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'Made in Dignity': the redistributive impact of Fair Trade*

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Abstract

In this paper, we develop a model of North-South trade to investigate the impact of Fair Trade. In the absence of a label, Southern producers are exploited by monopsonisitic traders who export to Northern markets. The Fair Trade label, given to some existing traders, certifies the adoption of high labour standards or the payment of fair prices to producers in the South. We first show that such a label is never Pareto-improving: the welfare of unlabeled and some labelled producers in the South falls while the welfare of Northern consumers increases. An expansion of Fair Trade tends to exacerbate those effects. We also show that the consequences of fair trade are systematically dampened in environments where traders enjoy more market power. We also explore an alternative setting in which new Fair Trade cooperatives are introduced alongside private traders. The cooperatives maximize the welfare of the producers they trade with. We show that our main results also apply in this context.

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1 Introduction

Over the recent decades, consumers in the North have expressed an increased concern about the working conditions prevailing in the production of what they import from less developed economies.[1][2] The sales of Fairtrade certified products have been growing rapidly over the last two decades. In 2021, there were 1930 Fairtrade certified producer organizations in 68 producing countries, representing more than 2 million farmers and workers. That same year, an estimated global amount of 200 million Euros of wage premium were paid to these producers.[3] Fairtrade products typically include coffee, cocoa, bananas, cane sugar, flowers, tea, cotton, fresh fruits, wine grapes, sports balls, etc. Besides their commercial success, most labeling programs are also actively supported by many international organizations such as ILO, UNICEF and major NGOs (Oxfam, Max Havelaar,...).

Fair trade labels can be seen as an effective way to solve informational asymmetries. In many instances consumers are not well informed on the social and economic conditions under which the good they consume has been produced. Labeling by an independent third party provides them with the appropriate information.[4] Labels are also particularly attractive as they do not rely on coercion but simply provide information to the consumers. The latter are then free to choose, by paying a higher price, to support better production conditions, giving rise to a form of 'democracy by the consumers'. One expects labeling programs to improve consumer welfare and wages to reward complying producers (See e.g. Zago and Pick (2004), Baksi and Bose

[1]Various studies show that consumers have a preference for 'fair' products and are willing to pay a premium for fair trade products (e.g. Prasad et al., 2004, Hiscox and Smyth, 2005, De Pelsmacker et al, 2005; Loureiro and Lotade, 2005; Basu and Hicks, 2008, Poelman et al 2008, Tagbata and Sirieix, 2008, Cranfield et al., 2010, Elfenbein and McManus, 2010, Hainmuller et al, 2015, Hiscox and Smyth, 2011, Sirieix et al, 2013).

[2]While this movement probably reflects genuine concern about the welfare of poor producers, fair trade restrictions can also be partly motivated by protectionist motives against 'unfair' competition by countries applying low labour standards. Numerous proposals have been put forward to incorporate minimum labour standards into international trade rules. See Rodrik (1996), Freeman (1998) and Bhagwati (1995) for a discussion on the pertinence of imposing labour standards, in line with the debates on the WTO. See also Maskus (1997), Fisher and Serra (2000), Fung et al. (2001), and Brown (2001) for more details on labour standards and international trade.

[3]www.fairtrade.net , Fair Trade International: "Annual report 2023" and "Monitoring the scope and benefits of fairtrade, Fourteenth edition, 2023".

[4]Since Akerlof (1970), market failures due to the lack of information on product quality are well known. Labour standards in the production process is a hidden characteristic of goods which is not revealed to consumers even after consumption, a 'credence' characteristic (Nelson, 1970, Darby and Karni, 1973).

(2007), Roe and Sheldon (2007), and Bonroy and Constantatos (2008)).

On the other hand, labels can be viewed as a tool in the hands of Southern producers to price discriminate between different types of consumers.[5] A priori, one expects social labeling to improve the welfare of both Northern consumers and Southern producers. These benefits may however get dissipated under free entry, as argued by de Janvry et al. (2015) about coffee cooperatives in Central America. Some producers in the South may also directly suffer from the introduction of fair trade: "Ethical trading in Bangladesh has both positive and negative consequences, (...). Working conditions have improved in compliant factories, but workers in non-compliant firms are worse-off." (Murshid et al (2003), see also Valkila and Nigren (2009), Dragusanu and Nunn (2014) or Jaffee (2009), Dragusanu et al. (2022)).

This paper investigates who benefits and who is disadvantaged by Fairtrade certification, and identifies the mechanisms that determine the magnitude of these effects. We set up a simple North-South trade model and analyze the impact of the introduction of a fair trade label in the South. In the absence of the label, producers in the South sell their output to competing monopsonist traders who have exclusive access to export markets. Their market power is modeled as arising from market frictions: each producer has idiosyncratic preferences over existing traders, who exploit these preferences by under-pricing the output they purchase. If labeled, a trader pays a higher price for the goods and guarantees improved production conditions. We assume that (a) at least some consumers in the North are willing to pay a price premium for labeled goods (i.e. demand for the labeled good exists), and (b) the label is perfectly implemented and monitored. Taken together, these assumptions tend to bias the results of the model in favor of a positive impact of labeling. Given the relatively limited scope of fair trade in practice, we focus on situations under which the Northern market is not saturated by labeled goods, so that some Northern consumers also consume unlabeled goods.[6]

We first show that fair trade cannot be Pareto-improving and always generates losers among producers or consumers. The welfare of unlabeled producers in the South increases if and only if the welfare of Northern consumers decreases. The intuition behind this result is as follows: if the equilibrium price of unlabeled goods rises, Southern producers in the unlabeled sector are

[5]From the firm's point of view, a label raising the demand for labeled goods can be viewed as a form of informative advertising.

[6]Thus, FLO, the umbrella body for Fairtrade ensures compliance with Fair Trade standards through a long and strict certification process, which involves a lengthy initial inspection, followed by regular on-site visits. At the end of 2021 for instance, FLO had certified only 1930 producer organizations.

better off but consumers in the North are worse off since, in equilibrium, they are indifferent between consuming the high price labeled good and the low price unlabeled good.(The reverse holds when the unlabeled price falls.) Unlabeled prices increase when the fair trade label certifies working conditions that reduce substantially labour productivity, labour hours or the effort levels of the labeled producers. More interestingly, the welfare of some labelled producers may fall, as they enjoy better prices or working conditions when selling to a labelled trader, but loose the idiosyncratic benefits they enjoyed with their traditional trader. We also show that the effects of fair trade are systematically dampened in less competitive environments or when a smaller set of producers are labeled. Indeed when traders have more market power, fewer producers switch into the labeled sector, so the labeled segment remains small and the aggregate effects of the label are muted. Conversely, when more producers become labeled, the labeled sector expands, which amplifies the general-equilibrium effects of certification and magnifies the resulting welfare losses for other Southern producers. Finally, we explore an alternative setting in which new Fair Trade cooperatives are introduced alongside private traders. We assume that these cooperatives make no profit and maximize the welfare of their 'members', i.e. the producers they trade with. We show that our main results also apply in this context.

Our framework and our main results can, to some extent, be generalized to some eco-labelling and environmental standards. For Northern agents, environmental concerns take the form of a warm glow effect when consuming eco-labelled food, while Southern producers directly enjoy private benefits from such standards (under the form of health benefits, for instance) but incur private costs (e.g., by renouncing to pesticide use). However, this interpretation does not fully capture the public good nature and the intertemporal consequences of such standards (e.g. think of sustainable forest management practices), which would require a different setting.

So far the literature has essentially proposed partial equilibrium analyses of fair trade, pointing to the beneficial implications for qualifying producers by reducing the traders' market power (Baumann (2012), Podhorsky (2015)). In the present paper, we investigate the properties of fair trade as an instrument to reduce the traders' market power in the South and focus on its consequences in terms of welfare. The market equilibrium perspective allows us to also analyze more satisfactorily the demand for fair trade, as well as to identify among the different components of fair trade those that are more conducive to welfare gains for the producers in the South.[7]

[7]Some authors also raise doubts about the beneficial impact of a label 'child labor free' label (see e.g. Brown (1999), Davies (2005), Basu et al. (2006), Edmonds (2007), Doepke

The paper proceeds as follows. In Section 2 we present the model and derive the market equilibrium prevailing before and after the introduction of a label in Section 3. In Section 4, we characterize the welfare impacts of the label and investigate the consequences of expanding fair trade or increasing the monopsony power of traders. Section 5 investigates the implications of creating fair trade cooperatives and a final Section concludes.

2 The model

We consider an economy with two countries, North and South, denoted by N and S respectively. In each country, there is a continuum of measure 1 of identical individuals, who have one unit of time that they supply inelastically on the labour market. We assume complete specialization in production, with the North producing clothes and the South producing food. The production functions are linear, with labour as the only input. Productivity in the North is equal to γ, each worker producing γ units of clothes. We let clothing be the numeraire so that its price is normalized to 1. The income of a worker in the North is then equal to γ. Productivity in the South is equal to 1, with each producer producing one unit of food.

There are potentially two sectors in the South, the labeled and the unlabeled one, respectively denoted by ℓ and u. We let p_ℓ and p_u stand for the price of labeled and unlabeled food respectively. A label on a unit of food certifies that it has been produced under well defined labour standards and fair wages. Monitoring is perfect so that there is no uncertainty associated with the quality of the label.[8]

2.1 The North

In the North, individuals consume food and clothing, but also care about the working conditions under which the Southern goods they consume has been

and Zilibotti (2010) and Baland and Duprez (2009).) In contrast to the present analysis which focuses on exploitative working conditions or pricing practices, being underage is a fixed characteristic of the worker which cannot be changed by the label.

[8]The introduction of uncertain quality, while making the analysis more complex, yields essentially similar results as the ones presented in the paper, as long as consumers are ready to pay a premium for labeled - of uncertain quality - over unlabeled food.

produced.[9] The utility function of a Northern consumer is as follows:

$$U_N = (1 + \lambda\mu)\, c_N^{\alpha}\, (f_N^{\ell} + f_N^{u})^{1-\alpha} \tag{1}$$

where $0 \leq \alpha \leq 1$, c_N represents the amount of clothing, f_N^{ℓ}, the amount of labeled food and f_N^{u}, the amount of unlabeled food consumed. λ, is a dummy variable which takes the value 1 when consuming labeled food, and 0 otherwise.[10] Northern agents, when consuming labeled food, receive a sense of personal satisfaction or a "warm glow" (Andreoni (1990)) and enjoy an extra utility benefit $\mu > 0$ when choosing labeled food.[11]

The budget constraint of a Northern household is given by:

$$c_N + f_N^{\ell} p_{\ell} + f_N^{u} p_u = \gamma > 1$$

2.2 The South

Southern producers care about the working conditions they face. As consumers, however, they are not concerned about the labour conditions involved in the food they consume.[12] Their utility from consuming goods, which we will refer to as their 'consumption utility', is as follows:

$$V_S = (1 + \delta\theta)\, c_S^{\alpha}\, (f_S^{\ell} + f_S^{u})^{1-\alpha} \tag{2}$$

where c_S and f_S^k represent respectively the amount of clothes and food of type $k = \ell, u$, consumed. The two types of food are perfect substitutes, so that, as a consumer, he purchases the least costly variety. When working under high labour standards, the dummy variable δ takes the value 1 and the

[9] Without loss of generality, we henceforth assume Cobb Douglass utility functions for all agents. Our main results do not depend on this particular assumption, as they can easily be generalized to all regular utility functions, at the cost of expositional simplicity.

[10] Without loss of generality, we implicitly consider that a particular Northern consumer consumes only one type of food so that either $f_N^{\ell} = 0$ or $f_N^{u} = 0$.

[11] Modeling label preferences as a warm-glow allows us to focus on the price mechanism emphasized in the paper. An alternative specification in which Northern consumers derive utility directly from Southern outcomes (e.g. wages or welfare in the non-labeled sector) would introduce an additional welfare channel and could modify the Pareto result in Proposition 2 below.

[12] This assumption is by no way necessary for the validity of the results. It simply allows us to distinguish between concerned and unconcerned consumers without additional notation. The model, and its results, can trivially be extended to the case where some Southern consumers also care about labour standards. Similarly the model can be extended to take into account that some Northern consumers are indifferent.

worker receives a utility benefit of $\theta \geq 0$, δ is equal to 0 otherwise.[13]. In the context of social labeling, this benefit can be interpreted as any agent-specific non-monetary gain associated with certification (such as improved working conditions, reduced health risks, or access to social rights). What matters here is that the benefit is privately appropriated by the producer. This differs from other types of labels, such as environmental labeling, for which the benefit enjoyed by the producers have a public good nature (reduction of pesticide use, better water quality, etc.). In the latter case producers face a standard free-riding problem inherent to public good provision, and the label will be under-provided. A deeper analysis of this type of labels requires another analytical setting.

Unlike Northern producers, Southern producers do not sell their production directly on the world markets. Instead, there is a number T of traders to whom they sell their output. The producer trades with the trader he prefers and these traders differ across several dimensions. First, a trader can either be labeled or unlabeled. Producers can produce labeled food only if they trade with a labeled trader. Second, different traders can offer different wages. Let $V_{S,i}$ denote the utility derived from producing and consuming goods when trading through intermediary i.

When a Southern producer trades with a particular intermediary i, he also gets an idiosyncratic benefit ϵ_i. His full utility when trading with trader i is given by:

$$U_S = V_{S,i} + \epsilon_i \tag{3}$$

Each producer j faces a set of potential traders $i \in T$ and has their own vector of idiosyncratic preferences $E_j = \{\epsilon_i\}_{i \in T}$, representing the match-specific utility they derive from trading with each intermediary. This idiosyncratic benefit ϵ_i varies across each possible pair of producer and trader and is drawn from an i.i.d. Gumbel distribution with mean zero and standard deviation $d\,(\pi/\sqrt{6})$.[14]

[13]The utility benefit θ enters the utility function of the Southern producers multiplicatively to mimic the utility benefit Northern consumers get when consuming fair trade. However, the results of this paper also hold with an additive utility benefit θ.

[14]The Gumbel distribution is similar to the Normal distribution, but unlike the Normal it is skewed to the right. The choice of the Gumbel (which is standard in discrete-choice models), as opposed to a Normal or Uniform distribution, is made for reasons of tractability. It allows a closed-form solution for the proportion of producers who choose a given intermediary (see Equation 4), which is otherwise non-trivial because it requires comparing the idiosyncratic benefit from this trader with those from all other traders. The Gumbel

The parameter d scales the dispersion of the idiosyncratic term ϵ_i and thus captures the degree of heterogeneity in producers' preferences across traders. Formally, d determines the variance of the unobserved idiosyncratic terms and, while it does not measure market power per se, it is closely related to the degree of effective market power in the intermediary sector. A larger d implies greater heterogeneity and stronger producer attachment to specific intermediaries—producers become more "loyal," and competitive pressure across traders weakens. Conversely, smaller values of d correspond to more homogeneous preferences, stronger substitutability across traders, and more competitive market conditions. This parameter can therefore be interpreted as summarizing the overall strength of the economic bonds between producers and specific traders. It may reflect unmodeled structural factors such as geographic dispersion (through transportation or communication costs), size of the intermediaries, social organization (e.g., caste or kinship systems), or legal obligations (such as protected designations of origin). A reduction in d,resulting in more competitive market structures, can thus be caused by improvements in communication or transport efficiency or the weakening of social or institutional constraints that tie producers and intermediaries. Importantly, d does not depend on the number of traders T; rather, increasing T mechanically raises the probability that a producer encounters an especially attractive trader by increasing the size of E_j. This, in turn, induces switches between intermediaries.

2.3 Traders in the South

All traders sell food competitively on the world market and southern producers freely choose which trader to sell their production to. Since ϵ_i are i.i.d. according to the Gumbel distribution, the proportion of producers P_i choosing to sell to traders i is given by the multinomial logit (McFadden (1976), Thisse and Toulemonde (2010)):

$$P_i = \frac{\exp\left(\frac{V_{S,i}}{d}\right)}{\sum_j \exp\left(\frac{V_{S,j}}{d}\right)} \tag{4}$$

distribution is the only one that yields such a tractable closed form. Although the Gumbel is slightly right-skewed—implying that a newly appearing trader has a somewhat higher chance of being a "lucky draw" for some producers—this asymmetry has no impact on our results, which depend only on relative utilities rather than the specific shape of the noise distribution.

Each unlabeled trader decides the price at which he purchases food to producers (which is the wage earned by the workers/producers he trades with) w_u in order to maximize his profits Π_i:

$$\Pi_i = P_i(p_u - w_u) \tag{5}$$

Profits depend on the number of producers the trader attracts when announcing a purchase price or wage w_u, and on the profit generated by each transaction $(p_u - w_u)$. Maximizing profits, the optimal purchase price w_u is given by[15]:

$$w_u = p_u - \frac{d}{V'_{S,u}(w)} = p_u - \frac{d}{\alpha^\alpha(1-\alpha)^{1-\alpha}}\, p_u^{1-\alpha} \tag{6}$$

As expected, traders in equilibrium make profits by offering producers a lower price than the market price of food. They are able to do this because producers have idiosyncratic preferences over traders[16]: when an intermediary reduces the price he pays for food, he looses some of, but not all, the producers he trades with. The size of this effect is captured by the dispersion of idiosyncratic preferences d. In equilibrium, more market power (a larger d) effectively leads to lower prices paid to producers.

Under a fair trade label, a proportion η of traders within the existing set of traders are chosen randomly and given a label, but have to comply with fair trade standards (being labeled is attractive for traders whenever $(1+\mu)^{1/(1-\alpha)} \geq \pi$, i.e., the price premium paid by the North is sufficient to cover the wage premium paid to producers).[17] When labeled, a trader can sell food on the world market at the price p_ℓ. Under the label, he has to follow a particular wage rule which requires that he offers a piece rate that is π times higher than the one unlabeled producers receive, w_u.[18] The label also implies costly labour standards on producers : a producer incurs

[15]Here, we assume that T is sufficiently large so that the intermediary does not take into account how changes in the price he offers affects the denominator in Equation 4.

[16]Clearly, Southern 'producers' can also be interpreted as workers employed by a particular employer (called here the 'trader') producing for the export market. The analysis of this situation is identical to the one developed here. To avoid confusion, we will stick in the following to the interpretation of the model in terms of producers and traders.

[17]An alternative to this assumption is discussed in Section 5

[18]For example, FLO requires a price premium of around 15% of the commercial price, usually associated to a minimum price (1.8 dollar for a pound of coffee in 2023). In this paper, we model the fairtrade premium as a price premium, but the results are essentially unchanged when using a minimum price. In a sense, any minimum price can be reinterpreted as a price premium π applied to a particular price level.

a productivity loss of $\sigma \geqslant 0$ units of labour per unit of food produced and a fixed cost of $\sigma_c \geqslant 0$ units of clothes.[19] The first type of cost captures the idea that improved labour standards imply higher production costs by resorting to less exploitative modes of production, reducing working hours or spending more resources on producers' health and education. We describe, under Proposition 1 below, the impact of these costs on the equilibrium, the conditions under which the label involves larger prices and discuss the implications of productivity gains from fair trade (i.e., when $\sigma < 0$). Empirically, the effect of certification on yields is heterogeneous. For environmental and organic labels, numerous studies document systematic yield penalties relative to conventional production (e.g., Seufert et al. (2012), Ponisio et al. (2015); De Ponti et al. (2012)). For social labels such as Fairtrade, the evidence is more mixed. Some studies find higher yields due to better training or improved access to inputs (Ruben and Fort (2012)), while others find lower yields when producers shift toward quality-oriented practices (Jena et al. (2012)). Overall, the literature suggests that yield reductions are common, but not a universal feature of social labels.

The second type of cost, σ_c, occurs if Northern equipment, goods and expertise are involved in the adoption of improved labour standard (and must be paid for at the going wage rate in the North). As a result the net income earned by labeled producers is given by:

$$w_\ell = (1 - \sigma)\pi w_u - \sigma_c$$

In the following, we restrict attention to labels that are beneficial to Southern producers, that is, where the 'consumption utility' of a labeled producer, $V_{S,\ell}$, is at least as large as that of an unlabeled producer, $V_{S,u}$. (As we show below, this will be a consequence of 'effective' transfers.)

Both unlabeled and labeled traders make profits, and have preferences that are identical to the preferences of Southern producers.[20] Their utility function is given by:

$$U_K = c_K^\alpha \left(f_K^\ell + f_K^u\right)^{1-\alpha} \tag{7}$$

[19]For the sake of generality, we assume costly labels as these costs are an important aspect of fairtrade schemes: all our results hold when the label involves a pure wage premium.

[20]In reality, some intermediary traders are large multinational corporations which do not consume. We could then consider that traders only maximize profits, while these profits be added to Northern consumers budget through shares and salaries in trading companies. Since what matters here is aggregate demand, this would not substantially change the results below.

where c_K and f_K^k represent respectively the amount of clothes and food of type $k = \ell, u$, consumed. Given the Cobb-Douglas nature of these preferences, the distribution of income between traders and producers does not affect the aggregate demand for each type of good.

3 Equilibrium prices and size of the labeled sector

We first describe the equilibrium that prevails before labels are introduced. In the pre-label situation, there are no labeled traders ($\eta = 0$) and no labeled food. The equilibrium price for unlabeled food, p^*, can easily be found by equalizing the supply and the demand for clothes:

$$p^* = (1 - \alpha)\frac{\gamma}{\alpha} \tag{8}$$

In the labeling equilibrium, a fraction $\eta > 0$ of traders are labeled, meaning that the producers who choose to sell food to one of them is labeled. A trader may attract as many producers as they want, with η_S the proportion of labeled producer. As discussed above, we assume η_S is 'small' enough, so that the supply of labeled food does not cover the entire Northern market. Some consumers in the North consume unlabeled food.

The equilibrium prices of labeled and unlabeled food must be such as to leave Northern consumers indifferent between the two types of food:

$$p_\ell = (1 + \mu)^{\frac{1}{1-\alpha}} p_u \tag{9}$$

Again using the market clearing condition for clothing, the equilibrium price of unlabeled food is given by:

$$p_u = \frac{1 - \alpha}{\alpha} \frac{\gamma - \eta_S \sigma_c}{1 + \eta_S[(1 + \mu)^{1/(1-\alpha)}(1 - \sigma) - 1]} \tag{10}$$

While the proportion of labeled traders η is exogenously given, the number of labeled producers is endogenous since each producer chooses which trader to trade with. This depends on the price of unlabeled food, p_u. Using Equation (4), we obtain the equilibrium proportion of labeled producers in the South:

$$\eta_S = \left[1 + \frac{1 - \eta}{\eta} \Big/ \exp\Big(\frac{V_{S,\ell} - V_{S,u}}{d}\Big)\right]^{-1} \text{, where} \tag{11}$$

$$V_{S,\ell} - V_{S,u} = [Ap_u^{\alpha} - d][(1+\theta)(1-\sigma)\pi - 1] - (1+\theta)A\frac{\sigma_C}{p_u^{1-\alpha}}$$

with $A = \alpha^{\alpha}(1-\alpha)^{1-\alpha}$.

As $\left[Ap_u^{\alpha} - d\right] = V_{S,u} > 0$ for all positive w_u, access to the labeled market becomes increasingly profitable for a particular producer when θ or π are large enough to compensate for the potential productivity losses σ and the fixed cost σ_c. [21]

4 The welfare implications of fair trade

The introduction of a label creates a price differential between labeled and unlabeled food. In equilibrium, consumers in the North must be indifferent between both kinds of food, which implies they are ready to pay a price premium for labeled food. The change in prices compared to the initial equilibrium price p^* depends on the characteristics of the label and the market. We have:

Proposition 1 *With the introduction of a label, the price of unlabeled food is smaller than in the pre-label equilibrium iff*

$$\frac{\sigma_c}{\gamma} + (1+\mu)^{1/(1-\alpha)}(1-\sigma) > 1. \tag{12}$$

A sufficient condition for the price of labeled food to be larger than in the pre-label equilibrium is given by:

$$\frac{\sigma_c}{\gamma} + (1-\sigma) < 1 \tag{13}$$

Proof: see Appendix.

Labeling involves some costs in terms of food or reduced productivity, σ, which lowers the total supply of food, generating an excess demand of labeled food when $\frac{\sigma_c}{\gamma} + (1-\sigma) < 1$. Since both types of food are substitutes, the higher the decrease in the supply of labeled food (or the higher the increase in its price), the more consumers will turn to unlabeled goods, generating an

[21] In the specific case in which $V_{S,\ell} = V_{S,u}$, the proportion of labeled producers, η_S, is exactly equal to the proportion of labeled traders, η: every producer trades with the trader that gives him the highest idiosyncratic benefit ϵ_i, and for η producers this happens to be a labeled trader. As the gains from labeling increase (with a larger wage premium π or higher utility gain θ), more producers choose to sell to a labeled trader.

excess demand for unlabeled food if $\frac{\sigma_c}{\gamma} + (1+\mu)^{1/(1-\alpha)}(1-\sigma) < 1$. Under these conditions, both prices should be larger in equilibrium. [22]

Proposition 1 also shows that prices are more likely to decrease when σ_c is high. This is due to the fact that costs in terms of clothes convert demand for labeled food into demand for clothes (Northern consumers, by consuming labeled food, indirectly 'consume' more clothing through these costs), making an excess supply of both labeled and unlabeled food more likely. The higher the price premium $(1+\mu)$ that Northern consumers are ready to pay, the more likely an excess supply on the unlabeled market.

We now define *effective transfers* from Northern consumers to the Southern market. Effective transfers take place if the price premium paid by Northern consumers for the labeled good is large enough to cover the costs of labelling, so that the labelling scheme does not involve 'reverse' transfers from the South to the North. More precisely, the price paid to the trader for a unit of labelled output, net of all labelling costs, is larger than the price paid for an unlabelled unit of output:

$$p_\ell(1-\sigma) - p_u \geq \sigma_C \tag{14}$$

From Conditions (9) and (14), a necessary condition for a label to involve effective transfers is that:

$$(1+\mu)^{1/(1-\alpha)}(1-\sigma) \geq 1 \tag{15}$$

Comparing this condition with Condition 12, we have:

Corollary 1 *Under effective transfers, the price of unlabeled food is always smaller than in the pre-label equilibrium.*

In the rest of the paper, we essentially focus on the implications of effective transfers.

The introduction of a label creates a welfare differential between unlabeled and labeled producers in the South. In the North, in equilibrium, consumers must be indifferent between labeled and unlabeled food. Compared to the pre-label situation, Northern consumers are therefore better off with the introduction of a label if and only if the price of unlabeled food, p_u, is smaller than the initial price, p^* (their budget set is strictly larger). However, this is exactly the condition under which the welfare of unlabeled producers in the South falls with the introduction of the label. We therefore have:

[22] Note that if labels create productivity gains (i.e., $\sigma < 0$), prices on both markets are increasingly likely to decine compared to the pre-label situation. This will indeed create excess supply on both markets.

Proposition 2 *A label is never Pareto improving, nor Pareto deteriorating. With effective transfers, the North is better off and unlabeled producers in the South are worse off.*

Proof. We have already discussed the fact that the North is better off with the introduction of a label if and only if $p_u < p^*$. The second part of the proof requires that unlabeled producers are worse off if and only if $p_u < p^*$. When the price of unlabeled food falls, the price paid to unlabeled producers by their traders, w_u, also falls, but less than proportionately because the extractive power of traders is lower when p_u is lower. Moreover, unlabeled workers also consume unlabeled food, which becomes cheaper when p_u falls. In the appendix, we show formally that the net effect of a lower p_u on the welfare of unlabeled workers is negative.

■

Note that this proposition does not guarantee that total utility (labeled and unlabeled producers) will increase with the introduction of the label. Indeed, if only a small proportion of producers become labeled and actually gain from it (see below), there is no guarantee that producers win in the agreggate; in particular if market prices drop substantially after the introduction of the label.

Additionnaly it is worth noting that effective transfers do not guarantee that all labeled producers gain with the introduction of a label. Clearly, a well-designed labeling program should make sure that at least some of the labeled producers end up better off. This does not prevent the impact of the label to vary across labeled producers. This is due to the fact that there is a non-empty set of labeled producers who, in equilibrium, are just indifferent between selling to a labeled or an unlabeled trader: the 'consumption utility' they gain from being labeled just compensates the loss from trading with their preferred unlabelled trader.[23] For these producers, the impact of a label in terms of welfare is identical to that of unlabeled ones, and they necessarily loose from the introduction of a label. By contrast, producers who were already selling to a trader who became labeled can only gain: they still sell to their preferred trader but enjoy the gains brought by the label. We thus have:

Proposition 3 *The introduction of a label with effective transfers generates winners and losers* ***even*** *among labeled producers.*

The impact of the label on unlabeled traders is unambiguous:

[23]Because $V_{S,l} > V_{S,u}$ and because, in the pre-label situation producers choose their favorite traders, the producers switching traders must be those going from a trader who remained unlabeled to one who got the label.

Proposition 4 *With the introduction of a label with effective transfers, profits and welfare of unlabeled traders always decrease.*

Proof: see Appendix.

Profits of unlabeled traders decrease for two reasons. They first loose on the extensive margin as labeled traders offer better conditions and in this way attract more producers. They also loose on the intensive margin - profits per unit sold - since the price of unlabeled food falls. While, in reaction to this, they reduce the wages paid to the unlabeled producers, they cannot fully pass through the fall in prices (see Equation (6)).

Labeled traders must be strictly better off than unlabeled ones, otherwise, they would not accept to become labeled. However, compared to the pre-label situation, labeled traders' profits may increase. First, by offering better conditions, they attract more producers and gain on the extensive margin. On the other hand, labeled products impose a price premium in the North, determined by the preferences over labeled goods μ, which allows them to gain or lose on the intensive margin. The higher the price premium received for their sales compared to the wage premium that must be paid to labeled producers, the higher this gain. Finally, even if their profits decrease, they could still be better off if the price of the unlabeled food they consume decreases enough.[24]

We now investigate the effects of expanding the fair trade sector by increasing the number of labeled traders, η. We have:

Proposition 5 *An expansion of a label with effective transfers (i) increases the welfare of Northern consumers, (ii) decreases the welfare of the unlabeled producers who remain ex post unlabeled, (iii) decreases the welfare of producers who were previously labeled and (iv) increases the welfare of producers who were previously selling to a trader who become labeled.*

Proof: see Appendix

An expansion of fair trade leads to an increase in the number of labeled producers, which magnifies the consequences in terms of welfare of the introduction of a label. Because overall demand for Southern products decreases, both unlabeled producers in the South and producers who were already labeled are worse off. This result however does not imply that expanding fair

[24]There exists levels of prices such that $\Pi_{K,\ell} < \Pi_K$ and $U_{K,\ell} > U_K$. Formally this happens when $\frac{d}{A}\Big(P_\ell\pi(1-\sigma) - \frac{1}{N}\big(\frac{p}{p_u}\big)^{1-\alpha}\Big) < P_\ell(\pi - (1+\mu)^{\frac{1}{1-\alpha}})(1-\sigma)p_u^\alpha < \frac{d}{A}\Big(P_\ell\pi(1-\sigma) - \frac{1}{N}\Big)$, that is when $\frac{p}{p_u}$ is big enough.

trade lowers the overall welfare of producers in the South. Indeed, producers who were selling to a trader who became labeled do gain by becoming labeled producers.

Finally, we consider the effects of introducing fair trade in economies with different degrees of market power. Recall that d, the dispersion in idiosyncratic benefits for the producers, directly measures trade frictions or the lack of competitiveness among traders in the South. When the same label is introduced in a less competitive environment, fewer producers become labeled because of those frictions, which reduce the mobility of producers across traders.[25] Since fewer producers become labeled in a less competitive environment, the labeled sector ex post is smaller, which weakens the effects of a label on the economy. As a result, unlabeled producers lose less.

Proposition 6 *A label has a smaller impact on welfare and price differentials in high-friction markets (large d).*

Proof: see Appendix

5 A fair trade cooperative

We now investigate another way through which fair trade can be implemented. We consider the arrival on the market of one (or F in general) Fair trade cooperative (NGO, Fairtrade organization, etc.). This Fair trade cooperative, unlike the monopsonistic traders, does not maximize profits but, instead, chooses the price premium paid to the producers it trades with in order to maximize their total utility.

We define ρ as the ratio between the price paid to a labeled producer and the price paid to an unlabeled one (with $\rho \in \left[1, (1+\mu)^{1/(1-\alpha)}\right]$ so that the Fair trade cooperative does not incur losses). The cooperative choses ρ to maximize the sum of utilities of the producers who choose to become labelled:

$$\max_{\pi} \eta_S U_S^{\ell}$$

in which the size of the labelled market, η_S, depends on the price premium, ρ, the cooperative offers. The equilibrium obtained and the comparative statics are descibed in Appendix 7.3. As we show there, the main results described in Proposition 1-5 above still obtain. With the entry of the Fair

[25]Note also that, in our setting, the wage premium is proportional to the wage offered to unlabeled producers. In a less competitive environment, unlabeled food prices are lower, and so is the wage premium that producers obtain from the labeled trader.

trade cooperative(s), a price differential between unlabelled and labelled output emerges, and, under effective transfers, unlabelled producers are worse off, while Northern consumers are better off. Some labelled producers are better off, but others, who were almost indifferent but left their traditional traders for the cooperative end up worse off.

Proposition 6 can be extended as follows:

Proposition 7 *The entry of a Fair Trade Cooperative(s) has weaker effects on welfare and price differential in*

- *high-friction markets, and*
- *markets with a large number of traders.*

The intuition behind the first part of the Proposition is identical to that in Proposition 6: when frictions are high (i.e., when d large), producers are strongly attached to their preferred traders and are therefore less responsive to the introduction of a labeled intermediary. Fewer producers switch, and the overall impact of the label on prices and welfare is weaker. The logic behind the second part of the proposition is similar. With many traders on the unlabeled market, the probability that at least one of them offers a very favorable idiosyncratic match ϵ_i to a producer is high. It is therefore much harder for the Fair Trade Cooperative to attract producers. As the number of traditional traders T increase, the share of producers willing to switch and sell their output to the Cooperative is reduced, which correspondingly reduces the overall impact of Fair Trade.

6 Conclusion

In this paper, we develop a model of North-South trade to investigate the impact of Fair Trade. In the absence of a label, Southern producers are exploited by monopsonisitic intermediaries who export to Northern markets. The Fair Trade label certifies the adoption of high labour standards and the payment of fair prices to producers in the South. We explore two possible strategies to implement a label: some traders receive the label, but must accept the Fair Trade requirements, or new Fair Trade cooperatives are created that directly compete with the traditional traders to attract the producers. We first show that the label is never Pareto-improving: the welfare of unlabeled producers in the South falls if and only if the welfare of Northern consumers increases. The intuition behind this result comes from the fact that the Northern market is not fully covered by Fair Trade products and,

as a result, Northern consumers, who choose to pay a price premium on Fair Trade output, must in equilibrium be indifferent between the labelled and the unlabelled output of the South. This directly implies that Northern consumers can only be better off if and only if Southern unlabelled producers are worse off. This is more likely to occur when the label only requires a price premium to be paid to producers or when it certifies improved production practices that do not entail too large productivity losses. In general, only a fraction of labelled producers benefit from the introduction of Fair Trade. Finally we show that the effects of Fair Trade on equilibrium prices, and in particular the potential gains for labelled producers, are systematically dampened in environments where traders enjoy more market power, which is precisely where one would, a priori, preferentially target those labels.

References

Akerlof, G. (1970). "The market for 'Lemons': Quality Uncertainty and the market mechanism." Quaterly Journal of Economics, 84, 488–500.

Andreoni, J. (1990). "Impure altruism and donations to public goods: a theory of warm-glow giving." The economic journal, 100, 464-477.

Baksi, S. and Bose, P. (2007). "Credence goods, efficient labeling policies, and regulatory enforcement", Environmental and Resource Economics 37, 411-430.

Baland, J. M. and Duprez, C. (2009). "Are labels effective against child labor?." Journal of Public Economics, 93(11), 1125-1130.

Basu, A.K., Chau, N.H. and U. Grote (2006), "Guaranteed Manufactured without Child Labor: The Economics of Consumer Boycotts, Social Labeling and Trade Sanctions", Review of Development Economics, 10(3), 466-491.

Basu, A. K. and Hicks, R. L. (2008). "Label performance and the willingness to pay for Fair Trade coffee: a cross-national perspective." International Journal of Consumer Studies, 32(5), 470-478.

Baumann, F., Oschinski, M., and Staehler, N. (2012). "On the effects of fair trade on the welfare of the poor." Journal of International Development, 24(S1), S159-S172.

Bhagwati, J. (1995), "Trade Liberalization and 'Fair Trade' Demands: Addressing the Environment and Labor Standards Issues", World Economy, 18, 745-759

Bonroy O. and Constantatos C. (2008), "On the use of labels in credence goods markets", Journal of Regulatory Economics, 33, 237-252.

Brown, Drusilla K. (1999), "Can Consumer Product Labels Deter Foreign Child Labor Exploitation?", Department of Economics, Tufts University, Working Paper No. 99-19.

Brown, D. (2001), "Labor standards: where do they belong on the international trade agenda?" Journal of Economic Perspectives, 15(3), 89–112.

Cranfield, J., Henson, S., Northey, J. and Masakure, O. (2010). "An assessment of consumer preference for Fair Trade coffee in Toronto and Vancouver.", Agribusiness, 26(2), 307-325.

Davies R. (2005), "Abstinence from Child Labor and Profit Seeking", Journal of Development Economics, 76, 251-263.

De Janvry, A., McIntosh, C., and Sadoulet, E. (2015). "Fair Trade and Free Entry: Can a Disequilibrium Market Serve as a Development Tool?". Review of Economics and Statistics, 97(3), 567–573

Darby M. and Karni E. (1973) "Free competition and the optimal amount of fraud", Journal of Law and Economics, 16(1), 67-88.

Dragusanu, R., Daniele G., and Nathan N. (2014). "The Economics of Fair Trade." Journal of Economic Perspectives, 28(3), 217-36.

Dragusanu, R., Montero, E., and Nathan N. (2022). "The Effects of Fair Trade Certification: Evidence from Coffee Producers in Costa Rica.", Journal of the European Economic Association, 20 (4), 1743-1790

de Pelsmacker, P. Driesen L. and Rayp G. (2005) "Do consumers care about ethics? Willingness to pay for fair-trade coffee", Journal of Consumer Affairs 39(2), 363-385.

de Ponti, T., Rijk, B., van Ittrsum, M.K., (2012), "The crop yield gap between organic and conventional agriculture", Agricultural Systems, 108, 1-9.

Doepke, M. and Zilibotti, F. (2010). "Do international labor standards contribute to the persistence of the child-labor problem?." Journal of Economic Growth, 15(1), 1-31.

Edmonds, E. (2007), "The economics of consumer actions against products with child labor content", prepared for the Child Labor World Atlas, Hugh Hindman, ed. ME Sharpe Publishers, New York.

Elfenbein, D. W. and McManus, B. (2010). "A greater price for a greater good? Evidence that consumers pay more for charity-linked products." American Economic Journal: Economic Policy, 2(2), 28-60

Fischer, R., Serra, P. (2000), "Standards and protection", Journal of International Economics, 52, 377-400.

Freeman, R.B. (1998), "What role for labor standards in the global economy?", Harvard University and NBER, Centre for Economic Performance, LSE, mimeo.

Fung, A., O'Rourke, C. and Sabel C. (2001), "Stepping up labor standards", Boston Review 26.

Hainmueller, J., Hiscox, M. J. and Sequeira, S. (2015). "Consumer Demand for Fair Trade: Evidence from a Multistore Field Experiment." Review of Economics and Statistics, 97(2), 242–256

Hiscox, M. J. and Smyth, N. (2015). "Is there consumer demand for Fair labor standards? Evidence from a field experiment. Evidence from a Field Experiment." Mimeo, Harvard University.

Jaffee, D. (2009) "'Better, But Not Great': The Social and Environmental Benefits and Limitations of Fair Trade for Indigenous Coffee Producers in Oaxaca, Mexico." In The Impact of Fair Trade, edited by Ruerd Ruben, 195–222. Wageningen: Wageningen Academic Publishers.

Jena, P.R., Chichaibelu, B.B., Stellmacher, T., Grote, U., (2012), "The impact of coffee certification on small-scale producers' livelihoods: a case study from the Jimma Zone, Ethiopia", Agricultural Economics, 43(4), 429-440.

Kotowitz, Y. and Mathewson, F. (1979), "Informative Advertising and Welfare", American Economic Review, 69(3), 284-294.

Loureiro, M.L. and Lotade, J. (2005), "Do fair trade and eco-labels in coffee wake up the consumer conscience?," Ecological Economics, 53(1), 129-138.

McFadden, D., (1976), "Quantal Choice Analysis: A Survey", Annals of Economic and Social Measurement, 5(4), 363-390.

Maskus, K. (1997), "Should core labor standards be imposed through international trade policy?", Policy Research Working Paper 1817, World Bank, Washington, D.C.

Murshid, K.A.S., Zohir, S.C., Milford A. and Wiig A. (2003), "Experience from Bangladesh with ethical trading initiatives", Chr. Michelsen Institute Development Studies and Human Rights.

Nelson P. (1970), "Information and consumer behaviour", Journal of Political Economy, 78(2), 311-329.

Podhorsky, A. (2015), "A positive analysis of Fairtrade certification." Journal of Development Economics, 116, 169-185.

Poelman, A., Mojet, J., Lyon D., and Sefa-Dedeh S. (2008), "The influence of information about organic production and fair trade on preferences for and perception of pineapple", Food Quality and Preference 19, 114–121

Ponisio, L., M'Gonigle, L.K., Mace, K.C., Palomino, J., de Valpine, P., Kremen, C., (2015), "Diversification practices reduce organic to conventional yield gap" Proc Biol Sci, 282(1799).

Prasad, M., H. Kimeldorf, R. Meyer and I. Robinson, (2004), "Consumers of the World Unite: A Market-Based Response to Sweatshops", Labor Studies Journal, 29(3), 57–79.

Rodrik, D. (1996), "Labour standards in international trade : Do they matter and what do we do about them ?", in Robert Z. Lawrence, Dani Rodrik and John Whalley, Emerging Agenda for Global Trade : High Stakes for Developing Countries. Washington, D.C. : Overseas Development Council.

Roe, R. and Sheldon, I. (2007), "Credence good labeling: The efficiency and distributional implications of several policy approaches", American Journal of Agricultural Economics 89(4), 1020–1033.

Ruben, R., and Fort, R., (2012). "The Impact of Fair Trade Certification for Coffee Farmers in Peru", World Development, 40(3), 570-582.

Seufert, V., Ramankutty, N, and Foley, J., (2012), "Comparing the yields of organic and conventional agriculture", Nature, 485, 229–232.

Sirieix, L., Delanchy, M., Remaud, H., Zepeda, L. and Gurviez, P. (2013). "Consumers' perceptions of individual and combined sustainable food labels: a UK pilot investigation." International Journal of Consumer Studies, 37(2), 143-151.

Tagbata, D., Sirieix, L., (2008), "Measuring consumer's willingness to pay for organic and Fair Trade products", International Journal of Consumer Studies, 32(5), 479-490.

Thisse, J. F. and Toulemonde, E. (2010). "The distribution of earnings under monopsonistic/polistic competition." IZA, Discussion Paper No. 5136.

Valkila, J. and Nygren, A. (2009) "Impacts of Fair Trade Certification on Coffee Farmers, Cooperatives, and Laborers in Nicaragua." Agriculture and Human Values, 27(3), 321–33.

Zago, A., and Pick, D. (2004). "Labeling Policies in Food Markets: Private Incentives, Public Intervention and Welfare", Journal of Agricultural and Resource Economics, 29(1), 150-169.

7 Appendix

7.1 Model resolution

7.1.1 Preliminary results

Let us first show

$$w_u = p_u - \frac{d}{\alpha^\alpha (1-\alpha)^{1-\alpha}} p_u^{1-\alpha}$$

$$\frac{\partial \Pi_i}{\partial w_u} = 0$$

$$\Leftrightarrow \frac{\partial P_i (p_u - w_u)}{\partial w_u} = \frac{\partial P_i p_u}{\partial w_u} + \frac{\partial P_i w_u}{\partial w_u} = \frac{V'_{S,u}}{d} P_i p_u - \left(\frac{V'_{S,u}}{d} P_i w_u + P_i \right) = 0$$

$$\Leftrightarrow w_u = p_u - \frac{d}{V'_{S,u}}$$

and since $V_{S,u} = \alpha^\alpha (1-\alpha)^{1-\alpha} \frac{w_u}{p_u^{1-\alpha}}$, we have $V'_{S,u} = \frac{\alpha^\alpha (1-\alpha)^{1-\alpha}}{p_u^{1-\alpha}}$. Hence the result.

7.1.2 Pre-label equilibrium

Demand for food from the North:

$$\frac{(1-\alpha)\gamma}{p}$$

Demand for food from Southern producers:

$$\frac{(1-\alpha)w}{p}$$

Demand for food from Traders:

$$\frac{(1-\alpha)(p-w)}{p}$$

with the supply of food normalized to 1.

Therefore, we have

$$\frac{(1-\alpha)\gamma}{p^*} + \frac{(1-\alpha)w}{p^*} + \frac{(1-\alpha)(p^*-w)}{p^*} = 1$$

$$\Leftrightarrow p^* = \frac{1-\alpha}{\alpha}\gamma$$

7.1.3 Post-label equilibrium

In equilibrium, prices of labeled and unlabeled food must be such as to leave Northern consumers indifferent between the two types of food so that

$$U_N^\ell = U_N^u$$

$$\Leftrightarrow (1+\mu)(\alpha\gamma)^\alpha \left(\frac{(1-\alpha)\gamma}{p_\ell}\right)^{1-\alpha} = (\alpha\gamma)^\alpha \left(\frac{(1-\alpha)\gamma}{p_u}\right)^{1-\alpha}$$

$$\Leftrightarrow p_\ell = (1+\mu)^{\frac{1}{1-\alpha}} p_u$$

The quantity of labeled food available on the market is $\eta_S(1-\sigma)$ and is fully consumed by Northern consumers (since $p_\ell > p_u$, traders and producers in the South only consume unlabeled food). The demand from the North for unlabeled food is therefore given by:

$$\frac{(1-\alpha)\gamma - \eta_S(1-\sigma)p_\ell}{p_u}$$

where $(1-\alpha)\gamma - \eta_S(1-\sigma)p_\ell$ is the residual budget not spent in labeled food.

Demand for unlabeled food from labeled producers in the South:

$$\eta_S \frac{(1-\alpha)(w_\ell - \sigma_C)}{p_u}$$

Demand for unlabeled food from labeled traders in the South:

$$\eta_S \frac{(1-\alpha)(p_\ell - w_\ell)}{p_u}$$

Demand for unlabeled food from unlabeled producers in the South:

$$(1-\eta_S)\frac{(1-\alpha)w_u}{p_u}$$

Demand for unlabeled food from unlabeled traders in the South:

$$(1-\eta_S)\frac{(1-\alpha)(p_u - w_u)}{p_u}$$

with $w_\ell = \pi w_u(1-\sigma)$ and $p_\ell = (1+\mu)^{\frac{1}{1-\alpha}} p_u$.

And since the supply of unlabeled food is $(1-\eta_S)$, we easily get:

$$p_u = \frac{1-\alpha}{\alpha} \frac{\gamma - \eta_S \sigma_c}{1 + \eta_S[(1+\mu)^{1/(1-\alpha)}(1-\sigma) - 1]}$$

Finally, Equation (4) suggests that

$$\eta_S = \frac{\eta \exp\left(\frac{V_{S,\ell}}{d}\right)}{\eta \exp\left(\frac{V_{S,\ell}}{d}\right) + (1-\eta) \exp\left(\frac{V_{S,u}}{d}\right)}$$

which can be rewritten as

$$\eta_S = \left[+ \frac{1-\eta}{\eta} \Big/ \exp\Big(\frac{V_{S,\ell} - V_{S,u}}{d} \Big) \right]^{-1}$$

7.2 Proofs

Proposition 1 *With the introduction of a label, the price of unlabeled food is smaller than in the pre-label equilibrium iff*

$$\frac{\sigma_c}{\gamma} + (1+\mu)^{1/(1-\alpha)}(1-\sigma) > 1.$$

A sufficient condition for the price of labeled food to be larger is given by:

$$\frac{\sigma_c}{\gamma} + (1-\sigma) < 1$$

Proof. As for the first part of the proof, it suffices to show that $p_u > p^*$ iff Condition 12 in the proposition is satisfied.

To do so, consider the ratio of p_u over p^*:

$$\frac{p_u}{p^*} = \frac{1 - \frac{\eta_S \sigma_c}{\gamma}}{1 + \eta_S[(1+\mu)^{1/(1-\alpha)}(1-\sigma) - 1]}$$

It follows immediately that

$$p_u < p^* \iff \frac{\sigma_c}{\gamma} + (1+\mu)^{1/(1-\alpha)}(1-\sigma) > 1$$

In order to show that Condition 13 is sufficient for $p_\ell < p^*$ we consider

the ratio

$$\frac{p_\ell}{p^*} = (1+\mu)^{1/(1-\alpha)} \frac{1 - \frac{\eta_S \sigma_c}{\gamma}}{1 + \eta_S[(1+\mu)^{1/(1-\alpha)}(1-\sigma) - 1]}$$

from which it follows that

$$p_\ell > p^* \iff (1+\mu)^{1/(1-\alpha)} - 1 > \eta_S \left[(1+\mu)^{1/(1-\alpha)} \Big((1-\sigma) + \frac{\sigma_c}{\gamma} \Big) - 1 \right]$$

So that $(1-\sigma) + \frac{\sigma_c}{\gamma} < 1$ guarantees the result. It is only a sufficient condition since $p_\ell > p^*$ may hold without the latter condition: when η_S is small enough (due to a small value of π or θ for instance).

■

Proposition 2 *A label is never Pareto improving, nor Pareto deteriorating. With effective transfers, the North is better off and unlabeled producers in the South are worse off.*

Proof (Continued).

It remains to be shown that unlabeled producers are worse off if and only if $p_u < p^*$.

To this end, consider the utility of unlabeled workers:

$$U_{S,u} = A \frac{w_u}{p_u^{1-\alpha}} + \epsilon_i = A p_u^\alpha - d + \epsilon_i$$

A decrease in p_u leads to a decrease in w_u as well as a decrease of the denominator, and has no other effects. Note that ϵ_i does not change as unlabeled workers do not change traders when the label is introduced. Hence, a decrease in p_u leads to a decrease in welfare for unlabeled workers, and vice versa. ■

Proposition 4 *With the introduction of a label with effective transfers, profits and welfare of unlabeled traders always decrease.*

Proof. It suffices to show that, with the introduction of the label, the profits and utility of unlabeled traders fall.

In equilibrium, the utility function of any trader i is given by:

$$U_{K,i} = A \frac{\Pi_i}{p^{1-\alpha}}$$

where Π_i is its profits, and p is the price of the food they consume.

From Equation (5), we know that Π_i is a function of two components: 1) The number of producers P_i that choose trader i (the extensive margin) and 2) the profits made on every unit sold, $p - w$ (the intensive margin). We easily derive from Equation (6) that the intensive margin is given by

$$\frac{d}{A} p^{1-\alpha}$$

which increasing with prices. Therefore with the introduction of a label with effective transfers, unlabeled producers loose at the intensive margin. And since both pre-label traders and unlabeled traders consume the food they trade, the value of the intensive margin is exactly proportional to the denominator of the utility function at equilibrium. Their utility can therefore be simplified into:

$$U_{K,i} = P_i \; d$$

For the extensive margin, note that prior to the introduction of the label all traders offer the same conditions and attract the same proportion of producers ($1/N$). When the label is introduced, the share of producers choosing a given intermediary i is given by Equation (4). As one would expect, the share of producers P_i is increasing in $V_{S,i}$, the utility of producing and consuming when trading with trader i. Since this utility is higher when trading with labeled than with unlabeled traders ($V_{S,\ell} \geq V_{S,u}$), labeled traders attract more producers than unlabeled traders ($P_\ell \geq P_u$). Since prior to the label they attracted the same number of producers, and since the total number of producers N is fixed, this implies that the share of producers attracted by an unlabeled trader, P_u, decreases.

■

Proposition 5 *An expansion of a label with effective transfers (i) increases the welfare of Northern consumers, (ii) decreases the welfare of the unlabeled producers who remain ex post unlabeled, (iii) decreases the welfare of producers who were already labeled before the expansion and (iv) increases the welfare of producers who were previously selling to a trader who become labeled.*

Proof. Since the discussion in the paper following this proposition goes beyond the proposition, we prove a somewhat more general lemma below.

However, Lemma 1 immediately implies the proposition. Indeed, by Condition (15) any label with effective transfers satisfies the condition $\frac{\sigma_c}{\gamma} + (1 + \mu)^{1/(1-\alpha)}(1 - \sigma) > 1$ in the lemma. ■

Lemma 1 *If* $\frac{\sigma_c}{\gamma} + (1 + \mu)^{1/(1-\alpha)}(1 - \sigma) > 1$*, an expansion of a label (i) increases the welfare of Northern consumers, (ii) decreases the welfare of the unlabeled producers who remain ex post unlabeled, (iii) decreases the welfare of producers who were already labeled before the expansion and (iv) increases the welfare of producers who were previously selling to a trader who become labeled.*

Proof. We will show that an increase in the number of traders η leads to a decrease in unlabeled food prices when $\frac{\sigma_c}{\gamma} + (1 + \mu)^{1/(1-\alpha)}(1 - \sigma) > 1$. This implies the lemma. Indeed, in the proof of Proposition 1 we have shown that a decrease in unlabeled food prices (1) increases the welfare of Northern consumers and (2) decreases the welfare of Southern producers. Since the proposition involves unlabeled producers who remain ex post unlabeled (case (ii)) and producers who were already labeled (case (iii)), this suffices.

It thus remains to be shown that increasing η leads to a decrease in unlabeled food prices when

$$\frac{\sigma_c}{\gamma} + (1 + \mu)^{1/(1-\alpha)}(1 - \sigma) > 1$$

is satisfied and leads to an increase in p_u when it is not satisfied. Let us first prove the first part, that an expansion of fairtrade leads to a decrease in p_u when the condition is satisfied.

To this end, recall that apart from p_u, also the share of labeled producers in the South, η_S, is endogenous. To understand how prices change, we thus also need to consider changes in η_S. A change in η has no immediate effect on p_u (Equation (10)), and we know that $\frac{\partial \eta_S}{\partial \eta} > 0$ (Equation 11). Moreover, equation 10 and 11 show that, under Condition (12), the immediate effect of an increase in η_S is a decrease in p_u, while an increase in p_u leads to an increase in η_S, so that:

$$\frac{\partial p_u}{\partial \eta_S} < 0 \text{ and } \frac{\partial \eta_S}{\partial p_u} > 0 \tag{16}$$

The total effect of an increase in η is the following: It increases η_S, which has a negative effect p_u. The latter has a negative effect on η_S, thus attenuating the original change. Despite this attenuation we show below that

the overall effect of an increase in η is an increase in η_S and a decrease in p_u. Indeed, taking into account these attenuation effects one can write the overall effect of η on η_S and p_u as follow:[26]

$$\frac{dp_u}{d\eta} = \frac{\partial \eta_S}{\partial \eta} \frac{\partial p_u}{\partial \eta_S} \left[\frac{1}{1 - \frac{\partial p_u}{\partial \eta_S} \frac{\partial \eta_S}{\partial p_u}} \right] \tag{17}$$

and

$$\frac{d\eta_S}{d\eta} = \frac{\partial \eta_S}{\partial \eta} \left[\frac{1}{1 - \frac{\partial p_u}{\partial \eta_S} \frac{\partial \eta_S}{\partial p_u}} \right] \tag{18}$$

Under conditions 16 it directly follows that $\frac{dp_u}{d\eta} < 0$ and $\frac{d\eta_S}{d\eta} < 0$.

Left to show that an increase in η leads to a increase in p_u when Condition (12) is not satisfied. This is easier. Indeed, when Condition (12) is not satisfied, changes in p_u and η_S go in the same direction:

$$\frac{\partial p_u}{\partial \eta_S} > 0 \text{ and } \frac{\partial \eta_S}{\partial p_u} > 0$$

From Equation 17 it is thus immediate that an increase in η, whose immediate effect is to increase η_S, leads to an increase in both η_S and p_u.

The proof of case (iv) is trivial.

■

Proposition 6 *A label has weaker effects in less competitive environments.*

Proof.

in particular, we show that, in a less competitive environment (higher d), the introduction of a label with effective transfers leads to a smaller reduction in (1) equilibrium prices, p_u, and (2) unlabeled workers' wages, w_u.

The proof for point (1) is almost identical to the one of Proposition (5) where we looked at the comparative statics of η. The direct effect of a change in d on p_u and η_S is:

$$\frac{\partial p_u}{\partial d} = 0 \text{ and } \frac{\partial \eta_S}{\partial d} < 0 \tag{19}$$

[26] We need to suppose $\frac{\partial p_u}{\partial \eta_S} \frac{\partial \eta_S}{\partial p_u} < 1$ otherwise the overall effect diverges, and so do prices.

Just like for η, a change in d only has a direct effect on η_S and not on p_u. However, the direct effect of d on η_S is negative, while it was positive for η.

Under a label with effective transfers, the price for unlabeled food, p_u, falls following the introduction of the label. Using the same argument as in the proof of Proposition (5), we can show that an increase in d leads to a decrease in η_S and an increase in p_u. Since the original effect of the label was a decrease in p_u, the reduction in p_u is indeed smaller in a less competitive environment.

Next, we need to show that also the reduction in wages is smaller in a less competitive environment. To this end, consider the effect of a change in p_u on unlabeled workers' wages:

$$\frac{\partial w_u}{\partial p_u} = 1 - \frac{(1-\alpha)d}{\alpha^\alpha(1-\alpha)^{1-\alpha}} p_u^{-\alpha} \tag{20}$$

Assuming an equilibrium exists, $w_u \geq 0$ must hold and, so, $dp_u^{-\alpha}/\alpha^\alpha(1-\alpha)^{1-\alpha} \leq 1$. As a consequence, $\frac{\partial w_u}{\partial p_u} > 0$ and a decrease in p_u always leads to a decrease in wages for unlabeled producers.

$$\frac{\partial w_u}{\partial p_u} = 1 - \frac{(1-\alpha)d}{\alpha^\alpha(1-\alpha)^{1-\alpha}} p_u^{-\alpha}$$

This expression is decreasing in d. Hence, under an introduction of fairtrade, a given reduction in p_u has a smaller effect on w_u when competitiveness is low. Moreover, we have just shown that in this setting, the reduction in p_u is smaller. Both effects together thus imply that the reduction in wages is smaller when competitiveness is lower.

■

7.3 Equilibrium with a Fair trade cooperative

We only present the equilibrium. All the proofs are similar to those presented in Appendix 7.1.

The condition on relative prices remain the same and must be such as to leave Northern consumers indifferent between the two types of food. In equilibrium,

$$p_\ell = (1+\mu)^{\frac{1}{1-\alpha}} p_u$$

As for the prices themselves, the only difference is that labeled traders do not exist (and are therefore not considered in the demand for food)[27].

[27]For the sake of simplicity, we also get rid of the fixed cost of label σ_C

The equilibrium price for unlabeled food then becomes:

$$p_u = (1-\alpha)\frac{\gamma}{\alpha(1-\eta_S)+\eta_S(1-\sigma)[(1+\mu)^{1/(1-\alpha)}-(1-\alpha)\rho]}$$

and from Equation 4 we show that[28]

$$\eta_S = \left[1 + T \Big/ \exp\Big(\frac{V_{S,\ell} - V_{S,u}}{d}\Big)\right]^{-1} \tag{21}$$

$$\text{with } V_{S,\ell} - V_{S,u} = Ap_u^{\alpha}\Big[(1+\theta)(1-\sigma)\rho - 1\Big] + d.$$

Finally, the NGO then finds ρ maximizing $\eta_S U_S^{\ell}$ with,

$$U_S^{\ell} = Ap_u^{\alpha}(1+\theta)(1-\sigma)\rho$$

So ρ is given by

$$Ap_u^{\alpha}(1+\theta)(1-\sigma)\eta_S\left[1 + \alpha\frac{\rho}{p_u}\frac{\partial p_u}{\partial \rho} + \frac{\rho}{\eta_S}\frac{\partial \eta_S}{\partial \rho}\right] = 0$$

which is always positive as long as the NGO has no additional cost to bear[29]. We should therefore expect $\rho = (1+\mu)^{1/(1-\alpha)}$

[28] Generalizing the number of NGO to F this expression becomes $\left[1 + \frac{T}{F} \Big/ \exp\Big(\frac{V_{S,\ell} - V_{S,u}}{d}\Big)\right]^{-1}$

[29] We could indeed add a cost $\sigma_F \eta_S^2$, in which case we would expect the solution to become interior under certain values of σ_F when the label sector becomes big enough.