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Abstract

This paper investigates the impact of legalized prostitution on human trafficking inflows. According to economic theory, there are two opposing effects of unknown magnitude. The scale effect of legalized prostitution leads to an expansion of the prostitution market, increasing human trafficking, while the substitution effect reduces demand for trafficked women as legal prostitutes are favored over trafficked ones. Our empirical analysis for a cross-section of up to 150 countries shows that the scale effect dominates the substitution effect. On average, countries where prostitution is legal experience larger reported human trafficking inflows.

Keywords: human trafficking; prostitution; crime; scale effect; substitution effect; global

1. INTRODUCTION

Much recent scholarly attention has focused on the effect of globalization on human rights (Bjørnskov, 2008; de Soysa & Vadlamannati, 2011) and women's rights in particular (Cho, 2011; Potrafke & Ursprung, 2012). Yet, one important, and largely neglected, aspect of globalization with direct human rights implications is the increased trafficking of human beings (Cho and Vadlamannati, 2012; Potrafke, 2011), one of the dark sides of globalization. Similarly, globalization scholars with their emphasis on the apparent loss of national sovereignty often neglect the impact that domestic policies crafted at the country level can still exert on aspects of globalization. This article analyzes how one important domestic policy choice – the legal status of prostitution – affects the incidence of human trafficking inflows to countries.

Most victims of international human trafficking are women and girls. The vast majority end up being sexually exploited through prostitution (United Nations Office of Drugs and Crime (UNODC), 2006). Many authors therefore believe that trafficking is caused by prostitution and combating prostitution with the force of the law would reduce trafficking (Outshoorn, 2005). For example, Hughes (2000) maintains that "evidence seems to show that legalized sex industries actually result in increased trafficking to meet the demand for women to be used in the legal sex industries" (p. 651). Farley (2009) suggests that "wherever prostitution is legalized, trafficking to sex industry marketplaces in that region increases" (p. 313).[1] In its *Trafficking in Persons* report, the U.S. State Department (2007) states as the official U.S. Government position "that prostitution is inherently harmful and dehumanizing and fuels trafficking in persons" (p. 27). The idea that combating human trafficking requires combating prostitution is, in fact, anything but new. As Outshoorn (2005, p. 142) points out, the UN International Convention for the Suppression of the Traffic in Persons from 1949 had

already called on all states to suppress prostitution.[2] See Limoncelli (2010) for a comprehensive historical overview.

Others disagree. They argue that the legalization of prostitution will improve working and safety conditions for sex workers, allowing sex businesses to recruit among domestic women who choose prostitution as their free choice of occupation. This, in turn, makes resorting to trafficked women less attractive (Bureau of the Dutch National Rapporteur on Trafficking, 2005; Segrave, 2009). While those who call for combating prostitution with the force of the law typically subscribe to the belief that prostitution is almost always forced and rarely truly voluntary (Farley, 2009), the view that the legalization of prostitution may reduce trafficking is typically held by those who believe that the choice to sell one's sexual services for money need not always be forced, but can be a voluntary occupational choice. See Limoncelli (2009) who discusses both sides of this debate.

In this article, we argue that theoretically the legalization of prostitution has two contradictory effects on the incidence of trafficking, a substitution effect away from trafficking and a scale effect increasing trafficking. Which of these effects dominate in reality, and whether legalization is therefore likely to increase or decrease trafficking, is an empirical question. The extant qualitative literature contains many strongly held views and beliefs, sometimes based on anecdotal evidence, but little in terms of systematic and rigorous research. We know of only two quantitative studies which have tried to answer this empirical question.[3] In their main estimations, Akee, Bedi, Basu and Chau (2010a) find that prostitution laws have no effect on whether there is any reported incidence of trafficking between two country pairs in a global cross-sectional dyad country sample. They do find a negative effect of legalized prostitution on human trafficking in two of their three sets of instrumental variable estimations (prostitution law is *not* the variable instrumented for), but this result is due to sample selection effects since the inclusion of settler mortality rates as an instrument leads to the loss of almost half of their observations, most likely in a non-random way.

Jakobsson and Kotsadam (2011), on the other hand, find a positive effect of legalized prostitution on human trafficking in a cross-sectional monadic dataset of 31 European countries.

Our empirical analysis differs from these existing studies. Jakobsson and Kotsadam's (2011) study is similar to ours in that we also analyze human trafficking at the monadic country level. However, in contrast to their study, we use a global sample consisting of up to 150 countries. European countries are only a sub-sample of relevant destination countries for human trafficking. Not only are there other developed target countries such as the United States, Canada, Japan, Australia and New Zealand, but also several non-OECD countries such as China, Pakistan, Turkey, Thailand and some Arab countries, all of which are important destination countries as well. This begs the question whether Jakobsson and Kotsadam's (2011) finding can be generalized or is confined to Europe.

Despite our sample being global like Akee et al.'s (2010a) study, we do not attempt to estimate the incidence of trafficking at the bilateral (dyadic) country level like they do. Dyadic studies only outperform monadic studies such as ours if the data quality at the dyadic level is sufficiently high. We contend that this does not hold for human trafficking. As will be explained further below, even at the monadic level the quality of data is relatively low. It is much worse at the bilateral level. With this in mind, one price that Akee et al. (2010a) pay for moving to the dyadic level is the loss of all information on the intensity of trafficking – their dependent variable is a dichotomous one, i.e., whether trafficking between a country pair exists or not. This loss of information may well represent one reason why Akee et al. (2010a) find no effect of prostitution laws on human trafficking in their main estimations.

The remainder of this article is structured as follows. In section 2, we discuss what economic theory can tell us about the effects of legalizing prostitution on the incidence of human trafficking. Contrary to Jakobsson and Kotsadam (2011), who suggest an unambiguously positive effect, we show that the effect is theoretically indeterminate because

the substitution effect and the scale effect work in opposite directions. Therefore, being an essentially empirical question, we are keen to construct a global dataset. We exploit a measure of the reported intensity of human trafficking flows into the country under observation on a scale of 0 to 5. This measure and our research design are described in section 3, while section 4 presents the results. We find that countries with legalized prostitution have a statistically significantly larger reported incidence of human trafficking inflows. This holds true regardless of the model we use to estimate the equations and the variables we control for in the analysis. Also, the main finding is not dominated by trafficking to a particular region of the world.

2. THEORY

In this section, we discuss what economic theory suggests regarding the effect of the legalization of prostitution on trafficking. Akee et al. (2010a) provide an excellent game-theoretic analysis on the effects of anti-trafficking law enforcement in source and destination countries between such country pairs. However, their analysis tells us nothing about the effect of the legalization of prostitution in itself. This is because contrary to Akee et al.'s (2010a) implicit underlying assumption, the legalization of prostitution is not equal to laxer enforcement of anti-trafficking laws and, conversely, the fact that prostitution is illegal does not imply stricter anti-trafficking enforcement. Human trafficking always remains illegal even if prostitution becomes legal. Moreover, by erroneously equating the legal status of prostitution with different levels of law enforcement with respect to human trafficking, Akee et al. (2010a) overlook other demand and supply effects that the legalization of prostitution may have on human trafficking. Jakobsson and Kotsadam's (2011) paper is closer to our theoretical analysis in this regard as they directly focus on the supply and demand effects of legalizing prostitution. However, they only take into account the scale effect, i.e., the expansion of prostitution markets after legalization. As we will show below, there is an

opposing substitution effect replacing illegal, forced prostitution with voluntary, legal prostitution, making the overall effect indeterminate.

Our discussion is gender-neutral, referring to individuals, persons and prostitutes in general, rather than female prostitutes. This is because the theoretical arguments, in principle, equally apply to boys and, possibly, men, also trafficked into the sex industry. We are, of course, under no illusion that the overwhelming majority of individuals affected by trafficking are in fact girls and women.

A theoretical analysis of the effect of the legality of prostitution on international human trafficking is rendered complicated by the fact that, as Edlund and Korn (2002) point out, not all prostitution is the same. Street prostitution differs from prostitution in brothels, bars and clubs, which also differs from prostitution offered by call girls (and boys) and escort agencies. Differences include, but are not limited to, the types of services rendered, numbers of clients served, types of clients served, sizes of payments and also the share of illegally trafficked prostitutes working in each market segment. For simplicity, we will avoid such complications by assuming that there is one single market for prostitution.

Let us assume a situation in which prostitution is entirely illegal in a country and those engaging in prostitution – i.e., sex workers, their pimps and clients – are prosecuted, if caught. As with other illegal markets, e.g., the market for classified drugs or endangered species, illegality does not eradicate the market, given that there is strong demand from clients on the one hand, and the willingness to supply prostitution services on the other hand.[4] The equilibrium quantity of prostitution will be a function of supply and demand, just as in any other market. A commonly recognized stylized fact is that despite working conditions that many would regard as exploitative, wages earned by prostitutes tend to be high relative to their human capital endowments such as education and skills,[5] and therefore relative to the wages they could earn outside prostitution.[6] This has been explained by factors such as compensation for social stigma[7] and exclusion, risky and unattractive working conditions, and

forgone marriage benefits (Cameron, 2002; Edlund & Korn, 2002; Giusta, Di Tommaso & Strøm, 2009). Another reason, we suggest, is the compensation for allowing random and often previously unknown clients to infiltrate private and intimate spheres. Importantly, there will be a wage premium, all other things being equal, if prostitution is illegal compared to a situation in which prostitution is legal, since sex workers (and their pimps) need to be additionally compensated for the risk of prosecution. This is similar to the price premium for banned goods like drugs (Miron & Zwiebel, 1991; Miron, 2003).

What will be the effect of legalizing prostitution on the demand, supply, and thus equilibrium quantity of prostitution? Starting with the demand effect, some clients will be deterred from consuming commercial sex services if prostitution is illegal and they expect that there is a reasonable probability of being prosecuted, as this raises the costs of engaging in such activities. Legalizing prostitution will therefore almost invariably increase demand for prostitution.[8] Concerning supply, legalizing prostitution will induce some potential sex workers (or their pimps) to enter the market, namely those who were deterred from offering such services by the threat of prosecution and for whom the pay premium that arose from the illegality of prostitution represented insufficient compensation – i.e., the risk of prosecution creates costs that are not easily expressed in monetary terms and can therefore not be compensated for with a higher wage. One might conjecture that supply could also decrease given that the state will want to raise taxes from legalized prostitution, whereas illegal prostitution, by definition, does not entail payment of taxes. However, this is not the case. Those unwilling or unable to operate legally (including meeting the legal obligation to pay taxes), can continue to operate illegally. Before, their business was illegal because prostitution was illegal; now their business is illegal due to their tax evasion in the shadow economy. Supply could only decrease under the assumption that the state prosecutes tax evasion more vigorously than it prosecuted illegal prostitution before, which, we believe, will not be the case.[9] As is the case with demand, supply will therefore increase as well. With demand and

supply both increasing, the equilibrium quantity of prostitution will be higher in the legalized regime compared to the situation where prostitution is illegal.

If the scale of prostitution becomes larger once it is rendered legal, will the incidence of human trafficking also increase? The increased equilibrium quantity of prostitution will, for a constant share of trafficked prostitutes among all prostitutes, exert an increasing scale effect on the incidence of international trafficking for prostitution purposes.[10] This is the effect Jakobsson and Kotsadam (2011) take into account. It is only part of the whole story, however. The full answer to the question depends on what happens to the composition of prostitutes and whether any substitution effect away from trafficked prostitutes (towards domestic prostitutes or foreign prostitutes legally residing and working in the country) is stronger than the scale effect. Under conditions of illegality, a certain share of prostitutes will consist of trafficked individuals, given the difficulties in recruiting individuals willing to voluntarily work in such an illegal market.[11] This share of trafficked prostitutes is likely to fall after legalization. Sex businesses wishing to take advantage of the legality of prostitution (instead of remaining illegal) would want to recruit more national citizens or foreigners legally residing with a work permit in the country since employing trafficked foreign prostitutes (or, for that matter, illegally residing foreign prostitutes that were not trafficked) endangers their newly achieved legal status.[12]

However, the legalization of prostitution will not reduce the share of trafficked prostitutes to zero. First, there may be insufficient supply among domestic or legally residing foreign individuals, given the risky and unattractive nature of prostitution which persists even after legalization. Second, trafficked individuals are significantly more vulnerable and exposed to the demands of their pimps, which makes their continued employment attractive to some extent. For example, a greater portion of their earnings can be extracted, making their pimps' business more lucrative than operating with legal prostitutes. Third, clients might have

preferences for “exotic” sex workers from geographically remote places whose nationals are unlikely to have legal rights to reside in the country.

There is consequently a substitution effect away from illegally trafficked prostitutes (as well as illegally residing non-trafficked prostitutes) to legally residing prostitutes, but just how strong this substitution effect is remains an empirical matter. In sum, the effect of legalization of prostitution on the international trafficking of human beings is theoretically indeterminate as the two effects, with unknown magnitudes, work in opposite directions. We therefore now turn to our empirical analysis to shed light on whether, on average, the substitution effect or the scale (quantity) effect dominates.

3. RESEARCH DESIGN

(a) Data on human trafficking and prostitution laws

One of the biggest challenges of doing research on human trafficking is the scarcity of reliable and comparable data. Human trafficking is a clandestine, criminal activity, with those being trafficked and involved in such activities being part of ‘hidden populations’ (Tyldum & Brunovskis, 2005). Therefore, the true number of human trafficking victims is unknown (Belser, de Cock & Mehran, 2005). Currently, existing data available across countries – although reflecting fragmented information only – can be divided into three categories: characteristics of victims, trafficking routes, and country reports (Kangaspunta, 2003). Extensive data on victims have been collected by the International Organization for Migration (IOM) and utilized for micro-analyses on the characteristics of human trafficking **(**Di Tommaso, Shima, Strøm & Bettio, 2009; Mahmoud & Trebesch, 2010). The reports by the United Nations Office on Drugs and Crime (UNODC, 2006, 2009), the US Department of State (2001-2011) and the Protection Project (2002) provide information on trafficking routes; some of them being utilized in recent gravity analyses on human trafficking (Akee et al., 2010a, b).

Among the currently available sources, the aforementioned Report on Trafficking in Persons: Global Patterns (UNODC, 2006) has also collected and presented data on incidences of human trafficking at the country level; therefore the utilization of this report best serves the purpose of our study. The UNODC Report provides cross-country information on the reported incidence of human trafficking in 161 countries, measuring trafficking flows on a six-point scale. To the best of our knowledge, this report is the only source with comparable data across countries and covering most countries in the world, which also differentiates between the intensity levels of human trafficking inflows. Our empirical analysis is based on the UNODC data given that we want to test the impact of prostitution laws on the *degree* of human trafficking.

Our dependent variable (*Trafficking*) captures the incidence of human trafficking into a country, taken from the Index on Incidence of Reporting of Destination Countries provided by the UNODC Report. The Index has ordinal scores ranging from 0 to 5; 0 indicates no reported inflow of human trafficking and 5 implies very high reported inflows (see appendix A for more details). The Index was constructed based on the Global Programme against Trafficking in Human Beings (GPAT) Database, which includes reviews on publications by 113 institutions reporting incidences of human trafficking in 161 countries over the 1996-2003 period. Cases reported by these institutions were collected in the GPAT Trafficking Database and used to determine the scores on the incidence of human trafficking in countries of destination, origin and transit, respectively. The 113 institutions represent major informational sources on human trafficking and consist of international organizations (32%), governmental institutions (27%), research institutes (18%), NGOs (18%) and the media (5%) (UNODC, 2006, p. 112). The Index has some limitations. First, it uses cross-sectional aggregated information from the collection period of 1996-2003 – therefore a panel analysis controlling for unobserved country and time effects is not possible. Second, the geographical distribution of the source institutions is biased towards Western Europe (29%) and North

America (18%),[13] suggesting that the data collected might lead to an overestimation of human trafficking incidences in these regions *relative to* other regions due to reporting biases. In absolute terms, such reporting biases are likely to underestimate the incidence of trafficking in countries outside Western Europe and North America. We try to reduce the problem by controlling for regional effects in our estimation. The countries in each category (score) of the index are listed in appendix B. The main limitation of the UNODC data however is that reporting will arguably depend on the quality of institutions, judicial and police effectiveness, in particular, but also on how aware the international community is about trafficking problems in a particular country. However, a fair share of the information the UNODC data covers comes from research institutes (18%), NGOs (18%), and the media (5%), mitigating the problem of using official sources – the problem that other existing data such as crime statistics confront more severely.

Our dependent variable thus does not reflect actual trafficking flows, and needs to be interpreted cautiously.[14] Rather than being interested in actual absolute numbers, our analysis focuses on the effect of legal prostitution on trafficking flows. To the extent that – controlling for the substantial number of variables we employ below – the degree of distortions in reported trafficking intensities is not correlated with whether or not prostitution is legal, the low quality of data will not bias our coefficient estimates, but will only make it less likely the coefficients are statistically significant. While probably not sharply distinguishing between different degrees of the crime, the indicator is arguably positively correlated with actual cases of trafficking, so the index remains meaningful. To mitigate the problem that the ordered categories of our dependent variable may not capture true differences among destination countries, we also constructed a binary dependent variable which is one for medium, high, and very high inflows, and estimated the regression with probit rather than ordered probit. Our results are unchanged. Still, the results should be interpreted with caution.

Our main independent variable of interest is *Legalized Prostitution*, which indicates the legal status of prostitution. Following Outshoorn's (2004) typology on prostitution regimes, we construct two dummy variables indicating: 1) whether or not prostitution is legally allowed,[15] being 1 in this case and 0 otherwise; 2) whether or not 3rd party involvement (such as brothel operation) is additionally legally allowed, being 1 in the case that brothels/pimping are legal and 0 otherwise.[16] In our analysis, we focus on the effects of the former – legalized prostitution – while the latter is employed to test whether the additional legality of brothels creates an additional effect. The source data cover annual variations in prostitution legislation in each country from 1995[17] to 2003, but there is very little change over time in most countries and variance in the Legalized Prostitution variable is dominated by cross-country variation. The coding is based on information from the Country Report on Human Rights Practice (US Department of State, 1999-2008) and country reports on progress in women's rights submitted to the Committee on the Elimination of Discrimination against Women (CEDAW Committee).[18] Appendix C shows the distribution of the legal status of prostitution in the world.

(b) Estimation strategy

Our regressions are based on cross-section data, with reported inflows of human trafficking referring to the 1996-2003 period. We include as many countries as possible given the availability of data for the dependent and the *Legalized Prostitution* variables. We therefore impute the missing data on the control variables. Specifically, we impute continuous control variables using multivariate normal regression, with 20 imputations, while the democracy dummy is imputed with logistic regression.[19] As will be shown in table 1, our results do not depend on whether or not we impute these data prior to estimation. While striving to include all relevant country observations, we nevertheless exclude low-income countries from the sample, as defined by the World Bank (2010). Trafficking for the purpose of sexual

exploitation requires that clients in a potential destination country have sufficient purchasing power to pay for such services, as well as requiring domestic supply to be somewhat constrained. Neither of these pre-conditions is likely to hold in low-income countries: domestic clients are too poor to be attractive clients for potential traffickers and the widespread poverty among the domestic population ensures that there is no shortage of domestic supply. Low-income countries are therefore arguably outside the relevant sample population.[20]

Our estimation equations take the following form:

$$y_i = \alpha + \beta_1 Prostitution_i + \beta_2' X_i + \beta_3 Region_i + \varepsilon_i, \quad (1)$$

where y_i represents the reported degree of human trafficking inflows in country i, and $Prostitution_i$ is our dummy variables for whether or not prostitution is legal. X_i is the vector of explanatory variables, and ε_i is the idiosyncratic error term. Given the cross-sectional nature of our dataset, we cannot control for unobserved country heterogeneity by including country fixed effects. Nor can we find a suitable and valid instrument that would be partially correlated with our *Legalized Prostitution* variable, but uncorrelated with unobserved country heterogeneity. To mitigate any bias this might introduce, and in order to capture at least some heterogeneity across groups of countries, we include regional fixed effects instead, denoted as $Region_i$.[21] In all regressions, we use robust standard errors. The dependent variable is categorical and ordinal. We therefore use ordered probit to estimate the main equations; the results are robust toward using ordered logit instead.

Our baseline estimation accounts for the most important determinants of human trafficking flows, according to the previous literature (Akee et al., 2010a, b; Cho, 2011, 2012; Jakobsson & Kotsadam, 2011). We include measures of (log) per capita income and (log)

population size from the World Bank's World Development Indicators (2010) as control variables, since richer and more populous countries should experience a higher incidence of human trafficking inflows. In addition, we include a rule of law indicator from the World Bank Governance Indicators (Kaufmann, Kray & Mastruzzi, 2009), ranging from -2.5 to 2.5, with higher values corresponding to better outcomes. We expect a better rule of law to reduce trafficking flows due to traffickers facing a higher risk of prosecution.[22] An index indicating democratic governments is taken from Cheibub, Ghandi & Vreeland (2010). The dummy is coded as 1 if multiple parties are legally allowed and exist outside the regime front, as well as if the selection of the executive and the legislature involves an either direct or indirect mandate from an electorate (Cheibub et al., 2010). All other things being equal, democracies tend to have more open borders, which lowers the risk of detection for traffickers. We include the share of Catholics living in a country in order to control for cultural effects.[23] Cho (2012) has shown that countries with larger shares of Catholics have smaller human trafficking inflows. As religiosity reduces sexual tolerance, it arguably reduces demand for prostitution services and thus implies less trafficking, all else equal (Saguy, 1999). The control variables refer to the year 1995, so they precede the dependent variable, with the exception of the rule of law indicator, which is from 1998.[24] Finally, we include the (logged) share of pre-existing migrants in a country because potential trafficking victims might be attracted by the existence of pre-existing migrant networks (Mahmoud & Trebesch, 2010). Data are taken from the UNDP Human Development Report (2010) and are only available for 1990 and 2005. We take the year 1990 to avoid problems with endogeneity.[25] Appendix D provides more information on the sources and definitions of these data, while appendix E reports descriptive statistics.

4. RESULTS

As argued in section 2, the effect of legalized prostitution on trafficking inflows is theoretically indeterminate due to opposing scale and substitution effects. We now analyze which effect dominates in our global sample of countries. Column 1 of table 1 shows the basic results with the sample excluding low-income countries. Data for six countries were incomplete and are thus imputed.[26] Countries where prostitution is legal experience a larger reported incidence of human trafficking inflows, with the estimated coefficient statistically distinguishable from zero at the five percent level. Regarding the control variables, reported trafficking declines with better rule of law, at the ten percent level of significance. Countries with higher GDP per capita, larger populations, larger stocks of pre-existing migrants, and a democratic political regime experience a larger reported incidence of trafficking inflows, with all of these results being statistically significant at the five percent level. The share of Catholics is marginally insignificant, with a negative coefficient. The regional dummies are jointly significant at the five percent level. As can be seen, relative to the omitted reference category of Western Europe and other industrialized countries, all regional dummies, with the exception of East Asia, have negative coefficients. However, only the dummies for developing Europe and Latin America are significant at conventional levels.

Column 2 includes a dummy that indicates whether or not third-party involvement in prostitution is legal. It takes the value of one if brothel operation or pimping is legal and zero otherwise (i.e., when prostitution is illegal or only self-employed prostitution is legal). The coefficient of the dummy is marginally insignificant, while the dummy for legal prostitution in general remains almost unchanged. This might imply that legalization of prostitution, per se, is more important in explaining human trafficking than the type of legalization, i.e., whether brothel operations or pimping are also allowed. This suggests that our assumption of a single prostitution market is justified. Note however that the dummy for legal third-party involvement is different from the legal prostitution dummy in only 10 countries. If we omit

the legal prostitution dummy, the dummy indicating the legality of brothels and pimping is significant at the ten percent level (column 3).

In column 4 we include low-income countries, while column 5 exclusively focuses on high-income countries instead.[27] As can be seen, the effect of legal prostitution is no longer significant when low-income countries are included. As we have argued in the previous section, low-income countries are largely irrelevant for international traffickers and the inclusion of these countries in the sample injects so much noise into the estimations as to render the identification of a significant effect of the prostitution variable more difficult. In the high-income country sample, the coefficient of legal prostitution is significant at the ten percent level, with a larger coefficient, indicating that the effect of legalized prostitution, compared to middle-income countries, is stronger in high-income countries.[28] The significant coefficient in this sample is consistent with Jakobsson and Kotsadam's (2011) results for the European Union. Columns 6-8 illustrate changes in the method of estimation to test for robustness. Column 6 uses OLS instead of ordered probit. Finally, we report results without imputing our data in column 7 (with ordered probit) and column 8 (with OLS). For the most part, the results remain unchanged.[29]

The substantive effects of the statistically significant variables are also important. When calculating these effects for the second highest level of the dependent variable (i.e., a value of 4), the results in column 7 imply that an increase in the rule of law by one standard deviation centered around the mean reduces the baseline probability of being in this second highest category (which is 12.1 percent) by 1.8 percentage points. A one standard deviation increase in the share of Catholics among the population reduces the probability by almost 5 percentage points, while a corresponding increase in per capita GDP increases the probability by 2.5 percentage points. The corresponding number for both population size and the stock of migrants is around 1.3 percentage points. Democracies have a 13.4 percentage points higher probability of receiving high reported inflows. When prostitution is legal the probability to be

in this second highest category is more than 12.8 percentage points higher. For comparison, the probability of being in the lowest category of receiving no reported inflow of human trafficking is 5.3 percentage points lower in countries with legal prostitution. The corresponding values for the other categories are -10 (at a value of 1), -8.6 (value of 2), +8.6 (value of 3), and +1.2 (value of 5) percentage points.

Figure 1 shows the partial leverage plot based on the linear OLS model of column 8. While OLS is typically not the estimator of choice for strictly positive ordered categorical dependent variables (not least because it produces negative predicted values), such a plot allows us to check whether our results for the legal status of prostitution appear to be driven by a few influential outliers. Figure 1 shows that this is not the case.

– Insert Figure 1 here –

5. ROBUSTNESS TESTS

We perform two important robustness tests. In table 2 we estimate regional jackknife analyses, in which all countries of one particular region are dropped from the analysis one at a time in order to test whether the results are driven by the presence of observations from a specific region in the sample. The results show that none of the regions substantially drives the coefficient of prostitution laws. The individual exclusion of each region leaves the coefficient significant at the ten percent level at least.

Next we turn to the robustness of our results to the choice of control variables. As the theory and empirics of human trafficking flows have only begun to be seriously addressed recently, there is still considerable uncertainty over which explanatory variables to include among its determinants. To examine the sensitivity of the results reported above, we therefore employ (variants of) the extreme bounds analysis (EBA), as proposed by Leamer (1983) and Levine and Renelt (1992), as our second test for robustness.[30] EBA enables us to examine whether our main result that countries with legal prostitution experience a larger reported

inflow of human trafficking is indeed robust, independent of which additional variables are also included in the set of control variables.

To conduct an EBA, we estimate equations of the following form:

$$y_i = \beta_M M + \beta_F F + \beta_Z Z + v \quad , \tag{2}$$

where y_i again measures reported human trafficking flows to country *i; M* is a vector of "commonly accepted" explanatory variables and *F* is a vector containing the variables of interest (i.e., the legal prostitution dummy). The vector *Z* contains up to three possible additional explanatory variables (as in Levine & Renelt, 1992), which, according to existing literature, might be causally related to the dependent variable. The error term is *v*.

The EBA-test for a variable in *F* states that if the lower extreme bound for β_F — i.e., the lowest value for β_F minus two standard deviations — is negative, while the upper extreme bound for β_F — i.e., the highest value for β_F plus two standard deviations — is positive, the variable *F* is *not* robustly related to human trafficking flows. Sala-i-Martin (1997) argues that this criterion is far too restrictive for any variable to pass the test. If the distribution of the parameter of interest has both positive and negative support, then a researcher is bound to find at least one regression model for which the estimated coefficient changes sign if enough regressions are run. Consequently, not only do we report the extreme bounds, but also the percentage of the regressions in which the coefficient of the variable *F* is statistically different from zero at the five percent level.

Moreover, instead of merely analyzing the extreme bounds of the estimates for the coefficient of a particular variable, we follow Sala-i-Martin's (1997) recommended procedure and analyze the entire distribution. Accordingly, we also report the unweighted parameter estimate of β_F and its standard error, as well as the unweighted cumulative distribution function, CDF(0).[31] The latter represents the proportion of the cumulative distribution

function lying on each side of zero. CDF(0) indicates the larger of the areas under the density function (either above or below zero). Therefore, CDF(0) always lies between 0.5 and 1.0.

The vector *M* contains the same variables as the regressions in the tables above. Specifically, we focus on the specification shown in column 1 of table 1, again using ordered probit with robust standard errors, and again imputing the explanatory variables.[32] To test for the robustness of our results we have collected a total of 27 additional variables which could potentially influence the level of human trafficking flows and are potentially related to the effect of prostitution laws.[33]

Our choice of variables derives from an extensive review of the existing literature (Akee et al., 2010a, b; Cameroon & Newman, 2008; Cho, 2011, 2012; Danailova-Trainor & Belser, 2006; Jakobsson & Kotsadam, 2011; Mahmoud & Trebesch, 2011; and Potrafke, 2011). It covers four important aspects of potential determinants of human trafficking, namely international movement of people, societal vulnerability to human trafficking, crime, and policies combating such crime (Cho, 2012). Besides the 14 variables used for the baseline estimations, 27 additional variables are listed below. We use the (logged) number of incoming tourists to measure short-term flows of human movement across borders. We also include two measures of a country's visa restrictions, indicating the number of countries whose citizens are allowed to enter the country without a visa.[34] The share of a country's population living in cities is included because urbanization may create demand for cheap services in, for example, household work and construction which trafficking victims can potentially provide, while trade (as a percentage of GDP) captures flows of goods and services which may impact on human movements. We include indices measuring the existence of laws for the prosecution of perpetrators engaged in human trafficking, the protection of victims, and the prevention of human trafficking (taken from Cho et al., 2011) to check whether the legal status of prostitution spuriously picks up the effect of policies aimed at combating human trafficking. The share of right-wing governments in power over the 1990-95 period is included, as right-

wing governments can reasonably be expected to take a tougher stance on illegal migration, an important source of human trafficking inflows. Unemployment rates among men and women and employment in the agricultural sector (as a percentage of total employment) are also included because they have the potential to capture the demand for cheap and possibly exploitative labor in society outside the market for prostitution. Literacy is included because a higher level of education can lead to a higher level of public awareness towards human trafficking. Mortality rates of children under five is a proxy for the basic living conditions in a country, a pulling factor of international migration. The shares of Muslims and, respectively, Protestants in the population are included to account for potentially varying moral values, so the two groups might have different propensities to consume the services of trafficked persons (Potrafke, 2011). We include an index measuring a country's media freedom, taken from Freedom House (2010). Arguably, a freer media is more likely to report on delicate issues such as human trafficking, making it more likely that trafficking flows will be reported. Dummies for English, French, Spanish, Portuguese, and German speaking countries, as well as dummies for British, Socialist, French, German, and Scandinavian legal origin are included to account for some additional group heterogeneity among countries. All variables and their sources are listed in appendix B.

The results for the EBA models are presented in table 3, based on 3,303 regressions (with 116 observations each). Following Sala-i-Martin, we use a CDF(0) value of 0.90 as the threshold above which we consider variables to be robust. As can be seen, the results mirror those of table 1 above. With the exception of four of the regional dummies, all variables used for the baseline estimations pass the robustness criterion. The effect of the legal prostitution dummy is clearly robust to the choice of explanatory variables, as indicated by a CDF(0) of 0.99. The dummy is significant at the five percent level (at least) in almost all of the 3,303 regressions run.

6. CASE STUDIES

Our empirical findings so far indicate that the scale effects of the expansion of prostitution markets after legalization dominate the substitution effects away from human trafficking. However, our quantitative empirical analysis is cross-sectional. As pointed out already, this means we cannot control for unobserved country heterogeneity. Also, while we have established that the legalized status of prostitution is associated with a higher incidence of trafficking inflows, a cross-sectional analysis cannot provide a conclusion as to whether legalizing prostitution would result in increased trafficking after legalization. In order to provide anecdotal evidence that our estimated effect of legalized prostitution is likely to capture a causal rather than a spurious effect, we now briefly analyze three country case studies, namely Sweden, Germany and Denmark. These three countries changed their prostitution law during the 1996-2003 period our investigation covers, albeit in opposite directions. Sweden prohibited prostitution in 1999, while Germany further legalized prostitution by allowing third-party involvement in 2002. Denmark, where prostitution as a main income source was previously illegal, decriminalized prostitution in 1999. Since then, self-employed prostitution is legal but brothel operation is still forbidden in Denmark.

We have sufficient data for Germany to compare the number of trafficking victims in the pre- and post-legalization period. For Sweden and Denmark, we lack such data. We therefore compare the available data for Sweden after the prohibition of prostitution with data for Denmark, where prostitution was legalized. Sweden and Denmark have similar levels of economic and institutional development, and a similar geographic position, which, as our quantitative analysis shows, are important determinants of human trafficking.

Sweden amended its prostitution law in 1999 by prohibiting all forms of commercial sex and punishing the purchase of sex with a fine or imprisonment for a maximum of six months. Prior to the amendment, Sweden allowed self-employed individual prostitution while prohibiting brothel operation **(**Di Nicola et al., 2005). The amendment was introduced after

long debates over the root causes of prostitution in Swedish society, with the new law stating that prostitution by nature is always exploitative, and that the purchase of sexual services provided by women and girls amounts to discrimination against them (Ekberg, 2004). Furthermore, this new law links prostitution to human trafficking and specifically states the former as an alleged cause of the latter (Ekberg, 2004). Ekberg estimates – based on various cases reported to the Swedish Ministry of Industry, Employment, and Communications – that the number of prostitutes in Sweden decreased rather substantially from 2,500 in 1999 to 1,500 in 2002, with street prostitution in particular decreasing by between 30-50% after the prohibition of prostitution. At the same time, Ekberg points out that even though so-called 'hidden prostitution' via internet and escort services may have increased, it is generally agreed that the prostitution market in Sweden contracted after prohibition, as a buyer now risks facing criminal charges for purchasing sex (Di Nicola et al., 2005; Ekberg, 2004; Jakobsson & Kotsadam, 2011). Such evidence of a shrinking market indicates that the prohibition of prostitution in this particular case has a negative scale effect on prostitution markets, as theory predicts.

However, whether or not human trafficking inflows have reduced after the prohibition in Sweden is a trickier question to answer because of the lack of sufficient time-series data on the number of victims. Di Nicola et al. (2005) provide annual estimates of human trafficking victims for sexual exploitation in Sweden during the 2000-03 period, suggesting anywhere between 200 to 600 victims per year. This would mean a share of trafficked individuals among the estimated 1,500 prostitutes of between 13.3% and 40%. There are, however, no available nationwide statistics on trafficking victims prior to the amendment in 1999 and therefore, a direct comparison between the pre- and post-prohibition periods is impossible. However, for the substitution effect to dominate the scale effect, as well as for the number of trafficked prostitutes to have been higher after prostitution was rendered illegal, it would need to be shown that the share of trafficked prostitutes was less than 8% at the minimum estimate,

or 24% at the maximum estimate of 2,500 prostitutes prior to 1999. A compositional shift from 13.3% to 8% (minimum estimate) or from 40% to 24% (maximum estimate) is of course possible, but would appear to require quite a large shift.

A comparison between Sweden and Denmark, a neighboring country with similar socio-economic conditions yet reforming their prostitution laws in the opposite direction, tentatively suggests that compositional differences across regimes legalizing and prohibiting prostitution have been small. Since 1999, Denmark has allowed individual, self-employed prostitution, while prohibiting brothel operation, representing the same level of legality in prostitution as Sweden had before the 1999 reform. The ILO estimates the stock of human trafficking victims in Denmark in 2004 at approximately 2,250, while the estimated number in Sweden is about 500 (Global report data used in Danailova-Trainor and Belser, 2006).[35] This implies that the number of human trafficking victims in Denmark is more than four times that of Sweden, although the population size of Sweden (8.9 million) is about 40% larger than that of Denmark (5.3 million). Importantly, the Global report also estimates the number of prostitutes in Denmark – about 6,000 – to be three to four times larger than the number in Sweden. This comparison thus tentatively suggests that the share of trafficked individuals among all prostitutes is fairly similar in the two countries, despite one prohibiting and the other permitting prostitution. This in turn, would suggest that compositional changes and thus the substitution effect are likely to have been small.[36]

Contrary to Sweden, Germany introduced a more liberal prostitution law in 2002. Today, prostitution in Germany is regulated by law and regarded as a 'regular job' subject to tax payment and retirement schemes (Di Nicola et al., 2005). Prior to 2002, Germany only allowed individual, self-employed prostitution without third party involvement. Having a liberal prostitution regime, Germany is known to have one of the largest prostitution markets in Europe, with about 150,000 people working as prostitutes (Global report data used in Danailova-Trainor and Belser, 2006). This means that the number of prostitutes in Germany is

more than 60 times that of Sweden, while having a population (82 million inhabitants) less than 10 times larger. In terms of human trafficking victims, the ILO estimated the stock of victims in Germany in 2004 to be approximately 32,800 – about 62 times more than in Sweden (Danailova-Trainor & Belser, 2006). Again, the share of trafficked individuals among all prostitutes appears to be quite similar in both countries, corroborating the view that any compositional differences across prohibitionist and legalized prostitution regimes are likely to be small. Additionally, Di Nicola et al. (2005) provide annual estimates of trafficking victims used for sexual exploitation in Germany over the 1996-2003 period, which can shed some light on the changing number of trafficked prostitutes. The estimates show that the number of victims gradually declined between 1996/97, the first years of data collection, and 2001, when the minimum estimate was 9,870 and the maximum 19,740.[37] However, this number increased upon fully legalizing prostitution in 2002, as well as in 2003, rising to 11,080-22,160 and 12,350-24,700, respectively.[38] This is consistent with our result from the quantitative analysis indicating a positive correlation between the legal status of prostitution and inward trafficking.

7. CONCLUSION

This paper has investigated the impact of legalized prostitution on inflows of human trafficking. According to economic theory, there are two effects of unknown magnitude. The scale effect of legalizing prostitution leads to an expansion of the prostitution market and thus an increase in human trafficking, while the substitution effect reduces demand for trafficked prostitutes by favoring prostitutes who have legal residence in a country. Our quantitative empirical analysis for a cross-section of up to 150 countries shows that the scale effect dominates the substitution effect. On average, countries with legalized prostitution experience a larger degree of reported human trafficking inflows. We have corroborated this quantitative evidence with three brief case studies of Sweden, Denmark and Germany. Consistent with the

results from our quantitative analysis, the legalization of prostitution has led to substantial scale effects in these cases. Both the cross-country comparisons among Sweden, Denmark and Germany, with their different prostitution regimes, as well as the temporal comparison within Germany before and after the further legalization of prostitution, suggest that any compositional changes in the share of trafficked individuals among all prostitutes have been small and the substitution effect has therefore been dominated by the scale effect. Naturally, this qualitative evidence is also somewhat tentative as there is no "smoking gun" proving that the scale effect dominates the substitution effect and that the legalization of prostitution definitely increases inward trafficking flows. The problem here lies in the clandestine nature of both the prostitution and trafficking markets, making it difficult, perhaps impossible, to find hard evidence establishing this relationship. Our central finding, i.e., that countries with legalized prostitution experience a larger reported incidence of trafficking inflows, is therefore best regarded as being based on the most reliable existing data, but needs to be subjected to future scrutiny. More research in this area is definitely warranted, but it will require the collection of more reliable data to establish firmer conclusions.

The likely negative consequences of legalized prostitution on a country's inflows of human trafficking might be seen to support those who argue in favor of banning prostitution, thereby reducing the flows of trafficking (e.g., Outshoorn, 2005). However, such a line of argumentation overlooks potential benefits that the legalization of prostitution might have on those employed in the industry. Working conditions could be substantially improved for prostitutes – at least those legally employed – if prostitution is legalized. Prohibiting prostitution also raises tricky "freedom of choice" issues concerning both the potential suppliers and clients of prostitution services. A full evaluation of the costs and benefits, as well as of the broader merits of prohibiting prostitution, is beyond the scope of the present article.

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NOTES

[1] See Batsukova (2007) and Ekberg (2004), then Swedish Minister of Industry, Employment, and Communications, as well as the New York Times regular commentator Nicholas D. Kristof (International Herald Tribune, 2011) for similar views.

[2] On the other hand, the *International Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime* (2000), does not clearly state its position concerning prostitution.

[3] In addition, Di Nicola, Orfano, Cauduro and Conci (2005) provide descriptive statistics focusing on 11 EU countries. According to their results, stricter prostitution laws are correlated with reduced flows of human trafficking. In ongoing research following this paper, Hernandez and Rudolph (2011) also examine the effect of legalization of prostitution laws on trafficking flows to 13 European countries. However, the fixed country dummies included in their analysis do not allow for the exploitation of the cross-sectional variation in prostitution laws. Their results reflect the few changes in the laws of the sample countries over the 1998-2009 period.

[4] Note that we can remain agnostic as to whether any of those individuals actually supplying prostitution services do so "voluntarily." What matters is that either prostitutes themselves, or their pimps forcing them to prostitute themselves, are willing to supply prostitution services.

[5] With regard to prostitution, the apparent physical attractiveness and age of prostitutes can be crucial endowments determining the price level of their sexual services (Edlund & Korn, 2002).

[6] Wages that forced prostitutes (e.g., trafficking victims) actually receive may not be high, with the profits earned by their pimps being high instead.

[7] Nussbaum (1999) describes the similarities of bodily risks and working conditions colonoscopy artists and prostitutes face and the level of skills required for these professions. By doing so, she challenges the rational basis of the social stigma imposed on prostitutes (i.e., prostitutes as fallen women lacking bodily integrity).

[8] We say "almost" invariably, since one could construct an argument that the illegality of prostitution renders the service more interesting and thus in higher demand. There might be some clients who are

drawn to prostitution mainly because of its illegality, but we think this phenomenon is unlikely to be common. For further discussions on clients' risk aversion and decision to buy sex, see Cameron and Collins (2003), and Giusta et al. (2009).

[9] The large size of the shadow economy in most countries suggests that states do not prosecute tax evasion vigorously (Schneider, 2005).

[10] Consistent with this proposition, Danailova-Trainor and Belser (2006) show that human trafficking is higher in countries with a larger sex industry.

[11] A domestic individual's willingness to work as a prostitute also depends on their opportunities in other labor markets.

[12] If there were severe constraints on the expansion of prostitution services provided by domestic individuals despite its legalization, then the share of trafficked prostitutes could even increase. This will typically not be the case.

[13] The distribution of the other regions is: Asia (11%), Africa (5%), Central and Eastern Europe (5%), Latin America (4%), Oceania (4%) and the CIS (2%), in addition to 22% of institutions being categorized as international.

[14] There is a concern that the UNODC data does not capture the number of human trafficking victims because the data are not weighted by the (reported) number of victims but weighted by the frequency the subject is mentioned in the reports. In fact counting the number of victims is one of the most challenging problems in human trafficking research and the literature has not yet agreed on appropriate estimation methods (Kangaspunta, 2003). The UNODC (2006) report explains that weighting by the quoted number of victims distorts the validity of information to a large extent because quoted figures of victims from different sources tend to contradict each other.

[15] Prostitutes can be self-employed or employed by others (through brothels, for example). The vast majority of countries with legalized prostitution allow self-employed, street prostitution only, but there are several countries which allow both self-employment and brothel operation. In our sample, there is no country which legalized brothel operation while prohibiting self-employment.

[16] Jakobsson and Kotsadam (2011) also follow this method and construct a variable for prostitution legislation in 2003 for 39 European countries.

[17] That is, one year prior to the collection of data on the incidence of human trafficking, the dependent variable.

[18] In constructing the prostitution law variable, we use the CEDAW country reports for the 1995-1998 period, and the US Human Rights Reports for the 1999-2008 period.

[19] Coefficients and standard errors are adjusted according to Rubin's (1987) combination rules.

[20] Tellingly, there is only one low-income country (Cambodia) with a high incidence of inward trafficking and in this case the demand is driven by foreign tourists. Modeling the international sex tourism industry is beyond the scope of this paper.

[21] We additionally included dummies indicating income groups. However, given that these dummies did not turn out to be jointly significant at conventional levels, we exclude them from the estimations. Our results are not affected by this.

[22] The effect of prostitution laws on human trafficking flows might also be affected by the enforcement of international treaties against trafficking. When we control for government's compliance with anti-trafficking laws regarding the prosecution of perpetrators, protection of victims, and prevention of the crime (using data constructed in Cho, Dreher & Neumayer, 2011) our results are not affected. Among the three indices we use to measure compliance with anti-trafficking policies, only protection is significant at conventional levels, with the expected positive coefficient. We include these indices in our tests for robustness below. Another interesting question would be to investigate the effect of legalized prostitution on the enforcement of anti-trafficking policies. We leave this question for future research.

[23] We do not include a similar variable for the share of Muslims in our main estimations since this variable is highly correlated with our regional dummy variable for North Africa and the Middle East. However, we include such a variable in our extreme bounds analysis in the robustness section.

[24] The index is also available for one prior year, 1996. However, the number of observations is substantially lower so we prefer using data from 1998 instead. Note that the coding for the prostitution dummy refers to the year 1995. For some countries, prostitution law changed during the 1996-2003 period: Bangladesh (2000), Colombia (2002), Germany (2002), Denmark (1999), Greece (1999),

Hungary (1999), Netherlands (2000), New Zealand (2003), and Sweden (1999). Our results are robust to the exclusion of these countries.

[25] A set of variables of potential importance we cannot include here refers to countries' immigration policies. While such policies are available for selected industrial countries, they are not available for the large sample of less developed countries in our sample. We address one part of immigration policies by including the countries' visa restrictions in our robustness section. Our results do not depend on this.

[26] These are Cuba, Hong Kong, Iraq, Libya, Qatar, and Serbia.

[27] The World Bank (2010) defines these groups to be those with a 2009 GNI per capita below $995 (low income) and $12,276 or more (high income). In column 4, data for ten countries are imputed: Afghanistan, Cuba, Hong Kong, Iraq, Democratic Republic of Korea, Libya, Myanmar, Qatar, Serbia, and Zimbabwe. In column 5, data for Hong Kong and Qatar are imputed.

[28] Note that the regional dummies cannot be included in this regression given that the World Bank's regional classification includes high income countries in the Western and other industrialized countries group.

[29] For these models, we can also calculate goodness of fit statistics that cannot readily be provided for the imputed models. In the ordered probit model (column 7), McFadden's Adjusted R^2 is 0.16, while the adjusted R-squared for the OLS model is 0.50 (column 8).

[30] The Stata code we use follows Gassebner, Lamla and Sturm (2011).

[31] See Sturm and de Haan (2001).

[32] The results reported below consequently reflect the impact of the additional control variables rather than those of different samples.

[33] The control variables again refer to the year 1995, with the exception of the share of right-wing governments and anti-trafficking policies. The share of governments refers to the 1990-1995 period, as we expect the type of government over a longer period to be more important than the stance of a government in a particular year. The policy indices are not available for 1995, so we take the average over the 1996-2003 period (i.e., the same years the dependent variable refers to).

[34] One of the measures considers a country to be visa-free if one can obtain a visa upon arrival at the border, whereas the other counts this as a visa restriction.

[35] We thank Gergana Danailova-Trainor and Patrick Belser for sharing their data. The estimates of the ILO are in line with Di Nicola et al.'s estimate given that the duration of the victims being trafficked is generally between 3 to 18 months (Belser et al., 2005; Di Nicola et al., 2004).

[36] Part of the demand in Denmark might however arise due to the change in Swedish prostitution laws and vice versa. As pointed out by Collins and Judge (2010), clients can be expected to react to inter-jurisdictional differences in regulations. Swedish clients might cross the border and use prostitution services in Denmark, while prostitution and trafficking in Sweden might be higher if prostitution were illegal in Denmark as well.

[37] On the other hand, the number of victims identified by the police varies from year to year without a clear pattern, probably reflecting the level of enforcement and policy priority rather than the true magnitude of the problem (see German Federal Police Office, 1999-2009).

[38] This increase is partly attributable to the change in the definition of human trafficking victims in 2003; German nationals are also included in the category from 2003 onwards. However, this change does not fully explain the increase because German nationals amount to only 10.3% of all victims in the given year (German Federal Police Office, 2005).

Table 1: Human Trafficking and Prostitution, cross section

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legal prostitution dummy	0.665**	0.612**		0.322	0.948*	0.625**	0.694**	0.662***
	(2.38)	(2.18)		(1.45)	(1.83)	(2.61)	(2.47)	(2.74)
Legal brothels dummy		0.555	0.689*					
		(1.60)	(1.95)					
Rule of law	-0.555*	-0.547*	-0.361	-0.322	-0.827	-0.559**	-0.536*	-0.546**
	(1.86)	(1.83)	(1.42)	(1.41)	(1.45)	(2.13)	(1.75)	(1.99)
(log) population	0.232**	0.241***	0.235***	0.195**	0.530**	0.177**	0.236**	0.187**
	(2.50)	(2.60)	(2.59)	(2.37)	(2.33)	(2.09)	(2.49)	(2.11)
(log) GDP per capita	0.664**	0.627**	0.495**	0.444**	0.787	0.645***	0.674**	0.673***
	(2.37)	(2.23)	(2.01)	(2.27)	(1.31)	(2.72)	(2.27)	(2.67)
Democracy dummy	0.780**	0.750*	0.801**	0.614**	0.219	0.635*	0.813*	0.678*
	(2.02)	(1.94)	(2.07)	(2.28)	(0.31)	(1.91)	(1.91)	(1.83)
(log) migrant stock	0.228**	0.221**	0.244**	0.258***	0.183	0.200**	0.222**	0.196**
	(2.28)	(2.21)	(2.43)	(2.91)	(0.86)	(2.23)	(2.10)	(2.07)
Share of catholics	-0.006	-0.006	-0.005	-0.005	-0.010*	-0.005	-0.007*	-0.006
	(1.48)	(1.53)	(1.21)	(1.35)	(1.92)	(1.37)	(1.65)	(1.57)
East Asia dummy	0.251	0.159	-0.059	0.173		0.379	0.312	0.456
	(0.36)	(0.23)	(0.09)	(0.29)		(0.59)	(0.42)	(0.65)
Developing Europe dummy	-1.057*	-1.148*	-1.199**	-1.101**		-0.909*	-1.050*	-0.890
	(1.77)	(1.94)	(2.06)	(2.10)		(1.72)	(1.69)	(1.59)
Latin America dummy	-1.658***	-1.750***	-1.561***	-1.376***		-1.478***	-1.518***	-1.361**
	(3.20)	(3.35)	(3.15)	(3.08)		(2.99)	(2.87)	(2.61)
MENA dummy	-0.726	-0.882	-1.056**	-0.925**		-0.587	-0.723	-0.592
	(1.26)	(1.53)	(1.97)	(1.97)		(1.04)	(1.17)	(0.93)
South Asia dummy	-0.566	-0.633	-0.866	-1.530**		-0.280	-0.526	-0.224
	(0.92)	(1.02)	(1.38)	(2.37)		(0.51)	(0.84)	(0.39)
Sub-Sahara Africa dummy	-0.848	-0.942	-0.979	-0.905*		-0.696	-0.734	-0.566
	(1.36)	(1.51)	(1.62)	(1.75)		(1.16)	(1.07)	(0.83)
Sample	no poor	no poor	no poor	all	rich	no poor	no poor	no poor
Method	O. Probit, imputed	O. Probit, imputed	O. Probit, imputed	O. Probit, imputed	O. Probit, imputed	OLS imputed	Order Probit	OLS
Number of countries	116	116	116	150	46	116	110	110

Absolute t-statistics in parentheses; * (**, ***) indicates significance at 10 (5, 1) percent level.

Table 2: Regional Jackknife, Human Trafficking and Prostitution, Ordered Probit, imputed

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Legal prostitution dummy	0.704*	0.794***	0.603*	0.565*	0.696**	0.652**	0.677**
	(1.84)	(2.63)	(1.91)	(1.84)	(2.47)	(2.32)	(2.34)
Rule of law	-0.390	-0.641**	-0.552*	-0.536	-0.631*	-0.537*	-0.506
	(1.26)	(2.02)	(1.94)	(1.44)	(1.91)	(1.80)	(1.61)
(log) population	0.177	0.193*	0.152	0.362***	0.284***	0.226**	0.231**
	(1.61)	(1.94)	(1.43)	(3.67)	(2.68)	(2.44)	(2.43)
(log) GDP per capita	0.588*	0.749**	0.486	0.691**	0.788**	0.660**	0.595**
	(1.91)	(2.44)	(1.60)	(2.15)	(2.52)	(2.37)	(2.05)
Democracy dummy	0.886*	0.730*	0.898**	0.631	0.788**	0.761**	0.753*
	(1.66)	(1.75)	(2.19)	(1.45)	(2.00)	(1.98)	(1.93)
(log) migrant stock	0.188*	0.255**	0.453***	0.146	0.170	0.220**	0.204**
	(1.68)	(2.34)	(3.76)	(1.34)	(1.59)	(2.21)	(1.96)
Share of catholics	0.002	-0.006	-0.007	-0.007	-0.007*	-0.006	-0.007
	(0.26)	(1.38)	(1.56)	(1.44)	(1.72)	(1.46)	(1.56)
East Asia dummy	1.085*		0.248	-0.152	0.222	0.266	0.158
	(1.82)		(0.30)	(0.22)	(0.30)	(0.38)	(0.22)
Developing Europe dummy	-0.068	-1.023*		-1.143*	-0.993	-1.020*	-1.089*
	(0.10)	(1.67)		(1.80)	(1.63)	(1.72)	(1.76)
Latin America dummy	-1.426**	-1.680***	-1.813***		-1.612***	-1.628***	-1.651***
	(2.10)	(3.16)	(3.17)		(3.03)	(3.18)	(3.06)
MENA dummy	0.309	-0.654	-1.068	-0.981		-0.705	-0.793
	(0.76)	(1.06)	(1.50)	(1.58)		(1.24)	(1.34)
South Asia dummy	0.396	-0.358	-1.213*	-0.739	-0.452		-0.626
	(0.47)	(0.55)	(1.75)	(1.20)	(0.72)		(0.96)
Sub-Sahara Africa dummy		-0.812	-1.220	-1.037	-0.744	-0.826	
		(1.25)	(1.55)	(1.55)	(1.16)	(1.34)	
Sample without:	Western Europe	East Asia	Developing Europe	Latin America	MENA	South Asia	Sub-Sahara Africa
Number of countries	70	109	98	96	105	113	105

Absolute t-statistics in parentheses; * (**, ***) indicates significance at 10 (5, 1) percent level.

Table 3: Extreme Bounds Analysis (EBA), Ordered Probit, imputed

Variable	Avg. Beta	Avg.Std.Err	%Sign.	CDF-U
Latin America dummy	-1.63	0.55	1.00	1.00
(log) migrant stock	0.26	0.10	1.00	0.99
(log) GDP per capita	0.73	0.30	0.95	0.99
Legal prostitution dummy	0.65	0.28	1.00	0.99
Rule of law	-0.59	0.28	0.84	0.97
Developing Europe dummy	-1.06	0.60	0.52	0.95
Democracy dummy	0.71	0.43	0.55	0.93
(log) population	0.18	0.10	0.62	0.92
Share of Catholics	-0.01	0.00	0.29	0.91
Sub-Sahara Africa dummy	-0.76	0.67	0.01	0.86
MENA dummy	-0.66	0.59	0.00	0.86
East Asia dummy	0.44	0.73	0.00	0.72
South Asia dummy	-0.37	0.66	0.00	0.70

Notes: Variables are sorted according to their CDF(0). All results are based on 3,303 regressions. 'Avg. beta' reports the average coefficient while 'Avg S.E.' indicates the average standard error of all regressions. '%Sig' shows the percentage of regressions in which the coefficient is statistically different from zero at the 5 percent level at least. 'CDF-U' shows the (unweighted) mass of the larger part of the distribution of the estimated coefficients (i.e., the value is always greater or equal to 0.5). The criterion for a variable we consider as robust is a value of 0.9 or above.

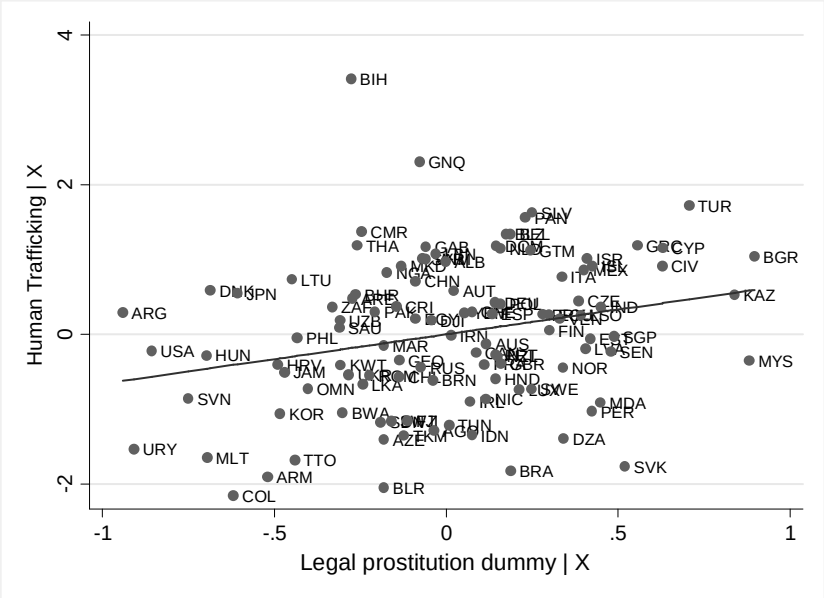


Figure 1: Partial Leverage Plot of the Effect of Prostitution on Reported Human Trafficking

Appendix A. Degree of Human-Trafficking Inflows

Number of Sources	Index Ranking	Total Number of Countries
0[a]	0 (No)	24
1	1 (Very low)	29
2-3	2 (Low)	27
4-10	3 (Medium)	50
11-24	4 (High)	21
25-40	5 (Very high)	10

Source: UNODC (2006, p.118)

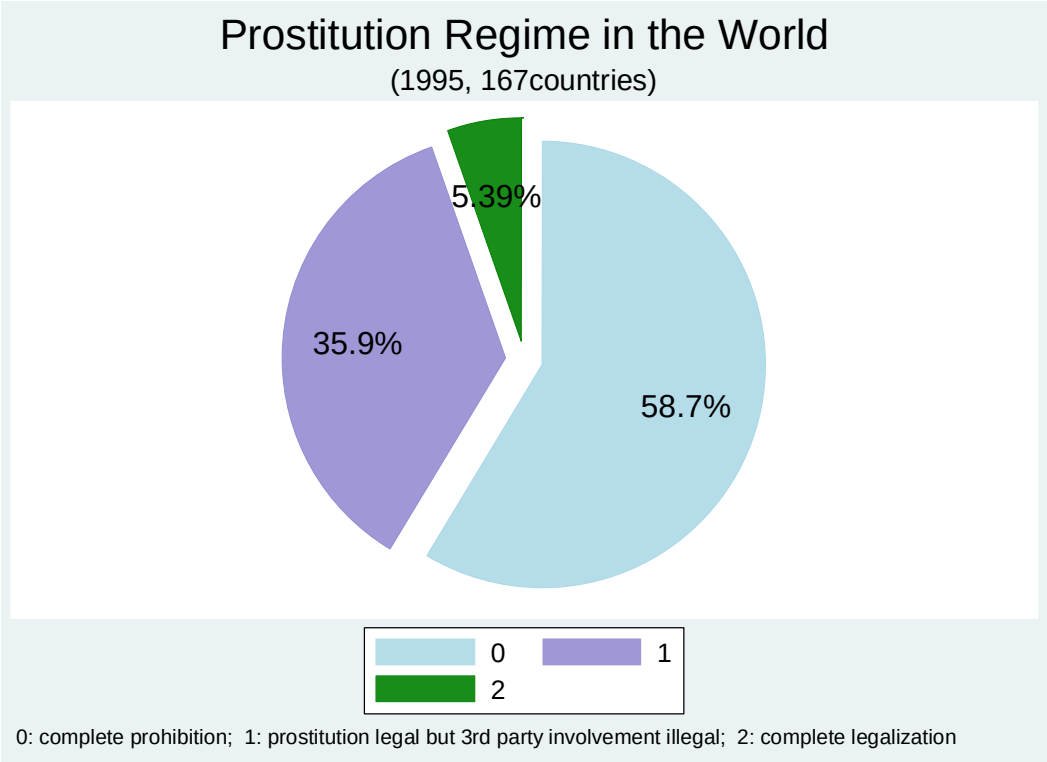
[a] The Index does not explicitly specify a ranking for countries with no inflow of human trafficking.

Appendix B. Distribution of Countries across Categories of Human-Trafficking Inflows

Very High	High	Medium	Low	Very Low
Belgium	Australia	Albania	Aruba	Algeria
Germany	Austria	Argentina	Bangladesh	Bhutan
Greece	Bosnia and Herzegovina	Bahrain	Belize	Brazil
Israel	Cambodia	Benin	Brunei Darussalam	Burundi
Italy	Canada	Bulgaria	Congo, Republic of	Chad
Japan	China	Burkina Faso	Costa Rica	Chile
Netherlands	Hong Kong, China SAR	Cameroon	Ecuador	Congo, Democratic Republic of
Thailand	Taiwan Province of China	Cote d'Ivoire	Egypt	Djibouti
Turkey	Cyprus	Croatia	Haiti	Dominica
United States of America	Czech Republic	Curacao	Indonesia	Ethiopia
	Denmark	Dominican Republic	Iraq	Fiji
	France	El Salvador	Ireland	Gambia
	India	Equatorial Guinea	Kyrgyzstan	Georgia
	Kosovo, (Serbia and Montenegro)	Estonia	Lao People's Democratic Republic	Honduras
	Pakistan	Finland	Libyan Arab Jamahiriya	Jamaica
	Poland	Gabon	Luxembourg	Liberia
	Saudi Arabia	Ghana	Mali	Malawi
	Spain	Guatemala	Niger	Maldives
	Switzerland	Hungary	Oman	Morocco
	United Arab Emirates	Iceland	Paraguay	Mozambique
	United Kingdom	Iran	Romania	Republic of Moldova
		Kazakhstan	Slovenia	Senegal
		Kenya	Sri Lanka	Sierra Leone
		Kuwait	Uganda	Slovakia
		Latvia	United Republic of Tanzania	Sudan
		Lebanon	Uzbekistan	Tajikistan
		Lithuania	Yemen	Trinidad and Tobago
		Macao, China SAR		Zambia
		Malaysia		Zimbabwe
		Mexico		
		Myanmar		
		New Zealand		
		Nigeria		
		Norway		
		Panama		
		Philippines		
		Portugal		
		Qatar		
		Republic of Korea		
		Russian Federation		
		Serbia and Montenegro		
		Singapore		
		South Africa		
		Sweden		
		Syrian Arab Republic		
		The former Yugoslav Republic of Macedonia		
		Togo		
		Ukraine		
		Venezuela		
		Viet Nam		

Source: UNODC (2006, p.20)

Appendix C. Prostitution Regimes



Source: US Department of State, Country Reports on Human Rights Practice (1999-2008) and various issues of CEDAW country reports

Appendix D. Descriptive Statistics (estimation sample, Table 1, column 8)

Variables	Mean	Std. Dev.	Min	Max
Human trafficking inflows	2.56	1.46	0.00	5.00
Legal prostitution dummy	0.47	0.50	0.00	1.00
Rule of law	0.19	0.99	-1.57	2.00
(log) population	16.08	1.72	12.29	20.91
(log) GDP per capita	8.90	1.05	6.92	10.83
Democracy dummy	0.62	0.49	0.00	1.00
(log) migrant stock	5.79	1.74	0.99	10.05
Share of Catholics	33.94	38.40	0.00	97.30
East Asia dummy	0.06	0.25	0.00	1.00
Developing Europe dummy	0.15	0.36	0.00	1.00
Latin America dummy	0.17	0.38	0.00	1.00
MENA dummy	0.08	0.28	0.00	1.00
South Asia dummy	0.03	0.16	0.00	1.00
Sub-Sahara Africa dummy	0.10	0.30	0.00	1.00

Appendix E. Sources and Definitions

Variables	Definition	Source
Human trafficking inflows	Reported incidences of human trafficking inflows. Score 0 (no flows) and 5 (very high flows).	UNODC (2006)
Legal prostitution dummy	Dummy indicating whether or not a country allows prostitution. 1 being legal and 0 otherwise.	US Dept. of State (1999-2008)
Legal brothel dummy	Dummy indicating whether or not a country allows brothel/pimping. 1 being legal and 0 otherwise.	US Dept. of State (1999-2008)
Rule of law	Index in the range of -2.5 to 2.5, with higher values corresponding to better outcomes.	Kaufmann et al. (2009)
(log) population	Log of a country's total population.	World Bank (2011)
(log) GDP per capita	Log of GDP per capita, PPP (constant 2005 international $).	World Bank (2011)
Democracy dummy	Indicates whether multiple parties are legally allowed and exist outside the regime front, and whether the selection of the executive and the legislature involve an either direct or indirect mandate from an electorate.	Cheibub et al. (2009)
(log) migrant stock	Stock of migrants.	UNDP (2010)
Share of Catholics	Share of Catholics in overall population.	Encyclopedia Britannica Book (2001)
Regional dummies	Dummies for the regions East Asia dummy, Developing Europe, Latin America, Middle East and North Africa (MENA), South Asia and Sub-Sahara Africa.	World Bank (2010)
Media Freedom	Freedom of the Press Index. Score 0 (best) to 100 (worst).	Freedom House (2009)
Tourism inflows	Annual number of foreign visitors in a country.	World Bank (2011)
Share of Protestants	Share of Protestants in overall population.	Encyclopedia Britannica Book (2001)
Share of Muslims	Share of Muslims in overall population.	Encyclopedia Britannica Book (2001)
Urbanization	Share of a country's population living in cities.	World Bank (2011)
Trade (% of GDP)	Trade in percent of GDP.	World Bank (2011)
Prosecution index	Index assessing the level of governmental efforts to punish and prosecute traffickers and other related offenders (such as employers of trafficking victims, law enforcement officials who collude with traffickers, and clients of services provided by human trafficking victims).	Cho et al. (2011)
Protection index	Index assessing the level of governmental efforts to protect and assist the victims of human trafficking.	Cho et al. (2011)
Prevention index	Index assessing the level of governmental efforts to prevent and combat human trafficking.	Cho et al. (2011)
Right government	The share of right-wing governments in power over the 1990-95 period.	
Unemployment, male	Unemployment, male (in percent of the male labor force).	World Bank (2011)
Unemployment, female	Unemployment, female (in percent of the male labor force).	World Bank (2011)
Employment, agriculture	Employment in agriculture (in percent of total employment).	World Bank (2011)
Literacy rate	Literacy rate, adult total (in percent of people ages 15 and above).	World Bank (2011)
Mortality rate	Mortality rate, under-5 (per 1,000).	World Bank (2011)
Visa restrictions	The number of foreign countries whose nationals need a visa to enter the country under observation (in 2004).	Neumayer (2006)
Visa restrictions 2	The number of foreign countries whose nationals need a visa to enter the country under observation (in 2004), counting visa provision at border as visa-free access.	Neumayer (2006)
Language dummies	Dummies for English speaking, French speaking, Spanish speaking, Portuguese speaking, and German speaking countries.	CIA (2010)
Legal origin dummies	Dummies for British, Socialist, French, German, and Scandinavian legal origin.	La Porta et al. (1998)