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Be Self-Enforcing?**

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ABSTRACT

Can a Ban on Child Labour Be Self-Enforcing?

A series of articles beginning with Basu and Van (1989) argue that a ban on child labour may be self-enforcing in the sense that, once an equilibrium where only adults work is established, parents may have no incentive to depart from it, and the ban is no longer required. This important result was originally obtained under the assumption that parents would rather see their children do nothing and consume the minimum necessary to survive, than do even a very small amount of work and consume more. We show that it holds also if education is a valuable alternative to child labour, and the disutility of the latter can be compensated by the utility of present consumption or future earning capacity. If children work for their parents as well as in the labour market, however, and the second type of work is observable by the policy maker, but the first is not, a ban can only apply to market work. Paradoxically, a child labour ban may be effective in reducing child labour under such circumstances if it would not be self-enforcing under the alternative ones.

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1 Introduction

In a series of articles beginning with Basu and Van (1989), Kaushik Basu and coauthors argue that, if an economy has a multiplicity of equilibria, some with and some without child labour, a ban on the latter may be self-enforcing in the sense that, once an equilibrium without child labour is established, parents have no incentive to depart from it, and a ban is no longer required. That is a valuable result, because it implies that a major obstacle to development can be eradicated without any need for coercion.¹ However, the assumptions under which this result was originally obtained are rather extreme. One is that there are no opportunities for increasing a child's future earnings by investing in the child's education. Another is that, at or above the subsistence level, parents would rather see their children do nothing and consume the bare minimum that is necessary to survive, than work even only a little and consume more than the minimum. The second assumption is all the more doubtful because, in view of the first one, the children's time has no opportunity-cost.

The present article shows that the important result in question holds also if education is an alternative to work, and the disutility of the latter can be compensated by the utility of present consumption or future earning capacity. We remark, however, that a child labour ban may be ineffective if, as is overwhelmingly the case in the developing world, children work not only in the market, but also within their families, because the latter may not be observable by the competent authorities. Paradoxically, the condition under which a child labour ban can be justified in this case is that the ban would not be self-enforcing if all child labour were observable.

2 The basic model

We start by outlining the basic model in Basu and Van (1989), henceforth BV, with some minimal and uninfluential changes that will make it easier to extend in the next section. There is a large number of identical firms demanding labour, and an equally large number of identical families supplying it. Firm owners are neither workers, nor parents of potential workers, so that their profits do not end up in the workers' pockets. Adult labour, denoted by A , and child labour, denoted by C , are perfect substitutes in the production of the numeraire good at the constant rate γ . We may thus conduct the analysis in terms of a single

¹The general idea, more fully developed in Basu (2002, 2011), is that, if more than one equilibrium exists, it may be possible to nudge the economy towards the socially more desirable one at (almost) no cost.

market for adult-equivalent labour,

$$L = A + \gamma C, \quad 0 < \gamma < 1,$$

instead of two interrelated markets, one for adult and the other for child labour.

The representative firm maximizes its profit

$$P = f(L) - wA - w_c C,$$

where $f(\cdot)$ is a concave production function, w the adult wage rate, and w_c the child wage rate. From the first-order conditions for a solution with both child and adult labour employed, we find

$$f'(L) = w \tag{1}$$

and

$$w_c = \gamma w.$$

The representative family is composed by an adult parent and n school-age children. Each family member is endowed with one unit of time, so that the representative family can supply at most

$$L = 1 + \gamma n$$

units of adult-equivalent labour. There are two crucial values of w . One, denoted by \bar{w} , is defined as the minimum value of the adult wage rate that would allow the entire family to barely survive if the parent worked full time and the children did not work at all. The other, denoted by \underline{w} , is defined as the minimum w that would allow the entire family to barely survive if all family members, children included, worked full time. Clearly,

$$(1 + \gamma n) \underline{w} = \bar{w}.$$

BV do not actually mention \underline{w} , but it matters.

Decisions are taken by parents. Parental preferences are such, that parents will not let their children work if they can help it. The family will then supply one unit of L if

$$w \geq \bar{w},$$

$1 + \frac{n}{\gamma}$ units of L if

$$\underline{w} \leq w < \bar{w}.$$

It is thus assumed that, at or above \bar{w} , no amount of consumption can compensate a parent for even a very small amount of child labour. Below

\bar{w} , child labour ceases to be a bad. Given such preferences, it is not possible to draw indifference curves, and no utility function exists.² The labour supply is "backward bending" in the sense that it is smaller at higher than at lower values of w . In the (L, w) plane, it is actually represented by two vertical segments, one perpendicular to the horizontal axis at $L = 1 + \frac{n}{\gamma}$ in correspondence with the wage rate range $\underline{w} \leq w < \bar{w}$, and the other perpendicular to the same axis at $L = 1$ in correspondence with the wage rate range $w \geq \bar{w}$. Below \underline{w} there is no labour supply, because there are no workers.

The labour market may have a unique equilibrium where the demand curve tracing (1) crosses the supply curve only once, either at $(1, f'(1))$, where only adults work, or at $(1 + \gamma n, f'(1 + \gamma n))$, where everybody does. The former is typical of developed countries, where productivity is high. The latter may arise in a developing country, where productivity is low.³ In the latter, it is also possible that the demand curve cuts both segments of the supply curve, in which case the labour market has two equilibria, one at $(1, w^H)$, and the other at $(1 + \gamma n, w^L)$, with $w^L < w^H$. BV concentrate on the particular case where

$$\underline{w} \leq w^L < \bar{w} \leq w^H. \quad (2)$$

Parents prefer the high wage rate equilibrium, where children do not work. Employers prefer the low wage rate equilibrium, where their profits are higher. Therefore, the two equilibria are not Pareto-comparable. If child labour were outlawed, employers would have an incentive to flout the ban by offering to employ children at a wage rate lower than $\frac{w^H}{\gamma}$, but parents would reject any such offer, because they abhor child labour. Therefore, the ban would be self-enforcing.

The model illustrated carries two, rather extreme, implications. As education is not mentioned, it must be presumed either that no educational opportunities exist, or that education brings no benefits. Therefore, the only alternative to work is for children to do nothing.⁴ This

²Above the subsistence level, parental preferences are lexicographic. What this means is that alternative baskets of goods (and, in the present case, bads like child labour) are ranked like words in a dictionary, where Arthur comes before Bernard, because the first letter of the former, "a", comes alphabetically before the first letter of the latter, "b", even though "r" comes after "e", "t" after "r", etc.

³Productivity could be so low, that demand would equal supply only at a wage rate lower than \underline{w} . That is not possible, however, because either all potential workers would die, or parents would sell or "bond" (offer as security to obtain a loan) some of their children in order for the rest to survive; see Cigno and Rosati (2005, Ch. 2).

⁴In Section 3 of the original article, BV relax this assumption by postulating a Stone-Geary utility function in consumption and leisure. This is more general than the initial assumption, but it still excludes the possibility that children could usefully spend at least part of their time studying.

makes the assumption that parents would rather see their children not work and consume the subsistence minimum, than work even just a little and consume more, all the more doubtful, because the time children spend working has no opportunity-cost.

The particular example that yields the result of interest relies on the further assumption that the demand for L is sufficiently rigid for the equilibrium wage rate to jump from below to above \bar{w} as child labour is banned, and L consequently drops from $1 + \gamma n$ to 1. For this to be the case, the wage elasticity of the demand for L , $\varepsilon := -\frac{w}{L} \frac{\Delta L}{\Delta w}$, evaluated at $(1 + \gamma n, w^L)$, must be lower than a certain limit, that may be written, using (1), as

$$\varepsilon \leq \frac{\gamma n}{1 + \gamma n} \frac{f'(1 + \gamma n)}{\bar{w} - f'(1 + \gamma n)}. \quad (3)$$

The elasticity of the demand for labour is inversely related to the production elasticity.

3 An alternative formulation

Let us now examine a more realistic setting, where children have access to education, and education brings benefits in terms of future earning capacity, health or personal satisfaction. Define time in education to include not only school attendance, but also homework and rest (both of which are necessary for school attendance to be profitable), so that time at work and time in education add up to unity. Let parental preferences be represented by a conventional Becker-style utility function,

$$U = a + \beta n V(c, e), \quad 0 < \beta < 1,$$

where a is the amount of the numeraire good consumed by the parent, c that consumed by each child, e the time a child spends in education, and $V(c, e)$ the child's utility maximized conditionally on c and e .⁵ The β parameter is a measure of descending altruism. The representative parent maximizes U subject to the budget constraint

$$a + nc = w + (1 - e)nw,$$

to the time constraints

$$0 \leq e \leq 1 \quad (4)$$

and to subsistence constraints on the choice of a and c .

To simplify matters, we assume that a child's consumption is perfectly substitutable for the parent's at the constant rate αn , $0 < \alpha < 1$,

⁵In the logic of backward induction, this maximization is carried out by the child, but the parent takes the prospective outcome into account when choosing (c, e) .

so we can re-write the utility function as

$$U(a, e) := a + \beta n V(\alpha a, e), \quad (5)$$

and the budget constraint becomes

$$(1 + \alpha n) a = [1 + (1 - e) \gamma n] w. \quad (6)$$

The constraints on the child's use of time (4) are still in place. The subsistence constraints may now be written as

$$(1 + \alpha n) a \geq \underline{w}. \quad (7)$$

In view of the inequality constraints, there is again the possibility of a corner solution at $L = 1$ or $L = 1 + \frac{n}{\gamma}$. But, it is now possible, indeed likely, that the optimization has an interior solution, where the MRS of a for e equals the marginal cost of the one in terms of the other,

$$-\frac{\beta n V_e}{1 + \alpha \beta n V_c} = \frac{\gamma n}{1 + \alpha n} w. \quad (8)$$

Let $(a(w), e(w))$ be the interior solution given the wage rate w . Suppose that child labour is banned. If the wage rate remained the same, consumption would become

$$a = \frac{w}{1 + \alpha n} < a(w),$$

and utility would be lower than without the ban,

$$U\left(\frac{w}{1 + \alpha n}, 1\right) < U(a(w), e(w)).$$

But the wage rate will not remain the same.

In view of (1), since $f'(L)$ is decreasing in L , a ban on child labour will cause the equilibrium wage rate to rise from

$$w = f'(1 + \gamma n [1 - e(w)])$$

to

$$w' = f'(1).$$

That may not be enough, however, for utility to be at least as large with, as without the ban. If it is not, the ban will have to be enforced by the threat of sufficiently severe penalties, because employers and parents will have a common interest in trying to go back to the old equilibrium with child labour. Indeed, the wage rate increase may not be sufficient for the

entire family to survive by the parent's work alone, $f'(1) < \bar{w}$, in which case not even the severest penalties would deter families from disobeying the ban.

The representative family will have no incentive to disobey if the equilibrium wage rate with the ban is high enough for them to be able to buy the same amount of the numeraire good that they bought without the ban,

$$f'(1) \geq \{1 + \gamma n [1 - e(w)]\} w. \quad (9)$$

If (9) is satisfied, the new wage rate will be at least equal to \bar{w} . That is an overcompensation, because each child is now receiving a unit of education instead of $e(w) < 1$. Therefore, (9) is a sufficient, not necessary condition for the ban to be self-enforcing. Expressed in terms of the wage elasticity of the demand for L , evaluated at $(1 + \gamma n [1 - e(w)], w)$, (9) becomes

$$\varepsilon \leq \frac{\gamma n [1 - e(w)]}{1 + \gamma n [1 - e(w)]}. \quad (10)$$

For different parameter configurations, (10) may be more or less stringent than the analogous condition we established in relation to the original BV model, namely (3). Recall, however, that the latter is a necessary condition, while the former is a sufficient one (therefore, the ban could be self-enforcing even if the demand for L were a little more elastic than (10) indicates). Since education is a form of investment, the condition for a child labour ban to be self-enforcing is relaxed if education can be financed on credit.⁶

4 What if children work for their parents?

Throughout the developing world, the vast majority of the children who work do so within the ambit of their families, either directly, by participating in the activities of the family business or family farm, or indirectly, by replacing their parents in the performance of domestic chores. Therefore, most working children are effectively employed by their own parents.⁷ Now, the work that children supply to the labour market may be thought to be observable by the competent authorities, but not the work that they do for their parents (especially if this activity takes place within the walls of the family home like much of the work done by girls). Therefore, a ban can be effectively imposed only on work that is done overtly in the labour market.

⁶However, credit in general may be rationed, and credit for education in particular may not be forthcoming, because grown-up children cannot be held responsible to honour the debts incurred by their parent on their behalf when they were minors; see Cigno and Rosati (2005, Ch. 2).

⁷See Cigno and Rosati (2005, Ch. 2).

Taking into account the production activities that take place within the family, the representative parent then maximizes (5) subject to a budget constraint that must now be written as

$$(1 + \alpha n) a = (L_a + \gamma n L_c) w + g(1 - L_a + \gamma n(1 - L_c - e)),$$

where L_a is the amount of time an adult supplies to the labour market, L_c the amount a child does, and $g(\cdot)$ is the family production function, assumed concave. The usual inequality constraints apply. In addition to (8), an interior maximum now satisfies

$$g'(1 - L_a + \gamma n(1 - L_c - e)) = w. \quad (11)$$

In equilibrium, (1) also holds. Therefore, if family members work both at home and in the market,

$$f'(L_a + \gamma n L_c) = g'(1 - L_a + \gamma n(1 - L_c - e)). \quad (12)$$

But, it is also possible to have an equilibrium where g' is greater or smaller than f' . In the first case, nobody works within the family. In the second, nobody works in the market.

Now suppose that child labour is outlawed. Children are no longer allowed to work in the labour market, but the work they do within the family goes on undetected. Adults work in either or both ambits anyway. Parents now maximize (5) subject to the budget constraint

$$(1 + \alpha n) a = L_a w + g(1 - L_a + \gamma n(1 - e)), \quad (13)$$

and to the usual inequality constraints. At an equilibrium where adults work both at home and in the market,

$$f'(L_a) = g'(1 - L_a + \gamma n(1 - e)).$$

Once again, the ban is self-enforcing if the equilibrium wage rate is sufficiently higher with, than without the ban for the representative family to be at least as well-off in the former as in the latter. The condition concerning the market demand elasticity is analogous to (10), and no more stringent than it, because L_a cannot be greater than 1, and L_c cannot be greater than $1 - e(w)$. Therefore, the ceiling on ε cannot be lower than it would be if all work were market work.

If the market demand for labour is sufficiently rigid, the ban is then trivially self-enforcing in the sense that children have no interest in working in the market – but, they have every interest in working within the family, and there is nothing to stop them! Child labour will simply go underground. Conversely, if the market demand for labour is not rigid

enough, not only would the ban fail to eliminate child labour, but it would also require penalties to achieve the limited objective of stopping children working overtly in the market. On the other hand, if this is the case, the ban will reduce the return to child labour, and this would be good reason for imposing it as part of a policy package, such that the distortion resulting from the ban is traded, in a second-best perspective, against the distortions caused by other measures.⁸ In other words, forbidding children to work in the market may be justified in the very case (the one in which the demand is not sufficiently rigid) where a ban would not be self-enforcing if all labour were observable.

5 Conclusion

We set out to demonstrate that the proposition according to which a ban on child labour may be self-enforcing does not require the assumption made in Basu and Van (1998), that parents will not let their children do any work if they can help it, even if the only alternative to work is to do nothing because education is either not available or brings no benefits. We found that the proposition holds also if education is an alternative to work, and the disutility of child labour can be compensated by an increase in present consumption or future benefits such as higher earning capacity. We also examined the problem that children may work for their parents as well as in the labour market, and that the first type of work may not be observable by the policy maker. In such circumstances, a ban can only apply to market work. Paradoxically, the condition for such a ban to be effective in discouraging child work is that the ban should not be self-enforcing if all labour were market labour, and all child labour were thus observable.

6 References

- Basu, Kaushik (2002), "A note on multiple general equilibria with child labor", *Economics Letters* 74:301-308
- (2011), *Beyond the Invisible Hand*, Princeton and Oxford: Princeton University Press
- and Pham Hoang Van (1998), "The economics of child labor", *American Economic Review* 88:412-427
- Cigno, Alessandro (2012) "How to deal with covert child labor and give children an effective education, in a poor developing country", *The World Bank Economic Review* 26: 61-77

⁸Cigno (2012) shows that, if the work children do within the family is not observable, the second-best policy package may include a ceiling on the work children do in the market, because this will reduce the opportunity-cost of education.

————— and Furio C. Rosati (2005), *The Economics of Child Labour*, Oxford and New York: Oxford University Press