

‘Made in Dignity’: the redistributive impact of social labeling*

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Abstract

In this paper, we develop a North-South model to investigate the impact of social labelling, which certifies the adoption of high labour standards in the production of exports to the North. We show that the adoption of a label is never Pareto-improving if (i) a small fraction of eligible producers have access to the label, or if (ii) the price premium Northern consumers are willing to pay is just sufficient to cover the costs of adopting better standards. In these cases, we show that the welfare of Southern workers can increase if and only if the welfare of Northern consumers decreases. Southern workers are more likely to loose when the Northern demand for labelled goods is price elastic and the productivity losses associated with higher labour standards are small.

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1 Introduction

The recent debates about the impact of globalization stressed the need to regulate international trade in order to avoid what is thought as unfair competition by countries applying low labour standards. Numerous proposals have been put forward to incorporate minimum labour-standards into international trade rules.¹ If these proposals are partly motivated by protectionist motives against 'social dumping', they also express a genuine concern about labour conditions in developing economies. While at the national level, various policies are available, ranging from bondage prohibition to incentives for entrepreneurs to improve working conditions, the set of instruments at the international level is much more limited.

Social labeling programs have developed recently as an alternative to import taxes or import prohibition. By raising public awareness, labels are also expected to trigger a change in demand patterns towards the producers complying with a code of conduct. Labels are particularly attractive as they do not rely on coercion. They instead give information to the consumers on the social environment surrounding the production of a particular good.² The consumer is then free to choose whether to support or not those practices, giving rise to a form of 'democracy by the consumers' (as advertised by Oxfam in a recent campaign). The purchase of a labeled good is thus a particular form of voluntary transfers by consumers to complying producers.³ Southern countries may also choose to use labels as a tool to discriminate between various customers according to their preference for labour standards, in the same way as a discriminating monopolist would. With appropriate redistribution mechanism, such labels should improve welfare in the South.

Over the recent years, social labeling programs have been growing rapidly. Thus, the sales of Fairtrade goods have been growing on an average of 40% per year in the last five years. In 2007, Fairtrade sales amounted to approximately €2.3 billion worldwide.⁴ Besides their commercial success, most labeling

¹See 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), Fung et al. (2001), and Brown (2001) for more details on labour standards and international trade.

²A label can be viewed as a form of informative advertising. There is a large literature investigating the optimal amount of advertisement. See e.g. Kotowitz and Mathewson (1979), Grossman and Shapiro (1984), and Becker and Murphy (1993).

³Many studies show that consumers are willing to pay a premium for goods produced under 'fair' conditions. See e.g. Prasad et al. (2004), Hiscox and Smyth (2005), De Pelsmacker et al. (2005), Loureiro and Lotade (2005), Poelman et al. (2008), and Tagbata and Sirieix (2008).

⁴See www.fairtrade.net (january 2009).

programs are actively supported by international organizations (such as ILO or UNICEF) and NGO's (Oxfam, Max Havelaar,...).

These initiatives follow the presumption that social labels improve labour standards in the South, and increase the welfare of both workers in the South and consumers in the North. In this paper, we develop a model of North-South trade to investigate the consequences of the introduction of social labels. To this end, we assume that (a) all consumers in the North are willing to pay a price premium for labeled goods, and (b) the label is perfectly and costlessly monitored. Taken altogether, these two assumptions tend to bias the results of the model in favour of a large positive impact of labelling.

We first analyze the case where any eligible producer can obtain the label, provided that he satisfies the conditions of the label. We first show that, because of free access, the label cannot create a welfare differential between labelled and unlabelled producers. We also describe the conditions under which the introduction of a label leads to a Pareto-improvement and we show that, when the price premium the North is willing to pay just covers the cost of adopting high labour standards in the South, a social label cannot be Pareto improving: the welfare of Northern consumers increases if and only if welfare of all Southern producers decreases. Second, we consider the case where only a fraction of eligible producers have access to the label, so that the South exports both labeled and unlabeled production to the North: in this case, a social label cannot again be Pareto improving. The intuition behind this result is the following: if the price of unlabeled food rises, so that unlabeled Southern workers are better off, consumers in the North must be worse off as they now purchase food produced under low labour standards at a higher price.

The literature on social labeling is fairly limited. Fisher and Serra (2000) stress the protectionist role of production standards. Some authors have already raised doubts about the beneficial impact of a label certifying the absence of child labour.⁵ In a related paper, we pointed out the scope for large displacement effects inhibiting the impact of child labor labels, as the labeled production is channelled towards labeled consumers while the production made by working children is re-directed towards unconcerned consumers (Baland and Duprez, 2007). While closely related, the difference between the latter analysis and the present paper is the following: the age of a worker is not a characteristic that can be changed, unless by firing the worker. By contrast, working conditions can be improved by the employer, albeit at some cost. The present paper therefore focusses on the impact of social labelling when

⁵Edmonds (2007) provides a survey of this literature. See e.g. Brown (1999), Davies (2005), and Basu et al. (2006).

it involves a costly improvement in the working conditions of the labour force. The presence of a cost implies that part of the price premium paid by Northern consumers gets dissipated and may lead to a fall in the gross output from the South. Following another branch of the literature, labour standards can to some extent be viewed as a credence characteristics, a hidden attribute that is not revealed to consumers even after consumption. Other types of credence attributes include environment-friendly production, food quality and safety, etc.⁶ The literature on credence good generally concludes that (perfect) labeling improves welfare.⁷ In this paper, instead of considering an homogenous 'credence' good, we focus on the distributive impact of labeling by taking explicitly into account the fact that producers are heterogeneous in their ability to receive the label.

The paper proceeds as follows. In section 2, we present the basic model and investigate the welfare impact of a label certifying high labour standards. In sub-section 2.2, we analyze the case of unrestricted labelling where all producers in the South can enter the labelled sector, while in sub-section 2.3, we investigate the consequences of restricted labelling where only a small number of producers have access to the label. In Section 3, we analyze the case where adopting high labour standards is costless for Southern producers (the label simply certifies that a wage premium is given to the workers). Section 4 concludes.

2 A label on working conditions

We consider an economy with two countries, North and South, denoted by N and S respectively. In each country, there are L identical individuals, each of whom has one unit of time that he supplies 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 worker producing one unit of food.

There are potentially two sectors in the South, the labelled and the unlabelled one, respectively denoted by a superscript l and u . We let p^l, p^u stand

⁶The classification into credence goods follows Nelson (1970), and Darby and Karni (1973).

⁷See e.g. Zago and Pick (2004), Baksi and Bose (2007), Roe and Sheldon (2007), and Bonroy and Constantatos (2008).

for the price of labelled and unlabeled food respectively, and w^l, w^u for the corresponding wage rates in each sector. A label on a unit of food certifies that it has been produced under high labour standards, which are uniquely defined. Monitoring is perfect so that there is no uncertainty associated with the quality of the label.⁸

Southern workers care about the working conditions they face. As consumers, however, they are not concerned about the labour conditions involved in the food they consume.⁹ Their utility function is as follows:

$$U_S = U_S(c_S, f_S^l + f_S^u, \theta) \quad (1)$$

where c_S and f_S^j represent respectively the amount of clothes and food of type j , $j = l, u$, consumed. The two types of food are perfect substitutes in a one-for-one basis, so that Southern consumers purchase the least costly variety. The third argument, θ , is a dummy variable which takes the value 1 when working under high labour standards, and 0 otherwise. We assume that Southern workers prefer working under high labour standards, so that $U'_{S,3} > 0$.

Adopting high labour standards is costly for the producers. To obtain high labour standards, one has to spend $\zeta \geq 0$ units of labour per unit of food produced and $\zeta_c \geq 0$ units of clothes. The first type of cost can reflect the fact that improved labour standards imply higher production costs, by resorting to less exploitative modes of production or spending more resources on workers' health and education. The second type of cost, ζ_c , may reflect the fact that Northern equipment and expertise are involved in the adoption of improved labour standards, and must be compensated at the going wage rate in the North.

The budget constraint of a Southern individual working in the sector j , $j = u, l$, is as follows:

$$c_S + f_S^l p^l + f_S^u p^u + \theta(\zeta w^j + \zeta_c) = w^j$$

⁸The 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 labelled (even of uncertain quality) over unlabelled food.

⁹This 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 notations. The model, and its results, can trivially be extended to the case where some Southern consumers care about labour standards, while some Northern consumers are indifferent.

where $w^j = p^j$. We restrict ourselves to the case where the costs of improved labour standards are higher than the utility gains they create for the Southern worker.¹⁰ Under this assumption, in the absence of a label, food is produced under low labour standards. If production units with better labour standards are labeled, a price differential between labeled and unlabeled food is necessary to induce individuals in the South to work in the labeled sector. More formally, we define $w(p^u)$ as the wage in the labelled sector such that Southern workers are indifferent between working under high and low labour standards, with $w(p^u) > p^u$:

$$Max_{f_S^u} U_S((1 - \zeta)w(p^u) - \zeta_c - p^u \cdot f_S^u, f_S^u, 1) = Max_{f_S^u} U_S(p^u - p^u \cdot f_S^u, f_S^u, 0) \quad (2)$$

Equation (2) defines all pairs of food prices $(w(p^u), p^u)$ which leave Southern workers indifferent between working in either sector. As discussed above, we require $w(p^u) > p^u$. Moreover, equation (2) implies that, at $p^l = w(p^u)$, the wage of a labelled worker, net of the cost of adopting high labour standards, is strictly lower than the wage in the unlabeled sector: $(1 - \zeta)w(p^u) - \zeta_c < p^u$.

In the North, individuals consume food and clothing, but also care about the working conditions prevailing in the production unit of the goods from the South that they consume. The utility function of a Northern consumer is given by:

$$U_N(c_N, f_N^l, f_N^u) \quad (3)$$

where c_N represents the amount of clothing, f_N^l , the amount of labeled food and f_N^u , the amount of unlabeled food that he consumes. The budget constraint of a Northern household is written as:

$$c_N + f_N^l p^l + f_N^u p^u = \gamma$$

For expositional convenience, we assume that a Northern consumer consumes only one type of food so that either $f_N^l = 0$ or $f_N^u = 0$.¹¹ We also consider that Northern consumers prefer labelled units of food to unlabeled ones. We therefore require that, at any $p^l = p^u$, the North consumes only labelled food. We also define $P(p^u)$ as the price of labelled food which leaves

¹⁰If this is not the case, food is always produced under high labour standards in the absence of a label.

¹¹This assumption is not restrictive if labelled and unlabelled food are perfect substitutes. If they are imperfect substitutes, the assumption imposes upper bounds on the marginal utility of both types of food.

Northern consumers indifferent between the two types of food:

$$\underset{f_N^l}{Max} U_N (\gamma - P(p^u) \cdot f_N^l, f_N^l, 0) = \underset{f_N^u}{Max} U_N (\gamma - p^u \cdot f_N^u, 0, f_N^u). \quad (4)$$

For any pair of food prices $(P(p^u), p^u)$ satisfying equation (4), we have $P(p^u) > p^u$ since Northern consumers prefer labelled units of food. Moreover, $f_N^u = 0$ if $p^l < P(p^u)$ and $f_N^l = 0$ if $p^l > P(p^u)$.

We assume that all goods are normal, and that U_S and U_N are concave and satisfy the Inada end-point conditions.¹² Maximizing utility given the budget constraint yields the demands of a Northern consumer, $c_N(p^l, p^u, \gamma)$, $f_N^l(p^l, p^u, \gamma)$ and $f_N^u(p^l, p^u, \gamma)$ as functions of labelled food prices, unlabelled food prices and income. The corresponding demands for a Southern individual working in the food sector j , $j = l, u$, are given by $c_S(p^l, p^u, w^j, \theta)$, $f_S^l(p^l, p^u, w^j, \theta)$, $f_S^u(p^l, p^u, w^j, \theta)$ as function of food prices, wage and working conditions.

2.1 The pre-label equilibrium

We first describe the equilibrium that prevails before labels are introduced. In the pre-label situation, labour standards are low so that $\theta = 0$. There is no labelled food available in the market and, accordingly, the pre-label equilibrium price for labelled food can be considered as infinite. At a pre-label equilibrium, the price for unlabeled food, p^* , is given by the equality between supply and demand for food:

$$L f_N^u(\infty, p^*, \gamma) + L f_S^u(\infty, p^*, w^*, 0) = L \quad (5)$$

where $w^* = p^*$. By Walras' law, the equilibrium price p^* also constitutes an equilibrium for the clothing market, and we therefore have:

$$L c_N(\infty, p^*, \gamma) + L c_S(\infty, p^*, w^*, 0) = L \gamma$$

We now discuss the assumptions necessary for an equilibrium to be unique

¹²More precisely, we assume that U_S is twice continuously differentiable, increasing and concave in all arguments: $U_{S,j} > 0$ and $U_{S,jj} < 0$, $j = 1, 2$. We assume all goods to be normal. We also assume Inada end-point conditions to ensure the existence of an interior equilibrium: $\lim_{c_S \rightarrow 0} U_{S,1} = \lim_{f_S^l + f_S^u \rightarrow 0} U_{S,2} = +\infty$ and $\lim_{c_S \rightarrow +\infty} U_{S,1} = \lim_{f_S^l + f_S^u \rightarrow +\infty} U_{S,2} = 0$.

Similar assumptions are made for the utility function of a Northern consumer.

and stable. The normality of all goods implies that, in the North, f_N^j , if positive, is decreasing in p^j , $j = u, l$. At $p^l = p^u = p$, we assume that the aggregate demand for clothing is strictly increasing in food prices: $\frac{dc_N(p,p,\gamma)}{dp} + \frac{dc_S(p,p,p,\theta)}{dp} > 0$. In the food market, the impact of a rise in food prices on the demand in the South is ambiguous, as it depends on the relative strength of the wage effect (being richer, the individual demands more food) and the substitution effect (as the opportunity cost of food rises, the individual demands less food). We however require that the wage effect does not dominate the substitution effect at $p^l = p^u = p$, so that an increase in p leads to a lower demand for food in the South: $\frac{df_S(p,p,p)}{dp} \leq 0$ (where $f_S = f_S^u + f_S^l$ represents the total amount of food consumed).

In the following, we also impose some restrictions on the demand for food in the North and in the South:

Assumption 1 $f_N^l(p, p, \gamma) > f_N^u(\infty, p, \gamma)$

Assumption 2 $f_N^l(P(p), P(p), \gamma) \leq f_N^u(\infty, p, \gamma)$

Assumption 3 $f_S(p, p, (1 - \zeta)w - \zeta_c, 0) = f_S(p, p, w, 1)$

Assumption 1 requires that, at the same prices, the demand for labelled food is higher than the pre-label demand for unlabeled food, so that the introduction of a label necessarily implies an increase in food demand by Northern consumers.¹³ Assumption 2 imposes an upper bound on this increase. More precisely, we assume that at the price that makes consumers indifferent between the two types of food, $P(p)$, the Northern demand for labelled food does not exceed the Northern pre-label demand for unlabeled food at price p .¹⁴ Assumption 3 requires that, at identical food prices and net wages, working under high or low labour standards does not affect the demands of a Southern individual. When Assumption 3 fails, the introduction of a label creates an additional effect as it changes the demand patterns in the South. This additional feature however does not provide any additional insight in the analysis of the impact of a label, and assumption 3 allows us to ignore the potential effect of these changes.¹⁵

¹³More specifically, Assumption 1 means that, given the initial prices, the label increases the marginal utility for food relative to clothing.

¹⁴Note that this assumption is satisfied if labelled and unlabelled food are perfect substitute.

¹⁵If improved labour standards increases the marginal utility of food relative to clothing, the label is more likely to benefit Southern workers as it drives food prices upwards. The opposite occurs if improved labour standards diverts demand patterns in the South in favor of clothing.

2.2 The impact of unrestricted labelling

We now turn to the impact of introducing a label. An equilibrium with label exists iff $P(p^{u*}) \geq W(p^{u*})$. The price premium the North is willing to pay for labelled food must be large enough to cover the net cost of adopting high labour standards. Otherwise, the market for labeled food is empty.

Without loss of generality, we assume that the label sector is accessible to a number \bar{L} of workers in the South, with $0 < \bar{L} \leq L$. We define a label as *unrestricted* if, in equilibrium, the Northern demand for labeled food at a post-label equilibrium does not exhaust the production capacities of the labelled workers. More formally, an *unrestricted* labelling equilibrium (p^{l*}, p^{u*}) exists if \bar{L} is such that:

$$\begin{aligned} (i) \quad & p^{l*} = W(p^{u*}), \\ (ii) \quad & Lf_N^l(p^{l*}, p^{u*}, \gamma) \leq \bar{L}(1 - \zeta), \text{ and} \\ (iii) \quad & Lf_N^l(p^{l*}, p^{u*}, \gamma) + \bar{L}f_S^u(p^{l*}, p^{u*}, w^{l*}, 1) \\ & + (L - \bar{L})f_S^u(p^{l*}, p^{u*}, w^{u*}, 0) = L - \zeta\bar{L} \end{aligned}$$

where $w^j = p^j$, $j = l, u$. We also define a *restricted* equilibrium as a pair (p^{l**}, p^{u**}) such that the total amount of labeled food falls below the potential demand by Northern consumers: in equilibrium, the latter consume both types of food. A *restricted* equilibrium (p^{l**}, p^{u**}) exists if \bar{L} is such that:

$$\begin{aligned} (i) \quad & p^{l**} = P(p^{u**}), \\ (ii) \quad & \alpha Lf_N^l(p^{l**}, p^{u**}, \gamma) = \bar{L}(1 - \zeta), \text{ and} \\ (iii) \quad & (1 - \alpha)Lf_N^u(p^{l**}, p^{u**}, \gamma) + \bar{L}f_S^u(p^{l**}, p^{u**}, w^{l**}, 1) \\ & + (L - \bar{L})f_S^u(p^{l**}, p^{u**}, w^{u**}, 0) = L - \bar{L} \end{aligned}$$

where α is the proportion of all units of food consumed in the North that are labelled ($0 < \alpha < 1$).

Our assumptions guarantee that, for given parameter values, only one type of equilibrium exists, and that this equilibrium is unique.¹⁶ Moreover, one can show that a restricted equilibrium always exists for small values of \bar{L} while the unrestricted equilibrium arises for large enough values of \bar{L} .¹⁷

¹⁶To guarantee a stable equilibrium with label, we assume that the demand for food from a labeled worker is decreasing in food prices: $\frac{df_S^u(W(p), p, W(p), \theta)}{dp} \leq 0$ and $\frac{df_S^u(P(p), p, P(p), \theta)}{dp} \leq 0$ in addition to the stability assumptions made previously.

¹⁷This last statement invites two remarks. First, for intermediate values of \bar{L} , there

In this section, we focus on the analysis of unrestricted labeling. Under an unrestricted label, the equilibrium pair of food prices must leave Southern individuals indifferent between working in either sector: $p^{l*} = w(p^{u*})$. Indeed, as long as labour is perfectly mobile across sectors, a welfare differential attracts all Southern workers in the more beneficial sector, which automatically leads to an excess demand in the other sector. We therefore have:

Proposition 1 *Under an unrestricted label, the welfare of labeled workers is equal to the welfare of unlabeled workers.*

Proof. Let F^i represents the total supply of food of type i , $i = l, u$.

We show that $p^{l*} = w(p^{u*})$ is the only possible equilibrium.

(i) If $p^l > w(p^u)$, then $f_S^u > 0$ and $F^u = 0$, which cannot constitute an equilibrium.

(ii) If $p^l < w(p^u)$, then $f_N^l > 0$ and $F^l = 0$, which cannot constitute an equilibrium. ■

At a post-label equilibrium, unlabeled food is sold exclusively in the South while labeled food is sold exclusively in the North, and the price premium paid by Northern consumers is such that Southern producers are indifferent between working in either sector.

The welfare impact of unrestricted labelling are determined by the change in the food market that follows the introduction of the label. The label introduces three changes: (i) it increases the Northern demand for food (Assumption 1), (ii) it reduces the total supply of food since the productivity in the labelled sector falls by ζ , and (iii) part of the premium paid by Northern consumers is spent to cover the costs of improved labour standards. The demand effect and the productivity effect push food prices upwards while the cost effect pushes food prices downwards.

The redistributive impact of unrestricted labeling depends on the relative strength of these three effects. When the equilibrium prices for food are low, i.e. $p^{l*} < w(p^*)$ and $p^{u*} < p^*$, the South is worse off, while the North is better off. As shown in Appendix, this is more likely to occur when (i) the Northern demand for labeled food is price elastic, so that, compared to the pre-label price p^* , the demand is much smaller at the higher price $w(p^*)$, (ii) the shift

exists a third type of equilibrium in which only labelled food is consumed in the North and $w(p^{u*}) > p^{l*} > w(p^{u*})$. The analysis of this particular regime follows that of a restricted equilibrium, with no further insights, and is therefore omitted. Second, while a restricted equilibrium always exists, an unrestricted equilibrium may fail to appear if ζ is so large that the labelled supply by all Southern workers falls short of the potential labelled demand from Northern consumers.

towards labeled food does not increase substantially the total demand for food by Northern consumers, and (iii) the income elasticity of the Southern demand for food is high, so that the lower net wage earned by labeled individuals translates into a lower demand for food. Similarly, if the equilibrium prices for food are high, that is if $p^{l*} > P(p^*)$ and $p^{u*} > W^{-1}(P(p^*))$, the North is worse off while the South is better off compared to the pre-label situation. Finally, an unrestricted label is Pareto-improving when food prices take on intermediate values: $p^* < p^{u*} < W^{-1}(P(p^*))$ and $W(p^*) < p^{l*} < P(p^*)$.

An increase in ζ has an ambiguous effect on the welfare of Southern workers as it simultaneously increases the costs to be covered by the price premium on labeled food, and decreases the net supply of food. The net effect depends on the price elasticity of the demand for labelled food in the North, $\varepsilon_{f_N^l, p^l}$. If $\varepsilon_{f_N^l, p^l} < -1$, an increase in ζ reduces food prices and hurts Southern producers. The reverse holds true if $\varepsilon_{f_N^l, p^l} > -1$. Relatedly, if $\zeta = 0$ and $\zeta_c > 0$, so that the cost of improved labour standards is essentially in terms of units of clothes (or, more generally, any good produced in the North, such as the expertise of the inspection teams), the South is always worse off, as the introduction of a labour standard leads to a net increase of the demand for clothing at the expense of food.¹⁸

The existence of a differential between the price premium the North is willing to pay for labelled food and the net cost of adopting improved labour standards is the key mechanism that allows labels to be welfare improving. The lower this differential, the narrower the potential for a Pareto-improving label. At the limit, when the price premium exactly covers the net cost, an unrestricted label is never Pareto-improving. We have:

Proposition 2 *Consider a situation under which $P(p^*) = W(p^*)$. Under an unrestricted label, the North is better off iff the South is worse off. Moreover, the South is worse off when ζ is small enough.*

Proof. The proof of the first statement is omitted. As for the second statement, welfare in the South decreases iff $p^{l*} < W(p^*)$ and $p^{u*} < p^*$. This arises iff Expression (10) given in Appendix is negative. The second term in

¹⁸More formally, welfare in the South rises iff Expression (10) in Appendix is positive, while welfare in the North rises iff Expression (9) at prices $p^l = P(p^*)$ and $p^u = W^{-1}(P(p^*))$ is negative. For instance, one can show that, only for some values of the parameters, the South is better off under the following utility functions: $U_N = (\alpha(\lambda f_N^l + f_N^u)^\rho + (1-\alpha)c_N^\rho)^{\frac{1}{\rho}}$, $U_S = (\alpha(f_S^l + f_S^u)^\rho + (1-\alpha)c_S^\rho)^{\frac{1}{\rho}}(1+\theta)$; or $U_N = \lambda f_N^l + f_N^u + v_N(c_N)$, $U_S = f_S^l + f_S^u + v_S(c_S) + \theta$; or $U_N = c_N + v_N(\lambda f_N^l + f_N^u)$, $U_S = c_S + v_S(f_S^l + f_S^u) + \theta$. Under the same utility functions, welfare in the North can also go up, for some parameter values (typically when they allow a large price premium relative to the cost of higher labour standards).

(10) is always negative. If $P(p^*) = W(p^*)$, the first term is negative when $\zeta \rightarrow 0$ by Assumption 2, while it is positive for ζ large enough. Accordingly, if $P(p^*) = W(p^*)$, Expression (10) is unambiguously negative when ζ is small enough. ■

If $p^{l*} < P(p^*)$, the North is better off as the equilibrium labeled price is lower than the price which would leave their welfare unaffected. If $p^{l*} > W(p^*)$, workers in the South are better off as the equilibrium wages are higher than the wages which would leave their welfare unaffected. Both conditions are incompatible when $P(p^*) = W(p^*)$, so that a label is never Pareto-improving.

2.3 The impact of restricted labelling

In the previous section, we have assumed perfect mobility of workers across sectors, and argued that the possibility for workers to reallocate themselves freely towards the most beneficial sector does not allow the emergence of a welfare differential between the two sectors. In this section, we explore the impact of labeling when only a small number \bar{L} of workers in the South can obtain the label. Indeed, most labeling programs in the world are currently in restricted access, owing to the limited monitoring capacities of labelling agencies. 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. As a result, at the end of 2008, FLO had certified only very strict and, by the end of 2007, only 632 producer organizations were certified.¹⁹

When \bar{L} is small enough, the supply of labelled food is such that both types of food are consumed in the North. In equilibrium, the prices of labeled and unlabeled food must be such as to leave Northern consumers indifferent between the two types of food: $p^{l**} = P(p^{u**})$, where a double asterisk denotes the equilibrium levels under restricted access. If $p^l > P(p^u)$, all consumers demand unlabeled food, which leads to an excess supply of labeled food. If $p^l < P(p^u)$, the supply of labelled food is at most equal to \bar{L} , while all consumers in the North demand the labeled variety of food: for \bar{L} small enough, this leads to an excess demand for labelled food.

The introduction of a restricted label creates a welfare differential between the two types of workers in the South: those who work in the unlabeled sector and those who work in the labeled sector and are better off.

¹⁹Similar restrictions hold for NGO programs, such as Max Havelaar, or for private firm initiatives, such as Starbuck Coffee and Farmer Equity (CAFE) program which currently involves 185000 small scale-farmers (to be related to a network more than 16500 Starbuck coffee shops in 2008).

In the North, in equilibrium, consumers must be indifferent between the two types of food, and their welfare is identical, whether they consume labeled food or not. Compared to the pre-label situation, Northern consumers are 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 workers in the South falls with the introduction of the label. We therefore have:

Proposition 3 *Under a restricted label, the North is better off iff unlabeled workers are worse off.*

With the introduction of a restricted label, the price of unlabeled food and the welfare of unlabeled workers fall if and only if an excess supply of food arises at $p^u = p^*$ and $p^l = P(p^*)$. The conditions under which the price of unlabeled food and the welfare of unlabeled individuals fall are relatively similar to the conditions under which the South is worse under an unrestricted label, as analyzed in Section 2.2. As shown in Appendix, this is more likely to occur when (i) the Northern demand for labeled food is price elastic so that, compared to the pre-label price p^* , the demand falls at the higher price $P(p^*)$, (ii) the shift towards labeled units of food does not increase substantially the demand for food in the North, and (iii) the productivity losses in the labelled sector, ζ , are small so that the fall in supply of food is low.²⁰

While, in general, the introduction of a restricted label increases the welfare of labeled workers, it may also decrease it. This occurs in particular when the price premium paid by Northern consumers is roughly equal to the increase in the costs incurred by labeled producers.²¹ Thus, when $P(p) = W(p)$, the welfare of labeled and unlabeled workers is identical, and labeled workers are worse off when $p^{u**} < p^*$.

Consider now a situation under which access to the label is restricted, but allocated randomly across Southern individuals: ex ante, each adult in the South has the same probability $\frac{\bar{L}}{L}$ to be hired in the labeled sector. Clearly, the expected utility of an individual in the South rises if the utility of unlabeled workers rises. However, if unlabeled workers are worse off with the introduction of a label, the expected utility of a individual in the South may fall, provided access to the labeled sector is restricted to an adequately

²⁰More formally, unlabeled workers are worse off iff Expression (12) in Appendix is negative.

²¹More formally, labelled workers are worse off iff Expression (11) in Appendix is negative at $p^u = \tilde{p}$ and $p^l = P(\tilde{p})$, where $\tilde{p} < p^*$ is implicitly defined by $Max_{f_S^u} U_S((1 - \zeta)P(\tilde{p}) - \zeta_c - \tilde{p} \cdot f_S^u, f_S^u, 1) = Max_{f_S^u} U_S(p^* - p^* \cdot f_S^u, f_S^u, 0)$.

small number of individuals. Actually, there always exists a value $\bar{L}' > 0$ such that, if $\bar{L} < \bar{L}'$, the expected utility of an individual in the South falls while the utility of a individual in the North rises. This leads us to the following Proposition:

Proposition 4 *Consider a situation under which all workers in the South face the same probability $\frac{\bar{L}}{L}$ of obtaining a label. If $p^{u**} < p^*$ and if \bar{L} is small enough, the introduction of a label reduces welfare in the South.*

3 A label on wage premia

In this Section, we analyze a label which certifies wages paid to the workers to be higher than a given level, say \tilde{w} , where \tilde{w} is the minimum wage requirement in the labelled sector (we define \tilde{w} more precisely later). Thus, a particular producer in the South is given a label if he pays to his workers a wage rate which is at least equal to \tilde{w} .²² We assume that the label is costless, in the sense that there are no direct costs involved in implementing the label, except the increase in wages. Accordingly, a label on wage premia is a particular label certifying high labour standards when the costs are nil: $\zeta = 0$ and $\zeta_c = 0$.

The utility functions of individuals in the South are given by Equation (1). The third argument, θ , is a dummy variable which now takes the value 1 when wages are higher than \tilde{w} , and 0 otherwise. As the level of wages is the only difference between sectors in the South, we have that $w(p^u) = p^u$. A worker in the South prefers higher wages and is indifferent between the two sectors when wages are equal.

In the North, each worker earns a wage γ which corresponds to the amount of clothing produced. As consumer, he maximizes his utility function given at (3). Once again, it is assumed that he purchases only one type of food, and is indifferent between the two types of food when $p^l = P(p^u) > p^u$ where $P(p^u)$ is implicitly defined in Equation (4).

We again briefly describe the equilibrium that prevails before labels are introduced. The pre-label equilibrium (unlabeled) price, denoted by p^* , is such that demand equals supply on each market:

$$\begin{aligned} Lf_N^u(\infty, p^*, \gamma) + Lf_S^u(\infty, p^*, w^*, 0) &= L \\ Lc_N(\infty, p^*, \gamma) + Lc_S(\infty, p^*, w^*, 0) &= L\gamma \end{aligned} \tag{6}$$

²²Given free entry under an unrestricted label, all workers can directly sell their output on the market, and receive a label if the price at which they sell is at least greater than \tilde{w} .

The stability assumptions made in Section 2 guarantee a stable and unique equilibrium.

3.1 The impact of unrestricted labeling

We are now able to analyze the impact of introducing a label. For our analysis to be relevant, we consider that the minimum wage required in the labelled sector, \tilde{w} , is strictly higher than the pre-label equilibrium wage in the South, w^* . This ensures that, compared to the pre-label situation, workers earn a wage premium.

We once again make assumptions 1 and 2 on the demands for labelled food in the North.²³ We now have our first result:

Proposition 5 *Under Assumption 1, there always exists $\tilde{w} > w^*$ such that an equilibrium with a wage premium label exists.*

Proof. Let F^i represents the total supply of food of type i , $i = l, u$.

(i) We first show that $p^{l*} \geq p^{u*}$. If $p^u > p^l$, then $f_N^l > 0$ and $F^l = 0$, since all workers in the South strictly prefer to produce unlabeled food as wages are higher in this sector. There is an excess demand for labelled food and this cannot constitute an equilibrium.

(ii) If $p^* \geq p^l \geq p^u$, then the demand for food in the North is larger than its pre-label level: $\alpha L f_N^l(p^l, p^u, \gamma) + (1 - \alpha) L f_N^u(p^l, p^u, \gamma) > L f_N^u(\infty, p^*, \gamma)$ by Assumption 1 and $\frac{df_N^j}{dp^j} \leq 0$. Moreover, the demand for food in the South is also larger: $L_S^l f_S(p^l, p^u, p^l, \theta) + (L - L_S^l) f_S(p^l, p^u, p^u, \theta) > L f_S^u(\infty, p^*, w^*, 0)$ by normality of food and $\frac{df_S(p,p,p)}{dp} \leq 0$, where L_S^l represents the number of individuals in the South working in the labelled sector ($0 \leq L_S^l \leq \bar{L}$). Given the pre-label equilibrium condition on the food market given at (6), there is an excess demand for food.

(iii) As result, $p^{l*} > p^*$ and any \tilde{w} s. t. $p^{l*} \geq \tilde{w} > p^* = w^*$ constitutes an equilibrium with label. ■

Under Assumption 1, the introduction of a label involves an increase in demand for food in the North, which always makes possible the payment of a wage premium to the workers in the labeled sector.

We first investigate the case of unrestricted labeling, by which we refer to a situation in which any worker in the South can freely reallocate himself between the labeled and the unlabeled sector, provided he satisfies the conditions of the label. We assume that the label sector is accessible to a number \bar{L} of workers in the South, with $0 < \bar{L} \leq L$. We again define a label

²³Assumption 3 is not relevant in the absence of costs.

as *unrestricted* if, in equilibrium, the Northern demand for labeled food at a post-label equilibrium does not exhaust the production capacities of the labelled workers. We also define a *restricted* equilibrium as a pair (p^{l**}, p^{u**}) such that the total amount of labeled food falls below the potential demand by Northern consumers: in equilibrium, the latter consume both types of food.²⁴ Under unrestricted labelling, open access to the label sector implies:

Proposition 6 *Under an unrestricted wage premium label, the equilibrium price of labeled food, p^{l*} , is equal to the equilibrium price of unlabeled food, p^{u*} .*

Proof. We show that $p^{l*} = p^{u*}$ is the only possibility at equilibrium.

(i) $p^l < p^u$ cannot constitute an equilibrium. See (i) in proof of Proposition 5.

(ii) If $p^l > p^u$, then $f_S^u > 0$, and $F^u = 0$ since wages are lower in the unlabeled sector. Once again, this cannot constitute an equilibrium. ■

As long as labour is perfectly mobile across sectors, a price differential between the two types of food attracts all Southern workers in the highest priced sector, while consumers in the South demand the least costly variety of food which automatically leads to an excess demand in the lowest priced sector. Under an unrestricted label, labelled and unlabeled units of food therefore sell at the same price. In equilibrium, consumers in the North purchase labelled food only. Consumers in the South purchase either type of food, at the same price. Our next Proposition deals with the welfare impact of labelling:

Proposition 7 *Under Assumptions 1 and 2, an unrestricted wage premium label increases welfare both in the South and in the North.*

Proof. Following Propositions 5 and 6, we have $p^{l*} = p^{u*} > p^*$ at an equilibrium with label. By the envelope theorem, the utility of a Southern individual increases.

We now show that $p^{l*} \leq_P(p^*)$ at equilibrium. If $p^l = p^u = p >_P(p^*)$, then the demand for food in the North is lower than its pre-label level: $Lf_N^l(p, p, \gamma) < Lf_N^u(\cdot, p^*, \gamma)$ by Assumption 2 and $\frac{df_N^l}{dp^l} < 0$. Moreover, the demand for food in the South decreases: $Lf_S(p, p, p) \leq Lf_S^u(\infty, p^*, w^*)$ by $\frac{df_S(p,p,p)}{dp} \leq 0$. These price levels involve an excess supply of food and this cannot constitute an equilibrium. Given our stability assumptions, food prices

²⁴The definition of the regime exactly follows the description made in Section 2.2, taking into account that here $\zeta = 0$ and $\zeta_c = 0$. One can easily show that a restricted equilibrium always exists for small values of \bar{L} while the unrestricted equilibrium always exists for large enough values of \bar{L} .

must be lower for the food market to be in equilibrium. By the envelope theorem and using the definition of $P(p^*)$, the utility of a Northern consumer increases if $p^{l*} \leq P(p^*)$. ■

Under Assumption 1, a label increases the Northern demand for labeled food, and food prices (labeled and unlabeled) increase. In the South, the rise in food prices necessarily increases the utility of individuals, as they are net suppliers of food. (The relative price of clothing falls, and they are net demanders of clothing). Under Assumption 2, a label is also beneficial to the North, since the equilibrium price of labeled food is lower than $P(p^*)$, the price which leaves Northern consumers indifferent compared to the pre-label situation.

3.2 The impact of restricted labelling

In this section, we explore the impact of labeling when only a small number \bar{L} of workers in the South can obtain the label (e.g. owing to limited monitoring capacities). As mentioned above, at an equilibrium under restricted access, both types of food are consumed in the North. When this holds, the prices of labeled and unlabeled food are such as to leave Northern consumers indifferent: $p^{l**} = P(p^{u**})$.

The results of this Section are very similar to the results of Section 2.3 on restricted working conditions labeling. Here again, the North is better off if and only if $p^{u**} < p^*$, which is exactly the condition under which the welfare of unlabeled workers in the South falls, as stated in Proposition 3. For instance, the following utility functions are such that unlabelled workers are worse off: $U_N = (\alpha (\lambda f_N^l + f_N^u)^\rho + (1 - \alpha) c_N^\rho)^{\frac{1}{\rho}}$, $U_S = (\alpha (f_S^l + f_S^u)^\rho + (1 - \alpha) c_S^\rho)^{\frac{1}{\rho}}$; or $U_N = c_N + v_N (\lambda f_N^l + f_N^u)$, $U_S = c_S + v_S (f_S^l + f_S^u)$. If $(U_N = \lambda f_N^l + f_N^u + v_N (c_N), U_S = f_S^l + f_S^u + v_S (c_S))$, the welfare of unlabelled workers is unaffected by the introduction of a label.

Given Proposition 5, the impact of the label on labeled workers is unambiguously beneficial since, in equilibrium, $p^{l**} > p^*$:

Proposition 8 *Under a restricted wage premium label, the welfare of labeled workers increases.*

Finally, even if labelled workers are made better off by the introduction of the label, the expected utility of an individual in the South falls if $p^{u**} < p^*$ and access to the label is restricted to a suitably small number of workers, as stated in Proposition 4.

4 Concluding comments

In this paper, we have investigated the redistributive impact of a label certifying high labour standards in the South. We have shown that a label may be detrimental for Southern producers. This is more likely to occur when (i) the demand for Southern products is price-elastic in the North, (ii) the cost of adopting improved labour standards involves the use of Northern goods, and generally (iii) the productivity losses associated with higher labour standards are small. These results give some insight on the conditions under which the South can benefit from a labeling policy as a trade instrument. For instance, it shows that the existence of close substitutes to the goods targeted by the label reduces the potential of labeling as a trade instrument for improving the terms of trade. We have also shown that the price interval in which a label is Pareto-improving may be small, particularly when the premium the North is willing to pay for labelled products just covers the cost of improving labour standards. When adopting high labour standards is costless for the producers, the label essentially amounts to certifying that a wage premium is paid to the workers. We have shown that an unrestricted label is beneficial to Southern workers when it leads to a net increase in the demand for Southern products. It can also be beneficial to Northern consumers, if this increase is not too large.

We have also investigated a restricted label, where only a small number of producers have access to the label. Under restricted access, Northern consumers are better off when the unlabeled price falls. However, this is exactly the condition under which unlabeled producers are worse off. Even though labelled workers are in general better off, the label may thus reduce welfare in the South when access to the labelled sector is restricted to a small number of workers. The detrimental impact of the introduction of a label on unlabeled workers is consistent with a study made by Murshid et al. (2003) according to whom:

"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."

As a result, to increase the expected welfare in the South, the label must be made accessible to a large proportion of producers and not to a small minority of privileged producers. This result runs against the practice followed by most NGOs of selecting a few well-known producers to provide them with a label and ignoring the others.

We could have build a richer model in which the South is made up of two types of agents, capitalists and workers, with the formers owning the

firms and choosing the working conditions of the latter. Alternatively, we could have introduced middlemen, with exclusive access to the export sector, in our basic framework. The redistributive impacts of a label would be less clear as one more type of agent is involved in the analysis. However, our main results would not be qualitatively modified. We have also assumed a representative consumer in the North who is willing to pay a premium for goods produced under high labour standards, while all Southern consumers were indifferent. This is a simplifying expositional device, as the model can trivially be extended to the case where some Southern consumers care about the labour standards involved in the consumption goods they purchase, while some Northern consumers can be indifferent. Our results have then to be re-interpreted in terms of the demand by concerned consumers. Interestingly, when one allows two (or more) types of consumers in the North, the unconcerned consumers purchase unlabeled food, which is the least costly variety. As a result, with the introduction of a label, their welfare rises if and only if the price of unlabeled food falls, which is exactly the condition under which the welfare of unlabeled workers falls. In this more general setting, a label is therefore never Pareto-improving.

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Appendix. Market conditions

In this Appendix, we provide the market conditions on the food market. At food prices (p^l, p^u) , we let L_S^l stands for the number of Southern workers in the labeled sector ($0 < L_S^l \leq \bar{L}$), such that demand equals supply on the market for labeled food:

$$\alpha L f_N^l(p^l, p^u, \gamma) = (1 - \zeta) L_S^l \quad (7)$$

where α is the proportion of all units of food consumed in the North that are labelled ($0 < \alpha \leq 1$). The post-label aggregate net demand - defined as the total demand less the total supply - for (labelled and unlabelled) food is equal to:

$$\begin{aligned} & \alpha L f_N^l(p^l, p^u, \gamma) + (1 - \alpha) L f_N^u(p^l, p^u, \gamma) + L_S^l f_S^u(p^l, p^u, w^l, 1) \\ & + (L - L_S^l) f_S^u(p^l, p^u, w^u, 0) - (L - \zeta L_S^l) \end{aligned}$$

The change in the market for food, obtained by subtracting the pre-label equilibrium market condition defined at Equation (5) to the post-label aggregate net demand for (labeled and unlabeled) food is:

$$\begin{aligned} & \alpha L f_N^l(p^l, p^u, \gamma) - \alpha L f_N^u(p^l, p^u, \gamma) + L f_N^u(p^l, p^u, \gamma) \quad (8) \\ & - L f_N^u(\infty, p^*, \gamma) + L_S^l [f_S^u(p^l, p^u, w^l, 1) - f_S^u(p^l, p^u, w^u, 0) + \zeta] \\ & + L [f_S^u(p^l, p^u, w^u, 0) - f_S^u(\infty, p^*, w^*, 0)] \end{aligned}$$

Under unrestricted labelling, $\alpha = 1$. Dividing Expression (8) by L_S^l , using (7) and rearranging yields:

$$\begin{aligned} & 1 - \frac{(1 - \zeta) f_N^u(\infty, p^*, \gamma)}{f_N^l(p^l, p^u, \gamma)} + f_S^u(p^l, p^u, w^l, 1) - f_S^u(p^l, p^u, w^u, 0) \quad (9) \\ & + \frac{(1 - \zeta) (f_S^u(p^l, p^u, w^u, 0) - f_S^u(\infty, p^*, w^*, 0))}{f_N^l(p^l, p^u, \gamma)} \end{aligned}$$

At $p^u = p^*$ and $p^l = w(p^*)$, the last term disappears, and Expression (9) simplifies into:

$$\left[1 - \frac{(1 - \zeta) f_N^u(\infty, p^*, \gamma)}{f_N^l(w(p^*), p^*, \gamma)}\right] + [f_S^u(w(p^*), p^*, w(p^*), 1) - f_S^u(w(p^*), p^*, p^*, 0)] \quad (10)$$

When positive (negative), an excess demand (supply) for food arises at $p^l = w(p^*)$ and $p^u = p^*$, so that $p^{l*} > w(p^*)$ and $p^{u*} > p^*$ ($p^{l*} < w(p^*)$ and $p^{u*} < p^*$) at an equilibrium.

Under restricted labelling, we have $L_S^l = \bar{L}$. Dividing Expression (8) by \bar{L} , using (7) and rearranging yields:

$$1 - \frac{(1 - \zeta) f_N^u(\infty, p^*, \gamma)}{f_N^l(p^l, p^u, \gamma)} + f_S^u(p^l, p^u, p^l, 1) - f_S^u(p^l, p^u, p^u, 0) \quad (11)$$

$$+ \frac{L [f_N^u(p^l, p^u, \gamma) - f_N^u(\infty, p^*, \gamma) + f_S^u(p^l, p^u, p^u, 0) - f_S^u(\infty, p^*, p^*, 0)]}{\bar{L}}$$

At $p^u = p^*$ and $p^l = P(p^*)$, the last term disappears, and Expression (11) simplifies into:

$$1 - \frac{(1 - \zeta) f_N^u(\infty, p^*, \gamma)}{f_N^l(P(p^*), p^*, \gamma)} + f_S^u(P(p^*), p^*, P(p^*), 1) - f_S^u(P(p^*), p^*, p^*, 0) \quad (12)$$

When positive (negative), an excess demand (supply) for food arises at $p^l = P(p^*)$ and $p^u = p^*$, so that $p^{l**} > P(p^*)$ and $p^{u**} > p^*$ ($p^{l**} < P(p^*)$ and $p^{u**} < p^*$) at an equilibrium.