FAIR TRADE: A MODEL TO STUDY THE BEHAVIORAL ENTRY DECISION FOR PRODUCERS INTO THE FAIR TRADE MARKET AS WELL AS ITS EFFECT ON HETEROGENEOUS PRODUCERS

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ABSTRACT
In this paper we will try to construct a model to examine the entry decision for producers into Fair Trade market, as well as compare this entry with the normal process, or the heterogenous producers' model, we will study the discrepancies between the two, including the lack of information at the entry point for Fair trade producers, and try to find an equilibrium under which the Fair Trade model can succeed.
Keywords: *Fair Trade, productivity, costs, profit*

1. INTRODUCTION

Fair trade is one type of alternative business model that aims to protect small scale farmers and guarantee them a fair price irrespective of fluctuations in global markets. It also pays an additional 'premium' to the farmer organization, which can then be invested in the social, environmental, or economic development of the local area. the model while highly celebrated on paper is put to the test by many scholars and researchers that find it hard to believe that this model is as perfect as it boasts. One the aspects being criticized by researchers is the effect on normal farmers, or heterogenous producers as we will refer to them in this paper, the entry decision for a farmer into the Fair Trade market is not only fraught with uncertainties and dangers, but this decision also affects even the other producers already present on the market. While many may argues that this effect wouldn't be an issue if everyone just switch to fair trade produces, this argument is simply invalid and unrealistic, the high standards and entry costs of Fair Trade certifications make it simply impossible for heterogenous producers to make the shift to Fair Trade, and even for Fair Trade producers, a certification does not last for life, every year is followed by an examination and strict audits, aiming to make sure that the Fair Trade standards are still being respected.

2. THE MODEL

The theoretical key to the success of fair trade is that some consumers are willing to pay higher prices for a category of goods produced at a higher standard. Other customers are less concerned or indifferent about these features of fairness, seeing fair trade products as any other good. Therefore, we assume that in society there are two categories of goods, fair trade goods and ordinary goods, each of which provides consumer types with different uses. Dividing consumers into two broad categories is convenient. There is a group of ethical consumers who prefer fair trade products, whereas ordinary products would be preferred by a group of ordinary consumers. These are fixed, but not absolute, preferences. There is a relative preference for fair trade goods among ethical consumers, but not at any cost. Similarly, fair trade goods can also be purchased by ordinary consumers. We will translate this by supposing that the consumption of simple goods and fair trade goods is valued by a representative consumer as follows:

$$U = \left[aC_{pg}{}^{v} + (1-a)C_{pg}{}^{v} \right]^{1/v} \qquad (1)$$

Where Ci; i ∈ {Pg ; Ft }; is an index of consumption of varieties different from the category of simple goods or from the category of fair trade products and where is a surrogate parameter of the CES. This way of modeling is close to the utility function of Bernard and Al (2003). The parameter 0 <a <1 is a demand offset parameter, which can be interpreted here as the relative value imposed on ordinary goods by a representative customer. 1-a gives the meaning of fair trade in public services. a would represent the share of ordinary consumers in society, and 1 would represent the share of ethical consumers in the typology of consumer groups. On the other hand, V = 1 / (1-v)> 1 is the elasticity of substitution between groups. It is important because, even if consumers have clear ideas as to which category of goods they prefer, their actual consumption would often depend on the relative prices of goods in one or another category of goods.

Each product category is made up of a multitude of varieties, indicated by the consumption index C:

$$C_i = \left[\int_{\omega \in \Omega} c_i(\omega)^p \, d\omega \right]^{1/p} \qquad (2)$$

Where c_i (ω) is the consumption of specific variety ω in the complete set Ω_i of varieties of category i ∈ { Pg ; Ft } product. The varieties of a category are imperfect substitutes, with elasticity σ = 1 / (1-ρ)> 1. To focus on the difference between categories, preferences within a category are assumed to be constant and equal for both categories. In other words, for ethical and ordinary buyers, the appeal of alternate varieties within a product category is constant and the same. In addition, we will make the normal assumption that the substitution elasticity within a category is higher than the substitution elasticity between categories: σ-v> 0.

We denote the price that a consumer pays for a variety of product by ρ_i (ω), The price index of a particular category of goods becomes:

$$P_i = \left[\int_{\omega \in \Omega_i} p_i(\omega)^{1-\sigma} \, d\omega \right]^{1/1-\sigma} \qquad (3)$$

Consumers in either category maximize their utility by spending:

$$r_i(\omega) = R_i \left[\frac{p(\omega)}{P_i} \right]^{1-\sigma} \qquad (4)$$

On each variety ω. In this expression, $\mathbb{R}_i = \mathbb{C}_i.\mathbb{P}_i$ denotes the overall expenditure on a particular category. Using R = Rpg + Rft to denote the total expenditure in society, maximizing public services also involves:

$$\frac{R_{ft}}{R} = \frac{\left(\frac{1-a}{a}\right)^{\psi} \left(\frac{P_{ft}}{P_{pg}}\right)^{1-\psi}}{1+\left(\frac{1-a}{a}\right)^{\psi} \left(\frac{P_{ft}}{P_{pg}}\right)^{1-\psi}} = \frac{K}{1+K} \qquad (5)$$

With K defined as $\left(\frac{1-a}{a}\right)^{\psi}\left(\frac{P_{ft}}{P_{pg}}\right)^{1-\psi}$ The share of expenditure for products of normal quality and therefore 1 / (1 + K). The importance of the change in demand parameter a in determining societal spending on fair trade goods is clear since dRft / da < 0: the share of spending on fair trade goods increases when fair trade products are valued more (less than). Furthermore, the figure below reflects that the preference for the good of fair trade and the willingness to pay more for it are clearly linked. In order to keep the fair trade expenditure share constant, a higher price index for fair trade goods must go hand in hand with a higher preference for fair trade goods in society (da <0):

$$dR_{ft} = 0 \Leftrightarrow (1-a)\frac{da}{a} = \frac{(1-\psi)}{\psi}\frac{dP_{ft}}{P_{ft}} \qquad (6)$$

We now turn to the implications of fair trade for the supply. First of all, the desire for fair trade to improve trading conditions implies additional constraints for local producers. Requiring certain production standards is only one of these constraints. Other constraints involve being part of a cooperative in order to be able to benefit from the fair trade agreement, which implies additional organizational and information costs (Nicholls and Opal , 2005) . Essentially then, being part of the fair trade production chain will be costly for producers, varying costs of production. For example, transactions within the cooperative will increase operating costs, while having to comply with fair trade environmental and labor standards directly translate into higher variable production costs. On the other hand, Fair trade also has obvious advantages for participating producers. For example, being part of a democratically organized cooperative gives a counterweight to monopsonic intermediaries in the product distribution chain (Hayes, 2006). In addition, fair trade offers producers a direct and secure channel to rich Western consumer markets. These benefits, however, seem to relate more to the decision to enter the fair trade arrangement, rather than a direct production decision. We therefore model fair trade as being more expensive to produce than ordinary goods, using a parameter s to mark the difference (mnemonic for the standard).

Accordingly, the production function for producers producing fair varieties and good varieties are given by:

$$l_i(\varphi, s) = (f + \frac{q_{i(\varphi)}}{\varphi})s_i \qquad (7)$$

For i ∈ { pg ; ft } and where we assume $s_{ft} > s_{pg} > 0$. The production function gives the total amount of labor l that is needed to produce the output q of the variety that the producer produces. There are increasing returns at the producer level due to a fixed cost of production f. The variable costs of production are normalized to 1, but depend on the productivity of the producer, denoted by $_{\varphi}$> 0. Since sft > spg > 0, a fair trade producer requires a greater contribution of labor than 'an equally productive producer in normal production. We will assume that once producers have decided which category, they will produce their product for, they cannot move on to the other category. Mixed strategies are therefore excluded. This makes sense considering the fact that fair production requires different standards and different organizational arrangement than simple production, so switching to a different mode of production would require new costs. We will also assume that those who produce fair trade products cannot sell these products without the fair trade label. In other words, if the demand for fair trade goods is

insufficient, we deny them the possibility of selling their fair trade products on the simple goods markets. This is not restrictive in our study, since we only consider circumstances where the demand for fair trade goods is equal to the availability of fair trade goods. We note, however, that, given the limited size of the fair trade market, in practice it is quite common for producers of fair trade programs to also sell some of their products on good markets. We also assume that wages are equalized in the two sectors, assuming a fully functioning labor market. In addition, the wage rate will be used as cash in our model, that is to say: w = 1 henceforth. This is in line with the concept that the very nature of the work remains the identical (e.g. acting on land), despite the actual fact that working practices are going to be different in fair trade production from those in production simple. additionally, equal pay across sectors is per the concept that the presence of fair trade arrangements will bring labor markets closer to it of a perfect economy, where wages reflect productivity and not powers of exploitation. monopsonic intermediaries within the agricultural commodity supply chain (Hayes, 2006). Finally, having equal nominal wages in both sectors is additionally compatible with the aspect of fair trade that it pays (more) decent wages: the amount of production and productivity of upper labor standards of trade production fair means fair labor receives wages that are above their marginal productivity. The profit of the producers is then given by

$$\pi_i = r_i - \left(f + \frac{q_i(\varphi)}{\varphi} \right) s_i \qquad (8)$$

And, using the previous equation, profit maximization leads to the familiar outcome that the price is set at a markup on marginal cost:

$$p_i(\varphi) = \frac{1}{p} \frac{s_i}{\varphi} \qquad (9)$$

Considering this assumption, the price of fair trade products is higher than for simple products, while in each product category, more productive producers charge lower prices. Therefore, it is not necessary to introduce a guaranteed minimum price for fair trade producers in the analysis. Also, we assume that these prices are cif prices - to reach foreign markets - because that is ultimately the relevant comparison for local producers. Any difference in the costs of reaching distant markets between fair trade and good simple producers could be easily incorporated, but we ignore it because it would serve a similar function to the difference in Si.

Considering the price rule, producer profit and producer income can be written as:

$$\pi_i = \frac{r_i(\varphi)}{\sigma} - fs_i \quad \text{et} \quad r_i(\varphi) = R_i \left[\frac{s_i}{p\varphi P_i} \right]^{1-\sigma}$$

and as a norm in the heterogeneous literature, the profits and incomes of producers increase in productivity levels:

$$\frac{r_i(\varphi')}{r_i(\varphi)} = \left(\frac{\varphi'}{\varphi} \right)^{\sigma-1} > 1, \forall \varphi' < \varphi$$

Meaning that the least conditioned producer would be the least productive. Whether a (low) productivity producer is better positioned than simple good production in fair trade is not clear:

$$\frac{r_{ft}(\varphi')}{r_{pg}(\varphi)} = K.\left[\frac{\varphi'}{\varphi}.\frac{s_{pg}}{s_{ft}}.\frac{P_{ft}}{P_{pg}}\right]^{\sigma-1}$$

However, for an equal mass of Fair Trade producers and simple goods, income and profits would be lower for Fair Trade producers unless a sufficient share of consumers have a preference for Fair Trade goods:

$$\frac{r_{ft}(\varphi')}{r_{pg}(\varphi)} = \left[\left(\frac{1-a}{a}\right)\right]^{\psi}.\left(\frac{M_{pg}}{M_{ft}}\right)^{\frac{\sigma-\psi}{\sigma-1}}.\left(\frac{s_{ft}}{s_{pg}}\frac{\varphi}{\varphi'}\right)^{1-\psi} \qquad (10)$$

For φ = φ '.

The essence of entering and exiting companies is as in standard heterogeneous business models. In other words, companies learn about their productivity once they enter the market and then decide whether or not to produce, depending on whether their productivity generates positive profits or not. This basic mechanism is the same for all businesses, whether they end up producing simple goods or fair trade goods. Even if fair trade production has an ethical concern, its main aspect remains profitability (Nicholls and Opal , 200¡Moore, 2004). We assume that this also applies to the decision of companies in which category of goods they will produce: a company will choose the category that generates the highest profits. In our setup, this will involve a comparison of the future profits of the two product categories. This is different from Bernard et al. (2003), where the decision for the category to produce depends on the profits of a single period. The reason for this is often, as we are going to argue, that fair trade production is characterized by the next probability of survival, while it also involves additional entry costs. This creates a discrepancy between the results of a comparison supported earnings for one period and a comparison supported expected future earnings. It is a common feature of the literature on heterogeneous firms that firms can be hit by an exogenous shock leading to bankruptcy. The possibility of such a shock is modeled as an exit probability (ie risk of death) for companies (Melitz , 2003¡ Bernard et al., 2003). We argue that the likelihood of businesses facing a bad shock is lower in the fair trade category than in the ordinary good category. This makes sense given the objective of fair trade of building long term relationships with local producers, but also because fair trade agreements guarantee minimum prices and are likely to provide better access to financial markets. Therefore, by letting 0 <θ <1 denote the risk of death for a good company, we assume:

$$\theta_{ft} = X_D\theta$$

With 0< X_D <1 indicating the relative risk of Fairtrade death.

Becoming a fair trade business also involves several transition costs. These costs can be material, for example the costs of learning a new production method. But also intangible costs are involved, such as ambiguity regarding an unknown arrangement. For example, joining a fair trade cooperative involves a change to a different organization in the supply chain. Farmers will leave the classic buyer system, where a monopsonic buyer would visit the farmer once a

year to regulate prices and quantities of production. Despite its drawbacks, this system has at least provided certainty to the farmer, which the new system has yet to show. Especially for farmers who are on the margins of survival, such ambiguity may be too much to bear, due to the lack of appropriate fallback options (Nicholls and Opal , 200 †). In addition, joining the fair trade cooperative implies that farmers will have to adapt their production method, for example towards more sustainable production methods. It also creates ambiguity, especially when it would involve "moving from a crop your grandfather cultivated to a more expensive crop that no one in your village has ever cultivated before." We model these transition costs as additional entry costs faced by every farmer who decides to become a fair trade producer. These entrance fees are fixed and do not change over time. Adjusting to what it takes to become a Fair Trade farmer is a process that every farmer should follow, regardless of other farmers' experiences with Fair Trade. I0 The costs of entering Fair Trade should be considered separately from general market entry costs, also time wise. However, the two entrance fees have in common that they become sunk once incurred. Our assumptions imply that the decision to enter the market and the type of products to be produced can be viewed as a three-step process. First, each potential newcomer calculates an expected value of future profits, which is a probability-weighted average of the potential profits to become a good business and a fair trade business. The business enters if this value exceeds the entry costs that it must pay to become a business. Second, the business learns its productivity level and calculates whether its productivity level could support profitable production. If not, the business will quit. Third, and in the same vein, the company determines the type of good to be produced. It based that decision on a comparison of the benefits of clean and fair production, taking into account the lower probability of survival and the first additional entry costs e*f*t the second. The first calculation made by the firms is to list the conditions under which production will be profitable. Whichever category a business chooses, businesses must make non-negative profits. This defines a production indifference value of productivity Q × for one or the other of the categories below which firms would not produce:

$$\frac{r_i\left(\varphi_i^*\right)}{\sigma} \geq fs_i \qquad (11)$$

for sc (pg , *f*t }. This is the standard result that operating profits should at least equal a firm's fixed cost of production. A priori, it is not clear which category has the most value. low of Q ×. We know that for sufficiently low productivity levels, v*f*t (Q) c vpg (Q) is: v*f*t (0) = —*f* ‹ *f*t c vpg (0) = —*f*‹ pg , like ‹ *f*t > ‹ Pg . However, this will depend on the elasticity of v with respect to Q, which category shows the positive benefits first as Q increases. However, as we will explain below:

Q × *f*t ≤ Q × pg

The second calculation is to derive the conditions that determine the type of good to be produced. Once a firm knows its productivity, and provided that the condition for profitable production is maintained, this decision depends on whether the expected difference in future profits between fair trade and the production of ordinary goods is equal to or greater than the additional fair trade entry costs. The expected future benefits are obtained by taking the net present value of all future benefits, correcting for the risk of death:

$$\pi_{pg}^F\left(\varphi \geq \varphi_{pg}^*\right) = \frac{1}{\theta}\pi_{pg}\left(\varphi\right) \quad , \quad \pi_{ft}^F\left(\varphi \geq \varphi_{ft}^*\right) = \frac{1}{\theta}\pi_{ft}\left(\varphi\right), \qquad (12)$$

Let φ ** be the value of productivity where the difference between the future profits of a fair trade business and those of a business in good standing is just equal to the cost of entering the fair trade market. This marks the point of indifference for a firm between production methods, giving a category indifference productivity value:

$$\pi_{ft}\left(\varphi^{**}\right) = X_d \pi_{pg}\left(\varphi^{**}\right) + \theta_{ft} e_{ft}$$

We will assume that in the event of equal profitability, the business will become a fair trade business. The difference in chance of death decreases the difference in benefits required to be indifferent between production methods X_D<1 , higher entry costs increase it. The non-deductible nature of the additional entry cost means that it is not part of the profit function over a single period, which is why e*f*t is presented as a separate term in the comparison between future profits. A lower risk of death for a Fairtrade business has a similar effect to a higher level of productivity in that it facilitates the payment of the entry cost for Fairtrade production. Since there are preferences for ordinary goods and for fair trade goods in society, balance requires that both categories of products be produced. This puts a strain on the cutoff points identified in (11) and (13). First, it implies that $\varphi_{ft}^{*} \geq \varphi_{pg}^{*}$. Suppose for argumentative reasons, that the order is reversed. This is possible when the profit from the elasticity of fair trade has φ "exceeds that of ordinary products by a sufficient margin." Using (12), the elasticity of the future profits of fair trade will also be higher than ordinary products, which means that not only producers with $\varphi_{ft}^{*} \leq \varphi < \varphi_{pg}^{*}$would be a fair trade producer, but also with the producers $\varphi > \varphi_{pg}^{*}$In such situation, no producer would decide to become a simple producer making balance impossible. Second, $\varphi_{ft}^{*} \geq \varphi_{pg}^{*}$ does not guarantee that the production of fair trade goods is the preferred option for certain values of φ.. A sufficient condition for the existence of φ^{**} is that the elasticity of future profits from fair trade to φ exceed that of normal production. It requires:

$$d\pi_{ft}^{F} / d\varphi > d\pi_{pg}^{F} / d\varphi \Leftrightarrow dr_{ft} / d\varphi > \frac{\theta_{ft}}{\theta} dr_{pg} / d\varphi$$

Which, using (7) and (4), is equivalent to:

$$\frac{\theta_{ft}}{\theta}\left(\frac{P_{ft}}{P_{pg}}\right)^{\sigma-\psi}\left(\frac{S_{pg}}{S_{ft}}\right)^{\sigma-1} > \left(\frac{a}{1-a}\right)^{\psi} \tag{13}$$

Having a fair trade production requires a preference for fair trade products and that the cost of fair trade production must not be too high. The lower risk of death helps increase the likelihood of fair production, as expected. The condition also conforms to the formal requirement of $\varphi_{ft}^{*} \geq \varphi_{pg}^{*}$.

Proposal 1:
To have both simple goods and fair trade goods produced in equilibrium, it is necessary:

- That the zero-rate productivity of the production of ordinary goods φ_{pg}^{*} is lower than the zero-profit threshold productivity of fair trade production φ_{ft}^{*}.
- That condition (14) is verified.

If condition (14) is fulfilled, there will be a value $\varphi = \varphi^{**}$ beyond which producers prefer to produce fair trade goods. This implies that high productivity producers self-select to become fair trade producers, while low productivity producers produce simple goods. Defining $\varphi = \varphi_{pg}^{**}$ then giving:

$$\frac{1}{\theta_{ft}} \frac{r_{ft}(\varphi')}{\sigma} - \frac{1}{\theta} \frac{r_{pg}(\varphi')}{\sigma} > \frac{1}{\theta_{ft}} fs_{pg} + e_{ft}$$

Assuming that (13) holds and using (7) to get $r_c(\varphi') / r_c(\varphi^{**}) = (\varphi' / \varphi^{**})^{\sigma - 1}$.

Proposition 2:
When both types of goods are produced, firms with productivity $\varphi^{*} < \varphi < \varphi^{**}$ will produce simple goods and firms with productivity $\varphi \geq \varphi^{**}$ will produce fair trade goods.

The situation that arises is illustrated in Figure 1 below. The horizontal axis shows productivity levels, the vertical axis represents profits over a single period or future profits, depending on the curve shown. These are the simulation schemes that each potential entrant calculates before learning his productivity. Figure 1 is drawn in such a way that the single period profit lines of the two categories converge, which is not necessary for the analysis to be valid, however. For both categories to be produced, however, the expected future profit lines must converge. They always begin with $\pi_i(\varphi) = 0 (i = pg, ft)$ because companies with negative results in one period suffer bankruptcy. The difference in slope between future profit lines and profit lines in a single period is due to the death ratio. Because of the difference in survival rates, the slope of future fair trade profit curves diverges more from the profit line in a single period than is the case for good production. Entry costs for fair trade can be introduced by means of an imaginary line below of $\pi_{ft}^{F}(\varphi)$, as if it were an additional fixed time cost. The indifference productivity level φ^{**} is then at the intersection of this shadow line with $\pi_{pg}^{F}(\varphi)$. This point is to the right of ϕ_{pg}^{*} and relates to positive profits. Note, however, that the real profits made are not represented by the phantom line, because e_{ft} becomes irrecoverable once it has been incurred. We also note that, as shown, the level of productivity that supports the production of fair trade provides benefits on a single highest period for single producing companies: $\pi_{pg}(\varphi^{**}) > \pi_{ft}(\varphi^{**})$. While this may be different, it is consistent with the inclusion of other elements in the decision on the type of product to be produced than mere differences in production standards. The necessary leap in future profits to φ^{**} highlight the trade-off between facing lower prices but the certainty of producing ordinary goods, and the ambiguity of moving to fair trade, despite the prospect of a better price. The difference in profits over a single period of profits φ^{**} could be interpreted the same way: to be on the safe side, companies are prepared to face lower profits today.

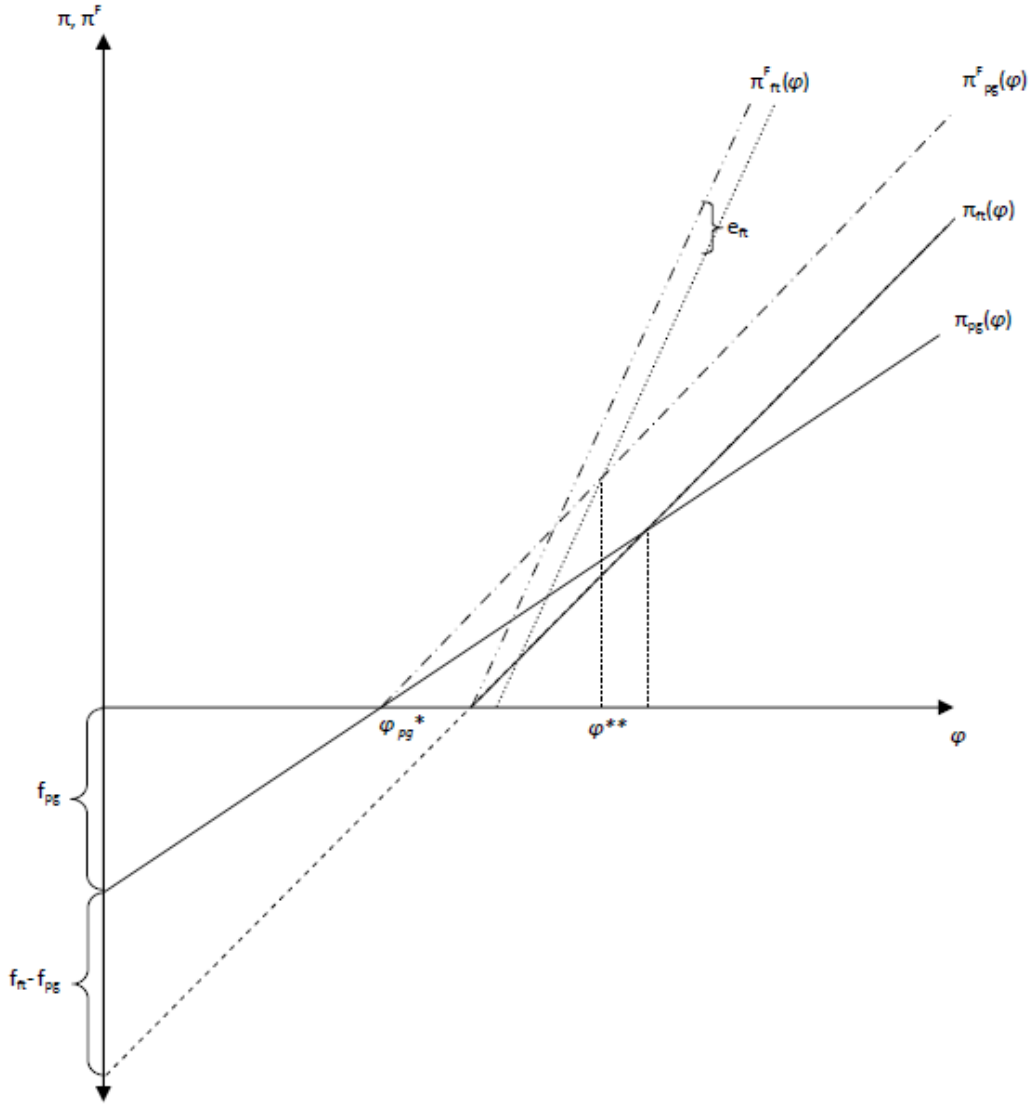

Figure 1: Productivity cut-off points

3. EQUILIBRIUM

Since entrants know what would be optimal to do once they know their productivity, they can calculate expected lifetime gains and compare them to the entry cost for starting a business, including possibility of an additional entry cost for fair trade production. To make this assessment, producers need information on the likelihood of alternative entry options (direct exit, good quality production, fair trade). In this section, we deal with this in the usual way from the literature on heterogeneous firms, as in Melitz (2003). In a later section we will check the consequences of having information, for example on the possibility of engaging in fair trade before entry.

We assume a prior probability density function of the productivities $g(\varphi)$ and the associated cumulative distribution function $G(\varphi)$. It follows that prior probabilities of a successful entry, good regular production and a fair production is respectively of $1-G(\varphi^{*})$, $G(\varphi^{**})$ -G $G(\varphi^{*})$, and 1- $G(\varphi^{**})$.

Taking into account that the distribution changes due to the exit of firms, the probability distribution that will follow productivities in one or the other becomes:

$$\mu\left(\varphi_{pg}\right)=\frac{g\left(\varphi\right)}{G\left(\varphi^{**}\right)-G\left(\varphi^{*}\right)} \text{ And } \mu\left(\varphi_{ft}\right)=\frac{g\left(\varphi\right)}{1-G\left(\varphi^{**}\right)} \quad (15)$$

This determines the average productivity levels in each market, which can be used to calculate aggregate variables. Average productivity only depends on the distribution of productivity $g\left(\varphi\right)$ and thresholds (Bernard et al., 2003):

$$\varphi_{pg}\left(\varphi^{*},\varphi^{**}\right)=\left[\frac{1}{G\left(\varphi^{**}\right)-G\left(\varphi^{*}\right)}\int_{\varphi^{*}}^{\varphi^{**}}\varphi^{\sigma-1}g\left(\varphi\right)d\varphi\right]^{1/\sigma-1} \quad (16)$$

$$\varphi_{pg}\left(\varphi^{**}\right)=\left[\frac{1}{1-G\left(\varphi^{**}\right)}\int_{\varphi^{**}}^{\infty}\varphi^{\sigma-1}g\left(\varphi\right)d\varphi\right]^{1/\sigma-1} \quad (17)$$

Where a tilde above a variable indicates an average value. Since Fairtrade companies are companies with $\varphi\geq\varphi^{**}$, it follows that the average productivity in Fairtrade is higher than in $\tilde{\varphi}_{pg}>\tilde{\varphi}_{ft}$.

With full information on all available options, prior to entry, the expected value of the business is the weighted average of the probabilities of $\tilde{\pi}_{pg}=\pi_{pg}(\tilde{\varphi}_{pg})$ and $\tilde{\pi}_{ft}=\pi_{ft}(\tilde{\varphi}_{ft})$, taking into account the respective survival rates. Entry stops when this value equals the expected entry costs:

$$v_e=\frac{G\left(\varphi^{**}\right)-G\left(\varphi^{*}\right)}{\theta}\tilde{\pi}_{pg}+\frac{1-G\left(\varphi^{**}\right)}{X\ \theta}\tilde{\pi}_{ft}=e+\left[1-G\left(\varphi^{**}\right)\right]e_{ft} \quad (18)$$

Since this model deals with two types of business, the entry costs are separated between the general entry cost to become a normal business and the additional entry cost to become a fair trade business. The latter has a probability since only companies whose productivity is greater than or equal to φ^{**} will decide to become fair trade companies, which is not clear in advance. As usual, we will assume a steady state equilibrium between input and output. This means that for every type of business that comes out, a similar type of business enters. Either M_{pg} and M_{ft} the mass of companies of good companies and fair trade companies respectively, designating the entrants to the market with M_e.. Steady state equilibrium then implies:

$$\theta M_{pg}=\left[G\left(\varphi^{**}\right)-G\left(\varphi^{*}\right)\right]M_e \text{ And } XM_{ft}=\left[1-G\left(\varphi^{**}\right)\right]M_e \quad (19)$$

The probabilities of (19) reiterate that firms decide what type of firm to become after entering. Ceteris paribus, the relative incidence of fair trade companies increases if X_d decreases, if the threshold of profitable production φ^* increases, and if φ^{**} decreases. The model is closed assuming that the labor market emerges. Labor is the only input to our model and all income earned must be paid at work. Since the wage rate has been set at one (numeraire), this implies $L = L_e + L_p = R$, where L_e and L_p denote respectively the labor used for input and the labor used in production. The total profits earned are $\prod = M_{pg}\tilde{\pi}_{pg} + M_{ft}\tilde{\pi}_{ft}$, which in equilibrium should be the costs of entry, otherwise more companies would like to enter. So:

$L_p = R - \prod$ And $L_e = \prod$

L_e Includes additional entry costs for businesses that decide to become Fairtrade:

$$L_e = M_e e + \left[1 - G\left(\varphi^{**}\right)\right] M_e e_{ft}$$

and the equilibrium of the labor market implies:

$$M_{pg}\tilde{\pi}_{pg} + M_{ft}\tilde{\pi}_{ft} = M_e e + \left[1 - G\left(\varphi^{**}\right)\right] M_e e_{ft} \tag{20}$$

The model can be reduced to a system of four equations that can be solved for the variables endogenous φ^*, φ^{**}, P_{pg} and P_{ft}. To solve the model, we follow Bernard et al. (2003) in terms of procedure. First, we combine the expression of the relative income of the firm (9) with the category indifference condition (13). Then, by $r_{pg}\left(\varphi^{**}\right) = \left(\varphi^{**}/\varphi^*\right)^{\sigma-1} r_{pg}(\varphi^*)$ of (8) and by applying the cut-off condition at zero profit (11), we obtain:

$$\left(\frac{\varphi^{**}}{\varphi^*}\right) = \frac{\frac{S_{ft}}{S_{pg}} + \frac{X_d \theta e_{ft}}{\int S_{pg}} - X_d}{\left(\frac{1-a}{a}\right)^{\psi} \left(\frac{P_{ft}}{P_{pg}}\right)^{\sigma-\psi} \cdot \left(\frac{S_{pg}}{S_{ft}}\right) - X_d} \tag{21}$$

Which is greater than 1 since $\varphi^{**} > \varphi^*$. By (14) the denominator is positive. It is clear that the disadvantageous development of costs and prices for fair trade - for example S_{ft} or P_{ft}/P_{pg} - will increase the minimum productivity requirement to become a fair trade business compared to what it takes to profitably enter the market. the market. Likewise, this also applies to a decrease in relative Fairtrade expenditure R_{ft}/R_{pg}.. A decrease in the relative advantage of Fairtrade producers in the exogenous chance of exiting - an increase in X_d - is likely to increase φ^{**}/φ^*,, but this cannot be settled definitively. Intuitively this can be explained by means of Figure 1, where a change in X_d would not only rotate the curves shown, but also move them.

The ratio of the relative price index can be expressed by:

$$\frac{P_{ft}}{P_{pg}} = \left(\frac{M_{ft}}{M_{pg}}\right)^{1/1-\sigma} \frac{S_{ft}}{S_{pg}} \frac{\tilde{\varphi}_{ft}}{\tilde{\varphi}_{pg}} = \left[\frac{\int_{\varphi^{**}}^{\infty} \varphi^{\sigma-1} g(\varphi) d\varphi}{\int_{\varphi^{*}}^{\varphi^{**}} \varphi^{\sigma-1} g(\varphi) d\varphi}\right]^{\frac{1}{1-\sigma}} \frac{S_{ft}}{S_{pg}} \left(\frac{1}{X_d}\right)^{\frac{1}{1-\sigma}} \tag{22}$$

where we applied (19) and the expressions for average productivity (16) - (17). Logically, the price index ratio increases in the relative fair trade working standard by the fixed markup price rule. Likewise, a higher average productivity for fair trade products decreases its relative price ratio. When the relative probability of X_d Fairtrade death decreases, its price ratio will decrease as fewer companies will exit. We note that with $\varphi^{**} > \varphi^{*}$ and X_d <1, it is not clear whether fair trade products carry higher prices, despite $S_{ft} > S_{pg}$. Although one of the central tenets of the fair trade movement is that consumers pay higher prices for goods produced under fair circumstances, the self-selection of high productivity firms under fair trade agreements does that it is neither necessary nor required.

The next step is to express (18) in relative prices and cut-off points. Using (10), (8) and (11), while applying the mean productivity expressions (16) - (17), we get:

$$\tilde{\pi}_{pg} = \left[\left(\frac{\tilde{\varphi}_{pg}}{\varphi^{*}}\right)^{\sigma-1} - 1\right] \int S_{pg}$$

$$\tilde{\pi}_{ft} = \left[\left(\frac{1-a}{a}\right)^{\psi} \left(\frac{P_{ft}}{P_{pg}}\right)^{\sigma-\psi} \left(\frac{S_{pg}}{S_{ft}} . \frac{\tilde{\varphi}_{ft}}{\varphi^{*}}\right)^{\sigma-1} - \frac{S_{ft}}{S_{pg}}\right] \int S_{pg}$$

During the substitution, the free entry condition (18) becomes:

$$\frac{\int S_{pg}}{\theta}\left[\int_{\varphi^{*}}^{\varphi^{**}}\left[\left(\frac{\varphi}{\varphi^{*}}\right)^{\sigma-1} - 1\right] g(\varphi) d\varphi\right] + \frac{\int S_{pg}}{X_d \theta} \int_{\varphi^{**}}^{\infty}\left[\left(\frac{1-a}{a}\right)^{\psi}\left(\frac{P_{ft}}{P_{pg}}\right)^{\sigma-\psi}\left(\frac{S_{pg}}{S_{ft}}\right)^{\sigma-1}\left(\frac{\varphi}{\varphi^{*}}\right)^{\sigma-1} - \frac{S_{ft}}{S_{pg}}\right] g(\varphi) d\varphi = e + e_{ft} \int_{\varphi^{**}}^{\infty} g(\varphi) d\varphi$$

(23)

The combined equilibrium conditions (21) and (22) determine a single value of the relative prices of goods and the relative cut-off point. Together with the equations (23) and (20), they solve for φ^{*}, φ^{**}, P_{pg} and P_{ft}.

4. LACK OF INFORMATION AT MARKET ENTRY

A key aspect of the modeling setup is that potential new entrants to the market are aware of the possibility of fair trade before their decision to enter the market. However, potential new entrants are not always aware of this option and will only learn about the possibility of engaging in fair trade after entering as a good company. In a context of poor developing countries with few and dispersed fair trade operations, this scenario is not unlikely. This leaves the decision to stay in the market and / or become a Fair Trade business intact - once businesses get in, they learn that Fair Trade is an option - but this clearly has consequences for the decision.

To enter the market or not. Without knowing the possibility of fair trade, the free entry condition would become:

$$v'_e = \frac{G\left(\varphi^{**}\right) - G\left(\varphi^{*}\right)}{\theta}\tilde{\pi}'_{pg} + \frac{1-G\left(\varphi^{**}\right)}{\theta}\tilde{\pi}'_{pg} = e \qquad (24)$$

where we use a 'to indicate variables that might change due to incorrect information. The notable difference between (24) and the initial free entry condition (18) is the absence of average fair trade benefits, as well as the absence of expected fair trade entry costs. in addition, average profits may change, depending on implicit changes in price indices. The values of the thresholds φ^{*} and φ^{**} remain the same: the simulation diagrams of the previous section become their productivity.

Without prior knowledge of fair trade production possibilities, the expected value of a business will decrease $v'_e < v_e$. To see this, it is essential to understand that without the exact information that potential new entrants will base their preliminary calculations based on a version of Figure 1 that only includes (future) profits for normal production companies. Therefore, they estimate that profitability is lower than it will actually be, expecting a lower mass of incumbents. To see this formally, consider Figure 2 below. The figure represents the expected value of the entry as a negative function of the number of companies in place. The full information scenario is represented by M, at the intersection of v_e $e + (1-G(\varphi^{**}))e_{ft}$. Having limited information implies lower expected entry costs and, as we will show, lower company value. To make this argument, we draw $v_e(\tilde{\varphi} = \varphi^{**})$ as a special case for the full information scenario, giving the value of the firm if the net fair trade benefit for the average firm is just the additional cost of entry. Logically, if fair trade does not bring additional benefits, the number of companies is indifferent to the right information or not. Therefore, the curves of the incomplete information scenario must also intersect in M'. Since $e < e + (1-G(\varphi^{**}))e_{ft}$, it must be that $v'_e < v_e(\tilde{\varphi} = \varphi^{**})$, as shown by the dotted lines. Obviously, the average Fairtrade productivity will exceed and therefore will be higher than φ^{**} this borderline v_e case, resulting in $v'_e < v_e$ and $M' < M$.

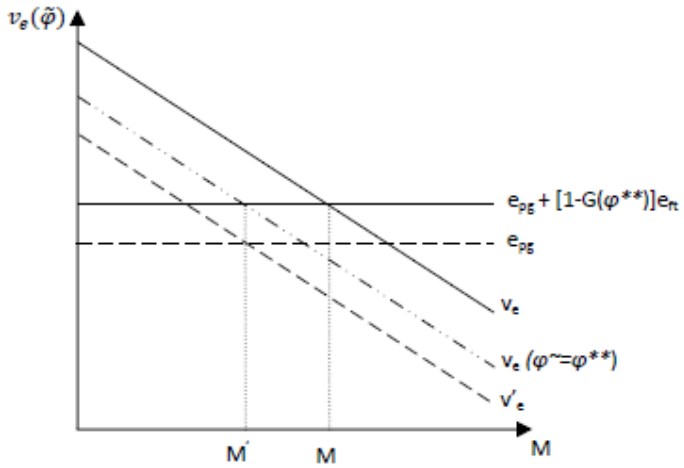

Figure 2: The expected value of a business

The consequence is that when fair trade is not provided for, fewer companies will enter the market than is required for a balanced labor market. With a fixed aggregate labor supply, this implies either unemployment of $L-(L_e'+L_p)>0$, or a drop in real wages L_p that increases to match the drop in L_e. In both cases, the relative position of workers in society deteriorates. In the event of unemployment, this would manifest itself in part of the working population receiving no wage income, as well as in the resulting excess profits for companies. With real wages unchanged L_p, R and $\prod$ are as before, which implies $\prod - L_e' > 0$. When the adjustment occurs through a fall in real wages, the total profits fall to L_e', which is the required entry costs. These negative effects can be avoided by advertising the possibility of fair trade to potential entrants.

5. REALITIES OF THE MODEL

Local labor markets will therefore be negatively affected by the existence of fair trade if potential producers are not aware of the possibility of engaging in fair trade agreements before making their entry decisions. As fair trade agreements are introduced, the most productive businesses in society will want to switch to fair trade production. Although they face an additional entry cost, in addition to higher production costs, they benefit from a higher survival rate. Fair trade clearly implies a selection effect. While seeking to help the less fortunate in society, the firms drawn to the arrangement are the larger and more productive firms. This conclusion is drawn in a framework where firms differ in their productivity and where fair trade is presented as a sustainable alternative to ordinary production arrangements, both in terms of labor standards and in terms of sustainable partnerships. The paradoxical results are that when fair trade is successful in its inherent functioning, the benefits will flow to the "wrong" set of producers. What is more, when the possibility of fair trade is not generally known to new businesses before they enter, too few businesses will enter, which will lead to lower real wages and / or excess profits for new businesses. Fair Trade Organizations (FTOs) could take steps to lower the productivity threshold required to become a Fair Trade business. Lowering the costs of entry into fair trade, consumer awareness and pressure on local governments to raise the standards of good production would all help in this regard. However, to fundamentally solve these problems, unorthodox measures may be needed. When productivity differences between firms exist, higher standards and the existence of transition costs mean that there is no way to escape the selection effect. One solution might be to set a maximum profit level for the companies that FTOs wish to include. This would at least make fair trade unattractive for the most productive companies, although it is not clear what this would imply for the level of productivity required to enter into fair trade agreements profitably. Another, more direct solution is to strengthen the criteria for admission to fair trade agreements: FTOs may wish to reconsider which companies they allow to enter the partnership. To counter the selection effect, a rigorous selection policy may be warranted, emphasizing a company's productivity rather than a company's ability to adhere to the requirements of fair trade agreements.

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