THE ECONOMICS OF INTERNATIONAL REFUGEE LAW

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ABSTRACT. We model the current system of refugee protection based on the 1951 Convention Relating to the Status of Refugees as a Pareto improving contract that bound states to provide a more efficient level of the global public good of refugee protection. Our analysis suggests that the increase in economic migration since the 1951 Convention was adopted has made it more difficult for host states to distinguish between refugees and those who migrate in search of economic opportunities. The response of states to this screening problem has been to shade on performance of their obligations under the 1951 Convention by, inter alia, increasing the standards of proof of their refugee status determination procedures, resulting in more false negatives and refoulement of refugees. We show that the choice of standard of proof can exhibit strategic complementarity; as more states use a high standard of proof, the best response of other states may be to increase their standard of proof. We also model potential reform schemes in which wealthy states pay poorer states to host refugees that initially travel to the wealthy states, and argue that such transfer systems could ameliorate the screening problem by inducing self-selection among those who migrate and result in increased protection of refugees. However, such reforms could also make some developing countries worse-off by increasing their burden of hosting refugees without fully compensating them for their increased costs.

1. Introduction

The current international system of refugee protection, codified in the 1951 Convention Relating to the Status of Refugees,\(^1\) consists principally of a commitment by states not to return refugees to their country of persecution (non-refoulement). This system was created in the aftermath of World War II to address the problem of large numbers of displaced people living in Europe outside of their country of origin, and was subsequently extended in 1967 to become a general regime for protecting those who cross national boundaries to avoid persecution.\(^2\)


\(^{2}\)The 1951 Convention was limited to refugees who acquired their refugee status “as a result of events occurring before 1 January 1951” but was effectively extended by the 1967 Protocol Relating to the Status of Refugees, Oct. 4, 1967, 606 U.N.T.S. 267 [hereinafter 1967 Protocol], which incorporated the substantive provisions of the 1951 Convention but lacked any temporal or geographic restriction on the definition of
In recent years the 1951 Convention system has come under pressure as world inequality has increased, transportation costs have fallen, and wealthy states have faced increasing numbers of migrants claiming refugee status. The number of asylum applicants in Western Europe grew from 0.8 million in 1980-84 to 3.4 million in 1990-94.\(^3\) In response, industrialized countries have implemented *non-entrée* policies that attempt to prevent migrants from entering their territory and claiming refugee status under the Convention and have adopted stricter refugee status determination procedures.\(^4\) *Non-entrée* policies typically involve intercepting refugees off-shore before they can apply. For example, the U.S. Coast Guard routinely intercepts Cuban and Haitian “boat people” and forcibly returns them to their country of origin.\(^5\) Procedural reforms have made it more difficult for asylum seekers to successfully claim refugee status. For example, since the Dublin Convention\(^6\) came into force in 1997, asylum applicants in the EU must file their application in the country in which they first arrived. This procedural rule is intended to prevent “asylum shopping” by refugees. The U.S. tightened its refugee status determination procedures in a 1996 reform\(^7\) that provides for expedited removal proceedings in which immigration officers can order an alien removed without further hearing or review unless the alien states a fear of persecution or intent to apply for asylum.\(^8\) One observer, describing the situation, asserts that “the Convention is coming apart at the seams... Intercontinental travel has become easy... States say

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\(^3\)Neumayer (2005).

\(^4\)See generally Keely and Russell (1994).

\(^5\)When this policy was initiated under the Reagan administration, the Coast Guard conducted interviews of those intercepted and transported those with credible claims to refugee status to the U.S. while repatriating the rest. In 1992, however, facing a large influx of Haitians after a September 1991 coup deposed Haitian President Jean-Bertrand Aristide, the U.S. stopped conducting refugee screenings of intercepted Haitians and simply forcibly repatriated all of them. This interdiction policy was challenged in federal court, but the U.S. Supreme Court upheld the policy as consistent with both U.S. domestic law and the 1951 Convention. *Sale v. Haitian Ctrs. Council*, 113 S. Ct. 2549, 509 U.S. 155 (1993).

\(^6\)Convention Determining the State Responsible for Examining Applications for Asylum Lodged in One of the Member States of the European Communities, June 15, 1990, 30 I.L.M. 427.


\(^8\)INA §235(b)(1)(A) & (B), 8 U.S.C. §1225(b)(1)(A) & (B).
their asylum systems are being overwhelmed with this tangled mass of refugees and economic migrants and are urging a legal retrenchment."\(^9\)

While wealthy states have attempted to deflect those claiming refugee status, poorer states have become the primary hosts of refugees. Under the 1951 Convention, the burden of hosting refugees largely falls on states that are geographically proximate to refugee producers. At the end of 2005, out of an estimated 8.4 million refugees worldwide, some 6.1 million resided in developing countries, principally in Africa, Central and Southeast Asia, and the Middle East.\(^10\) Poor countries deny many refugees the opportunity to integrate into their new national communities and “warehouse” many in large camps with limited economic opportunities.\(^11\)

Hathaway and Neve (1997) and Schuck (1997) propose substantial reforms to the current system that combine increased commitments by developing countries to host refugees with payments from developed countries to compensate developing countries for the costs of refugee protection. The aim of these schemes is to reduce the incentive of economic migrants to fraudulently claim refugee status in wealthy countries by sending those who claim refugee status to poorer countries for protection, while at the same time improving protection in poorer countries through increased financing from wealthy countries. While it is difficult to accurately estimate the cost to industrialized countries of screening and hosting refugees, UNHCR has estimated the cost of administering asylum procedures and providing welfare benefits to refugee claimants in thirteen industrialized countries to be US $7 billion in 1991.\(^12\) Hathaway and Neve (1997, p. 147) argue that the costs of payments from developed countries under their proposal would be offset by substantial reductions in these costs of administering the current refugee protection system.

The aim of this paper is to model the political economics of international refugee law. We model the current system of refugee protection based on the 1951 Convention as a

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\(^12\)United Nations High Commissioner for Refugees (1995).
Pareto-improving contract that bound states to provide a more efficient level of the global public good of refugee protection. Our analysis suggests that the screening problem created by economic migration has resulted in states shading on performance of their obligations under the 1951 Convention by increasing the standards of proof of their refugee status determination procedures. We show that the choice of standard of proof can exhibit strategic complementarity; as more states use a high standard of proof, the best response of other states may be to increase their standard of proof. We also model reform schemes like those of Schuck (1997) and Hathaway and Neve (1997) in which wealthy states pay poorer states to host refugees that initially travel to the wealthy states, and argue that such transfer systems could ameliorate the screening problem by inducing self-selection among those who migrate and result in increased protection of refugees. However, by inducing changes in the migration destination choices of refugees, such reforms could also make some developing countries worse-off by increasing their burden of hosting refugees without fully compensating them for their increased costs. In equilibrium, individual poorer transferee states may be willing to participate in such a system, but each may be better off if none of them participated.

Section 2 of the paper presents a model of the current system of refugee protection; Section 3 models potential reform schemes; Section 4 concludes.

2. Explaining the 1951 Convention and its Breakdown

States party to the 1951 Convention are bound not to return refugees to their place of persecution. A simple explanation for why states entered into this agreement is that all states receive altruistic benefits when any state protects refugees, but the host state bears all of the costs. This divergence in public and private benefits from hosting refugees results in free-riding and creates scope for a Pareto-improving contract under which states agree to host refugees in excess of the privately optimal number. However, the relatively simple regime of the 1951 Convention — “host all refugees who enter your country” — is less attractive to wealthy states if economic incentives to migrate result in difficulty distinguishing refugees from economic migrants and an increase in the hosting burden of wealthy states.
Economic migration can increase incentives for states to shade on the performance of their obligations under the Convention by increasing the standard of proof of their refugee status determination procedures. Moreover, as more states shade, it can become more attractive to other states to shade as well since they face larger flows of asylum applicants.\textsuperscript{13} For some parameter values, this strategic complementarity results in multiple equilibria, with both all states fully complying with the Convention, as well as all states shading on performance of their Convention obligations, being equilibria. The model presented below sheds light on the historical evolution of refugee protection institutions. Sections 2.1 - 2.5 present and analyze a formal model of international refugee law, and Section 2.6 discusses the implications of the model.

2.1. \textbf{Model setup}. We model international refugee law using an extensive form game of incomplete information. There are two regions, the north and the south. Each region has $L + 1$ states, and each state has a continuum of citizens of unit mass. The set of states is denoted by $\{N_0, \ldots, N_L, S_0, \ldots, S_L\}$. The northern states are wealthy, which is reflected in their high wages, net of transfer payments, $w_N$. The southern states are poor, each with wages $w_S < w_N$.

States $N_0$ and $S_0$ persecute a minority group with population of size $\lambda$ in each, costing group members $P$ utils if they remain in their country of origin.

The players in the model are all non-persecuting host states $\mathbb{H} \equiv \{N_1, \ldots, N_L, S_1, \ldots, S_L\}$ and the citizens of the persecuting states $N_0$ and $S_0$, the sets of which are denoted by $\mathbb{N}$ and $\mathbb{S}$, respectively, with $\mathbb{C} \equiv \mathbb{N} \cup \mathbb{S}$. Denote the subset (of size $2\lambda$) of $\mathbb{C}$ that are \textit{persecuted} in their country of origin as $\mathbb{P}$. As described in more detail below, host states in $\mathbb{H}$ choose refugee policies, and citizens in $\mathbb{C}$ then choose whether and where to migrate in response to those policies.

\textsuperscript{13}Furthermore, as more states shade, it may disproportionately deflect economic migrants rather than refugees to other states, for example if migrants know the strength of their asylum claim and so refugees with strong claims continue to migrate to the high standard of proof host state. Our model, however, does not capture this source of strategic complementarity.
2.1.1. Host states. Assume that people in the host states are altruistic towards those who experience persecution, but also face costs of immigration. Potential reasons for such costs include xenophobic preferences, costs of redistribution in response to factor price changes caused by immigration, and any direct financial burdens imposed by immigrants. We model the burden of immigration as simply an additively separable cost in host states’ utility functions that is a function of the number of immigrants hosted, denoted by $B_j(x)$ for host state $j \in \mathbb{H}$, with $B_j'(x) \geq 0$, $B_j(0) = 0$, $B_j'(0) = 0$, $B_j''(x) > 0$. Assume that all northern countries have the same burden function, $B_N(x) = B_N(\cdot)$, all southern countries have the same burden function $B_S(x) = B_S(\cdot)$, and that

\begin{equation}
B_N(x) > B_S(x) \quad \forall x > 0
\end{equation}

so that hosting immigrants is more costly for northern states (both on the margin and, given $B_N(0) = B_S(0)$, in levels) because of the more extensive welfare states in place in the north.\textsuperscript{14} Let $\beta$ represent the (assumed uniform) degree of altruism in countries’ preferences, with $0 < \beta << 1$. For each refugee that avoids persecution, all host states get an additive altruistic utility benefit of $\beta P$.

Assume that host states do not observe the persecution status of migrants, but that they have access to a technology, referred to as a refugee status determination procedure, for testing whether a particular migrant faces persecution in his country of origin. The testing technology reveals evidence that a particular migrant has of his refugee status. A migrant can produce either no, weak, or strong evidence, denoted by $e_i \in \{0, w, s\}$. A fraction $\pi^R_w$ of migrants who are actually persecuted in their country of origin (i.e., refugees) can produce weak evidence, a fraction $\pi^R_s$ can produce strong evidence, and the rest, $\pi^R_0 = 1 - \pi^R_s - \pi^R_w$, can produce no evidence. The analogous fractions for non-persecuted citizens (i.e., economic migrants) are $\pi^M_w$, $\pi^M_s$, and $\pi^M_0 = 1 - \pi^M_s - \pi^M_w$. Migrants do not know what type of evidence they can produce until they submit to a refugee status determination procedure. We assume

\textsuperscript{14} Articles 23 and 24 of the Convention requires states to accord refugees the same rights as nationals with respect to public relief and pensions.
that

\[
\frac{\pi^R_s}{\pi^M_s} > \frac{\pi^R_w}{\pi^M_w} > \frac{1 - \pi^R_s - \pi^R_w}{1 - \pi^M_w - \pi^M_s}
\]

so that \( e_i = s \) is always a stronger signal of persecution than \( e_i = w \), which is always a stronger signal than \( e_i = 0 \).

Assume, however, that country of origin is observable. Host states use country of origin in forming beliefs about whether a migrant is a refugee.\(^{15}\) Since there are no altruistic benefits from admitting the non-persecuted, states would never admit any migrants from non-persecuting states, and so we omit any potential emigration from host states from the model.

2.1.2. Migrants. There are two potential motivations for citizens in persecuting states to migrate: (i) to avoid persecution; and (ii) to seek higher wages. We refer to migrants who are persecuted as “refugees” and to migrants who are not persecuted as “economic migrants.”

Individuals’ preferences for consumption of the single composite commodity are represented by \( u(\cdot) \), with \( u'(\cdot) > 0 \). Thus, the utility citizens derive from consumption residing in a northern state, \( u(w_N) \), is greater than that from residing in a southern state, \( u(w_S) \).

Assume that each person \( i \in \mathbb{C} \) faces a dislocation cost of \( d_i \) utils to relocating, because of, for example, psychic costs of being in a new culture and far from family, and that these costs are distributed in the population according to the strictly increasing cdf \( G(\cdot) \) on the interval \([d, \bar{d}]\) (distributed independently of persecution status and country of origin). Furthermore, to travel between the south and the north costs an extra \( J \) utils (the same amount for everybody).\(^{16}\) Assume that \( P > u(w_N) - u(w_S) + \bar{d} + J \) so that all those who are persecuted

\(^{15}\)Many countries, particularly those in Europe, routinely use country of origin as a (sometimes dispositive) indicator of refugee status. For example, under a 2004 reform to its asylum law, the U.K. has authorized the Home Secretary to publish a list of countries deemed “safe” and to decline to examine asylum applications from nationals of those countries. See Schedule 3 of the U.K. Asylum and Immigration (Treatment of Claimants, etc.) Act 2004, and Part 11, Section 345 of U.K. Immigration Rules.

\(^{16}\)This embodies the assumption that travel between the north and south requires substantially more time and expense than travel within the north and south. Think of the north as Europe and the south as Africa.
want to migrate if they will be admitted somewhere (even if that means traveling from north to south).

2.1.3. Timing of the game and choice sets of the players. Host states $j \in \mathbb{H}$ first simultaneously choose whether to accede to the 1951 Convention. Let $t_j = 1$ if host state $j$ accedes to the treaty, $t_j = 0$ otherwise. The Convention comes into force if and only if all states accede.\(^{17}\)

We will refer to the subgame following the choices $t_j = 1 \forall j$ as the “Convention subgame.” If all host states join the Convention, then each state simultaneously chooses the standard of proof of its refugee status determination procedures, $p_j \in \{h, l\}$ with $h, l \in [0, 1]$ and $h > l$. $p_j$ represents a cutoff such that, under the 1951 Convention, if host state $j$’s posterior belief $\mu$ about the refugee status of a migrant after submitting the migrant to the refugee status determination procedure is above $p_j$, it must admit the migrant.\(^{18}\) These beliefs are formed according to Bayes’ rule where possible, as described more precisely below. Denote the profile of all host states’ choices as $p \equiv \{p_i\}_{i \in \mathbb{H}}$.

If host state $j$ chooses the high standard of proof, $p_j = h$, it suffers a “shading cost” $K$ in its payoff function. However, host states may not withdraw from the Convention (or if you like, withdrawing is associated with a very large utility penalty) and must admit all migrants who successfully meet their standard of proof.\(^{19}\)

\(^{17}\)It is not clear that this is the right way to model the choice to accede to the 1951 Convention. Under Article 43 of the Convention, the Convention enters into force following ratification by just six states. If all other $2L - 1$ host states accede, then the remaining state would rather stay out and free ride on the hosting by others. And indeed, while some 146 states have acceded to the Convention, some states (perhaps most notably India) have still not done so. We assume this form of bargaining — everybody or nobody acceding — to simplify the analysis. If we used something other than a unanimity rule, the analysis would be similar, but as the number of states necessary for the Convention to come into force decreases, free-riding by states that stay out and enjoy the altruistic benefits of increased hosting by Convention states but bear none of the costs becomes harder to prevent.

\(^{18}\)These assumptions roughly correspond to the actual Convention regime. The Convention only requires states to admit refugees and places on states the burden of determining refugee status. However, refugee status determinations typically turn on the testimony of the refugee claimant, and economic migrants have strong incentives to claim refugee status and lie about being persecuted, given the large cross-country disparities in economic opportunities. Thus refugee status determinations are imperfect.

\(^{19}\)Article 44 of the Convention allows states to denounce the Convention and be released from their obligations under the Convention one year after denouncing it. However, no state has denounced the Convention, and it appears that withdrawing is in fact costly to states. See text accompanying footnote 21, *infra.*
We are essentially assuming a form of incomplete contracting. States are able to contract on the broad legal responsibility to avoid *non-refoulement*. Once they have acceded to the Convention, states effectively cannot outright withdraw or plainly breach the Convention. Thus, if there is no uncertainty about the refugee status of a migrant, parties to the Convention must admit him. However, if there is uncertainty about the refugee status of an asylum applicant, under the Convention states must make judgments through appropriate legal procedures. The details of these refugee status determination procedures — namely, the standards of proof used $p$ — are not perfectly contractible and states can choose their standard of proof. However states have induced preferences (represented by the shading cost $K$) for choosing the more generous standard of proof after acceding to the Convention. $K$ captures in a reduced form way states’ aversion to shading on the performance of their international obligations. The underlying reasons for these preferences, which result from details of international politics that are beyond the scope of this paper, are unmodeled.

If instead some host state does not join the Convention, each host state $j$ then simultaneously chooses the total number of migrants to admit, denoted by $A_j \in [0,2\lambda]$. Denote an entire profile of all host states’ choices by $A$. We refer to the subgame following some country not joining the Convention as the “non-cooperative subgame.”

After host states have chosen their refugee policies, citizens in the persecuting states choose whether and where to migrate. We will refer to subgames following host states’ refugee policy choices as “migration subgames.” Citizens’ strategies in the Convention subgame are a map from all possible strategy profiles of host states $\{h,l\}^{2L}$ into their action set $0 \cup \mathbb{H}$ that specifies whether and where they will migrate as a function of the profile of host states’ policies $p$. The action $0$ represents not migrating; actions $\in \mathbb{H}$ represent the choice to migrate

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20One way to motivate this assumption is to note that for states with a monist conception of international law or that otherwise give direct effect to international law, it will be difficult for domestic policy makers to prevent domestic judges from implementing international law, particularly for international law the effectively vests rights in individuals, as does the 1951 Convention. This limits the ability of the political branches of government to outright breach the 1951 Convention. An immigration judge, for example, may hear and rule on a claim to refugee status under the Convention despite attempts by the government to curtail such claims. Shading, then, may be effectuated by appointing judges that are more skeptical of such claims.

21For a review of explanations for the compliance of states with international law, see Koh (1997).
and specifies the destination choice. Denote the strategy of citizen \( i \in \mathbb{C} \) as \( a_i(p) \) and denote the profile of all citizens strategies by the function \( a(\cdot, p) \) defined such that \( a(i, p) = a_i(p) \).

Citizens’ strategies in the non-cooperative subgame are a map from all possible strategy profiles of host states \([0, 2\lambda]^{6-2L}\) into their action set \( 0 \cup \mathbb{H} \), denoted (in a slight abuse of notation) by \( a_i(A) \), with the profile denoted \( a(\cdot, A) \) with \( a(i, A) = a_i(A) \).

After citizens make their migration choices, with probability \( \alpha \) a migrant is diverted to a randomly chosen host state in \( \mathbb{H} \) (and with probability \( 1 - \alpha \) arrives at his chosen destination). The purpose of these random diversions in our model is to introduce some noise in the destination choices of migrants and avoid a perfect Bertrand competition-like model in which all migrants respond to infinitesimal changes in the attractiveness of different destinations. One modeling benefit from this assumption is that the beliefs of all host states about the persecution status of migrants from a particular country of origin are pinned down by Bayes’ rule in any subgame in which there is some migration from that country of origin (since all host states receive some migrants in every such subgame). Think of the \( \alpha \) fraction of migrants who are diverted as being drawn to a particular destination country for idiosyncratic reasons, unrelated to the policy choices of the country. For example, they may have family connections in a particular country, or they may have been stowaways on a commercial vessel and unaware of its destination.\(^{22}\) Whether a migrant gets diverted is distributed independently of the type of the migrant (e.g., dislocation costs, persecution status, evidence type, etc.).

In the Convention subgame, a migrant is then admitted by the host state \( j \) he arrives at if and only if the host state’s posterior belief \( \mu \) about the refugee status of the migrant conditional on the migrant’s evidence and country of origin is greater than or equal to \( p_j \). Denote the assessment of host state \( j \) in the subgame following host states’ profile of actions \( p \) given migration strategies \( a(\cdot, p) \) of the probability that an asylum applicant from region of origin \( o \in \{S, N\} \) who presents evidence \( e \) is persecuted in his country of origin as

\(^{22}\)A more realistic but more complicated way to model this is to use a random utility model such as a conditional logit model. In such a model, prospective migrants’ utility functions would include additive random disturbance terms for each potential destination country that capture unobservables affecting their choices. These disturbance terms would spread migrants out among host countries, and smooth out the response of refugee flows to changes in policies of host countries.
\( \mu_j(e, o, p, a(\cdot, p)) \). Let \( R_j^S(a(\cdot, p), p) \), \( R_j^N(a(\cdot, p), p) \), \( M_j^S(a(\cdot, p), p) \) and \( M_j^N(a(\cdot, p), p) \) denote the measures of persecuted citizens from \( S_0 \) and \( N_0 \) and the measures of non-persecuted citizens from \( S_0 \) and \( N_0 \), respectively, that attempt to migrate to host state \( j \) following the host states’ profile of actions \( p \) when citizens’ strategies are \( a(\cdot, p) \).\(^{23}\) Let \( R_j^S = \sum_{j \in \mathbb{H}} R_j^S \), \( R_j^N = \sum_{j \in \mathbb{H}} R_j^N \), \( M_j^S = \sum_{j \in \mathbb{H}} M_j^S \) and \( M_j^N = \sum_{j \in \mathbb{H}} M_j^N \) denote the total numbers of refugees and economic migrants from \( S_0 \) and \( N_0 \), respectively. Bayes’ rule then gives host states’ beliefs as

\[
\mu_j(e, o, p, a(\cdot, p)) = \frac{\pi_e^R (\frac{\alpha}{2L} R_j^o + (1 - \alpha) R_j^o)}{\pi_e^R (\frac{\alpha}{2L} R_j^o + (1 - \alpha) R_j^o) + \pi_e^M (\frac{\alpha}{2L} M_j^o + (1 - \alpha) M_j^o)}
\]

with the dependence of the sizes of the migration flows on \( p \) and \( a(\cdot, p) \) suppressed to simplify the notation. If \( R_j^o = 0 \) and \( M_j^o = 0 \) (i.e., no migration from region \( o \)) then host states’ beliefs about migrants from region \( o \) are unconstrained since Bayes’ rule cannot be applied. Let \( \hat{R}_j(a(\cdot, p), p) \) and \( \hat{M}_j(a(\cdot, p), p) \) denote the measures of refugees and economic migrants, respectively, actually admitted by host state \( j \) under strategy profiles \( p \) and \( a(\cdot, p) \).\(^{24}\) Citizens and host states then receive their payoffs. Host state \( j \)’s payoff is given by

\[
U_j(a(\cdot, p), p) = \beta P \sum_{i \in \mathbb{H}} \hat{R}_i - B_j(\hat{R}_j + \hat{M}_j)
\]

In the non-cooperative subgame, each host state admits migrants according to its immigration policy choice \( A_j \), admitting migrants by random lottery if applicants exceed slots for a particular evidentiary and country of origin category.

Our solution concept is Perfect Bayesian Equilibrium. A strategy profile \( (t^*, p^*, A^*, a^*(\cdot, p), a^*(\cdot, A)) \) and host state beliefs \( \mu_j(e, o, p, a(\cdot, p)) \) form a PBE if an only if:

\(^{23}\)So, for example, \( R_j^S(a(\cdot, p), p) = \int_{i \in \mathbb{P} \cap \mathbb{S}} 1_{\{a(i, p) = j\}} di \), and we assume that the sets \( \{i \in \mathbb{P} \cap \mathbb{S} : a(i, p) = j\} \) are always Lebesgue measurable.

\(^{24}\)These take into account both the random diversions and whether each migrant is able to meet host state \( j \)’s standard of proof. Formally, \( \hat{R}_j(a(\cdot, p), p) = (1 - \alpha) \int_{i \in \mathbb{P} \cap \{a(i, p) = j\}} 1_{\{\mu_j(e, o, p, a(\cdot, p)) \geq p_j\}} di + \frac{\alpha}{2L} \int_{i \in \mathbb{P} \cap \{a(i, p) \neq 0\}} 1_{\{\mu_j(e, o, p, a(\cdot, p)) \geq p_j\}} di \) and similarly for \( \hat{M}_j(a(\cdot, p), p) \).
(1) Each citizen \( i \in \mathbb{C}' \)'s strategy \( a^*(i, p) \) is a best response to other citizens' strategies \( a^*(\cdot, p) \) in every migration subgame following creation of the Convention (i.e., following every possible profile of host states' policy choices \( p \)) given host states' beliefs \( \mu_j(e, o, p, a(\cdot, p)) \).

(2) Each citizen \( i \in \mathbb{C}' \)'s strategy \( a^*(i, A) \) is a best response to other citizens' strategies \( a^*(\cdot, A) \) in every migration subgame in the non-cooperative subgame (i.e., following every possible profile of host states' policy choices \( A \)) given host states' beliefs \( \mu_j(e, o, p, a(\cdot, p)) \).

(3) Given citizens' strategies \( a^*(\cdot, p) \), each host state \( j \)'s strategy in the Convention subgame \( p_j^* \) is a best response to other states' strategies \( p_{-j}^* \).

(4) Given citizens' strategies \( a^*(\cdot, A) \), each host state \( j \)'s strategy in the non-cooperative subgame \( A_j^* \) is a best response to other states' strategies \( A_{-j}^* \).

(5) All states accede to the Convention \( (t_j^* = 1 \forall j \in \mathbb{H}) \) if and only if for each host state the payoff in the Convention subgame exceeds the payoff in the non-cooperative subgame (under the equilibrium strategies).

(6) Host states' beliefs \( \mu_j(e, o, p, a(\cdot, p)) \) are formed according to Bayes' rule, consistent with citizens' strategies \( a^*(\cdot, p) \), where possible (i.e., after any non-zero migration flows from region \( o \)).

In the analysis that follows, we first characterize PBEs of the non-cooperative subgame and the Convention subgame, and then consider equilibrium strategies of the entire game and whether, given the Convention outcome and the non-cooperative outcome, states would accede to the 1951 Convention.
2.2. First best for host states. We first define the first best for host states as the allocation of refugees that maximizes the sum of all host states’ utility functions. The first best is thus the solution to:

\[
\max_{\{R^N_j, R^S_j\}_{j \in \mathbb{H}}} \left\{ \sum_{i \in \mathbb{H}} \left[ \beta P \sum_{k \in \mathbb{H}} (R^N_k + R^S_k) - B_i(R^N_i + R^S_i) \right] \right\}
\]

subject to

\[
\sum_{j \in \mathbb{H}} R^N_j \leq \lambda
\]

(6)

\[
\sum_{j \in \mathbb{H}} R^S_j \leq \lambda
\]

(7)

and appropriate non-negativity constraints, where \(R^N_j\) and \(R^S_j\) here denote the number of refugees from \(N_0\) and \(S_0\), respectively, hosted by state \(j \in \mathbb{H}\). In the solution, each northern state hosts the same number of refugees,

\[
\forall j, k, R^{Nfb}_{N_j} + R^{Sfb}_{N_j} = R^{Nfb}_{N_k} + R^{Sfb}_{N_k} \equiv R^{Nfb}_{N}
\]

(8)

and similarly for southern states,

\[
\forall j, k, R^{Nfb}_{S_j} + R^{Sfb}_{S_j} = R^{Nfb}_{S_k} + R^{Sfb}_{S_k} \equiv R^{Nfb}_{S}
\]

(9)

\(^{25}\)We exclude the utility of economic migrants and refugees from this definition both to simplify algebra and to capture the idea that we are considering contracts among states and excluding the possibility of contracts between migrants and states. While it is not readily apparent to us why contracts between migrants and states are not feasible, given their rarity in the real world we think it is realistic to exclude them. Importantly, then, this definition does not consider the costs of transporting refugees (\(J\)) in defining the first best. If transportation costs were included, then our conclusion below that some northern refugees are hosted in the south in the first best is only true for sufficiently low transportation costs. If northern refugees are not wealth constrained then presumably northern states could require them to pay their own way south in the first best, in which case it is appropriate to exclude these costs in defining the first best (since states would not bear them).

\(^{26}\)We ignore the random diversions of migrants assumed in the model in defining the first best. If these diversions are a consequence of a true technological constraint, so that ignoring them results in a utility possibility set that includes elements that are not technologically feasible, then we should include the random diversions as a constraint when defining the first best. But it is simpler to think of the random diversions as something that could in theory be avoided in the first best.
and the marginal cost of hosting refugees is equated across the north and south,

\[ B'_N(R_{N}^{fb}) = B'_S(R_{S}^{fb}) \]  

Note that (1) and (10) imply that \( R_{S}^{fb} > R_{N}^{fb} \) — that is, there are more refugees hosted in each southern state than in each northern one — because it is cheaper to host refugees in the south.\(^{27}\)

Depending on the parameters, the first best may or may not entail offering asylum to all those who are persecuted. We will focus on the case in which the first best is the corner solution in which all refugees are protected. To guarantee this, throughout we assume

**Assumption 1.** \( L\beta P > B'_N(\frac{1}{L}) \) and \( L\beta P > B'_S(\frac{1}{L}) \).

With this assumption, we have the following result.

**Lemma 1.** Under Assumption 1, in the first best all persecuted people are hosted. \((LR_{S}^{fb} + LR_{N}^{fb} = 2\lambda)\).

*Proof.* Suppose not. Then in the first best, the marginal social benefit of hosting an additional refugee is \( 2L\beta P \) and the marginal social cost, given Assumption 1 and the convexity of \( B_j(\cdot) \), is less than \( 2L\beta P \) since some state must be hosting less than \( \frac{1}{L} \) refugees, so the maximand in (5) could be increased by increasing the number of refugees hosted — a contradiction.

The first best characterized above may not be achieved for several reasons. First, in the absence of a contract, the altruistic externalities of refugee protection may result in sub-first best levels of refugee protection chosen by individually-optimizing states. Second, characterization of the first best ignores the incentive compatibility constraints of migrants. When refugees and economic migrants choose whether and where to migrate, and states cannot perfectly observe persecution status, the second best outcome may impose higher

\(^{27}\)For more general forms of heterogeneity in burden functions across states, the condition is \( B'_i(R_i^{fb}) = B'_j(R_j^{fb}) \) \( \forall i, j \in \mathbb{H} \). The point is that the efficient distribution of refugees across host states depends on states’ burden functions. In the first best, more refugees are hosted where it is cheaper to host them.
costs and provide protection to fewer refugees than the first best. We now examine PBEs of
the non-cooperative subgame and the Convention subgame and compare them to the first
best under various parameter values.

2.3. The non-cooperative outcome. Consider the non-cooperative subgame, in which
the 1951 Convention is not adopted. In this subgame, each host state $j$ simultaneously
chooses how many migrants to admit, denoted by $A_j$. Potential migrants in $\mathbb{C}$ then choose
whether and where to migrate. We focus on the case in which, optimizing individually, states
would not want to host their pro rata share of refugees. In particular, throughout we assume

Assumption 2. $\beta P < B'_N(\frac{\lambda}{L})$ and $\beta P < B'_S(\frac{\lambda}{L})$.

With these assumptions, we have the following result.

Lemma 2. Under Assumptions 1 and 2, in any PBE of the non-cooperative subgame, states
host fewer than the first best number of refugees, and some persecuted citizens in $N_0$ and $S_0$
remain in their country of origin.

Proof. Suppose not. Then there exists a PBE in which all $2\lambda$ refugees migrate to and are
hosted by the $2L$ host states in $\mathbb{H}$, and therefore some host state $j$ must host at least $\frac{\lambda}{L}$
refugees. Host state $j$’s payoff is then $2\lambda\beta P - B_j(R_j + M_j)$, where $R_j \geq \frac{\lambda}{L}$ is the number
of refugees, and $M_j$ is the number of economic migrants, hosted by $j$ in the PBE. However
under Assumption 2 and given that $B''_j(\cdot) > 0$, $j$ would gain by choosing some $A_j$ such that
it hosts fewer than $\frac{\lambda}{L}$ migrants. A contradiction. $\Box$

The inefficiency in the non-cooperative subgame results from the standard public goods
problem — in the absence of a contract or other institution, states do not internalize the
full social altruistic benefit they generate by hosting refugees yet bear the full social cost. In
the resulting equilibrium, states under-provide refugee protection. The 1951 Convention, to
which we now turn, was an attempt by states to solve this problem through contracting.

2.4. The 1951 Convention outcome. Consider now the Convention subgame following
the decision by all states to accede to the 1951 Convention. In this subgame, host states in $\mathbb{H}$
simultaneously choose the standard of proof of their refugee status determination procedures, \( p_j \in \{h,l\} \), and face a “shading cost” \( K \) of choosing \( p_j = h \), and then all citizens in \( C \) simultaneously choose whether and where to migrate.

2.4.1. No economic migration. Consider first the case in which transportation costs are high enough, and the wage differential is low enough, that no non-persecuted person would choose to migrate, even if he would be admitted to a host state. In particular, suppose

**Assumption 3.** \( u(w_N) - u(w_S) < J \) (no economic migration).

We then have the following result.

**Lemma 3.** Under Assumption 3, in any PBE of the Convention subgame in which there is any migration, all migrants are refugees and all persecuted people migrate and are hosted.

*Proof.* Under Assumption 3 (no economic migration), there is no economic migration (since \( u(w_N) - \bar{d} - J < u(w_S) \)). Thus, in any PBE with any migration, in equilibrium all migrants are refugees, and every host state’s equilibrium belief that any migrant is a refugee is equal to 1. Thus, all asylum applicants are admitted whether a host state uses the high or low standard of proof. Since \( \bar{d} < P \), all persecuted people migrate and under Assumption 3, they remain in their region (north or south) of origin (since \( u(w_N) - d_i - J < u(w_S) - d_i \)). \( \square \)

Even under Assumption 3, the outcome under the 1951 Convention may not achieve the first best characterized in Section 2.2. In the first best, more refugees are hosted in the south than in the north due to the lower burden of hosting refugees in the south, whereas under the 1951 Convention, refugees are hosted by whatever state they choose to travel to. Under Assumption 3, refugees remain in their region of origin, leading to more refugees protected in the north than in the first best. The first best is achieved by the 1951 Convention only if the migration destination choices of refugees happen to coincide with the cost-minimizing allocation of refugees.
2.4.2. *Economic migration*. Consider now the case in which transportation costs are low enough, and the wage differential is high enough, that some non-persecuted citizens would choose to migrate if they would be admitted to a host state. In particular, assume

**Assumption 4.** $u(w_N) - u(w_S) > J$ (*economic migration*).

We then have our main result for the Convention subgame:

**Proposition 1.** Under Assumption 4 (*economic migration*),

1. In any PBE of the Convention subgame with some positive migration from $N_0$, all persecuted people from $N_0$ migrate and are hosted by some state in $H$.
2. There exist parameter values such that there exists a PBE of the Convention subgame in which all host states use the low standard of proof.
3. There exist parameter values such that there exists a PBE of the Convention subgame in which all host states use the high standard of proof.
4. There exist parameter values such that there are multiple PBEs of the Convention subgame, including both one in which all host states use the low standard of proof, and one in which all host states use the high standard of proof.

*Proof is in the Appendix.*

2.5. *Equilibria of the entire game*. Consider now the PBEs of the entire game. Without economic migration, Lemma 3 tells us that under the Convention, all persecuted people could be hosted. States prefer this result to the non-cooperative outcome. Hence we have the following result.

**Proposition 2.** There exist parameter values such that, under Assumptions 1, 2, and 3 (*no economic migration*), there is a PBE in which all host states in $H$ join the 1951 Convention and use the low standard of proof, and all persecuted people are hosted.

*Proof is in the Appendix.*
2.6. Discussion. The model presented above provides an explanation for both why the 1951 Convention was created, and why wealthy states now seem to be shading on the performance of their obligations under the Convention.

2.6.1. 1951 Convention as a Pareto improving agreement. Proposition 2 states that without economic migration, there can exist equilibria in which all states prefer the regime created by the 1951 Convention to the unregulated regime. In this subset of the parameter space, the 1951 Convention is a Pareto improving agreement among states to share the burden of hosting refugees, and given the choice between all countries acceding to the Convention and no Convention, all countries would be willing to accede without side payments. Because of the low wage differential and the high cost of moving between regions, the 1951 Convention is only applied to true refugees, and each country faces equal inward flows of refugees. Under these conditions, compliance with the 1951 Convention is relatively easy for states to monitor, and host states use the low standard of proof and do not shade on the performance of their obligations under the Convention since there is no screening problem. Note that the simple rule — host all refugees that enter your borders and claim asylum — also economizes on administrative costs.

The subset of the parameter space considered here seems to us to be a rough approximation to the context in which the 1951 Convention was adopted, and our stylized model provides a formal explanation for why the 1951 Convention was created — it reduced free riding by states and increased the number of refugees protected to (closer to) the efficient level.

2.6.2. Shading on performance of the Convention. However, as transportation costs fall and the wage differential between north and south increases, economic migrants begin to mix with refugees and the 1951 Convention is less attractive to states. Proposition 1 characterizes various equilibria under the Convention with economic migration. Host states now face a screening problem. Because the 1951 Convention does not explicitly regulate the way in which refugees are recognized as such and places on states the primary responsibility for determining the refugee status of asylum claimants, states party to the Convention are able
to shade on performance of their obligations under the Convention by adopting stricter
refugee status determination procedures that result in fewer false positives and more false
negatives than is socially optimal.

Furthermore, host states face *strategic complementarity* in their choice of whether to shade
on performance of their obligations under the Convention. Consider first a strategy profile
with economic migration in which all states choose the low standard of proof (i.e., do not shade). Under certain parameter values, some state will prefer to deviate and increase its
standard of proof. This results in a deflection of migrants to other states, since migrants
prefer to apply to states that use a lower standard of proof, and makes other states un-
ambiguously worse off since they have to host more refugees. Choosing a high standard
of proof is thus a "beggar thy neighbor" strategy, and the choice of standard of proof can
exhibit strategic complementarity such that, as more states increase their standard of proof,
it becomes attractive to other states to also increase their standard of proof. Under certain
parameter values, this process will result in all states shading on the performance of their
obligations under the Convention and using high standards of proof in their refugee status
determination procedures.

In some cases there will be multiple equilibria, with both all states using the low stan-
dard of proof, and all states using the high standard of proof, being equilibria. Strategic
complementarity can thus turn the old adage “two wrongs don’t make a right” on its head.
The first $2L - 1$ wrongs can indeed make the last wrong appealing, even when no country
would prefer to be the first to unilaterally use a high burden of proof in its refugee status
determination procedures.

2.6.3. *Refugee recognition rates.* Another prediction of the model is that asylum seekers
from wealthy countries should succeed in their asylum claims at higher rates than asylum
seekers from poor countries since, because of the lower incentives for economic migration
from wealthy countries, rational host states will believe that refugee claimants from wealthy
countries are more likely to be persecuted in their country of origin than refugee claimants
from poor countries. This prediction is supported by data on refugee recognition rates. Neumayer (2005) finds in his sample of asylum applicants in Western Europe from 1980–1999 that, controlling for other characteristics of destination and origin countries, asylum applicants from poorer countries have lower recognition rates.28

3. Potential Reforms to the International Refugee Protection System

Given the inefficient outcomes that seem to have resulted from increased economic migration and the consequent tightening of refugee status determinations, consideration of potential reforms to the 1951 Convention system is in order. The logic of the Coase theorem suggests that additional contracting among host states may result in a more efficient allocation of refugees than is achieved by the 1951 Convention system. In the high standard of proof equilibrium of the Convention subgame with economic migration characterized in Proposition 1, fewer refugees are protected than in either the first best or the low standard of proof equilibrium. However, if the incentive for economic migration were somehow eliminated, the screening problem would disappear and Lemma 3 states that the first best level of refugee protection could be provided.

One way to reduce the economic incentive to migrate is for northern states to send any refugees they receive to southern states for protection. For such an arrangement to be individually rational for southern states, northern states would have to make payments to southern states to compensate them for their increased burden of hosting. We will refer to a system under which states transfer refugees that arrive in one state to another state for protection as a “transfer system.”

Hathaway and Neve (1997) and Schuck (1997) both propose transfer system reforms to the international refugee protection system. In the system proposed by Hathaway and Neve (1997), states would form regional “interest-convergence groups” in which poorer states in a

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28When country of origin and destination country fixed effects are added to the model, the per-capita income of country of origin is no longer significant. Given the there is relatively little within-country over-time variation in per-capita income, and that presumably people make migration decisions based on permanent income rather than short-run income fluctuations, this is unsurprising.
region would agree to host the majority of refugees produced in the region, and richer states in the region would agree to finance the costs of refugee protection incurred by those host states. Refugee claimants in the wealthier states would be transferred to safe, poorer countries for refugee status determination proceedings. This would eliminate the incentive of both refugees and economic migrants to seek asylum in wealthier countries, which would allow developed states to dismantle their current costly refugee status determination institutions and non-\textit{entretien} policies.

Schuck (1997) proposes a similar system in which states would agree to quotas, based on national wealth or other criteria, for the number of refugees each is obligated to protect. Schuck’s main innovation is to propose that states be allowed to trade their refugee quotas in a market, which would presumably result in an ultimate allocation of refugees similar to that envisioned by Hathaway and Neve.

While states have not implemented anything like the large-scale transfer systems proposed by Hathaway and Neve (1997) and Schuck (1997), the United States and Australia recently entered into an informal bilateral agreement under which each will transfer a small number of refugees that apply for asylum in one country to the other country for resettlement. The goal of the program is to deter asylum seekers by sending them to a country far away with which they have few cultural links.\textsuperscript{29}

Other variants of such reforms are conceivable as well. For example, refugees from developing countries who migrate to developed countries, rather than being entitled to remain in the developed country, could be given a \textit{voucher} that entitles a country that accepts the refugee to a payment from an international fund. As a condition to receiving the voucher payment, the host country would have to provide the refugee with an internationally agreed-upon set of rights, akin to the current rights provided refugees under the 1951 Convention. The payment would be set large enough to induce some country to accept the refugee. Indeed,

\textsuperscript{29}Nicholas Kralev, “U.S. to ship refugees half a world away; Washington, Canberra say move isn’t a ‘swap’”, \textit{The Washington Times}, April 19, 2007, p. A17
one can imagine a centralized market in refugee vouchers, similar to the quota market envisioned by Schuck (1997), in which prospective host countries would bid on the right to host refugees. Furthermore, the rights afforded refugees by their host state could be substantially expanded from the fairly paltry set of rights provided by the 1951 Convention. Such a voucher system could potentially transform refugees from a liability into an asset, and rather than being hosted in camps, as many refugees are, especially in poorer countries, refugees would enjoy rights to work, move within their host country, and potentially a path to nationalization for those permanently resettled under a new, broader international legal framework for protecting refugees. Such a system would also reduce the incentive of economic migrants to claim refugee status as presumably the winners of the bidding over vouchers would be predominately developing countries, which face lower costs of hosting refugees.

More radical means could also be employed to solve host states’ screening problem. What is needed is a mechanism that makes it unattractive to economic migrants to migrate but does not deter persecuted people from seeking refuge. One such mechanism is to impose a large income tax on refugees from poor states that are hosted in wealthy countries. If an income tax were levied on successful asylum claimants so as to make their after-tax income roughly the same as it would be in their country of origin, then the non-persecuted would have less incentive to falsely claim refugee status. However, such a tax would violate Article 29 of the Convention, which prohibits discriminatory taxation of refugees.

Modeling the details of any such reform proposals, and considering the myriad implementation issues that would beset them, awaits future work. For now, in Sections 3.1 and 3.2 we model simple transfer systems. Our analysis yields several insights. First, a transfer system of an individual northern state could increase the number of refugees hosted by inducing that northern state to lower its standard of proof. However, such a transfer system would make other northern states worse off. Second, if all northern states entered into transfer agreements with southern states, the incentives for economic migration and the consequent screening problem could be eliminated, resulting in the first best level of refugee protection.
Third, a large-scale transfer system, despite being individually rational for each poorer transferee state, could actually make poorer states worse-off than they are with no such transfer system in place because payments made under the transfer system fail to fully compensate transferee states for their increased cost of hosting, part of which is due to changes in migration flows. In Section 3.3 we then briefly consider the legality of a transfer system under current international law.

3.1. **Transfer system of individual northern state.** We model transfer systems using a modified version of the baseline Convention subgame model defined in Section 2.1. We assume, then, that all states have acceded to the Convention. Suppose the parameters are such that Assumption 4 (*economic migration*) holds and all states using the high standard of proof, \( p_j = h \forall j \in \mathbb{H} \), is an equilibrium of the baseline Convention subgame.

We first consider the decision of an individual northern state to setup its own transfer system. Suppose that a single northern state \( N_k \) could, prior to all states choosing their standards of proof \( p \), offer a set of contracts to southern states defined by \( \{(Q^{S_j}, T^{S_j})\}_{j=1,\ldots,L} \), where \( Q^{S_j} \) is the number of refugee transfer slots southern country \( S_j \) provides to refugees sent by \( N_k \) in exchange for a payment \( T^{S_j} \). Under the agreement, state \( N_k \) can deport \( Q^{S_j} \) migrants whom it determines have refugee status to state \( S_j \). Each southern state then simultaneously chooses whether to accept or reject its contract offer (for simplicity, without knowing the contracts offered other southern host states). Denote \( S_j \)'s strategy that specifies whether to accept or reject by the function \( r_{S_j}(Q, T) \), which is equal to 1 if \( S_j \) accepts and 0 if it rejects (and denote the entire strategy profile by \( r(Q, T) \)). Any states that accept are paid their \( T^{S_j} \) by \( N_k \). Denote the profile of resulting contracts by \( (\hat{Q}, \hat{T}) \) (with \( \hat{Q}_{S_j} = 0 \) and \( \hat{T}_{S_j} = 0 \) if \( S_j \) rejects). Then, after migrants make their migration decisions, \( N_k \) can transfer any migrant that passes its refugee status determination procedure to a southern state with open contracted-for transfer slots until all slots are filled. We restrict attention to Markov-perfect PBEs in which citizens’ strategies are a function only of the state \( p \) and \( \hat{Q} \) and not the entire history of contract offers and rejections/acceptances by southern host.
states, and similarly host states strategies specifying their standards of proof are a function of only \( \hat{Q} \). We thus denote citizens’ strategy profile as \( a(\cdot, p, \hat{Q}) \) and host states’ strategy profiles following transfer slot contracting as \( p(\hat{Q}) \). We refer to this game as the Individual Transfer System game.

We now have the following result:

**Proposition 3.** Under Assumption 4 (economic migration), there exist parameter values such that there exist PBEs of the baseline Convention subgame in which all host states use the high standard of proof, and for which in the Individual Transfer System game there exist PBEs in which state \( N_k \) transfers all successful asylum applicants from \( S_0 \) to southern states for protection, and other northern states are made worse off than they are in a PBE of the baseline Convention subgame.

*Proof is in the Appendix.*

The northern state with the transfer system is made better off by using the transfer system for two reasons: (i) it deflects both economic migrants and refugees to other northern host states by making it less attractive as a migration destination; and (ii) some of the migrants who continue to arrive in \( N_k \) are now hosted in the south where it is less costly to host migrants. This individual transfer system is thus a “beggar thy neighbor” strategy for state \( N_k \) in much the same way as increasing the standard of proof. Individual northern states thus have a strong incentive to enter into such contracts with southern states.

Furthermore, we conjecture (but have yet to prove) that there exist parameters such that, while states choosing the high standard of proof in a PBE of the baseline Convention subgame, in the Individual Transfer System game, \( N_k \) chooses the low standard of proof in equilibrium. The reason is that the transfer system dramatically lowers the number of refugees that migrate to \( N_k \), and thus it becomes attractive to \( N_k \) to lower its standard of proof and thereby increase the number of migrants it either hosts or transfers but also avoid the shading cost \( K \).
3.2. **Global transfer system.** With $N_k$’s transfer system in place, other northern states will have an even stronger incentive to follow suit as they are now hosting more migrants. There is thus strategic complementarity in creating refugee transfer systems. Consider now a game in which all northern states simultaneously offer contracts to southern states $\{(Q_{N_k}^{S_j}, T_{N_k}^{S_j})\}_{j,k=1,...,L}$, where $Q_{N_k}^{S_j}$ is the number of refugee transfer slots southern country $S_j$ provides to refugees sent by $N_k$ in exchange for a payment $T_{N_k}^{S_j}$. Each southern state can then accept or reject each individual contract. Denote $S_j$’s strategy that specifies whether to accept or reject by the vector-valued function $r_{S_j}(Q,T)$ where $(Q,T)$ is a vector of contract offers and the $k$-th element of $r_{S_j}(Q,T)$ is equal to 1 if $S_j$ accepts the contract offered by $N_k$ and is equal to 0 if it rejects (and denote the entire strategy profile by $r(Q,T)$). The game then proceeds as before, but after citizens make their migration choices, northern states can transfer any migrants that pass its refugee status determination procedures to southern states with which it has unused contracted-for transfer slots. Denote the profile of contract offers as $(Q,T)$ and the profile of resulting contracts as $(\hat{Q},\hat{T})$. Again, we focus on Markov-perfect PBEs; denote host states’ entire strategy profile as $((Q,T); r(Q,T); p(\hat{Q}))$ and citizens’ strategy profile as $a^*(\cdot,p,\hat{Q})$. We refer to this game as the Global Transfer System game.

We have the following result.

**Proposition 4.** There exist parameter values such that there is a PBE of the baseline Convention subgame in which all states use high standards of proof, but for which there is a PBE of the Global Transfer System game in which there is no economic migration, all host states use the low standard of proof, and all persecuted people migrate and are hosted, with all southern refugees hosted in the south. Furthermore, there exist parameters in which southern host states are worse off in this PBE of the Global Transfer System game than they are in a PBE of the baseline Convention subgame.

*Proof is in the Appendix*
The reason a large-scale transfer system can result in the first-best level of refugee protection is that, by eliminating the economic incentive to migrate, the transfer system eliminates host states’ screening problem. However, this may not be Pareto improving, even among host states, as the transfer system also alters the migration destination choices of southern refugees. They now attempt to migrate to southern host states, and the resulting increase in southern states’ burden of hosting refugees may not be fully compensated by payments made by northern host states under the transfer system.

If instead of a decentralized market of take-it-or-leave-it offers to individual southern host states, there is a collective bargaining process among all states, then a Pareto-improving contract could emerge in which southern host states receive payments that do fully compensate them for their increased hosting costs.

3.3. **Legality of a transfer system under current international law.** A transfer system could be structured to be consistent with existing international law. Two potentially troublesome legal issues in a transfer system are briefly analyzed below.

3.3.1. **States’ ability to deport refugees to safe-third-countries.** The foundational obligation under the 1951 Convention is that of non-refoulement. Article 33 of the Convention provides that “[n]o Contracting State shall expel or return (“refouler”) a refugee in any manner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social group or political opinion.” This provision imposes substantial limitations on states’ right to remove refugees from their territory. Clearly, under the 1951 Convention, a state may not lawfully remove a refugee from its territory and repatriate him to his country of persecution. However, the Convention has been interpreted by states not to prevent removal of refugees to countries that will neither persecute nor refoule them. States have adopted “safe third country” policies under which refugees are deported to third states deemed safe. Given state practice, the involuntary deportation of refugees to safe third countries under a transfer system is consistent with the 1951 Convention.
Safe third country policies arise in two general contexts: (i) the reaction of states to the inward flow of refugees from their country of first asylum; and (ii) the involuntary resettlement of refugees from their country of first asylum. First, many states subscribe to the “country of first asylum” principle under which refugees are considered to have a right to protection by the state to which they initially flee but do not have the right to subsequently migrate, claiming refugee status in other states. European countries in particular have adopted “safe third country” policies that require the removal of asylum-seekers who do not come directly from their place of persecution. Such asylum claimants are removed to “safe” countries through which they have traveled for determination of their asylum claims. This policy was adopted by European states in two international legal instruments, the Schengen Convention\textsuperscript{30} and the Dublin Convention,\textsuperscript{31} under which member states of the European Union transfer asylum applicants to the appropriate member state determined by objective criteria for determination of their asylum claims, or alternatively to non-EU states which are deemed safe. Similarly, under U.S. law, migrants who have become “firmly resettled” in a foreign country after fleeing persecution in their country of origin are not eligible for refugee status. A refugee is considered firmly resettled if he has been offered “resident status, citizenship, or some other type of permanent resettlement by a country other than the United States.”\textsuperscript{32}

Second, countries of first asylum may wish to remove refugees to safe third states in order to more equitably distribute the burden of refugee protection. Thus, U.S. law allows for the deportation of refugees to “safe third countries,” pursuant to a bilateral or multilateral agreement.\textsuperscript{33} UNHCR resettlement programs involve the removal of refugees from their country of first asylum to third countries. Generally it seems that refugees resettled under

\textsuperscript{30}Convention Applying the Schengen Agreement of 14 June 1985 Between the Governments of the States of the Benelux Economic Union, the Federal Republic of Germany and the French Republic, on the Gradual Abolition of Checks at their Common Borders, June 19, 1990, 30 I.L.M. 84.

\textsuperscript{31}Convention Determining the State Responsible for Examining Applications for Asylum Lodged in One of the Member States of the European Communities, June 15, 1990, 30 I.L.M. 427.

\textsuperscript{32}C.F.R. §207.1.

\textsuperscript{33}INA §208(a)(2)(A). However, historically the U.S. has rarely exercised this power, and migrants who are determined to be refugees are typically granted permanent resident status.
the auspices of the UNHCR do so voluntarily, and given that most resettlement states are developed industrialized democracies, this is unsurprising. But in principle, countries of first asylum claim the right to forcibly remove refugees for resettlement.

While safe third country practices have come under criticism by some scholars, the Executive Committee of the UNHCR has stated that they are consistent with the 1951 Convention provided that there are sufficient guarantees “that the person will be readmitted to that country; will enjoy there effective protection against refoulement; will have the possibility to seek and enjoy asylum; and will be treated in accordance with accepted international standards.” Since states are generally under no obligation to admit non-nationals, a refugee cannot lawfully be deported unless the receiving state agrees to admit him (e.g., under a bilateral or multilateral readmission agreement). Thus, the duty of non-refoulement puts significant limits on the ability of states to deport would-be asylees to safe third states, which must reach such agreements with transferee states and seek assurances that any deported refugees will be protected.

These legal issues are implicated by any transfer system for refugees. In theory, the amount of the payment made to the transferee state will be sufficient to induce that state to accept the refugee, and provided that guarantees of non-refoulement and basic rights are made, a refugee could be lawfully removed from a country of first asylum to that state. It seems likely that not all refugees will voluntarily resettle, particularly if the receiving state is a low-income country and/or far from the refugee’s country of origin. For a transfer system to work, states would likely need the ability to deport unwilling refugees to safe third countries. While such deportation practices appear to be consistent with the 1951 Convention, there may be practical difficulties in a transfer system in forcing refugees to resettle unwillingly. Importantly, refugees would retain the right to voluntarily repatriate to their country of

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34 See, e.g., Borchelt (2002).
35 UNHCR Executive Committee, “Note on International Protection,” July 7, 1999, U.N. doc. A/AC.96/914, para. 19. See also UNHCR Executive Conclusion No. 58 (XL) on the Problem of Refugees and Asylum-Seekers Who Move in an Irregular Manner from a Country in Which They Had Already Found Protection (condoning the removal of refugees who move “irregularly” from the country of first asylum, provided that they are protected from refoulement and assured of appropriate treatment).
origin, whether from the country of first asylum or subsequent to resettlement in a third country.

3.3.2. **Nondiscrimination.** Article 3 of the 1951 Convention requires states to “apply the provisions of [the] Convention to refugees without discrimination as to race, religion or country of origin.” While the precise meaning of this clause is not evident, by its terms it imposes limitations on the rights of states to discriminate based on the enumerated grounds in their treatment of refugees and potentially could limit discriminatory aspects of a transfer program.

States do seem to recognize that the nondiscrimination provision limits their policy options. For example, prior to 1980, the U.S. only admitted refugees from Communist countries and from countries in the Middle East. The U.S. Immigration Act of 1980 was a significant overhaul of U.S. immigration policy and was described by the Immigration and Naturalization Service as intending to bring the U.S. into compliance with the 1967 Protocol by establishing “a politically and geographically neutral adjudication standard for both asylum status and refugee status, a standard to be applied equally to all applicants regardless of country of origin.”

Despite the non-discrimination provision of the 1951 Convention, states commonly make distinctions based on country of origin in their treatment of refugees, some of which are innocuous. Most obviously, in situations in which a particular state is considered to persecute particular groups, its nationals are commonly treated differently, for example by being given automatic refugee status with no need for individual “well-founded fear of persecution” determinations. Conversely, some states also make negative determinations based solely on country of origin for refugee claimants originating from states deemed to be non-persecutors. Furthermore, states often discriminate in offering permanent resettlement by selecting refugees that have some ethnic or political nexus with the receiving state or are

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otherwise deemed desirable or of special concern. The UNHCR is complicit in such discriminatory judgments, particularly through its resettlement programs, suggesting that it does not consider them in violation of the 1951 Convention.

Nonetheless, the nondiscrimination provision would have to be considered in fashioning any potentially discriminatory aspects of a transfer system. For example, outright conditioning of the monetary value of the payment made to the transferee state on the country of origin of the refugee would arguably violate article 3 of the 1951 Convention. At the very least, such a feature of a transfer system would likely stimulate political opposition from refugee advocates.

4. Conclusion

While the 1951 Convention may have worked well in the past, the subsequent increase in economic migration resulting from falling transportation costs and increasing inequality has resulted in efforts by states to avoid their obligations under the Convention. Our model provides a formal account of this process.

One potential reform suggested by our analysis is to place the responsibility for refugee status determinations with the UNHCR. By centralizing the responsibility for recognizing refugees as such, states would no longer have the ability to shade on their obligations under the Convention by increasing the standards of proof of their refugee status determination procedures. Given that the current decentralized system results in less than socially optimal refugee protection, states party to the Convention may be willing to renegotiate this aspect of the international refugee protection system and thereby increase the number of refugees protected.

Our analysis of refugee transfer systems makes clear that, while such reforms could help ameliorate host states’ screening problem and increase the number of persecuted people who are given refuge, such reforms do not make all potential migrants and host states better off. First, they clearly make economic migrants worse off by closing off the refugee system as a
route to better economic opportunities. Limitations imposed by states on international migration are surely welfare-reducing. Second, and less obviously, transfer systems may make poorer transferee states worse off, despite payments from transferor states that make it individually rational for transferee states to participate in such a system. Transfer systems such as the one recently consummated by the United States and Australia impose externalities on other states through their effects on the destination choices of migrants.

APPENDIX

Proof of Proposition 1. We begin with a useful existence lemma:

Lemma 4. For all \( \hat{p} \in \{l, h\}^{2L} \), there exist a strategy profile \( a^*(\cdot, \hat{p}) \) and beliefs \( \mu_j(e, o, \hat{p}, a(\cdot, p)) \) that form a PBE of the subgame following \( \hat{p} \).

Proof. Trivially, consider the strategy profile with \( a^*(i, \hat{p}) = 0, \forall i \in S \) and all northern persecuted people traveling in equal numbers to each northern host state (and as usual no northern non-persecuted migrate). Beliefs about southerners are unconstrained, so consider the pessimistic beliefs \( \mu_j(e, S, \hat{p}, a^*(\cdot, p)) = 0 \) (and \( \mu_j(e, N, \hat{p}, a^*(\cdot, p)) = 1 \)). Then no citizen has any incentive to deviate, since southerners would not be admitted given the pessimistic beliefs of host states. Of course, more reasonable PBEs may exist as well, some of which will be characterized in the proof below. \( \square \)

Proof of (1). Non-persecuted citizens in \( N_0 \) have no incentive to migrate, so in any PBE \( (p^*, a^*(\cdot, p)) \) and \( \mu_j(e, o, p, a(\cdot, p)) \) with any migration, all migrants from \( N_0 \) are refugees so we must have \( R^N((a^*(\cdot, p), p^*) > 0 \). Thus, every host state’s equilibrium beliefs are \( \mu_j(e, N, p^*, a^*(\cdot, p)) = 1 \) and all asylum applicants from \( N_0 \) are admitted whether a host state uses the high or low standard of proof. By attempting to migrate to a northern host state, a persecuted person from \( N_0 \) gets the payoff \( (1 - \frac{a}{2}[u(w_N) - d_i] + \frac{a}{2}[u(w_S) - d_i) - J \]. Since, by assumption, \( u(w_N) - d > u(w_N) - P \) and \( u(w_S) - J - d > u(w_N) - P \) and \( u(w_N) - d_i > u(w_S) - J - d_i \), in a PBE all persecuted people from \( N_0 \) will choose to attempt to migrate to a northern state.

Proof of (2). We construct a PBE in which each host state chooses the low standard of proof, \( p^* = p^i \) where \( p^j = l \forall j \in H \), and in which migrants from \( S_0 \) are admitted to their destination country if and only if they present evidence \( e_i \in \{w, s\} \), and in which if any host state deviated and chose \( p_j = h \), migrants would be admitted if and only if \( e_i = s \). Denote the strategy profile of citizens in such an equilibrium as \( a^*(\cdot, p) \). \( a^*(\cdot, p) \) and \( \mu_j(e, o, p, a(\cdot, p)) \) must form PBEs of every migration subgame (i.e., following every possible \( p \)).
We first characterize equilibrium migration flows, \(a^*(\cdot, p')\). A non-persecuted citizen from \(S_0\), \(i \in \mathcal{S} \setminus \mathcal{P}\), will prefer to migrate to a host state in the north rather than remain in \(S_0\) if

\[
(1 - \alpha) \left[ (\pi_s^M + \pi_w^M)[u(w_N) - J - d_i] + (1 - \pi_s^M - \pi_w^M)[u(w_S) - J] \right] + \\
\alpha \left[ \frac{1}{2} \left[ (\pi_s^M + \pi_w^M)[u(w_N) - J - d_i] + (1 - \pi_s^M - \pi_w^M)[u(w_S) - J] \right] + \\
\frac{1}{2} \left[ (\pi_s^M + \pi_w^M)[u(w_S) - d_i] + (1 - \pi_s^M - \pi_w^M)[u(w_S)] \right] \right] > u(w_S)
\]

The \((1 - \alpha)\) term is the expected utility from applying for asylum in the north; the \(\alpha\) term is the consequence of being diverted to a random host state. To simplify notation, define \(\Delta u \equiv u(w_N) - u(w_S)\). After some algebra, (11) becomes

\[
d_i < (1 - \frac{\alpha}{2})[\Delta u - \frac{J}{\pi_s^M + \pi_w^M}]
\]

The total number of economic migrants in this equilibrium is

\[
M^S(a^*(\cdot, p), p') = G \left[ (1 - \frac{\alpha}{2})(\Delta u - \frac{J}{\pi_s^M + \pi_w^M}) \right] (1 - \lambda)
\]

We will look for an equilibrium \(a^*(\cdot, p)\) in which they attempt to travel in equal numbers to each northern host state, so that \(\dot{M}^S_j(a^*(\cdot, p), p') = M^S(a^*(\cdot, p), p')/L \forall j \in \{N_1, \ldots, N_L\}\).

Consider now the choices of persecuted individuals from \(S_0\). A persecuted southerner would rather attempt to migrate north instead of migrating to another southern country if

\[
(\pi_s^R + \pi_w^R)[u(w_N) - J - d_i] + (1 - \pi_s^R - \pi_w^R)[u(w_S) - J - P] > \\
(\pi_s^R + \pi_w^R)[u(w_S) - d_i] + (1 - \pi_s^R - \pi_w^R)[u(w_S) - P]
\]

or, after some algebra,

\[
(\pi_s^R + \pi_w^R)\Delta u > J
\]

Persecuted people from \(S_0\) will prefer to migrate north rather than stay in \(S_0\) if

\[
(1 - \alpha) \left[ (\pi_s^R + \pi_w^R)[u(w_N) - J - d_i] + (1 - \pi_s^R - \pi_w^R)[u(w_S) - J - P] \right] + \\
\alpha \left[ \frac{1}{2} \left[ (\pi_s^R + \pi_w^R)[u(w_N) - J - d_i] + (1 - \pi_s^R - \pi_w^R)[u(w_S) - J - P] \right] + \\
\frac{1}{2} \left[ (\pi_s^R + \pi_w^R)[u(w_S) - d_i] + (1 - \pi_s^R - \pi_w^R)[u(w_S) - P] \right] \right] > u(w_S) - P
\]

Substituting in \(\bar{d}\) for \(d_i\) and rearranging, the following condition guarantees that all persecuted people would prefer to migrate north rather than stay in \(S_0\).

\[
\bar{d} - P < (1 - \frac{\alpha}{2})[\Delta u - \frac{J}{\pi_s^R + \pi_w^R}]
\]

Assume that the false negative rate \(1 - \pi_s^R - \pi_w^R\) and transportation costs \(J\) are sufficiently small, and the wage differential sufficiently large, that (15) and (17) hold and all persecuted southerners seek asylum in the north. We will look for an equilibrium \(a^*(\cdot, p)\) in which they
attempt to travel in equal numbers to each northern host state, so that \( R_j^S(a^*(\cdot, p), p') = \lambda/L \forall j \in \{N_1, \ldots, N_L\} \).

All persecuted people from \( N_0 \) seek and receive asylum in the north (see proof of (1) above). We look for an equilibrium in which they attempt to travel to each northern host state in equal numbers.

Under \( a^*(\cdot, p) \) and \( p' \), then, each northern host state hosts \([1-\alpha/L + \alpha/2L]M^S(a^*(\cdot, p), p') (\pi^M_s + \pi^w_w)\) economic migrants from \( S_0 \), \([1-\alpha/L + \alpha/2L]\lambda \) refugees from \( N_0 \), and \([1-\alpha/L + \alpha/2L]\lambda(\pi^R_s + \pi^R_w)\) refugees from \( S_0 \). Each southern host state hosts \( \alpha/2L M^S(a^*(\cdot, p), p') (\pi^M_s + \pi^M_w) \) economic migrants from \( S_0 \), \( \alpha/2L \lambda \) refugees from \( N_0 \), and \( \alpha/2L \lambda(\pi^R_s + \pi^R_w) \) refugees from \( S_0 \). Note that the only migrants who travel to a southern state are the \( \alpha/2 \) fraction of migrants who get diverted to a random southern state.

A total of only \( \lambda(1 + \pi^R_s + \pi^R_w) \) refugees are hosted. The screening problem results in \( \lambda(1 - \pi^s_s - \pi^R_s) \) refugees being returned to their place of persecution.

In such an equilibrium, host states’ equilibrium posterior beliefs about southern migrants are, \( \forall j \in \mathbb{H}, \)\(^{37}\)

\[
\mu_j(e, S, p', a^*(\cdot, p)) = \frac{\pi^R_s \lambda}{\pi^R_s \lambda + \pi^M_s M^S(a^*(\cdot, p), p')}
\]

For host states to accept southern migrants if and only if \( e_i \in \{w, s\} \) we must have\(^{38}\)

\[
\mu_j(w, S, p', a^*(\cdot, p)) \geq \lambda
\]

\[
\mu_j(0, S, p', a^*(\cdot, p)) < \lambda
\]

Northern states’ payoffs in this equilibrium are

\[
U_{N_j}(a^*(\cdot, p), p') = \beta P \lambda(1 + \pi^R_s + \pi^R_w)
\]

\[
- BN \left[ \frac{1-\alpha}{L} + \frac{\alpha}{2L} \right] \left[ M^S(a^*(\cdot, p), p') (\pi^M_s + \pi^w_w) + \lambda(1 + \pi^R_s + \pi^R_w) \right]
\]

and southern states’ payoffs are:

\[
U_{S_j}(a^*(\cdot, p), p') = \beta P \lambda(1 + \pi^R_s + \pi^R_w)
\]

\[
- BS \left[ \frac{\alpha}{2L} \left[ M^S(a^*(\cdot, p), p') (\pi^M_s + \pi^M_w) + \lambda(1 + \pi^R_s + \pi^R_w) \right] \right]
\]

In order for \( (p', a^*(\cdot, p)) \) to be an equilibrium, \( \forall j \in \mathbb{H} \) choosing \( p_j = \lambda \) must be a best response to all other states choosing \( p_{-j} = \lambda \) and citizens choosing \( a^*(\cdot, p) \).

Consider first a deviation from \( p' \) by a northern state \( N_k \) to \( p_{N_k} = h \). We look for an equilibrium such that, in the migration equilibrium \( a^*(\cdot, (p_{N_k} = h, p_{-N_k} = \lambda)) \) that would follow, \( N_k \) only admits southern migrants with \( e_i = s \) (and continues to admit all northern migrants as in \( p' \)).

Both economic migrants and refugees from \( S_0 \) would now prefer to migrate to some other northern country \( N_j \neq k \) that is using a low standard of proof. The only migrants who travel to \( N_k \) are part of the fraction \( \alpha/2L \) of migrants who are randomly diverted to \( N_k \). They are

\(^{37}\)All states have the same posterior belief functions since each receives economic migrants and refugees from \( S_0 \) in the same proportion.

\(^{38}\)Note that (2) implies that \( \mu_j(w, S, p', a^*(\cdot, p)) > \mu_j(w, S, p', a^*(\cdot, p)) > \mu_j(0, S, p', a^*(\cdot, p)) \), limiting the number of conditions we must impose.
now rejected at a higher rate than under \( p' \). The total number of economic migrants is now

\[
M^S(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l)) =
\]

\[
G \left[ \frac{(1 - \frac{\alpha}{2})((\pi_s^M + \pi_w^M)\Delta u - J) - \frac{\alpha}{2L} \pi_w^M \Delta u}{\pi_s^M + (1 - \frac{\alpha}{2L})\pi_w^M} \right] (1 - \lambda)
\]

which could be larger or smaller than \( M^S(a^*(\cdot, p), p') \). The condition for refugees from \( S_0 \) to prefer migrating to some northern country rather than to stay to be persecuted in \( S_0 \) is now

\[
d - P < \frac{(1 - \frac{\alpha}{2})((\pi_s^R + \pi_w^R)\Delta u - J) - \frac{\alpha}{2L} \pi_w^R \Delta u}{\pi_s^R + (1 - \frac{\alpha}{2L})\pi_w^R}
\]

Assume the parameters are such that (24) holds and all persecuted people continue to migrate north. We look for an equilibrium \( a^*(\cdot, p) \) in which migrants from \( S_0 \) now attempt to migrate in equal numbers to each \( N_j \neq k \).

The beliefs of host states are now, \( \forall j \in \mathbb{H} \):

\[
\mu_j(e, S, (p_{N_k} = h, p_{-N_k} = l), a^*(\cdot, p)) = \frac{\pi_s^R \lambda}{\pi_e \lambda + \pi_s^M M^S(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l))}
\]

For host states other than \( N_k \) to continue to accept migrants if and only if \( e_i \in \{w, s\} \) we must have

\[
\mu_j(w, S, (p_{N_k} = h, p_{-N_k} = l), a^*(\cdot, p)) \geq l
\]

(27)

\[
\mu_j(0, S, (p_{N_k} = h, p_{-N_k} = l), a^*(\cdot, p)) < l
\]

and for \( N_k \) to admit migrants if and only if \( e_i = s \), we must have

(28)

\[
\mu_j(s, S, (p_{N_k} = h, p_{-N_k} = l), a^*(\cdot, p)) \geq h
\]

(29)

\[
\mu_j(w, S, (p_{N_k} = h, p_{-N_k} = l), a^*(\cdot, p)) < h
\]

\( N_k \) now hosts only \( \frac{\alpha}{2L} M^S(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l))\pi_s^M \) economic migrants from \( S_0 \), \( \frac{\alpha}{2L} \pi_s^R \) refugees from \( N_0 \), and \( \frac{\alpha}{2L} \pi_w^R \) refugees from \( S_0 \). Because of \( N_k \)'s higher standard of proof, only \( \beta P \lambda (1 + \pi_s^R + (1 - \frac{\alpha}{2L})\pi_w^R) \) refugees are hosted.

\( N_k \)'s payoff is now

\[
U_{N_k}(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l)) = \beta P \lambda (1 + \pi_s^R + (1 - \frac{\alpha}{2L})\pi_w^R) - K
\]

\[
B_N \left[ \frac{\alpha}{2L} M^S(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l))\pi_s^M + \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \lambda + \frac{\alpha}{2L} \lambda \pi_s^R \right]
\]

\( N_k \) will not be made better off by its deviation if

\[
K > B_N \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] \left[ M^S(a^*(\cdot, p), p')(\pi_s^M + \pi_w^M) + \lambda (1 + \pi_s^R + \pi_w^R) \right]
\]

\[
- B_N \left[ \frac{\alpha}{2L} M^S(a^*(\cdot, p), (p_{N_k} = h, p_{-N_k} = l))(\pi_s^M + \pi_w^M) + \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \lambda + \frac{\alpha}{2L} \lambda \pi_s^R \right]
\]

\[
- \beta P \lambda \frac{\alpha}{2L} \pi_s^R
\]

\( \frac{\alpha}{2L} \pi_s^R \) has the same beliefs as other states since all states continue to receive economic migrants and refugees from \( S_0 \) in the same proportion.
The LHS of (31) is the “shading cost” to $N_k$ of shading on the performance of its international commitments; the RHS is the savings from the reduced burden of hosting refugees less the lost altruistic benefits from the fewer refugees now hosted.

Similarly, consider a deviation by a southern state $S_k$ to $p_{S_k} = h$. The total number of economic migrants is now

$$M^S(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l)) = G\left[\frac{(1 - \frac{\alpha}{2})(\pi^M_s + \pi^M_w)\Delta u - J}{\pi^M_s + (1 - \frac{\alpha}{2L})\pi^M_w}\right](1 - \lambda) > M^S(a^*(\cdot, p), p')$$

and the condition for all persecuted people to migrate north is now

$$d - P < \frac{(1 - \frac{\alpha}{2})(\pi^R_s + \pi^R_w)\Delta u - J}{\pi^R_s + (1 - \frac{\alpha}{2L})\pi^R_w}$$

which is implied by (17).

The beliefs of host states are now

$$\mu_j(e, S, (p_{S_k} = h, p_{-S_k} = l), a^*(\cdot, p)) = \frac{\pi^R_e \lambda}{\pi^R_e \lambda + \pi^M_e M^S(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l))} < \mu_j(e, S, p', a^*(\cdot, p))$$

For host states other than $S_k$ to continue to accept migrants if and only if $e \in \{w, s\}$ we must have,

$$\mu_j(0, S, (p_{S_k} = h, p_{-S_k} = l), a^*(\cdot, p)) < l$$

and for $S_k$ to admit migrants if and only if $e = s$, we must have

$$\mu_j(s, S, (p_{S_k} = h, p_{-S_k} = l), a^*(\cdot, p)) \geq h$$

$$\mu_j(w, S, (p_{S_k} = h, p_{-S_k} = l), a^*(\cdot, p)) < h$$

$S_k$’s payoff is now

$$U_{S_k}(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l)) = \beta P \lambda (1 + \pi^R_s + (1 - \frac{\alpha}{2L})\pi^R_w)$$

$$- B_S \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l))(\pi^M_s) + \lambda(1 + \pi^R_s)] \right]$$

$S_k$ will not be made better off by this deviation if

$$K > B_S \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l))(\pi^M_s + \pi^M_w) + \lambda(1 + \pi^R_s + \pi^R_w)] \right]$$

$$- B_S \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), (p_{S_k} = h, p_{-S_k} = l))(\pi^M_s) + \lambda(1 + \pi^R_s)] \right]$$

$$- \beta P \lambda \frac{\alpha}{2L} \pi^R_w$$

If both (31) and (39) hold, which occurs for sufficiently large $K$, all states choosing low standards of proof is an equilibrium.

We must show that there exist parameters such that the inequalities (2), (15), (17), (19), (20), (24), (26), (27), (28), (29), (31), (35), (36), (37), and (39) and Assumption 4 all hold.
A set of parameters for which all of these conditions are satisfied is $\pi^R_s = 0.5$, $\pi^M_s = 0.2$, $\pi^R_w = 0.3$, $\pi^M_w = 0.2$, $\beta = 0.005$, $\alpha = 0.2$, $h = 0.7$, $l = 0.4$, $u(w_N) = 15$, $u(w_S) = 4$, $P = 22$, $J = 3$, $G(\cdot) = U[1, 7]$, $K = 3$, $\lambda = 0.3$, $L = 5$, $B_N(x) = x^4 + x^2$, and $B_S(x) = x^2$.

The strategy profile $a^*(\cdot, p)$ and beliefs $\mu_j(e, o, p, a^*(\cdot, p))$ must also result in a PBE of every possible migration subgame, that is, for every possible profile $p \in \{l, h\}^2$. So far we have only considered the subgames following $p \in \{p', (p_{N_k} = h, p_{-N_k} = l), (p_{S_k} = h, p_{-S_k} = l)\}$. To complete the proof we appeal to Lemma 4 and complete the equilibrium strategy profile and beliefs such that PBE follows every possible $p$.

\[ \square \]

**Proof of (3).** We construct a PBE in which each host state chooses the high standard of proof, $p^* = p^h$ where $p^h_j = h \forall j \in \mathbb{H}$, and in which migrants from $S_0$ are admitted by a host state if and only if they present evidence $e_i = s$, and in which if any host state deviated and chose $p_j = l$, migrants would be admitted if and only if $e_i \in \{w, s\}$. Denote the strategy profile of citizens in such an equilibrium as $a^*(\cdot, p)$.

We first characterize equilibrium migration flows, $a^*(\cdot, p^h)$. A non-persecuted citizen from $S_0$, $i \in S \setminus \mathbb{P}$, will prefer to migrate to a host state in the north rather than remain in $S_0$ if

\[ d_i < (1 - \frac{\alpha}{2})[\Delta u - \frac{J}{\pi^M_s}] \]

The total number of economic migrants in this equilibrium is

\[ M^S(a^*(\cdot, p), p^h) = G[(1 - \frac{\alpha}{2})(\Delta u - \frac{J}{\pi^M_s})](1 - \lambda) < M^S(a^*(\cdot, p), p') \]

We will look for an equilibrium $a^*(\cdot, p)$ in which they attempt to travel in equal numbers to each northern host state, so that $M^*_j(a^*(\cdot, p), p^h) = M^S(a^*(\cdot, p), p^h)/L \forall j \in \{N_1, \ldots, N_L\}$.

Consider now the choices of persecuted individuals from $S_0$. A persecuted southerner will prefer to attempt to migrate north instead of migrating to another southern country if

\[ \pi^R_s \Delta u > J \]

All persecuted people from $S_0$ will prefer to migrate north rather than stay in $S_0$ if

\[ \bar{d} - P < (1 - \frac{\alpha}{2})[\Delta u - \frac{J}{\pi^R_s}] \]

Assume that the false negative rate $1 - \pi^R_s$ and transportation costs $J$ are sufficiently small, and the wage differential sufficiently large, that (42) and (43) hold and all persecuted southerners seek asylum in the north. We will look for an equilibrium $a^*(\cdot, p)$ in which they attempt to travel in equal numbers to each northern host state, so that $R^*_j(a^*(\cdot, p), p^h) = \lambda/L \forall j \in \{N_1, \ldots, N_L\}$.

Persecuted people from $N_0$ continue to seek and receive asylum in the north. We look for an equilibrium in which they attempt to travel to each northern host state in equal numbers.

In such an equilibrium, host states’ posterior beliefs about southern migrants are, $\forall j \in \mathbb{H}$,

\[ \mu_j(e, S, p^h, a^*(\cdot, p)) = \frac{\pi^R_e \lambda}{\pi^R_e \lambda + \pi^M_e M^S(a^*(\cdot, p), p^h)} \]

For host states to accept southern migrants if and only if $e_i = s$ we must have

\[ \mu_j(w, S, p^h, a^*(\cdot, p)) < h \]

(45)
\(\mu_j(s, S, p^h, a^*(\cdot, p)) \geq h\)

Northern states’ payoffs in this equilibrium are
\[
U_N(a^*(\cdot, p), p^h) = \beta P\lambda(1 + \pi_s^R)
\]
\[
- B_N \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] [M^S(a^*(\cdot, p), p^h)(\pi_s^M) + \lambda(1 + \pi_s^R)] - K
\]
and southern states’ payoffs are:
\[
U_S(a^*(\cdot, p), p^h) = \beta P\lambda(1 + \pi_s^R)
\]
\[
- B_S \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), p^h)(\pi_s^M) + \lambda(1 + \pi_s^R)] - K
\]

In order for \((p^h, a^*(\cdot, p))\) to be an equilibrium, \(\forall j \in H\) choosing \(p_j = h\) must be a best response to all other states choosing \(p_{-j} = h\) and citizens choosing \(a^*(\cdot, p)\).

Consider first a deviation from \(p^h\) by a northern state \(N_k\) to \(p_{N_k} = l\). We look for an equilibrium such that, in the migration equilibrium \(a^*(\cdot, (p_{N_k} = l, p_{-N_k} = h))\) that would follow, \(N_k\) admits southern migrants if and only if \(e_i \in \{w, s\}\).

Both economic migrants and refugees from \(S_0\) would now prefer to migrate to \(N_k\) rather than to any other host state. The total number of economic migrants is now
\[
M^S(a^*(\cdot, p), (p_{N_k} = l, p_{-N_k} = h)) =
\]
\[ G\left[ \frac{(1 - \frac{\alpha}{2})[\pi_s^M + \pi_w^M]\Delta u - J - \frac{(L-1)\alpha}{2L}\pi_w^M\Delta u}{\pi_s^M + (1 - \alpha + \frac{\alpha}{2L})\pi_w^M} \right] (1 - \lambda) \]
which is larger than \(M^S(a^*(\cdot, p), p^h)\) since economic migrants now have a better chance of being admitted to a northern state. The condition for refugees from \(S_0\) to prefer migrating to some northern country rather than to stay to be persecuted in \(S_0\) is now
\[
\tilde{d} - P < \frac{\frac{(1 - \frac{\alpha}{2})[\pi_s^R + \pi_w^R]\Delta u - J - \frac{(L-1)\alpha}{2L}\pi_w^R\Delta u}{\pi_s^R + (1 - \alpha + \frac{\alpha}{2L})\pi_w^R}}{G}\]
This is implied by (43) and so all persecuted people continue to migrate north.

The beliefs of host states are now, \(\forall j \in H\),
\[
\mu_j(e, S, (p_{N_k} = l, p_{-N_k} = h), a^*(\cdot, p)) = \frac{\pi_e^R \lambda}{\pi_e^R \lambda + \pi_e^M M^S(a^*(\cdot, p), (p_{N_k} = l, p_{-N_k} = h))} < \mu_j(e, S, p^h, a^*(\cdot, p))
\]
For host states other than \(N_k\) to continue to accept migrants if and only if \(e_i = s\) we must have
\[
\mu_j(s, S, (p_{N_k} = l, p_{-N_k} = h), a^*(\cdot, p)) \geq h
\]
and for \(N_k\) to admit migrants if and only if \(e_i \in \{w, s\}\) we must have
\[
\mu_j(w, S, (p_{N_k} = l, p_{-N_k} = h), a^*(\cdot, p)) \geq l
\]
\[
\mu_j(0, S, (p_{N_k} = l, p_{-N_k} = h), a^*(\cdot, p)) < l
\]
$N_k$’s payoffs are now
\[ U_{N_k}(a^*(\cdot, p), (p_{N_k} = l, p_{-N_k} = h)) = \beta P \lambda (1 + \pi^R_s + (1 - \frac{\alpha(2L-1)}{2L})\pi^R_w) - \]
\[ B_N \left[ (1 - \frac{\alpha(2L-1)}{2L})M^S(a^*(\cdot, p), (p_{N_k} = l, p_{-N_k} = h))(\pi^M_s + \pi^M_w) \right. \]
\[ + \left. \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] \lambda + (1 - \frac{\alpha(2L-1)}{2L})\lambda(\pi^R_s + \pi^R_w) \right] \]
\[ N_k \text{ will not be made better off by its deviation if} \]
\[ K + \beta P \lambda (1 - \frac{\alpha(2L-1)}{2L})\pi^R_w < \]
\[ B_N \left[ (1 - \frac{\alpha(2L-1)}{2L})M^S(a^*(\cdot, p), (p_{N_k} = l, p_{-N_k} = h))(\pi^M_s + \pi^M_w) \right. \]
\[ + \left. \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] \lambda + (1 - \frac{\alpha(2L-1)}{2L})\lambda(\pi^R_s + \pi^R_w) \right] \]
\[ - B_N \left[ \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] M^S(a^*(\cdot, p), p^h)(\pi^M_s) + \lambda(1 + \pi^R_s) \right] \]

The LHS of (56) is the benefit to $N_k$ composed of the avoided “shading cost” and the additional altruistic benefits from admitting more refugees; the RHS is the additional burden of hosting more migrants.

Similarly, consider a deviation by a southern state $S_k$ to $p_{S_k} = l$. The total number of economic migrants is now
\[ M^S(a^*(\cdot, p), (p_{S_k} = l, p_{-S_k} = h)) = G \left[ \frac{(1 - \frac{\alpha}{2})[\pi^M_s \Delta u - J]}{\pi^M_s + \frac{\alpha}{2L}\pi^M_w} \right] (1 - \lambda) \]
\[ < M^S(a^*(\cdot, p), p^h) \]

The condition for all persecuted people to attempt to migrate north rather than stay in $S_0$ is now
\[ d - P < \left( \frac{1 - \frac{\alpha}{2}}{\pi^R_s + \frac{\alpha}{2L}\pi^R_w} \right) \]
\[ \frac{[\pi^R_s \Delta u - J]}{\pi^R_s + \frac{\alpha}{2L}\pi^R_w} \]
and the condition for all persecuted people to prefer migrating to a northern host state rather than to $S_k$ is
\[ \pi^R_s \Delta u > p^R_w(P - d) + J \]
Assume (58) (which implies (43)) and (59) hold so that all persecuted people continue to attempt to migrate north despite $S_k$’s lower standard of proof.

The beliefs of host states are now
\[ \mu_j(e, S, (p_{S_k} = l, p_{-S_k} = h), a^*(\cdot, p)) = \frac{\pi^R_e \lambda}{\pi^R_e \lambda + \pi^M_e MS(a^*(\cdot, p), (p_{S_k} = l, p_{-S_k} = h))} > \mu_j(e, S, p^h, a^*(\cdot, p)) \]
For host states other than $S_k$ to continue to accept migrants if and only if $e_i = s$ we must have,

\begin{equation}
\mu_j(w, S, (p_{S_k} = l, p_{-S_k} = h), a^*(\cdot, p)) < h
\end{equation}

and for $S_k$ to admit migrants if and only if $e_i \in \{w, s\}$, we must have

\begin{equation}
\mu_j(w, S, (p_{S_k} = l, p_{-S_k} = h), a^*(\cdot, p)) \geq l
\end{equation}

\begin{equation}
\mu_j(0, S, (p_{S_k} = l, p_{-S_k} = h), a^*(\cdot, p)) < l
\end{equation}

$S_k$’s payoff is now

\begin{equation}
U_{S_k}(a^*(\cdot, p), (p_{S_k} = l, p_{-S_k} = h)) = \beta P \lambda (1 + \pi_s^R + \frac{\alpha}{2L} \pi_w^R)
\end{equation}

\begin{equation}
- BS \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), (p_{S_k} = l, p_{-S_k} = h))(\pi_s^M + \pi_w^M) + \lambda(1 + \pi_s^R + \pi_w^R)] \right]
\end{equation}

$S_k$ will not be made better off by this deviation if

\begin{equation}
K + \beta P \lambda \frac{\alpha}{2L} \pi_w^R <
\end{equation}

\begin{equation}
BS \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), (p_{S_k} = l, p_{-S_k} = h))(\pi_s^M + \pi_w^M) + \lambda(1 + \pi_s^R + \pi_w^R)] \right]
\end{equation}

\begin{equation}
- BS \left[ \frac{\alpha}{2L} [M^S(a^*(\cdot, p), p^h)(\pi_s^M) + \lambda(1 + \pi_s^R)] \right]
\end{equation}

If both (56) and (65) hold, all states choosing high standards of proof is an equilibrium.

We must show that there exist parameters such that the inequalities (42), (45), (46), (52), (53), (54), (56), (58), (59), (61), (62), (63) and (65) and Assumption 4 all hold. A set of parameters for which all of these conditions are satisfied is $\pi_s^R = 0.75$, $\pi_s^M = 0.2$, $\pi_w^R = 0.2$, $\pi_w^M = 0.2$, $\beta = 0.0025$, $\alpha = 0.2$, $h = 0.7$, $l = 0.4$, $u(w_N) = 24$, $u(w_S) = 4$, $p = 42$, $J = 3$, $G(\cdot) = U[1, 18]$, $K = .01$, $\lambda = 0.3$, $L = 5$, $B_N(x) = x^4 + x^2$, and $B_S(x) = x^2$.

To complete the proof we appeal to Lemma 4 and complete the equilibrium strategy profile and beliefs such that a PBE follows every possible $p$.

**Proof of (4).** If all of the sufficient conditions identified in the proofs of (2) and (3) hold, then there exist a PBE with $p^r = p^f$ and a PBE with $p^r = p^h$. A set of parameter values for which this is so is $\pi_s^R = 0.75$, $\pi_s^M = 0.2$, $\pi_w^R = 0.2$, $\pi_w^M = 0.2$, $\beta = 0.0025$, $\alpha = 0.2$, $h = 0.7$, $l = 0.4$, $u(w_N) = 24$, $u(w_S) = 4$, $p = 42$, $J = 3$, $G(\cdot) = U[1, 18]$, $K = .1$, $\lambda = 0.3$, $L = 5$, $B_N(x) = x^4 + x^2$, and $B_S(x) = x^2$. Note that these parameters are the same as the example offered in the proof of (3) above except that the “shading cost” $K$ has been increased enough to make it unappealing to states to use the high standard of proof when other states are using the low standard of proof, but not so much as to eliminate the high standard of proof equilibrium.

**Proof of Proposition 2.** We look for a PBE strategy profile $(t^*, p^*, A^*, a^*(\cdot, p), a^*(\cdot, A))$ and host state beliefs $\mu_j(e, o, p, a(\cdot, p))$ such that $t^*_j = 1 \forall j \in \mathbb{H}$. Recall that under Assumption 3 only the persecuted will attempt to migrate (and refugees remain in their region of origin), so the refugee status determination procedures provide no additional information to host states.
Consider first the payoffs for host states in the non-cooperative subgame that would follow if any host state deviated by choosing \( t_j = 0 \). In each migration subgame of the non-cooperative subgame (i.e., for each possible \( A \)), citizens’ equilibrium strategy profile \( a^*(\cdot, A) \) must form a Nash equilibrium. We first define some useful notation. Let \( R_j(a(\cdot, A), A) \) denote the measure of persecuted people who attempt to migrate to host state \( j \) under strategy profiles \( a(\cdot, A) \) and \( A \).  

Let \( R(a(\cdot, A), A) \equiv \sum_{k \in \mathbb{P}} R_k(a(\cdot, A), A) \). Let \( \hat{R}_j(a(\cdot, A), A) \) denote the measure of persecuted people who actually arrive in host state \( j \) under profiles \( a(\cdot, A) \) and \( A \), given random diversions.  

If fewer refugees apply than there are slots \( (A_j) \) in a host state, then all applicants are admitted. However, if slots are oversubscribed, applicants are admitted by lottery. Thus, the probability that a citizen is admitted to host state \( j \) under strategy profiles \( a(\cdot, A) \) and \( A \) is given by

\[
\psi_j(a(\cdot, A), A) = \begin{cases} 
1 & \text{if } A_j > \hat{R}_j \\
\frac{A_j}{\hat{R}_j} & \text{otherwise}
\end{cases}
\]

The payoff to persecuted person \( i \) from choosing to migrate to \( a_i(A) \) given other citizens’ choices \( a(\cdot, A) \) and host states’ choices \( A \) is

\[
U_i(a_i(A), a(\cdot, A), A) = (1 - \alpha)[\psi_{a_i(A)}(u(w_{a_i(A)}) - d_i - J \cdot 1_{a_i(A) \neq 0}) + (1 - \psi_{a_i(A)})(u(w_{a_i}) - P)] \\
+ \frac{\alpha}{2L} \sum_{k \in \mathbb{P}} [\psi_k(u(w_k) - d_i - J \cdot 1_{k \neq a_i}) + (1 - \psi_k)(u(w_{a_i}) - J \cdot 1_{k \neq a_i} - P)]
\]

where \( o_i \in \{N, S\} \) is the region of origin of person \( i \) (and also denotes the set of host states in region \( o_i \)), and \( w_k \) \( (w_{a_i}) \) are the wages in host state \( k \) (region \( o_i \)). Note that the second term in (66) is the same for all \( a_i(A) \).

Given a profile of host state choices \( A \), a citizens strategy profile \( a^*(\cdot, A) \) that forms a Nash equilibrium of the subgame following \( A \) is straightforward to construct using the following algorithm. Since under Assumption 3 it is more attractive to migrate to a host state in their region of origin if they would be admitted, persecuted people with the lowest \( d_i \) first fill up all of the refugee slots provided under \( A \) by host states in their region of origin. Then, set the destinations of any remaining persecuted people from \( S_0 \) to host states in the south in proportions that keep the \( \psi_j \) of southern host states equal to each other until one of the following events occurs: (i) the marginal persecuted person is indifferent between migrating to a southern host state and staying in \( S_0 \); (ii) the marginal persecuted person is indifferent between traveling to a northern host state and traveling to a southern host state; or (iii) all \( \lambda \) persecuted persons in \( S_0 \) are allocated. If (ii) occurs, then begin setting the destinations of the remaining persecuted people from \( S_0 \) to both southern and northern host states in proportions that keep them indifferent among all host states that offer any slots. Keep doing this until (i) or (iii) occurs. Then perform the mirrored algorithm for the remaining persecuted people in \( N_0 \).

Now consider host states’ choice of \( A \). In the non-cooperative subgame, each state \( j \) only cares about the total number of migrants admitted by any host state (for each of which it receives altruistic utility \( \beta P \)) and the total number of migrants that state \( j \) itself hosts.

\[\text{So, } R_j(a(\cdot, A), A) = \int_{\mathbb{P}} 1_{a(\cdot, A) = j} d\mu.\]

\[\text{So, } \hat{R}_j(a(\cdot, A), A) = (1 - \alpha)R_j(a(\cdot, A), A) + \frac{\alpha}{2L} R(a(\cdot, A), A).\]
Assume for the moment that \( a^*(\cdot, A) \) is such that each host state will receive as many migrants as it wants to host. Each host state \( j \) then solves
\[
\max_{A_j} \left\{ \beta P \sum_{k \in \mathbb{H}} (A_k) - B_j(A_j) \right\}
\]
Assuming an interior solution, the solution satisfies, \( \forall j \in \mathbb{H} \),
\[
B'_j(A^*_j) = \beta P
\]
Under Assumption 2 we know that \( A^*_j < \lambda / L \), so under \( A^* \) not all \( 2\lambda \) persecuted people are hosted. We look for a “semi-symmetric” equilibrium in which \( A^*_N_j = A^*_N_k \equiv A^*_N \) for all northern states \( N_j \) and \( N_k \) and similarly \( A^*_S_j = A^*_S_k \equiv A^*_S \) for all southern states \( S_j \) and \( S_k \).

The following thus define our proposed equilibrium \( A^* \):
\[
B'_N(A^*_N) = \beta P
\]
\[
B'_S(A^*_S) = \beta P
\]
Given citizens’ equilibrium strategies \( a^*(\cdot, A) \) characterized above, under appropriate parameters the host state strategies characterized by (69) and (70) form a Nash equilibrium of the non-cooperative subgame. To see this, first assume that \( \alpha \) is small enough that all of the refugee slots that are offered by host states in this equilibrium are used.

Now consider a deviation by host state \( j \) in which it increases the number of asylum slots it provides to some \( A^*_j \). Given citizens’ strategies this can only (weakly) increase the number of migrants that it hosts, but given the convexity of \( B_j(\cdot) \) and the definition of \( A^*_j \), this would make \( j \) (weakly) worse off. Consider instead a reduction in the number of asylum slots \( j \) provides to some \( A'_j \). Given citizens’ strategies this can only decrease the number of migrants that it hosts and have no effect on the number of refugees hosted by other states (who continue to offer \( A^*_{-j} \) slots, all of which are taken). But again that would decrease \( j \)’s objective function since, given the convexity of \( B_j(\cdot) \), now \( B'_j(A'_j) < \beta P \).

Host states’ payoffs in such an equilibrium of the non-cooperative subgame are
\[
U_j(A^*, a^*(\cdot, A)) = \sum_{k \in \mathbb{H}} (A^*_k) - B_j(A^*_j)
\]
Consider now the equilibrium outcome under the Convention. Lemma 3 says that, under Assumption 3 (no economic migration), in any PBE of the Convention subgame in which there is positive migration, all persecuted people migrate and are hosted and there is no economic migration. Suppose \( a^*(\cdot, p) \) is such that refugees travel in equal numbers to each host state in their region of origin, \( \lambda / L \) to each. Note that since, given \( a^*(\cdot, p) \), host states receive \( \lambda / L \) whether they choose \( p_j = h \) or \( p_j = l \), we must have \( p^*_j = l \forall j \in \mathbb{H} \) since host states prefer to avoid the shading cost \( K \). The equilibrium payoff to host state \( j \) is thus
\[
U_j(p^*, a^*(\cdot, p)) = 2\lambda \beta P - B_j(\frac{\lambda}{L})
\]
Under Assumption 1 the equilibrium payoffs under the Convention given in (72) exceed the non-cooperative payoffs given in (71) and so no host state has an incentive to deviate by choosing \( t_j = 0 \).

Proof of Proposition 3. Suppose the parameters are such that all of the sufficient conditions identified in the proof of Proposition 1 for there to exist a PBE of the Convention
subgame with \( p = p^h \) are satisfied. First note that in the high standard of proof PBE of the baseline Convention subgame, the payoffs to host states (derived in the proof of Proposition 1) are

\[
U_N(j^*(\cdot, p), p^h) = \beta P \lambda (1 + \pi_s^R)
\]

\[
- B_N \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \right] \left[ M^S(j^*(\cdot, p), p^h)\pi_s^M + \lambda (1 + \pi_s^R) \right] - K
\]

\[
U_S(j^*(\cdot, p), p^h) = \beta P \lambda (1 + \pi_s^R)
\]

\[
- B_S \left[ \frac{\alpha}{2L} \left[ M^S(j^*(\cdot, p), p^h)\pi_s^M + \lambda (1 + \pi_s^R) \right] - K
\]

Now consider the Individual Transfer System game. If \( N_k \) contracts for any transfer slots, it is less attractive to potential migrants from \( S_0 \) as a destination since migrants arriving in \( N_k \) risk being deported south under the transfer system. We look for an equilibrium \( j^*(\cdot, p, \hat{Q}) \) in which all migrants attempt to travel to other northern states \( N_{-k} \) in equal numbers and \( N_k \) only receives migrants who are randomly diverted, and for an equilibrium \( p^*(\hat{Q}) = p^h \forall \hat{Q} \) (host states choose the high standard of proof following every possible \( \hat{Q} \). In such an equilibrium, \( N_k \) will make a take-it-or-leave-it offer of \( (Q^*, T^*) \) that maximizes the surplus achieved between it and the southern host states and leaves each southern host state indifferent between accepting and rejecting. Because of the convexity of \( B_j(\cdot) \), the efficient contract spreads out transfer slots evenly among southern host states. We thus have \((Q^*_j, T^*_j) = (Q^*, T^*) \forall j \) (so that \( (Q^*, T^*) \) denotes both the equilibrium profile of contract offers and the common contract offered to each southern host state). \( Q^* \) is chosen to solve

\[
\max_{Q \in [0, \frac{L}{2} \pi_s^M]} \left\{ - B_N \left[ \frac{\alpha}{2L} \left[ M^S(j^*(\cdot, p, Q), p^h, Q)\pi_s^M + \lambda (1 + \pi_s^R) \right] + \left[ \frac{1 - \alpha}{L} \right] \lambda - LQ \right] - B_S \left[ \frac{\alpha}{2L} \left[ M^S(j^*(\cdot, p, Q), p^h, Q)\pi_s^M + \lambda (1 + \pi_s^R) \right] + Q \right] \right\}
\]

If we have an interior solution, \( Q^* \) is thus defined by

\[
\left( \frac{-\alpha}{2L} \pi_s^M M^S_{\hat{Q}} + L \right) B'_N \left[ \frac{\alpha}{2L} \left[ M^S(j^*(\cdot, p, Q), p^h, Q^*)\pi_s^M + \lambda (1 + \pi_s^R) \right] + \left[ \frac{1 - \alpha}{L} \right] \lambda - LQ^* \right] - B_S \left[ \frac{\alpha}{2L} \left[ M^S(j^*(\cdot, p, Q), p^h, Q^*)\pi_s^M + \lambda (1 + \pi_s^R) \right] + Q^* \right]
\]

where \( M^S_{\hat{Q}} \) denotes the derivative of \( M^S(j^*(\cdot, p, Q), p^h, Q) \) with respect to \( Q \) evaluated at the equilibrium strategy choices (and we are assuming the necessary differentiability). The reason that \( M^S_{\hat{Q}} \neq 0 \) is because with probability \( \frac{\alpha}{2L} \pi_s^M \frac{Q^*}{\pi_s^M (\pi_s^M + \lambda \pi_s^R)} \) an economic migrant who without the transfer system would have been admitted to \( N_k \) is now instead sent south. This slightly lowers the expected payoff to migrating. Note, however, that this probability

\[42\text{Note that the transfer system has no effect on the number of refugees who avoid persecution and hence no effect on altruistic benefits.}\]
is very small. Most migrants are unaffected by the transfer system because they successfully attempt to travel to another northern host state.

Now, since \( \frac{a}{2L} \pi_s^M M_s^* \approx 0 \) and \( B_N'(x) > B_k'(x) \forall x \) we have \( Q^* > 0 \). For reasonable parameter values, we get the corner solution, defined by

\[
Q^* = \frac{\alpha}{2L} \left[ M^S(a^*(\cdot, p, Q), p^h, Q^*) \pi_s^M + \lambda \pi_s^R \right]
\]

and all successful asylum applicants in \( N_k \) are transferred to a southern host state.

The equilibrium contract payment is

\[
T^* = B_S \left[ \frac{\alpha}{2L} \left[ M^S(a^*(\cdot, p, Q), p^h, Q^*) \pi_s^M + \lambda(1 + \pi_s^R) \right] + Q^* \right] - B_S \left[ \frac{\alpha}{2L} \left[ M^S(a^*(\cdot, p, Q), p^h, Q_j = 0, Q^*_{-j}) \pi_s^M + \lambda(1 + \pi_s^R) \right] \right]
\]

Because \( N_k \) is now less attractive as a destination to both economic migrants and refugees, migrants prefer to attempt to travel to other northern host states. The equilibrium payoffs of other northern host states with the transfer system in place are now

\[
U_{N_j \neq k}(a^*(\cdot, p), p^h, Q^*) = \beta P \lambda (1 + \pi_s^R)
\]

\[
-B_N \left[ \frac{1 - \alpha}{L - 1} + \frac{\alpha}{2L} \right] \left[ M^S(a^*(\cdot, p), p^h, Q^*) \pi_s^M + \lambda(1 + \pi_s^R) \right] - K
\]

Other northern states are made worse off since they now host more migrants.

The proof may now by completed by following the analogous argument from the proof of Proposition 1 (3) above and verifying that no host state has an incentive to deviate by choosing the low standard of proof. Formally, we also should specify the equilibrium strategies of citizens in subgames following \((\hat{Q}, \hat{T}) \neq (Q^*, T^*)\). We omit these details to shorten the exposition. \(\square\)

**Proposition 4.** Suppose the parameters are such that all of the sufficient conditions identified in the proof of Proposition 1 for there to exist a PBE of the Convention subgame with \( P = P^h \) are satisfied. We construct a PBE of the Global Transfer System game under such parameters, with equilibrium strategy profiles denoted by \((Q^*, T^*), r^*(Q, T), p^*(\hat{Q}), a^*(\cdot, p, \hat{Q})\) and beliefs denoted by \( \mu_j(e, o, p, \hat{Q}, a^*(\cdot, p, \hat{Q}) \), in which there is no economic migration, all persecuted people attempt to migrate to host states in their region of origin (and are distributed evenly across host states), and all successful asylum applicants from \( S_0 \) to northern states are transferred to southern host states.

First note that, in such an equilibrium, the equilibrium beliefs are \( \mu_j(e, o, p^*, \hat{Q}^*, a^*(\cdot, p, \hat{Q}) = 1 \) since all migrants are refugees. Given these beliefs, choosing the high standard of proof costs \( K \) but delivers no benefit in terms of reducing the number of migrants hosted, so we have \( p^* = p^h \).

We construct a symmetric equilibrium so that \( Q^S_{N_k} = \frac{\alpha L}{2L} \lambda \) for all \( j, k \) so that all southern migrants who arrive in a northern host state are transferred to a southern host state. In the equilibrium we will have \( r^*(Q^*, T^*) = 1 \) so that all southern host states accept all contract offers.
The equilibrium payment $T_{N_k}^{S_j}$ offered to each southern host state by each northern host state is an amount that makes each southern host state indifferent between accepting all of the contracts it is offered and rejecting one of them (and strictly better off if it rejects more than one of them, as we will see given the convexity of $B_j(\cdot)$). $S_j$‘s payoff in the equilibrium is

$$(80) \quad U_{S_j}(a^*(\cdot, p, \hat{Q}), p^l, (Q^*, T^*)) = 2\lambda\beta P - B_S \left[ \frac{1 + \frac{\alpha}{2} \lambda}{L} \right] + LT^*$$

If any southern host state $S_j$ rejects one contract, its payoff is

$$(81) \quad U_{S_j}(a^*(\cdot, p, \hat{Q}), p^l, (Q^*, T^*), r'(Q, T)) = 2\lambda\beta P - B_S \left[ \frac{1 + \frac{(L-1)\alpha}{2L} \lambda}{L} \right] + (L - 1)T^*$$

$S_j$ will be indifferent between rejecting one contract and accepting all if

$$(82) \quad T^* = B_S \left[ \frac{1 + \frac{\alpha}{2} \lambda}{L} \right] - B_S \left[ \frac{1 + \frac{(L-1)\alpha}{2L} \lambda}{L} \right]$$

Note that with $T^*$ so defined, $S_j$ is strictly worse off if it rejects more than one contract given the convexity of $B_S(\cdot)$. Thus no southern host state has an incentive to deviate from $r^*(Q^*, T^*)$.

Now consider deviations by northern host states from these equilibrium contract offers. The equilibrium payoff of each northern host state is

$$(83) \quad U_{N_j}(a^*(\cdot, p, \hat{Q}), p^h, (Q^*, T^*), r^*(Q, T)) = 2\lambda\beta P - B_N \left[ \frac{1 - \frac{\alpha}{2} \lambda}{L} \right] - LT^*$$

Since it is transferring all southern migrants it receives to southern host states in equilibrium, we only need to consider downward deviations from $(Q^*, T^*)$. By offering fewer transfer slots to a southern host state, $N_k$ could reduce the payment it has to make to induce the southern host state to accept the contract, but then also must host more migrants itself. In particular, for any $Q_{N_k}^{S_j}$, the payment necessary to induce $S_j$ to accept the contract, given other northern host states continue to offer $(Q^*, T^*)$, is given by

$$(84) \quad T_{N_k}^{S_j}(Q_{N_k}^{S_j}) = B_S \left[ \frac{1 + \frac{(L-1)\alpha}{2L} \lambda + Q_{N_k}^{S_j}}{L} \right] - B_S \left[ \frac{1 + \frac{(L-1)\alpha}{2L} \lambda}{L} \right]$$

$N_k$‘s objective function, holding other states’ strategies fixed at the equilibrium strategy profile, is thus

$$U_{N_k}(a^*(\cdot, p, \hat{Q}), p^h, \{((Q_{N_k}, T_{N_k}); (Q^{S_j}_{-N_k}, T_{-N_k}^{S_j}), r^*(Q, T)) =$$

$$(85) \quad 2\lambda\beta P - B_N \left[ \frac{(1 - \frac{\alpha}{L} + \frac{\alpha}{2L}) \lambda}{L} + \frac{\alpha}{2L} \lambda - \sum_{j=1}^{L} Q_{N_k}^{S_j} \right] - \sum_{j=1}^{L} T_{N_k}^{S_j}(Q_{N_k}^{S_j})$$

Subbing in from (84) and taking the first order condition of the corresponding lagrangian, we have a corner solution $Q_{N_k}^{S_j} = \frac{\alpha \lambda}{2L} \forall j = 1, \ldots, L$ if the following holds:

$$B_S \left[ \frac{1 + \frac{\alpha}{2} \lambda}{L} \right] > B_N' \left[ \frac{1 - \frac{\alpha}{2} \lambda}{L} \right]$$
We have already assumed $B'_s(x) > B'_n(x) \forall x$ so for sufficiently small $\alpha$ (or sufficiently greater burden of hosting in the south versus the north), (86) holds and no northern host state has an incentive to deviate from the equilibrium and offer a contract for fewer transfer slots. Assume parameters are such that this is so.

It remains to confirm that citizens have no incentive to deviate from $a^*(\cdot,p,\hat{Q})$ in which all persecuted people from $N_0$ attempt to migrate in equal numbers to each northern host state, all persecuted people from $S_0$ attempt to migrate in equal numbers to each southern host state, and all non-persecuted remain in their country of origin. Citizens from $S_0$ have no incentive to attempt to migrate to a northern country because a marginal migrant is transferred to the south under the transfer system. The persecuted in $S_0$ ($N_0$) do have an incentive to attempt to migrate to a southern (northern) host state as they can avoid the persecution cost $P$ by doing so.

Formally, we should now specify the equilibrium strategies for all subgames off the equilibrium path; we omit these details to shorten the (already long) exposition.

Consider now whether states are better off in the PBE of the Global Transfer System game than they are in a PBE of the baseline Convention subgame. In the high standard of proof PBE of the baseline Convention subgame characterized in the proof of Proposition 1), the payoffs to host states are

$$U_{N_j}(a^*(\cdot,p),p^h) = \beta P \lambda (1 + \pi^R_s)$$

(87) $- B_N \left[ \frac{1 - \alpha}{L} + \frac{\alpha}{2L} \left[ M^S(a^*(\cdot,p),p^h)\pi^M_s + \lambda (1 + \pi^R_s) \right] \right] - K$

$$U_{S_j}(a^*(\cdot,p),p^h) = \beta P \lambda (1 + \pi^R_s)$$

(88) $- B_S \left[ \frac{\alpha}{2L} \left[ M^S(a^*(\cdot,p),p^h)\pi^M_s + \lambda (1 + \pi^R_s) \right] \right] - K$

Host states’ payoffs in the transfer system equilibrium are

(89) $U_{N_j}(a^*(\cdot,p,\hat{Q}),p^h,(Q^*,T^*),r^*(Q,T)) = 2\lambda P B_N \left[ \frac{1 - \alpha}{L} \lambda \right] - LT^*$

(90) $U_{S_j}(a^*(\cdot,p,\hat{Q}),p^h,(Q^*,T^*),r^*(Q,T)) = 2\lambda P B_S \left[ \frac{1 + \alpha}{L} \lambda \right] + LT^*$

Because each southern host state $S_j$ receives not only refugees through the transfer system for which it is paid compensation but also refugees from $S_0$ that now choose to attempt to travel to southern host states rather than (as in the equilibrium of the baseline Convention subgame) to northern host states, southern host states can be made worse off in the equilibrium with the transfer system than they are in the baseline Convention subgame equilibrium. A set of parameters under which all northern host states are better off, but southern host states are worse off, under the transfer system is $\pi^R_s = 0.75$, $\pi^M_s = 0.2$, $\pi^R_w = 0.2$, $\pi^M_w = 0.2$, $\beta = 0.0025$, $\alpha = 0.2$, $h = 0.7$, $l = 0.4$, $u(w_N) = 24$, $u(w_s) = 4$, $P = 42$, $J = 3$, $G(\cdot) = U[1,18]$, $K = 0.01$, $\lambda = 0.3$, $L = 5$, $B_N(x) = 40(x^4 + x^2)$, and $B_S(x) = 40x^2$.

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References


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