Fair Trade: in or out the Market?

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Abstract

This paper focuses on a sustainable perspective of fair trade concept. We propose a simple model to provide some theoretical arguments in the debate about the sale of fair trade goods in the large-scale distribution. The main hypothesis of our model is related to the observation that some consumers are willing to pay a premium for fair trade products. We underline that the key variable for a retailer is not the percentage of consumers who are willing to pay for a fair good but how much the fair trade likers are willing to pay for it. Moreover, for some values of the parameters, it exists a unique equilibrium where the fair product is the only good sold and where fair trade likers’, traditional consumers’ and retailer’s surplus are greater than the ones when only the traditional product is sold by the retailer.

Keywords: D21, L22, L31.

JEL classification: fair trade, ethical premium, second-degree price discrimination, distribution.

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1 Introduction

With the growth of fair trade, there is today a large debate about the insertion of fair trade products into the conventional distribution network.\(^1\) Indeed, fair trade organizations have a double purpose: to help producers from the South improve their living conditions and to transform international trade relations.\(^2\) The issue of the distribution and more particularly the insertion of the fair trade into the large-scale distribution prompt a debate on priorities within this movement.

Fair Trade defines itself as an alternative approach to conventional international trade. It is a trading partnership, based on dialogue, transparency and respect, which seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers, especially in the South.

Fair trade started as a grassroots movement in the late 1960s in Europe. The aim was to alleviate poverty in the South by building direct, sustainable relationships with disadvantaged producers and providing fair access to markets in the North, using a strategy of “trade, not aid”. The alternative trade organizations (Non-Governmental Organizations) created a parallel distribution network with specialty stores managed as cooperatives and staffed by volunteers.\(^3\) In 1988, a working with a Mexican cooperative of coffee producers, who requested help in marketing their product in Europe, and a collaborator of a Dutch NGO conceived the idea of a fair trade label (Renard, 2003). Products bought, traded and sold respecting fair trade conditions would qualify for a label that would make them stand out among ordinary products on store shelves and would allow any company to get involved in fair trade. Thus, the “Max Havelaar” label was established in the Netherlands. In the late 1980s, similar non-profit fair trade organizations began labelling fair trade products to facilitate their entry into conventional markets (Raynolds, 2000). In 1997, the creation of the Fair trade Labelling Organisation International (FLO-I) united many of these labelling initia-

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\(^1\)See, for example, the virtual symposium of some French fair trade actors in march 2004, « La grande distribution : l’avenir du commerce équitable ? » http://www.changerdereg.com/accueil/.

\(^2\)IFAT (International Federation for Alternative Trade) http://www.ifat.org

\(^3\)Oxfam and Twin Trading (Great Britain), Stichting Ideele Import (Netherlands) or Artisans du Monde (France) are some alternative trade organizations.
tives. FLO-I is now responsible for setting international fair trade standards for certifying production, trade and labelling of a certain number of products.

Fair trade concerns agriculture and handicraft products, but only agricultural ones more or less transformed (coffee, cocoa, tea, honey, sugar, rice, bananas, and orange juice) can be labelled. A third-party certification agency, member of the FLO network who harmonizes the quality norms, professionalizes the control mechanisms and creates a certification structure, is in charge of making sure that fair trade criteria are respected. The movement is a global network of producers, wholesalers, retailers, certification agencies, and consumers who commit themselves to certain fair trade guidelines. Transparency is the core issue at all the levels of the production and distribution circuit. It is fundamental to maintain reputation which is the crucial competitive factor for fair trade products and labels give informations about producers. Contrary to the other certification schemes, which focus strictly on conditions at the point of production, fair trade label criteria is unique in that it covers both trade and production conditions (Raynolds, 2000).

There are general criteria for what the label guarantees. The producers have to follow certain agreements to qualify the products they produce as fair trade. Small scale farmers/producers can only be certified Fair Trade if they have formed cooperatives, associations or other organizational entities which are democratically controlled and contribute to the social and economic development of its members. The producers must tend towards the use of environmentally sustainable agricultural practices and a production of quality. Trading standards stipulate that importers have to pay a price to producers that covers the costs of sustainable production and living, pay a premium that producers can invest in development, partially pay in advance so that the producers can purchase the necessary raw materials to complete an order without falling into debt, establish long-term working relationships and contracts with producers. Certification costs are born by importers, not by producers like in organic certification. Finally, there are product-specific standards for each good that determine minimum quality, price, and processing requirements that have to be complied with.

4For example, in the United-States, fair trade products bear the “Fair Trade Certified” label and the “Fair Trade Federation” logo. TransFair USA is the third-party certification agency that places the “Fair Trade Certified” label on coffee, chocolate, cocoa, tea, bananas, and other fruits.

5Fair trade coffee producers are guaranteed that they will receive at least US$1.26. If the world market price is higher than this rate, importers pay a premium of US$0.05 per
The percentage of fair trade was estimated at a mere 0.01% of total world trade. The annual aggregate net retail value of all fair trade products sold in Europe through alternative channels and supermarkets would exceed €260 million, of which €210 million for labelled products (EFTA, 2001). Fair trade products are sold in the 2,700 or so world shops in Europe (18 countries) and they are available too in more than 43,000 supermarkets throughout Europe thanks to the labeling schemes. In North America (the US and Canada) and the Pacific Rim (Australia, New Zealand and Japan) fair trade market is later and less developed than the European one, but it is expanding much more rapidly. Total fair trade sales in these regions increased 37% during 2002, from US$183 million to US$251 million (FTF, 2003). In 2004, there were 433 certified producer organizations. In addition, the number of registered traders increased from 297 from 2003 to 406 at the end of 2004 (see on the website of FLO-I, http://www.fairtrade.net).

More and more consumers know the concept of fair trade and declare they are willing to pay a higher price for a product with fair trade criteria. In Germany, according to recent market surveys, 40% of the population believe fair trade is a good idea and 11% already buy TransFair-labelled tea or coffee, although the market share for these products is just 2% and 1% respectively. Almost 37% of Germans are willing to pay a higher price for coffee if it is guaranteed that the benefits are distributed to producers in developing countries (EFTA, 2001). Nevertheless, farmers groups produce more quantity than they can sell to fair trade markets, the outlets are still too low to absorb the potential production. In a French study (AlterEco, 2004), to the question “why have you never bought fair trade products?” 39.1% of the 495 questioned persons argue the lack of information, 36.7% say not to know a retail outlet, 20.3% advance a high price, and among the other arguments (32%), some respondents mention the lack of signing in retail outlets. Thus, fair trade is curbed by the lack of market opportunities and its future depends on the consumers’ better knowledge.

The introduction of fair trade products in large-scale distribution is a solution to this double objective. But the viable niche markets created by fair trade attract dominant actors of the agri-food industry and of the large-scale distribution, who develop some strategies to benefit from the image pound more. Certified organic coffee gets a further premium of US$0.15 per pound.

\(^{5}\)For example, in France in 2003, 66.9\% of food purchases were made in supermarkets (INSEE, 2004).
associated with the fair trade values. At the moment, there appear some parallel labels based on weaker criteria, such as “Bio Equitable” in France. Some distributors create their fair private labels, certified or not by fair trade label. Thus, incorporate the large-sale distribution represents some risks. Given the great power of the distributors, they may impose their conditions: wholesale price cutting pressure, creation of less strict labels, risk of delisting, lack of long term contracts, and capture of the most lucrative niche. For some fair trade organizations, as Fédération Artisans du Monde, it is impossible to participate in large-scale distribution, because the distributors are not ethic per se. Fair trade organizations should withdraw from large-scale distribution since the multinationals that structure it are part of the problem that fair trade is trying to fight against. The debate is acute in fair trade organizations, because some fair traders exclusively deal with supermarkets.

We propose a simple model to provide some theoretical arguments in this debate. We want to explain the motivation of a retailer to sell some fair products and to show how a fair trade agency can react to the different strategies of the retailer’s according her preferences between fair price received by producers and quantities of fair product sold. The main hypothesis of your model is related to the observation that some consumers, called fair trade likers, are willing to pay a premium for fair trade products, function of producers’ revenue. We underline that the key variable for a retailer is not the percentage of consumers who are willing to pay for a fair good but how much the fair trade likers are willing to pay for it. Moreover, it exists an equilibrium where the fair product is the only good sold and where the surplus of fair trade likers and traditional consumers are greater than the ones when only the traditional product is sold by the retailer. From a theoretical point of view, this paper is related to several branches of the literature: vertical relationships, second degree price discrimination. Fair trade is the object of some theoretical approaches (Adriani and Becchetti (2002), Becchetti, Solferino (2003), Immordino (2002)), but to our knowledge the supply of fair products by large-scale distribution is not modeled.

This paper proceeds as follows. In the next section, we describe the assumptions of the model and the possible strategies of a retailer in front of the possibility to sell a fair product. Section 3 analyses the response of the fair trade certifier in terms of fair wholesale price and consumers’ surplus. Section 4 presents a conclusion.
2 The distributor in front of fair product

2.1 The model

On the basis of a sample of 808 Belgian citizens and using conjoint analysis, De Pelsmacker, Driesen, Rayp (2005) study the importance of a fair trade label in the coffee buying decision and the willingness to pay for such a fair product. On average, a fair trade label is considered as the second most important coffee attribute, behind the brand and as important as aroma. The authors divide coffee buyers into four segments on the basis of the relative importance they attach to various coffee attributes (Brand, Blending, Flavor, Package, Fair Trade Label). 11% of the respondents expressed a high preference for fair trade label and are named “fair trade lovers”. For 40% of them, called the “fair trade likers”, fair trade label comes out as the most important attribute but not as the prominent one. The two other segments are the “flavor lovers” (24%) and the “brand lovers” (25%).

Based on this empirical study, we model the sell of fair trade products as follows. A single retailer can launch a fair trade product, in addition to the traditional product.\(^7\) The both products are quality equivalent. We assume that the retailer faces a unitary market consisting of two segments of consumers. A fraction \(\lambda\) of the market are fair trade likers and \(1 - \lambda\) are traditional consumers or products seekers. Furthermore, fair trade likers give value to producers’ welfare and they are willing to pay a premium for a fair trade product that is related to its wholesale price \(w_f\). As so, we define the demand function as follows:\(^8\)

\[
d(p) = \begin{cases} 
1 + \alpha w_f - p & \text{for the } \lambda \text{ fair trade likers} \\
1 - p & \text{for the } 1 - \lambda \text{ product seekers.}
\end{cases}
\]

The parameter \(\alpha\) reflects the intensity with which fair trade likers enhance the value of the producers’ revenue, that is, the wholesale price they receive. We assume that \(\alpha \in (1, 0)\). Based on Italian scanned data and using the price hedonic model, Maietta (2003) shows that the marginal value of the

\(^7\)In many countries, the food product distribution chain is controlled by a very restricted number of actors, which gives a high market power to distributors (see Allain and Chambolle (2003) and Renard (2005)).

\(^8\)In a paper on the subject of private labels, Soberman and Parker (2004) distinguish two segments of consumers: product seekers and brand seekers. The latter are willing to pay a premium for the national brand equal to the level of advertising realized by the firm.
ethical content in coffee consumption is equal to €2.36 per kilo, with an average price of around €7.5 per kilo for coffee. De Pelsmacker, Driesen, Rayp (2005) evaluate the willingness to pay for a fair trade label. 35% of the respondents are willing to pay a price premium of 10%, 17% a premium of 20%, and 10% a premium equal to the average actual premium (27%). It is clear that greater the premium price lower the number of persons willing to pay it. The data exhibit a decreasing relation between the intensity with which fair trade likers enhance the value of the producers’ revenue and the number of fair trade likers. Including this relation in the model does not change results.

The game consists of three stages. In the first stage, the traditional producer and the fair trade certifier specify their wholesale prices simultaneously, \(w_f\) and \(w_t\) per unit purchased. In the second stage, the retailer decides on the strategy of reference list. The retailer can supply one of the type of products, fair trade (Strategy 3) or traditional product (Strategy 2), or both (Strategy 1). In the third stage of the game, the retailer sets prices for the product(s) he sells. To simplify the analysis without loss of generality, we normalize to zero the marginal cost of production and retailing for both products.

Retailer’s objective function according the strategy choose at the second stage of the game are as following:

- **Strategy 1:** \((T, F)\)
  \[
  \pi^R_1(p_f, p_t, w_f, w_t) = \lambda(1 + \alpha w_f - p_f)(p_f - w_f) + (1 - \lambda)(1 - p_t)(p_t - w_t) \tag{1}
  \]
  with \(p_f\) the retail price for the fair product, \(p_t\) the retail price for the traditional one and \(w_t\) its wholesale price.

- **Strategy 2:** \((T)\)
  \[
  \pi^R_2(p_t, w_t) = (1 - p_t)(p_t - w_t) \tag{2}
  \]

- **Strategy 3:** \((F)\)
  \[
  \begin{align*}
  \pi^R_{31}(p_f, w_f) &= \lambda(1 + \alpha w_f - p_f)(p_f - w_f) + (1 - \lambda)(1 - p_f)(p_f - w_f) \\
  & \quad \text{when } p_f < 1 \\
  \pi^R_{32}(p_f, w_f) &= \lambda(1 + \alpha w_f - p_f)(p_f - w_f) \\
  & \quad \text{when } p_f > 1 \tag{3}
  \end{align*}
  \]

We solve the game by backward induction.
2.2 The analysis

We first characterize equilibrium at the stage 2 subgame in which the retailer chooses product(s) he refers.

**Proposition 1.** At the second stage, the choice of the retailer depends on two thresholds of the fair trade product wholesale price,

\[ w_{f_{1/31}} = \frac{1 - \sqrt{1 - \left(1 - \alpha^2 \lambda\right)w_t(2 - w_t)}}{1 - \alpha^2 \lambda} \quad \text{and} \quad w_{f_{1/2}} = \frac{w_t}{1 - \alpha}. \]

(i). If \( w_f < w_{f_{1/31}}(w_t, \alpha, \lambda) \), then the retailer sells only the fair product, at a retail price such as all consumers buy this product (strategy 3 case 1 - (F)).

(ii). If \( w_{f_{1/31}}(w_t, \alpha, \lambda) < w_f < w_{f_{1/2}}(w_t, \alpha) \), then the retailer sells both products (strategy 1 - (T,F)).

(iii). If \( w_f > w_{f_{1/2}}(w_t, \alpha) \), then the retailer sells only the traditional product (strategy 2 - (T)).

**Proof.** See the appendix A.

These results are relatively intuitive and are due to two effects, represented by the derivative of the retailer’s profit in the fair trade wholesale price.

\[
\frac{\partial \pi^R(w_f, w_t)}{\partial w_f} = \frac{\lambda}{2}[-(1 - (1 - \alpha)w_f) + \alpha(1 - (1 - \alpha)w_f)] = [-q_f + \alpha q_f] < 0, \tag{4}
\]

with \( q_f \) the quantity sold of the fair trade product in the strategy 1. The first effect is direct: a greater wholesale price for a product puts the retailer off distributing it.\(^9\) The second effect is the retailer’s ability to discriminate between the both segments of consumers. This effect reduces the negative effect of the first one. As some consumers give value to the producers’ revenue, that is, the wholesale price, the retailer can use that and discriminates between consumers.

The equilibrium at the stage 2 subgame is represented by Figure 1 with \( w_t = 0.5 \) and \( \lambda = 0.4 \). If the fair trade wholesale price is so low \( w_f < \)

\(^9\)We also find this effect in the case of the traditional good: \( \frac{\partial \pi^R(w_f, w_t)}{\partial w_t} = -q_t < 0 \), with \( q_t \) the quantity sold by the traditional producer in the strategy 1.
Figure 1: Equilibrium at the stage 2

$w_{f1/31}(w_t, \alpha, \lambda)$ that it is very inferior to the traditional product wholesale price $w_t \ (w_{f1/31}(w_t, \alpha, \lambda) < w_t)$, the retailer opts for the fair product only. The dominant effect is the direct one related to the wholesale price.

In the case of an intermediate value $(w_{f1/31}(w_t, \alpha, \lambda) < w_f < w_{f1/2}(w_t, \alpha))$, the retailer sells both products, even if the fair wholesale price is lower than the traditional product one. Indeed, in the strategy 1,

$$p_f - p_t = \frac{1}{2} (w_f - w_t + \alpha w_f).$$

Even if the fair wholesale price is lower than the traditional product one, the fair retail price can be greater than the traditional product one, because of the ethical premium and the possibility of discrimination for the retailer. This is all the more true since the consumer enhances the value of the wholesale price receives by producers (high $\alpha$). In this case, the retailer fully takes advantage of the discrimination between the both segments of consumers.
Even when the fair wholesale price is greater than the traditional product one, the benefit of the discrimination is higher than its cost. This area is all the larger since consumers enhance the value of the fair trade product wholesale price and, in a lesser measure, since the number of fair trade likers is great. Intuitively, the two fair wholesale prices thresholds are increasing in the traditional wholesale price and $w_{f1/2}$ is increasing in $\alpha$. But $w_{f1/31}$ is decreasing in $\alpha$ and in $\lambda$. If the fair trade likers are willing to pay more for fair products and/or if the number of fair trade likers rises, a retailer who sold only the fair product may, after this change, sell the two types of products. This is because the retailer can better discriminate between consumers and increase the fair retail price.

Beyond the threshold $w_{f1/2}(w_t, \alpha)$, the retailer refers only the traditional product. Even if the discrimination is related to the fair wholesale price, this latter is too high.

In Figure 1, we compare the two fair wholesale prices thresholds to those, indexed by $b$, obtained using a simpler demand function

$$d^b(p) = \begin{cases} 1 + \alpha - p & \text{for the } \lambda \text{ fair trade likers} \\ 1 - p & \text{for the } 1 - \lambda \text{ product seekers}, \end{cases} \quad (5)$$

where the valuation of fair trade is independent of producers’ revenue. With this formulation, we do not obtain the discrimination effect, related to $\alpha$ in Equation 4. Indeed, with a demand independent of the wholesale price,

$$\frac{\partial \pi^R(w_t, w_f)}{\partial w_f} = -\lambda [1 + \alpha - w_f] = -q_f < 0.$$  

In this way, we show that $w_{f1/31}$ is always greater than $w^b_{f1/31}$ and that $w_{f1/2}$ is greater than $w^b_{f1/2}$ only when $\alpha > 1 - w_t$.

At the first stage of the game, the traditional producer chooses his wholesale price, $w_t$. If the retailer refers the traditional product, traditional producer’s profits are as follows. If the retailer chose the strategy 1, $\pi^T(w_t) = (1 - \lambda) \frac{w_{t}(1-w_t)}{2}$ and in the strategy 2, $\pi^T_2(w_t) = \frac{w_{t}(1-w_t)}{2}$. Thus, for all strategies chose by the retailer, the best response of the traditional producer is $w^*_t = \frac{1}{2}$.

3 The response of the fair trade certifier

At the first stage, the fair trade certifier sets the wholesale price of the fair product. With respect to her objective, we consider that she acts as a trade union.
3.1 The fair trade agency utility

We assume that fair trade certifier utility, \( U(w_f, q_f) \), depends positively on fair wholesale price, which determines the revenue of the small producers, and fair quantities sold, which represent the number of poor producers in the fair trade network. It is specified in an utilitarian form:

\[
U(w_f, q_f) = (w_f - w_{\text{min}})^\beta (q_f)^{1-\beta},
\]

and \( \beta \) is a wholesale price preference parameter, with \( \beta \leq 1 \) and \( w_{\text{min}} \) the minimum wholesale price. We assume that the latter is equal to the production marginal cost, specified to zero. When \( \beta = 0.5 \), the utility of the fair trade certifier is equal to the total profit of small producers.

In strategies 1 and 3 case 2, the objective function of the fair trade certifier is as follows

\[
U_1(w_f) = U_32(w_f) = (w_f)^\beta \left( \frac{\lambda(1 - (1 - \alpha)w_f)}{2} \right)^{1-\beta}.
\]

In strategy 3, when the fair retail price is lower than 1 (case 1), the fair trade certifier utility is

\[
U_{31}(w_f) = (w_f)^\beta \left( \frac{1 - (1 - \alpha \lambda)w_f}{2} \right)^{1-\beta}.
\]

These functions are concave in \( w_f \). The two first order conditions allow us to obtain the optimal wholesale prices for the fair trade agency without constraint,

\[
\hat{w}_{f31} = \frac{\beta}{1 - \alpha \lambda} = \arg \max_{w_f} U_{31}(w_f) \quad \text{and} \quad \hat{w}_{f1} = \frac{\beta}{1 - \alpha} = \arg \max_{w_f} U_1(w_f),
\]

increasing in parameters \( \alpha, \beta, \) and \( \lambda \) for \( w_{f31} \).

3.2 The results

Given the fair trade certifier’s preferences and the retailer’s strategies, we can define the fair wholesale price that the fair trade certification agency should propose to the retailer in order to see the fair product on his shelves.
Proposition 2. The equilibrium fair wholesale price $w_f^*$ for the fair trade certifier and the equilibrium strategy for the retailer depend on the ethical premium parameter, $\alpha$, and on the wholesale price preference parameter, $\beta$.

(i). If $\alpha < \frac{1}{2}$, the fair product is the unique product sold (Strategy 3 case 1 -(F)) and $w_f^*$ depends on $\beta$.

- If $\beta < \bar{\beta}$, $w_f^* = \hat{w}_{fs1} < \frac{1}{2}$.
- If $\beta > \bar{\beta}$, $w_f^* = w_{f1/31} = \frac{2 - \sqrt{1 + 3\alpha^2 \lambda}}{2(1 - \alpha^2 \lambda)} < \frac{1}{2}$.

(ii). If $\alpha > \frac{1}{2}$, then there exists a threshold value of $\beta$, $\beta^*$, such that

(a) if $\beta < \beta^*$, the equilibrium strategy is the strategy where the unique product sold by the retailer is the fair one (Strategy 3 case 1 -(F)) and

- if $\beta < \bar{\beta}$, $w_f^* = \hat{w}_{fs1} < \frac{1}{2}$,
- if $\beta > \bar{\beta}$, $w_f^* = w_{f1/31} = \frac{2 - \sqrt{1 + 3\alpha^2 \lambda}}{2(1 - \alpha^2 \lambda)} < \frac{1}{2}$.

(b) If $\beta > \beta^*$, the equilibrium strategy is the strategy where both products are sold by the retailer (Strategy 1 -(T,F)) and

- if $\beta^* < 1 - \alpha$ and $\beta^* < \beta < 1 - \alpha$, $w_f^* = 1$,
- if $\max\{\beta^*, 1 - \alpha\} < \beta < \frac{1}{2}$, $w_f^* = \hat{w}_{f1} > 1$,
- if $\beta > \max\{\beta^*, \frac{1}{2}\}$, $w_f^* = w_{f1/2} = \frac{1}{2(1 - \alpha)} > 1$.

Proof. See the appendix B. \qed

Figure 2 depicts these results. If the ethical premium parameter is low, the unique way for fair trade certifier to see fair products marketed by the retailer is to propose a wholesale price lower than the traditional product one. The retailer can sell in any way the product that it is equitable or not, because consumers buy the product even if it is not fair. Thus, if the label enables him to obtain the product at the wholesale price lower than the one proposed by the traditional producer, he sells only the fair product. When the fair premium parameter ($\alpha < \frac{1}{2}$) is low and when the wholesale price preference parameter $\beta$ is low, the fair trade agency can propose to the retailer a fair wholesale price increasing in her wholesale price preference parameter. But, above a certain level of this parameter, $\bar{\beta}$, the retailer refuses to sell the fair product if the wholesale price is greater than $w_{f1/31} = \frac{\bar{\beta}}{1 - \alpha^2 \lambda}$. 
Figure 2: Equilibrium at the stage 1

The fair trade agency can propose a relatively high wholesale price (higher than 1) only when the fair trade likers are willing to pay a high premium for fair trade products, because only in this case it is profitable for the retailer to discriminate between fair trade likers and traditional consumers. Table 1 gives equilibrium retail prices and retailer’s profits and we can see that in all equilibrium strategies retail price is increasing in \( \alpha \). In other words, the retailer can benefit from discrimination only if the fair trade likers give a high valuation to producers’ revenue whatever their number. Thus, the most important parameter for the fair trade is not the number of fair trade likers, \( \lambda \), but the value they give to small producers’ revenue, \( \alpha \).

When the willing to pay an ethical premium is relatively high, the fair trade certifier faces two different wholesale price strategies according to her wholesale price preference parameter. If the fair trade agency gives a relative high value to the producers’ individual revenue, she sets a high fair wholesale
price and the retailer markets both types of products. If she prefers guarantee higher total quantities sold, she has to propose a low fair wholesale price to exclude her competitor.

When both products are sold at the equilibrium and when the wholesale preference parameter is relatively low ($\beta^* < \beta < 1 - \alpha$), the fair trade agency proposes a wholesale price equal to the unit. When the wholesale preference parameter increases, the equilibrium wholesale price increases too, until a certain level of $\beta$. When $\beta > \max\{\beta^*, \frac{1}{2}\}$, the fair trade agency is constrained in the offer she can make to the retailer. If the agency’s offer was greater than $w_{f1/2}$, the retailer would sell only the traditional product (see Proposition 1 and Table 1), because otherwise his profit would be lower than $\frac{1}{16}$, retailer’s profit when he sells only the traditional good. In addition, the retailer’s profit does not change or, in many cases, rises with the introduction of the fair good in the market.

The threshold value of $\beta$, $\beta^*$, is decreasing with the percentage of the fair trade likers, $\lambda$, and decreasing with the ethical premium parameter, $\alpha$. More the number of fair trade likers or more they give value to producers’ revenue, more the retailer can discriminate between the two types of consumers and want to market both types of products.

We compare these results to those, indexed by $b$, obtained using the

<table>
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<tr>
<th>Table 1: Equilibrium prices and retailer’s profits</th>
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<tbody>
<tr>
<td>Equilibrium Strategy $w_f$</td>
</tr>
<tr>
<td>$(T, F)$</td>
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<td>$(T, F)$</td>
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simpler demand function given by Equation (5). When the ethical premium is independent of the fair wholesale price, results are qualitatively similar to those obtained with an ethical premium related to the wholesale price. Nevertheless, the equilibrium \((T, F)\) is less frequent in the model with the demand equation (5) than in the model with the ethical premium function of the fair wholesale price, especially when \(\alpha\) is high. This is due to the fact that if the ethical premium depends on the wholesale price and if fair trade likers give a high value to the fair products, the retailer can price discriminate much more between both types of consumers.

### 3.3 The consumers’ surplus

As the consumers’ surplus is the difference between what consumers are willing to pay and their actual expenditure, it is interesting to study how the introduction of a fair trade product changes the surplus of both types of consumers. In Table 2 we summarize how the different levels of fair wholesale price, according the equilibrium, affect the surplus of the fair trade likers, \(SC_f\), and the one of the product seekers, \(SC_t\).

<table>
<thead>
<tr>
<th>Equilibrium Strategy</th>
<th>(SC_f)</th>
<th>(SC_t)</th>
</tr>
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<tbody>
<tr>
<td>((T, F)) (w^*_f = \frac{1}{2(1-\alpha)})</td>
<td>(\frac{1}{32})</td>
<td>(\frac{1}{32})</td>
</tr>
<tr>
<td>((T, F)) (\hat{w}_f = \frac{\beta}{1-\alpha})</td>
<td>(\frac{1}{32} &lt; \frac{(1-\beta)^2}{8} &lt; \frac{1}{8})</td>
<td>(\frac{1}{32})</td>
</tr>
<tr>
<td>((T, F)) (w_f = 1)</td>
<td>(\frac{1}{32} &lt; \frac{\alpha^2}{8} &lt; \frac{1}{8})</td>
<td>(\frac{1}{32})</td>
</tr>
<tr>
<td>((F)) (w_{f_{1/31}} = \frac{2-\sqrt{1+3\alpha^2\lambda}}{2(1-\alpha^2\lambda)})</td>
<td>(\frac{(1-w^*_f(1+\alpha\lambda-2\alpha))^2}{8} &gt; \frac{1}{32})</td>
<td>(\frac{(1-w^*_f(1+\alpha\lambda))^2}{8} &lt; \frac{1}{32})</td>
</tr>
<tr>
<td>((F)) (\hat{w}<em>{f</em>{31}} = \frac{\beta}{1-\alpha\lambda})</td>
<td>(\frac{(1-\beta(1+\alpha\lambda-2\alpha))^2}{8} &gt; \frac{1}{32})</td>
<td>(\frac{(1-\beta(1+\alpha\lambda))^2}{8} &gt; \frac{1}{32}) when (\beta &lt; \hat{\beta} = \frac{1-\alpha\lambda}{2(1+\alpha\lambda)})</td>
</tr>
</tbody>
</table>

Table 2: Consumers’ surplus

We take the consumers’ surplus in the case where only the traditional
product is proposed, that is, $\frac{1}{32}$, as a referential level. The consumers’ surplus is affected by both a change in price and characteristic of the product sold by the retailer. Whatever the equilibrium, when the fair trade product is sold, the fair trade likers’ surplus is stable or enhanced, only because they give value to the characteristic and despite the increase in the price of the product. At the equilibrium where both products are sold and where $w_f^* = \frac{1}{2(1-\alpha)}$, the fair trade agency succeeds in extracting all the fair trade likers’ surplus related to their preference for the characteristic of the product and in giving to the retailer the profit he should have obtained from the only sale of traditional product (see Table 1). In the other two cases where he sells both products, the surplus of the fair trade likers increases. The surplus of fair trade likers is always greater when the retailer sells only the fair product, because the fair retail price is lower and despite the fact that the fair wholesale price is lower.

The surplus of the products seekers is stable with respect to the referential situation when both types of products are sold by the retailer, because the traditional product is sold at the same retail price, $p_t = \frac{3}{4}$. When only the fair product is sold, the product seekers’ surplus can be greater than the one they receive when the traditional product is sold. Indeed, in the equilibrium where $w_f^* = \tilde{w}_{f_{st}}$, if $\beta < \tilde{\beta}$ (see Figure 2 and Table 2), the surplus of the product seekers is greater than $\frac{1}{32}$. At this equilibrium, each agent is in a better situation than in a market without the fair product.

4 Conclusion

This article tries to give some arguments in the debate about the introduction of fair trade goods in the large-scale distribution. First, the most important parameter for the fair trade is not the number of consumers who are willing to pay an ethical premium for a fair product but how much these consumers are willing to pay for this kind of good. Indeed, products from fair trade and labelled are agricultural products already in the shelves of supermarkets in their traditional format and a retailer is interested by a fair product only if its wholesale price is lower than the one of the traditional good or if he can discriminate between fair trade likers and other consumers with a relatively high retail price for the fair product. This second solution is possible only if the fair trade likers give a high value to the ethical characteristic of a product.

Second, when the ethical premium parameter is high and when the fair
trade certifier has a preference for the wholesale price in relation to the fair quantities sold, she can extract all the surplus related to the ethical characteristic of the good.

Third, when the fair trade agency has a preference for quantities, she has to propose a low wholesale price to the retailer. In this case, only the fair product is sold and we show that the surplus of all consumers is higher than the one they obtain with only the traditional product. Fair price to producers does not necessarily imply above average price to consumers (Bowen, 2001). Many products are highly competitive thanks to the lack of intermediaries in the distribution chain, the savings in advertising costs, and the work of volunteers in fair trade organizations.

The next logical step in the problematic of fair trade would be to verify the hypothesis of Alternative Trading Organisations which suggest that by paying a fair price for even a small part of production, a snowball effect appears on prices paid for the rest of production (Bowen, 2001).

A Proof of Proposition 1

At Stage 3 of the game, the retailer chooses retail prices of products according his strategy.

- **Strategy 1: (T, F)**
  
  The condition of positive quantity of fair product is \( w_f < \frac{1}{1-\alpha} \).
  
  The retail prices are \( p_f = \frac{1+(\alpha +1)w_f}{2} \) and \( p_t = \frac{1+w_t}{2} \) and the retailer’s profit is \( \pi_1^R(w_f, w_t) = \lambda \left( \frac{1+\alpha w_f - w_f}{2} \right)^2 + (1-\lambda) \left( \frac{1-w_t}{2} \right)^2 \)

- **Strategy 2: (T)**
  
  \( p_t = \frac{1+w_t}{2} \) and \( \pi_2^R(w_t) = \left( \frac{1-w_t}{2} \right)^2 \)

- **Strategy 3: (F)**
  
  **Case 1: \( p_f < 1 \)**
  
  \( p_f = \frac{1+(\alpha\lambda +1)w_f}{2} \) with \( p_f < 1 \iff w_f < \frac{1}{\alpha\lambda +1} = \frac{w_f}{w_f} \) and \( \pi_3^R(w_f) = \left( \frac{1+\alpha\lambda w_f - w_f}{2} \right)^2 \)
Case 2: \(p_f > 1\)

\[
p_f = \frac{1 + (\alpha + 1)w_f}{2} \quad \text{with} \quad p_f > 1 \iff w_f > \frac{1}{\alpha + 1} = w_{f2} \quad \text{and} \quad \pi^R_{32}(w_f) = \lambda \left( \frac{1 + \alpha w_f - w_f}{2} \right)^2
\]

For Stage 2 of the game, we compare retailer’s profits, two to two, and we obtain that:

- whatever \(w_f, \pi^R(w_f, w_t) > \pi^R_{32}(w_f)\),

- if \(w_f < \frac{1 - \sqrt{1 - (1 - \alpha^2)w_t(2 - w_t)}}{1 - \alpha^2} = w_{f1/31}, \pi^R_{31}(w_f) > \pi^R_1(w_f, w_t) > \pi^R_2(w_t)\),

- if \(w_{f1/31} < w_f < \frac{w_t}{1 - \alpha} = w_{f2/31}, \pi^R_1(w_f, w_t) > \pi^R_{31}(w_f) > \pi^R_2(w_t)\),

- if \(w_{f2/31} < w_f < \frac{w_t}{1 - \alpha} = w_{f1/2}, \pi^R_1(w_f, w_t) > \pi^R_2(w_t) > \pi^R_{31}(w_f)\),

- if \(w_f > \frac{w_t}{1 - \alpha} = w_{f1/2}, \pi^R_2(w_t) > \pi^R_1(w_f, w_t) > \pi^R_{31}(w_f)\).

**B Proof of Proposition 2**

We can easily show that

\[
\begin{cases}
U_{31}(w_f) > U_1(w_f) = U_{32}(w_f) & \text{if} \quad w_f < 1 \\
U_{31}(w_f) < U_1(w_f) = U_{32}(w_f) & \text{if} \quad w_f > 1
\end{cases}
\]

and that

\[
\begin{cases}
\hat{w}_{f1/31} < w_{f1/31} \iff \beta < \frac{1 - \alpha \lambda}{1 - \alpha^2 \lambda} \left( \frac{2 - \sqrt{1 + 3\alpha^2 \lambda}}{2} \right) = \bar{\beta} < \frac{1}{2} \\
\hat{w}_{f1/2} < w_{f1/2} \iff \beta < \frac{1}{2} \\
\hat{w}_{f1} < 1 \iff \beta < 1 - \alpha
\end{cases}
\]

We compare the different values of the fair trade agency objective function according to \(\alpha\) and \(\beta\).

(i). When \(\alpha < \frac{1}{2}\), that is, \(w_{f1/2} < 1\), as \(U_{31}(w_f) > U_1(w_f)\) if \(w_f < 1\), the unique equilibrium which can be achieved with the sale of the fair product is the one where the fair product is the unique product sold (Strategy 3 case 1 - (F)) and the optimal wholesale price \(w^*_f\), that the fair trade agency proposes, depends on \(\beta\).

- If \(\beta < \bar{\beta}\), \(w^*_f = \hat{w}_{f1/31} < \frac{1}{2}\).
• If $\beta > \tilde{\beta}$, $w_f^* = w_{f_{1/31}} = \frac{2-\sqrt{1+3\alpha^2\lambda}}{2(1-\alpha^2\lambda)} < \frac{1}{2}$.

(ii). When $\alpha > \frac{1}{2}$, that is, $w_{f_{1/2}} < 1$, the equilibrium with both products sold by the retailer can emerge too.

• If $\beta < \tilde{\beta}$, then $\hat{w}_{f_{31}} < w_{f_{1/31}}$ and $\hat{w}_{f_1} < w_{f_{1/2}}$.
  - If $\beta < 1 - \alpha$, we have to compare $U_1(1)$ and $U_{31}(\hat{w}_{f_{31}})$. Though, $U_1(1) = U_{31}(1)$, thus $U_{31}(\hat{w}_{f_{31}}) > U_1(1)$. The equilibrium strategy is the strategy 3 case 1 and $w_f^* = \hat{w}_{f_{31}}$.
  - If $\beta > 1 - \alpha$, we have to compare $U_1(\hat{w}_{f_1})$ and $U_{31}(\hat{w}_{f_{31}})$. It exists a threshold of $\beta$,

$$
\beta_1^* = \frac{\ln \lambda}{\ln \lambda(1 - \alpha) - \ln (1 - \alpha\lambda)},
$$

such as

- if $\beta < \beta_1^*$, then $U_{31}(\hat{w}_{f_{31}}) > U_1(\hat{w}_{f_1})$ and the equilibrium strategy is the strategy 3 case 1 and $w_f^* = \hat{w}_{f_{31}}$ and
- if $\beta > \beta_1^*$, then $U_1(\hat{w}_{f_1}) > U_{31}(\hat{w}_{f_{31}})$ and the equilibrium strategy is the strategy 1 and $w_f^* = \hat{w}_{f_1}$.

• If $\tilde{\beta} < \beta < \frac{1}{2}$, then $w_{f_{1/31}} < \hat{w}_{f_{31}}$ and $\hat{w}_{f_1} < w_{f_{1/2}}$.
  - If $\beta < 1 - \alpha$, we have to compare $U_1(1)$ and $U_{31}(w_{f_{1/31}})$. It exists a threshold of $\beta$,

$$
\beta_2^* = \frac{\ln \left[2\alpha\lambda(1-\alpha^2\lambda)\right] - \ln \left[2(1-\alpha^2\lambda)-(1-\alpha\lambda)(2-\sqrt{1+3\alpha^2\lambda})\right]}{\ln \left[\alpha\lambda(2-\sqrt{1+3\alpha^2\lambda})\right] - \ln \left[2(1-\alpha^2\lambda)-(1-\alpha\lambda)(2-\sqrt{1+3\alpha^2\lambda})\right]},
$$

such as

- if $\beta < \beta_2^*$, then $U_{31}(w_{f_{1/31}}) > U_1(1)$ and the equilibrium strategy is the strategy 3 case 1 and $w_f^* = w_{f_{1/31}}$ and
- if $\beta > \beta_2^*$, then $U_1(1) > U_{31}(w_{f_{1/31}})$ and the equilibrium strategy is the strategy 1 and $w_f^* = 1$.
  - If $\beta > 1 - \alpha$, we have to compare $U_1(\hat{w}_{f_1})$ and $U_{31}(w_{f_{1/31}})$. It exists a threshold of $\beta$,

$$
\beta_3^*: U_1(\hat{w}_{f_1}) = U_{31}(w_{f_{1/31}}),
$$

such as
if $\beta < \beta_3^*$, then $U_{31}(w_{f_1/31}) > U_1(\tilde{w}_f)$ and the equilibrium strategy is the strategy 3 case 1 and $w_f^* = w_{f_1/31}$ and

if $\beta > \beta_3^*$, then $U_1(\tilde{w}_f) > U_{31}(w_{f_1/31})$ and the equilibrium strategy is the strategy 1 and $w_f^* = \tilde{w}_f$.

- If $\beta > \frac{1}{2}$, then $w_{f_1/31} < \tilde{w}_{f_31}$ and $w_{f_1/2} < \tilde{w}_{f_1}$. Thus, we have to compare $U_1(w_{f_1/31})$ and $U_{31}(w_{f_1/31})$. It exists a threshold of $\beta$,

$$
\beta_4^* = \frac{\ln \left[ \lambda (1 - \alpha^2 \lambda) - \ln \left[ 2(1 - \alpha^2 \lambda - (1 - \alpha \lambda)(2 - \sqrt{1 + 3\alpha^2 \lambda}) \right] \right]}{\ln \left[ (1 - \alpha) \lambda (2 - \sqrt{1 + 3\alpha^2 \lambda}) - \ln \left[ 2(1 - \alpha^2 \lambda - (1 - \alpha \lambda)(2 - \sqrt{1 + 3\alpha^2 \lambda})) \right] \right]},
$$

such as

if $\beta < \beta_4^*$, then $U_{31}(w_{f_1/31}) > U_1(w_{f_1/2})$ and the equilibrium strategy is the strategy 3 case 1 and $w_f^* = w_{f_1/31}$ and

if $\beta > \beta_4^*$, then $U_1(w_{f_1/2}) > U_{31}(w_{f_1/31})$ and the equilibrium strategy is the strategy 1 and $w_f^* = w_{f_1/2}$.

All the thresholds of $\beta$ are decreasing in $\alpha$ and

$\beta_3^* = \beta_1^*$ when $\beta = \tilde{\beta}$

$\beta_3^* = \beta_2^*$ when $\beta = 1 - \alpha$, with $\tilde{\alpha}$ defined by $\beta_2^*(\tilde{\alpha}) = 1 - \tilde{\alpha}$

$\beta_3^* = \beta_1^*$ when $\beta = \frac{1}{2}$, with $\tilde{\alpha}$ defined by $\beta_1^-(\tilde{\alpha}) = \frac{1}{2}$

$\beta_2^* = \beta_1^*$ when $\alpha = \frac{1}{2}$.

In addition, we can show that $\beta_2^*(\alpha = \frac{1}{2}) = \beta_4^*(\alpha = \frac{1}{2}) > \frac{1}{2}$ when $\lambda < \tilde{\lambda} \approx 0.636215$.

We define $\beta^*$ as follows:

when $\lambda < \tilde{\lambda}$, $\beta^*(\alpha) = \begin{cases} 
\beta_1^*(\alpha) & \text{when } \alpha \in [\tilde{\beta}^{-1}(\alpha), 1] \\
\beta_2^*(\alpha) & \text{when } \alpha \in [\tilde{\alpha}, \tilde{\beta}^{-1}(\alpha)] \\
\beta_3^*(\alpha) & \text{when } \alpha \in [\frac{1}{2}, \tilde{\alpha}]
\end{cases}$

when $\lambda > \tilde{\lambda}$, $\beta^*(\alpha) = \begin{cases} 
\beta_1^*(\alpha) & \text{when } \alpha \in [\tilde{\beta}^{-1}(\alpha), 1] \\
\beta_3^*(\alpha) & \text{when } \alpha \in [\tilde{\alpha}, \tilde{\beta}^{-1}(\alpha)] \\
\beta_2^*(\alpha) & \text{when } \alpha \in [\frac{1}{2}, \tilde{\alpha}]
\end{cases}$

Thereof, when $\alpha > \frac{1}{2}$,
if $\beta < \beta^*$, the equilibrium strategy is strategy 3 case 1, when the fair product is the unique product sold by the retailer.

if $\beta > \beta^*$, the equilibrium strategy is strategy 1, when the retailer sells both products.

References


FLO (Fairtrade Labelling Organizations International) http://www.fairtrade.net

Immordino G. (2002), Fairness, NGO activism and the welfare of the less developed countries, CSEF Working Paper n.101


Renard M.-C. (2005), Quality certification, regulation and power in fair trade, Journals of Rural Studies, 21: 419-431.