

International Trafficking of Children and Women: Cross-National Evidence, Theory and Policy Implications

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Abstract: This paper explores empirically and theoretically one of the least studied economic phenomenon: the trafficking of women and children into slavery. By focusing on market imperfections and differential bargaining power amongst the concerned parties, we pin down how the incentives of traffickers (middlemen) are affected in response to interventions that grant legal status to trafficked persons in host countries and tougher legislation targeting traffickers in the source countries. Using cross-national data, we find that (i) a typical worker in a source country of international trafficking and trafficking hubs are more likely to be employed in agriculture, (ii) a higher dependency ratio due primarily to the larger size of children population in source countries and trafficking hubs compared to host countries, (iii) higher incidence of child labor in source countries and trafficking hubs and (iv) host countries have, on average, the highest police force per capita compared to source countries and trafficking hubs. Nevertheless, the number of convicted persons per recorded crime is also the lowest there. Finally, the granting legal status to trafficked victims in host countries, as well as a legal ban on prostitution in source countries, are both associated with an increased likelihood of trafficking.

Keywords: Trafficking; Worst Forms of Child Labor; Gravity Model; Buyer-Seller Match; Nash Bargaining.

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1 Introduction

As a matter of definition and identification, the ILO Convention on the Worst Forms of Child Labor (138) calls for the immediate suppression of all extreme forms of child labor including:

[a] all forms of slavery or practices similar to slavery, sale, trafficking of children, forced or compulsory labor including debt bondage and serfdom.

[b] the use, engagement or offering of a child for the purposes of prostitution, production of pornography or pornographic performances, production of or trafficking in drugs or other illegal activities.

[c] the use or engagement of children in any type of work, which by its nature or the circumstances in which it is carried out, is likely to jeopardize their health, safety, or morals.¹

Although the ILO's Convention on the Worst Forms of Child Labor has received the most international attention, there were two other earlier ILO conventions that specifically address the issue of slavery. First, the ILO Forced Labour Convention No 29 (1930) and specifically the Abolition of Forced Labour Convention No 105 (1957) which defines forced or compulsory labor as "all work or service which is extracted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily". In addition to these ILO Conventions, the United Nations specifically targets trafficking through its International Agreement for the Suppression of White Slave Traffic (1904) while the United Nations Supplementary Convention on the Abolition of Slavery (1956) defines debt bondage as "the status or condition arising from a pledge by a debtor of his personal services or of those of a person under his control as security for a debt, if the value of those services as reasonably assessed is not applied towards the liquidation of the debt or the length and nature of those services are not respectively limited and defined".

Despite international attention and calls for the elimination of the worst forms of child labor, formal economic analysis on the subject remains scant. Rogers and Swinnerton (2002) consider a general theory of the worst forms where parents decide to send their children to work based on incomplete information regarding the nature of work. They

¹See Dennis (2000) for a comprehensive treatment of U.N and other international legislation regarding child labor.

show that a ban on the worst forms of child labor leads to an increase in child wages in an economy and increases the incidence of child labor. Thus, the prevalence of the worst forms of child labor in the presence of imperfect information impinges on the supply of children to the labor market. In a more specific context, Friebel and Guriev (2004) consider the economic incentives of a trafficker of illegal immigrants. They posit a theory that accounts for circumstances in which trafficked or illegal immigrants have no recourse to formal credit markets. As such, victims of trafficking have no choice but to borrow from the trafficker to finance their migration and repay in the form of labor services. Thus, when moving from the illegal to the legal sector becomes costly due to stricter deportation laws, fewer immigrants default on their debt obligation. This serves to strengthen the incentives of traffickers and leads to an increase in the incidence of trafficking.

The phenomenon of debt bondage is explicitly modeled in a sequence of papers by Basu and Chau (2003, 2004). Our model considers the situation where poor agrarian households have no access to formal credit markets and borrow from landlord-cum-moneylenders during the lean season to finance their subsistence consumption in return for a pledge of adult and child labor services during the peak or harvest season. The basic model is also extended to an overlapping generation framework, in which it is shown that the effects of bondage in one generation can spillover to adversely affect the welfare, and the ability to break free from bondage by future generations. In this situation merely freeing households from debt bondage by paying off their debts (without improving their ability to finance subsistence consumption in the lean season) results in the same households falling back into debt bondage the very next year.

These theoretical papers notwithstanding, there is little empirical work on a cross-national basis that attempts to unravel the determinants of these two types of the worst forms of child labor, with the exception of Basu and Chau (2003) for debt bondage and Basu and Chau (2007) for Child trafficking. Thus, the primary goal of this paper is to explore the determinants of trafficking on a cross-national basis and develop a theoretical model that underscores the empirical findings. As a starting point, we focus on two economic features that precipitate the problem of trafficking — market imperfections and differential bargaining power amongst the concerned parties.

In the context of trafficking, a natural candidate to look at in terms of market imperfection stems from incomplete information on the part of buyers of services from trafficked persons, who do not know how much to pay these workers. Meanwhile, potential sellers of services (the trafficked individuals) are likely imperfectly informed about the sort of work they will be engaged in and accordingly what sort of pay to expect. In terms of bargaining power, the problem of trafficking is made worse as a larger number of uncoordinated and anonymous buyers and sellers are pitted against a small number of coordinated traffickers. The lack of bargaining power on the part of buyers arises since the consumption of services offered by trafficked individuals is illegal. The same lack of bargaining power also plagues potential sellers who are unable to coordinate due to their unmet income needs. Thus, unequal bargaining power implies that traffickers reap most if not all of the rent generated from the *buyer-seller* match.

The economics of the worst forms of child labor, as seen through the lens of the above two forms of market imperfections, underscore an additional issue that lies at the heart of the question of whether redemption can work. In particular, with multiple market imperfections, piecemeal policy reforms may well falter (Lipsey and Lancaster 1956). Redemption is of course but one example of piecemeal reform, since it does not address the underlying causes of trafficking. Thus, there is little guarantee that the granting of asylum to trafficked victims will not, for example, instigate a renewed surge in demand and supply of trafficked children. Put another way, the central question here is whether there are justifiable reasons to believe that the following two social objectives are competing rather than reinforcing: (i) freedom from slavery and serfdom as a human right for those who have been enslaved, and (ii) a sustainable decrease in the observed incidence of trafficking. Our examination in what follows can be understood as a step in this direction, drawing on existing data on trafficking.

2 Trafficking: Definitions and Scope

The term trafficking refers to a set of interrelated activities that encompass migration, prostitution as well as acts that violate human and children's rights. The term is synonymous with illicit trade in human beings across international borders or within the same country. However, trafficking of children is often discussed together with the trafficking of women. The main reasons being that (i) available data on trafficking of women is not

disaggregated by age and (ii) there is considerable debate regarding the age at which a child should be considered an adult. For example, the majority of women coerced into prostitution are between 16-24 years of age (International Labour Organization 2002). However, 16 and 17 year old girls are children according to the 1989 UN Convention on the Rights of the Child (CRC) and the ILO Worst Forms of Child Labor Convention (No. 182). The issue of age is further complicated by considerable variations in national laws regarding the age until which an individual is considered a “child”. As Dennis (2000) points out, Ireland protects those under 17 as a child while Australia, Belgium, the Netherlands, New Zealand, Switzerland and the United Kingdom accord protection to those under 16. The age for protection is 15 in France, Sweden and Denmark while it is 14 in Austria and Germany. As a specific illustration, the age of consent for sexual matters is 15 in Denmark. Thus, the word “child” in the Danish provision on child pornography is only applicable to individuals below the age of 15.

The above variation regarding the legal definition of a child notwithstanding, there is a broad consensus in so far as examples of activities that falls under the definition of trafficking. They are respectively, (i) if a child is misled with false reports or promises, coerced or otherwise forcibly recruited/handed over to transporters; (ii) a child is lied to about the destination and (iii) a child is lied to about either the nature of work (i.e. recruited as a dancer but forced into prostitution) or about their wages and methods of payment. It may also take the form of physical or mental abuse, confinement, inadequate or non-existent health care, poor accommodation and hazardous work (International Labour Organization 2002).

The determinants of trafficking can be broken up into push (supply side) and pull (demand side) factors. Some of the supply-side factors that lead to trafficking and prostitution stem from the same common factors that lead to the emergence and persistence of child labor in the first place: poverty and lack of educational opportunities. In addition, armed conflict in some African countries such as Sierra Leone and Sudan gives rise to social fragmentation that makes it easier for children to be forcibly removed and trafficked by various factions. On the demand side, the largest demand for child trafficking and prostitution can be linked to the growth in income in both developed and developing countries. For developed countries, two factors are frequently alleged to be in play: (i) the rise of tourism from developed to developing countries and the subsequent rise in the

demand for "sex tourism" as developed countries increasingly strengthen laws to protect minors and increase enforcement related to prostitution and (ii) economic growth in developed countries, low fertility, and the subsequent increase in demand for cheap migrant labor. The latter effect is also evident in some developing countries that have witnessed relative prosperity over the last decade, and where the native population has gradually moved away from low-skilled, low-wage employment sectors. Consequently, migrants, most of whom are illegal, are now filling employment in these low-wage sectors. As an example, an increased number of children have migrated and/or trafficked into Thailand from Myanmar, Laos and Cambodia to work in exploitative jobs previously done by Thai children (International Labour Organization 2002).

The pattern of trafficking and the types of work that trafficked individuals are engaged in vary across countries and continents. For instance, in Africa the most common source countries of trafficking are Sierra Leone, Malawi, Mozambique, Nigeria and Somalia from where children and women are trafficked to South Africa, Gabon, Gambia, and Western European countries primarily to work in the sex industry. There is also a steady supply of trafficked children from Mali to Cote d'Ivoire who land up working in cocoa plantations (UNICEF 2003). In Asia, the most common source country of trafficking seems to be Bangladesh, Nepal, Vietnam, Bhutan, Laos and Cambodia while the host countries are India, Thailand, Sri Lanka, Saudi Arabia, United Arab Emirates (UAE) and Australia. Trafficked children and women are engaged in a variety of work. The primary activity remains prostitution, but an increasing number also work as domestic helpers in host countries while young boys are smuggled from Bangladesh and India to work as camel jockeys in Saudi Arabia and the UAE (International Labour Organization 2002). In Central and Latin America, the source countries of trafficking are Bolivia, Colombia, Ecuador, Honduras and the host countries are Argentina, Belize, Mexico, El Salvador and in some cases, Guatemala where trafficked women and children are usually coerced into prostitution. The same is the case for trafficked women and children from the former republics of the Soviet Union (Estonia, Georgia, Ukraine, Uzbekistan, Kazakhstan and Kyrgyzstan) to Western European countries (specially, Germany, Italy and Greece).

It bears emphasis that a distinguishing feature of international trafficking is that a middleman is involved. Such a middleman may be an individual "recruiter" with an aim to serve the receiving end at the lowest cost, a smuggler of illegal migrants specializing in

evading border controls, or a criminal network operating on both the supply and the final demand ends (U.S. Department of State 2003). Thus, in addition to the aforementioned push and pull factors, it is important to understand how these traffickers operate, and more importantly, how legislations granting human rights to trafficked individuals in the host and source countries of trafficking affect the incentives of traffickers. Unfortunately, there is no data on how traffickers operate, not to mention their earnings from trafficking. As a result, we proxy the incentives of traffickers by analyzing their locational choice as captured by host-source matches amongst countries, as delineated below.

3 Cross-National Evidence on Trafficking of Women and Children

To the best of our knowledge, there has been no systematic cross-national empirical analysis of the features characterizing countries that are subject to the forces of international trafficking. However, given the problems associated with segregating data between women and children due to the various interpretations of age, we look at the joint incidence of trafficking in women and children. As an initial step towards an understanding of the push and pull factors of international trafficking of women and children, we make use of the country-by-country reports in the Trafficking in Persons Report (US Department of State 2003) and the Protection Project Country Report (2002). We are interested in obtaining two sets of information for each country. First, we classify countries based on four mutually exclusive groupings: a host country, a source country, a trafficking hub (both a host and a source country), or one with no reported incidences of trafficking.

Second, and specifically with an eye towards examining the push and pull forces that dictate the direction of international trafficking, we construct a binary variable “ $traffick_{hs}$ ”. The unit of analysis here is a potential host-source *country pair*, country h and country s , and the variable takes on a value of “1” if trafficking from country s to country h has been reported, and “0” otherwise. Table 1 lists the 187 countries included in our data and the nature and prevalence of trafficking that have reportedly taken place in these countries. It should be noted that countries are sorted based on reported incidence only, and should be interpreted as such. Despite this obvious drawback, a number of useful insights may be gleaned by comparing the economic, demographic, legislative and law enforcement characteristics of these countries stratified according to our classification. All

economic and demographic variables are taken from World Bank (2004) for the year 2000.

These economic, demographic and labor market characteristics of host and source countries respectively put international trafficking squarely in the context of the push and pull factors enumerated above. Doing so, however, does not allow one to distinguish the forces that govern international voluntary migration, for example, from the specific circumstances under which the trafficking of individuals occurs, including coercion, deceit, kidnapping, and forced or slave labor. To this end, we collected data on legislative and law enforcement variables in order to examine the extent to which international trafficking may also be looked at as a locational choice problem for criminal activities. These legislative and law enforcement variables are taken from the Protection Project (2002), the latest available years of the International Crime Survey and the Seventh International Survey of Crime Trends of the United Nations (2004) for 2000.

A. Macroeconomic, Labor Market and Demographic factors

First, while systematic estimates of the size and scope of international trafficking are unavailable, our 4-tier classification allows for a raw gauge on the share of the world's children who may be at risk of being trafficked. In particular, countries that are trafficking hubs host close to 77% of all children (ages 0-14) captured in our sample of 187 countries, yet these same countries take up 18% percent of the total gross domestic product of all countries combined in 2000. An additional 9% of all children live in source countries of international trafficking. These source countries produce 1% of the total gross domestic product of the 187 countries. The remaining 14% of children are spread across host countries (11.4%) and countries with no reported incidences of international trafficking (2.5%). Combined, these two groups of countries take up over 81% of the total gross domestic product of the countries in our sample.

In terms of the labor force and demographic characteristics of these countries, a typical worker in a source country of international trafficking and trafficking hubs are more likely to be employed in agriculture. We also observe a higher dependency ratio due primarily to the larger size of the child population in source countries and trafficking hubs compared to host countries. There is likewise a correspondingly higher incidence of child labor in source countries and trafficking hubs, in which the shares of economically

active children (ages 10 -14) are respectively 13.7% and 12.9% in source countries and trafficking hubs, compared to the around 3.8% average in host countries. Employment by adults, in contrast, exhibit the opposite patterns, wherein adult unemployment rates for both female and male are nearly twice as high in source countries and trafficking hubs, compared to host countries of trafficking. Meanwhile, dependence on income through workers' remittance from employment or other income sources abroad as a percentage of gross national products is higher in source countries and trafficking hubs (2.6%) as compared to host countries of trafficking (1.6%).

Taken together, and as Table 2 summarizes, these observations are in concert with the presumption that source and host countries of international trafficking stand respectively on opposite ends of the spectrum of countries ranked based on income, dependency ratio, the degree of industrialization, and domestic employment rates.

Turning now to global links, a different picture emerges. A country's dependence on trade, as measured by the trade share of GDP is in fact quite similar between host and source countries (Table 3). Indeed, we cannot reject the hypothesis that the trade share of all source countries (including trafficking hubs), is the same as the rest of the countries in the sample. The same is true when the comparison is made between source countries alone (not including trafficking hubs) and the rest of the countries in the sample, or host countries alone and the rest of the countries in the sample. In addition to merchandise trade, one may also take international tourism as another measure of the strength of global links. In this respect, we observe no statistically significant difference between international tourism expenditure, either as a fraction of total exports or gross national product, between source and host countries of trafficking. Interestingly, and in sharp contrast to the notion that prostitution and trafficking into host countries may be partly due to a host country's reliance on revenues on international tourism, our findings indicate just the opposite. Indeed, international tourism receipts (both as a fraction of export revenues or gross national product) are on average smaller in countries that host trafficked victims in our sample.²

²Though beyond the scope of this paper, global capital linkages between these four classes and the rest of the world exhibit a rather more systematic pattern. For example, source countries of international trafficking and trafficking hubs are relatively more dependent on official development assistance compared to host countries of international trafficking.

B. Legislations and Law Enforcement

There are a number of international conventions that are related to the condemnation of the trafficking of women and children. We have included here the Abolition of Forced Labor Convention and the Elimination of the Worst Forms of Child Labor Conventions of the ILO, along with two other United Nations Protocol that respectively call for an end to the sale of children for the purposes of prostitution and pornography (OPSC), and to the trafficking of persons, especially women and children (PPSPT). Finally, the migrant workers convention (MWC) calls for the protection of the rights of migrant workers and members of their families.

As may be expected, the patterns of the ratification of these conventions differ widely (Table 4). These patterns range from almost universal commitment to abolish forced labor, to the relative popularity among host countries of trafficked individuals a commitment to eliminate the worst forms of child labor which includes the sale of children and international trafficking. This ranking is reversed, for the case of the migrant workers' convention, in which ratification is more prevalent among source countries of international trafficking.

Turning now to national statutes with specific reference to trafficking and prostitution, we see a relatively high average percentage of host countries enacting laws that protect the rights of trafficked victims. Close to 22% of host countries grant legal status to trafficked victims, whereas no such country prevails among source countries. With respect to legal restrictions on prostitution and other related activities, we find that laws banning prostitution are in fact most common among trafficking hubs, followed by host and source countries. Meanwhile, laws banning activities surrounding and promoting prostitution, such as pimping, pandering and brothels are more common in host countries.

With the exception of the migrant worker convention, which covers voluntary migrants as well, the preponderance of the observations above would seem to be that a larger average share of host countries enact legislation answering to the international call to end trafficking and to protect trafficked victims.³ Host countries are likewise more likely to

³It is important to note that why and when countries adopt international conventions is a area of inquiry that is still in its infancy. In Chau and Kanbur (2002), with specific reference to the four core labor standards of the ILO, ratification pattern is shown to be highly convention specific. What

grant legal status to trafficked victims and to enact legislation that legalizes prostitution.

In addition to the enactment of national laws, and the ratification of international conventions, one might argue that of even more significant importance is the extent to which these laws are enforced. To this end, Table 5 summarizes data taken from the United Nations Survey of Crime Trends (Seventh Survey) for 2000. The capacity of policy enforcement is expressed in two ways. The variable "police" denote the number of police personnel per 100 thousand persons. The variable "convicted persons per crime" gives the number of convicted persons per reported crime in a country. The variable "police" allow us to pin down the physical capacity of the police force. Meanwhile, the variable "convicted persons per crime" is concerned with the efficiency of the police force. These two variables give two very different pictures of the capability of police enforcements. In particular, host countries have, on average, the highest police force per capita compared to source countries and trafficking hubs. Nevertheless, the number of convicted persons per recorded crime is also the lowest there.

A moment's thought reveals that these conflicting observations may have to do with the possibility of underreporting present in official police data. There are two reasons why underreporting in source countries is of interest in the context of trafficking. First, for traffickers operating in potential source countries, underreporting is of course advantageous since the likelihood of getting caught is accordingly lower. Second underreporting may also be a signal of the public's distrust of the police force due for instance to corruption among public officials. Both of these factors concern the degree of access to effective law enforcement, and separate the (economic) push and pull factors of international migration, as distinct from the criminal activities associated with international trafficking.⁴ As a partial remedy to this issue of access, we will further make use of the "rule of law" governance indicator from (Kaufmann, Kraay and Zoido-Lobaton 1999a and 1999b).

Empirical Findings and the Economic Consequences of Redeeming Trafficked Individuals

is important in our context, is that that whereas countries with higher income per capita (the host countries) appear to be more likely to participate in international conventions and domestic legislations protective of victims' rights, the same is not true for many other core labor standard conventions. In fact, the stage of development of an economy is not always a good predictor of ratification.

⁴Exactly why report rates are lower in source countries is of course of independent interest, although it is certainly beyond the scope of this paper.

In what follows, we report the results of the logit estimation⁵ that accounts for the push and pull factors of trafficking, in which the dependent variable of interest is a host-source country match. Three different sets of results are presented in Tables (6) - (8). The first regression (Table 6) employs basic macro variables in source and host countries, along with regional, distance, geographic and political variables. The variable “comborder” is an indicator variable, which takes on a value of one if two countries share a common border. The variable “comreg” indicates common region, and these include East Asia and the Pacific, Western Europe, North America, Eastern and Central Asia, Sub-Saharan Africa, South Asia, and Latin American Countries. The variable “landlock” is a dummy variable for landlocked countries, and the variable “transition” takes on a value of one for countries in transition and zero otherwise. The second regression (Table 7) introduces legislative variables and international conventions related to international trafficking of children and women. The third regression (Table 8) introduces law enforcement variables. From these results, a number of general remarks can be made.

First, the stage of economic development of the countries in question plays an important role throughout. In particular, a higher real per capita income (the variable “rgdppc” denoting real gross domestic product per-capita in Table 6) in a potential destination country, and a lower real per capita income in a potential country of origin raises the likelihood of trafficking between these two countries. This suggests that international inequality in the distribution of income is systematically correlated with international trafficking. Introducing the Gini coefficient⁶ as a measure of intra-country inequality in the distribution of income reduces the number of available observations by a great deal.

⁵In our logit regression, the binary variable, $traffick_{hs}$ takes on the value of 1 when incidences of trafficking going from the source country, s , to the host country, h , have been observed. Otherwise, $traffick_{hs}$ is set to zero. The logit regression model assumes that the probability that $traffick_{hs} = 1$ takes on the following form:

$$Prob(traffick_{hs} = 1 |_{xs, xh, yhs}) = \exp(a'xs + b'xh + c'yhs) / (1 + \exp(a'xs + b'xh + c'yhs)),$$

where xs and xh are respectively source and host country specific variables, and yhs pertains to country pair variables, such as when two countries share a common border. The maximum likelihood coefficients accordingly indicate whether an increase in xs , xh , and yhs are respectively associated with a higher likelihood that two countries s and h are indeed a source and host country pair of international trafficking.

⁶The Gini Coefficient measures the degree of inequality in income distribution within a country. For instance a value of 0 indicates a perfectly equitable income distribution (such that the poorest 10% of the population has access to 10% of national income), while a value of 1 indicates perfect inequality in the distribution of income.

However, the results are in support of Rogers and Swinnerton (2001), and suggest in particular that income inequality in source countries has a place among the push factors of trafficking.

Second, the role of ratifying international conventions is much less clear. In particular, for a potential source country, having ratified the worst forms of child labor convention (the variable “iloc182” in Table 7), and the two other United Nations Protocol that respectively call for an end to the sale of children for the purposes of prostitution and pornography, and to the trafficking of persons, especially women and children (the variables “ppspt” and “mwc” respectively in Table 7), is in fact associated with a higher likelihood of trafficking. A number of possible interpretations apply here. For example, ratifying may only signify the commitment to combat the problem of trafficking, and says little about the effectiveness of the measures implemented. Perhaps even more straightforwardly, there is little need to ratify a convention if the problem is non-existent to begin with.

Third, and in terms of law enforcement, we note that the coefficient associated with physical size of the police force is insignificant for host countries and of the wrong sign for source countries, indicating in particular that a larger police force is in fact associated with a higher likelihood of the outflow of trafficked victims. We attribute this to the endogeneity of the police variable (in the sense that the stage of development for a country and the effectiveness of the police force are positively correlated), a problem that is present also in Levitt (1997) and Soares (2004).⁷ In other words, poorer host countries also tend to have a more ineffective and corrupt police force. In contrast, the estimated coefficient for the rule of law variable is negative and significant for source countries. Controlling for this, and using the “conviction per reported crime” variable as a measure of police effectiveness, we find that effective enforcement is associated with a reduced likelihood of trafficking both for host and for source countries.

Fourth, in terms of legislative variables, two interesting observations are worth noting. One would expect that granting of legal status to victims in host countries, and banning

⁷Becker (1968), Ehrlich (1973) and Stigler (1970) take observed crime rates as outcomes of the cost-benefit assessments, and demonstrate the endogeneity of the extent of criminal activities depending on the stage of development of an economy, inequality in the distribution of income, and enforcement capabilities.

prostitution in source countries should ameliorate the problem of trafficking. Paradoxically, the granting legal status to trafficked victims in host countries is associated with an increased likelihood of trafficking. Moreover, a legal ban on prostitution in source countries is also associated with a higher likelihood of trafficking. In sharp contrast to the findings in Friebel and Guriev (2004), our results indicate that the provision of amnesty and the inflow of trafficked victims appear to go hand in hand. Meanwhile, the banning of prostitution and the outflow of trafficked victims also appear to be positively correlated.

Although the empirical findings might seem counter-intuitive, there is a logical explanation to these observed outcomes. In Basu and Seiberg (2005)), we find that this paradoxical result may be due to the impact that legislations have on the push and pull factors of trafficking, and on the incentives of traffickers. First, the granting of asylum in host countries reduces the number of trafficked prostitutes. If the demand for their services remains constant, the returns to prostitution in the host countries will likely rise with the granting of asylum. Subsequently, it becomes relatively more lucrative for traffickers to target countries that grant asylum as potential destinations for trafficked individuals.

On the other hand, a ban on prostitution in the source countries either reduces the supply of prostitutes or raises the price commanded by those involved in the sex trade. Both these factors raise the opportunity income of traffickers. Instead of taking an individual out of a country, traffickers have the alternative to engage the individual in illegal prostitution within the source country. The increased profits from this illegal prostitution strengthens the bargaining power of traffickers abroad as they can now negotiate a better price for those taken to the host country. In sum, the twin objectives of granting legal rights to trafficked individuals and a reduction in the incidence of trafficking conflict, unless (i) adequate attention is paid to the perverse incentives of traffickers and (ii) greater efficiency is attained in the apprehension of traffickers in host and source countries.

4 Theory: International Trafficking and Host-Country Amnesty

4.1 Individuals

We consider an economy with N heterogeneous individuals. Individuals differ according to their individual-specific search cost for gainful employment. Let $\theta^i \in [\underline{\theta}, \bar{\theta}]$ be the individual specific search cost, with $f(\theta) > 0$ as the density function and $F(\theta)$ the associated cumulative density function. Individuals have two choices: (i) use a middleman to find them employment or (ii) search for employment themselves. We consider a situation where an individual-middleman match is not guaranteed, and is thus subject to a random match. Further, in a one-shot matching problem we consider, the reputation of middlemen regarding their past history in finding legal employment is a non-issue.⁸

Figure 1 summarizes the various employment options open to an individual. Specifically,

- An individual first decides whether to use the services of a middleman to seek employment, or self-search. In the event of self-search, the payoff to an individual is $w_o - \theta^i c$ where w_o is the non-factory market wage for the legal sector and c is the fixed cost of finding employment.
- In the event that an individual seeks the services of a middleman, a match occurs with probability λ . In the event no match occurs (probability $(1 - \lambda)$), the individual reverts to self-search with associated payoff $w_o - \theta^i c$.
- Conditional on a match with a middleman there is a positive probability β that the individual finds legal factory employment with payoff $w_f - c$, with $w_f > w_o$.
- With probability $(1 - \beta)$, the middleman may engage the individual in the domestic illegal sector. In this event, two possibilities arise:
 1. with probability q the individual is discovered and is left consequently to engage in self-search for employment with payoff $w_o - \theta^i c$.
 2. with probability $(1 - q)$ the individual is not discovered. In this event, two possibilities arise again:
 - with probability α the individual is sent into domestic illegal activity (prostitution) with payoff $w_i (< w_o - c)$ or

⁸See Basu and Seiberg (2005) for a matching model with reputational concerns.

- with probability $(1 - \alpha)$ the individual is trafficked out of the country with payoff 0.

Solving through backward induction, an individual will elect to self-search for employment as opposed to seek the services of a middleman if and only if,

$$\begin{aligned} w_o - \theta^i c &\geq \lambda \left\{ \beta(w_f - c) + (1 - \beta)q(w_o - \theta^i c) + (1 - \beta)(1 - q)[\alpha w_i + (1 - \alpha).0] \right\} \\ &\quad + (1 - \lambda)(w_o - \theta^i c) \\ &= \frac{\beta(w_f - c) + (1 - \beta)(1 - q)\alpha w_i}{[1 - (1 - \beta)q]} \end{aligned}$$

which on rearranging yields,

$$\theta^i < \frac{w_o}{c} - \frac{\beta(w_f - c) + (1 - \beta)(1 - q)\alpha w_i}{[1 - (1 - \beta)q]c} \equiv \theta^* \quad (1)$$

Thus, individuals with specific search cost less than θ^* self-search for employment while individuals with search cost greater than or equal to θ^* seek middlemen to find them employment. For the economy,

- The total number of individuals who ex-post self-search for employment equals $NF(\theta^*) + (1 - \lambda)N[1 - F(\theta^*)] + \lambda(1 - \beta)q[1 - F(\theta^*)]$.
- The total number of individuals who seek middlemen, and end up with factory work equals $\lambda N\beta[1 - F(\theta^*)]$.
- The total number of individuals who seek middlemen, and end up in the domestic illegal sector equals $\lambda N(1 - \beta)(1 - q)\alpha[1 - F(\theta^*)]$.
- The total number of individuals who seek middlemen, and end up being trafficked equals $\lambda N(1 - \beta)(1 - q)(1 - \alpha)[1 - F(\theta^*)]$.

4.2 Middlemen

There are M number of middlemen ($M < N$, the number of individuals). Middlemen are distributed over their individual cost of having access to the illegal domestic sector, $x^i \in [\underline{x}, \bar{x}]$ with $g(x) > 0$ as the density function and $G(x)$ as the cumulative density function. The payoffs associated with placing individuals in the three activities (factory employment, domestic illegal sector work and trafficking), are as follows (Figure 2 summarizes the payoffs):

- The payoff of a middleman from finding factory employment for an individual is y_f .
- If the middleman wishes to engage the individual in illegal activity there are two possibilities:
 1. with probability q he is discovered and fined. The payoff in this case equals $-\phi$.
 2. with probability $(1 - q)$ he is not discovered. This scenario leads to two possibilities again:
 - he can engage the individual in domestic illegal activity (prostitution) with payoff $(y_i - x^i)$ where y_i is the middleman's compensation from sending an individual into illegal activity, or
 - traffick the individual out of the country with payoff $y_t - \delta(N_T)$ where y_t is the compensation received from trafficking and $\delta(N_T)$ captures the cost of trafficking with N_T as the aggregate number of individuals trafficked out of the country with $\delta' > 0, \delta'' > 0$.

without loss of generality, we assume that $y_i > y_f$. We shall turn to the determination of y_t *vis-à-vis* y_i in the sequel. From the above payoffs,

- The payoff to a middleman from finding factory employment for an individual equals λy_f .
- The expected payoff to a middleman from sending an individual into domestic illegal activity equals $\lambda(1 - q)(y_i - x^i) - \lambda q\phi$.
- Finally, the expected payoff to a middleman from trafficking an individual out of the country equals $\lambda(1 - q)(y_t - \delta(N_T)) - \lambda q\phi$.

Therefore, a middleman chooses to find factory employment for an individual as opposed to sending them into domestic illegal activity if and only if,

$$y_f \geq (1 - q)(y_i - x^i) - q\phi$$

which on rearranging yields,

$$x^i \geq y_i - \frac{q}{(1 - q)}\phi - \frac{y_f}{(1 - q)} \equiv x^* \tag{2}$$

Similarly, a middleman would choose to traffick an individual as opposed to sending the individual into domestic illegal activity if and only if,

$$(1 - q)(y_t - \delta(N_T)) - q\phi \geq (1 - q)(y_i - x^i) - q\phi$$

which on rearranging yields,

$$x^i \geq y_i - [y_t - \delta(N_T)] \equiv \hat{x} \quad (3)$$

For $x^* > \hat{x}$ we need $(1 - q)(y_t - \delta(N_T)) > y_f + q\phi$, a condition we assume holds.

Thus the number of middlemen who finds factory employment for individuals equals $M[1 - G(x^*)]$, the number of middlemen who sends individuals into domestic illegal sector activity equals $MG(\hat{x})$, while the number of middlemen who traffick individuals equals $M[G(x^*) - G(\hat{x})]$. Now from the individual payoffs,

$$\begin{aligned} M[1 - G(x^*)] &= \lambda N\beta[1 - F(\theta^*)] \\ MG(\hat{x}) &= \lambda N(1 - \beta)(1 - q)\alpha[1 - F(\theta^*)] \\ M[G(x^*) - G(\hat{x})] &= \lambda N(1 - \beta)(1 - q)(1 - \alpha)[1 - F(\theta^*)] \end{aligned}$$

substituting for $\lambda = \frac{M}{N[1 - F(\theta^*)]}$ and manipulating the above equations we have, $\alpha G(x^*) = G(\hat{x})$. The total number of individuals trafficked (N_T) equals $M[G(x^*) - G(\hat{x})]$ while the total number of individuals in domestic illegal activity (N_i), equals $MG(\hat{x})$. Thus, $N_i = MG(x^*) - N_T$.

4.3 Payoff from Trafficking, (y_t)

Let V be the potential income of a trafficked individual in the host country. Let y^* be the income of the foreign agent who transacts with the trafficker in the source country with \bar{y}^* as the foreign agent's reservation income. We assume that y_i as the reservation income of the source country trafficker, since the alternative to trafficking would be to engage an individual in domestic illegal activity (prostitution). Thus, V the income of a trafficked individual abroad is equal to the sum of the earnings of the foreign agent and the source country trafficker or $V = y_t + y^*$. With the surplus (S) being split equally between the foreign (host country) agent and the source country trafficker via Nash bargaining we have

$$\begin{aligned} \max_{y_t} S &= (y_t - y_i)(y^* - \bar{y}^*) \\ &= (y_t - y_i)(V - y_t - \bar{y}^*) \end{aligned}$$

maximization and simplification yields

$$y_t = \frac{V - \bar{y}^* + y_i}{2}$$

In the scenario where trafficked victims may be given amnesty in the host country, the potential income of a trafficked individual V is uncertain. Assume therefore that p^* is the probability that a trafficked individual is granted amnesty. Thus, $V = p^*.0 + (1 - p^*)R^*$ where R^* is the earning of a trafficked individual who is unable to get amnesty. Substituting we have,

$$y_t = \frac{(1 - p^*)R^* - \bar{y}^* + y_i}{2}$$

The income of the trafficked individual, in turn, is negatively related to the number of trafficked individuals unable to get amnesty or $R^* = R^*((1 - p^*)N_T)$ with $R^{*'}(\cdot) < 0$.

In a similar vein assume that the compensation of a middleman from sending an individual into domestic illegal activity depend on whether the source country government ends up freeing individuals in illegal activity. Let p be the probability of discovery in the source country and $N_i = MG(\hat{x})$ the number of individuals engaged in illegal activity in the source country. In this case, $y_i = (1 - p)R((1 - p)N_i)$ with $R' < 0$.

Substituting for V and y_i we have

$$y_t = \frac{(1 - p^*)R^*((1 - p^*)N_T) - \bar{y}^* + (1 - p)R((1 - p)N_i)}{2} \quad (4)$$

what is of interest to us is how y_t reacts to the possibility of amnesty in the host country. In other words, we seek to identify conditions under which the possibility of amnesty raises the income of a source country trafficker, and hence an increase in the likelihood of trafficking. To this end, differentiation of equation (4) with respect to p^* yields

$$\frac{\partial y_t}{\partial p^*} = \frac{-R^*(1 + (1 - p^*)M[G(x^*) - G(\hat{x})]\frac{R^{*'}}{R^*})}{[2 + (1 - p)^2MG'R' - (1 - p^*)^2MG'R^{*}]}$$

which reduces to

$$\frac{\partial y_t}{\partial p^*} = -R^* \frac{1 + \epsilon_z^{R^*}}{[2 + MG'\{(1 - p)^2R' - (1 - p^*)^2R^{*'}\}]} > (<)0$$

where $z = (1 - p^*)M[G(x^*) - G(\hat{x})]$ and $\epsilon_z^{R^*} < 0$ equals the elasticity of the earnings of a trafficked individual with respect to the number of trafficked individuals unable to get

amnesty in the host country. Sufficient conditions for $\frac{\partial y_t}{\partial p^*} > 0$, or the payoff from trafficking to the source country middlemen to rise consequent upon the possibility of amnesty in the host country are (i) $|\epsilon_z^{R^*}| > 1$ and (ii) $(1 - p)^2 R' < (1 - p^*)^2 R^{*'}$. Intuitively, (i) requires that the responsiveness of trafficked victim's earnings are sufficiently unresponsive to amnesty, a possibility if the demand for services from trafficked individuals is sufficiently inelastic in the host country and (ii) requires that the responsiveness of earnings in the source country illegal sector with respect to discovery and freedom of individuals is less than the responsiveness of the trafficked victims earnings with respect to amnesty in the host country. This latter effect is important since middlemen allocate individuals between illegal activity in the source country and trafficking. As the returns from trafficking increase consequent upon amnesty in the host country, the number of individuals trafficked rises at the expense of those sent to the illegal sector in the source country. Condition (ii) requires that the earnings of the individuals in domestic illegal activity is sufficiently elastic such that it does not impinge on the incentives of middlemen to traffick.

4.4 Equilibrium Incidence of Trafficking

The equilibrium incidence of trafficking from the source country is solved from the aggregate net profits of traffickers Π_T with respect to N_T . Thus,

$$\max_{N_T} \Pi_T = y_t N_T - N_T \delta(N_T)$$

where $y_t N_T$ is the aggregate profits from N_T number of individuals trafficked with y_t as the income from each trafficked individual and $N_T \delta(N_T)$ is the total cost incurred due to trafficking with $\delta(N_T)$ as the cost incurred per individual that is trafficked.

Substituting for y_t from equation (4), maximization of Π_T yields the equilibrium number of trafficked individuals from the source country as a solution to

$$y_t - \delta(N_T) = N_T \left[\frac{(1 - p)^2 R' - (1 - p^*)^2 R^{*'}}{2} - \delta' \right]$$

5 Conclusion

In this paper we have considered one of the worst forms of child labor — child trafficking and prostitution. In spite of widespread recognition of the parameters involved in the

persistence of trafficking in children (and women), policy interventions has so far been piecemeal and targeted towards accomplishing the twin objectives of granting human rights to those enslaved and reducing the incidence of the problem. As we have argued, systematic cross-country analysis underscores the problems inherent in achieving the twin objectives stated above, simply because there are multiple market imperfections associated with the emergence and persistence of trafficking. We argue, that instead of granting asylum to trafficked victims, effective policy intervention entails stricter enforcement of trafficking laws and heavier punishments for those involved in trafficking, simultaneously in the host and source countries.

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Table 1. List of Countries and Status of Trafficking

None	Host	Hub		Source
Andorra	Antigua	Afghanistan	Poland	Algeria
Bahamas	Australia	Albania	Romania	Angola
Barbados	Austria	Argentina	Russian Federation	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 Republic	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 Republic	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 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 2: Macroeconomic, Labor Market and Demographic factors

	Host	Hub	Source	All
Employment in Ag (% of total)	5.53	26.90	25.10	17.90
Share of Minors (ages 0 -14) in Total Population (%)	26.37	34.13	35.69	32.37
Share of Seniors (ages 65 +) in Total Population (%)	9.48	5.73	5.85	6.83
Labor Force Characteristics				
Child Labor (% 10-14 age)	3.84	12.90	13.67	10.18
Female Unemployment Rate	7.55	11.15	11.93	10.24
Male Unemployment Rate	5.95	9.43	11.25	8.38
Worker Remittance (% of GDP)	1.64	2.40	2.65	2.17

Table 3: Global and Informational Links

	Host	Hub	Source	All
Trade Share of GDP (%)	86.32	77.11	87.35	87.06
International Tourism Expenditure (% imports)	6.42	4.91	6.02	5.77
International Tourism Receipt (%exports)	10.21	10.44	12.13	14.01
International Tourism Expenditure (% GDP)	2.84	1.94	2.79	2.66
International Tourism Receipt (% GDP)	5.55	3.69	3.65	6.57
Official Development Assistance (% GDP)	2.88	4.30	9.60	6.67

Table 4: International and National Legislations

Ratification of International Conventions	Host	Hub	Source	All
ILO Convention 105	88.1%	82.5%	89.7%	84.3%
ILO Convention 182	61.9%	54.0%	37.9%	53.0%
PPSPT	47.6%	50.8%	37.9%	47.0%
OPSC	50.0%	33.3%	34.5%	39.8%
MWC	4.8%	14.3%	20.7%	13.3%
National Legislations	Host	Hub	Source	All
Grant Legal Status to Trafficked Victims	22.2%	6.2%	0.0%	7.6%
Prohibit Prostitution	35.6%	41.5%	34.4%	38.3%
Prohibit Pimping	86.7%	75.4%	75.0%	79.2%
Prohibit Brothels	55.6%	41.5%	50.0%	47.0%

Table 5: Crime and Law Enforcement

	Host	Hub	Source	All
Police Personnel (per 100K)	289.65	288.78	272.04	286.38
Total Recorded Crimes (per 100K)	4918.92	1825.94	1387.27	2991.97
Total Convicted Persons (per 100K)	809.62	735.15	337.01	692.38
Convicted Persons per Recorded Crime (%)	0.17	0.30	0.41	0.27
Rule of Law	0.73	-0.30	-0.52	0.01

**Table 6: Gravity Model of the Push and Pull Factors of Trafficking
Basic Economic and Geographic Variables**

Dependent Variable: Incidence of Trafficking of Women and Children

		I		II		III	
Host Country	lrgdppc	0.625	***	0.703	***	0.625	***
		0.030		0.145		0.031	
	transition	-1.286	***	-2.176	***	-1.201	***
		0.208		0.901		0.210	
	gini			-0.008			
	landlock			0.020			
						-0.443	***
						0.140	
Source Country	lrgdppc	-0.431	***	-0.953	***	-0.511	***
		0.028		0.201		0.032	
	transition	1.756	***	3.474	***	1.984	***
		0.112		0.603		0.116	
	gini			0.107	***		
	landlock			0.025			
						-0.649	***
						0.109	
Common	constant	-6.943	***	-7.673	***	-6.235	***
		0.321		2.393		0.351	
	Region (comreg)	yes	***	yes	***	yes	***
	Border (comborder)	yes	***	yes	***	yes	***
N		28056		870		28056	
Wald Chi2		964.680		81.830		950.780	
Prob > Chi2		0.000		0.000		0.000	
Pseudo R2		0.206		0.339		0.215	
Log Likelihood		-2154.613		-111.172		-2131.545	

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.

Table 7: Gravity Model of the Push and Pull Factors of Trafficking Legislations and International Conventions

Dependent Variable: Incidence of Trafficking of Women & Children

		I	II	III	IV	V
Host Country	lrgdppc	0.508 ***	0.503 ***	0.645 ***	0.601 ***	0.598 ***
	grant legal	0.039	0.039	0.033	0.034	0.032
	prostitution	1.130 ***	1.099 ***			
		0.135	0.131			
		0.224 **				
		0.106				
	iloc182	-0.196 *	-0.162	-0.372 ***		
		0.102	0.103	0.098		
	ppspt	-0.007	-0.065		0.152	
		0.112	0.114		0.101	
mwc	-0.205	-0.233			-0.343 *	
	0.180	0.179			0.174	
transition	yes ***	yes ***	yes ***	yes ***	yes ***	
landlock	yes ***	yes ***	yes ***	yes ***	yes ***	
Source Country	lrgdppc	-0.525 ***	-0.534 ***	-0.524 ***	-0.499 ***	-0.486 ***
	grant legal	0.038	0.038	0.033	0.032	0.032
	prostitution	-0.379	-0.374			
		0.256	0.259			
		0.319 **				
		0.102				
	iloc182	0.269 ***	0.347 ***	0.353 ***		
		0.104	0.101	0.098		
	ppspt	0.377 ***	0.370 ***		0.374 ***	
		0.099	0.098		0.098	
mwc	-0.045	-0.099			-0.109	
	0.142	0.139			0.138	
transition	yes ***	yes ***	yes ***	yes ***	yes ***	
landlock	yes ***	yes ***	yes ***	yes ***	yes ***	
Common	constant	-5.640 ***	-5.332 ***	-6.162 ***	-6.237 ***	-6.011 ***
	Region	0.398	0.392	0.356	0.357	0.360
	Border	yes ***	yes ***	yes ***	yes ***	yes ***
	yes ***	yes ***	yes ***	yes ***	yes ***	
N	23256	23562	23562	23562	23562	
Wald Chi2	1014.860	993.920	877.580	904.350	904.350	
Prob > Chi2	0.000	0.000	0.000	0.000	0.000	
Pseudo R2	0.238	0.235	0.216	0.215	0.212	
Log Likelihood	1875.809	1886.411	1933.292	-1937.685	1944.462	

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.

Table 8: Gravity Model of the Push and Pull Factors of Trafficking Law Enforcement

Dependent Variable: Incidence of Trafficking of Women and Children

		I		II		III		IV		V	
Host Country	lrgdppc	0.421	***	0.493	***	0.172	***	0.542	***	0.333	
		0.050		0.064		0.202		0.110		0.209	
	grant legal	1.145	***	1.149	***	1.352	***	1.037	***	1.383	***
		0.119		0.120		0.228		0.216		0.236	
	prostitution	0.129		0.120		0.002		-0.199		0.065	
		0.105		0.104		0.291		0.270		0.290	
	rule of law			-0.025						0.211	
				0.098						0.262	
	report rate	0.011				0.043	*				
		0.006				0.022					
police							0.001				
							0.001				
conviction rate					-1.247	**				-1.055	*
					0.627					0.567	
transition	yes	***	yes	***	yes	***	yes	***	yes	***	***
landlock	yes	***	yes	***	yes	*	yes		yes		
Source Country	lrgdppc	-0.419	***	-0.406	***	-0.218	***	-0.580	***	-0.486	***
		0.050		0.052		0.127		0.074		0.032	
	grant legal	-0.315		-0.323		-0.301		-0.458		-0.232	
		0.245		0.245		0.352		0.306		0.364	
	prostitution	0.303	***	0.284	***	0.380		0.507	**	0.237	
		0.092		0.091		0.247		0.218		0.251	
	rule of law			-0.282	***					-1.410	***
				0.084						0.254	
	report rate	-0.023	***			-0.097	***				
		0.008				0.021					
police							0.001				
							0.001				
conviction rate					-1.049	***				-1.213	***
					0.447					0.441	
transition	yes	***	yes	***	yes	***	yes	***	yes	***	***
landlock	yes	***	yes	***	yes	*	yes		yes		*
Common	constant	-4.919	***	-6.066	***	-1.903	***	-4.960	***	-6.067	***
		0.385		0.645		1.445		1.282		2.115	
	Region Border	yes	***	yes	***	yes	***	yes	***	yes	***
	yes	***	yes	***	yes	***	yes	***	yes	***	***
N		22052		22052		2352		2756		2352	
Wald Chi2		920.410		909.790		199.200		236.980		203.330	
Prob > Chi2		0.000		0.000		0.000		0.000		0.000	
Pseudo R2		0.232		0.231		0.310		0.257		0.316	
Log Likelihood		1949.345		1950.047		375.502		387.105		372.689	

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.

Figure 1: Payoffs for Individuals

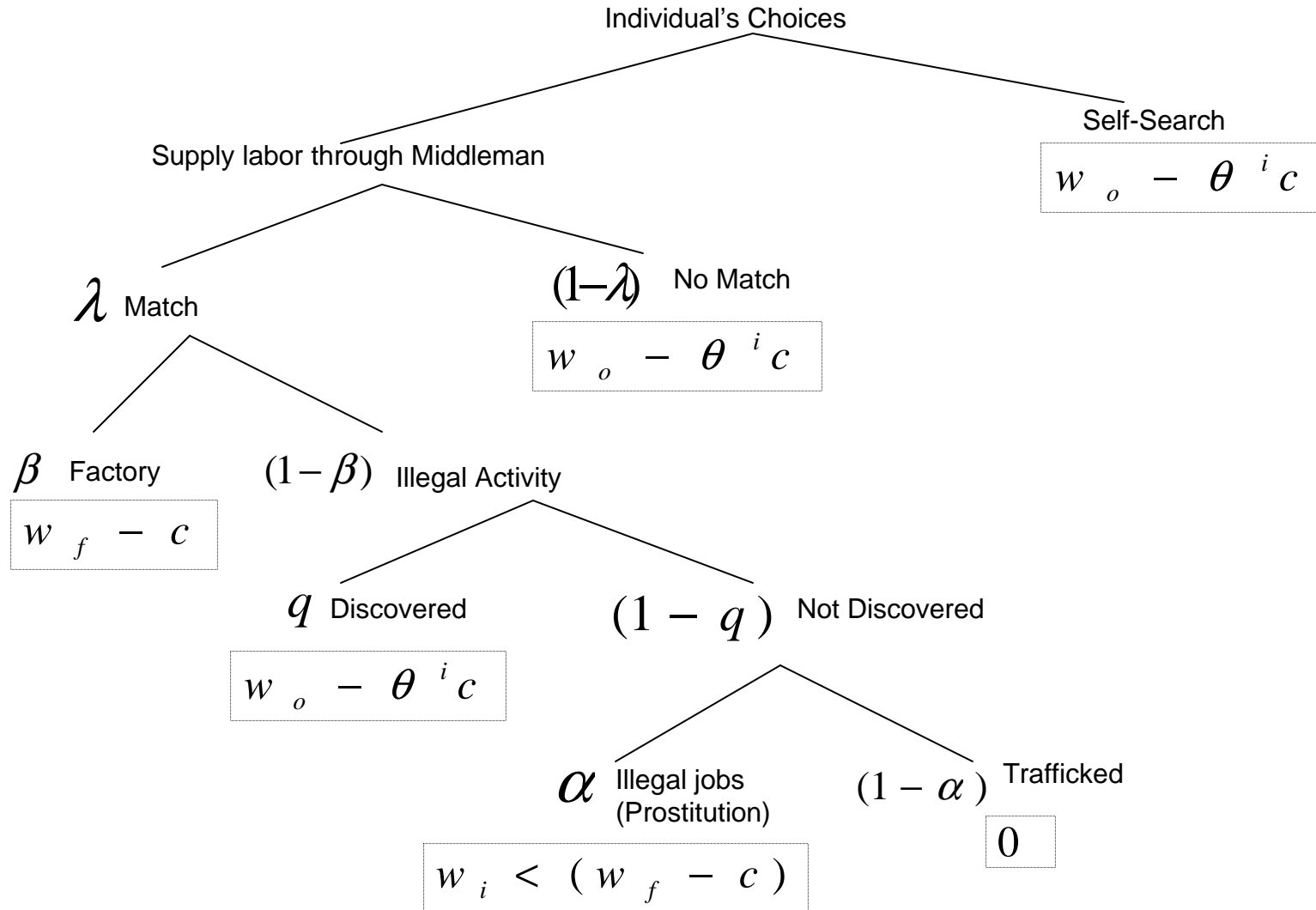


Figure 2: Payoffs for Middlemen

