CIRPÉE
Centre interuniversitaire sur le risque, les politiques économiques et l'emploi

Cahier de recherche/Working Paper **03-23**

The Economics of Child Trafficking

Sylvain Dessy
Stéphane Pallage

Avril/April 2003

Pallage (corresponding author): CIRPÉE and Département des Sciences économiques, Université du Québec à Montréal, P.O. Box 8888, Downtown Station, Montreal, QC, Canada ; tel.: (514) 987-3000 ext. 8370
pallage.stephane@uqam.ca
Dessy: CIRPÉE and Département d'économique, Université Laval, Quebec, QC, Canada G1K 7P4
sdes@ecn.ulaval.ca

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.

The Economics of Child Trafficking

Sylvain Dessy[a]   Stéphane Pallage[b,*]

[a] CIRPEE and Département d'Économique, Université Laval

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

April 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

Exploitation is a social crime. Exploitation of children is an even bigger one. Yet stories abound of the deception many parents experience when confiding their children to the care of reward-

1

promising entrepreneurs (see, for example, Lin Lean Lim, 1998). Children are often abducted, trafficked away, and deprived of the promised better future. Cross-border trafficking is distinguished from mere immigrant-smuggling by the degree of coercion, deception and exploitation. Under international law, trafficking is a crime involving the movement of persons and their exploitation. The exploitation can take several different forms: forced labor, prostitution and in some cases forced conscription. According to the International Labor Organization (ILO-IPEC, 2002), 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. 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.[1] 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 – both legal and illegal – from East to West and in the trafficking of children and adults.

So there is no doubt that cross-border child trafficking for exploitation is an issue of global concern. And, thanks to a recent surge in ILO-sponsored empirical research on child trafficking, we know that trafficking agents thrive on deception and coercion. Available data also suggest that traffickers usually prey on children seeking paid employment away from their home, and that parents, while aware of the risks associated with their sending children off to work, have imperfect information over the outcome of this decision (ILO-IPEC, 2002). However, there is still a knowledge gap in both the analysis of the problem and in finding effective means to eradicate it. For example, does the growing incidence of child trafficking necessarily reflect a lack of law-enforcement efforts? This question is a crucial one to consider for two reasons. On the one hand, given the hidden nature of trafficking and exploitation, the evidence suggests that legislative measures both at the source and in the destination countries are not perfectly enforceable, even in the richest countries.[2] On the other hand, internationally agreed strategies to eliminate child

---

[1]See *The Economist*, April 19th 2001.

[2]In the United States, for example, an estimated 400,000 children are reported to be victims of prostitution and other forms of commercial sex. The vast majority of them are Americans, mostly from the Midwest (*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 and exploitation continue to focus on better law-enforcement alone as the main concept of prevention. For example, 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.[3]

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. Under these circumstances, the question of how the incidence of child trafficking will respond to better, albeit imperfect, law-enforcement becomes non-trivial. Indeed, if, as the data suggest, trafficking occurs when children are sent to the labor market, one may expect a high likelihood of child trafficking to reduce the expected utility gain altruistic parents derive from sending their children to the labor market. As rational decision makers, parents would take this into consideration when deciding on their children's time use. 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 likelihood that a child sent to the labor market will fall victim to trafficking agents, will therefore cause more children to be sent to the labor market. Depending upon the degree of imperfection of the enforcement mechanism, better law-enforcement may actually lead to more children being trafficked away for exploitation, simply because there are many more of them around. This surprising result is not unrelated to the Peltzman puzzle: Sam Peltzman (1975) showed that the introduction of a regulation mandating the installation of more safety devices in automobiles could lead to an increase in the number of automobile accidents.

In this paper, we develop a simple theory of child trafficking based upon a two-period model of rational agents. Parents, in our model, are altruistic, expected-utility maximizers who must decide on their children's time use. A child's time has two competing claims: leisure and work. Unlike leisure, work has two possible outcomes: On the one hand, a child sent to the labor market can be lucky and find a genuine, non-exploitative paid employment, in which case he contributes the total proceeds from his labor to his family income; on the other hand, he can be unlucky and fall

trafficking is characterized by imperfect law-enforcement.

[3]See *The Economist*, May 30th 2002.

3

victim to predators who traffic their victims abroad to be exploited. Prior to the decision to send his child out to seek employment, each parent only knows the probability that the child will be victim of traffickers. In our model, parents are heterogeneous in that they differ in their endowment of a consumption good. The difference in endowment levels is the only source of inequality in the economy.

In such an environment, we find that parents can be divided into three groups according to their choices. In the first group, parents would send their children to the labor market whether or not this exposes them to the risk of exploitation. These are the poorest of the poor. Parents in the second group would choose leisure as the only occupation for their children, unless there is better law-enforcement against child trafficking, in which case children would be sent to work. This second group is composed of "not-so-poor" parents. The third group, in contrast, consists of parents who would choose leisure as the only occupation for their children whether or not the law against child trafficking is enforced. These parents are clearly the richest of all. When analyzing the effects of the new legislation, understanding the response of parents in the second group turns out to be of extreme importance. Depending on the latter response, the fight against child trafficking can in fact lead to a higher incidence of trafficked children. Some of our findings are illustrated numerically.

2   Related Literature

Our research is related to Kenneth A. Swinnerton and Carol A. Rogers (2002). In their paper, Swinnerton and Rogers explore the welfare effects of banning exploitative forms of child labor in an environment with risk-neutral, homogeneous parents. Their model is mostly concerned with the modeling of the demand side of child labor. This demand originates from capitalists who are the firms owners hiring labor for production. Capitalists have two options for earning a return on their capital. They can either pay children workers 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 between both sectors. Hence the endogeneity of the demand for both forms of child labor. A direct implication of that feature of their environment is that the demand for child labor is responsive to the adoption of a perfectly enforceable ban. In their model, legislative intervention alone can lead to a welfare-improving eradication of child exploitation, because it forces capitalists to operate in the non-exploitative sector only.

Our analysis differs from Swinnerton and Rogers's in at least three 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 2002). Examples of accompanying policies include improvements in the quality of education,[4] redistribution, or appropriately targeted poverty alleviation programs. Second, Swinnerton and Rogers (2002) consider exploitation of children on domestic informal markets. Exploitation in their model implies a wage below the marginal product of labor. We model another reality, the trafficking of children away from their parents. As we showed above, this constitutes a substantial part of child exploitation. Third, unlike Swinnerton and Rogers (2002) who implicitly assume the proportion of child laborers to be fixed, we allow for the possibility that parents may increase the supply of child labor as the law makes it less risky for children to work. This may turn out to be crucial once we analyze the labor market implications of the law.

Our paper is also linked to the literature on the worst forms of child labor. The trafficking of children workers clearly falls in the ILO's definition of the worst forms of child labor. 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 involve deception and abuse. 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 (Victoria Rialp, 1993). In a recent paper, (Sylvain Dessy and Stéphane Pallage, 2002), we show that banning hazardous child labor is hardly socially desirable because of the adverse effect of the ban on the wage of children in the non-hazardous sector.

If child exploitation has 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 Kaushik Basu and Pham Hoang Van (1998). Among the contributors are Priya Ranjan (1999, 2001), Basu (1999, 2000), Dessy (2000), Dessy and Pallage (2001, 2002), and Dessy and Désiré Vencatachellum (2003). The empirical literature was started somewhat earlier, with the works of Christiaan Grootaert and Ravi Kanbur (1995); and Sudharshan Canagarajah and Harold Coulombe (1997).

---

[4]In 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.

3 The model economy

We consider a one-good economy with a continuum of heterogeneous parents of mass normalized to 1. Each parent has one period left to live. Parents differ in their endowment, θ, of the unique consumption good. The distribution of parents by endowment levels is described by a continuously differentiable cumulative distribution function Ψ with strictly positive density ψ over the support $\left[\underline{\theta}, \bar{\theta}\right]$, where $0 \leq \underline{\theta} < \bar{\theta}$ and $\psi\left(\theta\right) = \Psi'\left(\theta\right)$ for all $\theta \in \left[\underline{\theta}, \bar{\theta}\right]$. These differences in parental endowments are the only source of inequality in this economy.

Each parent bears one child in the beginning of the period and 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 in the labor market only. 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. Parental information is summarized by 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 first ask which parents are better off sending their children to the labor market, given p.

3.1 The parents' problem

In addition to their own consumption, parents care about their children's emotional, mental and cognitive development, which is assumed to be promoted by a leisurely activity.[5] Given p, if a parent with endowment level θ decides that his child should not participate to the labor force then

---

[5]One can interpret such leisurely activity as being free education.

leisure will be the child's only activity. In that case, the parent gains a level of utility A from raising a well-nurtured child, and level of utility $u(\theta)$ from consuming a quantity θ of the unique good. We assume $u(.)$ to be strictly increasing and strictly concave. However, if he 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 a 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 the 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.

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).

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

In other words if a parent of type θ chooses $x = 0$, his expected welfare is

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

However, if he chooses $x = 1$, 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 trafficking:

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

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 $x = 1$. Therefore, 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 $A = B = 1$,[6] we have, for an indifferent parent:

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

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

---

[6]It 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 $A = B = 1$.

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 jth argument ($j = \theta, \omega_c, p$). Then, from the properties of $u(.)$, we have:

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

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 wretched to care. We will show further below that Lemma 1 indeed formalizes the determinants of the supply of child labor.

3.2   Production

Output is produced by perfectly competitive firms. For simplicity, we restrict the labor force to children and 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:

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

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

$$\omega_c = F' \left[(1 - p) N \right].$$

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

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

Given the properties of F, φ, and Ψ, equation (5) is clearly a fixed-point problem. We can always choose the functions u, Ψ, and F, and the parameter values for the support $\left[\underline{\theta}, \bar{\theta} \right]$ of the distribution of endowments such that this fixed-point problem has a solution.

4   The effects of better law-enforcement

In this section, we characterize a market equilibrium.

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 equations are satisfied:

$$\omega_c^* = F' \left[(1 - p) N^* \right] \tag{6}$$

$$N_e^* = pN^* \tag{7}$$

$$N_g^* = (1 - p) N^*. \tag{8}$$

Proposition 1 (Existence) *Assume $p > 0$. Then an equilibrium with child trafficking always exists.*

Proof. Since $N_e^* = pN^*$, establishing the existence of an equilibrium with child trafficking reduces to establishing that there exists a non-vanishing solution, N^*, to the fixed-point problem in (5). That this solution exists simply follows from Brouwer's fixed-point theorem, given that the functions Ψ, φ, and F' are all continuous by assumption, and can be chosen such that $N^* > 0$. ∎

Proposition 1 states that child trafficking exists whenever poverty pushes parents to send their children to the labor market (i.e., $N^* > 0$), despite the risk of abduction.

Proposition 2 *If the function F is not too concave, then, in equilibrium, the total mass of parents who are better off sending their children to work decreases with the likelihood of child trafficking.*

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 (12) holds. Define function Γ by

$$\Gamma(N; p) \equiv N - \Psi(\varphi[(F'[(1-p)N]), p]). \tag{9}$$

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

$$\Gamma_N = 1 - (1-p)\Psi'(\theta^*)\varphi_\omega F''(N) > 0 \tag{10}$$

$$\Gamma_p = -\Psi'(\theta^*)[\varphi_p - \varphi_\omega N F'']. \tag{11}$$

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 the following restriction on the concavity of the production function is satisfied:

$$F'' > \frac{\varphi_p}{\varphi_\omega} \tag{12}$$

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 2 states that when parents believe that there is a high likelihood that sending their children to the labor market will expose these children to trafficking agents, this belief causes them to 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 in turn, tends to discourage them from sending their children to work, unless they are 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 (12) 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 the wage rate. This might be the case for example if the technology used in non-exploitative child labor is sufficiently labor-intensive, which is not unusual.

Since with a high 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 3 *If condition (12) 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 the enforcement of the law can be seen through the following expression:

$$N'_e(p) = pN'(p) + N(p).$$

Since $N'(p) < 0$ by proposition 2, the first term on the right-hand-side is negative and represents an indirect effect, 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. In what follows we illustrate this finding with a numerical example.

5   A numerical example

To solve a numerical example, we make the following specializations:

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

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

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

where ν and γ are measures of labor productivity. The interested reader can verify that $F' > 0$ for $\nu > 2\gamma$ and $F'' < 0$. Furthermore, 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). Finally, the choice of a uniform distribution of endowments is made for simplicity, without loss of generality.[7]

---

[7]It 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.

5.1 Some Parametric Results

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

$$\theta^* \equiv \varphi(\omega_c, p) = \omega_c \delta(p) \quad \text{with } \delta(p) \equiv \frac{1}{e^{\frac{1+p}{1-p}} - 1} \tag{13}$$

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,

$$\omega_c = \nu - 2\gamma(1-p)N. \tag{14}$$

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 (13), the cut-off parent has a level of endowment $\tilde{\varphi}(N, p)$ given by:

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

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

$$\text{(i)} \quad 0 \quad < \quad \delta(p)\nu \tag{16}$$

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

Taking the derivative of N yields:

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

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 (i.e., the number of children trafficked away) is therefore given by:

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

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 satisfying all our constraints.[8] 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. For a large portion of the bottom part of the figure, however, 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 actual increase in the incidence of trafficking.
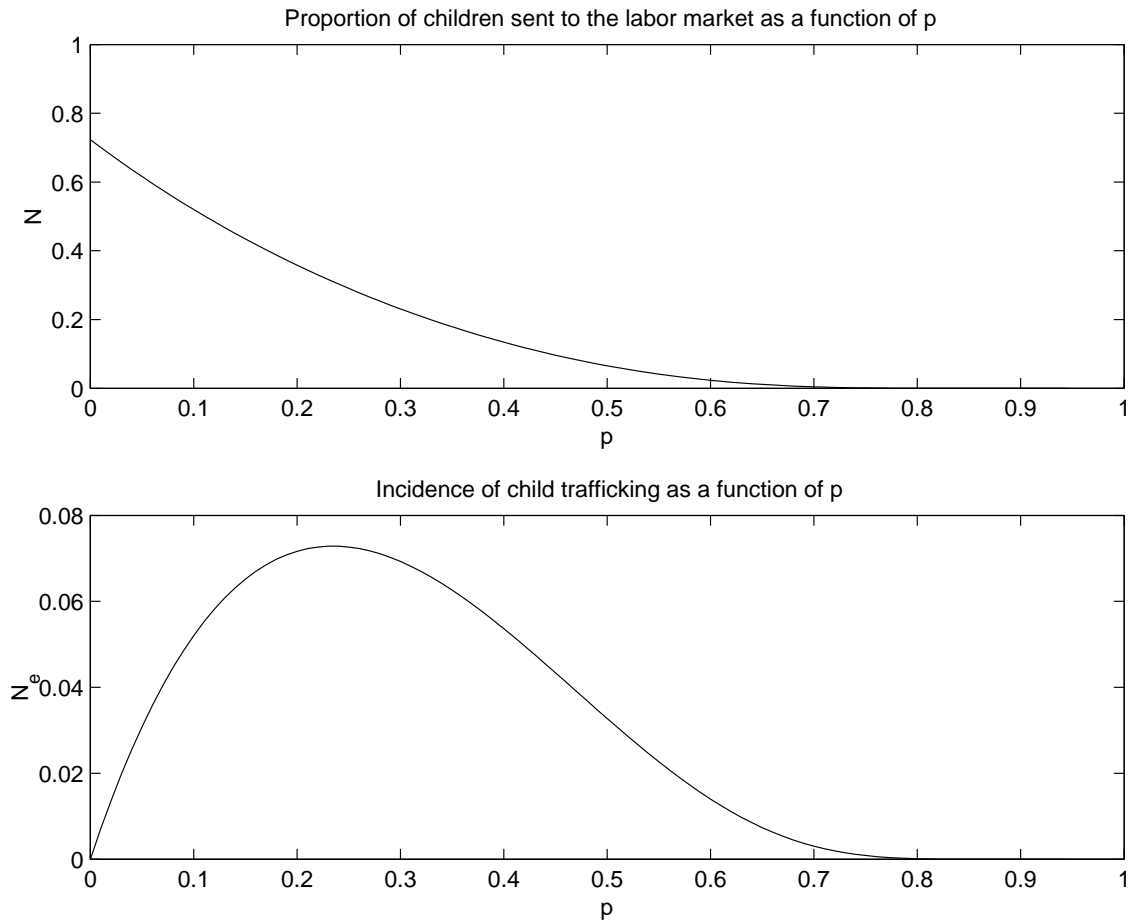
No doubt, any reduction of child trafficking is socially desirable. It is not clear, however that improvements in law enforcement against child traffickers will necessarily achieve the desired goal. It can, in fact, prove counter-productive if enforcement was initially poor.

Law enforcement in the poorest countries is known to be deficient. Not surprisingly, these are also the countries where child trafficking thrives. The first message from this paper is that caution is therefore needed when designing laws to fight child trafficking.

---

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

The second message from this paper is that one should not disregard policies that aim at increasing the opportunity cost of child labor, or reducing poverty. Such policies will help reduce the number of parents constrained to gamble with their child's life.

Figure 1:

Proportion of children sent to the labor market as a function of p

Incidence of child trafficking as a function of p

6   Concluding Remarks

In this paper, we studied the economic consequences of adopting an imperfectly enforceable legislation against child trafficking. We developed a simple theory of child trafficking within a two-period, heterogeneous-agent model, with altruistic parents.

We use this model to show that, in an environment characterized by imperfect information over the outcome of children's labor market participation, an imperfectly enforceable ban on child trafficking has two major effects. First it causes more parents to send their children to work (the law

14

makes it safer for children to venture into the labor market). Second, depending upon the degree of imperfection of the enforcement mechanism, it can cause the incidence of child trafficking to rise. With this finding, our paper supports the view that the fight against child trafficking can only be won by effectively combining legislation with other policy measures, such as improvements in the quality of education, redistribution, or appropriately targeted poverty alleviation programs. These accompanying policies are necessary to raise the opportunity cost of sending children to work.

References

Basu, K. (1999). Child labor: cause, consequence, and cure, with remarks on international labor standards. *Journal of Economic Literature*, *37*(3), 1083–1119.

Basu, K. (2000). The intriguing relation between adult minimum wage and child labour. *The Economic Journal*, *110*(March), C50–C61.

Basu, K. & Van, P. H. (1998). The economics of child labor. *American Economic Review*, *88*(3), 412–427.

Canagarajah, S. & Coulombe, H. (1997). Child labor and schooling in Ghana. The World Bank, Working Paper 1844.

Dessy, S. E. (2000). A defense of compulsory measures against child labor. *Journal of Development Economics*, *62*(1), 261–275.

Dessy, S. E. & Pallage, S. (2001). Child labor and coordination failures. *Journal of Development Economics*, *65*(2), 469–476.

Dessy, S. E. & Pallage, S. (2002). Why banning the worst forms of child labor would hurt poor countries. Manuscript, UQAM.

Dessy, S. E. & Vencatachellum, D. (2003). Explaining cross-country differences in policy response towards child labour. *Canadian Journal of Economics*, forthcoming.

Grootaert, C. & Kanbur, R. (1995). Child labour: an economic perspective. *International Labour Review*, *134*(2), 187–203.

ILO (1996). *Child Labour: Targeting the Intolerable*. International Labor Organization, Geneva.

ILO-IPEC (2002). *Unbearable to the Human Heart: Child Trafficking and Action to Eliminate It*. International Labor Organization: Geneva.

Lim, L. L. (1998). *The Sex Sector: The Economic and Social Bases of Prostitution in Southeast Asia*. International Labour Office: Geneva.

Peltzman, S. (1975). The effects of automobile safety regulation. *Journal of Political Economy*, *83*(4), 677–725.

Ranjan, P. (1999). An economic analysis of child labor. *Economics Letters*, *64*(1), 99–105.

Ranjan, P. (2001). Credit constraints and the phenomenon of child labor. *Journal of Development Economics*, *64*(1), 81–102.

Rialp, V. (1993). *Children and Hazardous Work in the Philippines*. International Labour Office: Geneva.

Swinnerton, K. A. & Rogers, C. A. (2002). A theory of exploitative child labor. Manuscript, U.S. Department of Labor.