Transnational Trafficking, Law Enforcement and Victim Protection: A Middleman's Perspective[*]

Randall Akee,[†]   Arjun Bedi,[‡]   Arnab K. Basu[§]   and   Nancy H. Chau[¶]

This version: July 2010

Abstract: This paper explores two hitherto poorly understood characteristics of human traffickers – their ease of mobility between domestic and foreign illicit demand sources, and their bargaining power in claiming a share of buyer's valuation. In a model of two-way bargaining, the exact configuration of trafficker mobility and bargaining power is shown to determine whether domestic and foreign crackdowns on illicit employment mutually reinforce or counteract one another in efforts to stem the tide of trafficking. Estimation results from a gravity model of trafficking present evidence consistent with the mutual reinforcement view, indicating considerable ease of mobility, and partial bargaining power.

JEL Classification: K42, R23, O24
Keywords: Human Trafficking; Two-Way Nash Bargaining; Victim Protection; Law Enforcement.

[†]Tufts University and Institute for the Study of Labor (IZA).
[‡]Institute of Social Studies-Erasmus University Rotterdam, and IZA.
[§]College of William & Mary, Center for Development Research (ZEF), and IZA.
[¶]Cornell University, ZEF and IZA.

1 Introduction

Transnational human trafficking is one of the least studied forms of international move-
ment in persons. But what little is known about it suggests that it is a highly lucrative
business. A recent ILO report puts the total illicit profits produced each year by trafficked
laborers at US$31.7 billion, and the estimated stock of forced labor due to trafficking at
2.45 million (ILO 2005). Together these figures imply a level of illicit profits per trafficked
person per year at close to US $13,000. An overwhelming majority of trafficked persons
are women and girls, and sexual exploitation is the most commonly identified form of
profiteering on trafficked persons (US Department of State 2009).[1] Matching worldwide
demand with victims in this global trade in humans, recent research shows that the per-
petrators of trafficking are driven primarily by local criminal networks in source countries
(UNODC 2009). This latest evidence based on painstakingly collected criminal justice
data worldwide reveal that some local networks in the source countries sell victims domes-
tically to feed domestic illicit demand, while others are directed internationally instead
to service criminal networks in destination countries, where diaspora population from the
same source country are frequently used as conduits.

These salient features of the market for illicit trade in humans uncovered to date –
buyers' demand driven exploitative employment that operates underground, and footloose
middleman traffickers with multiple possible buyer sources reaching across national borders
– reveal two critical though hitherto poorly understood sets of issues related to trafficking
policy design. First, with possibly competing demand for trafficked victims coming from
both domestic and foreign sources, how effective is a stand alone crackdown on domestic
illicit activities that acts on domestic buyers' willingness to pay, but leaves foreign demand
untouched? Conversely what about stricter foreign law enforcement, or victim protection
programs such as an amnesty that facilitate discovery by law enforcement in destination
countries?

Next, the clandestine nature of the employment of trafficked victims and the need

---

[1]The exploitative and involuntary nature of the employment, where the victims take no part of the illicit
profit, squarely sets human trafficking apart from voluntary migration and human smuggling. Specifically,
the Protocol to Prevent, Suppress and Punish Trafficking in Persons, especially Women and Children
defines the crime of trafficking in human beings to mean "the recruitment, transportation, transfer,
harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion,
of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving
or receiving of payments or benefits to achieve the consent of a person having control over another person,
for the purpose of exploitation".

to evade law enforcement are conditions that foster underground bargaining and exchange rather than open competition for the labor of victims. But the mere possibility of a departure from the competitive frame means that the trafficker may no longer partake in the full measure of buyers' willingness to pay. Now the same set of questions concerning the effectiveness of a crackdown on illicit activities take on sharply different meaning, for what is the trafficking impact of a crackdown on illicit activities in the source country if the bargaining position of footloose transnational traffickers hinges on a threat to switch to a domestic buyer source? Similarly, what about the case when there is a similar hike in the likelihood of discovery in the foreign country?

These are the questions that guide the tasks set forth in this paper. Our goal is to contribute to the debate on the choice and coordination of international efforts to curb transnational trafficking, by means of legislation that directly act on the demand side incentives of middlemen to engage in trafficking. The issue is of vital importance for a number of reasons. As set out in the UN Protocol to Prevent, Suppress and Punish Trafficking in Persons, signatory governments agree to adopt legislative measures to discourage the demand that fosters the exploitation of persons that leads to trafficking. But whether a heightened likelihood of discovery in illicit service sectors can in fact achieve this goal, and stem the tide of transnational trafficking is a matter of vigorous debate. The *Trafficking in Persons* report (U.S. Department of State 2007) discusses the view in favor of a crackdown on prostitution as follows:

> "*Sex trafficking would not exist without the demand for commercial sex flourishing around the world. The U.S. Government adopted a strong position against prostitution in a December 2002 policy decision, which states that prostitution is inherently harmful and dehumanizing and fuels trafficking in persons.* (pp. 27.)"

In sharp contrast, the *Trafficking in Human Beings* report of the Dutch National Rapporteur (Bureau of the Dutch National Rapporteur on Trafficking 2005) notes:

> "*Opponents of the criminalisation of prostitution take the view that it is precisely this that plays into the hands of the criminal networks... They feel that prostitution would continue regardless, while at the same time sex workers would be stigmatised, criminalised or – because their clients could be prosecuted – marginalised because of a repressive approach.* (pp.7) ".

To date, the question of how victim protection and empowerment, as well as law enforcement against illicit activities ultimately impact traffickers' incentives remains largely open due to a real paucity in both theoretical and empirical research in the literature.

In addition, illicit trade in humans shares many parallels with other forms of illicit international trade in goods such as drugs, endangered species, and arms, for example, and many of the lessons learned here for the case of trafficking can be more broadly applied to alternative forms of of illicit international trade. Closely related to our work, Becker, Grossman and Murphy (2006) examines the effectiveness of law enforcement on the volume of illicit drug activities in a competitive setting within a single country, and highlights the importance of the elasticity of demand in determining the answer. Our analysis adds to the insights developed therein, and does so in the context of a two-way bargaining framework in which traffickers' ability to access buyers' demand in both sending and receiving countries, as well as their bargaining strength and position, are simultaneously accounted for.

This paper is made up of two parts, including first a model of international trafficking that highlights the likelihood of discovery from the trafficker's perspective, and an empirical counterpart that tests the implications of the model. In the model we propose, trafficking arises first and foremost as a consequence of middleman traffickers' response to buyers' willingness to pay in the source and the host countries. This willingness to pay is taken to be endogenous, depending among other things on the likelihood of discovery and work stoppage. We envisage two sets of policies as key determinants of these likelihoods: (i) victim protection programs, such as an amnesty granted to trafficked victims, and (ii) law enforcement against prostitution. The former raises the likelihood of work stoppage by empowering victims to access host country police authorities, and the latter achieves similar ends through direct law enforcement.

Beyond willingness to pay, we pay particular attention to the possible implications of the underground transaction between a trafficker and a buyer, domestic or foreign. We do so by expressing a footloose trafficker's decision problem as a two-way bilateral Nash bargaining problem, in which we allow for (i) a full range of possible relative bargaining strengths of the trafficker in both the source and the foreign countries, and (ii) heterogeneity among traffickers in their ability to switch between a domestic and a foreign buyer in the form of a search cost.

By varying the bargaining strength of the trafficker, our model captures market structures where the trafficker earns only the reservation threat point profit in one case,

to the opposite scenario where the trafficker takes home the full measure of the buyers' willingness to pay. By allowing for heterogeneity in the ease of access among traffickers to domestic and foreign demand, we analyze the extent to which the effectiveness of unilateral policy making hinges on the cross-border reach of trafficking networks. Within this setting, does a hike in the likelihood of discovery on source country illicit activities offset or reinforce the trafficking impact of a similar crackdown in the foreign country?

Consistent with the message of Becker, Grossman and Murphy (2006), we find that if buyer demand is inelastic, an increase in the likelihood of discovery in the destination country will always raise buyers' willingness to pay, and accordingly the incidence of transnational trafficking. If in addition the bargaining strength of traffickers is strong enough to guarantee that they in fact reap the full value of buyers' willingness to pay, a similar increase in the likelihood of discovery in the source country now encourages traffickers to substitute foreign buyers in favor of domestic demand, provided that the search cost is not so high as to preclude switching all together. As such, with strong trafficker ability to bargain, a crackdown on illicit activities in the source and the host countries can have polar opposite impacts on the incidence of international trafficking.

In sharp contrast, consider instead the case where middleman bargaining strength is less than perfect, so that the threat point bargaining position – a trafficker's expected profit in the *source* country – is itself paramount in deciding the traffickers' claim on *foreign* buyer's willingness to pay. A crackdown on illicit activities respectively in the source and the destination countries can now reinforce one another in encouraging transnational trafficking, as rising detection likelihoods at source countries act favorably on the threat point expected profit of foreign traffickers. This bargaining position impact of domestic law enforcement dominates provided once again that demand is sufficiently inelastic, and that the search cost is not too high.

These observations imply that international policy coordination in the presence of footloose traffickers can present a genuine challenge, requiring detailed information concerning demand elasticity, as well as the bargaining strength and cross-border reach of the traffickers. The empirical part of the paper accordingly takes these issues to the data, and employs a novel 187×187 matrix of the incidence of bilateral international trafficking collected for the purpose of this research (Basu and Chau 2008). We estimate a modified gravity model of international trafficking, and in so doing we simultaneously account for the push and pull forces of international trafficking in determining the bilateral match

between host and destination countries. We augment a standard gravity model of international migration by including a measure of host country granting of legal amnesty to discovered victims of trafficking. After controlling for potential endogeneity by using a two-stage least squares regression, we find that countries which grant legal amnesty to immigrants have an increased likelihood of experiencing human trafficking. This empirical finding is robust to the use of several different instruments. We also include prostitution laws in the host and the source countries in our estimation. Based on our theoretical model, these empirical results are consistent with (i) inelastic final buyers' demand and (ii) partial bargaining power on the part of traffickers and (iii) considerable cross-border reach in traffickers' ability to identify buyers.

Our modified gravity approach introduces a new dimension to a very small, but growing literature on the empirics of trafficking in humans. These studies have empirically examined the pattern of trafficking, using distinctive measures such as country level indicators respectively of "out-trafficking" and "in-trafficking" (Bales 1999, Danilova-Tranior and Belser 2006), the incidence of forced labor in illicit sectors to which trafficking in persons belong as a subset (Busse and Braun 2002), and data from surveys of victims and families (Mahmoud and Trebesch 2009). These studies single out a list of factors that are associated with trafficking: socio-economic and governance indicators in both host and source countries such as poverty, unemployment and government corruption; the practice of migration for work in the source country; as well as trade and foreign direct investment linkages. Clearly, much more remains to be uncovered concerning the sources in particular of a bilateral match between source and destination countries of trafficking, and the role of source and destination country legislation directed towards the illicit sectors where victims are ultimately employed.

The theoretical literature on the topic is substantially thinner. Most closely related to our work dealing with trafficking policy formation, Rogers and Swinnerton (2008) provides theoretical justification for a complete ban on exploitative labor, where employment is made possible only by the deception of firms concerning the true nature of work. Dessy, Mbiekop and Pallage (2004) likewise examines a model of exploitative work made possible by deceit. It is shown that children in poorer countries are more vulnerable to trafficking when the private and public cost of prevention are accounted for. Our paper contributes to this growing literature by introducing a two-country setup in which both domestic and transnational trafficking are in the trafficker's choice set, and where the impact of

legislation is shown to interact in important ways with the market structure in which traffickers operate.

2   The Model

We consider a setting featuring buyers and middlemen. Buyers of trafficked victims originate from two countries: the domestic (source) country illicit sector (d) and the foreign (host) country illicit sector (f). Middlemen traffickers in turn link buyers in both countries with victims trafficked from the source country.[2]

Buyers' Demand

Let $n_i \geq 0$ denote the number of workers employed in $i = d, f$, and $V_i(n_i) \geq 0$ the money equivalent value of labor services per worker. We assume that $V_i(n_i)$ is positive and strictly decreasing in n_i for $i = d, f$, consistent with diminishing marginal value product.

Labor demand in the illicit sectors in d and f are met by large international supplies of trafficked victims, $\bar{T}_f$ and $\bar{T}_d$. In the domestic (source) country, buyers face a likelihood $p_d \in [0, 1]$ of discovery due to law enforcement, leading to work stoppage and fines $c_d \geq 0$. With $\bar{T}_d$ number of illicit sector workers in d, the number that remains undiscovered is thus $n_d = (1 - p_d)\bar{T}_d$, and the expected surplus generated per worker in d is

$$EV_d = (1 - p_d)V_d((1 - p_d)\bar{T}_d) - p_d c_d - \delta_d \tag{1}$$

where $\delta_d \geq 0$ denote the cost required to capture and traffic a victim to work in the domestic illicit sector.

In the foreign (host) country, let $p_f \in [0, 1]$ denote the likelihood of discovery of foreign illicit activities due to foreign law enforcement, $c_f \geq 0$ the size of punishment / fines, and $\delta_f \geq 0$ the cost of trafficking a victim abroad. Specifically to address the incidence of international trafficking, many host countries additionally provide assistance to trafficked victims through the granting of amnesty. We take the victims protection that an amnesty confers – as opposed to a policy of indifference, or one which gives discovered trafficked victims the same legal status as an illegal immigrant for example – to contribute to raising the likelihood that a trafficked victim is discovered from p_f to $p_f + a_f \in [0, 1]$, $a_f \geq 0$. Furthermore, since detection in this case is not driven by direct law enforcement

---

[2]Our definition of an illicit sector employment, whether domestic or foreign, is simply taken to be any work relation from which workers can derive no benefit at all.

and inspection, but rather by victim escapees who can now to turn to law enforcement for assistance, we assume accordingly that amnesty is less likely to result in buyer persecution, or the imposition of fines. Indeed, with $\bar{T}_f$ number of illicit sector workers in the foreign country, let the expected value per worker in f be

$$EV_f = (1 - p_f - a_f)V_f((1 - p_f - a_f)\bar{T}_f) - p_f c_f - \delta_f. \tag{2}$$

Henceforth, denote $\theta_j^d \equiv \frac{\partial EV_d}{\partial j_d}$ where $j = p, c$, and $\theta_j^f \equiv \frac{\partial EV_f}{\partial j_f}$, $j = p, a, c$. θ_j^i gives the marginal impacts respectively of law enforcement (p_i) and penalty (c_i) on the expected value of a trafficked victim in i, whereas θ_a^f gives the marginal impact of amnesty on the expected value EV_f. Of these policies, the role of penalty c_i is the most straightforward, since the value EV_i decreases strictly with penalty c_i as long as there is positive enforcement $p_i > 0$ from (1) and (2). Thus, $\theta_c^i < 0$.

Two opposite forces impact the role of law enforcement p_i on the value of trafficked victims. Working to decrease EV_i, stricter law enforcement raises the likelihood of work stoppage and fines. In the opposite direction, the same increase in p_i contributes to rising scarcity of workers in i, and thus the value per worker there. It follows that if the quantity demand for illicit workers is sufficiently inelastic ($\partial \log(V_i)/\partial \log(n_i) \gg 1$), $\theta_p^i > 0$.[3]

In similar fashion, amnesty raises the likelihood of work stoppage, while it decreases the size of the pool of workers $n_f = (1 - p_f - a_f)\bar{T}_f$ in the foreign country. Unlike p_f, amnesty raises the value EV_f ($\theta_a^f > 0$) if and only if quantity demand n_f is inelastic ($\partial \log(V_i)/\partial \log(n_i) > 1$), as amnesty emphasizes victim protection rather than buyer persecution.

These then define the determinants of expected buyer valuation EV_i in the presence of trafficking related policy interventions p_i, c_i and a_f. With the buyer and the middleman both involved in any given exchange, the division of expected buyer valuation EV_i between the two parties will naturally depend on the extent of open competition for labor and any differences in relative bargaining positions, for example. We turn to these issues next.

Middleman

Consider now a pool of heterogeneous middleman traffickers in the domestic country.[4]

---

[3]Bales (2004) emphasizes the important role of the demand elasticity for trafficked victims, discusses its determinants, and provides arguments suggesting that demand for trafficked victims in illicit sectors is likely inelastic.

[4]The symmetric problem of a middleman trafficker based in the foreign country can be worked out as well. Other than the positioning of the search cost, the analytics are identical to the case considered here.

Each middleman trafficker enjoys direct cost-free contact with one domestic illicit buyer. We parameterize the cross-border reach of a trafficker's access to foreign illicit sector buyers as a search cost ($k \geq 0$) required to solicit a final buyer in the foreign country. The reservation income of a trafficker is given by $\bar{y} \geq 0$, the amount of income forgone upon engaging in trafficking.

Assume henceforth that the cumulative distribution function characterizing the pool of heterogeneous middlemen on the two-dimensional $(k, \bar{y})$ plane is given by $G(k, \bar{y})$, with density function $g(k, \bar{y}) \geq 0$ for $k \geq 0$ and $\bar{y} \geq 0$.

2.1 Two-Way Bargaining and the Gains from Trafficking

The problem of a trafficker is two-staged. In the first, the middleman decides whether or not to engage in trafficking. If not, the middleman earns his reservation income $\bar{y}$. Otherwise, a second stage decision needs to be made about the choice between trafficking destinations d and f.

We take the clandestine nature of employment in illicit sectors to possibly forbid open competition for workers. Transaction between a buyer and a middleman is modeled here as an outcome of two-way Nash bilateral bargaining. Specifically, the equilibrium incomes of a trafficker selling a source country victim in d and f, $y_d(k)$ and $y_f(k) - k$, are the simultaneous solutions to the following Nash bargaining problems:

$$y_d(k) = \arg\max_{y_d} \ [y_d - (y_f(k) - k)]^{\alpha_d} [EV_d - y_d]^{1-\alpha_d} \tag{3}$$

$$y_f(k) - k = \max\{\arg\max_{y_f} \ [y_f - y_d(k)]^{\alpha_f} [EV_f - y_f]^{1-\alpha_f} - k, \ 0\} \tag{4}$$

taking as given $\bar{T}_d$ and $\bar{T}_f$, as well as host and source policies as given in equilibrium. Note that y_i and $EV_i - y_i$ divide the victim's expected value (EV_i) completely between the middleman and the buyer in $i = d, f$. The relative bargaining strength of the middlemen in the exchange is parameterized by $\alpha_i \in [0, 1]$.

Equations (3) - (4) show the domestic and foreign illicit markets as inextricably linked – in (3) the threat point of a trafficker operating domestically is the expected income that the same middleman can anticipate in the foreign country $y_f(k) - k$, while in (4) the threat point income of the trafficker in the foreign country is the expected income he can earn domestically $y_d(k)$. In equilibrium, both threat points are endogenous, to be determined as the joint solutions to the two-way bargaining problem in (3) - (4). Note in addition that in (3) and (4), traffickers are free to quit at any point, and as such $y_f(k) - k$

never dips below zero even when k is high. Finally, the reservation income of the buyers in i, $EV_i - y_i$, in case an agreement cannot be struck, is normalized at zero.

Gains from Transnational Trafficking

Consider first the solution $y_f(k) - k$ to (3) - (4) which gives the expected income from transnational trafficking

$$y_f(k) - k \;\; = \;\; \max\{\beta(\alpha_f EV_f - k) + \beta_f \alpha_d EV_d, \; 0\}, \tag{5}$$

where $\beta = 1/[1 - (1 - \alpha_d)(1 - \alpha_f)]$, and $\beta_f = (1 - \alpha_f)\beta$. As shown, expected middleman income from international trafficking depend on the illicit sector characteristics of *both* the host and the source countries. These include the bargaining strength of middlemen α_d and α_f, and the expected value of the trafficked victim EV_d and EV_f in the two countries. From (1) and (2), these expected values are in turn dependent on law enforcement (p_i), as well as the degree victim protection in the form of amnesty (a_f) in f.

The D_f schedule in Figure 1 illustrates, taking as given the stock of illicit workers $\bar{T}_d$ and $\bar{T}_f$ in the two countries, and for bargaining strengths of the middleman α_i anywhere in the interior of the range $(0,1)$. Naturally, D_f is downward sloping as a higher search cost k decreases a domestic trafficker's income from transnational trafficking. For trafficker immobility sufficiently acute, or k beyond $\widehat{k} = \alpha_f EV_f + (1 - \alpha_f)\alpha_d EV_d$, the search cost is too high to justify transnational trafficking, and $y_f - k$ is thereafter equal to zero.

As a useful special case, let $\alpha_i = 1$, $i = d, f$. This is equivalent to open competition for trafficked victims on the part of buyers in i, which results in all buyers paying the full value EV_i to the middlemen. Clearly, with full bargaining strength $\alpha_i = 1$, the role of the threat points vanishes, and from (5), middlemen income simplifies to:

$$y_f(k)|_{\alpha_i=1} - k = \max\{EV_f - k, 0\}. \tag{6}$$

This simple observation has powerful policy implications. As shown in (6), source country legislation p_d no longer has any impact on the expected income from transnational trafficking. Thus, full middlemen bargaining power severs the link between the D_f schedule and changes in source country enforcement policies p_d. This is shown in Figure 2, and the corresponding threshold search cost beyond which transnational trafficking yields zero expected payoff for the trafficking is simply $\widehat{k} = EV_f$.

9

Gains from Domestic Trafficking

The expected trafficker payoff from domestic trafficking $y_d(k)$ is:

$$y_d(k) = \max\{\beta\alpha_d EV_d + \beta_d(\alpha_f EV_f - k), \alpha_d EV_d\} \qquad (7)$$

where $\beta = 1/[1 - (1 - \alpha_d)(1 - \alpha_f)]$, and $\beta_d = (1 - \alpha_d)\beta$. This is illustrated as the D_d schedule in Figure 1, once again at constant $\bar{T}_d$ and $\bar{T}_f$, bargaining strengths of the middleman α_i anywhere in the interior of the range $(0, 1)$, and with the assumption that $EV_f > EV_d$ for there to be positive probability that a trafficker engages in international trafficking.[5] Like before, the gains from domestic trafficking depend on law enforcement in the two countries and the availability of victim protection.

Now Figures 1 and 2 illustrate the two expected incomes y_d and $y_f - k$ facing the trafficker depending on his type $(k, \bar{y})$. Since the trafficker's type can possibly take on a value anywhere along the $(k, \bar{y})$ plane, how likely will a trafficker choose transnational trafficking, domestic trafficking, or no trafficking in equilibrium?

2.2 Trafficking Equilibrium with Two-Way Bilateral Bargaining

A trafficking equilibrium with two-way bilateral bargaining is a combination $\{\mu_f, \mu_d\}$ representing the probabilities respectively that a trafficker engages in transnational and domestic trafficking.[6] Specifically, a trafficker engages in transnational trafficking if he belongs to area A of Figure 1, where $\{(k, \bar{y}_d)|y_f(k) - k = \max\{\bar{y}, y_f(k) - k, y_d(k)\}\}$. The cutoff $\tilde{k} = \alpha_f(EV_f - EV_d)$ gives the search cost of marginal trafficker who is indifferent between transnational and domestic trafficking, or $y_f(\tilde{k}) - \tilde{k} = y_d(\tilde{k})$. Now, area B in Figure 1 illustrates the set of traffickers that engage in domestic trafficking $\{(k, \bar{y}_d)|y_d(k) = \max\{\bar{y}, y_f(k) - k, y_d(k)\}\}$. It follows that

$$\mu_f = \int_0^{\tilde{k}} \int_0^{y_f(k)-k} g(k, \bar{y})d\bar{y}dk \qquad (8)$$

$$\mu_d = \int_{\tilde{k}}^{\hat{k}} \int_0^{y_d(k)} g(k, \bar{y})d\bar{y}dk + \int_{\hat{k}}^{\infty} \int_0^{\alpha_d EV_d} g(k, \bar{y})d\bar{y}dk. \qquad (9)$$

---

[5]The opposite case with $EV_d > EV_f$ can be plotted in symmetric fashion in a figure like Figure 1. It can be easily confirmed that if $EV_d > EV_f$, the D_f schedule lies uniformly below the D_d schedule, and as such no traffickers will engage in international trafficking.

[6]The probability that the middleman does not engage in trafficking is thus $1 - \mu_d - \mu_f$

10

2.3   Trafficking Response to Policy Interventions

To showcase the range of possibilities, we contrast the effectiveness of trafficking-related policy interventions p_d, p_f and a_f, along two dimensions (i) bargaining power of traffickers, and (ii) trafficker mobility between d and f. We will maintain throughout that $EV_f > EV_d$ so that the probability of transnational trafficking is non-zero.

Full Middlemen Bargaining Power

To begin with, assume that $\alpha_i = 1$, $i = d, f$, a case observationally equivalent to a market in which there is open competition for workers in d and f, wherein the middleman reaps the full value EV_i in i. D_f and D_d in Figure 2 respectively display the expected income of domestic and transnational trafficking, where

$$y_f(k)|_{\alpha_i=1} - k = \max\{EV_f - k, 0\} \ \ \text{and} \ \ y_d(k)|_{\alpha_i=1} = EV_d.$$

A higher likelihood of discovery in the foreign country either due to an increase in law enforcement p_f, or the provision of victims protection a_f shifts the D_f schedule upwards if and only if demand, V_f, is inelastic ($\theta_a^f > 0, \theta_p^f > 0$), while the D_d schedules remains unchanged. With inelastic demand, such legislation raise the market value of successfully trafficked victims even further, giving rise to two effects. First, among traffickers with an already low search cost ($< \tilde{k}$), stronger demand increases the likelihood of transnational trafficking by raising the cutoff reservation income $y_f(k) - k$. Meanwhile, the increase in EV_f that follows from stricter law enforcement also raises the cutoff search cost, $\tilde{k} = EV_f - EV_d$ with $\alpha_i = 1$. This second effect captures the switch undertaken by traffickers who are otherwise engaged in domestic trafficking to turn to international trafficking. These two effects reinforce one another, in encouraging international trafficking.

If instead there is an increase in law enforcement in the domestic country p_d, domestic demand EV_d rises whenever demand is sufficiently inelastic ($\theta_p^d > 0$). This shifts the D_d upwards but leaves the D_f schedule unchanged. As such, the probability of trafficking among potential traffickers with low search cost ($< \tilde{k}$) remains unchanged, but there is now a reverse switch undertaken by foreign traffickers to engage in domestic trafficking instead. We have thus:

Proposition 1 *With full middlemen bargaining power $\alpha_i = 1$, the probability of transnational trafficking μ_f rises with amnesty a_f if and only if buyer demand is inelastic $\theta_a^f > 0$, and rises with law enforcement p_f if and only if buyer demand is sufficiently inelastic*

$\theta_p^f > 0$.

By contrast, μ_f decreases with domestic law enforcement p_d if and only if buyer demand is sufficiently inelastic $\theta_p^d > 0$.

Where there is full middlemen bargaining power, and inelastic demand in the foreign and domestic illicit sectors, Proposition 1 shows that foreign and domestic law enforcement policies are distinct, polar opposite forces in the list of push and pull factors of transnational trafficking.

Partial Bargaining Power

Let us return to the case of partial bargaining power $\alpha_i \in (0,1)$ as shown in Figure 1. From (5) and (7),

$$
\begin{aligned}
y_f(k) - k &= \max\{\beta(\alpha_f EV_f - k) + \beta_f \alpha_d EV_d,\ 0\} \\
y_d(k) &= \max\{\beta\alpha_d EV_d + \beta_d(\alpha_f EV_f - k),\ \alpha_d EV_d\}
\end{aligned}
$$

where the income of a foreign trafficker now depends on domestic value EV_d, for his threat point income determines in part his equilibrium payoffs with partial bargaining power. Likewise, the income of domestic traffickers also depend on foreign value EV_f.

Now, a higher likelihood of discovery in the foreign country either due to an increase in law enforcement p_f, or the provision of victims protection a_f continues to shift the D_f schedule upwards if demand, V_f, is sufficiently inelastic ($\theta_a^f > 0, \theta_p^f > 0$). But a higher foreign demand raises the threat point income of a domestic trafficker, and shifts D_d upwards as well. The resulting impacts are two-fold. First, and consistent with the full bargaining power case, for a trafficker with an already low search cost ($< \tilde{k}$), stronger demand increases the likelihood of transnational trafficking by raising the cutoff reservation income $y_f(k) - k$. Second, and still consistent with the full bargaining power case, the increase in EV_f that follows from stricter law enforcement also raises the cutoff search cost, $\tilde{k} = \alpha_f(EV_f - EV_d)$ with $\alpha_i > 0$. As such foreign legislation that raises the demand for trafficked victims unambiguously increase the likelihood of transnational trafficking, μ_f.

Consider instead an increase in law enforcement in the domestic country p_d. Assuming once again that demand is sufficiently inelastic, ($\theta_p^d > 0$), a rise in the likelihood of discovery domestically shifts the D_d upwards for by now familiar reasoning. This raises

the likelihood of domestic trafficking as the cut off search cost $\tilde{k} = \alpha_f(EV_f - EV_d)$ decreases with domestic law enforcement. However, stricter law enforcement domestically shifts the D_f schedule upwards, indicating a rise in foreign traffickers income as well. This follows since the threat point income of foreign traffickers is now higher. Consequently, the incidence of trafficking among potential traffickers with low search cost $(< \tilde{k})$ rises. These two effects run contrary to one another, and the net effect depends on whether there is sufficient probability mass among traffickers with low search cost for the threat point income effect to dominate. To gauge the size of these two effects, denote:

$$\mu_f^k = \int_0^{y_f(\tilde{k})-\tilde{k}} g(\tilde{k}, \bar{y})d\bar{y}$$

as the probability mass of traffickers with the cutoff search cost. These are the first traffickers to switch away from transnational trafficking when the value of domestic trafficking rises. Meanwhile, denote:

$$\mu_f^y = \int_0^{\tilde{k}} g(k, y_f(k) - k)dk$$

as the probability mass among transnational traffickers with the threshold reservation income $y_f(k) - k$, summing across all those with search cost less than the cutoff. These are traffickers with sufficiently low search cost k but relatively high reservation income, and as such the first to engage in foreign trafficking when a hike in the value of domestic trafficking raises the threat point income of foreign traffickers. The relative size of these two groups of traffickers determine the impact of domestic legislation on transnational trafficking. In what follows, we say that on net, a representative trafficker has considerable ease of mobility between d and f if the ratio μ_f^y/μ_f^k is sufficiently large. Specifically,[7]

Proposition 2 *With partial middlemen bargaining power, the probability of transnational trafficking μ_f rises with amnesty a_f if foreign buyer demand is inelastic, and rises with law enforcement p_f if foreign buyer demand is sufficiently inelastic ($\theta_a^f > 0, \theta_p^f > 0$). The likelihood of transnational trafficking μ_f rises with domestic law enforcement p_d as well if buyer demand is sufficiently inelastic $\theta_p^d > 0$, and if a foreign trafficker have considerable*

---

[7]To see the second part of the proposition, differentiate (8) with respect to p_d to obtain

$$\frac{\partial \mu_f}{\partial p_d} = \left(-\alpha_f \mu_f^k + \frac{\alpha_d(1-\alpha_f)}{1-(1-\alpha_f)(1-\alpha_d)}\mu_f^y\right)\theta_p^d$$

and the second part of the proposition straightforwardly follows.

ease of mobility between d and f:

$$\frac{\mu_f^y}{\mu_f^k} > \frac{\alpha_f(1 - (1 - \alpha_d)(1 - \alpha_f))}{\alpha_d(1 - \alpha_f)} \equiv \bar{\alpha}.$$

Partial bargaining power, and sufficiently extensive cross-border buyer connection on the part of middlemen traffickers are thus two key conditions for foreign and domestic law enforcement policies to mutually reinforce one another in determining the scale of transnational trafficking. Jointly, Propositions 1 and 2 suggest a list of sharp empirical implications, summarized in Table 1. First, the role of amnesty in transnational trafficking depends critically on illicit sector demand elasticity, *regardless* of the bargaining power of middlemen. Specifically, an increase in transnational trafficking subsequent to amnesty provision is consistent with inelastic demand (Table 1B and 1C, with $\theta_a^f > 0$), while a negative trafficking impact of amnesty is consistent with elastic demand (Table 1A, with $\theta_a^f < 0$, and $\theta_p^i < 0$, $i = d, f$). This is true for all degrees of middlemen bargaining strength, $\alpha_i \in [0, 1]$, and all $k \geq 0$ and $\bar{y} \geq 0$.

Second, if demand is indeed sufficiently inelastic (Table 1B, with $\theta_a^f > 0$, and $\theta_p^i > 0$, $i = d, f$), whether domestic and foreign law enforcement are found to be mutually reinforcing or run opposite to one another can shed light on the bargaining power and cross-border reach of middlemen traffickers. In particular, law enforcement against illicit sector activities in host (p_f) and source (p_d) countries that mutually reinforce one another in encouraging transnational trafficking is consistent *only with* partial middleman bargaining power, and a ready access to an internationally diverse buyer base. This is shown in Table 1B for $\alpha_i \in (0, 1)$ and $\mu_f^y/\mu_f^k > \bar{\alpha}$, where both p_f and p_d are shown to have a positive impact of international trafficking flows. In all other cases in Table 1B, the effects of p_f and p_d on international trafficking bear opposite signs.

Table 1C completes our classification of the possible cases by turning now to situations where demand is inelastic but not sufficiently so such that $\theta_a^f > 0$, but $\theta_p^i < 0$, $i = d, f$. With the impact of law enforcement on buyer valuation θ_p^i now in opposite sign compared to Table 1B, the impact of law enforcement on international trafficking is likewise also in opposite sign compared to Table 1B. For our empirical analysis in the sequel, note that Tables 1A - 1C identify six potential combinations of the effects of a_f, p_f and p_d on transnational trafficking.[8] Three of these are of particular interest as they are

---

[8]These are: {Neg., Neg., Pos.}, {Neg., Neg., Neg.}, {Pos., Pos., Neg.}, {Pos., Pos., Pos.}, {Pos., Neg., Pos.}, and {Pos., Neg., Neg.}.

each consistent with a precise combination of demand elasticity, bargaining power, and trafficker mobility. In particular, the case of amnesty, foreign and domestic law enforcement each imposing a negative impact ({Neg., Neg., Neg.} in Table 1A) on transnational trafficking is consistent only with elastic demand, partial bargaining power ($\alpha_i \in (0,1)$), and considerable ease of mobility on the part of traffickers ($\mu_f^y/\mu_f^k > \bar{\alpha}$). In contrast, all three policies are expected to contribute to increase the likelihood of transnational trafficking ({Pos., Pos., Pos.} in Table 1B}) when there is sufficiently inelastic demand, partial bargaining power, and ease of trafficker mobility. Finally, amnesty and law enforcement (either abroad or domestically) have opposite impacts on international trafficking ({Pos., Neg., Neg.} in Table 1C}) when demand is inelastic by not sufficiently so, when there is partial bargaining power, and when there is considerable ease of trafficker mobility.

The aim of our empirical investigation is to characterize the market for trafficking in terms of demand elasticity, trafficker bargaining power, and their ease of mobility across domestic and foreign countries. To do so, in what follows we identify the push and pull factors which drive transnational trafficking while paying close attention to the effect of two key policy-relevant variables - host country victim protection through amnesty and host and source country legislation against prostitution, a sector which constitutes a lion's share of employment for trafficked victims.[9]

3   Data on Human Trafficking

A paucity of reliable and comparable data has been a key factor hindering research on the forces that determine international trafficking. Research on the topic is based primarily on piecemeal information gathered from victims of trafficking. For example, the International Organization of Migration (IOM) has collected data since 1999 from persons assisted under the IOM's counter-trafficking programs. These data from the Counter-Trafficking Module Database (CTM) of the IOM primarily cover trafficking originating from the Balkans (Salt 2005). More recently, a unique data set has been collected by the ILO's Special Action Programme to Combat Forced Labour (SAP-FL). Based on questionnaires from 160 returned migrants in four origin countries (Albania, Romania, Moldova and Ukraine), interviews with informants, focus group discussions and research

---

[9]A recent study conducted by the United Nations Office of Drugs and Crime (UNODC 2009, p. 51) shows that based on information provided by 52 countries, an overwhelming majority (79%) of the reported incidences of human trafficking involve sexual exploitation.

in seven destination countries (France, Germany, Hungary, Japan, Russia, Turkey and United Kingdom), the SAP-FL database contains 298 entries of forced labor of which 186 are trafficked victims (see Andrees and van der Linden, 2005). Most recently, a study by Mahmoud and Trebesch (2009) analyzes IOM data from 5513 households in Belarus, Bulgaria, Moldova, Romania and Ukraine and shows that migrant families in migration areas and with larger migrant networks are much more likely to be a victim of trafficking. While yielding useful information, these studies based on interviews with survivors leads to an emphasis on the supply-side of the problem of trafficking and limits analysis of the demand-side factors (economic and legislative) that creates a market for trafficked individuals in the destination countries. As a result the economic and demographic characteristics of host and source countries of trafficking, the international and national legislation in host and source countries that affect the incentives of traffickers, and finally how these in turn interact with the characteristics of the market for trafficking highlighted in our theoretical discussion (i.e. demand inelasticity, trafficker bargaining strength and ease of mobility) have yet to be thoroughly analyzed.

To shed light on these issues, the empirical analysis presented here is based on a dedicated dataset collected specifically for the purpose of this paper. In terms of a global picture of the incidence of trafficking the Trafficking in Persons (TIP) Report (US Department of State 2003) and The Protection Project (TPP) Country Report (2002), are the two most extensive collection of cross-country trafficking information to the best of our knowledge. The U.S. State Department's country reports provides qualitative information on host and source countries of trafficking based on reports published in host countries, and only for those host countries where at least 100 cases of trafficking have been discovered in the past year. While the Protection Project's Report details trafficking routes as well as laws and legislation surrounding trafficking and prostitution in every country.[10]

We combed through the sizeable and extensive country-by-country descriptive accounts in the TIP (2003) and the TPP (2002) reports to obtain two sets of information for each country. These are, first, whether a country is a host country of trafficking, a source, both (a trafficking hub), or neither.[11] Second, for each country we identify its trafficking

---

[10]Copies of the annual U.S. Department of State, Trafficking in Persons Reports can be found at `http://www.state.gov/g/tip/rls/tiprpt/`. The specific report that we use to construct our data base covers the period April 2002 to March 2003. The Protection Project Report is published by The Johns Hopkins University School of Advanced International Studies and the 2002 report provides information on legislation pertaining to trafficking and prostitution for the year 2002.

[11]We use the year 2002 as a cutoff, for our data on legislation on trafficking and prostitution from

links. We construct a binary variable "$traffick_{hs}$", for all potential host-source country pairs. The variable takes on a value of "1" if trafficking from country s to country h has been reported, and "0" otherwise. The data in these reports is certainly not comprehensive and clearly unreported cases of trafficking are not accounted for. Nevertheless, it does contain information to support an analysis of broad patterns of trafficking and represents a first attempt at systematically using available information to analyse the interaction between host and source country legislation and incentives of traffickers.

Table 2 lists the 187 countries included in our data and their location in the four-part taxonomy. Of the 187 countries in our dataset, 42 countries are identified as source, 45 as hosts, 66 as hubs (or transit countries that act as both source and host) while 44 countries have no reported incidence of trafficking. To shed further light on the characteristics of the countries falling in each category, Table 3 provides category specific information on a few key characteristics. All economic and demographic variables are taken from World Bank (2004) for the year 2000. All legislative and law enforcement related variables are taken from Protection Project (2002). Furthermore, variables capturing political stability, voice and accountability, and rule of law are taken from Kaufmann, Kraay, and Zoido-Lobaton (1999a, 1999b).[12]

4   Empirical Methodology

4.1   Specification

To identify the drivers of cross-border trafficking we propose to estimate a modified gravity model. Such models have been widely used to examine trade flows and international

---

the Protection Project Report pertains to that year. Furthermore, since 2003, a wave of national level legislative reforms to crackdown on international trafficking has reportedly taken place in response to the UN Protocol to Prevent, Suppress and Punish Trafficking in Persons (UNODC 2009). According to UNODC (2009),

> "*most legislative frameworks on trafficking in persons have been developed only within the last few years... The UN Protocol entered into force in December 2003. The data shows that the majority of countries did not have any sort of trafficking in persons legislation prior to that year and that most of the current laws criminalizing human trafficking were established after 2003.* (p. 22)"

While these developments since 2003 raise intriguing empirical questions, we do not have access to information on the legislative reforms carried out at the individual country level since 2003.

[12]The "rule of law" indicator is a composite index of voice and accountability; political and stability; government effectiveness; regulatory framework; rule of law and control of corruption. The indicator ranges from -3 (worst) to +3 (best).

migration. In its simplest form, in the migration context, a gravity model specifies international migration flows between an origin and a destination country as a function of income and population in both locations and some measure of the physical distance between countries.[13] Both origin and destination country characteristics are included to control for the push and pull factors that drive the migration decision.

Drawing on this established literature, we specify and estimate an augmented gravity model. The outcome variable in our trafficking flow model is a measure of whether there is any reported incidence of human trafficking from country s (source) to h (host). Following the standard approach we specify trafficking as a function of per capita GDP (PCGDP) in both the host and the source country. However, instead of an explicit measure of physical distance we include a measure of whether countries s and h share a common border and whether they are in a common region of the world. These proxies may be more useful measures of overall distance because it is not very clear, especially in large countries with multiple ports of entry and exit, the point from where one should measure the distance between countries s and h.

In addition to the inclusion of common region and common border effects we include other region specific measures which may have a bearing on trafficking flows. These include for both host and source countries a variable indicating whether the country is a transition economy (from socialist towards market-based economy), whether the country is land-locked and a set of regional fixed effects. Furthermore, following some of the migration literature (Borjas 1987, Karemara et al. 2000) we include a set of variables that reflect host and country political conditions. These are, variables which capture rule of law, political stability and voice and accountability in both host and source countries.

Finally, and most importantly, we include whether host and source countries have laws banning prostitution and whether they have laws which allow for the granting of amnesty to trafficked victims. Whether a country grants legal status (amnesty) indicates that a country does not treat victims of trafficking in violation of immigration law and subject to deportation but offers them temporary or permanent residency status. The presence of host (source) country laws banning prostitution is the empirical counterpart for p_f (p_d) and legal provisions allowing for amnesty is the empirical counterpart of a_f. We expect that countries which have laws banning prostitution are more likely to enforce laws related to trafficking (at least of women). While it is quite likely that there is

---

[13]Papers which employ the gravity model in the immigration context include Sjaastad (1962), Greenwood (1975), Borjas (1987, 1989), and Karemera et al (2000).

a gap between legislation and enforcement in the absence of actual information on law enforcement activities the use of laws banning prostitution as a proxy for law enforcement related to prostitution, given that it is a sector that account for the bulk of trafficked victims' employment does not seem unreasonable.

The complete augmented gravity specification may be written as:

$$
\begin{aligned}
\text{Traffick}_{hs} = \ & \text{PCGDP}_{h(s)} + \text{Common Region} + \text{Common Border} + \text{Region}_{h(s)} \\
& + \text{Political Conditions}_{h(s)} + \text{Grants Legal Amnesty}_{h(s)} \\
& + \text{Bans Prostitution}_{h(s)} + \epsilon_{hs}.
\end{aligned} \tag{10}
$$

4.2 Econometric Concerns and Estimation

Since traffick$_{hs}$ is a binary variable, assuming that ϵ_{hs} is normally distributed we begin by estimating several single-equation probit specifications of (10). Given that the main aim of the empirical work is to characterize the market for trafficking by examining the effects of amnesty in a host country and the effect of host and source country prostitution laws (as proxies for law enforcements with regard to trafficking) a relevant econometric concern is whether these three policy related measures and trafficking flows are simultaneously determined. While laws pertaining to prostitution are less likely to be directly linked to trafficking flows, our main concern is about the amnesty variable as it is probably the variable which is most susceptible to a two-way relationship. That is, a country may be more likely to grant amnesty if it experiences a large inflow of trafficking rather than trafficking flows being driven by the provision of amnesty.

An additional but related concern is that since we are using a single cross-section of data and cannot control for country specific unobserved heterogeneity which may influence trafficking flows and laws we may obtain biased estimates of the effect of amnesty provision and prostitution related laws on trafficking. For example, unobserved country specific characteristics and values such as tolerance and openness may influence trafficking flows and may also exert an effect on whether a country provides amnesty. An obvious approach to account for this would be to use panel data and allow for country fixed effects. However, such data are not readily available and even if they were, considering that amnesty and prostitution related variables are unlikely to display much variation over time, access to panel data is unlikely to aid identification of the effect of such laws on trafficking. As an alternative, in addition to the inclusion of the country specific socio-political conditions in (10), to account for typically unobserved country values which may influence trafficking

19

flows and the policy-relevant variables of concern we estimate specifications which control for "distaste for foreign neighbors" and a country's views on prostitution.[14] These data are obtained from the World Values Survey, a source which claims to provide a country-level representative assessment of values and outlook of the residents in various countries.[15]

To allow for the possible endogeneity between trafficking flows and amnesty we adopt an instrumental variable (IV) approach and provide several IV estimates of (10). We endogenize amnesty and treat it as a function of explanatory variables that are listed in (10) and a set of variables that are assumed to determine amnesty but are assumed not to have a direct bearing on trafficking (excluded from the trafficking equation). Following Vella (1993) we obtain generalized residuals from a first-stage probit regression of amnesty which are subsequently, inserted in (10). This augmented probit equation provides consistent estimates and a test of the null hypothesis that the coefficients on the generalized residuals are zero is a (Hausman) specification test for the exogeneity of amnesty.

While the estimation methodology is straightforward a key concern while implementing IV is the availability of credible instruments. To estimate the impact of amnesty on trafficking we need variables that are correlated with the probability that a country grants amnesty but which, conditional on other controls, do not exert an effect on trafficking flows, other than through their effect on amnesty provisions. There are several sets of potentially relevant instruments.

In recent years, a large body of literature has shown that a country's legal origins have a direct bearing on its legal framework in several spheres and through these laws on economic and social outcomes.[16] More specifically, LaPorta et al. (1997, 1998) use

---

[14]The question on tolerance of foreign neighbors is: "On this list are various groups of people. Could you please sort out any that you would not like to have as neighbors?" A positive response is recorded as the number one, while a no response is recorded as a zero. The question for the justifiability of prostitution is: Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between. A ten point scale is given with 1 equal to never justifiable and 10 equal to always justifiable.

[15]European Values Study Group and World Values Survey Association. EUROPEAN AND WORLD VALUES SURVEYS FOUR-WAVE INTEGRATED DATA FILE, 1981-2004, v.20060423, 2006. Aggregate File Producers: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tilburg University, Tilburg, The Netherlands. Data Files Suppliers: Análisis Sociologicos Economicos y Politicos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tillburg, The Netherlands/ Zentralarchiv fur Empirische Sozialforschung (ZA), Cologne, Germany:) Aggregate File Distributors: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tilburg, The Netherlands/Zentralarchiv fur Empirische Sozialforschung (ZA) Cologne, Germany.

[16]For more details on the link between legal origins and laws in different spheres including labor laws, company and security law see LaPorta et al. (2008). For the link between legal origins and constitutional

a country's legal origins as an instrument for its legal rules to identify the effect of laws on outcomes of interest. Taking a cue from this literature we argue that laws regarding amnesty are likely to be influenced by a country's legal origins but are unlikely to exert a direct effect on trafficking patterns. While laws do evolve, the legal origin theory argues that the origins of a legal system continue to exert a substantial influence on its current legal system and that each legal system is marked by an "ideology, that is, a religious or political conception of how economic or social life should be organized" (Zweigert and Kotz, 1998, p.72). Following Reynolds and Flores (1989) each country in our data set is classified into one of five groups (Socialist, English common law, and civil law which is further divided into French, Scandinavian and German origin) and subsequently the set of variables indicating a country's legal origins are used to instrument amnesty.

While it is quite likely that a country's legal origins are correlated with the probability that it grants amnesty, the exclusion restriction that legal origins do not have a direct bearing on trafficking flows may be challenged. If legal origins are viewed as a general indicator of how economic and social life should be organized then these instruments may capture country-level unobserved attitudes such as openness or tolerance and may indeed have a direct bearing on trafficking flows. We adopt two approaches to examine the extent to which our estimates may be driven by such omitted variables. First, we estimate several IV models including specifications which control for a number of variables which are likely to be correlated with trafficking flows and legal origin. These include measures of the rule of law, voice and accountability, political stability, distaste for foreign neighbors, attitudes towards prostitution. Of course it is not possible for us to control for all variables that might be correlated with legal origins and trafficking flows, hence in addition to these sensitivity checks we examine the validity of the instruments by using an overidentification test. To implement the test we use the mortality rate of European settlers in colonies between the seventeenth and the nineteenth century as an additional instrument for amnesty. This variable has been used most famously by Acemoglu et al. (2000, 2001) to instrument institutions and is based on the argument that colonies with high rates of settler mortality were less attractive for European settlers and hence less likely to have developed institutions conducive to economic development. Drawing a parallel we argue that countries with high settler morality rates are less like to have developed the legal infrastructure and institutions that would allow for the granting of

---

commitments to education, health, housing and worker's rights see Ben-Bassat and Dahan (2008).

amnesty to trafficked people. For instance, in a country with high settler mortality there would be little need for strong immigration and amnesty legislation.[17]

5 Regression Results

5.1 Single Equation Estimates

Single equation estimates of several variants of (10) are provided in Table 4. The first specification includes only the key variables of interest (amnesty and prostitution laws) while each successive specification expands the model to include additional regressors. Specification 2 includes GDP and distance related measures, specifications 3 and 4 include measures to control for regional fixed effects, while specifications 5 and 6 include controls for country specific social and political conditions.

Focusing on the key variables of interest, as shown in the table, regardless of the specification, the estimates indicate that the granting of amnesty by a host country is statistically significant and positively associated with trafficking flows. The marginal effect ranges from 1.1 to 5.5 percentage points and while the inclusion of various regressors reduces the magnitude of the coefficient, it remains remarkably stable across specifications. Except for specification 1 which includes only the key policy-relevant variables, the magnitude of the coefficient lies between 1.2 and 2.1 percentage points. Based on the specification (specification 4) which records the smallest magnitude, at the mean, the provision of amnesty in a host country increases the chances that it experiences trafficking by about 56 percent (1.15/2.05).[18] As argued in the theoretical section of the paper and displayed in Table 1, the provision of amnesty, which is designed to protect victims by making it more attractive for them to access host country police authorities, raises the likelihood that a trafficking victim will be discovered and will stop working. If demand for trafficking is elastic then an increase in the likelihood of discovery may be expected to reduce trafficking flows. However, across the board we see that there is a positive link between host country amnesty provision and trafficking flows suggesting that demand for

---

[17]The European settler mortality rate defined in terms of deaths per thousand is available for 73 countries. It is based on the mortality rates of soldiers, bishops and sailors working in various colonies over the 17th and 19th centuries. For more details see Acemoglu et al. (2001). Since the measure of settler mortality is computed in the 19th century it should have no bearing on current trafficking flows except through the endogenous variable.

[18]The marginal effect of amnesty on trafficking is 1.15 percentage points while the observed probability of trafficking in the sample used to estimate specification 4 is 2.05 percent.

trafficking is inelastic and that an increase in the probability of discovery (cost of trafficked individuals) does not hinder trafficking flows.

In terms of laws prohibiting prostitution, the estimates are also stable across specifications and display a positive link between host country prostitution laws and the probability of trafficking. However, the estimates are small in magnitude and are not statistically significant. Similarly, the coefficients on source country prostitution laws are also positive, small and not statistically significant at conventional levels. Notwithstanding their insignificance both sets of laws have a positive sign indicating that increases in law enforcement related to illicit sector activities in both host and source countries mutually reinforce one another and are likely to increase trafficking flows. In light of the discussion in section 2.3 and Table 1, the estimates related to amnesty and prostitution laws jointly support the idea that the market for transnational trafficking is characterized by inelastic demand, partial middleman bargaining power, and that middlemen have access to an internationally diverse buyer base and are able to readily switch between domestic and foreign markets.

5.2   Instrumental Variable Estimates

Tables 5a, 5b and 5c, present IV estimates (6 specifications in each table) based on different sets of instrument. The estimates in Table 5a are based on the use of legal origins as an instrument, Table 5b is based on the use of settler mortality as an instrument while Table 5c uses both. The first stage estimates corresponding to each of the IV estimates is provided in columns 1 to 3 of Appendix Table 1.

Before turning to the second-stage estimates a few comments on the first stage estimates, in particular, the strength of the instruments is in order. Column 1 shows that countries with French or German legal origin as opposed to countries with other legal origins are more likely to provide amnesty. The greater likelihood of amnesty provisions in countries with a civil law tradition is consistent with the findings of Ben-Bassat and Dahan (2008) who find that countries with a civil law tradition tend to have a higher constitutional commitment to social rights as compared to countries with a common law tradition. Jointly and individually, the two legal origin variables are statistically significant and a joint statistical test for excluding the instruments records a p-value of less than 0.0001. Column 2 estimates which are based on settler mortality as an instrument show that countries which recorded higher rates of settler mortality are less likely to grant

amnesty. Although, data on this measure is available for a smaller set of countries, the instrument is statistically significant and records a p-value of less than 0.001. In column 3 both instruments are statistically significant although the sign of the legal origin variable flips. Nevertheless, the requirement that the instruments should be (highly) correlated with amnesty holds across all three specifications.[19]

Table 5a provides IV estimates based on legal origins as an instrument. The first three specifications show that the generalized residual is not statistically significant and that there is no need to endogenize amnesty. However, in the remaining columns the term is negative and statistically significant indicating that in the absence of this correction there would be a tendency to underestimate the effect of amnesty on trafficking. Consistent with this, across the last three columns of the table, the IV estimates of amnesty are positive, statistically significant and much larger than their single equation counterparts. As in the case of the single equation estimates, both host and source country prostitution laws are positive but remain statistically insignificant.

Similar to the patterns discussed above, across the board, estimates in Table 5b and 5c support the idea that amnesty and trafficking are endogenous. In both tables and almost across all specifications the generalized residual is negative and statistically significant. For the most part, correcting for endogeneity leads to an upward revision of the effect of amnesty on trafficking. The main change here is that while both host and source country prostitution laws continue to exert a positive and mutually reinforcing effect on international trafficking they are now statistically significant. This change is not due to an increase in the magnitude of the coefficient which still remains small, but due to the increased precision with which the coefficient is measured.

Overall, qualitatively there is not much difference between the single equation and IV estimates. In both cases and across a variety of specifications there is a positive, large and statistically significant effect of amnesty on trafficking flows. Across our empirical analysis, the effects of both host and source country prostitution laws remain positive and small and the coefficients on these variables is not always statistically significant.

---

[19]Following Stock, Wright and Yogo (2002), the strength of the instruments may be gauged by examining the F-statistic on the instruments in the first stage. In order to do so we estimated the first stage regression using a linear probability model. In all three cases the first stage F-statistics were substantially higher than the benchmark of 10 for two-stage least squares to be reliable. To examine the validity of the instruments we conducted an overidentification test using linear probability models. The test statistic recorded a p-value of 0.852 indicating that the null hypothesis that the instruments are not correlated with the error term in the equation of interest cannot be rejected.

6 Conclusion

We began this paper with two sets of questions – what is the trafficking impact of a crackdown on illicit activities in the source country if the bargaining position of footloose transnational traffickers hinges on a threat to switch to a domestic buyer source? What about a similar hike in the likelihood of discovery in the foreign country? Our goal is to contribute to the debate on the coordination of international efforts to curb transnational trafficking, by means of laws that directly act on the demand side incentives that encourage individuals to engage in trafficking. Our theoretical model shows within the context of a two-way bilateral bargaining problem that the answers to these questions are nuanced. In particular, crack downs on illicit employment of trafficked victims in the host and the source countries can be mutually reinforcing, or can counteract one another depending precisely on middlemen bargaining power, whether traffickers enjoy ready access to an internationally diverse buyer base, and the demand elasticity of the demand for trafficked victims.

Based on a novel dataset of international trafficking, we empirically ascertained the drivers of cross-border trafficking, including victim protection programs, and law enforcement against prostitution. Our empirical assessment paid particular attention to the endogeneity of victim protection legislation, and country specific unobserved heterogeneity. We present results from single equation estimates, and instrumental variable estimates using legal origin and settler mortality as instruments. In both cases, and across a variety of specifications, our findings show that the impacts of both host and source country legislation prohibiting prostitution on trafficking are positive. These findings are consistent with an inelastic demand for trafficked victims, partial bargaining power of traffickers, and considerable ease of access across domestic and foreign markets.

In terms of the debate concerning whether a heightened likelihood of discovery in illicit service sectors can stem the tide of transnational trafficking, these findings lend support to the view that with inelastic demand, heightened enforcement in the host country can raise the willingness to pay for trafficked victims in the host country, thus encouraging transnational trafficking. Meanwhile, with partial bargaining power, and considerable ease of access between domestic and foreign markets, heightened enforcement in the source country can indeed "play into the hands of criminal networks" (Bureau of the Dutch National Rapporteur on Trafficking 2005), by raising the (threat point) reservation price of trafficked victims, and accordingly the profitability of transnational trafficking.

A number of other important questions remains. A key issue raised in this paper is that domestic and international trafficking activities are simultaneously determined. This suggests not only that domestic legislation can spill over to impact international trafficking, but likewise international enforcement of anti-trafficking initiatives can impact domestic trafficking activities as well. This observation naturally suggest the need to empirically ascertain the link between trafficking related policy measures and illicit domestic employment. In addition, the model that we explored is in fact equally applicable for other forms of illicit international trade such as drugs and antiquities. Empirical work on these alternative areas where middleman traffickers operate can be equally illuminating.

Reference

Acemoglu, Daron, Simon Johnson and James A. Robinson. 2001. "The Colonial Origins Of Comparative Development: An Empirical Investigation," American Economic Review 91 (5): 1369-1401.

Acemoglu, Daron, Simon Johnson and James A. Robinson. 2000. "The Colonial Origins Of Comparative Development: An Empirical Investigation," NBER Working Paper #7771.

Andrees, Beate, and Mariska N. J. van der Linden. 2005. "Designing Trafficking Research from a Labour Market Perspective: The ILO Experience," International Migration 43 (1/2): 55 - 74.

Bales, Kevin. 1999. "What Predicts Human Trafficking? Proceedings of the United Nations Conference on Human Trafficking, Verona, October.

Bales, Kevin. 2004. "Understanding the Demand behind Human Trafficking." Mimeo. http://www.childtrafficking.com/Docs/bales__understanding_the_de.pdf

Basu, Arnab K. and Nancy H. Chau. 2008. "An Exploration of the Worst Forms of Child Labor: Is Redemption a Viable Option?" In *The Economics and Ethics of Slave Redemption*, K. Anthony Appiah and Martin Bunzel (eds), Princeton University Press, Princeton, New Jersey.

Becker, Gary S., Kevin M. Murphy and Michael Grossman. 2006. "The Market for Illegal Goods: The Case of Drugs." *Journal of Political Economy* 114 (1): 38 - 60.

Ben-Bassat, Avi and Momi Dahan. 2008. "Social Rights in the Constitution and in Practice," *Journal of Comparative Economics* 36(1): 103 - 119.

Borjas, George J. 1989. "Economic Theory and International Migration," *International Migration Review* 23(3) : 457-85.

Borjas, George J. 1987. "Self-selection and the Earnings of Immigrants," *American Economic Review* 77(4) : 531-53.

Bureau of the Dutch National Rapporteur on Trafficking in Human Beings. 2005. *Trafficking in Human Beings.* Bureau NRM, The Hague.

Busse, Matthias and Sebastian Braun. 2002. "Trade and Investment Effects of Forced Labour: An Empirical Assessment." Hamburg Institute of International Economics Discussion Paper 200.

Danailova-Trainor, Gergana and Patrick Belser. 2006. "Globalization and the Illicit Market for Human Trafficking: An Empirical Analysis of Demand and Supply." ILO Special Action Programme to combat Forced Labor Working Paper no. 53.

Dessy, Sylvain, Flaubert Mbiekop and Stèphane Pallage. 2004. "The Economics of Child Trafficking." Mimeo.

European and World Value Surveys Four-Wave Integrated Data File, 1981-2004, v.20060423, 2006. Aggregate File Producers: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tilburg University, Tilburg, The Netherlands. Data Files Suppliers: Análisis Sociologicos Economicos y Politicos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tillburg, The Netherlands/ Zentralarchiv fur Empirische Sozialforschung (ZA), Cologne, Germany:) Aggregate File Distributors: Análisis Sociológicos Económicos y Políticos (ASEP) and JD Systems (JDS), Madrid, Spain/Tillburg University, Tilburg, The Netherlands/Zentralarchiv fur Empirische Sozialforschung (ZA) Cologne, Germany.

Friebel, Guido and Sergei Guriev. 2006. "Smuggling Humans: A Theory of Debt-Financed Migration", *Journal of the European Economic Association* 4 (6): 1085-1111.

Greenwood, Michael. 1975. "Research on National Migrational in the United States: A Survey," *Journal of Economic Literature* 13, 397-433.

ILO. 2009. *The Cost of Coercion, Global Report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work.* International Labour Conference, Geneva.

ILO. 2005. *A Global Alliance Against Forced Labour, Global Report under the follow-up to the ILO Declaration on Fundamental Principles and Rights at Work.* International Labour Conference, Geneva.

Karemera, David, Victor Iwuagwu Oguledo and Bobby Davis. 2000. "A Gravity Model Analysis of International Migration to North America," *Applied Economics* 32(13): 1745-55.

Kaufmann, Daniel, Aart Kraay and Pablo Zoido-Lobaton 1999a. "Aggregating Governance Indicators". World Bank Policy Research Department Working Paper No. 2195.

Kaufmann, Daniel, Aart Kraay and Pablo Zoido-Lobaton 1999b. "Governance Matters", World Bank Policy Research Department Working Paper No. 2196.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny. 1998. "Law and Finance," *Journal of Political Economy* 106 (6): 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny. 1997. "Legal Determinants of External Finance," *Journal of Finance* 52 (3): 1131-1150.

La Porta, Rafael, Florencio Lopez-de Silanes and Andrei Shleifer. 2008. "The Economic Consequences of Legal Origins," *Journal of Economic Literature* 46 (2): 285-332.

Mahmoud, Toman Omar, and Christoph Trebesch. 2009. "The Economic Drivers of Human Trafficking: Micro-Evidence from Five Eastern European Countries." Mimeo.

Reynolds, Thomas and Arturo Flores. 1989. *Foreign Law: Current Sources of Basic Legislation in Jurisdictions of the World.* Littleton, Co.: Rothman and Company.

Rogers, Carol Ann and Kenneth A. Swinnerton. 2008. "A Theory of Exploitative Child Labor." *Oxford Economic Papers* 60 (1): 20-41.

Salt, John. 2005. *Current Trends in International Migration in Europe*, Strasbourg: Council of Europe Publishing, September.

Stock, James., Jonathan Wright, and Yogo Motohiro. 2002. "A survey of weak instruments and weak identification in generalized methods of moments," *Journal of Business and Economic Statistics*, 20(4) 518-529.

Sjaastad, L. A. 1962. "The Cost and Returns of Human Migration," *Journal of Political Economy* 70: 80-93.

Protection Project. 2002. Human Rights Report on Trafficking in Persons, Especially Women and Children. The Johns Hopkins University.

UNICEF 2003. "Trafficking in Human Beings Especially Women and Children in Africa", Innocenti Research Center, Florence, Italy.

UNODC. 2009. *Global Report on Trafficking in Persons.* United Nations Office of Drugs and Crimes. United Nations Office.

United States Department of State. Various Issues. *Trafficking in Persons Report.* Office of the Undersecretary for Global Affairs. United States Department of State Publication.

Vella, Frank. 1993. "A Simple Estimator for Simultaneous Models with Censored Endogenous Regressors. *International Economic Review* 34(2), 441-457.

World Bank. 2004. World Development Indicators. CD-ROM. Washington DC: The World Bank.

Zweigert, Konrad and Hein Kotz. 1998. *An Introduction to Comparative Law.* Third Edition. Oxford and New York: Oxford University Press, Clarendon Press.
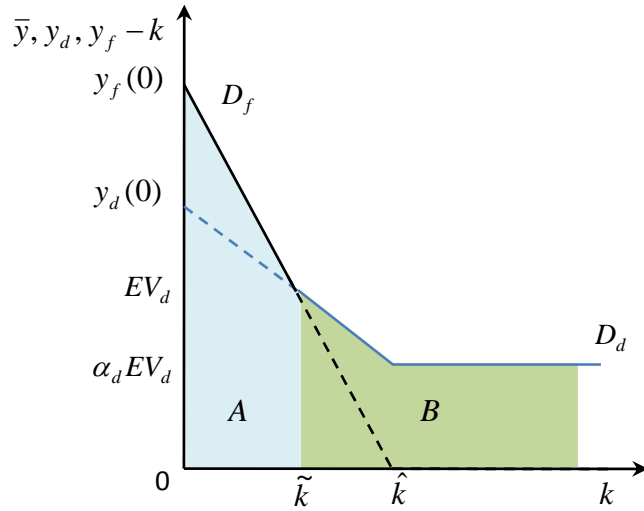
Figure 1.
Trafficker Destination Choice
$\alpha_i \in (0,1)$
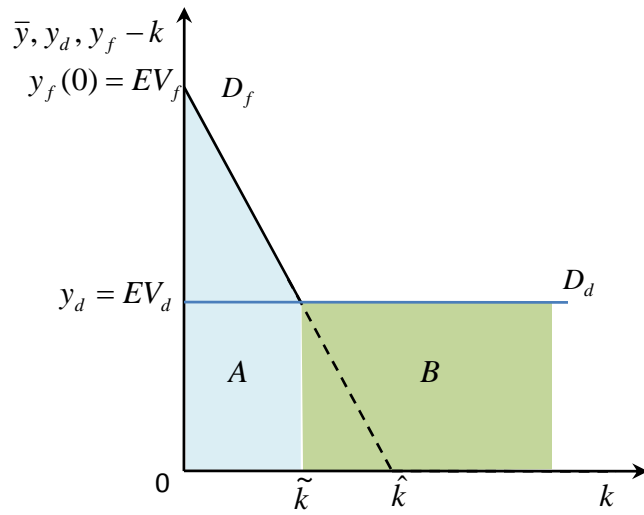
Figure 2.
Trafficker Destination Choice
$\alpha_i = 1$

Table 1A.

Effects of $a_f, p_f,$ and p_d on Transnational Trafficking μ_f -- Elastic Demand ($\theta_a^f < 0, \theta_p^i < 0, i = d, f$)

	$\mu_f^y / \mu_f^k < \bar{\alpha}$	$\mu_f^y / \mu_f^k > \bar{\alpha}$
$\alpha_i = 1$	Neg., Neg., Pos.	Neg., Neg., Pos.
$\alpha_i \in (0,1)$	Neg., Neg., Pos.	Neg., Neg., Neg.

Table 1B.

Effects of $a_f, p_f,$ and p_d on Transnational Trafficking μ_f -- Sufficiently Inelastic Demand ($\theta_a^f > 0, \theta_p^i > 0, i = d, f$)

	$\mu_f^y / \mu_f^k < \bar{\alpha}$	$\mu_f^y / \mu_f^k > \bar{\alpha}$
$\alpha_i = 1$	Pos., Pos., Neg.	Pos., Pos., Neg.
$\alpha_i \in (0,1)$	Pos., Pos., Neg.	Pos., Pos., Pos.

Table 1C.

Effects of $a_f, p_f,$ and p_d on Transnational Trafficking μ_f – Intermediate Demand Elasticity ($\theta_a^f > 0, \theta_p^i < 0, i = d, f$)

	$\mu_f^y / \mu_f^k < \bar{\alpha}$	$\mu_f^y / \mu_f^k > \bar{\alpha}$
$\alpha_i = 1$	Pos., Neg., Pos.	Pos., Neg., Pos.
$\alpha_i \in (0,1)$	Pos., Neg., Pos.	Pos., Neg., Neg.

Table 2. List of Countries and Status of Trafficking

Non	Host	Hub		Source
Andorra	Antigua	Afghanistan	Poland	Algeria
Bahamas	Australia	Albania	Romania	Angola
Barbados	Austria	Argentina	Russian Fed.	Armenia
Burundi	Belgium	Bahrain	Senegal	Azerbaijan
Comoros	Belize	Bangladesh	Slovakia	Belarus
Croatia	Bosnia & Herzegovina	Benin	South Africa	Bhutan
Djibouti	Botswana	Brazil	South Korea	Bolivia
Egypt	Canada	Brunei	Sri Lanka	Cape Verde
Eritrea	Central African Rep.	Bulgaria	Sudan	Colombia
Fiji	Chile	Burkina Faso	Taiwan	Cuba
Iceland	Cote d'Ivoire	Cambodia	Tanzania	Ecuador
Jamaica	Denmark	Cameroon	TFYR Macedonia	Estonia
Lesotho	Finland	Chad	Thailand	Ethiopia
Liechtenstein	France	China	Togo	Georgia
Luxembourg	Gabon	Congo, Dem. Rep.	Turkey	Guyana
Maldives	Gambia	Costa Rica	Uganda	Honduras
Malta	Germany	Cyprus	Ukraine	Iraq
Marshall Islands	Greece	Czech Republic	Uzbekistan	Kenya
Micronesia	Hong Kong (SAR)	Dominican Rep.	Venezuela	Latvia
Monaco	Israel	El Salvador	Vietnam	Madagascar
Namibia	Italy	Equatorial Guinea	Zimbabwe	Malawi
Nauru	Japan	Ghana		Mauritania
New Zealand	Kuwait	Guatemala		Moldova
Niue	Lebanon	Haiti		Morocco
Oman	Libya	Hungary		Mozambique
Palau	Macau (SAR)	India		Nepal
Palestine	Mauritius	Indonesia		Nicaragua
Papua New Guinea	Netherlands	Iran		Sierra Leone
Paraguay	Norway	Kazakhstan		Slovenia
Saint Kitts and Nevis	Portugal	Kosovo		Somalia
Saint Lucia	Qatar	Kyrgyzstan		Tajikistan
Saint Vincent and the Grenadines	Rwanda	Laos		Zambia
Samoa	Saudi Arabia	Liberia		
San Marino	Singapore	Lithuania		
Sao Tome and and Principe	Spain	Malaysia		
Seychelles	Suriname	Mali		
Solomon Islands	Swaziland	Mexico		
Tonga	Sweden	Mongolia		
Trinidad and Tobago	Switzerland	Myanmar		
Tunisia	Syria	Niger		
Turkmenistan	United Arab Emirates	Nigeria		
Tuvalu	United Kingdom	Pakistan		
Uruguay	United States	Panama		
Vanatu	Yemen	Peru		
	Yugoslavia	Philippines		

Table 3. Legislative, Economic, Demographic and Labor Force Characteristics

	Non	Host	Hub	Source	All
	(19%)	(25%)	(38%)	(18%)	(100%)
Grants Legal Status/Amnesty to trafficked victims	0.0%	22.2%	6.2%	0.0%	7.6%
Prohibits prostitution	39.0%	35.6%	41.5%	34.4%	38.3%
Employment in Ag (% of total)	12.58	5.53	26.90	25.10	17.90
Population Density (people per sq)	167.41	279.98	119.88	55.37	156.52
Mortality Rate (under 5 per 1000)	41.68	36.90	80.73	96.69	64.74
Literacy Rate (% of population)	84.90	82.17	77.42	77.28	79.32
Female Unemployment Rate	13.84	7.55	11.15	11.93	10.24
Male Unemployment Rate	9.26	5.95	9.43	11.25	8.38
Log GDP per capita in constant 1995 USD	7.80	9.04	7.03	6.51	7.61
(std. dev.)	(1.35)	(1.54)	(1.21)	(1.08)	(1.59)
Political Stability	0.372	0.539	-0.279	-0.486	-0.012
(std. dev.)	(0.658)	(0.925)	(0.796)	(0.854)	(0.927)
Voice and accountability	0.245	0.487	-0.251	-0.285	0.014
(std. dev.)	(0.897)	(1.042)	(0.835)	(0.790)	(0.955)
Rule of law	0.252	0.728	-0.327	-0.468	0.006
(std. dev.)	(0.802)	(0.945)	(0.695)	(0.625)	(0.912)
Legal origins – French	40.0%	46.5%	42.6%	45.1%	43.6%
Legal origins - German	0.0%	9.3%	1.6%	0.0%	3.03%
Legal origins - British	53.3%	32.5%	27.8%	25.8%	33.3%
Legal origins - Socialist	0.0%	2.3%	27.8%	29.0%	17.0%
Legal origins - Scandinavian	3.3%	9.3%	0.0%	0.0%	3.03%
Distaste for foreign neighbors	0.135	0.122	0.222	0.169	0.175
(std. dev.)	(0.123)	(0.071)	(0.102)	(0.0422)	(0.100)
Justifiability of prostitution	3.03	3.243	2.101	2.283	2.529
(std. dev.)	(1.045)	(0.961)	(0.686)	(0.607)	(0.948)
Settler mortality	62.57	209.8	300.27	170.93	223.49
(std. dev.)	(38.05)	(392.51)	(585.71)	(158.42)	(449.36)

Table 4
Probability of Trafficking – Probit Marginal Effect Estimates
(standard errors)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Host country grants amnesty	0.0566**	0.0179***	0.0154***	0.0115***	0.0211***	0.0142***
	(0.0276)	(0.00644)	(0.00428)	(0.00351)	(0.00606)	(0.00445)
Host country prostitution laws	0.00146	0.00143	0.00112	0.000627	0.000369	0.000237
	(0.00535)	(0.00280)	(0.00218)	(0.00122)	(0.00219)	(0.00120)
Host country log GDP per capita		0.00532**	0.00318***	0.00191***	0.00426***	0.00222***
		(0.00269)	(0.00121)	(0.000410)	(0.00144)	(0.000346)
Host country is a transition economy			-0.00478***	-0.00306***	-0.00690***	-0.00391***
			(0.000645)	(0.000373)	(0.00109)	(0.000514)
Host country is land locked			-0.00256***	-0.00143***	-0.00405***	-0.00195***
			(0.000754)	(0.000320)	(0.00138)	(0.000441)
Source country grants amnesty	-0.00818	-0.00125	-0.00193	8.16e-05	-0.00282	0.000610
	(0.00534)	(0.00449)	(0.00211)	(0.000513)	(0.00292)	(0.000723)
Source country prostitution laws	0.00448	0.00413	0.00195	0.00101	0.00340	0.00160
	(0.00610)	(0.00382)	(0.00217)	(0.000859)	(0.00358)	(0.00106)
Source country log GDP per capita		-0.00386**	-0.00333***	-0.00176***	-0.00361**	-0.00153*
		(0.00166)	(0.00104)	(0.000655)	(0.00147)	(0.000909)
Source country is a transition economy			0.0280***	0.0279***	0.0291***	0.0409**
			(0.00460)	(0.00662)	(0.00626)	(0.0190)
Source country is land locked			-0.00359**	-0.00200**	-0.00456	-0.00191
			(0.00154)	(0.000915)	(0.00287)	(0.00117)
Host and source are in the same region		0.0229***	0.0227***	0.0174***	0.0289***	0.0215***
		(0.00772)	(0.00635)	(0.00524)	(0.0105)	(0.00606)
Host and source share a border		0.0852***	0.0650***	0.0519***	0.0649***	0.0473***
		(0.0264)	(0.0209)	(0.0145)	(0.0178)	(0.0102)
Source country lies in EAP				0.104***		0.178***
				(0.0244)		(0.0601)
Source country lies in ECA				0.0365***		0.0278*
				(0.0115)		(0.0145)
Source country lies in MENA				0.0139***		0.0103
				(0.00532)		(0.00874)
Source country lies in South Asia				0.149***		0.182**
				(0.0431)		(0.0708)
Source country lies in SSA				0.0331***		0.0417**
				(0.00978)		(0.0182)
Source country lies in LAC				0.0543***		0.0721***
				(0.0108)		(0.0173)
Host country political stability					-0.00174	-0.00113**
					(0.00111)	(0.000491)
Host country voice and accountability					-0.00177	-0.000932
					(0.00183)	(0.000915)
Host country rule of law					0.00240	0.00148
					(0.00261)	(0.00112)
Source country political stability					6.16e-05	-0.00153*
					(0.00260)	(0.000867)
Source country voice and accountability					0.000609	-0.000304
					(0.00239)	(0.00113)
Source country rule of law					-0.00298	0.000268
					(0.00248)	(0.00195)
Pseudo R²	0.045	0.177	0.233	0.257	0.228	0.265
Log likelihood	-2752	-2192	-2043	-1979	-1789	-1704
Observations	30940	26560	26560	26560	18358	18358

Notes: a) Standard errors allow for intra-regional correlations b) *** p<0.01, ** p<0.05, * p<0.1

Table 5a
Instrumental variable estimates of the probability of trafficking – Selected marginal effects
(standard errors)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Host country grants amnesty	0.21	0.037	0.045	0.041*	0.080**	0.080***
	(0.15)	(0.035)	(0.030)	(0.024)	(0.039)	(0.029)
Host country prostitution laws	0.0046	0.0021	0.0023	0.0013	0.0020	0.0011
	(0.0059)	(0.0034)	(0.0025)	(0.0013)	(0.0019)	(0.00094)
Source country grants amnesty	-0.013*	-0.0020	-0.0024	0.00025	-0.0022	0.00080
	(0.0072)	(0.0062)	(0.0030)	(0.00057)	(0.0028)	(0.00055)
Source country prostitution laws	0.0071	0.0071	0.0029	0.0013*	0.0026	0.0011
	(0.0095)	(0.0061)	(0.0029)	(0.00070)	(0.0028)	(0.00071)
				(0.028)		(0.026)
Generalized residual	-0.031	-0.0041	-0.0046	-0.0031**	-0.0075***	-0.0046***
	(0.021)	(0.0072)	(0.0032)	(0.0014)	(0.0027)	(0.0012)
Observations	17293	17293	17293	17293	17293	17293

Notes: a) Standard errors allow for intra-regional correlations b) Legal origin is used as an instrumental variable c) The full set of regressors in each of the six specifications is the same as those reported in columns 1 to 6 of Table 3 d) *** p<0.01, ** p<0.05, * p<0.1.

Table 5b
Instrumental variable estimates of the probability of trafficking – Selected marginal effects
(standard errors)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Host country grants amnesty	0.10***	0.071**	0.071***	0.019***	0.072***	0.018*
	(0.040)	(0.029)	(0.023)	(0.0062)	(0.024)	(0.010)
Host country prostitution laws	0.011**	0.0063**	0.0049**	0.00038***	0.0047**	0.00035***
	(0.0052)	(0.0031)	(0.0024)	(0.00014)	(0.0024)	(0.000091)
Source country grants amnesty	-0.014***	-0.0036	-0.0031	0.000018	-0.0028	0.00011
	(0.0044)	(0.0032)	(0.0020)	(0.00016)	(0.0022)	(0.00025)
Source country prostitution laws	0.0037	0.0054	0.0030	0.00017**	0.0028	0.00018***
	(0.0065)	(0.0036)	(0.0025)	(0.000070)	(0.0023)	(0.000062)
Generalized residual	-0.011***	-0.0046**	-0.0040***	-0.00033***	-0.0041***	-0.00030
	(0.0041)	(0.0020)	(0.0012)	(0.00013)	(0.0013)	(0.00019)
Observations	8905	8905	8905	8905	8905	8905

Notes: a) Standard errors allow for intra-regional correlations b) Settler mortality is used as an instrumental variable c) The full set of regressors in each of the six specifications is the same as those reported in columns 1 to 6 of Table 3 d) *** p<0.01, ** p<0.05, * p<0.1

Table 5c
Instrumental variable estimates of the probability of trafficking – Selected marginal effects
(standard errors)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Host country grants amnesty	0.11**	0.082**	0.082***	0.020**	0.083**	0.019
	(0.047)	(0.034)	(0.031)	(0.0092)	(0.035)	(0.012)
Host country prostitution laws	0.011**	0.0062*	0.0047*	0.00036***	0.0046*	0.00032***
	(0.0051)	(0.0033)	(0.0025)	(0.00013)	(0.0025)	(0.000080)
Source country grants amnesty	-0.014***	-0.0035	-0.0031	0.000020	-0.0028	0.00011
	(0.0044)	(0.0032)	(0.0020)	(0.00016)	(0.0022)	(0.00024)
Source country prostitution laws	0.0037	0.0054	0.0030	0.00017**	0.0028	0.00017***
	(0.0065)	(0.0036)	(0.0025)	(0.000065)	(0.0023)	(0.000059)
Generalized residuals	-0.014*	-0.0064**	-0.0054**	-0.00037**	-0.0054**	-0.00033
	(0.0072)	(0.0030)	(0.0024)	(0.00016)	(0.0026)	(0.00020)
Observations	8905	8905	8905	8905	8905	8905

Notes: a) Standard errors allow for intra-regional correlations b) Legal origin *and* settler mortality are used as instrumental variables c) The full set of regressors in each of the six specifications is the same as those reported in columns 1 to 6 of Table 3 d) *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 1
First stage probit estimates

VARIABLES	Host country grants amnesty	Host country grants amnesty	Host country grants amnesty
Host country prostitution laws	-0.072	-1.72***	-2.86***
	(0.046)	(0.11)	(0.18)
Host country log GDP per capita	0.69***	1.70***	2.43***
	(0.038)	(0.11)	(0.14)
Host country is a transition economy	1.47***	.	.
	(0.075)	.	.
Host country is land locked	-0.19***	.	.
	(0.059)	.	.
Host country political stability	0.21***	0.40**	2.16***
	(0.064)	(0.17)	(0.27)
Host country voice and accountability	0.93***	1.17***	1.80***
	(0.060)	(0.10)	(0.13)
Host country rule of law	-0.72***	-2.09***	-4.75***
	(0.079)	(0.19)	(0.36)
Source country grants amnesty	-0.075	-0.063	-0.064
	(0.073)	(0.14)	(0.14)
Source country prostitution laws	-0.0043	-0.0040	-0.0033
	(0.041)	(0.078)	(0.079)
Source country log GDP per capita	0.0016	0.0034	0.0035
	(0.025)	(0.047)	(0.048)
Source country is a transition economy	0.0070	0.0023	0.0025
	(0.21)	(0.41)	(0.42)
Source country is landlocked	0.00086	0.0038	0.0034
	(0.047)	(0.091)	(0.093)
Source country political stability	0.0012	0.0016	0.0017
	(0.044)	(0.084)	(0.086)
Source country voice and accountability	0.0042	0.0053	0.0050
	(0.034)	(0.065)	(0.066)
Source country rule of law	-0.0031	-0.0021	-0.0021
	(0.057)	(0.11)	(0.11)
Host and source share a region	-0.17***	-0.36***	-0.27**
	(0.058)	(0.12)	(0.12)
Host and source share a border	0.33***	0.29	0.25
	(0.13)	(0.32)	(0.31)
Source country lies in EAP	-0.039	0.044	0.030
	(0.096)	(0.17)	(0.17)
Source country lies in ECA	-0.038	-0.036	-0.031
	(0.22)	(0.42)	(0.43)
Source country lies in MENA	-0.033	-0.022	-0.027
	(0.095)	(0.18)	(0.18)
Source country lies in South Asia	-0.053	-0.034	-0.029
	(0.14)	(0.27)	(0.27)
Source country lies in SSA	-0.048	-0.024	-0.021
	(0.10)	(0.19)	(0.20)
Source country lies in LAC	-0.034	0.079	0.058
	(0.089)	(0.17)	(0.17)
Host country has French legal origin	0.80***	.	-1.62***
	(0.055)	.	(0.18)
Host country has German legal origin	0.53***	.	.
	(0.067)	.	.
Settler mortality	.	-0.038***	-0.035***
	.	(0.0029)	(0.0028)
Constant	-8.27***	-14.8***	-20.4***
	(0.39)	(1.02)	(1.22)
Observations	17293	8905	8905

Notes: a) Standard errors allow for intra-regional correlations. b) *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 2
Probability of Trafficking – Probit Marginal Effect Estimates

VARIABLES	(1)	(2)	(3)	(4)	(5)
Host country grants amnesty	0.012***	0.011***	0.021***	0.0067***	0.0062***
	(0.0035)	(0.0039)	(0.0059)	(0.0012)	(0.0012)
Host country prostitution laws	0.00063	0.0010	-0.00043	0.00031	0.00023
	(0.0012)	(0.0011)	(0.0021)	(0.00023)	(0.00017)
Host country log GDP per capita	0.0019***	0.0015***	0.0017***	0.00017***	0.00015***
	(0.00041)	(0.00019)	(0.00047)	(0.000053)	(0.000056)
Host country is a transition economy	-0.0031***	-0.0030***	-0.0072***	.	.
	(0.00037)	(0.00069)	(0.0011)	.	.
Host country is land locked	-0.0014***	-0.0020***	-0.0022***	-0.00029***	-0.00023**
	(0.00032)	(0.00060)	(0.00056)	(0.00011)	(0.000093)
Source country grants amnesty	0.000082	0.00037	-0.00021	0.000087	0.000095
	(0.00051)	(0.00050)	(0.00072)	(0.00033)	(0.00033)
Source country prostitution laws	0.0010	0.00073	0.0016	0.00017	0.00016*
	(0.00086)	(0.00059)	(0.0015)	(0.00011)	(0.000099)
Source country log GDP per capita	-0.0018***	-0.0015**	-0.0018***	-0.00030***	-0.00030***
	(0.00065)	(0.00061)	(0.00038)	(0.000035)	(0.000037)
Source country is a transition economy	0.028***	0.024***	0.023***	0.76***	0.81***
	(0.0066)	(0.0054)	(0.0036)	(0.010)	(0.0067)
Source country is land locked	-0.0020**	-0.0017**	-0.0019***	-0.00034***	-0.00035***
	(0.00092)	(0.00076)	(0.00062)	(0.000048)	(0.000047)
Host and source are in the same region	0.017***	0.018***	0.022***	0.0062***	0.0060***
	(0.0052)	(0.0057)	(0.0064)	(0.0022)	(0.0022)
Host and source share a border	0.052***	0.052***	0.051***	0.015**	0.015**
	(0.015)	(0.011)	(0.0094)	(0.0059)	(0.0062)
Source country lies in EAP	0.10***	0.11***	0.067***	0.98***	0.98***
	(0.024)	(0.031)	(0.019)	(0.011)	(0.011)
Source country lies in ECA	0.036***	0.046***	0.048***	0.028*	0.017*
	(0.012)	(0.014)	(0.013)	(0.015)	(0.0092)
Source country lies in MENA	0.014***	0.016**	0.016*	0.95***	0.95***
	(0.0053)	(0.0072)	(0.0086)	(0.029)	(0.024)
Source country lies in South Asia	0.15***	0.18***	0.11***	1.00***	1.00***
	(0.043)	(0.059)	(0.037)	(0.0030)	(0.0033)
Source country lies in SSA	0.033***	0.037***	0.025***	0.80***	0.79***
	(0.0098)	(0.013)	(0.0079)	(0.057)	(0.060)
Source country lies in LAC	0.054***	0.059***	0.062***	0.93***	0.93***
	(0.011)	(0.015)	(0.014)	(0.031)	(0.032)
Host country has French legal origin		0.000037			-0.00035*
		(0.00054)			(0.00018)
Host country has German legal origin		0.0028**			
		(0.0012)			
Host country distaste for foreign neighbors			0.011***		
			(0.0041)		
Host country – justifiability of prostitution			-0.00034		
			(0.00042)		
Settler mortality				4.0e-07***	3.7e-07***
				(1.3e-07)	(1.3e-07)
Pseudo R²	0.233	0.269	0.283	0.285	0.291
Log likelihood	-2043	-1854	-947	-716	-711
Observations	26560	24649	10458	11620	11620

Notes: a) Standard errors allow for intra-regional correlation b) *** p<0.01, ** p<0.05, * p<0.1