

The Spatial Dynamics of Freedom of Foreign Movement and Human Trafficking

Sam R. Bell¹
Kansas State University

Richard Frank²
Australian National University

May 19, 2021

Abstract: Some existing human trafficking research examines how trafficking laws and regulations deter traffickers. This research, however, pays little attention to how states' freedom of movement policies influences human trafficking. Existing policy debates suggest two possible effects. Europe's experiences with open borders have led to claims that freedom of movement decreases the likelihood that traffickers are detected, thus making human trafficking in and out of states more likely. By contrast, movement restrictions could create an environment where people become more vulnerable to traffickers. We utilize data from 182 countries from 2001 to 2017 to test whether freedom of movement increases or decreases human trafficking flows. We find that it is necessary, theoretically and empirically, to consider freedom of foreign movement both locally and in a state's neighborhood because freedom of movement increases human trafficking when the local and neighborhood practices diverge from each other.

¹ Sam Bell is a Professor in the Department of Political Science at Kansas State University. His research interests include the human rights, political violence, and human trafficking. sbell3@ksu.edu.

² Richard W Frank is a Lecturer in the School of Politics and International Relations at the Australian National University. His research interests include the drivers of human trafficking flows, election violence, and civil conflict. richard.frank@anu.edu.au.

Introduction

Beginning with the formation of the European Economic Community in 1957, and culminating with the Schengen agreement in 1995, European Union member states have increasingly shifted towards greater freedom of foreign movement.¹ Many lawmakers and law enforcement agencies have responded to the increase towards freedom of foreign movement with criticism of its effects on the trafficking of people and goods. For example, while evaluating its membership in the European Union, a 2014 United Kingdom (UK) Home Office (2014, p. 45) report concludes that “[f]ree movement within the EU is extensively exploited by organised criminals to bring illicit commodities including...human trafficking victims.” This conclusion is based on a 2013 Europol report titled, “Serious and Organised Crime Threat Assessment.” In that report, a clearly stated cause of human trafficking in the EU was relaxed regulations for freedom of movement. The report suggests, “EU nationals are easily trafficked in the EU due to the freedom of movement realised by the Schengen Acquis and the combined low risk of identification and detection,” (Europol, 2013, p. 24). This conclusion was later reported on in mainstream UK press outlets like *The Telegraph* (Hope, 2014). While this quote speaks to specifically to trafficking of EU nationals, this is but one example of policymakers linking freedom of movement policies to the trafficking in persons. Much of this line of argument’s logic rests on the idea that freedom of foreign movement makes it easier for traffickers to skirt laws that punish human trafficking. As a result, it is argued, human trafficking out of a country with few constraints on movement is more likely.

However, scholars argue that constraints on the right to freedom of movement have the exact opposite effect. For example, Sassen (2000, p. 517) suggests that “[s]ome features of immigration policy and enforcement may contribute to make women who are victims of trafficking even more vulnerable and give them little recourse to the law.” These claims from the academic literature are directly in conflict with the kinds of claims that are being made by

policy makers. In a recent forum on *Open Democracy*, a website that publishes debates among academics and activists, it is argued that constraints on freedom of movement are linked to greater levels of human trafficking. Specifically, O’Connell Davidson (2015) argues that without the right to freedom of movement, “people are at heightened risk of abuse and exploitation in the course of movement and at the point of destination.” This line of argument suggests that it is actually restrictions on movement that create an environment at heightened risk of human trafficking.

Much of this disagreement boils down to policy disputes between law enforcement, policy makers, human rights activists, and some scholars. This debate continues, in part, because of the lack of systematic analysis of the theoretical and empirical links between freedom of movement and human trafficking. In this manuscript we seek to provide the first systematic analysis of the effect of freedom of movement on human trafficking, which provides us with greater empirical leverage to adjudicate between these competing arguments. More specifically, we examine how a state’s practices restricting freedom of foreign movement, coupled with the movement policies of neighboring states, affect human trafficking flows out of a state. Our research is important, therefore, both for helping to resolve these policy debates and for advancing the growing theoretical and empirical literature on the causes of human trafficking flows.

This research also makes important contributions to a growing empirical literature examining why we observe human trafficking flows. This work focuses on various push factors that leave individuals vulnerable to being trafficked and the pull factors that create a market (or demand) for trafficked persons (Jac-Kucharski, 2012; Cho, 2015, Cho et al., 2013; Long, 2014; Akee et al., 2012; Bettio & Nandi, 2010). Here we posit a theoretical argument that speaks to how freedom of foreign movement impacts both the push and pull factors for human trafficking. There are of course any number of human rights that might play a role in shaping

trafficking flows. For example, violations of physical integrity rights or violation of economic rights might leave individuals more vulnerable to being trafficked. However, the right to freedom of foreign movement, and its impact on the ability of individuals to move across borders, makes it the human right most likely to have a clear and direct connection to human trafficking flows.

The remainder of this manuscript proceeds as follows. First, we situate this research within the existing human trafficking literature. Second, we work through the theoretical logic for the two competing arguments that have been suggested in existing academic work and are assumed by some policy makers. Third, we present our research design, report the results from that research design, and conduct a series of systematic robustness checks. Finally, we conclude with important implications of our findings and some directions for future research.

Human trafficking causes

The existing human trafficking research suggests a number of individual and system-level push and pull factors behind human trafficking flows.² At the individual level, people with lower levels of economic opportunities (either relative or absolute) are more likely to be trafficked (Tallmadge & Gitter, 2017; International Labour Organization, 2012; Jac-Kucharski, 2012). At the systemic level, lower levels of economic development and employment, population size, political conflict, and natural disasters all increase the risk of trafficking (Cho, 2015; Rudolph & Schneider, 2017). This literature looks at systemic factors related to the source of trafficking flows as well as their destination, and it focuses mostly on the economic and social conditions that increase the risk of trafficking.³ It also focuses on the legal and enforcement aspects of laws prohibiting trafficking (Schwartz & Allain, 2020; Akee et al., 2014; Cho, Dreher, & Neumayer, 2013; Goodey, 2008).

Specifically, the trafficking literature focuses on two factors that are especially important when examining the role that freedom of foreign movement plays—those that impact the vulnerability of a state’s population and those that might incentivize or disincentivize individuals participating in trafficking networks. Regarding the first factor, Cho (2015) highlights vulnerability as one of four broad causes of trafficking and finds economic inequality, economic development, and conflict lead to a bigger pool of individuals seeking to leave their home country, and as a result more individuals becoming vulnerable to trafficking networks. In our theoretical argument below, we posit that restrictions on movement can also make these populations more vulnerable to trafficking.

By contrast, Jac-Kucharski (2012) argues that research on trafficking should focus more attention on the state characteristics that impact the expected costs and benefits to a potential trafficker. In the United States context, she focuses on the extent to which a trafficker might expect to be caught, which has an effect on the costs of participating in trafficking. More generally, some existing research shows that places with steeper punishments, and a greater ability to punish are less likely to see trafficking (Cho, Dreher, & Neumayer, 2013). Here we focus on how freedom of foreign movement practices, especially in neighboring states, might affect a trafficker’s expectations of being caught and prosecuted.

To our minds, however, there is an important gap in this literature—a failure to connect human trafficking to the larger and more established literature on human rights. While Cho (2013) does look at the relationship between women’s rights and trafficking, and Bell and Banks (2018) highlight the relationship between women’s rights organizations and trafficking, there has been very little work connecting other human rights violations and human trafficking. As with other rights, there has been a large international effort to discuss and develop an international definition of human trafficking, a connection to the 1948 Universal Declaration on Human Rights, and coordinating efforts at protecting victims, preventing future trafficking,

and punishing traffickers. The international efforts around these “three P’s” have been codified in reports by the UN Office on Drugs and Crime, the United States’ annual Trafficking in Persons Report, U.S. Congressional legislation, as well as the 1999 Palermo Protocol. Overall, there are echoes of a norm cascade akin to those seen with other human rights (Keck & Sikkink, 1998).

Therefore, we think more attention is needed on human rights, both how protection from human trafficking is a type of human right, but also how human rights laws and practices within a country play a role in forming a more or less conducive set of conditions for human trafficking. The human right that is most obviously connected to human trafficking (and regularly a concern of activists and policy makers) is the freedom of movement. Although not discussed in the context of human rights, Sassen (2000) does argue that state immigration policy restricting movement can leave women vulnerable and make trafficking more likely. The work described above is important in providing the foundations for much of the theory that we present below. However, the existing research does not consider theoretically and empirically both a state’s own restrictions on freedom of foreign movement and how those interact with the policies established in neighboring states to impact human trafficking. We believe taking this into account is necessary for fully understanding the role that freedom of foreign movement plays in human trafficking outcomes. In the following section we examine how freedom of movement practices might affect the vulnerability of populations and the incentives of traffickers.

Freedom of movement and human trafficking

The freedom of movement is a human right outlined in Article 13 of the 1948 Universal Declaration of Human Rights: “Everyone has the right to freedom of movement and residence within the borders of each state. Everyone has the right to leave any country, including his own,

and to return to his country.” Therefore, people have freedom of movement within their own country as well as the right to travel abroad and return. Freedom of foreign movement is frequently connected to concerns about human trafficking. While states’ freedom of movement practices are not the only factor that inhibits movement across borders (geography and infrastructure are also relevant), state restrictions on movement are indicative of other governmental restrictions. Here we focus on how both a state’s local practices in restricting freedom of foreign movement and the practices of states in its geographic neighborhood affect the probability of being a source for human trafficking. We cannot develop a complete understanding of this human right’s role without considering both local and neighborhood practices. We focus here on the effect that freedom of foreign movement has on whether a state is a source country for human trafficking. To distinguish between an individual state’s practices and its neighbors, we define “local practices” as the foreign movement practices of the potential source state. “Neighborhood practices” are the foreign movement practices of the geographically surrounding states. These two practices affect the probability of being a human trafficking source at two stages of the trafficking process.

As discussed in the introduction, there is growing attention to the links between freedom of movement and human trafficking among policy makers and activists, but much less attention within the scholarly literature (Sassen, 2000). We first present the logic for two competing arguments for how freedom of movement might affect trafficking from a particular state. We then discuss how neighborhood levels of freedom of foreign movement have both independent and conditional effects. In considering the effects of freedom of foreign movement practices of governments, it is necessary to consider how the behavior of both traffickers and those at risk of trafficking are affected. A focus on how they are affected by government respect for freedom of foreign movement also helps us understand the divergent expectations from policy makers, scholars, and activists. Law enforcement organizations, like Europol, focus

more on the traffickers. Some scholars have focused more on the victims. In developing our first two hypotheses, it is worthwhile to work through the logic of how restrictions on movement influence the incentives for traffickers and potential victims. Following that, we present what we think is a more nuanced theory that incorporates both freedom of foreign movement policies locally and in the surrounding neighborhood.

Human trafficking activists, and the limited academic literature on movement and trafficking, gives greater attention to the factors that make individuals vulnerable to trafficking. Hathaway (2008, p. 33), in a wide-ranging critique of anti-trafficking laws, argues that greater restrictions on movement across borders actually increases the market for smuggling and brings more organized crime involvement to smuggling. To Hathaway, greater restrictions on movement across borders will place more individuals into the hands of traffickers. As discussed above, Sassen (2000) also argues that restrictive immigration policies can leave women more vulnerable to being trafficked.

The existing literature already identifies a number of factors that make people more vulnerable to trafficking, and it shows that conditions that produce vulnerable populations lead to greater trafficking outflows (Long, 2004; Cho, 2015; Akee et al., 2014; Bettio & Nandi, 2010). A consideration of how freedom of movement is likely to affect potential victims suggests that restrictions on freedom of foreign movement are likely to make individuals from vulnerable populations even more vulnerable to being trafficked out of a country. The logic here is that there are logistical challenges and costs involved with any sort of international movement. Restrictions may place people in situations where they have to rely on people smugglers for transport. For example, restrictions on movement from North Africa has led to a number of deaths from illegal smuggling operations and raised migrants' trafficking risks as witnessed in spikes in the number of Nigerian trafficking victims in Italy (US Department of

State, 2020, p. 279). Put simply, the need to rely on extra-legal pathways to move across borders, places individuals into a position where they are more likely to be trafficked.

Hypothesis 1: High levels of government respect for freedom of foreign movement decrease the probability that a state is the source of human trafficking flows.

Unsurprisingly, the focus of law enforcement is on how traffickers are likely to be motivated by open borders and freedom of movement. There are two main pathways through which freedom of movement practices by a government might influence the incentives of traffickers. First, the literature suggests that human traffickers often operate along similar paths as legal migration (Mahmoud & Trebesch, 2010; Akee et al., 2014). Recruiting techniques often rely on the stories of legal migrations from source areas doing well abroad. Detection is also more difficult along more popular routes. Second, existing literature already makes the claim that increasing the potential costs to traffickers should decrease the likelihood of trafficking (Jackucharski, 2012; Cho, 2015, Cho et al., 2013). Consistent with this logic, restrictions on movement should raise expected costs for traffickers, and force them to change routes. In sum, the opportunity that freedom of movement offers and the lower probability of paying a cost for engaging in trafficking, leads to a greater likelihood of trafficking out of states that have more open borders. This focus on the perpetrators by law enforcement and some policy makers suggests that freedom of foreign movement will actually increase the likelihood and level of human trafficking. This leads to a counter hypothesis to our first hypothesis:

Hypothesis 2: High levels of government respect for freedom of foreign movement increase the probability that a state is the source of human trafficking flows.

The logics presented in Hypotheses 1 and 2 could also simply be applied to the relationship between freedom of movement practices in neighboring states and human trafficking. However, there is another possible more nuanced theoretical relationship between freedom of movement and trafficking. The theoretical explanations described above focus on an individual state's practices of freedom of foreign movement in isolation. A consideration of a state's own

levels of respect for freedom of movement, the practices in neighboring states, and how these might interact or condition one another, allows us to paint a more nuanced and complete picture. In this discussion we refer to a state's own freedom of foreign movement practices as local practices and practices in bordering states as neighborhood practices.⁴ A consideration of both local and neighborhood freedom of foreign movement helps to show that under some conditions both of the above sets of expectations might be correct.

Consistent with the activist school of thought, local freedom of foreign movement practices are likely to have their most immediate effects on potentially trafficked persons. This is the first impediment that a person that wants to leave their country is faced with. As a result, a state's own (local) restrictions on moving in and out of its borders are likely to have a more direct effect on whether a vulnerable person winds up in a position to be trafficked. In other words, having restrictions on movement out of a state increases the supply of persons to be trafficked. This, however, is not the complete picture. Whether or not traffickers capitalize on this increasingly vulnerable population will, in part, depend on the ease of entering and exiting neighboring states. The openness of neighboring borders, and the ease of travel into neighboring states, provides traffickers an opportunity to exploit the pool of vulnerable persons, and engage in trafficking out of a state. As a result, when freedom of movement is restricted locally, but there are open borders in neighboring states, we expect increases in human trafficking out of a state. Restrictions on foreign movement make the local population vulnerable, but it is easier to move people into neighboring locations when neighbors have greater freedom. As both local practices and neighboring practices become more open to freedom of movement and that domestic vulnerability decreases, trafficking out of a state should decrease. In sum, when there is a divergence in policies between a state's local freedom of foreign movement practices and its neighbors, we expect to observe the combination of a vulnerable population with some opportunity for traffickers to exploit them.

Hypothesis 3a (freedom of foreign movement divergence): State (local) restrictions on freedom of foreign movement increase the probability that a state is a source for human trafficking when neighboring states have few restrictions on freedom of foreign movement.

However, when both the local and neighboring practices are open, there is little reason for people to place themselves in a position to be trafficked in the first place, as they can move more freely.

Hypothesis 3b (freedom of foreign movement convergence): As state (local) and neighboring freedom of foreign movement converge towards fewer restrictions, the probability that a state is a source for human trafficking decreases.

Aspects of both the trafficker-focused and victim-focused perspectives are supported if these hypotheses receive empirical support. The focus on trafficker incentives would be partly supported because under the condition where there are constraints locally, openness in the neighborhood, should lead to greater trafficking. However, the victim-focused perspective, which focuses more on the potentially trafficked persons, would also be supported as restrictions locally produce a heightened risk when there is openness in the neighboring states. It should be noted though that under the condition where there is freedom of foreign movement, both locally and in the neighborhood, we do not expect to observe trafficking. This is certainly more in line with the perspective that focuses on victims and advocates for fewer restrictions on movement. Hypotheses 3a and 3b take into account the incentives and effects of freedom of foreign movement on both traffickers and populations that are vulnerable to trafficking. We think this more nuanced story provides a more complete picture of the role that freedom of foreign movement plays in the trafficking process. The key point that we are seeking to make is that it is difficult to understand the impact of freedom of movement policies on trafficking flows without a consideration of the policies being implemented by both a state and its neighbors.

Research design

This section outlines our research design to test our hypotheses. The unit of analysis is the country-year. The sample consists of all states for which data is not missing from 2001 to 2017. This includes as many as 182 states in 2012. The available time frame is determined by the overlap between our trafficking and human rights data sources. The sample relying on the CIRI data to measure freedom of movement is limited to the years 2001 to 2011. Where we rely on the V-Dem data to measure freedom of movement, we can expand the sample to 2017.

Dependent variable

To measure sources of human trafficking, we use trafficking data from Frank (2013), which we update to include data from 2012 to 2017. This data collection is based on U.S. State Department Trafficking in Persons reports, and these data have previously been used by Bell and Banks (2018), Bell et al. (2018), Blanton et al. (2020), and others. The main dependent variable is Frank's (2013) dichotomous measure "source" that captures whether there was evidence of a state being a source for any type of trafficking victims in a given country year.⁵

Trafficking is difficult to measure due to incentives to avoid detection, and as a result, the quantification of trafficking flows is also a source of debate in the literature (Laczko, 2007; Tyldum & Brunovskis, 2005). We prefer Frank's (2013) dichotomous measure to the alternative count measures for a few reasons. First, it has greater temporal and cross-sectional coverage. Second, given incentives to hide human trafficking, and the challenges of detecting it, we are more comfortable with a dichotomous measure than a measure that claims to capture the actual number of individuals. This is because there are likely to be systematic biases in terms of where it is easier to reliably measure the number of individuals trafficked.⁶ For example, any conditions that make it easier to catch traffickers will likely lead to higher reported numbers of trafficked individuals. A simpler dichotomous coding of whether there is trafficking out of a state or not, is less likely to be subject to those biases. There are, of course, tradeoffs in this choice. Moving to a dichotomous measure means that there is less information

to inform the statistical model. We believe that this is a more conservative and cautious approach to measuring trafficking. Turning to the distribution of our dependent variable, Figure 1 suggests the growing prevalence of countries as sources of trafficking. Given the dichotomous nature of the dependent variable we estimate a probit model with robust standard errors clustered by country.

[Figure 1 here]

Independent variables

We rely on two measures of freedom of movement. First, we use an ordinal, three-category (0, 1, 2), measure from the Cingranelli-Richards (CIRI) human rights dataset (Cingranelli and Richards, 1999). It is a cross-sectional measure and is coded for from 1981 to 2011. “Zero” is assigned to governments that “restricts all or nearly all the foreign travel of its citizens,” (Cingranelli et al. 2014, p. 46). These countries are relatively indiscriminate in who they prevent from movement across borders. Cases that are coded as a “one” place “modest restrictions” on foreign travel and typically target specific groups like religious leaders, human rights activists, journalists, small ethnic minorities, among others (Cingranelli et al. 2014, p. 47). A case can also be coded as a “one” when travel is restricted to and from specific locations. Finally, a case is coded as a “two” when travel is “unimpeded” or “free”. Cases received this score when there are no restrictions except for those placed on minors, refugees from other countries, or restrictions for national security (Cingranelli et al. 2014, p. 48). Figure 2 shows how countries’ scores have fluctuated over time, and Figure 3 shows how they differ across space.

[Figures 2 and 3 here]

The second measure comes from the Varieties of Democracy (V-Dem) project (Coppedge et al. 2020). This measure starts as an expert survey question with four possible responses reflecting whether freedom of foreign movement is “not respected by public

authorities” (zero); “weakly respected by public authorities” (one); “somewhat respected by public authorities” (two); “mostly respected by public authorities” (three), or “fully respected by public authorities” (four) (Coppedge et al. 2020, p. 171). The roughly five expert responses per country-year are aggregated to a single measure generated by a Bayesian item response theory (IRT) measurement model. This aggregated IRT score ranges from -3.6 (e.g., North Korea in 2016) to 2.6 (e.g., Spain in 2017).

There are several reasons to focus on both CIRI and V-Dem data. CIRI has an established track record in human rights data research and a clear and easily understood categorization of the variable of interest. However, CIRI is no longer being updated; the last year coded is 2011. V-Dem’s data are much more comprehensive (they stretch from 1789 to 2020), and V-Dem use a latent variable approach, which can account for differences in how experts apply the four-point ordinal scale as well as rater error. However, V-Dem’s measures of human rights are relatively new, are not as commonly used in the literature as CIRI, and their continuous measure may be less intuitive. Finally, while both datasets have their strengths, recent research by Cope, Crabtree, and Fariss (2019) find their human rights measures are not as correlated as you may expect (0.585) due to significantly different conceptualization and measurement approaches. Given these differing approaches we use both measures of freedom of foreign movement. If our results are substantively similar across data sources, we can have more confidence that our underlying argument and results are not artifacts of data sourcing.⁷

Using both sources for the freedom of foreign movement, we then generate spatial measures of these variables consisting of the mean value of the freedom of foreign movement in neighboring states. To identify the set of contiguous states across time, we use the Correlates of War (COW) contiguity data (Stinnett et al., 2002). This provides a directed dyadic dataset of all contiguous states that we can use as contiguity matrix for generating the spatial measures.⁸ With our directed dyadic contiguity data and the freedom of foreign movement data

we generate the spatial measure of freedom of foreign movement for neighboring countries either directly connected to a country or within 12km distance of water (Neumayer & Plumper, 2009).⁹ The connectivity matrix is row standardized. The eventual interval-level measure that is generated is the mean of all contiguous states' freedom of foreign movement.¹⁰

It is important note that this is a measure of a citizen's ability to come and go from the surrounding states. However, in places where borders are reasonably easy to cross, and there is freedom of movement for citizens, it is likely that there will be relatively free movement for all persons. In places where there are tight restrictions on citizens moving across borders, there is likely to be monitoring and security in place that would also make it difficult for a trafficker to move freely in and out of that state. This does not mean that there will be the same level of freedom of foreign movement for citizens and non-citizens in a state, but that across countries the restrictions on citizens are likely to correlate with the restrictions and impediments for non-citizens. For example, consider European Union countries. The characteristics that make it easy to move across borders for EU citizens, also make it easy for non-citizens to move across the borders of those states. In addition, even though the EU states are more restrictive of a non-citizen entering the EU, they are less restrictive than the average state is on non-citizens entering the EU area. On the more restrictive side, consider the United States. The rules that prohibited a U.S. citizen from traveling to and from the U.S. to Cuba will also limit the ability of a non-citizen to travel to and from Cuba. The same is true of a more repressive state like North Korea. The restrictions that North Korea places on its citizens to move in and out of the country also make it difficult for a non-citizen to move in and out of the country.

To test Hypotheses 3a and 3b, we generate an interaction term between a state's freedom of foreign movement and the neighborhood measure. The expectation is that when both are at high values, indicating local and neighborhood freedom of foreign movement, trafficking should be less likely. However, when local freedom of foreign movement is

restricted, neighboring openness will increase the probability of a state being a source of trafficking.

Control variables

We include two control variables that are linked to human trafficking in existing literature, but more importantly might serve as confounding variables in the relationship between movement and trafficking. The level of economic development of the state is controlled for with a measure of GDP from the World Bank (2020). This controls for the likelihood that places with low levels of economic development are more likely to have vulnerable populations that seek exit and become trafficked. We also control for population size (World Bank, 2020) to account for the overall opportunity and supply of potential trafficked persons. We include a minimum number of control variables in our initial analysis for theoretical and practical reasons. Theoretically, the quantitative human trafficking literature has not coalesced around a concise number of theoretically relevant control variables to include in trafficking models. Practically, we use two initial control variables to maximize the number of observations in our initial models as well as reduce the risk of multicollinearity among our control variables. Nevertheless, readers might with good reason worry that our findings are a result of omitting an important predictor. Therefore, in our sensitivity analyses section, we use over a dozen other potential control variables in hundreds of additional sensitivity analyses, and our main results hold.

Results

The results for our four models testing our hypothesis are summarized in Table 1. Models 1 and 3 estimate the unconditioned effect of freedom of movement on trafficking and tells us whether the local and neighborhood levels of freedom of foreign movement have an

unconditioned impact on trafficking. They include freedom of foreign movement, neighborhood freedom of movement, and the two control variables.¹¹ The only substantive difference between Models 1 and 3 is the source of the foreign movement variable—Model 1 uses CIRI while Model 3 uses V-Dem. In both models the coefficients for both local and neighboring freedom of foreign movement variables are positive and statistically significant. Therefore, our results suggest (consistent with Hypothesis 2's expectation) that as people's movements outside their home country are less restrictive, the likelihood of their home country being a human trafficking source increases. Furthermore, as neighboring states' policies related to freedom of movement become less restrictive the probability of trafficking increases. However, this finding should be treated as tentative, as these models do not account for the potential conditional relationship between local and neighborhood freedom of foreign movement. We discuss those findings in detail below. The two control variables are consistent with existing findings in these and subsequent models. GDP's coefficient is negative and statistically significant, which suggests that poorer states are more likely to be sources of trafficking flows all else being equal. Larger populations are found to consistently (and statistically significantly) increase the probability of being a trafficking source, which is consistent with the literature's finding that larger populations are increase the supply of potential trafficked persons.

[Table 1 here]

Models 2 and 4 are identical in form (and substantive results) to Models 1 and 3 except the additional interaction term between local and neighborhood freedom of foreign movement. This interaction term allows for testing Hypotheses 3a and 3b. Across models, both the local and neighborhood measures of freedom of foreign movement are positive and statistically significant while the interaction term is negative and statistically significant. However, given that this is a non-linear model, the constituent terms and the interaction term are not directly

interpretable (Brambor et al., 2006).¹² The constituent terms only allow us to evaluate the impact of one independent variable on the dependent variable, while the other constituent term in the interaction is set to zero. For example, this means that we can only interpret the coefficient on freedom of foreign movement as indicating that when neighborhood foreign movement is at zero (fully restricted), increases in local freedom of movement increase the probability of trafficking out of that state. However, this direct interpretation of the constituent terms is limited to just the cases where there are full restrictions in the neighborhood (the conditioning variable is at zero). We are ultimately interested in the impact of one variable across the full range of values on the other foreign movement variable. The negative coefficient on the interaction term indicates that the positive relationship between freedom of foreign movement and trafficking is attenuated as neighborhood movement becomes more open (increases from zero to one or to two). However, to fully evaluate the interaction across the range of values on the two constituent terms, and its statistical significance across the full range on the conditioning variable, it is necessary to plot out the substantive conditional effects graphically (Brambor et al., 2006).

Figure 4 shows how the effect of neighboring foreign movement changes across varying levels of local freedom of foreign movement. The x-axis is the size of the marginal effect of an increase from completely restricted neighborhood freedom of foreign movement to completely unrestricted neighborhood freedom of foreign movement. These values are changes in probabilities and range between -1 and 1. The y-axis identifies the local level of freedom of foreign movement: closed (0), moderate (1) and open (2). The plot's three squares show the effect of a change in neighborhood movement from closed to open.¹³ The plot lines, show the 95% confidence interval. Starting with the condition where local freedom of foreign movement is restricted, an increase in neighboring foreign movement produces an increased probability of a state being a source for trafficking. That effect is diminished at moderate local

levels of freedom of foreign movement. However, it is important to note the overlap between the confidence intervals here. The most interesting finding illustrated in this figure is that when local freedom of foreign movement is completely open, freedom of foreign movement in the neighborhood no longer has a statistically significant or positive effect on trafficking. The predicted probability actually becomes negative, although not statistically significant.

These findings are consistent with both Hypotheses 3a and 3b. Under the condition where a state is restrictive of foreign movement, greater openness in neighboring states increases the probability of a state being a source for trafficking (Hypothesis 3a). This is consistent with the theoretical claim that in states where there are restrictions on movement, vulnerable populations are more likely to be driven into the hands of traffickers, and traffickers can more easily move them into neighboring states. However, when a state's local freedom of foreign movement is relatively open, having relatively free movement in neighboring countries no longer increases the probability of being a source for trafficking (Hypothesis 3b). This is consistent with the idea that even with relatively open borders in neighboring states, the relative openness locally makes it less likely that there is a vulnerable population to be trafficked in the first place.¹⁴ Overall, our results suggest that open borders lead to increased trafficking when there is some divergence between what a state and its neighbors allow. As long as a state and its neighbors are less restrictive in their freedom of foreign movement, there is no increase in the probability of a state being a source of trafficking.

[Figure 4 here]¹⁵

Sensitivity analysis

In our initial four models discussed above our results are consistent with our hypotheses that expected higher trafficking outflows in countries with divergent freedom of foreign movement patterns than their neighbors. In estimating these models, we were minimal in our modeling approach especially in our choice of two control variables. In doing so we follow the advice of

a number of researchers from George Box (1976)¹⁶ to Christopher Achen (2005). While Box and others suggest that all models may be wrong, the key is to try and make them applicable to the task at hand. Our initial models simply captured the theoretical dynamic at the heart of this paper, however, it clearly left in the error term other country-level factors that the literature suggest are important to understanding why some countries are more or less likely to be sources for human trafficking. Therefore, in this section we conduct a series of sensitivity analyses to systematically evaluate the robustness of our three main independent variables as well as other explanatory factors. We do this in two ways. First, we address the sensitivity of our main results to the inclusion of other factors in our models using extreme bounds analysis. Second, we address model uncertainty more generally by Bayesian model averaging.

Leamer (1985, p. 308) says that “a fragile inference is not worth taking seriously,” so we use his method of sensitivity analysis to see if our variables are fragile or robust to a battery of additional variables as well as see what other variables are also significant. We look at over a dozen additional variables found to be significantly associated with trafficking push factors in Cho (2015). Cho (2015) is the most influential paper we are familiar with that looks at quantitative models of human trafficking. She finds thirteen push variables and thirteen pull variables robustly associated with trafficking. We use the same method as Cho (2015) to both see if our variables are robust to a series of additional variables as well as see given the HTI data these same variables are significant.¹⁷ The functional form of this model is $Y = \beta_i I + \beta_m M + \beta_z Z + u$ where Y is the dependent variable (a trafficking source dummy), I is a vector of focus variables included in all models (GDP), M is the variable of interest, Z is a set of three controls, and u is the error term (Sala-i-Martin 1997). For our sensitivity analysis we have five focus variables (freedom of foreign movement, neighboring freedom of foreign movement, the interaction term of the first two variables, GDP (ln), and population (ln)), and twelve variables that are alternately a variable of interest and a control. These models chose one of the twelve

auxiliary variables and put them in a series of models with the five variables and every possible unique combination of three other auxiliary variables. This means that each auxiliary variable is included in 66 models and the focus variables are included in all 286 models. Variables that are considered robust have the vast majority (95%) of their cumulative distribution function of their coefficients either all above zero (as we expect freedom of foreign movement to have) or below zero (the interaction term). To be sure that the results are not contingent on the choice of foreign movement data source, we run these models using both CIRI and V-Dem foreign movement data.

The results from our 286 EBA models are summarized in Table 2. The first two columns in Table 2 show the average coefficient and standard deviation for each variable. The next column shows the percentage of a variable's cumulative density function is above zero. If this number is above .95 or below 0.05 the variable is considered a robust predictor of being a human trafficking source. The top line result is that all five of our focus variables including our three main independent variables are still significant and in the expected direction. We take this to be an important finding. Our initial results hold up even when included a systematic additional series of predictors. Turning to the dozen auxiliary variables, nine are robust predictors using either CIRI or V-Dem data and most are for both. The three that are significant for one of two series of models are corruption, food and beverage production as a percentage of GDP, and the CIRI physical integrity rights index. The three factors that are not significant are the Europe dummy, Polity2 and the rule of law.

[Table 2 here]

As a further effort at gauging the robustness of our main results, we use the Bayesian model averaging (BMA) approach introduced by Magnus et al. (2010) to fit a classical linear regression model with uncertainty about the choice of the explanatory variables.¹⁸ This estimates models' posterior probabilities (e.g., what is the likelihood of a model given our

observed data) and then computes a weighted average of these conditional estimators (Magnus et al., 2010, p. 140). Four important statistics are generated by this process. The main one is the posterior inclusion probability (PiP)—the likelihood that the models will include a variable and suggests robustness. We follow the literature in concluding that a variable with a posterior inclusion probability above 0.5 is likely to be in the true model of human trafficking. The second and third are the posterior mean parameter and its standard error. The fourth is the ratio of the posterior mean and standard error, which is comparable to a frequentist t-statistic and captures the estimate’s precision. We use the standard estimate of one as threshold of being robustly correlated with outcome (De Luca & Magnus 2011).

The BMA results are summarized in Table 3. We run BMA using both CIRI and V-Dem data for our three main independent variables. As previously noted, these models allow for different time periods and different conceptualizations of freedom of foreign movement. Like in the EBA results our five main variables (three related to freedom of foreign movement and GDP and population) all have posterior inclusion probabilities of 1.0, and all but freedom of foreign movement is precisely measured. This provides further evidence that our main results are not driven by idiosyncratic modeling decisions or case inclusion. Five auxiliary variables are both robust and precisely measured in the CIRI models (globalization, rule of law, an EU dummy, the percentage of the population that is Muslim, and crime). The V-Dem models suggest the first four are robust, but crime is not. The V-Dem analysis also suggests that the Europe dummy, food and beverage production, and infant mortality are also robust and precisely measured.

[Table 3 here]

Taken as a whole, our sensitivity analysis provides further evidence for the robustness of the results in the previous section regarding the interactive effect of local and neighboring

freedom of foreign movement. These results hold even when including a dozen other factors that existing literature suggests are also push factors for human trafficking.

Conclusion

This paper provides insight into a question that has received limited academic theoretical attention and no quantitative empirical attention. It also addresses a question that has been at the center of a hotly contested policy dispute. That dispute has mainly been between policy makers, especially in law enforcement, who claim that open borders create an opportunity for trafficking, and activists and academics that see restrictions on movement as likely to make people more vulnerable to trafficking. We show here that the relationship is likely more complex and requires a consideration of both a state's own levels of freedom of foreign movement and the level of respect for freedom of foreign movement in neighboring states. More specifically, openness of borders in a regional neighborhood is really only shown to have a systematic effect on trafficking out of a state when that state places restrictions on movement of its own population. In addition, when a state adopts open policies on freedom of foreign movement, and its neighbors do as well, there is no increased probability of trafficking. This contradicts the sort of policy recommendations and concerns from the UK Home Office and Europol that we described in the introduction.

This paper is also an important contribution to the growing literature on human trafficking. This evidence is consistent with existing research that focuses on vulnerability (Cho, 2015) of potential trafficked individuals and the criminal calculation of traffickers (Jac-Kucharski, 2012). It also compliments and extends existing work on the links between human trafficking and domestic political institutions (Potrafke, 2016), borders (DiRienzo & Das, 2017), and legal frameworks (Cho et al., 2013). It also contributes to the work on neighborhood spatial dynamics of human rights observance (Bell et al., 2014) as well as establishes another

outcome affected by the freedom of foreign movement (Barry et al., 2014; Miller & Peters, 2018). In addition, while work like that of Sassen (2000) suggests that we might expect a connection between immigration policy and trafficking flows, to our knowledge this is the first piece to provide quantitative evidence that addresses that connection.

Finally, we see three areas for future research. First, freedom of movement is not the only human right violation that is likely to be related to human trafficking. We think that physical integrity rights abuses, workers' rights, and other empowerment rights warrant specific attention in future work as our argument suggests that governments' policies shape both trafficking perpetrator and potential trafficking victims' incentives to cross borders. Second, it is possible that there are other ways to identify the openness and ease of crossing borders. In particular, certain geographic features (e.g., the size of a state's territory or the number of potential border crossings) might serve as impediments or opportunities to trafficking. States also have different border orientations (Simmons & Kenwick 2021) that might help identifying where human trafficking flows are likely to be a problem. Third, our theoretical argument can also speak to how freedom of movement affects the probability of trafficking to destination states. This paper focuses on trafficking from source countries, but freedom of movement policies and practices potentially have similar effects on the probability of trafficking to destination states.

References

- Achen, C. (2005) Let's put garbage-can regressions and garbage-can probits where they belong. *Conflict Management and Peace Science*, 22(4), 327-339.
- Akee, R., Basu, A. K., Bedi, A., & Chau, N. H. (2014) Transnational trafficking, law enforcement, and victim protection: A middleman trafficker's perspective. *The Journal of Law and Economics*, 57(2), 349-386.
- Bales, K., Hesketh, O., & Silverman, B. (2015) Modern slavery in the UK: How many victims? *Significance*, 12(3), 16-21.
- Bales, K., Murphy, L. T., & Silverman, B. W. (2020) How many trafficked people are there in greater New Orleans? Lessons in measurement. *Journal of Human Trafficking*, 6(4), 375-387.
- Barry, C. M., Clay, K. C., Flynn, M. E., & Robinson, G. (2014) Freedom of foreign movement, economic opportunities abroad, and protest in non-democratic regimes. *Journal of Peace Research*, 51(5), 574-588.
- Bell, S. R., & Banks, V. (2018) Women's rights organizations and human trafficking. *Social Science Quarterly*, 99(1), 362-376.
- Bell, S. R., Bhasin, T., Clay, K. C., & Murdie, A. (2014) Taking the fight to them: Neighborhood human rights organizations and domestic protest. *British Journal of Political Science*, 44, 853-875.
- Bell, S. R., Flynn, M. E., & Martinez Machain, C. (2018) U.N. peacekeeping deployments and trafficking. *International Studies Quarterly*, 62(3), 643-655.
- Berry, W. D., Golder, M., & Milton, D. (2012) Improving tests of theories positing interaction. *Journal of Politics*, 74(3), 653-671.
- Bettio, F., & Nandi, T. (2010) Evidence on women trafficked for sexual exploitation: A rights based analysis. *European Journal of Law and Economics*, 29(1), 15-42.
- Blanton, R. G., Blanton, S. L., & Peksen, D. (2020) Confronting human trafficking: The role of state capacity. *Conflict Management and Peace Science*, 37(4), 471-489.
- Box, G. (1976) Science and statistics. *Journal of the American Statistical Association*, 71(356), 791-799.
- Brambor, T., Clark, W. R., & Golder, M. (2006) Understanding interaction models: Improving empirical analyses. *Political Analyses*, 14(1), 63-82.
- Braumoeller, B. F. (2004) Hypothesis Testing and Multiplicative Interaction Terms. *International Organization*, 58(4), 807-820.
- Cho, S.-Y. (2013) Integrating equality: Globalization, women's rights, and human trafficking. *International Studies Quarterly*, 57, 683-697.
- Cho, S.-Y. (2015) Modeling for determinants of human trafficking. *Social Inclusion*, 3(1), 2-21.
- Cho, S.-Y., Dreher, A., & Neumayer, E. (2013) Does legalized prostitution increase human trafficking? *World Development*, 41(1), 67-82.
- Cingranelli, D., & Richards, D. (1999) Measuring the level, pattern, and sequence of government respect for physical integrity rights. *International Studies Quarterly*, 43, 407-417.
- Cingranelli, D., Richards, D., & Clay K. C. (2014) The CIRI human rights dataset. <http://www.humanrightsdata.com>.
- Cope, K. L., Crabtree, C., Fariss, C. (2020) Patterns of Disagreement in Indicators of State Repression. *Political Science Research and Methods*, 8(1), 178-187.
- Coppedge, M., Gerring, J., Knutsen, C. H., Lindberg, S. I., Teorell, J., Altman, D., Bernhard, M., Fish, M. S., Glynn, A., Hicken, A., Lührmann, A., Marquardt, K. L., McMann, K., Paxton, P., Pemstein, D., Seim, B., Sigman, R., Skaaning, S.-E., Staton, J., Cornel, A.,

- Gastaldi, L., Gjer-Løw, H., Mechkova, V., vom Römer, J., Sundström, A., Tzelgov, E., Uberti, L., Want, Y., Wig, T., & Ziblatt, D. (2020) *V-Dem Codebook v10*. Varieties of democracy (V-Dem) project.
- Durgana, D., & Van Dijk, J. (2021) Measuring the hidden numbers of human trafficking through multiple systems estimation: Lessons learned and challenges outstanding. Forthcoming from *Crime and Delinquency*.
- De Luca, G., & Magnus, J. (2011) Bayesian model averaging and weighted-average least squares: Equivariance, stability, and numerical issues. *Stata Journal*, 11(4), 518-544.
- Direienzo, C. E., & Das, J. (2017) Human trafficking and country borders. *International Criminal Justice Review*, 27(4), 278-288.
- Europol (2013) *EU serious and organised crime threat assessment*. Van Deventer.
- Farrell, A., McDevitt, J., & Fahy, S. (2010) Where are all the victims? Understanding the determinants of official identification of human trafficking incidents. *Criminology and Public Policy*, 9(2), 201-233.
- Frank, R. W. (2013) *Human Trafficking Indicators, 2000-2011: A New Dataset*. <http://dx.doi.org/10.2139/ssrn.2314157>.
- Goodey, J. (2008) Human trafficking: Sketchy data and policy responses. *Criminology and Criminal Justice*, 8(4), 421-442.
- Hainmueller, J., Mummolo, J., & Xu, Y (2019) How much should we trust estimates from multiplicative interaction models? Simple tools to improve practice. *Political Analysis*, 27, 163-192.
- Hathaway, J. (2008) The human rights quagmire of 'human trafficking'. *Virginia Journal of International Law*, 49(1), 1-59.
- Hope, C. (2014, July 22) EU free movement rules being exploited by drug runners and human traffickers, says government study. *The Telegraph*.
- International Labour Organization (2012) *ILO 2012 global estimate of forced labour*. Geneva: ILO.
- Jac-Kucharski, A. (2012) The determinants of human trafficking: A U.S. case study. *International Migration*, 50(6), 150-165.
- Keck, M., & Sikkink, K. (1998) *Activists beyond borders: Advocacy networks in international politics*. Cornell University Press.
- Laczko, F. (2005) Data and research on human trafficking. *International Migration*, 43(1-2), 5-16.
- Laczko, F. (2007) Enhancing data collection and research on trafficking in persons. In E. U. Savona & S. Stefanizzi (Eds.) *Measuring human trafficking: Complexities and pitfalls* (pp. 37-44) Springer Science.
- Leamer, E. E. (1985) Sensitivity analysis would help. *American Economic Review*, 75(3), 308-313.
- Long, L. (2004) Anthropological perspectives on trafficking of women for sexual exploitation. *International Migration*, 42(1), 5-31.
- Magnus, J. R., Powell, O., Prüfer, P. (2010) A comparison of two model averaging techniques with an application to growth empirics. *Journal of Econometrics*, 154, 139-153.
- Mahmoud, T. O., & Trebesch, C. (2010) The economics of human trafficking and labour migration: Micro-evidence from Eastern Europe. *Journal of Comparative Economics*, 38(2), 173-188.
- Miller, M. K., & Peters, M. E. (2018) Restraining the huddled masses: Migration policy and autocratic survival. *British Journal of Political Science*, 50, 403-433.
- Neumayer, E., & Plümper, T. (2009) SPMON: Stata module to create spatial effect variable for monadic data. *Statistical Software Components*, Boston College, revised 02 Jul 2013.
- O'Connell Davidson, J. & Howard, N. (2015) On freedom and (im)mobility: How states

- create vulnerability by controlling human movement. May 18. *Open Democracy*.
- Potrafke, N. (2016) Policies against human trafficking: The role of religion and political institutions. *Economics of Governance*, 17, 353–386.
- Rudolph, A., & Schneider, F. (2017) International human trafficking: Measuring clandestinity by the structural equation approach. *Social Inclusion*, 5(2), 39-58.
- Sassen, S. (2000) Women’s burden: Counter-geographies of globalization and the feminization of survival. *Journal of International Affairs*, 53(2), 503-524.
- Silverman, B. W. (2020) Multiple-systems analysis for the quantification of modern slavery: Classical and bayesian approaches. *Royal Statistical Society*, 183(3), 691-736.
- Simmons, B., & Kenwick, M. (2021) Border orientation in a globalizing world. Forthcoming from *American Journal of Political Science*.
- Stinnett, D., Tir, J., Schafer, P., Diehl, P., & Gochman, C. (2002) The Correlates of War project direct contiguity data, Version 3. *Conflict Management and Peace Science*, 19(2), 58-66.
- Schwartz, K., & Allain, J. (2020) *Antislavery in domestic legislation: An empirical analysis of national prohibition globally*. University of Nottingham.
- Tallmadge, R., & Gitter, R. J. (2018) The determinants of human trafficking in the European Union. *Journal of Human Trafficking*, 4(2), 155-168.
- Tyldum, G., & Brunovskis, A. (2005) Describing the unobserved: Methodological challenges in empirical studies on human trafficking. *International Migration*, 43(1/2), 17-34.
- United Kingdom Home Office (2014) *Review of balance of competences between the United Kingdom and the European Union: Single market: Free movement of persons*. United Kingdom.
- United States Department of State (2020) *Trafficking in persons report*. Department of State.
- Whitehead, J., Jackson, J., Balch, A., & Francis, B. (2020) On the unreliability of multiple systems estimation for estimating the number of potential victims of modern slavery in the UK. *Journal of Human Trafficking*, 7(1), 1-13.
- World Bank, The (2020) *World development indicators*. World Bank.

Figure 1. Trafficking sources as a percentage of countries in TIP reports

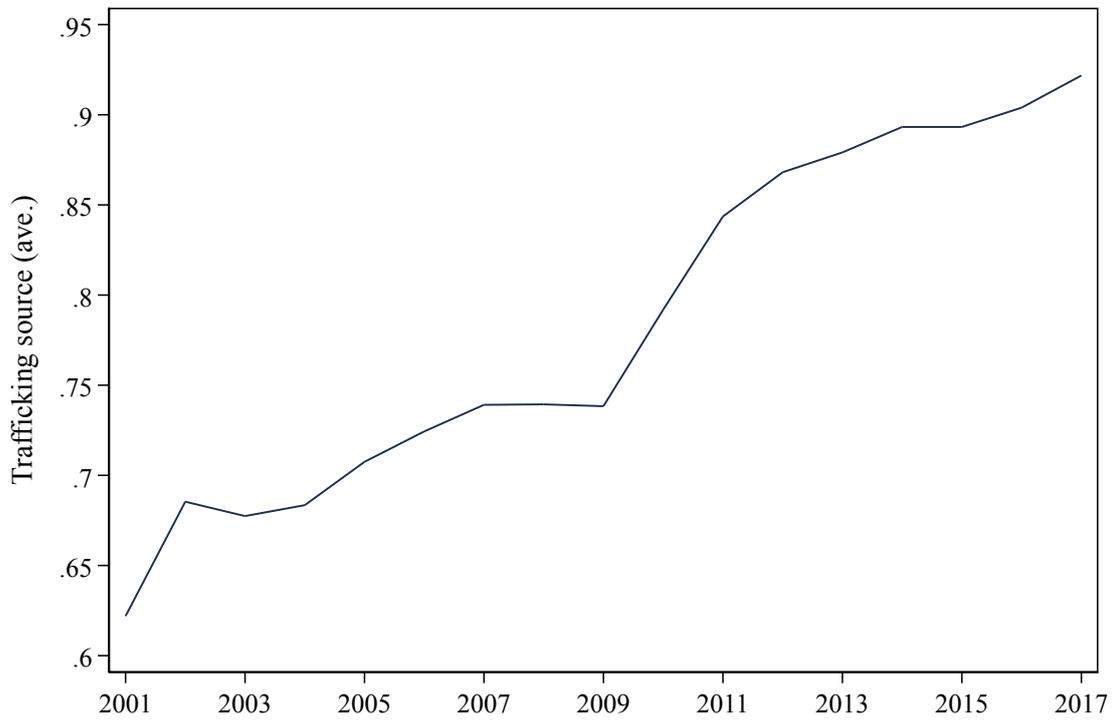


Figure 2. CIRI freedom of foreign movement over time

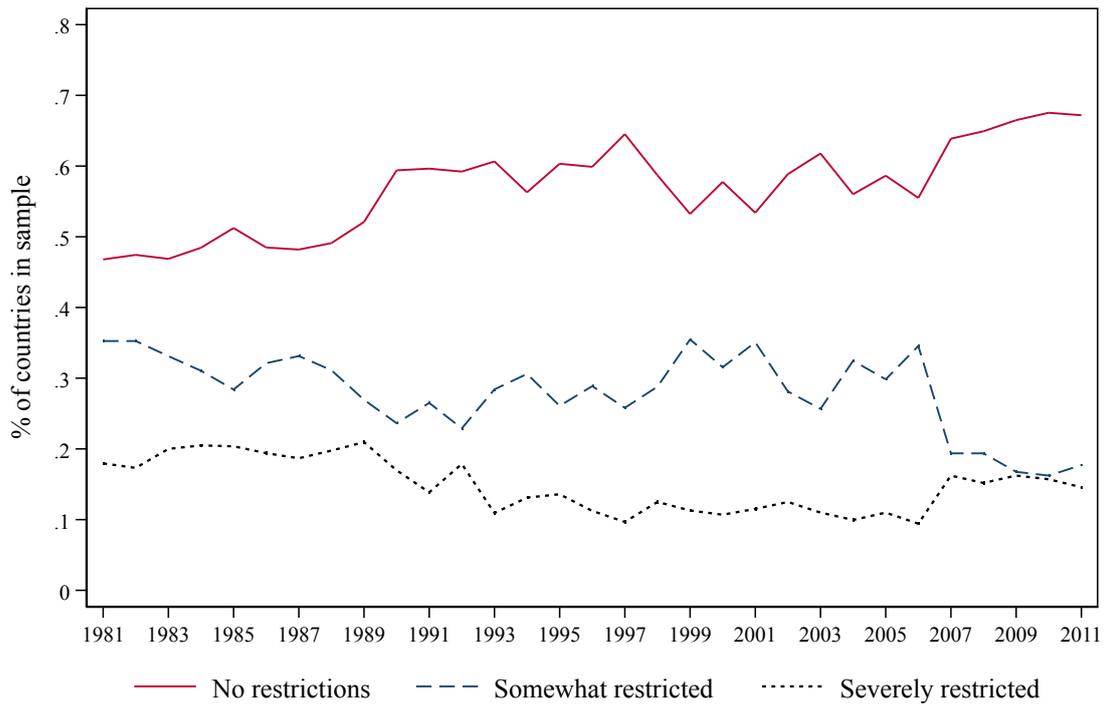


Figure 3. CIRI freedom of foreign movement restrictions, 2011

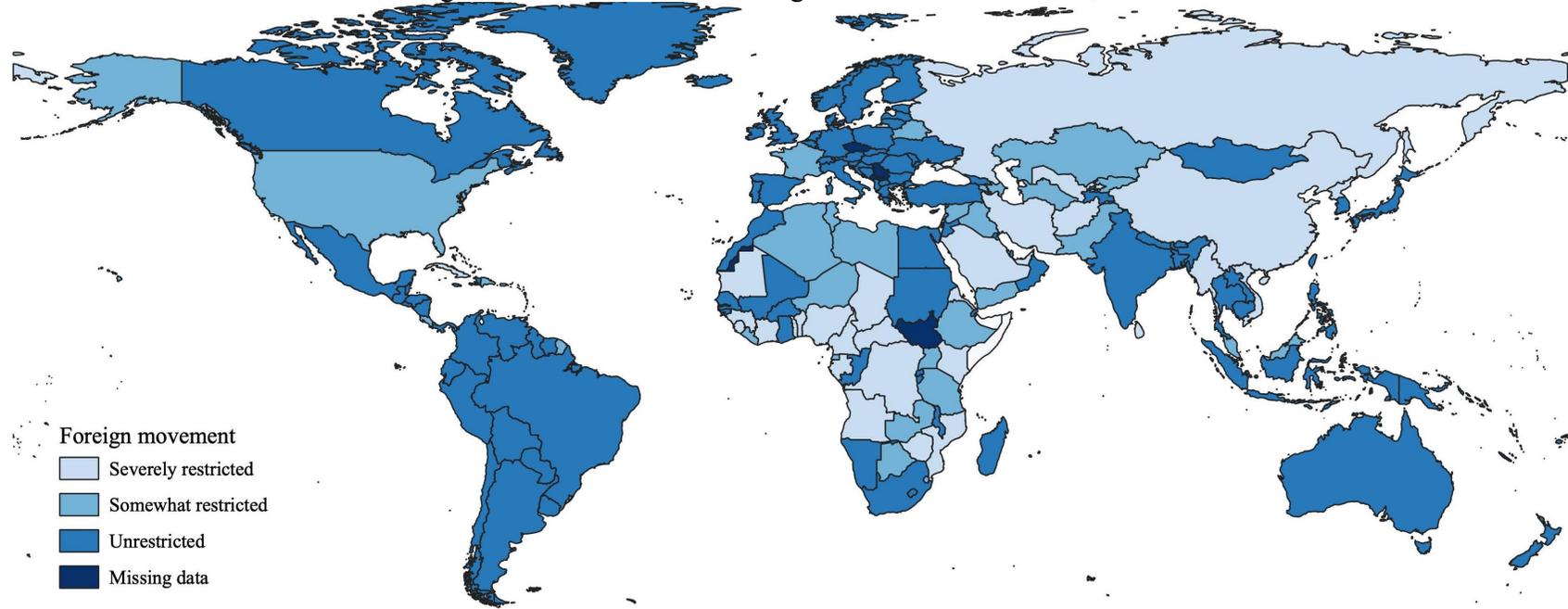


Table 1. Trafficking source probit results

	<i>CIRI</i>		<i>V-Dem</i>	
	(1)	(2)	(3)	(4)
Freedom of foreign movement	0.374** (0.139)	0.839*** (0.254)	0.219* (0.100)	0.301** (0.106)
Neighbors' freedom of foreign movement	0.378* (0.149)	1.056** (0.351)	0.316* (0.132)	0.498*** (0.148)
Foreign movement* Neighbors' freedom of foreign movement		-0.429* (0.201)		-0.132* (0.063)
GDP	-0.953*** (0.0828)	-0.949*** (0.084)	-0.929*** (0.083)	-0.914*** (0.084)
Population	1.117*** (0.104)	1.112*** -0.949***	1.130*** (0.100)	1.121*** (0.103)
Constant	5.514*** (1.210)	4.859*** (1.150)	5.398*** (1.069)	5.129*** (1.093)
Log-pseudolikelihood		-457.5	-452.2	-643.6
Observations		1,556	1,502	2,297
# countries		151	151	152
Years		2001-12	2001-12	2001-17
AIC		925.02	916.31	1,297.28
BIC		951.77	948.41	1,325.98

Note: * p<0.05, ** p<0.01, *** p<0.001, two-tailed test.

Figure 4: Model 2's conditional effect on trafficking

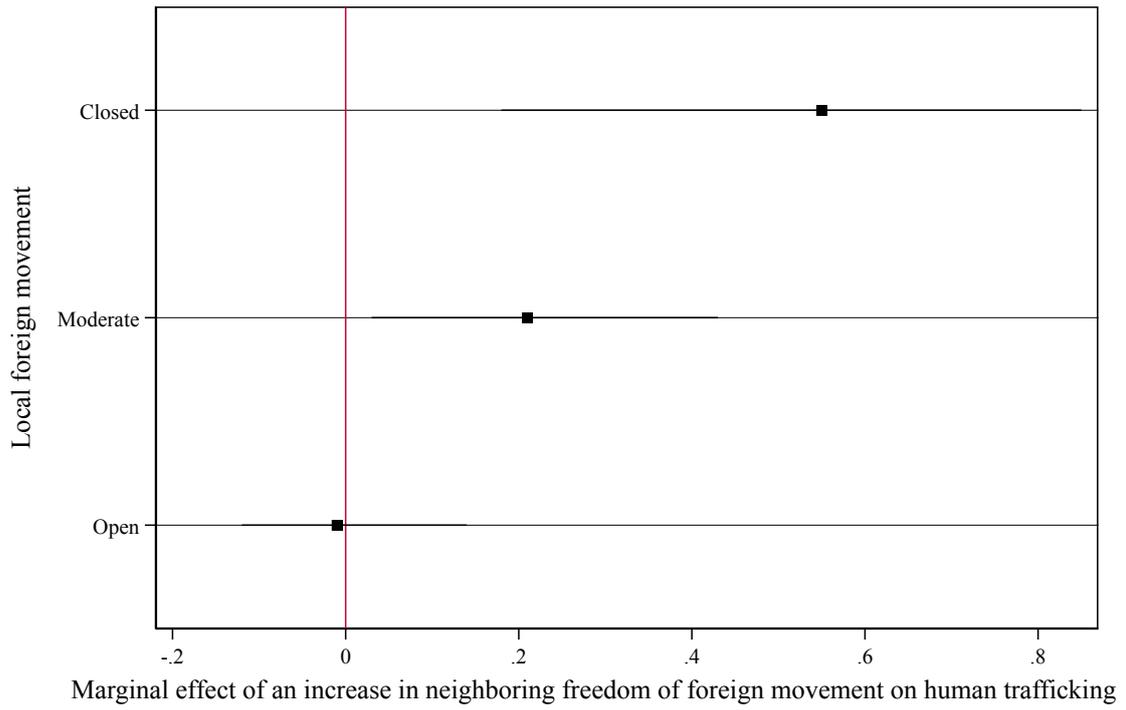


Table 2. Sensitivity analysis

Variable	Model 2 using CIRI's freedom of foreign movement				Model 4 using V-Dem's freedom of foreign movement			
	Coef. (mean)	s.d.	CDF %>0	Robust	Coef. (mean)	s.d.	CDF %>0	Robust
<i>Free variables</i>								
Freedom of foreign movement	0.863	0.147	1.000	yes	0.239	0.106	1.000	yes
Neighboring freedom of foreign movement (ave.)	1.184	0.288	1.000	yes	0.544	0.142	1.000	yes
Interaction term	-0.587	0.140	0.000	yes	-0.181	0.100	0.052	yes
GDP (ln)	-1.122	0.139	0.000	yes	-1.079	0.140	1.000	yes
Population (ln)	1.240	0.137	1.000	yes	1.234	0.134	1.000	yes
<i>Auxiliary variables</i>								
3P Index	0.131	0.020	1.000	yes	0.104	0.014	1.000	yes
Corruption	-0.050	0.052	0.136	no	-0.060	0.045	0.030	yes
Crime (homicides)	0.248	0.075	1.000	yes	0.181	0.104	0.970	yes
Europe dummy	0.058	0.251	0.636	no	0.051	0.230	0.621	no
Food/beverage/tobacco (% GDP)	-0.012	0.004	0.000	yes	-0.003	0.006	0.348	no
Globalization index	0.029	0.017	0.955	yes	0.041	0.015	1.000	yes
Infant mortality	-0.015	0.006	0.000	yes	-0.019	0.008	0.000	yes
Middle East/North Africa	-0.763	0.377	0.045	yes	-0.638	0.370	0.076	yes
Muslim population (%)	-0.012	0.002	0.000	yes	-0.010	0.002	0.000	yes
Physical integrity rights index	-0.014	0.054	0.591	no	-0.072	0.044	0.924	yes
Polity2	0.025	0.016	0.939	no	0.029	0.022	0.848	no
Rule of Law	-0.133	0.207	0.227	no	-0.152	0.178	0.121	no

Note: Extreme bounds analysis with focus variables included in all 286 models and all combinations (66) of auxiliary variables considered in groups of three. Robustness considered at 0.95 level, one tailed-test using Sala-i-Martin's (1999) criteria.

Table 3. Bayesian model averaging results

<i>Variable</i>	<i>CIRI</i>			<i>V-Dem</i>		
	Posterior mean (st'd error)	<i>t</i>	PiP	Posterior mean (st'd error)	<i>t</i>	PiP
<i>Free variables</i>						
Constant	0.742 (0.405)	1.83	1.00	1.954 (0.524)	3.73	1.00
Freedom of foreign movement	0.169 (0.051)	3.32	1.00	0.012 (0.032)	0.39	1.00
Neighboring freedom of foreign movement (ave.)	0.237 (0.073)	3.20	1.00	0.084 (0.041)	2.04	1.00
Interaction term	-0.127 (0.041)	-3.10	1.00	0.063 (0.022)	2.87	1.00
GDP (ln)	-0.221 (0.027)	-8.25	1.00	-0.270 (0.036)	-7.56	1.00
Population (ln)	0.249 (0.031)	8.10	1.00	0.287 (0.037)	7.71	1.00
<i>Auxiliary variables</i>						
Globalization	0.017 (0.003)	5.91	1.00	0.015 (0.003)	4.60	1.00
Crime (homicides)	-0.067 (0.020)	3.40	0.99	0.009(0.018)	0.49	0.24
Rule of law	-0.188 (0.046)	-4.05	0.99	-0.153 (0.090)	-1.70	0.80
EU dummy	-0.208 (0.054)	-3.86	0.98	-0.237(0.058)	-4.10	1.00
% Muslim population	-0.002 (0.001)	-2.26	0.91	-0.001 (0.001)	-1.28	0.70
CIRI physical integrity rights	0.011 (0.014)	0.79	0.45	-0.000 (0.002)	-0.00	0.04
Infant mortality	-0.001 (0.002)	-0.49	0.24	-0.003(0.003)	-1.02	0.58
3-P Index	0.000 (0.002)	0.16	0.16	0.000(0.002)	0.14	0.06
Europe dummy	-0.009 (0.033)	-0.26	0.10	-0.266(0.067)	-3.97	1.00
Middle East/North Africa dummy	-0.005 (0.031)	-0.16	0.08	-0.013(0.043)	-0.30	0.13
Corruption	-0.001 (0.008)	-0.16	0.06	-0.021 (0.033)	-0.64	0.34
Food, beverage, and tobacco as a % of GDP	-0.000 (0.000)	-0.15	0.05	-0.003(0.002)	-1.68	0.82
Polity 2	0.000 (0.001)	0.03	0.05	-0.000(0.001)	-0.06	0.05

Note: 8,192 model space. PiP above .5 in bold. Variables sorted by PiP value for CIRI models.

¹ We define freedom of movement here consistent with the International Covenant of Civil and Political Rights (1966: Article 12). This definition includes four parts: (1) “Everyone lawfully within the territory of a State shall, within that territory, have the right to liberty of movement and freedom to choose his residence.” (2) “Everyone shall be free to leave any country, including his own.” (3) “The above-mentioned rights shall not be subject to any restrictions except those which are provided by law, are necessary to protect national security, public order (ordre public), public health or morals or the rights and freedoms of others, and are consistent with the other rights recognized in the present Covenant.” (4) “No one shall be arbitrarily deprived of the right to enter his own country.” In this paper we focus on the parts of this definition that speak to restrictions on foreign movement.

² We use the definition of human trafficking given by the 1999 Palermo Protocol. This definition can incorporate trafficking for forced labor and for sexual exploitation. Most of the literature has focused on sexual exploitation, but a 2012 International Labor Organization (ILO) report finds that three quarters of trafficking is for forced labor in industries that are not sexually related.

³ To clarify our theoretical argument and because of space constraints, we focus this paper on freedom of movement and trafficking from source countries. We leave it to future research to link freedom of movement policies to destination and transit countries’ trafficking flows, but we do think our argument would likely also apply to destination states.

⁴ Local practices are not to be confused with freedom of domestic movement, which is a different concept.

⁵ It is important to note that this measure does not relate to the well-known TIP tier rankings, which measure “how well other governments complied with the minimum standards for the elimination of trafficking laid out in the law,” (US Department of State, 2020, 3). These tier rankings have been criticized in the past for political interference (e.g., Murray, 2020). Rather we use a measure of being a source country—a measure of the nature of human trafficking rather than government response.

⁶ There is a long and robust debate about the estimate of and use of human trafficking flow numbers (e.g., Bales et al., 2015, Bales et al., 2020; Durgana and van Dijk, 2021; Farrell et al., 2010; Laczko, 2005; Silverman, 2020; Tyldum and Brunovskis, 2005; Whitehead et al., 2020).

⁷ Both freedom of movement measures include elements of both de jure and de facto restrictions. Therefore, it is not possible in this study to isolate the effects of either formal restrictions or in practice restrictions’ effects on human trafficking.

⁸ Five different levels of contiguity were considered: direct contiguity, within 12 miles of water, within 24, 150, and 400 miles. Given many migration flows occur across water, it is necessary to examine our hypotheses with more than just direct territorial contiguity. In Models 1-4 we use 12km of water. The appendix includes models with different thresholds of contiguity. Our results hold regardless of contiguity level.

⁹ Spatial data generated using Stata 16.1’s `spmon` command.

¹⁰ Figure A2 shows this variable’s distribution using CIRC.

¹¹ We also estimated models controlling for domestic freedom of movement. The results (reported in the online appendix, Table A2) remain substantively the same.

¹² Previous work (e.g., Berry et al., 2012; Braumoeller, 2004; Brambor et al., 2006; Hainmueller et al., 2019) suggest not directly interpreting the coefficients in on interaction terms in non-linear models.

¹³ Statistical significance levels are the same for 0 to 1 and 1 to 2.

¹⁴ These models were also estimated with a control for EU membership. This variable is not statistically significant and does not change our main results. See Table A3.

¹⁵ The V-dem plot (Figure A4) looks substantively the same.

¹⁶ “Since all models are wrong the scientist cannot obtain a ‘correct’ one by excessive elaboration. On the contrary following William of Occam he should seek an economical description of natural phenomena,” Box (1976: 792).

¹⁷ Cho (2015) also uses TIP data to estimate time-series trafficking models.

¹⁸ Using linear regression with a dichotomous dependent variable violates several of OLS’s underlying assumptions—specifically that the residuals will not be normally distributed, and some model predictions would fall outside of realistic range. This is mitigated somewhat by our use of robust sandwich standard errors. Nevertheless, the BMA results should be indicative and not definitive. Given our focus is on model averaging not the results of any specific model nor prediction, we use BMA analysis as a complement to our sensitivity analysis. Therefore, the BMA results should be considered part of the larger effort to evaluate the sensitivity of our main independent variables’ results give various model specifications.