

The Economics of Child Trafficking

Sylvain E. Dessy^a

Stéphane Pallage^{b,*}

^a CIRPEE and Département d'Économie, Université Laval

^b CIRPEE and Département des sciences économiques, Université du Québec à Montréal

August 2003

Abstract

In this paper, we highlight the economic effects of the existence of child trafficking. We show that the risk of child trafficking on the labor market acts as a deterrent to supply child labor, unless household survival is at stake. An imperfectly enforceable legislation aiming at fighting child trafficking, by raising the expected gains parents derive from sending their children to work, will cause a rise in the number of child laborers. We show that it can even cause the incidence of child trafficking to rise. Our findings are consistent with the view that the fight against child trafficking can only be won by effectively combining legislation with other policy measures, including better quality for education, redistribution, or appropriately targeted poverty alleviation programs.

Keywords: Child labor, exploitation, poverty, law enforcement, trafficking

JEL classification: J22, J82, O15

1 Introduction

According to the International Labor Organization (ILO), it is estimated that in the year 2000 at least 1.2 million children were trafficked for child labor (ILO-IPEC, 2002a), mostly but not exclu-

*Pallage (corresponding author): Département des sciences économiques, Université du Québec à Montréal, P.O. Box 8888, Downtown Station, Montreal, QC, Canada; tel: 514-987-3000 (ext 8370); email: pallage.stephane@uqam.ca. Dessy: Département d'Économie, Université Laval, Sainte-Foy, QC, G1K 7P4, Canada, email: sdes@ecn.ulaval.ca. We have benefited from fruitful discussions with Ken Swinnerton. We gratefully acknowledge financial support from the Social Sciences and Humanities Research Council of Canada.

sively in developing countries. Quantitatively speaking this is equivalent to 1.5 times the population of a city like San Francisco being enslaved in a single year. The comparison takes an even bitter sense if we wake up to the fact that we are talking about children. The trafficking of children is so horrific that there is intense pressure on governments to ratify international conventions on the matter (see, e.g., ILO Convention C182). Legislators themselves are often morally compelled to act swiftly and put into law a ban on the practice. They are also very keen at recommending economic sanctions against those who do not. Why wait? What argument can possibly be put forward to hinder action? The legislative strategy is very understandable. It is based on the presumption that, even if perfect enforcement of a law against child trafficking is utopian, any improvement in enforcement must be synonymous with an improvement in the fate of children. In the present paper, we show that this intuition may be wrong. Specifically, we show that if enforcement is not perfect, the well-intentioned ban on child trafficking may have the adverse effect to increase the number of victims.

Our results therefore point to the need to fight child trafficking with a possibly multi-dimensional policy-mix which should target the very roots of the problem. Four elements are key to understand child trafficking. First, as is now widely recognized, child trafficking is a labor market phenomenon. Children fall prey to traffickers mostly when their parents send them to the labor market or confide them to reward-promising entrepreneurs (ILO-IPEC, 2002b). Second, even though misplaced trust and deception occur, parents are generally aware of the risk their children face once they are withdrawn from their supervision (ILO-IPEC, 2002b). Third, unless one assumes that parents are purely selfish — an assumption we are not ready to make¹ — only those parents that are unbareably cash constrained will submit their children to that risk. Fourth, and most important, a ban on child trafficking cannot be perfectly enforced. Child trafficking is a crime, which takes place in important numbers even in countries in which bans have been passed long ago and enforcement is considered among the best in the world.²

¹In that, we follow Basu & Van (1998) and consider that while abusive parents do exist, they do not represent the majority of parents and certainly cannot explain the mass phenomenon of child labor. The empirical evidence further establishes that poverty is the primary cause of child labor (see, e.g., Anker, 2000).

²In the United States, for example, an estimated 400,000 children are reported to be victims of forced prostitution and other forms of commercial sex (*The Economist*, May 30th 2002). Other rich countries such as Canada also report positive incidence of child trafficking (www.savethechildren.ca). We take this evidence as suggesting that, in these countries, the fight against child trafficking is characterized by imperfect law-enforcement.

The model in which we carry out our analysis is a heterogeneous agent model built around those premisses. There are adult parents and children. Adult agents differ primarily in their asset holdings. Parents are altruistic towards their children and choose whether or not to send the latter to work given the state of their assets and the probability that the children may fall prey to traffickers. If child trafficking occurs in the model, it therefore does on the job market. Arguably, the number of children sent to the labor market may therefore be smaller when parents are aware of a high likelihood of child trafficking. Better law-enforcement, by reducing the risk that a child sent to the labor market will be a victim of trafficking agents, will therefore cause more children to be sent out to work. Depending upon the degree of imperfection of the enforcement mechanism, better law-enforcement may actually lead to more children being trafficked away for exploitation.³

Some more facts

The trafficking of children is an international phenomenon. It is rarely limited to the borders of a country. Under international law, trafficking is a crime involving the movement of persons and their exploitation. The exploitation can take several forms: forced labor, prostitution, forced conscription. According to ILO-IPEC (2002b), for instance, close to 200,000 foreign children were trafficked into Thailand in 1996. According to the same report, approximately 20,000 children and young women are being exploited for sexual services in the sole city of Phnom Penh, Cambodia. The average age of these girls is about 15 years. Detailed information about the sex sector in Asia and its children slaves can be found in Lim (1998). West Africa is also an important source of supply. Reports indicate that thousands of children are exported from the region, some to work in the Middle East and Europe as unpaid laborers or for sexual exploitation.⁴ In Europe itself, growing poverty in the countries of Eastern Europe, increasing demand for labor of all kinds in Western Europe and the facility of open borders have resulted in massive movements of people from East to West and in the trafficking of children and adults. The frequent transboundary nature of trafficking puts an additional strain on the enforcement of possible bans on the practice.

It is important to remind the reader of the historical background behind the legislative agenda. The ILO has been combatting child labor for years. International conventions, written under its auspices, and aiming at the elimination of child labor, while extensively ratified, have not succeeded.⁵

³A technically similar paradox was once reported after the introduction of better safety devices in automobiles in the 1970ies (see, e.g. Peltzman, 1975).

⁴See *The Economist*, April 19th 2001.

⁵In fact, evidence from the nineteenth and early twentieth centuries suggests that national laws banning child labor

The most famous of them is the 1973 Minimum Age Convention C138. When it was later recognized that child labor was primarily caused by poverty, the ILO's focus shifted from the elimination of child labor to the elimination of the worst forms of child labor, including trafficking. Convention C182 was written in 1999 for this purpose and is in the process of being ratified world-wide.

While the evidence suggests that legislative measures against child trafficking, both at the source and in the destination countries, are not perfectly enforceable, even in the richest countries, internationally agreed strategies to eliminate child trafficking and exploitation thus continue to focus on better law-enforcement alone as the main concept of prevention. ILO-IPEC-funded regional projects all recommend the adoption and enforcement of laws making child exploitation a punishable crime. Some countries' own initiatives also echo this legislative intolerance of child trafficking and exploitation. For instance, the United States' Justice Department, under the *Trafficking Victim Protection Act* passed in 2000, demands that source countries step up the investigation and prosecution of traffickers, or risk the loss of non-humanitarian aid.⁶ Yet, notwithstanding the obvious criminal nature of child trafficking, there is no evidence that better law-enforcement, alone, can end poverty, the primary determinant of the vulnerability of children to trafficking.

Related Literature

Prior to us, Rogers & Swinnerton (2002), have begun exploring the welfare effects of banning exploitative forms of child labor. They do so in an environment with risk-neutral, homogeneous parents. Our model borrows several features from their model. Like in Rogers & Swinnerton (2002), parents in our model are altruistic towards their children and have imperfect information about whether or not employment opportunities available to their children are exploitative.

In Rogers & Swinnerton (2002), the demand for child labor originates from capitalists hiring labor for production. Capitalists have two options for earning a return on their capital. They can either pay child laborers a competitive wage or simply exploit them, in which case children get little or no pay. These capitalists, or residual claimants, move from the non-exploitative sector to the exploitative sector until returns to capital are equalized. Hence the endogeneity of the demand for both forms of child labor. In the model of Rogers & Swinnerton (2002), a ban on child exploitation can be perfectly enforced. Once such ban is passed, exploited children and exploiters both move to the non-exploitative side of the market. The ban turns out to benefit all parents because the market wage for child labor ends up increasing. It does so because capitalists from the exploitative sector

in England or the United States came when child labor was already declining (see, e.g., Galbi, 1997; Moehling, 1999).

⁶See *The Economist*, May 30th 2002.

all increase their scale of operation as they enter the more formal non-exploitative sector. Hence the increase in demand overcomes the increase in supply. If parents are happy with the ban, capitalists are not, however: the return to capital decreases after the ban, which suggests that capitalists may vigorously oppose the ban, a problem that Rogers & Swinnerton (2002) do not address.

Our analysis differs from Rogers & Swinnerton (2002)'s in at least two respects: First, we take into consideration the fact that enforcement of a law punishing child traffickers is unlikely to be perfect. In such case, we argue that better law-enforcement, in order to be effective in eradicating child exploitation, must be accompanied by other policies, those that raise the opportunity cost of sending children to the labor market. This result is consistent with recent empirical findings (ILO-IPEC, 2002b). Examples of accompanying policies include improvements in the quality of education,⁷ redistribution, or appropriately targeted poverty alleviation programs. Second, unlike Rogers & Swinnerton (2002) who work with homogeneous agents and obtain bang-bang solutions — every child in their model or none seeks employment —, our use of a heterogeneous-agent model allows us to consider the possibility that parents may increase the supply of child labor as the law makes it less risky for children to work. This turns out to be crucial once we analyze the labor market implications of the law.

Our paper is clearly also linked to the literature on the worst forms of child labor. The trafficking of child laborers clearly falls in the ILO's definition of the worst forms of child labor (see the text of Convention C182). One should distinguish, however, between child trafficking and hazardous child labor. Child trafficking underlines a sense of abuse and deception, and slavery-like labor. Not all hazardous child labor has these characteristics. Instead, hazardous child labor often offers much better returns than non-hazardous child labor, and thus tends to be more attractive to children, or to their parents (see, e.g., Rialp, 1993). In a recent paper, (Dessy and Pallage, 2002), we show that banning hazardous child labor is unlikely to be socially desirable because of the adverse effect of the ban on the wage of children in the non-hazardous sector.

If child exploitation or the worst forms of child labor have not been studied much, there exists, however, a large literature on child labor, both theoretical and empirical. The theoretical literature was initiated by the seminal work of Basu & Van (1998).⁸ Among the contributors are Basu (1999,

⁷In this paper, however, we do not explicitly model education as the alternative to child labor. Instead, we consider leisure, but it can easily be interpreted as education.

⁸The empirical literature was started somewhat earlier, with the works of Grootaert & Kanbur (1995) and Canagarajah & Coulombe (1997).

2000), Swinnerton & Rogers (1999), Baland & Robinson (2000), Ranjan (1999, 2001), Dessy (2000), Dessy & Pallage (2001), Dessy & Vencatachellum (2003), Doepke & Zilibotti (2002). In all that literature, bans, when desirable were assumed to be perfectly enforceable. The present paper is the first to our knowledge to verify what happens, if perfect enforcement cannot be achieved. We show that imperfect enforcement in the case of child trafficking may have counter-intuitive effects. Imperfect enforcement implies that a ban on child trafficking could increase the incidence of trafficking.

2 The model economy

We consider a one-good economy with a continuum of heterogeneous parents of mass normalized to 1. Each parent has one child. Parents have one period left to live, while children have two. Parents differ in their endowment, θ , of the unique consumption good. The distribution of parents by endowment levels is given by a continuously differentiable cumulative distribution function, Ψ , with strictly positive density, ψ , over the support $[\underline{\theta}, \bar{\theta}]$, where $0 \leq \underline{\theta} < \bar{\theta}$ and $\psi(\theta) = \Psi'(\theta)$ for all $\theta \in [\underline{\theta}, \bar{\theta}]$. Differences in parental endowments are the only source of inequality in this economy. Each parent must decide whether, for his child, childhood is to be a period of protection and nurturing through leisure for example, or a period of labor force participation during which the child is to contribute to the household income. Labor force participation, however, may expose the child to predators who traffic their victims away for exploitation. Trafficking takes place on the labor market. We assume that a child who is lucky enough to find a genuine employment opportunity receives a quantity ω_c of the consumption good in exchange for his labor. In contrast, a child who falls victim to traffickers is taken away and does not return to his parent.

The informational structure in this economy is as follows. Each parent knows that sending his child to the labor market is risky in that the child may be a victim of traffickers. However, no parent knows with certainty which potential employer is a trafficker. Parents have rational expectations over the actual risk faced by their children: they know the probability, $p \in [0, 1]$, that a child sent to the labor market falls prey to a trafficking agent.

For simplicity, we assume that leisure and work are mutually exclusive. Let x denote the parent's response to the risk of losing his child to traffickers: $x = 0$ means that the child is not sent to the labor market given the likelihood p that he will be trafficked away; $x = 1$ means that the child is sent to the labor market despite this risk.

We abstract from adult labor and assume that the household consumes the parent's endowment possibly augmented by the proceeds of child labor.⁹

In addition to the consumption of the household, parents care about their children's emotional, mental and cognitive development, which is assumed to be promoted by a leisurely activity. This leisurely activity could be interpreted as being free education. Given p , if a parent with endowment level θ decides that his child should not participate to the labor force, then leisure will be the child's only activity. In that case, the parent gains a level of utility $A > 0$ from raising a well-nurtured child, and a level of utility $u(\theta)$ from consuming a quantity θ of the unique good. We assume $u(\cdot)$ to be strictly increasing and strictly concave. However, if the same parent decides that his child should be sent to work for the benefit of the household, the parent will derive utility $u(\theta + \omega_c)$ from consumption if the child is lucky enough to find a genuine employment opportunity paying wage, ω_c . If the household is unlucky instead, and the child ends up falling victim to trafficking agents, the parent's utility will reduce to $u(\theta)$ net of the disutility B from losing his child. In other words, child trafficking costs the family not only an additional source of income (the loss of ω_c), but also the loss of the child. We are now equipped to verify which parents are better off sending their children to the labor market, given p .

2.1 The parents' problem

Let $V(x; \theta, \omega_c, p)$ denote the value for a parent of choosing x when his endowment of the consumption good is θ , and the economy is in the state (ω_c, p) .

$$V(x; \theta, \omega_c, p) = [A + u(\theta)](1 - x) + [u(\theta + \omega_c)(1 - p) + (u(\theta) - B)p]x. \quad (1)$$

In other words if a parent of type θ chooses that his child should not work, i.e. $x = 0$, his expected welfare is:

$$V(0; \theta, \omega_c, p) = A + u(\theta) \quad (2)$$

However, if he chooses child labor instead, i.e. $x = 1$, his expected welfare is equal to the level of welfare that would obtain in absence of child trafficking minus the welfare loss due to child

⁹We abstract from the possibility that child labor and adult labor may be substitutes. Our purpose is not to provide an accurate description of the labor market, but to illustrate a counter-intuitive effect of improving the enforcement of bans on child trafficking in the simplest possible setting. However, this omission is without loss of generality. In fact, it can be shown that our results would be even stronger in a more complex model in which the substitutability of adult labor and child labor in the non-exploitative market was taken into account.

trafficking:

$$V(1; \theta, \omega_c, p) = u(\theta + \omega_c) - [B + u(\theta + \omega_c) - u(\theta)]p. \quad (3)$$

When the economy is in state (ω_c, p) , if a parent chooses $x = 0$, it must be that he has a level of endowment, θ , such that:

$$V(0; \theta, \omega_c, p) > V(1; \theta, \omega_c, p),$$

The reverse holds for a parent choosing $x = 1$. It is immediate, from an inspection of (2) and (3) that if p were equal to 1, no parent, whatever his endowment, would choose to send his child to the labor market. It can be shown that there exists $\bar{p} < 1$ such that if $p < \bar{p}$, at least some parents choose to risk sending their child to the labor market.

For a given p , an indifferent parent is one whose endowment level is θ^* such that $V(0; \theta^*, \omega_c, p) = V(1; \theta^*, \omega_c, p)$. Using (2) and (3), and assuming, without loss of generality that $A = B = 1$,¹⁰ we have, for an indifferent parent:

$$u(\theta + \omega_c) - u(\theta) = \frac{1+p}{1-p}. \quad (4)$$

Let $\theta^* = \varphi(\omega_c, p)$ be the solution to the above equation.

Lemma 1 *The function φ has the following properties: (i) $\varphi_\omega > 0$ and (ii) $\varphi_p < 0$.*

Proof. Define a function G by:

$$G(\theta, \omega_c, p) \equiv u(\theta + \omega_c) - u(\theta) - \frac{1+p}{1-p}.$$

Let G_j denote the partial derivative of G with respect to its j th argument. Then, from the properties of $u(\cdot)$, we have:

$$\begin{aligned} G_\theta &= u'(\theta + \omega_c) - u'(\theta) < 0 \\ G_\omega &= u'(\theta + \omega_c) > 0 \\ G_p &= -\frac{2}{(1-p)^2} < 0 \end{aligned}$$

¹⁰It could be argued that there is an asymmetry in the benefit of having a well-nurtured child A and the cost of losing this child B . Some might even claim that B is infinite. Since we do observe children sent to the labor market in spite of the risk of trafficking, it must be, however, that B is bounded above. In absence of better information, we assume that $A = B = 1$.

The implicit function theorem may then be applied to establish the results. ■

Part (i) of Lemma 1 states that an increase in the child labor wage raises the level of endowment necessary for the parent to be indifferent between the two options. Part (ii) states that a rise in the likelihood of child trafficking does exactly the reverse: it lowers the level of endowment necessary for a parent to be indifferent between sending or not sending his child to the labor market. Lemma 1 implies that while poverty may force parents to consider sending their children to the labor market, the likelihood of child trafficking, in contrast, may force them to reconsider that decision, unless they are too desperate to care. We will show further below that Lemma 1 indeed formalizes the determinants of the supply of child labor.

2.2 Production

Output is produced by perfectly competitive firms. For simplicity, we assume that all honest firms hire only children and have access to the same technology which exhibits diminishing marginal productivity of labor. The aggregate production function is:

$$Y = F(L), \text{ with } F' > 0 \text{ and } F'' < 0 \quad \forall L,$$

where L denotes the demand for child labor. Profit maximization by perfectly competitive firms implies that the market wage equals the value of the marginal product of labor: $\omega_c = F'(L)$.

Let N be the total mass of children sent to the labor market, N_g , the incidence of non-exploitative child labor and N_e , the incidence of child trafficking for exploitation. Since we assume that child trafficking occurs on the labor market, then, by the law of large numbers, $N_g = (1 - p)N$, while $N_e = pN$. Hence domestic market clearing implies that: $\omega_c = F'[(1 - p)N]$.

Given our normalization of the population size, N equals the total mass of parents who are better off sending their child to the labor market. Hence:

$$N = \Psi(\varphi[(F'[(1 - p)N], p)]). \tag{5}$$

Equation (5) is clearly a fixed-point problem.

3 The effects of better law-enforcement

In this section, we characterize a market equilibrium given the probability of trafficking, p , and explore the effect on equilibrium decisions of changes in this probability.

Definition 1 An equilibrium for this economy is a wage for non-exploitative child labor, ω_c^* , a mass N^* of parents who elect to send their children to the labor market, an incidence of child trafficking, N_e^* , and an incidence of non-exploitative child labor, N_g^* , such that:

(i) given the likelihood of child trafficking p , N^* solves (5), and

(ii) the following market clearing equations are satisfied:

$$\omega_c^* = F'[(1-p)N^*] \quad (6)$$

$$N_e^* = pN^* \quad (7)$$

$$N_g^* = (1-p)N^*. \quad (8)$$

Recall that \bar{p} is the worst probability of victimization below which there exist wages and endowments such that some parents would choose to send his child to the labor market. It can easily be shown that for all θ and for all feasible ω_c , $\bar{p} < 1$. To see this, note that the poorest agent facing the worst possible wage ($\omega_c = F'(1-p)$) would send his child to work if:

$$V(1; \underline{\theta}, F'(1-p), p) \geq V(0; \underline{\theta}, F'(1-p), p)$$

This is equivalent to:

$$u(\underline{\theta} + F'(1-p)) - u(\underline{\theta}) - 1 - [1 + u(\underline{\theta} + F'(1-p)) - u(\underline{\theta})]p \geq 0$$

The above inequality holds iff:

$$p \leq \bar{p} = \frac{u(\underline{\theta} + F'(1-p)) - u(\underline{\theta}) - 1}{u(\underline{\theta} + F'(1-p)) - u(\underline{\theta}) + 1} < 1$$

We can always choose u , F and $\underline{\theta}$ so that \bar{p} is also strictly positive. Therefore, for all $p \in (0, \bar{p})$, there is a positive supply, N^* , of child labor. Since the incidence of child trafficking is $N_e^* = pN^*$, there exists an equilibrium with child trafficking as long as $p \in (0, \bar{p})$.¹¹

Proposition 1 If the production function, F , is not too concave, i.e. if

$$F'' > \frac{\varphi_p}{\varphi_\omega}, \quad (9)$$

then, in equilibrium, the total mass of parents who are better off sending their children to work decreases with the likelihood of child trafficking.

¹¹Interestingly, an equilibrium with child trafficking does not exist when child trafficking is too likely (i.e., $p > \bar{p}$). Too high a risk of victimization shuts off the child labor market. Since we do observe child trafficking in the real world, we abstract away from the case in which $p > \bar{p}$.

Proof. Let $N^* \equiv N(p)$ denote the equilibrium mass of parents who elect to send their children to the labor market when the state of nature in this environment is described by p . We need to show that $N'(p) < 0$ whenever condition (9) holds. Define function Γ by:

$$\Gamma(N; p) \equiv N - \Psi(\varphi[F'[(1-p)N], p]). \quad (10)$$

Letting Γ_j denote the partial derivative of Γ with respect to its j th argument, we have:

$$\Gamma_N = 1 - (1-p)\Psi'(\theta^*)\varphi_\omega F''(N) > 0 \quad (11)$$

$$\Gamma_p = -\Psi'(\theta^*)[\varphi_p - \varphi_\omega N F'']. \quad (12)$$

From Lemma 1, it follows that $\Gamma_p > 0$ if $N = 0$, and remains so as long as $\varphi_p - \varphi_\omega N F'' < 0$. In the worst case, for $N = 1$, $\Gamma_p > 0$ if restriction (9) on the concavity of the production function is satisfied. Hence, by the implicit function theorem, there exists a function $N(p)$ such that $\Gamma[N(p); p] \equiv 0$ and $N'(p) = -\frac{\Gamma_p}{\Gamma_N} < 0$. ■

Proposition 1 states that when parents believe that there is a high likelihood that sending their children to the labor market will expose them to trafficking agents, the parents discount the payoffs associated with that option. In other words, the likelihood of trafficking makes parents more cautious, as they understand that child labor may fail to “remedy” the very poverty that drives its supply. This effect will discourage all those who are not too poor to care. A direct implication of this is that any exogenous device that reduces the likelihood of child trafficking, p , will push more children into the labor market if a condition such as (9) is satisfied. This condition implies that it takes too high an influx of children into the non-exploitative forms of child labor to cause a significant decline in marginal productivity. This will be the case for example if the technology used in non-exploitative child labor is sufficiently labor-intensive, which is not unusual in developing countries.

Since with a higher likelihood of child trafficking fewer parents send their children to the labor market, clearly the incidence of non-exploitative child labor will be smaller than it would have been, absent child trafficking: $N'_g(p) = [(1-p)N'(p) - N(p)] < 0$. Hence the following result:

Proposition 2 *If condition (9) holds, then an exogenous decline in the likelihood of child trafficking raises the incidence of non-exploitative child labor.*

Since a decline in p draws more children into the labor market, it is not surprising that more of them will end up finding a genuine employment opportunity, albeit with a lower wage.

If the law banning child trafficking were to be perfectly enforceable, it would, by definition, end child trafficking (i.e., $p = 0$). However, since trafficking is hard to detect even in rich countries, it is unlikely that such law will ever be perfectly enforceable. In the context of this study, a legislation fighting child trafficking is said to be imperfectly enforceable if the probability that a child seeking employment falls victim to traffickers declines with enforcement, albeit without completely vanishing. Therefore, the effect on the incidence of child trafficking of better enforcement of the law can be seen through the following expression:

$$N'_e(p) = pN'(p) + N(p) \quad (13)$$

Proposition 3 *In an environment with imperfect enforcement, an improvement in the enforcement of laws banning child trafficking has ambiguous effects on the incidence of trafficking.*

Indeed, the sign of expression (13) is ambiguous. Since $N'(p) < 0$ by Proposition 1, the first term on the right-hand-side is negative and represents the indirect effect of better enforcement, while the second is positive and represents the direct effect. Depending upon the degree of imperfection of the enforcement mechanism, better enforcement of the law banning child trafficking may or may not cause the incidence of child trafficking to decline. Which effect dominates is a matter of empirical investigation.

The important point to take from Proposition 3, however, is that there is a significant possibility that improvements in the enforcement of laws banning child trafficking may turn out to increase the number of children trafficked away. One may question the empirical reality of the puzzle we highlight. In fact, a recent case study of Nepal by Kumar K.C. et al. (2001) reveals that the adoption of laws banning child trafficking in that country was accompanied by an increase in the incidence of child trafficking because of corruption in law enforcement. Nepal was in effect unable to drive p to zero.

In what follows, to illustrate our result, we solve a numerical example.

4 A numerical example

We make the following specializations:

(i) $F(L) = (\nu - \gamma L)L$, $\nu > 2\gamma$; $\gamma > 0$

(ii) $u(c) = \ln c$,

$$(iii) \Psi(\theta) = \frac{\theta - \underline{\theta}}{\theta - \bar{\theta}}, \quad \bar{\theta} > \underline{\theta} \geq 0,$$

where ν and γ are measures of labor productivity. The interested reader can verify that $F' > 0$ for $\nu > 2\gamma$ and $F'' < 0$. The use of a logarithmic utility specification is standard in the literature on parental choice of child occupation (see, e.g., Kremer and Chen, 1999). The choice of a uniform distribution of endowments is made for simplicity, without loss of generality.¹²

The first implication of this parameterization is that equation (4) now reduces to the following:

$$\ln \left[\frac{\theta + \omega_c}{\theta} \right] = \frac{(1+p)}{(1-p)}.$$

The solution, θ^* , to this equation is given by:

$$\theta^* \equiv \varphi(\omega_c, p) = \omega_c \delta(p) \quad \text{with } \delta(p) \equiv \frac{1}{e^{\frac{1+p}{1-p}} - 1} \quad (14)$$

From straightforward calculus, it can be established that $\varphi_p < 0$ as in Lemma 1.

The second implication of this parameterization is that, in a market equilibrium, $\omega_c = \nu - 2\gamma(1-p)N$. Since $\nu > 2\gamma$, it is clear that $\omega_c > 0$, and ν can be interpreted as the upper bound of the child labor wage ω_c , while $\nu - 2\gamma(1-p)$ is its lower bound. In the light of (14), the cut-off parent has a level of endowment $\tilde{\varphi}(N, p)$ given by:

$$\tilde{\varphi}(N, p) = [\nu - 2\gamma(1-p)N]\delta(p) \quad (15)$$

Assuming without loss of generality that $\underline{\theta} = 0$, combining (5) with (15) and making use of the functional form for $\Psi(\theta)$, yields the equilibrium mass of parents who are better off sending their children to the labor market:

$$N(p) = \frac{\delta(p)\nu}{[2\gamma(1-p)\delta(p) + \bar{\theta}]},$$

For $N(p)$ to be interior, that is $N \in (0, 1)$, it must be that p satisfies:

$$(i) \quad 0 < \delta(p)\nu \quad (16)$$

$$(ii) \quad \bar{\theta} > \delta(p)[\nu - 2\gamma(1-p)] \quad (17)$$

Taking the derivative of N yields:

$$N'(p) = \frac{\nu [\delta'(p)\theta + 2\gamma[\delta(p)]^2]}{d^2}$$

¹²It should be noted that none of our results hinge on the quadratic form of the production function. A more conventional Cobb-Douglas function would yield the same conclusions.

where $d = \bar{\theta} + 2\gamma(1-p)\delta(p)$ and $\delta'(p) = -\frac{2e^{\frac{1+p}{1-p}}}{(1-p)^2}\delta(p)^2$. It can be shown that a sufficient condition for $N'(p)$ to be negative is that $\gamma < \bar{\theta}e$. The incidence of child trafficking is therefore given by:

$$N_e(p) = \frac{p\delta(p)\nu}{[2\gamma(1-p)\delta(p) + \bar{\theta}]} \quad (18)$$

Figure 1 shows the incidence of child labor, N , and the incidence of child trafficking, N_e , as a function of the probability of victimization, p , for specific values of the parameters.¹³ As can be seen from the picture, for high enough values of p , the risk that a child be trafficked away is so large that the market for child labor vanishes ($N = N_e = 0$). As p decreases with better law enforcement, both N and N_e become positive — the cut-off \bar{p} is about 70% in this example. For a large portion of the bottom part of the figure, the decrease in the probability of victimization leads to a higher number of victims. Indeed, parents adjust to the safer environment and tend to send their children in proportionally larger numbers to the labor market.

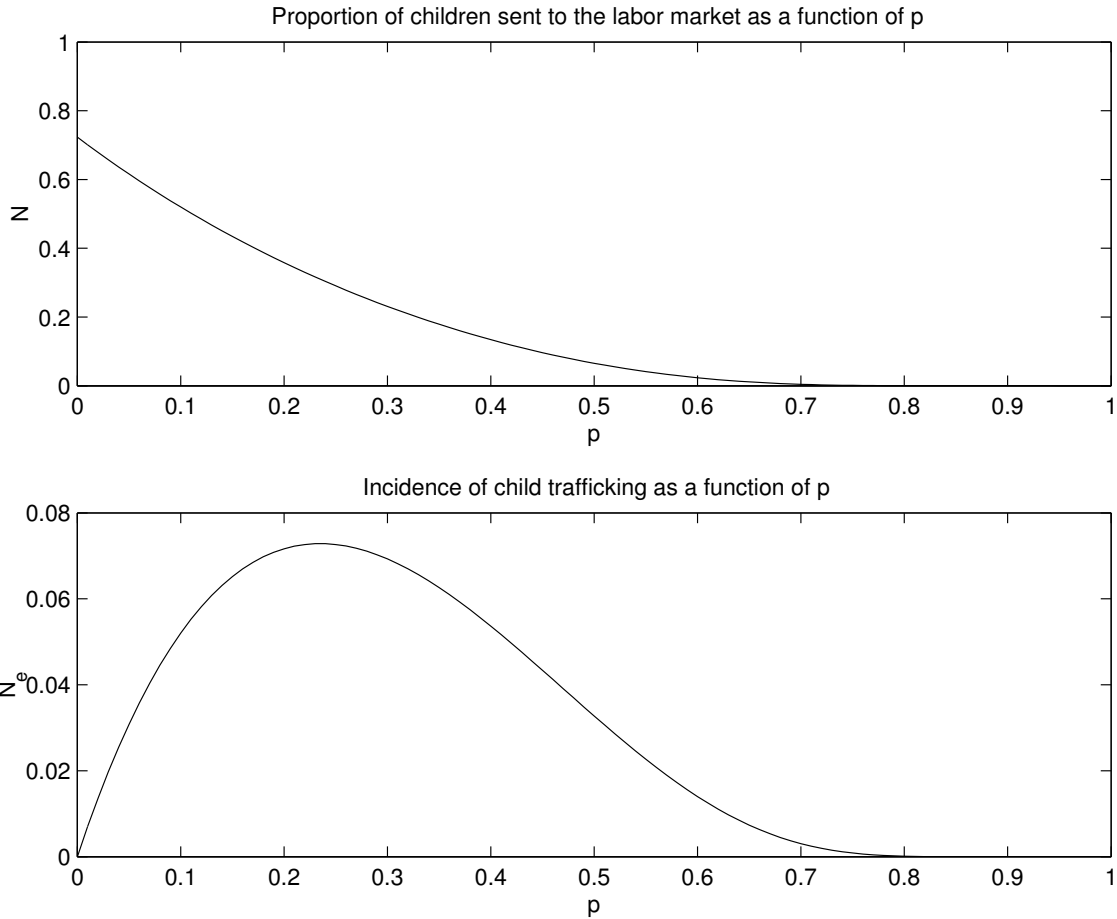
The top panel of Figure 1 allows us to identify three different groups of parents. Standing out on top of the intercept is a group of parents (25% with this parameterization) who would never send their children to the labor market, regardless of the risk of trafficking p . These parents are rich enough that they are better off without their child's labor. Depending on the value of p , there may also exist a group of parents whose budget is so tight that they may end up taking the risk to send their children to the labor market and a group of parents who might take the risk for lower p but do not for its current value. The responsiveness of this latter group to reductions in the risk of trafficking is key to understand. If we ignored this group of parents, any policy resulting in a lowering of p would be successful at reducing trafficking. Because the ignored group of parents may have a more than proportional response to a decrease in p , however, the same well-intended policy may lead to an increase in the incidence of trafficking.

5 Final discussion

No doubt, any reduction of child trafficking is morally desirable. It is not clear, however that improvements in law enforcement against child traffickers will necessarily achieve the desired goal. As we show, it can prove counter-productive if enforcement was initially poor.

¹³We assign numerical values to the relevant parameters, paying particular attention to conditions (16)-(17). The following parameter values satisfy all our constraints: $\nu = 250$; $\gamma = 1$; $\bar{\theta} = 200$.

Figure 1:



Law enforcement in the poorest countries is known to be deficient. Not surprisingly, these are also the countries where child trafficking thrives. Our paper suggests that caution is therefore needed when considering laws as the appropriate way to fight child trafficking. The vulnerability of children to trafficking is clearly linked to the poverty of parents, over which the laws have no control. The laws banning child trafficking in an environment with imperfect enforcement, have a positive effect on the supply of child labor as they make it safer for children to venture into the labor market. This, in turn, may imply a higher number of victims.

Our paper thus supports the view that the fight against child trafficking can only be won by effectively combining legislation with other policy measures that aim at reducing poverty, or increasing the opportunity cost of child labor, such as improvements in the quality of education and food-for-education programs. Such policies will help reduce the number of parents constrained to gamble with their children's life.

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