Reducing supply: the effect of disaster and government intervention on child trafficking

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Very early draft

Abstract

Building on intuitions from standard models of crime and economic incentives, we investigate the influence of disasters and government interventions on human trafficking and unsafe migration of children that supplies forced labor for multiple industries. We explore the effects of changes in the supply of such forced workers on individuals' willingness to migrate into forced work or their vulnerability to fall prey to illegal traffickers, and compare the situation where such changes are caused by government activity to free forced workers and prosecute perpetrators in particular industries, versus the situation where such changes are caused by exogenous shocks such as large-scale disasters. In our model, the reward to migrate into forced work increases when the supply of forced labor is reduced by government activity curtailing trafficking, while the cost of engaging in trafficking and the probability of being caught rises at the same time. In contrast, when the supply of trafficked humans declines through an exogenous shock, for example a disaster that cuts off supply routes, the cost of committing such crimes falls simultaneously due to decreased government capacity spent on enforcement but increases with blocked trafficking routes. We show that both forms of reducing supply makes trafficking more rewarding and therefore does not decrease criminal activity. We illustrate our theoretical findings with evidence from Nepal exploiting two events: a large-scale disaster (i.e., the 2015 earthquake) that serves as an exogenous shock on supply of forced labour as well as industry-specific government activity to free trafficked workers and prosecute traffickers in the textile industry.

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1 Introduction

The prevailing approach to studying child trafficking is based on an image of a naïve child being abducted and taken to live in a situation of modern-day slavery. Child trafficking is therefore often a concern in the humanitarian arena when disaster strikes. An unplanned shock such as an earthquake or tsunami causes a *disaster* by disrupting society. Large-scale disruptions can result in children being orphaned or separated from family and guardians, and as public officials struggle to grapple with relief efforts and coordinate recovery, traffickers snatch up children that are later presumed dead. Based on this narrative, vast efforts to combat child trafficking often follow catastrophic events, including heightened border patrols and citizenship checks.

These efforts are based on the idea that children are more vulnerable to trafficking when the supply of children is easier to access. The reality of child trafficking, however, is that the supply of children rarely involves abduction or parental absenteeism. In a preponderance of cases, children enter arrangements with the consent of, and sometimes additional funds contributed by, their parents. These parents are often hoping for a better life for the children that leave home, and for the people who stay behind. Though these parents could be considered duped or deluded to various degrees, their consent for the movement of their children across borders has implications for how trafficking is affected by the uncertainty disasters bring, and how successful efforts to stop such trafficking should be designed. Motivated by this contradiction, we use this paper to investigate the question: How do disasters affect the child trafficking calculus?

We formally model the decision parents make of whether or not to send their children out of the home. Parents know that trafficking exists and is a threat, but also have to weigh the potential for a child to expand their opportunities, as well as the resource and income effects. We build on previous work modelling the parent's decision by adding and analyzing the disaster context. Considering critical events such as earthquakes and landslides to be exogenous shocks, we describe the market for children and the effects of various policy interventions, as well as disasters, on market behavior. In comparing and contrasting the effect of disasters with the effects of government interventions outside of disasters, we are able to identify the

mechanisms underpinning both the trafficking calculus and attempts to combat trafficking in both concepts.

Specifically, we find that a critical event that spurs a disaster perturbs the child trafficking market much as it does any other market. In the time it takes for the market to adjust to a new equilibrium, one of two things might happen. In one scenario, traffickers may flock to the area to attempt to fill their supply. In the other scenario, the government and international agencies enhance enforcement mechanisms before traffickers arrive. Essentially, the outcome of the adjustment period depends on who gets to the vacuum first.

We then offer evidence from the 2015 earthquake in Nepal and the response of the child trafficking industry, and of enforcement efforts to restrict trafficking after the event. We show that policy interventions targeted at enforcement and stopping the supply of children to multiple industries resulted in interceptions of more trafficked children than ever before. In this case, the disaster focused attention on the trafficking industry and actually perturbed the supply of children more than a standard intervention would have Contrary to popular expectation, this disaster did more damage to the child trafficking industry than service.

Our work offers several contributions. First, by specifying the parent's calculus of whether or not to send their children out of the home, we more closely model the way children enter the trafficking industry. Considering parents as actors in the trafficking enterprise gives a clearer understanding of the motives behind trafficking children, which current literature does not do. Without this understanding attempts to address the trafficking problem will be unlikely to fully succeed.

2　The Market for Children

Extant literature has considered the effect of government activities on crime in general and human trafficking in particular. Most generally, we see that increasing punishment for criminal activity via longer sentences or heightened enforcement yields a larger prison population but rarely translates into less crime. Freeman (1999) shows that non-incarcerated people replace crime taken off the streets because continual demand for illicit goods and services entices (so far) non-criminals to become suppliers when given the opportunity to earn more than legal

alternatives would provide.

The industry of child trafficking behaves similarly. Though some literature and widespread policy implementation suggest that increasing punishment to suppliers, and thus increasing costs to traffickers, is the most promising way to disincentivize this type of criminal activity (Wheaton, Schauer, and Galli 2010), suppliers find new mechanisms because the removal of some suppliers or supply chain links via enforcement creates the opportunity to earn even greater profits. The ever-shifting and flexible nature of crime suggests that the effect of stricter enforcement laws may not be a reduction of the level of trafficking.

As is the case with the market for other illicit goods, the market for children rarely responds to reductions in supply by shutting down. As long as the demand for children is sufficiently inelastic, we should not expect the supply to disappear. In many cases, criminalizing the business that is fed by human trafficking and forced migration is similarly unsuccessful (Lee and Persson 2013).

One mechanism that aids in the proliferation of trafficking is the push to migrate. People turn to traffickers to escort them across borders illegally, and then remain indebted to the traffickers once they reach the new country. Though we will not consider the debt problem for migrants or its consequences on the demand and supply of workers, we do note that one policy mechanism that seems to stem trafficking is governmental activity that eases this migration conundrum, because it reduces the profitability of trafficking (Joarder and Miller 2013). Friebel and Guriev (2006) argue that amnesties for migrants who have paid traffickers to assist their migration, as well as more lenient deportation policies or reduced restrictions on the visa process, actually serve to decrease human trafficking activity. This outcome is reached because the move from illegal status to legal work is easier, meaning migrants are more likely to default on their trafficking debts, and trafficking is less profitable.

When it comes to child trafficking, the decision of whether to use a trafficker is different because children are not making these decisions for themselves. So we do not consider the debt-migration situation in the parents' decision calculus. Additionally, we argue that the demand of trafficked work is rather inflexible in the context under investigation here. While trafficking in general certainly depends on the availability of an exploitable market (Morrison

2000), there is no reason to believe that such markets will not arise to meet demand should the profits be high enough.

Whenever illegal migration exists, driven by the sheer size of emigration flows or restrictive policies in host countries, the risk to fall pray to human traffickers is large. Studies found awareness campaigns as policy tool to be helpful in reducing such risk even in high emigration areas (Mahmoud and Trebesch 2010).

Eventually, however, even information interventions cannot accomplish change. As with any intervention designed to change human behavior, once information asymmetries are dispelled, those continuing to engage in the behavior are making an informed choice (Reinhardt and Chatsiou 2018). Releasing one's child to traffickers can only be reduced when the benefits of trafficking are outweighed by the costs. As long as benefits to releasing one's children remain, awareness campaigns fall short.

3 Theory

We provide a sketch of a model. The full model including proofs is not fully drafted yet.

3.1 Motivation

Trafficker   Engaging in human trafficking or facilitating unsafe migration is just one of the potential activities individuals may engage in. We view the impact of governmental activity through the lens of traffickers by considering how enforcement or regulation changes the trafficker's decision to conduct his or hers illegal activity. When disaster strikes, traffickers calculus will also be affected through governmental activity, in particular through restrictions on their ability to move migrants.

Migrants   Individuals want to migrate for a plethora of reasons, moving after family, prosecution, obtaining better medical care. Most prominent among those reasons certainly are economic reasons. In particular, the type of migration we are considering here, human trafficking and unsafe migration, certainly has their routes in economic considerations. Even if their decision to migrate is of non-economic nature, migrants will want to move when the

benefits from doing so out-ways the benefits from staying (as in Friebel and Guriev (2002)). In other words, our set-up below is flexible enough to accommodate non-economic reasons for deciding to leave. When disaster strikes, migrants ability to benefit from work at home or their existing wealth will be affected and therefore alters their calculus whether to migrate.

Children migrants   We particularly focus on children migrating for economic reasons where the decision to leave is made by their parents.

Information   While traffickers do not know whether they will be caught when engaged in illegal activity, the probability that they are caught is common knowledge. Migrants understand the benefits from migrating and the benefits from staying home perfectly well. We model that they may be tricked into migrating by false promise, for example the promise to receive an education once abroad or a better job than the one they end up with, by allowing the benefit from migrating to unravel after the fact. That is, at the moment of the workers decision to migrate, the benefit they think they will be getting is the one we take as foundation of their decision even if that benefit will not materialize.

Market for child migration   The market for children migrant workers is a fully competitive market where traffickers take an exogenous (world) market price for selling their recruited children migrants. Traffickers and the parents of the migrating children take the market offer for sending off the child as given. Demand for child migrant labor is also inelastic. It follows that trafficker will keep recruiting children until the last child acquired matches the additional benefit from selling the child on the migrant worker market.

3.2   Set-up

We are modelling a labor-market like interaction between traffickers T and the parents of migrant workers W.

T choose between illegal activity, either apprehending the child of W forcefully and potentially moving them abroad or at least moving them domestically, and refraining from trafficking and picking up non-criminal activities. That is, T chooses between crime $a_T = 1$ or no

crime $a_T = 0$. In line with the discussion above about what constitutes trafficking and how it relates to unsafe migration, we note here that we treat T's actions as illegal even when workers choose to follow them voluntarily. T generates benefits, B_T from moving workers, which comes from the value it has to T to have W work from him or sell her off to a domestic or international client. The level of benefit is given exogenously, in other words T is a price-taker. T further endures costs from provisioning workers, a quantity composed of what it costs T to obtain the worker – or convincing W to let their child move – which we denote ω_M and what it cost to move the child, K. ω_M is the benefit a trafficker offers to the W, which could be a wage paid to the child, a payment to the family, or the cost of abducting the child. Similar to B_T, ω^M is exogenously given. We assume the market for recruitment or trafficking of workers to be competitive and both T and W are price-takers. K is exogenously imposed and a function of government restrictions on trafficking – note this is not a cost imposed through punishment because it applies independently of whether T is caught. T also needs to factor in the probability of being caught, p, as well as facing the costs of punishment, P, if caught. In this way, T's chooses to engage in illegal activity instead of pursing an alternative non-criminal activity when

$$(1 - p)u(B_T - (\omega_M + K)) + pu(-P) \; > \; u(\omega_T) \qquad (1)$$

where ω_T is the earnings to T from alternative activities, we assume that $u(\cdot)$ is a continuous, twice differentiable function. ω_T is a function of individual characteristics such as T's skills and motivation and distributed among N_T potential traffickers following some non-degenerate distribution $F_T(\omega_T)$ where $F_T(\cdot)$ is differentiable.

Implications from the equation (1) are straightforward: engaging in trafficking must pay better than non-criminal activity and increasing the probability that T is caught or the punishment P for being caught yield the necessity for a larger differential between trafficking and non-criminal activity to keep T a criminal. Whether trafficking pays better that legal activity for an individual T is influenced by his particular realization of ω_T.

With respect to migrants decisions, we model it as a problem faced by the parents of children potentially targeted for recruitment (Dessy, Pallage, et al. 2003; Dessy, Mbiekop, Pallage, et al. 2005). Parents W choose between taking the recruitment offer by trafficker T and letting

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their child migrate, $a_W = 1$, and keeping the child at their home, $a_W = 0$. When W does leave, she will earn ω_M from the trafficked work, if s/he stays at home she will earn ω_W from labor available on location but parents also value raising a happy child and giving her access to education. The child of W will only be able to harvest the earnings from leaving home when the trafficker is not caught. The difference in happiness and education a child receives when staying home instead of leaving is captured by $B_W \in \mathbb{R}$. B_W may be negative if the happiness or education differential is negative or education at home imposes such high costs on the parents that they outweigh the benefits they derive from providing their child with education. In other words, a (negative) B_W represents the opportunity costs to W for keeping the child at home.

We will conceive of the decision to migrate not just as voluntarily leaving for taking up paid work elsewhere but also potentially being forced to leave in which case ω_M does not necessarily reflect a wage but more the (perceived) benefits from taking up work, residing elsewhere. Above we illustrated several ways by which traffickers instigate people to leave their home for benefits that may not realise and, for example, submitting to migration for receiving and education abroad turns into forced labor. W chooses to send of their child for migration if

$$(1 - p)u(\omega_M) \; > \; u(B_W + \omega_W) \qquad (2)$$

where we assume that $u(\cdot)$ is a continuous, twice differentiable function. As with T, for the child of W the earnings to be had when staying at home and working, ω_W, are a function of individual characteristics such as the child's skills and motivation and distributed among N_W children in society following some non-degenerate distribution $F_W(\omega_W)$ where $F_W(\cdot)$ is differentiable.

Implications of the parents' problem in equation 2 are straightforward as well: the parents will only decide to migrate off their child or fall for the trafficker if the offer of the benefit from migrating exceeds the sum of the benefits from working at home and the parents' valuation of the child's happiness and/or education.

3.3 Illustrating the effect of government interventions and disasters

Government intervention and disasters both affect the parameters of the decision faced by T and W. To illustrate these effects we assume $u(\cdot)$ to be linear in its arguments and define ω_M^{T*}, the level of ω_M for which T is indifferent between trafficking and not trafficking, or spelled out differently, between making an offer to W trying to lure their child into migrating or not. Solving for ω_M making T indifferent and re-arranging equation 1 gives us

$$\omega_M^{T*} = \frac{(1-p)(B_T - K) - pP - \omega_T}{1-p} \qquad (3)$$

Equivalently, we define ω_M^{W*}, the level of ω_M for which W is indifferent between sending their child away and keeping her home. Solving for ω_M making W indifferent and re-arranging equation 2 gives us

$$\omega_M^{W*} = \frac{B_W + \omega_W}{1-p} \qquad (4)$$

Observation 1 *The number of T willing to engage in trafficking is decreasing in ω_M^{T*} while the number of W willing to send of their child is increasing in ω_M^{W*}.*

This observation arises from equation (3) and (4) and the distribution of ω_T and ω_W in society. Recall, we assume throughout that the demand for trafficked work and migrant workers is given exogenously and does not change with disaster or government intervention; in other words, B_T stays constant.

What happens when disaster strikes? It will become harder for T to move W's child, that is K increases. And, the opportunities for W to raise a happy child, by for example educating her properly, become more expensive and so B_W falls. What happens when governments intervene – in the aftermath of a disaster or at another time – by executing raids, changing laws to deter, or free workers? The level of enforcement rises, that is p increases and/or the punishment becomes harsher, P increases.

We can now graphically represent the effect of disaster and government intervention on the number of T willing to traffic and the number of W willing to send their child. After all, these are the outcome measures we care about. Normatively, we want to see both numbers to be low. T would not make an offer above ω_M^* but rather move into pursuing non-illegal activity.
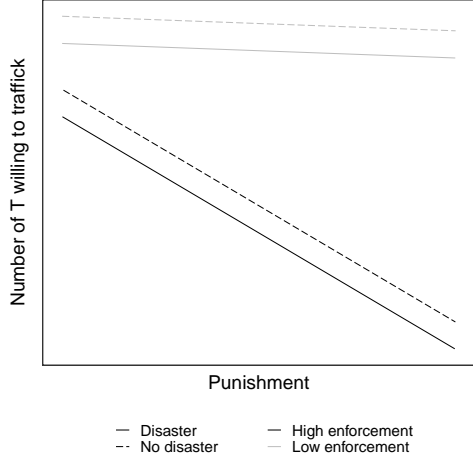
Figure 1: Number of T willing to engage in trafficking as function of the effect of a disaster (K increases) and of government enforcement (p increases) plotted over the level of punishment (P).
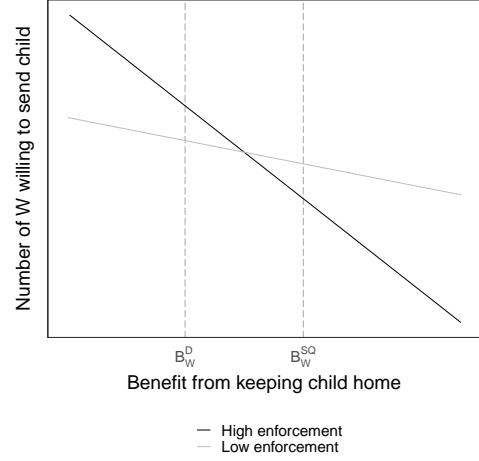

Figure 2: Number of W willing to send their children into migration as a function of government enforcement (p increases) plotted over the level of benefit to W from keeping the child home (B_W). We illustrate a shift from the status quo B_W^{SQ} to B_W^D induced by disaster.

With increasing ω_M^*, fewer potential traffickers are still willing to engage in trafficking.

Figure 1 illustrates that with government break down on trafficking in form of increased enforcement as well as harsher punishment, surely, the number of potential T who are willing to engage in illegal activity decreases. A disaster and the increase in costs K to move migrant workers similarly reduces the number of potential T willing to traffic.

On the side of W disasters increase the opportunity costs of keeping children at home or take away W's ability to care for the child properly. Recall, B_W in times of disaster, B_W^D, is lower than B_W before the disaster struck, B_W^{SQ}, or $B_W^D < B_W^{SQ}$. W's willingness to send the child is decreasing in B_W and therefore increasing in a disaster.

Observation 2 *Disaster and government intervention decrease the number of T willing to traffic but increases the number of W willing to migrate their child holding ω_M^* fixed at the pre-disaster/intervention level.*

Of course, ω_M^* will change with changes in supply of children, that is come a disaster, more children will be offered to migrate. In this fully competitive market where demand is inelastic, such a shock – disaster – to W's supply of children migrant workers must result in a lower equilibrium offer ω_M^{*W}. At the status quo offer, with the shock, more parents are willing to send

their child, the offer made by T that is still accepted by W will fall. Such falling offer will lure more T back into engaging in trafficking, at least those T for which trafficking even at a by the disaster increased cost of moving the migrant is profitable again.

Observation 3 *Disasters drop the market offer for a child but leave the number of T willing to traffic and the number of W willing to send their child unchanged.*

3.4   Empirical implications

Carrying over the intuitions and observations from the model write-up, we can state a range of empirical implications. At the level of the individual trafficker and of the parents, disasters have a counteracting effect:

Hypothesis 1 *When disaster strikes, the willingness of parents to send their children into migration increases while the willingness of traffickers to recruit decreases.*

At the societal level, the market-level if you will, these counter-acting forces lead, after adjustment, to the same level of children recruited and send but traffickers will need to invest less in recruitment:

Hypothesis 2 *When disaster strikes, the recruitment offer necessary to convince parents to send their children decreases but also the number of traffickers willing to recruit, leaving the amount of trafficking activity constant but at a lower offer.*

This move to a new post-disaster market equilibrium could happen in two ways: either the trafficker are quick in picking up the additional supply of willing parents or the government arrives first halting trafficking activity by increasing enforcement and punishment:

Hypothesis 3 *When disaster strikes and parents accept lower offers, traffickers are quicker to adjust than government enforcement and trafficking activity increases at first.*

The alternative hypothesis for this claim would be that government intervention, increasing punishment and/or enforcement, is quicker in containing parents sending of their children and trafficking activity does not increase.

Surely, the government is active against traffickers not just in the aftermath of disasters. The process to a new market equilibrium should be similar in mechanism than after a disaster but with a different outcome:

Hypothesis 4 *Government intervention lowers the offer traffickers are willing to extend and raises the offer parents want to see to send off their children therefore decreasing trafficking activity at a higher offer.*

4 Application: child trafficking in the aftermath of disaster and government intervention in Nepal

Just before midday on April 25, 2015, the Gorkha earthquake struck the Federal Democratic Republic of Nepal. The earthquake occurred at midday on a Saturday, killing nearly 9,000 people and injuring nearly 22,000. More than 600,000 homes were destroyed, leaving more than 3 million people homeless. Triggering at least two avalanches in the Himalayan mountains, the earthquake caused the worst disaster in Nepal's history since 1934.

Mindful of the possibility of such an event to make children vulnerable to trafficking and forced migration, the Government of Nepal and its Disaster Relief Commission teamed with UNICEF, Save the Children, its National Human Rights Commission, and the National Secretary of Women and Children to try to combat the situation. Checkpoints were created on major highways to control migration, and anyone travelling with a child was required to demonstrate guardianship rights and identity documents to cross province boundaries. Taking a child out of the country became illegal for several months following the event, and was gradually opened to allow children to leave the country only if accompanied by two parents.

Additionally, a national trafficking toll-free telephone number became a central means to report suspicious activity, and an information campaign was launched to help citizens and public officials understand how to recognize trafficked children. Reports from the region relayed chilling tales of how often the trafficking hotline was put to use as people noticed Nepalese children arriving in larger cities escorted by foreigners. Local organisations devoted to helping trafficked individuals kept in touch with villages to make sure their numbers of children

remained consistent, and school attendance records became a central mechanism for tracking children's whereabouts (TPO Nepal 2018).

Though exact numbers of trafficked children are impossible to know, it is the consensus of the Himalayan Institute of Development and Research (2018), the Central Child Welfare Board (2018), and World Education (2018) that the volume of trafficked children did not increase due to the earthquake. As one anti-trafficking agency director reports, "We work there and we know [know when a child leaves a village]. Any estimates that the numbers increased due to the earthquake are patently inaccurate."

It does appear that trafficking would have increased had it not been for the extra enforcement and interception mechanisms these organizations employed. A major trafficking ring was uncovered in India, including several women and children who had recently arrived from Nepal. The Indian Border Force reported a tenfold increase in intercepted children after the earthquake, and the Nepal National Human Rights Council reported a 33 percent increase in interceptions.

Thus, even though the volume of trafficked children did not ultimately change, the volume of children who traffickers *attempted* to traffic did increase. Traffickers' increased efforts were thwarted by the increased enforcement. The net effect on the number of trafficked children was zero.

In speaking with some of the would-be trafficked victims and organizations who worked with them and on the issue, as well as some rescued and repatriated victims of human trafficking, we found that though the *levels* of trafficking did not change, the *nature* of trafficking did change.

5   Conclusion

We set out to determine the extent to which economic modeling can help understand and communicate the choices parents face when deciding whether to send their child away from home. We found that a simple supply/demand relationship exists in the market for children, much as it would for any good. Children are not the decision-makers in whether or not they enter the labor market, but the decisions about whether or not to put them into that market

are much the same as they would be for whether or not to let out rooms to rent in one's home. The cost of upkeep, the potential earning revenue, and the presence of viable alternatives to earn money all play a role.

We then examine perturbations of the standard market by considering both enforcement mechanisms and disasters as disruptions to the basic trafficking procedure. Contrary to popular expectations, we find that disasters can actually help stem the flow of children out of disaster-stricken countries by focusing attention on the trafficking problem and raising awareness of how to combat it. Standard enforcement efforts, on the other hand, may shut down part of a supply chain here or there, but the market always adjusts quickly by supplying more children elsewhere. We therefore note that immediately after any particular disaster, the outcome for child trafficking depends on who marshals their efforts first – either the traffickers or the government.

We then apply these insights to the case of Nepal after the 2015 Gorkha earthquake. We note a quick-response crackdown on trafficking, combined with national efforts to galvanize citizens to take part, as well as the appearance of traffickers early on. Who won out? Evidence suggests that it was the government who came out ahead. The interception of traffickers and children at borders surged, and dozens of children were rescued and removed from the trafficking pipeline.

Unfortunately, traffickers did also learn new techniques and skills to get children out of the country and move them within it. Without the crackdown, traffickers would most surely have succeeded in getting more children out of Nepal than ever before.

We appreciate any and all comments on our initial ideas.

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