Are Fair Trade Labels Effective Against Child Labor?

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Abstract

In this paper, we develop a model of North-South trade to analyze the impact of a label certifying the absence of child labour in the export production of the South. When most eligible producers in the South can obtain the label, its impact is considerably reduced by a displacement effect whereby adult workers replace children in the export sector while children replace adults in the domestic sector. The label is then unable to create a price differential between goods produced under the label and those produced without it. When only a small fraction of eligible producers have access to the label, so that the South exports both labelled and unlabelled production to the North, labelled producers generally gain while those without a label generally loose from the introduction of the label. Ex ante welfare may thus fall in the South if the probability of getting a label when one qualifies is small. The impact on child labour is in general ambiguous, as the reaction of child labour to higher or lower adult and children wages depends on the strength of income and substitution effects.

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1 Introduction

The recent debates about the organization of world trade stressed the need to regulate 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. While these proposals are partly motivated by protectionist motives against 'social dumping', they also express a genuine concern about labour conditions in some developing economies. Among these, the working conditions of children are often singled out as particularly problematic (ILO (2002), Basu and Van (1998), Baland and Robinson (2000), Dessy and Pallage (2000)).

While at the national level, various policies ranging from child labour prohibition to food-for-education programs are available, the set of instruments at the international level is much more limited. Labelling programs have been developed recently as an alternative to import taxes or import prohibition. Labels are particularly attractive as they do not rely on coercion. They instead give information to the consumers on the social conditions underlying the production of a particular good. 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). In particular, 'child labour-free' labels may be granted provided that 'exploitative child labour' has not been used in the production process. Several such programs have emerged over the last decade, chiefly Rugmark, Kaleen, Step, Care & Fair, Abrinq, Pro-Child institute, and Double Income Project. They are mostly active in the hand-knotted carpet industry, the leather footwear industry, and the hand-stitched soccer ball industry (see Appendix B for further details on some active labelling programs). However, it is not clear that these labels have an important impact on working conditions in the South. Thus, a recent ILO report concludes that "the impact of labelling on child labour in India's carpet industry does not seem to be substantial" (ILO, 2000a).

In this paper, we investigate the conditions under which labels can be effective against child labour. It is generally expected that labels will trigger a change in demand patterns away from the unlabelled goods towards those with a label. As the demand for unlabelled products falls, one expects a fall in child wages, which should lead to an overall decline in child labour. Moreover, it can also be argued that such labels can be used by Southern countries as a tool to discriminate between various customers, as a discriminating monopolist would, and, therefore, with appropriate redistribution mechanism,

such labels should improve welfare in the South.[1]

We show that, under some conditions, these mechanisms are unlikely to be effective in practice. This is due to the fact that, as long as enough (Southern) consumers are not sensitive to the label, and adult workers can easily replace child workers in the exporting industry, the label generates a *displacement effect*, whereby adult production is redirected towards label demanding Northern consumers, while children now produce exclusively for the Southern consumers. Moreover, if only a few qualifying producers in the South can obtain the label, the label generally creates winners (the labelled producers) and losers (the unlabelled adult producers), so that its welfare consequences are ambiguous. The impact on child labour is equally indeterminate, as the reaction of child labour to higher or lower adult and children wages depends on the strength of income and substitution effects.

In the literature, some authors have already raised doubts about the beneficial impact of trade sanctions on child labour. This is due to the fact that trade sanctions reduce income in the exporting country, which may increase the incidence of child labour (see e.g. Ranjan (2001), Jafarey and Lahiri (2002), Basu (2003), and Edmonds and Pavcnik (2003)). However, the impact of a labelling program differs from trade sanctions as it is expected to increase the price of 'clean' exports. Closest to our results on the displacement effect is the analysis of a ban on child labour by Basu and Van (1998) who show that a ban on a small subset of producers is ineffective as long as there are enough adult producers available. Also related is the analysis of discrimination by Becker (1959). Becker introduces a 'discrimination coefficient', whereby a consumer prefers one unit of a good made by worker Y to one unit of the same good produced by worker X. In equilibrium, a price differential may arise, which corresponds to the discrimination coefficient of the marginal consumer.

The literature on 'child labor-free' labels includes Davies (2005), Brown (1999), and Basu et al. (2006). Davies (2005) shows that in a Bertrand competition framework with heterogenous consumers, labelling is unlikely to eliminate child labour since the creation of a profitable niche for adult-labor firms often creates comparable niches for child-labor firms, as it is standard in the product differentiation literature. The two last papers focus on the impact of labelling when certification is costly (either through a fee or through readjustment cost) and discuss the case of imperfect monitoring. They both

[1]The overall effect on the welfare of the formerly-employed children, however, is left uncertain. As working opportunities are reduced, the living conditions of these children may, in fact, become worse. It can also be argued that, with labelling, governments and industry associations may be induced to take pro-active initiatives, to avoid embarrassing inspections.

assume that the label necessarily increases the demand for labelled products which, as we shall show, is far from general. The aim of the present paper is different, as it questions the impact of labelling programs in a 'favorable' framework, in which large positive effects are expected. To this end, we assume that the label is costless and perfect, and that children can be costlessly replaced by adults in the production process.

The paper proceeds as follows. The fundamentals of the model are presented in Section 2. In Section 3, we analyze the impact of a label when most firms relying exclusively on adult workers can obtain the label, and provide necessary and sufficient conditions for the label to increase welfare in the South and to decrease child labour. The effects of a restricted label, where access to the label is limited to a small subset of producers, is then discussed in section 4. We provide a small discussion in Section 5, and Section 6 concludes.

2 The fundamentals and the pre-label equilibrium

Consider an economy with two countries, North and South, denoted by N and S respectively. In each country, there are L identical households made up of one parent and one child. Both parents and children have one unit of time. In the North, children do not work, and spend all their time on leisure, while in the South households have to choose how much time a child works and how much time he spends on leisure. We let l_S, with $l_S \in [0,1]$, represent the amount of time a child works in the South, so that $(1 - l_S)$ represents the amount of time he allocates to leisure.

Northern consumers care about the use of child labour in the production of the goods from the South that they consume. Their utility function has the following form:

$$U_N(c_N, 1, f_N, \pi)$$

where c_N, 1, and f_N represent respectively the amount of clothing, child leisure ($1 - l_N = 1$ by assumption) and food consumed. The fourth argument in the utility function is a dummy variable which takes the value 1 if the units of food consumed are guaranteed without child labour, and 0 otherwise. Northern consumers prefer children not to be involved in the production process of the goods they consume, so that $U_{N,4} > 0$.[2]

[2] $U_{i,j}$ represents the partial derivative of utility in country $i = N, S$ with respect to the

Southern households, as consumers, do not care about child labour in production. Accordingly, their utility function is given by:

$$U_S\left(c_S, 1-l_S, f_S\right) \tag{1}$$

where c_S, $1-l_S$ and f_S represent the amount of clothes, child leisure and food consumed.

We assume that U_i, $i = N, S$, is twice continuously differentiable, increasing and concave in its three first arguments: $U_{i,j} > 0$ and $U_{i,jj} < 0$, $j = 1, 2, 3$. We assume all goods to be normal. We also assume Inada end-point conditions to ensure the existence of an equilibrium: $\lim_{c_i \to 0} U_{i,1} = \lim_{1-l_i \to 0} U_{i,2} = \lim_{f_i \to 0} U_{i,3} = +\infty$ and $\lim_{c_i \to +\infty} U_{i,1} = \lim_{1-l_i \to 1} U_{i,2} = \lim_{f_i \to +\infty} U_{i,3} = 0$. In addition, we allow for cross-derivatives to be non zero. In particular, we have $U_{N,14} \gtreqless 0$ and $U_{N,34} \gtreqless 0$, so that a shift away from goods produced with child labour affects the marginal utilities of clothing and food in the North.

Each country produces one type of good, with the North producing clothes and the South producing food. Parents in both countries supply their unit of time inelastically on the labour market.[3] The technology of production in each country is linear, with labour as the only input. Productivity in the North is equal to γ_N, and the total supply of clothes is equal to $C = \gamma_N L$. We let clothing be the numeraire, so that $p_c = 1$. The income of a Northern household, w_N, is then equal to γ_N, and his budget constraint is given by:

$$\gamma_N = c_N + p f_N \tag{2}$$

where p stands for the price of food. In the South, adult labour and child labour are perfect substitutes in production, with one unit of adult labour producing γ_S units of food while one unit of child labour produces 1 unit of food. Total income in the South is represented by w_S, with $w_S = p\left(\gamma_S + 1\right)$. The budget constraint of a Southern household is given by:

$$p\left(\gamma_S + 1\right) = c_S + p f_S + p\left(1 - l_S\right)$$

Maximizing utility given these budget constraints yields the demands for

j^{th} argument, while $U_{i,jk}$ represents the cross partial derivative.

[3] This restriction allows us to focus our attention on child labour only. Our main results can be rewritten allowing for adult labour to vary, at the expense of notational simplicity.

food and clothing for a Northern consumer, $f_N(p, w_N, \pi)$ and $c_N(p, w_N, \pi)$ as functions of food prices, wages and the presence of child labour in the food consumed, and the corresponding demands for food, clothing and child labour in the South, $f_S(p, w_S)$, $c_S(p, w_S)$ and $l_S(p, w_S)$.

We first describe the equilibrium that prevails before labels are introduced. We assume that Northern consumers are informed about child labour in the South so that $\pi = 0$. Under the conditions above, a market equilibrium for food, p^*, is such that:

$$Lf_N(p^*, w_N^*, 0) + Lf_S(p^*, w_S^*) = L\gamma_S + Ll_S(p^*, w_S^*) \tag{3}$$

where $w_N^* = \gamma_N$ and $w_S^* = p^*(\gamma_S + 1)$. By the budget constraints, the equilibrium price p^* also constitutes an equilibrium for the clothing market, and we therefore have:

$$Lc_N(p^*, w_N^*, 0) + Lc_S^*(p^*, w_S^*) = L\gamma_N \tag{4}$$

We now discuss the assumptions necessary for the remaining of the analysis to be meaningful. The normality of all goods implies that, in the North, f_N is decreasing in p and in the South, c_S is increasing in p. On the market for clothes, we require that the aggregate demand for clothing is strictly increasing in the food price: $\frac{dc_N}{dp} + \frac{dc_S}{dp} > 0$ where $\frac{dc_j}{dp} = \frac{\partial c_j}{\partial p}dp + \frac{\partial c_j}{\partial w_j}\frac{\partial w_j}{\partial p}dp$, $j = S, N$. Since the supply is fixed and equal to $L\gamma_N$, the equilibrium on the market for clothing is unique and stable. In the South, the impact of a rise in the price of food on the supply of child labour is ambiguous, as it depends on the relative strength of the wage effect (being richer, the household demands more child leisure) and the substitution effect (as the opportunity cost of leisure rises, the household demands less child leisure): $\frac{dl_S}{dp} \gtrless 0$.[4] As a result, the supply of food may be increasing or decreasing in its own price. Using similar arguments, we also have $\frac{df_S}{dp} \gtrless 0$. We however require that, at all price levels, an increase in the price of food leads to a higher total net supply of food from the South. This assumption implies that the slope of the Southern demand for food is smaller than the slope of the supply of food. Under this assumption, the equilibrium defined by equation (3) is stable and unique.

[4] We let $\frac{dl_S}{dp}$ represent the (total) derivative of the supply of child labour to the price of food: $\frac{dl_S}{dp} = \frac{\partial l_S}{\partial p}dp + \frac{\partial l_S}{\partial w_S}\frac{\partial w_S}{\partial p}dp$. $\frac{dl_S}{dp}$ therefore represents the change in child labour when food prices, adult wages and child wages all change in the same proportions.

3 The impact of unrestricted labelling

We investigate the impact of the introduction of a label. The label on one unit of food certifies that it has been produced exclusively by adult workers. There is no uncertainty associated with the quality of the label, the necessary condition to obtain the label being the absence of child labour. We also assume that the label is free and costless.[5] The South can thus produce two types of food: labelled and unlabelled. We refer to each of them by the superscripts l and u, respectively and let p^j denote the price of food $j, j = u, l$. We assume that adult and child labour can costlessly reallocate themselves between the labelled and the unlabelled sector.

The labelled sector is accessible only to a fraction ζ of adult workers in the South, with $0 \leq \zeta \leq 1$. In this section, we assume that this restriction is not binding. We therefore require that the Northern demand for food is such that, at the initial prices, it is smaller than the production capacities of the adult workers who are allowed to enter the labelled sector:

Definition 1 *An unrestricted label is such that, at* $p^l = p^*$, $L \cdot f_N(p^*, \gamma_N, 1) \leq L \cdot \zeta \cdot \gamma_S$ *and* $L \cdot f_N(p^*, \gamma_N, 0) \leq L \cdot \zeta \cdot \gamma_S$, *where* p^* *represents the pre-label equilibrium price.*

Note that this definition also includes the case of perfect free entry where $\zeta = 1$. We are now in a position to state our first result:

Proposition 1 *Under an unrestricted label, the equilibrium price of labelled food,* p^{l*}, *is equal to the equilibrium price of unlabelled food,* p^{u*}.

Proof. Let f_j^i stand for the quantity of food of type $i, i = l, u$, demanded by a household in country $j, j = N, S$, while F^i represents the total supply of food of type $i, i = l, u$. Three situations can potentially arise:

(i)If $p^{l*} < p^{u*}$, then $f_N^l > 0$, $f_S^l > 0$ and $F^l = 0$, since all workers in the South strictly prefer to produce the unlabelled variety. There is an excess demand for the labelled variety, and this cannot constitute an equilibrium.

(ii) If $p^{l*} > p^{u*}$, then $f_S^l = 0$ and $F^l = L\zeta\gamma_S$, as adult workers prefer to produce the labelled variety of food. We first show that $p^{u*} > p^*$ since $f_N(p^*, \gamma_N, 0) \leq \zeta\gamma_S$. The equilibrium condition on the unlabelled food market is: $(1-\alpha)f_N(p^{u*}, \gamma_N, 0) + \zeta f_S(p^{u*}, \gamma_S p^{l*} + p^{u*}) + (1-\zeta)f_S(p^{u*}, (\gamma_S+1)p^{u*}) - (1-\zeta)\gamma_S - \zeta l_S(p^{u*}, \gamma_S p^{l*} + p^{u*}) - (1-\zeta)l_S(p^{u*}, (\gamma_S+1)p^{u*}) = 0$, where α,

[5] Note that we have also assumed perfect substitution between child and adult labour, which allows for large production shifts away from child labour. Taken altogether, these assumptions tend to bias the results of the model in favour of a large positive impact of labelling.

$\alpha \in [0,1]$, represents the fraction of Northern households purchasing labelled food, the others consuming the unlabelled variety. Since $(1-\alpha)f_N \geq 0$ and by normality of food and child leisure consumption in the South, we have $f_S(p^{u*}, p^{u*}(1+\gamma_S)) - (1-\zeta)\gamma_S - l_S(p^{u*}, p^{u*}(1+\gamma_S)) < 0$. From the second condition in Definition 1, we have $f_S(p^*, p^*(\gamma_S+1)) - (1-\zeta)\gamma_S - l_S(p^*, p^*(\gamma_S+1)) \geq 0$ at the pre-label equilibrium. These two inequalities yield $p^{u*} > p^*$ through our stability conditions. Second, we show that $p^{l*} \leq p^*$ since $f_N(p^*, \gamma_N, 1) \leq \zeta\gamma_S$. The equilibrium condition on the labelled food market is: $\alpha f_N\left(p^{l*}, \gamma_N, 1\right) = \zeta\gamma_S$, where α is defined as before. This therefore implies, by construction, that $f_N\left(p^{l*}, \gamma_N, 1\right) \geq \zeta\gamma_S$. But, from Definition 1, we know that $f_N(p^*, \gamma_N, 1) \leq \zeta\gamma_S$. Combining these two inequalities, we obtain $p^{l*} \leq p^*$ through our stability conditions.

Both $p^{u*} > p^*$ and $p^{l*} \leq p^*$ contradicts $p^{l*} > p^{u*}$.

(iii) The only possibility is thus that $p^{l*} = p^{u*}$. ■

In a situation in which the Northern demand for food is not very large, the label cannot create a price differential between labelled and unlabelled units of food: the equilibrium prices of the two types of food are identical. Indeed, as long as adult labour is perfectly mobile across the labelled and the unlabelled sectors, a difference in prices between the two varieties of food in the South attracts all adult workers in the sector with the highest price. This leads to an excess supply of the variety with the highest price (or a disequilibrium on the clothing market). As a result, the only possible equilibrium is such that the labelled and the unlabelled variety sell at the same price. Under a label, the equilibrium is such that all units of food sold to Northern consumers are produced by adult workers only, while the children previously producing units of food consumed in the North now produce exclusively for Southern consumers. We are now in a position to state our next proposition:

Proposition 2 *The introduction of an unrestricted label increases food prices if and only if $U_{N,34} > U_{N,14}$. When food prices increase (fall), welfare in the South increases (falls). Child labour increases (falls) with food prices if $\frac{dl_S}{dp} > 0$ (< 0).*

Proof. From Proposition 1, $p^{l*} = p^{u*}$.

(i) If $U_{N,34} > U_{N,14}$, then $f_N(p^*, \gamma_N, 1) > f_N(p^*, \gamma_N, 0)$. There is an excess demand for food at the pre-label price equilibrium and from stability assumptions food prices must increase: $p^{l*} = p^{u*} > p^*$.

(ii) If $p^{l*} = p^{u*} > p^*$, under our stability conditions, an excess demand arises at $p^l = p^u = p^*$. The label must therefore have increased the demand for food, which requires that $U_{N,34} > U_{N,14}$.

By the envelope theorem, it is easy to show that the utility of a Southern household increases if food prices increase. The last statement follows from the definition of $\frac{dl_S}{dp}$. ■

With the introduction of a label, the Northern demand for food may be larger or smaller than its pre-label level. When it is larger, i.e. $U_{N,34} > U_{N,14}$, food prices (labelled and unlabelled) increase. In the South, the rise in food prices necessarily increase the utility of all households, as they are net suppliers of food. (The relative price of clothing falls, and they are net demanders of clothing). The converse is true when $U_{N,14} > U_{N,34}$ so that the introduction of a label decreases the demand for food from the North. As a result, the impact on welfare in the South crucially depends on how demands in the North are affected by a consumption shift from goods produced with child labour towards goods produced by adult workers only.

Even if food prices rise, the level of child labour may rise or fall depending on the elasticity of the demand for child leisure to food prices. There is a large body of empirical studies investigating the link between household income and child labour, but with no consensus.[6] Negative income effects, whereby a low family income leads to more child labour, were thus found in Patrinos and Psacharopoulos (1995), Cartwright (1999), Grootaert (1999), and Edmonds (2005). This supports Basu and Van's 'luxury axiom' according to which children are sent to work when family income falls below a given subsistence target. Other studies tend to show that rises in parental income may have no effect on child labour, possibly because child labour is not a bad in parental preferences (see e.g. Bhatty (1998), Canagarajah and Nielsen (1999), Ray (2000), and Deb and Rosati (2002)). Lastly, some studies have stressed the fact that rises in household income may also imply better earnings opportunities for children (in the model, this corresponds to a simultaneous increase of both p^l and p^u). In this case, child labour may increase with a rise in household income, over some income range (see Psacharopoulos (1997), Canagarajah and Coulombe (1997) and Bhalotra and Heady (2003)).

4 The impact of restricted social labelling

In this section, we explore the impact of labelling when the label is not unrestricted: the fraction ζ of adults in the South who can work in the export sector is such that the total amount of labelled food produced falls below the demand by Northern consumers. In general, the introduction of a restricted label creates a price differential between labelled and unlabelled units of food,

[6] Surveys of this litterature include Dar et al. (2002), Brown et al (2003), Basu and Tzannatos (2003), Bhalotra and Tzannatos (2003), and Edmonds (2005).

and two types of households in the South: the labelled households in which the adult is working in the labelled sector (and the child in the unlabelled sector), and the unlabelled households in which both the adult and the child are employed in the unlabelled sector.

In the following, we let $V_N(p, w_N, \pi)$ stand for the indirect utility functions of a Northern consumer, depending on food price, p, income, w_N and the presence of child labour in the food sector, $\pi = 0, 1$. We also define $p^l = p^l(p^u)$ as the price of labelled food which leaves the Northern consumer indifferent between the two types of food:

$$V_N\left(p^l(p^u), \gamma_N, 1\right) = V_N\left(p^u, \gamma_N, 0\right) \tag{5}$$

Note that, since Northern consumers prefer goods produced without child labour, $p^l(p^u) > p^u$. We define formally a restricted label as:

Definition 2 *A restricted label is such that, at* $p^u = p^*$, $L \cdot f_N\left(p^l(p^*), \gamma_N, 1\right) > L \cdot \zeta \cdot \gamma_S$, *where* p^* *represents the pre-label equilibrium price.*

We are now in a position to analyze the impact of a restricted label. We first assume that the post label equilibrium is stable and unique, which requires in addition to the stability conditions made in Section 2 that the net supply of food from a labelled household is increasing in food prices: $\frac{df_S\left(p, \gamma_S p^l(p)+p\right)}{dp} \leq \frac{dl_S\left(p, \gamma_S p^l(p)+p\right)}{dp}$. As we show in Appendix A, the introduction of a restricted label, at $p^u = p^*$ and $p^l = p^l(p^*)$, generates a change in the aggregate net demand for food - defined as the total demand less the total supply - which is proportional to:

$$\left\{1 - \frac{f_N(p^*, \gamma_N, 0)}{f_N(p^l(p^*), \gamma_N, 1)}\right\} \gamma_S + \left\{x_S(p^*, (\gamma_S + 1)p^*) - x_S(p^*, \gamma_S p^l(p^*) + p^*)\right\}. \tag{6}$$

In this expression, $x_S(p, w_S) = \gamma_S + l_S(p, w_S) - f_S(p, w_S)$ represents the net supply of food of a household in the South. At the initial prices for unlabelled food, the aggregate net demand for food changes because of changes (i) in the demand by Northern consumers of labelled food, with the price of labelled food being such that they are indifferent between the two types of food, and (ii) in the net supply by Southern households who now work in the labelled sector. These changes correspond to the two terms between the curly brackets. When the expression (6) is positive, at $p^u = p^*$ and

$p^l = p^l(p^*)$, an excess demand on the food market follows the introduction of the label. Food prices must then rise to restore the equilibrium. Conversely, when expression (6) is negative, an excess supply develops at the initial prices on the food market, and a fall in prices is necessary to bring back the equilibrium. Expression (6) is positive when the Northern demand for food is price inelastic, so that the demand does not vary much with the higher prices of labelled food, and when the income elasticity of the Southern demand for food is high, so that, when labelled households earn a higher income, it translates into a stronger demand for unlabelled food.

The impact of a restricted label on the welfare of unlabelled households depends only on whether unlabelled food prices are higher or lower after the introduction of the label. As a result, when expression (6) is positive, unlabelled food prices rise, and the welfare of unlabelled households goes up. When it is negative, unlabelled food prices fall and their welfare goes down. The conditions under which the welfare of a labelled household also falls are much more demanding, since labelled households in the South generally benefit from the price differential which makes the food they themselves consume relatively cheaper. Their welfare may thus rise even if the price of labelled food falls below the initial price of food. For labelled households to be worse off, it must be that (i) both the labelled and the unlabelled prices are lower than the pre-label equilibrium price level (which requires $U_{N,14} > U_{N,34}$) so that their real income in terms of clothing falls, and (ii) the price differential between the two types of food is very small. In this situation, the introduction of a restricted label reduces welfare of all households in the South. Finally, the welfare of Northern consumers increases if and only if $p^u < p^*$ and $p^l < p^l(p^*)$, that is expression (6) above is negative. As a result, under a restricted label, Northern households are better off if unlabelled Southern household are worse off and vice versa.

This discussion is summarized in Proposition 3 below:

Proposition 3 *If the expression (6) is positive, the introduction of a restricted label increases welfare of all households in the South and decreases welfare in the North. If it is negative, the welfare of unlabelled households in the South falls, while welfare in the North rises.*

Proof. The result can be obtained using the envelope theorem and the stability conditions above. ■

The impact of a restricted label on child labour remains however ambiguous. Thus, child labour within unlabelled households increases if the price of unlabelled food rises and $\frac{dl_S}{dp} > 0$, or if the price of unlabelled food falls and $\frac{dl_S}{dp} < 0$. Among labelled households, child labor unambiguously falls

if household income rises ($\gamma_S p^{l*} + p^{u*} > p^*(\gamma_S + 1)$) but child wages fall ($p^{u*} < p^*$).

Proposition 3 above has an interesting implication in the situation where, ex ante, each household in the South has the same probability ζ to be hired in the labelled sector. Clearly, the expected utility of a household in the South rises if the utility of both labelled and unlabelled households rises. However, if expression (6) is negative, the expected utility of a household in the South, $E(V_S)$, may fall, provided access to the labelled sector is restricted to a suitably small number of households. In other words:

Proposition 4 ***Proposition 5*** *When access to the label is random and equal across Southern households, their ex ante utility falls with the introduction of a label if expression (6)*< 0*, and the probability* ζ *of getting the label is low enough: there always exists a value* $\zeta^* > 0$ *such that, if* $\zeta < \zeta^*$, $E(V_S) < V_S^*$, *where* V_S^* *represents the Southern indirect utility function in the pre-label situation.*

Proof. $E(V_S) = \zeta V_S\left(p^u, \gamma_S p^l(p^u) + p^u\right) + (1-\zeta)V_S(p^u, (\gamma_S+1)p^u)$, where $V_S(p, w_S)$ represents the indirect utility function of a Southern household at food price p and income w_S. Since (6)< 0, $V_S(p^u, (\gamma_S+1)p^u) < V_S^*$, and there always exist a value $\zeta^* > 0$ such that, if $\zeta < \zeta^*$, $E(V_S) < V_S^*$. ■

5 Discussion

Our main results can be summarized as follows: when the label is accessible to all qualifying households in the South and the demand for the labelled good is not too large, the label does not create a price differential between labelled and unlabelled food. It results in a *displacement* effect whereby adult producers replace children in the export sector, while children replace adult producers in the production for the domestic market. The price of the food rises if the presence of the label increases at the initial prices the demand for food by Northern households ($U_{N,14} > U_{N,34}$) and falls otherwise.

When the label is restricted to a subset of Southern households and the demand for labelled goods is large, the two types of food are available in the North, and labelled food enjoys a price premium compared to unlabelled food so as to make Northern consumers indifferent between the two. While the welfare of labelled households in the South generally rises, the welfare of unlabelled households may fall provided the price elasticity of the demand for food is high in the North, and the income elasticity of the demand for food in the South is low, so that at the initial prices, and excess supply develops on the unlabelled food market. In this case, if labels are given randomly to a

small number of qualifying producers, the expected welfare of all household in the South is reduced by the introduction of a label. Finally, the impact on the amount of labour provided by children in the South is generally ambiguous since child labour may rise or fall with unlabelled food prices, which also corresponds to their wage.

To illustrate these results, consider the following utility functions for a Northern and a Southern household respectively:

$$U_N = c_N^{\alpha}.f_N^{\beta}.1.(1+\pi)^{1-\alpha-\beta}; U_S = c_S^{\eta}.f_S^{\kappa}.(1-l_S)^{1-\eta-\kappa}.1$$

The impact of an unrestricted label is simple since $U_{N,14} = U_{N,34}$. Following Proposition 2, the introduction of the label does not change food prices: after the label is introduced, labelled food in the North is sold at the same price as food was sold before the label was introduced. The creation of the label thus causes a pure displacement effect, whereby adult production fully replaces children production for Northern consumers.

Under a restricted label, the expression (6) is negative: at the initial prices, a restricted label generates an excess total supply of food. The equilibrium on the food market is such that the price of unlabelled food is lower than the pre-label price, and the welfare of unlabelled household is therefore lower than in the pre-label situation. As a consequence, if the proportion of households entering the labelled sector is low enough, ex ante, the expected utility of a household in the South falls while the utility of a household in the North rises with the introduction of a restricted label.

An important assumption made in the previous discussion is that, in the pre-label situation, Northern consumers are fully informed about children employed in the export sector, so that π is equal to 0 at a pre-label equilibrium. If instead Northern consumers are not informed and wrongly believe that food units are produced only by adult workers in the pre-label situation, the introduction of the label informs Northern consumers about the presence of child labour in the food they consume. If the label is unrestricted, it has no impact on food prices, nor on welfare and child labour, since the introduction of a label induces no change in the Northern demand for food. However, if the label is restricted, the welfare of Southern households, particularly those who do not get access to the label, is much more likely to fall. When the initial information of consumers is bad, a label is more likely to have negative consequences in the South. The scandals which developed around the coffee industry or the textile industry in the recent years support the idea that consumers are not always aware of extremely low labour standards in those sectors. The current campaigns led by the ILO and many NGOs also attest the lack of awareness of consumers in the North.

Finally, we have also assumed that there is no cost in obtaining the label. However, it is clear that if labelled producers have to pay a fixed cost to obtain the label, their welfare will be reduced accordingly. As a result, the conditions under which the label will have positive consequences will be even more demanding. A similar conclusion can be reached if adult and child labour are not perfectly substitutable, but the analysis gets considerably more complex.

6 Concluding remarks

Over the last decade, several social labelling programs have been launched with the hope of promoting improved labour rights in developing economies. In particular, they are expected to play an important role in the struggle against child labour. In this paper, we proposed a systematic analysis of 'child labour free' labels, and their impact on welfare and child labour.

We developed a model where the South exports goods produced with child labour to Northern consumers, who prefer goods produced without child labour. We study the impact of a label which certifies that exports from the South are made exclusively with adult labour. We distinguished between two situations. In one situation, the label is unrestricted: the demand for labelled goods in the North is small, so there is enough adult labour in the South to produce the amounts required. The label then causes a 'displacement effect', that is a reallocation of labour whereby adults replace children in the export sector in the South, while children replace adult workers in the production for the interior market. In this case, the label is unable to create a price differential between labelled and unlabelled production, as otherwise adult workers would produce exclusively the highest priced good. However, the label increases the welfare of all Southern households if and only if, at the initial prices, the demand from Northern consumers increases with the label. The impact on child labour is in general ambiguous, as the reaction of child labour to higher or lower adult and children wages depends on the strength of income and substitution effects.

In the other situation, the label is restricted, in the sense that the demand for labelled goods in the North at the initial prices exceeds the production possibilities of the South. Export producers in the South thereby get differentiated according to their access to the label. In this case, we developed necessary and sufficient conditions such that the label creates winners and losers: the labelled export producers enjoy a higher real income with the label, while all the other producers in the South suffer from the creation of the label. If access to the label is random, the ex ante utility of Southern house-

holds therefore falls if the proportion of labelled households is too small: to increase welfare, the label should in general be accessible to a large proportion of households and not to a small minority of privileged producers. This result runs against the current practice by many NGOs of selecting a few well-known producers to provide them with a label and ignore the others.

Finally, it is important to realize that we considered here a labelling program which targets a fixed characteristic of the workers. The arguments can thus be extended to other fixed characteristics of the workers, such as gender, religion, cast or race. They do not however immediately extend to labelling which involves a costly action by producers in the South, as would occur with improved labour standards (higher wages, improved working conditions,...). We intend to explore this alternative in our future research.

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7 Appendix A

In this appendix, we provide a condition for an excess demand (supply) to arise on the post-label market for food at $p^u = p^*$ and $p^l = p^l(p^*)$. At these price levels, the aggregate demand for food may be larger or lower than the aggregate supply:

$$\begin{aligned}\alpha f_N\left(p^l, \gamma_N, 1\right)+(1-\alpha)f_N(p^*, \gamma_N, 0)+\zeta f_S(p^*, \gamma_S p^l+p^*)+(1-\zeta)f_S(p^*, (\gamma_S+1)p^*)\\ \lesseqgtr \gamma_S + \zeta l_S(p^*, \gamma_S p^l + p^*) + (1-\zeta) l_S(p^*, (\gamma_S+1)p^*) \quad (7)\end{aligned}$$

where α, $\alpha \in [0,1]$, represents the fraction of Northern households purchasing labelled units of food. The change in the market for food, obtained by susbtracting the pre-label equilibrium market condition defined at Equation (3) to the post-label condition given at (7), can be written as:

$$\begin{aligned}\alpha f_N\left(p^l, \gamma_N, 1\right)-\alpha f_N\left(p^*, \gamma_N, 0\right)+\zeta f_S(p^*, \gamma_S p^l+p^*)-\zeta f_S(p^*, (\gamma_S+1)p^*)\\ \lesseqgtr \zeta l_S(p^*, \gamma_S p^l + p^*) - \zeta l_S(p^*, (\gamma_S+1)p^*) \quad (8)\end{aligned}$$

Letting $x_S(p, w_S) = \gamma_S + l_S\left(p, w_S\right) - f_S\left(p, w_S\right)$ represent the net supply of food from a Southern household, this can be rewritten as:

$$\alpha f_N\left(p^l, \gamma_N, 1\right)-\alpha f_N\left(p^*, \gamma_N, 0\right)+\zeta x_S(p^*, (\gamma_S+1)p^*)-\zeta x_S(p^*, \gamma_S p^l+p^*) \lesseqgtr 0.$$

The left-hand side of this equation defines the change in the worldwide net aggregate demand for food. Using the equilibrium condition on the market for labelled food, $\alpha f_N\left(p^l, \gamma_N, 1\right) = \zeta\gamma_S$, the sign of the change in net aggregate demand depends on:

$$\left\{1 - \frac{f_N\left(p^*, \gamma_N, 0\right)}{f_N\left(p^l(p^*), \gamma_N, 1\right)}\right\}\gamma_S + \left\{x_S(p^*, (\gamma_S+1)p^*) - x_S(p^*, \gamma_S p^l(p^*) + p^*)\right\} \lesseqgtr 0 \quad (9)$$

Appendix B: A review of some social labels

Most labelling programmes are active in the hand-knotted carpet industry in the Asia-Pacific region.[7] The most publicized program is the Rugmark programme which is a private, voluntary certification programme. The Rugmark foundation began certifying hand-knotted carpets in India in 1994. The main goals of Rugmark foundation is to encourage the carpet industry to stop using child labour and to re-educate those children. In order to obtain the label, manufacturers commit themselves not to employ young workers below 14. They must also regularly submit an updated list of all their workers and provide details about their looms. Moreover, all licensees must allow surprise inspections of their loom-sheds.

In 1995, the Indian government launched the Kaleen labelling program. This program is based on exporters committing to a code of conduct which excludes child labour. Compliance with this code is ensured through members' self-monitoring and some site inspections by a private external firm.

The Step Foundation, a joint initiative of a Swiss trade association and five NGO's, was established in 1995. The program promotes the progressive elimination of abusive child labour, as well as better labour standards in the carpet industry. Step certifies companies with a label, which is given to their retail stores (but not to the individual carpets). Registered carpet manufacturers allow regular and unannounced inspections.

Care & Fair is an association of German carpet trade professionals founded in 1994. Its members demand from their suppliers to comply to a code of conduct, which includes the elimination of child labour as well as health and education programmes for carpet workers and their families. The association does not inspect its companies and relies completely on a moral commitment.

Several labelling programmes also operate in the leather footwear industry. Since 1995, the Abrinq foundation, a Brazilian non-profit organization grouping private companies, delivers 'child labour-free' certificates. The foundation does not have a formal monitoring system, but its members carry out irregular and informal investigations. The Pro-Child Institute, another Brazilian non-profit organization founded in 1995, launched a programme for the prevention and eradication of child labour in the footwear industry. Implementation and monitoring are carried out by the Institute's staff. Based in Switzerland, the Double Income Project provides labelling for textiles and garments imported from developing countries which are produced under socially acceptable conditions and without child labour. In the hand-stitched soccer ball industry, Reebok proposes a code of conduct prohibiting child

[7] See ILO (1997) and the Bureau of International Labor Affairs (1997)

labour. Reebok has hired independent monitors to check the effectiveness of the programme. In 1997, Baden Sports eliminated most hand-stitching of its soccer balls. Baden requires written certification that child labour is not used, and carries out site inspections.