s)}{32(2s - d)}, \quad (56)$$

By taking into account reasonable parameters ranges ( $t=s+.1$  and  $\xi < .3$ ) we find that exemption for both is preferred when, with  $d=.5$ ,  $s \in [2.5, 0]$ . Therefore, the exemption for the FT' only is preferred only for very high values of  $s$ . This is reasonable as, when  $s$  is very high,  $t$  is also very high. Therefore, with extremely high costs of ethical distance, consumers prefer exemption for the producer which in equilibrium has a more ethical product

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<sup>18</sup> This occurs because after the FT's duty exemption the incumbent is forced to reduce his imitation with negative effects on consumers costs of ethical distance.

### 4.3 The effects of FT's duty exemption in a three stage game of price and ethical location

We analysed so far different versions of the ethical differentiation game. Each of them considered the traditional producer as already being in the market when the FT comes in. In this section we analyse the effects of duty exemption on ethical producer in the game in which the profit maximising producer (from now on also PMP) may choose his original location already knowing that the FT is going to enter the market. We devise a three-stage game in which the PMP is Stackelberg leader in location by choosing it in the first stage. The FT chooses location in the second stage by maximising transfers to the South, while the PMP chooses price in the last stage of the game maximising profits.

We solve the model by backward induction starting from the solution of the third stage (price of the PMP as a function of location of both producers), then passing to the solution of the second stage (location of the FT as a function of the location of the PMP) and, finally, solving in the first stage the location of the PMP.

Becchetti-Solferino (2003) show that in this model the PMP always finds it optimal ethical imitation and minimum price differentiation, differently from what happens when the PMP jointly maximises prices and ethical location. This is because, even when  $t < s_w$ , the PMP knows that, by choosing ethical imitation in the first stage, he will strategically induce the FT's to increase his ethical location, therefore making room for his price increase. Equilibrium values of this game without duty exemption are  $P_A = P_B = \epsilon$ ,  $s^* = [t(2-a)/2w(1-a)]$  and  $a^{**} = 2/3 - 4\epsilon/3t$ .

We want to analyse here the effects of different policies given the structure of the game. This leads us to formulate the following proposition.

*Proposition 7. A duty exemption for the fair trader in the three stage game in prices and ethical location in which the profit maximising producer is Stackelberg leader in location has the*

*effect of reducing further the profit maximising producer's price, of increasing the fair trader's ethical stance, reducing, though, the propensity to imitate of the profit maximising producer*

To solve the model with FT's duty exemption consider that, in the third stage, the PMP maximises

$$\text{Max}_{P_A} \int_a^1 [P_A - w(1 + g + d + as)](x^* - a)da + \int_0^a [P_A - w(1 + g + d + as)]da | P_A \leq P_B \quad (57)$$

and

since the condition for the second part of the maximand is always respected (otherwise the market share of the PMP goes to zero) the problem reduces to:

$$\text{Max}_{P_A} \pi_A = [P_A - w(1 + g + d + as)] [(P_B - P_A) / (t + a)] \quad (P_A)$$

Solving his first order condition we obtain the following optimal price as a function of the optimal location of both players:

$$P_A = w(1 + g) + \frac{sw + at + asw}{2} + \frac{3dw}{4} \quad (58)$$

Consider that, in this case with respect to the standard case the duty exemption has the effect of reducing the optimal incumbent price as a function of his ethical location.

$(-sw/2)$  is the component of the solution of the fixed location game in which the PMP chooses to stay halfway between the price of the FT and his zero profit solution. The PMP's optimal price is his fixed location optimal price plus an additional part,  $(aw+at)/2$ . This part of the result says that added costs of the PMP, in case he decides to mimic the FT, must be partially incorporated into higher prices. The duty exemption adds to it a further price reduction (of  $(1/4)dw$ ) and therefore proportional to labour costs.

Solving for the optimal market share we find

$$x^* = \frac{P_B - P_A}{t} + a = \frac{sw + at - asw - dw}{2t} \quad (59)$$

We therefore find that for the PMP a decision of ethical imitation has positive effects on his market share, on the one side, but also negative effects which are proportional to the marginal cost of raising transfers to the South. We also find that the duty exemption therefore generates an additional reduction in the PMP's market share.

In the second stage the fair trader chooses location by maximising his transfers to the

South

$$\text{Max } T = s[L - x^*] = s[L - (sw + at - asw - dw)/2t] \quad (60)$$

(s)

His first order condition gives the following optimal ethical location as a function of the PMP location

$$s^* = \frac{t(2 - a) + dw}{2w(1 - a)} \quad (61)$$

With duty exemption the FT finds it optimal to become more ethical (to transfer more to the South) in proportion of the duty paid by the PMP.

This equation may also be interpreted as a reaction function of the FT to the PMP ethical location.

In the first stage of the game the PMP solves

$$\text{Max } \pi_A = [P_A^* - w(1 + g + i + d + a)]x^* \quad (62)$$

under i) the nonnegative location constraint  $a \geq 0$ ; ii) the positive mark-up constraint and; iii) the competitive price constraint  $P_b > P_a$ .

By substituting the PMP price and FT location reaction functions into the profit function and rearranging we get

$$\frac{\partial \pi_A}{\partial a} = \frac{2}{16t} [at - dw/2 + 2t] > 0 \quad (63)$$

As a consequence, the choice of the PMP is always that of ethical imitation up to the point in which his price is slightly lower than the FT's price and the third constraint is hit. The apparently paradoxical result is that the duty exemption reduces the PMP's incentive for ethical imitation. In fact, the optimal PMP location is  $a^* = \frac{2t - dw/2 - 4\varepsilon}{3t}$  and is lower by  $dw/6t$  than in the no

exemption benchmark.

This is because the PMP imitates up to the point in which his price is slightly lower than the FT's price.

For the welfare comparison between FT duty exemption and direct government aid in the three stage game we must solve:

$$\begin{aligned} & \int_0^{x_2} [R_P - P_A(d) - t(x - a_2)] dx + \int_{x_2}^1 [R_P - P_B + \frac{dw}{2}] dx + \int_0^{x_2} d(1 - \xi - \tau) dx - \\ & - \int_0^{x_1} [R_P - P_A - t(x - a_1)] dx - \int_{x_1}^1 [R_P - P_B] dx - \int_0^1 d(1 - \xi - \tau) dx \end{aligned} \quad (64)$$

From this difference we obtain that the FT duty exemption is preferred to direct government policy if the following inequality is respected or government spillovers (lhs) are higher than the expression in the right hand side:

$$\xi > -\tau + \left[ \frac{11d - 4t}{12(2t + d)} \right] \quad (65)$$

Note that this expression depends only from  $d$  and not from the transfer. To give an idea of the values involved government spillover must be around .3 or lower to have a welfare improvement with FT's duty exemption when duty is 50 percent of the marginal cost  $w$ . Benefits from the duty exemption are easily retrieved from equilibrium conditions of the game: the FT reduces prices and increases ethical location, the PMP follows the FT with his minimum price differentiation policy. The two

negative effects are that the PMP must reduce his ethical location due to his minimum price differentiation policy and that the government reduces resources transferred to consumers. If the duty is higher, consumers loose more government expenditure from the state and the incumbent has to reduce his ethical location, this negative effect though is less important because the FT's market share is increasing. Therefore it is the first effect to make that the FT exemption is no more Pareto preferred.

If the exemption is extended to both we get the following values respectively for the optimal FT's location, the PMP price, market share and ethical location

$$s^* = \frac{t(2-a) - dw/4}{2w(1-a)} \quad (66)$$

$$P_A = w(1+g) + \frac{sw + at + asw}{2} - \frac{7dw}{8} \quad (67)$$

$$x^* = \frac{sw + at - asw + dw/4}{2t} \quad (68)$$

$$a^* = \frac{2t + dw/4 - 4\varepsilon}{3t} \quad (69)$$

The PMP chooses a more ethical location with respect to the no exemption and to the FT only exemption case.

$$\int_0^{x_3} [R_p - P_A(dd) - t(x - a_3)] dx + \int_{x_3}^1 [R_p - P_B + \frac{3dw}{4}] dx -$$

$$- \int_0^{x_2} [R_p - P_A - t(x - a_2)] dx - \int_{x_2}^1 [R_p - P_B] dx - \int_0^{x_2} d(1 - \xi - \tau) dx$$

Exemption to FT only is preferred to exemption to both when the following expression

$$(70)$$

is lower than zero

Or when

$$\xi > -\tau + \left[ \frac{24t - 15d}{16(4t - d)} \right] \quad (71)$$

note that, by comparing this and the previous condition, when  $\xi$  is high enough to make the duty preferred to direct government intervention this last condition cannot be met. Therefore exemption to both is always preferred.

## 5. Conclusions

Corporate responsibility is gradually becoming an important issue in competition as far as market participants learn that the first pioneeristic socially responsible producers are gaining relevant market shares.

The existence of consumers choosing products which are relatively more expensive, but more consistent with their values is both a confirmation of the importance of social and environmental responsibility and also an indirect revelation of a preference structure in which social and environmental quality matter.

In this paper we clearly show that, if this is the case, the entry of a zero profit "socially responsible pioneer" generates a Pareto improvement for several reasons: it satisfies consumer tastes for social responsibility, it triggers a price undercutting strategy and, under given conditions, ethical imitation from the non ethical incumbent.

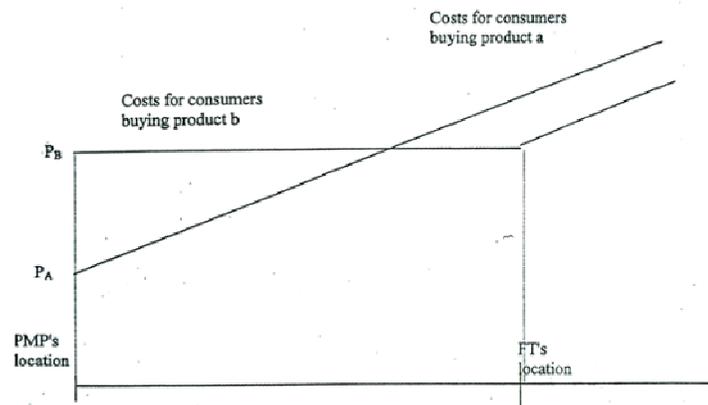
These changes reduce the distance between the private and the social optimum in a world in which prices but also social responsibility matter. As a consequence, we wonder in the second part of this paper if a social planner may find it optimal to support social responsibility with tax advantages.

We therefore compare the impact on welfare of a duty exemption on fair trader or on both players with a benchmark case in which the government collects the duty from both players and uses part of it for a policy of direct aid to the South.

We outline in a “subsidiarity principle” conditions under which a policy of direct aid to the South is inferior to “indirect intervention” through duty exemption for the fair trader or both players, when FT’s transfer to the South and the ex ante duty are contained in a reasonable range of values. We also show that the conditions for the application of the subsidiarity principle (the relative convenience of an indirect with respect to a direct aid policy) are less strict when the exemption is extended to both players.

Even though we do not explicitly formalize costs of domestic competitors under a reduction of duties our results implicitly suggest that, with a reasonable representation of consumers utility functions justified by their revealed preferences, departures from the current EU agricultural policy may be politically sustainable. If the subsidiarity principle is applied, consumers in the North may be better off and some of their welfare gains may be transferred to North producers negatively affected by the duty removal. Furthermore, the indirect development policy, together with the duty removal, may definitively be welfare improving for producers in the South.

**Figure 1. the Hotelling game of ethical imitation and the asymmetric costs of ethical distance**



**Legend:** moving to the left implies choosing a product below one's own ethical standards (and therefore is costly) while moving to right implies choosing a product above one's own ethical standards (and therefore does not give any added psychological value to the buyer).



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