CAE Working Paper #05-14

Is Product Boycott a Good Idea for Controlling Child Labor?

by

Kaushik Basu
and
Homa Zarghamee

August 2005

.

Is Product Boycott a Good Idea for Controlling Child Labor?

Kaushik Basu* and Homa Zarghamee†

June 2, 2005

Abstract

A popular form of action to curb child labor and uphold international labor standards in general is a product boycott by consumers. There are labeling agencies that inform us if, for instance, a carpet or a hand-stitched soccer ball is free of child labor. The presence of a consumer boycott will typically mean that products tainted by child labor will command a lower price on the market than ones certified to be untainted. It is popularly presumed that such consumer activism is desirable. The paper formally investigates this presumption and shows that consumer product boycotts can, in a wide class of situations, have a backlash that causes child labor to rise rather than fall. This happens under weak and plausible assumptions. Hence, there has to be much greater caution in the use of consumer activism and one has to have much more detailed information about the context, where child labor occurs, before using a boycott.

Journal of Economic Literature Classification Numbers: O12, D10, K00, J20.

Keywords: child labor, product boycott, labor standards.

*Department of Economics, Cornell University, Ithaca, NY 14853, Email: kb40@cornell.edu.

†Department of Economics, Cornell University, Ithaca, NY 14853, Email: hsz1@cornell.edu.

1 Motivation

The use of product boycotts by consumers is one of the more enduring actions that have been contemplated and used to control child labor and the violation of other minimal labor standards in developing countries. From college campuses to street gatherings during international conferences, such as the WTO ministerial meetings, there has been a growing campaign to encourage consumers to boycott goods that may have used child labor as input or violated other labor standards in the course of their production. These actions have become particularly popular because they do not involve the heavy hand of government intervention or lengthy legal action. It seems as if ordinary consumers, going about their regular chores and shopping, can influence the world in certain desirable ways. While in the popular mind this is virtually an axiom, there is very little by way of serious analytical examination of this 'axiom.' The aim of this paper is to do precisely that.

We undertake a theoretical investigation into this problem and come up with some surprisingly clear answers. That boycotting products that use child labor can harm the well-being of children is not too surprising to economists. In a lucid essay, Edmonds (2003) points out how children can get hurt by these sanctions if they live in regions where the alternative to work is dismal and when these sanctions are not complemented with the provision of alternative opportunities for the children. This is a natural conclusion if it is the case that children work because of their poverty and the lack of alternatives, such as decent schooling (Basu and Van, 1998; Swinnerton and Rogers, 1999; Dessy and Pallage, 2005). Our formal analysis confirms this, but it goes further. It shows that, quite paradoxically, the boycott of child labor-tainted products can actually cause child labor to increase. We refer to this as the 'backlash proposition.'

The broad intuition behind the backlash result is as follows. First, we should clarify that by boycott we do not mean an avoidance of certain products under all circumstances, but more realistically that consumers are willing to pay a price to avoid using products tainted by child labor. Now, suppose child labor is largely caused by the pursuit of poor families trying to escape extreme poverty, for which there is now considerable evidence (see Kambhampati and Rajan, 2004; Edmonds and Pavcnik, 2005, for a survey). If consumers decide to boycott products that are produced by child labor, then firms will realize that the use of child labor will mean that their products will sell for a lower price. Hence, the existence of such a boycott on the part of consumers will make child labor a less attractive input than it would have been otherwise. This will cause child wage to drop. In case children were working so as to avert extreme poverty for themselves and their families, as assumed above, then the lower wage will mean that they will have to work harder.

Of course, the above summary simplifies the argument. It turns out, for instance, that there are circumstances where boycotts can cause child labor to decrease. The advantage of the theoretical exercise is that it provides us with a model for asking a host of related questions. Under what conditions will the problem of child labor get exacerbated by boycotts? And when will child labor go down? What will be the impact of a boycott on the welfare of children? The theoretical model also helps us decide what the focus of future empirical studies ought to be in order for us to get more context-specific answers to some of these questions.

The scope for consumer action in upholding labor standards has increased considerably over the last decade, as the idea of product labeling has caught on in a big way. In India, for instance, carpets are labeled by Rugmark (a private initiative) and Kaleen (a quasi-governmental body) so that a consumer buying a hand-knotted carpet will know if it is child labor-free. In Switzerland, there is the labeling organization STEP which gives companies a clean chit if they are found to practice fair labor standards and not use child labor. The same is true of Brazil's Abrinq Foundation that labels toy companies that abjure child labor as "child friendly." In Pakistan, the soccer ball industry makes considerable use of product labeling for its exports to the United States. By all accounts these efforts are of great significance (U.S. Department of Labor, 1997; Sharma, Sharma and Raj, 2000), and it is therefore important to bring economics to understand the impact of these kinds of interventions.

This is one area where, we already know from past research, pathological reactions to different kinds of policy interventions abound (Basu, 2000, 2005; Ranjan, 2001, Jafarey and Lahiri, 2002; Rogers and Swinnerton, 2004). This can explain why child labor has been such a stubborn problem in history, that has resisted government policy over large stretches of time (Moehling, 1999; Humphries, 1999). It is of course possible to argue that the policies that have been pursued are themselves endogenous (see Doepke and Zilibotti, 2005). But it is possible that some policy choices were caused by misinformation about the impact of those choices. The present paper is meant to be a small contribution to shed further light on the impact of a widely used intervention.

The basic model is developed in Section 2, the main result and its policy implications are spelled out in Section 3, and Section 4 discusses the scope for empirical work.

2 Model: Preliminaries

The exogenous variable, the effect of which on various parameters is the focus of our study, is the boycott of products by consumers. Thus it is useful to begin by setting out clearly what we mean by this. Since our main concern is child labor, let us assume that what consumers may or may not wish to boycott is a product that has been produced using child labor. For example, consider the product of interest to be hand-knotted carpets or rugs. Very simply, we will assume that if p is the price of carpets that are free of child labor, then, given a consumer boycott of child labor, the price of carpets that have been produced using any positive amount of child labor will be αp, where $\alpha < 1$. An increased boycott of child labor is thus equated with a drop in α.

This simple characterization of boycotts can be derived from basic consumer theory. Suppose a consumer buys x units of rugs. Of this, let us suppose x_1 rugs are child-labor free and x_2 are tainted. Hence $x = x_1 + x_2$. A consumer's utility comes from the number of rugs she consumes and money, g, spent on all other goods. She also has to pay a mental 'guilt cost' which is proportional to the amount of money, T, she spends on the tainted product. One simple quasi-linear utility function capturing this is as follows:

$$u = \theta(x) + g - \eta T \tag{1}$$

where $\eta > 0$ and $\theta' > 0$, $\theta'' < 0$. Let us suppose that all consumers are identical and described by (1). If a consumer's total income is y, the price of untainted rugs is p_1, and the price of tainted rugs is p_2, then (1) may be written as:

$$\begin{aligned} u &= \theta(x_1 + x_2) + (y - p_1 x_1 - p_2 x_2) - \eta p_2 x_2 \\ &= \theta(x_1 + x_2) + y - p_1 x_1 - p_2(1+\eta)x_2 \end{aligned}$$

Note that if $p_1 > p_2(1+\eta)$, the consumer will buy only tainted rugs, no matter what her income. Likewise, if $p_1 < p_2(1+\eta)$, she will buy only untainted rugs, again, irrespective of income. Therefore if both kinds of rugs are to sell on the market, it must be the case that:

$$\left(\frac{1}{1+\eta}\right) p_1 = p_2$$

By using $\alpha = \dfrac{1}{1+\eta}$, we immediately have that $\alpha < 1$, since $\eta > 0$. Hence, we have what we wanted; if the price of the untainted product is p, the price of the tainted product will be αp.

In the formal exercise, we shall treat $\alpha \in [0, 1]$. If $\alpha = 1$, it means consumers do not care if products are tainted; that is, there is no product boycott. So to see the effect of a product boycott, we will compare the cases of $\alpha = 1$ and $\alpha < 1$. To understand the consequence of *increasing* product boycott, we will study the effect of α being lowered further.

Let us now turn to the labor market. Suppose each worker household consists of one adult and m children, and each child has the productive capacity of a fraction γ of one adult.

We assume that adults supply labor inelastically, and, as suggested above, that children supply labor in order for the household to reach a minimal acceptable level of consumption, s. In other words, child labor is caused by the urge to avoid extreme poverty. This in turn implies that child labor is only supplied if the adult wage, w_A, is less than s. Children face wages w_C, and it will turn out to be that $w_C < w_A$. We shall also make the reasonable assumption that if $w_C \leq 0$, then the child labor supply is zero.

Firms take labor as the only input; the resultant production function for a firm hiring A adults and C children is given by $F(A + \gamma C)$. In other words, each firm has a production function, $X = F(L)$, where X is the total output produced by the firm, and L is the amount of labor, measured in adult labor units, used by the firm. It will be assumed throughout that the production function satisfies the following properties: $F(0) = 0$; there exists $\widehat{L} > 0$, such that, for all $L < \widehat{L}$, $F'(L) > 0$ and $F''(L) \leq 0$; and, for all $L \geq \widehat{L}$, $F(L) = F(\widehat{L})$. Hence we make the reasonable assumption that output is bounded from above, and the convenient assumption that the bound can be reached.

Suppose now that a consumer boycott is introduced, such that a firm hiring any children will experience reduced demand for its product, as explained above. Therefore, while a firm that hires no children faces price p for its output, a firm hiring any children faces a price αp, where $\alpha \in [0, 1]$. From here on, we will normalize prices such that $p = 1$.

Hence, the profit, Π, earned by a firm that employs A adults and C children is given by:

$$\Pi(A, C) = \begin{cases} F(A) - w_A A & \text{if } C = 0 \\ \alpha F(A + \gamma C) - w_A A - w_C C & \text{if } C > 0 \end{cases}$$

We can now establish a useful 'separation result.' Given the above assumptions, whenever $\alpha < 1$, there will be separation between firms that employ adults and firms that employ children. The intuition is straightforward. Once a firm employs children, its product is tainted, and the price is lower; and so it may as well go all the way. Of course, in reality, the production function is typically more complex, and children and adults are not entirely substitutable. Therefore, in reality, we do find some adult labor in firms that employ children. For one, in a more complex model we would make the realistic assumption of at least some supervisory adult labor being needed in every firm. But the simplicity here is harmless. The lemma that follows establishes the separation result.

Lemma 1 *Let A and C denote the number of adults and children, respectively, hired by a firm. Given $\alpha < 1$, there will exist no firm such that $C > 0$ and $A > 0$.*

Proof. Suppose a firm maximizes profits by hiring $A^* > 0$ adults and $C^* > 0$ children. Then its profits are given by

$$\Pi(A^*, C^*) = \alpha F(A^* + \gamma C^*) - w_A A^* - w_C C^*$$

It will be shown that these profits are never higher than both the profits from hiring only children and the profits from hiring only adults. Let $\widehat{A} = A^* + \gamma C^*$ and $\widehat{C} = \dfrac{A^* + \gamma C^*}{\gamma}$. Then:

$$\Pi(\widehat{A}, 0) = F(\widehat{A}) - w_A \widehat{A}, \text{ and}$$

$$\Pi(0, \widehat{C}) = \alpha F(\gamma \widehat{C}) - w_C \widehat{C}$$

Assume:

$$\Pi(A^*, C^*) \geq \Pi(0, \widehat{C}), \text{ and} \tag{2}$$

$$\Pi(A^*, C^*) \geq \Pi(\widehat{A}, 0) \tag{3}$$

(2) implies:

$$\begin{aligned} \alpha F(A^* + \gamma C^*) - w_A A^* - w_C C^* &\geq \alpha F(\gamma \widehat{C}) - w_C \widehat{C} \\ &= \alpha F(A^* + \gamma C^*) - \frac{w_C A^*}{\gamma} - w_C C^* \end{aligned}$$

which implies:

$$w_C \geq \gamma w_A \tag{4}$$

(3) implies :

$$\begin{aligned} \alpha F(A^* + \gamma C^*) - w_A A^* - w_C C^* &\geq F(\widehat{A}) - w_A \widehat{A} \\ &= F(A^* + \gamma C^*) - w_A A^* - \gamma w_A C^* \end{aligned}$$

This implies:

$$(\gamma w_A - w_C) C^* \geq (1 - \alpha) F(A^* + \gamma C^*) \tag{5}$$

From (4), we know the left-hand side of (5) is negative. The right-hand side of (5) must be positive since $\alpha < 1$. Thus (5) cannot hold, and we get that either (2) or (3) can hold, but never both. In other words, when faced with consumer boycotts for hiring children, a firm will never strictly mix between adults and children. ■

The full definition of an equilibrium in the labor market will be given later. But note here that an ingredient of the equilibrium is that firms must be maximizing their profits, and the firms employ a positive amount of adult labor. Since adult labor supply is positive, we can never have an equilibrium if adult labor demand is zero. This is all that we need, for now, for the next result.

The next lemma claims that, given a product boycott is on, in equilibrium, child wage is less than or equal to what we get through a mere adult equivalence correction of the adult wage. This turns out to be a useful result for the analysis that follows. It may be stated in full, as follows.

Lemma 2 *Assume $\alpha < 1$. Then, in equilibrium, if $F''(L) = 0$, for all L, then $w_C = \alpha \gamma w_A$; and if $F''(L) < 0$, then $w_C < \alpha \gamma w_A$.*

Proof. By Lemma 1 we know that each firm will employ either all adults or all children. Let A^* be the equilibrium number of adults hired by firms only hiring adults, and define C^* analogously for all-children firms. Hence $A^* > 0$. It is important to note that the profits from these two types of firms must be equal; if not, then a firm earning a lower profit could do better by hiring the kind of labor hired by firms earning higher profits. So we have:

$$\Pi(A^*, 0) = F(A^*) - w_A A^* = \alpha F(\gamma C^*) - w_C C^* = \Pi(0, C^*)$$

First, consider the case $F'' = 0$. Then $F'(A)$ is a constant, for all A. If $F'(A^*) > w_A$, then demand for adult labor will be infinite and so will exceed supply of adult labor. If $F'(A^*) < w_A$, demand for adult labor is zero and so less than the supply of adult labor. Hence, in equilibrium, w_A must be such that:

$$F'(A^*) = w_A \tag{6}$$

By a similar logic, w_C must be such that:

$$F'(\gamma C^*) = \frac{w_C}{\alpha\gamma} \tag{7}$$

$F'' = 0$ implies that the right-hand sides of (6) and (7) are equal, which means $w_C = \alpha\gamma w_A$.

Now consider the case where $F'' < 0$. Assume $w_C \geq \alpha\gamma w_A$. Clearly,

$$\begin{aligned}
\Pi(0, C^*) &= \alpha F(\gamma C^*) - w_C C^* \\
&\leq \alpha F(\gamma C^*) - \alpha\gamma w_A C^* \\
&= \alpha[F(\gamma C^*) - w_A(\gamma C^*)] \\
&= \alpha\Pi(\gamma C^*, 0) \\
&\leq \alpha\Pi(A^*, 0), \text{ by the definition of } A^* \\
&< \Pi(A^*, 0), \text{ since } \alpha < 1 \text{ and, by } F'' < 0 \text{ and } A^* > 0,\ \Pi(A^*, 0) > 0.
\end{aligned}$$

In other words, $\Pi(A^*, 0) \neq \Pi(0, C^*)$, a contradiction; therefore, it must be that $w_C < \alpha\gamma w_A$. ■

3 Model: Equilibrium and the Backlash Proposition

To fully describe the labor market equilibrium, it is useful to write down the aggregate labor supply and demand functions. Let us suppose that there are N worker households. From what was stated above in words, each household's labor supply is given by:

$$l(w_A, w_C) = \begin{cases} 1, & \text{if } w_A \geq s \text{ or } w_C \leq 0 \\ 1 + \gamma \min\left\{m, \dfrac{s - w_A}{w_C}\right\}, & \text{otherwise} \end{cases} \tag{8}$$

The household's labor supply, measured in adult labor units, is denoted by l. If $w_A \geq s$, children do not work because adult work can guarantee that the household reaches the threshold tolerable income, s. Also, if $w_C \leq 0$, children do not work, as it would be pointless. Hence, the household labor supply is equal to the amount of adult labor in each household, namely one unit. In all other cases, that is when $w_A < s$ and $w_C > 0$, children work. They work just enough to help the houshold reach an income level of s. By this logic, the household should supply x units of child labor, where $w_C x = s - w_A$. But the maximum child labor the household possesses is m. Hence it supplies $\min\left\{\frac{s-w_A}{w_C}, m\right\}$. Converting this into adult labor units requires us to multiply this by γ. This explains equation (3.1).

Hence the aggregate labor supply, S, is given by

$$S = Nl(w_A, w_C)$$

Let us next suppose, as described above, that there are M identical firms in the economy. We know from Lemma 1 that each firm will be either an adult-labor-only firm or a child-labor-only firm. It is easy to see that a firm will be indifferent between hiring children-only or adults-only if and only if the following condition holds:

$$\max_A [F(A) - w_A A] = \max_C [\alpha F(\gamma C) - w_C C] \tag{9}$$

Note that (9) implicitly defines a function:

$$w_c = \phi(w_A, \alpha) \tag{10}$$

That is, given α and w_A, firms will be indifferent between being adults-only or children-only if and only if $w_C = \phi(w_A, \alpha)$.

Assuming (10) holds, let us work out a firm's demand for labor. Consider a firm that chooses to be adults-only. Its demand for labor is implicitly given by:

$$F'(A) = w_A \tag{11}$$

which is the first-order condition, derived from the firm's maximization problem. The value of A that solves (11) can be written as $a(w_A)$. That is, $F'(a(w_A)) = w_A$.

Next consider the first-order condition of a children-only firm:

$$\alpha F'(\gamma C) = \frac{w_C}{\gamma}$$

Let the total amount of labor—i.e. γ multiplied by the number of children—demanded by this firm be written as $C = c(w_C, \alpha)$. In other words, $\alpha F'(c(w_C, \alpha)) = \frac{w_C}{\gamma}$.

An interesting feature of this model is now apparent. A children-only firm employs at least as much labor, measured in adult units, than an adults-only firm. That is:

$$c(w_C, \alpha) \geq a(w_A) \tag{12}$$

when firms are indifferent between employing children-only and adults-only.

To prove this, observe:

$$\begin{aligned} F'(a(w_A)) &= w_A, \text{ and} \\ F'(c(w_C, \alpha)) &= \frac{w_C}{\alpha\gamma} \end{aligned}$$

Lemma 2 implies $\frac{w_C}{\alpha\gamma} \leq w_A$, with equality only if $F'' = 0$. Hence, if $F'' = 0$, a children-only firm and an adults-only firm employ equal amounts of labor, measured in adult units. If $F'' < 0$, $F'(a(w_A)) > F'(c(w_C, \alpha))$, and a children-only firm employs more labor than an adults-only firm. Hence (12) must be true.

Therefore, given that (10) always holds, for every (w_A, α) the aggregate demand for labor, D, is anywhere between $Ma(w_A)$ to $Mc(w_C, \alpha)$ since each firm is indifferent between employing children-only or adults-only. Thus what we have is not a demand function, but a demand correspondence. Ignoring the indivisibility of firms (assume M is large), we can write the aggregate demand correspondence as:

$$D = [Ma(w_A), Mc(w_C, \alpha)]$$

The aggregate supply function of labor is given by:

$$S = Nl(w_A, w_C)$$

Given that demand is a correspondence and supply a function, how do we define an equilibrium? Basically, an equilibrium is a configuration of wages, w_A and w_C, such that demand equals supply for both child labor and adult labor. Since we know that adult labor supply is N, an equilibrium occurs if the aggregate demand for child labor, given that a certain number of firms demand adult labor equal to N, equals the aggregate supply of child labor.

Given w_A, if K is the number of firms that have to demand adult labor so that the aggregate demand adds up to N, then it must be that: $Ka(w_A) = N$. Hence the number of firms demanding child labor will be $M - \frac{N}{a(w_A)}$, and the total demand for child labor will be:

$$\left[M - \frac{N}{a(w_A)}\right] c(w, \alpha)$$

And since the supply of child labor is $Nl(w_A, w_C) - N$, we can now define the labor-market equilibrium formally.

Given α, the wages w_A^* and w_C^*, constitute an *equilibrium* if they satisfy equation (10), and the following equation is true:

$$\left[M - \frac{N}{a(w_A^*)}\right] c(w_C^*, \alpha) = Nl(w_A^*, w_C^*) - N$$

Now we are in a position to state the main result of the paper, the backlash proposition, which says that an increased intensity of product boycott—that is, a drop in α—can cause child labor to increase. As will be clear from the proof of the theorem, this is not a stray special case, but happens over a class of situations.

Theorem 1 *There exist labor market equilibria such that if α declines, the incidence of child labor increases.*

Proof. The proof will be given by constructing a class of examples where this is always true.

Let us consider the case where the production function, F, is as follows:

$$F(L) = \begin{cases} bL, & \text{for all } L \leq \widehat{L} \\ \widehat{L}, & \text{for all } L > \widehat{L} \end{cases}$$

Let $\widehat{L}$ be so large that it can be ignored for now. More precisely, suppose $\widehat{L} > N$. Let us also assume that:

$$s - m\alpha\gamma b < b < s \tag{13}$$

It is easy to see that equilibrium adult wage will be such that:

$$w_A^* = b \tag{14}$$

If $w_A < b$, then each firm will demand $\widehat{L}$, and since $\widehat{L}$ is very large, demand will exceed supply. Meanwhile, if $w_A > b$, demand will be zero. Hence the demand curve for labor is horizontal.

Since adults-only firms earn zero profit, we know that in equilibrium the children-only firms will earn zero, and thus:

$$w_C^* = \alpha\gamma b = \alpha\gamma w_A^* \tag{15}$$

By (13) and (14), $w_A^* < s$. Therefore, in equilibrium children work. Also, by (13), $s - mw_C^* < w_A^*$. Hence, by (15), $s - m\alpha\gamma w_A^* < w_A^*$, or $\dfrac{s - w_A^*}{w_C^*} < m$. From (8) it follows that the child labor supplied by the household is $\dfrac{s - w_A^*}{w_C^*}$.

Let us now see what happens to labor supply if α drops. Adult labor supply of a household is of course fixed at 1. With adult wage at w_A^*, child labor supply is, by (8),

$$\frac{s - w_A^*}{w_C^*} = \frac{s - w_A^*}{\alpha\gamma w_A^*}$$

Hence, as α falls w_C^* falls, and child labor supply increases. Since the demand curve is horizontal, a rise in child labor supply implies that the amount of child labor increases. ■

Remark 1 *The backlash result applies to a much larger class of situations than the one described in the proof of the theorem. The general class may be described as follows: Suppose we have a stable equilibrium in which $w_C > 0$ and $w_A < s$. Then there exists $\epsilon > 0$ satisfying the property that if α decreases by less than ϵ, the incidence of child labor increases.*

Notice that in the example used in the proof, as α falls, adult wage is constant and child wage falls. Hence, worker households suffer a welfare loss. In other words, an increased boycott could cause child worker households to be worse off and cause the amount of child labor to rise.

Note that we can use Theorem 1 to comment on what happens if a product boycott is started. This is because the start of a product boycott means a shift in α from 1 to less-than-1. So it is a special case of lowering α and therefore comes under the purview of Theorem 1.

What is worrisome about this surprising result is that it occurs under normal conditions and is not simply a non-generic, exotic result. In other words, it warns us that when we sanction products in order to curb child labor, we may end up having exactly the opposite effect, rather like the rebound headaches that some migraine sufferers get from pain-killers.

This is not to deny that there are contexts and levels of boycott intensity that can curb child labor. The most obvious case is where $\alpha = 0$. That is, the case in which consumers will not buy a tainted product unless the product is completely free. If $\alpha = 0$, a firm will not employ children if $w_C > 0$. Thus for firms to have any demand for child labor, w_C has to be zero. But if wage is zero, labor supply will be zero. So $\alpha = 0$ would eliminate child labor.

But a total boycott, where no one buys any goods that have any child labor input and a positive price, is quite extreme. Can child labor be eliminated under milder boycotts? The answer is yes. To see this, define:

$$\widetilde{\alpha} \equiv \frac{\max_A[F(A) - sA]}{F(\widehat{L})} \tag{16}$$

Any production function for which $F'(0) > s$, will have $\widetilde{\alpha} > 0$. Since $F(\widehat{L})$ is the largest possible output, and $s > 0$, it must be that $\widetilde{\alpha} < 1$.

Our claim is that, if the intensity of product boycott is greater than that represented by $\widetilde{\alpha}$ (i.e. if $\alpha < \widetilde{\alpha}$), then child labor will be eliminated. To prove this, rewrite (16) as:

$$\begin{aligned} \max_A[F(A) - sA] &= \max_L \widetilde{\alpha} F(L) \\ &= \max_C[\widetilde{\alpha} F(\gamma C) - 0 \cdot C] \end{aligned}$$

Hence for all $w_A < s$,

$$\max_A[F(A) - w_A A] > \max_C[\widetilde{\alpha} F(\gamma C) - 0 \cdot C] \tag{17}$$

By (9) , (10), and (17), we know that, for all $w_A < s$,

$$\phi(w_A, \widetilde{\alpha}) \leq 0.$$

Next, note that $\alpha < \alpha'$ implies $\phi(w_A, \alpha) < \phi(w_A, \alpha')$. Hence what we have proved is this: If $w_A < s$, and $\alpha < \widetilde{\alpha}$, then $w_C \equiv \phi(w_A, \alpha) \leq 0$.

Suppose now there is a boycott so strong that $\alpha < \widetilde{\alpha}$. If the equilibrium adult wage, w_A^*, is less than s, then $w_C^* = \phi(w_A^*, \alpha)$ will be non-positive. Thus child labor supply is zero, making the incidence of child labor zero. If, on the other hand, $w_A^* \geq s$, child labor supply is again zero, and so the incidence of child labor is zero. Therefore, $\alpha < \widetilde{\alpha}$ is sufficient to eliminate child labor.

This does not mean that setting α so low that it eliminates child labor will always be beneficial for children. In fact, typically child welfare will decline with such a boycott. The exception is if the model has multiple equilibria, as in Basu and Van (1998). Then a strong boycott, like a legislative ban, can deflect the economy from an equilibrium with a high incidence of child labor to another pre-existing equilibrium with no child labor; as was shown in Basu and Van (1998) (see, also, Emerson and Knabb, 2005), in that case, child welfare rises as child labor is eliminated, and the boycott is worthwhile both because it removes child labor and raises child welfare. There are also models with imperfect capital markets where a ban on child labor results in a Pareto improvement (e.g., Baland and Robinson, 2000).

4 Policy Implications and Empirical Extensions

What the above analysis has hopefully made clear is that the effectiveness of a product boycott in achieving the desired outcome is conditional. While the intention of those partaking in the boycott is usually the reduction of child labor, the consequence of their actions may, in a wide variety of cases, be the opposite of that intended. The policy recommendation therefore depends on the case in question.

A case in which the above paradoxical outcome will occur is when the demand curve for labor is fairly elastic. In fact, such an outcome is more likely the flatter the demand curve. The household supply of labor varies with wages only when the adult wage does not reach subsistence and when there are members of the household not at work. This portion of the supply curve is actually downward sloping, as increasing the adult wage means the gap between it and the critical minimal consumption level decreases, and fewer children need to be sent to the workplace. Knowledge of the relative elasticities of demand and the downward-sloping portion of supply are pivotal in determining whether a product boycott will entail the intended result. If demand is flatter than the wage-variant portion of supply, a product boycott will likely cause an increase in child labor. This implication is especially sobering for boycotts targeting goods produced in small, open economies, as they are characterized by perfectly elastic labor demand curves.

Empirical work corresponding to the theoretical analysis above is necessary to address whether or not our main result is likely to hold in specific cases. A number of obstacles stand in the way of the researcher pursuing this path. The greatest problem is finding good data on the incidence of child labor. Firms using child labor have virtually no incentive to tell truthfully of it. Nevertheless, there are various data sets available and a growing body of empirical literature on the subject.

It is difficult to find direct evidence for whether our backlash result is likely to hold in a particular situation. The main task of the empirical researcher has to be to find circumstantial evidence. For this we will have to look for two kinds of evidence. First, it will need to be checked if the supply curve of child labor is downward-sloping. Second, we need to find out if the demand for child labor is very elastic. If both these conditions are valid, then an adverse reaction to product boycott is very likely, and consumer product boycotts would be ill-advised. On the supply of child labor, there is some evidence that children work typically to stave off extreme poverty, and so a drop in child wage is likely to increase the supply of child labor. Further and more direct evidence needs to be collected on this, but the big need—and very little exists on this—is to determine the nature of demand for child labor.

The theory also highlights some intermediate propositions that can be tested. And if they test positive, it will increase confidence in the overall plausibility of the backlash theorem. The most interesting intermediate proposition is that a heightened consumer boycott should drive child wage lower. This will not be easy to test since we will want a situation where the heightened boycott is not itself caused by worsening conditions in the child labor market. But this will be well worth testing.

Economic theory can alert us to certain possibilities. It is now important to do focussed empirical work to determine how likely these possibilities are in specific situations and countries. But even before such empirical results are available, this theoretical model should disabuse us of the widespread presumption that consumer product boycotts curb child labor.

References

[1] Baland, J. and Robinson, J. (2000), 'Is Child Labor Inefficient?' *Journal of Political Economy*, vol. 108, 663-79.

[2] Basu, K. (2005), 'Child Labor and the Law: Notes on Possible Pathologies', *Economics Letters*, vol. 87, 169-74.

[3] Basu, K. (2000), 'The Intriguing Relation Between Adult Minimum Wage and Child Labor, *The Economic Journal*, vol. 110.

[4] Basu, K. and Van, P.H. (1998), 'The Economics of Child Labor', *American Economic Review*, vol. 88, 412-27.

[5] Dessy, S. and Pallage, S. (2005), 'A Theory of the Worst Forms of Child Labour', *Economic Journal*, vol. 115, 68-87.

[6] Doepke, M. and Zilibotti, F. (2005), 'The Macroeconomics of Child Labor Regulation', forthcoming in *American Economic Review*.

[7] Edmonds, E. (2003), 'Should We Boycott Child Labour?' *Ethique économique/Ethics and Economics*, vol. 1.

[8] Edmonds, E. and Pavcnik, N. (2005), 'Child Labor in the Global Economy', forthcoming in *Journal of Economic Perspectives,* vol. 18.

[9] Emerson, P.M. and Knabb, S.D. (2005), 'Self-Fulfilling Expectations, Child Labor and Economic Development', mimeo: University of Colorado at Denver.

[10] Humphries, J. (1999), 'Cliometrics, Child Labor and the Industrial Revolution', *Critical Review,* vol. 13, 269-83.

[11] Jafarey, S. and Lahiri, S. (2002), 'Will Trade Sanctions Reduce Child Labour? The Role of Credit Markets', *Journal of Development Economics*, vol. 68, 137-56.

[12] Kambhampati, U. and Rajan, R. (2004), 'Does Child Work Decrease with Parental Income? The Luxury Axiom Revisited in India', mimeo: University of Reading.

[13] Moehling, C. (1999), 'State Child Labor Laws and the Decline of Child Labor', *Explorations in Economic History*, vol. 36, 72-106.

[14] Ranjan, P. (2001), 'Credit Constraints and the Phenomenon of Child Labor', *Journal of Development Economics*, vol. 64, 81-102.

[15] Rogers, C.A. and Swinnerton, K. (2004), 'Does Child Labor Decrease When Parental Incomes Rise?', *Journal of Political Economy*, vol. 112, 939-46.

[16] Sharma, A.N., Sharma, R., and Raj, N. (2000), 'The Impact of Social Labelling on Child Labour in India's Carpet Industry', ILO/IPEC working paper.

[17] Swinnerton, K. and Rogers, C.A. (1999), 'The Economics of Child Labor: Comment', *American Economic Review*, vol. 89, 1382-5.

[18] U.S. Department of Labor (1997), *By the Sweat and Toil of Children, Vol. IV: Consumer Labels and Child Labor*, Washington D.C.: Bureau of International Labor Affairs.