 Tradable Immigration Quotas

Jesús Fernández-Huertas Moraga\textsuperscript{a} and Hillel Rapoport\textsuperscript{b}

\textsuperscript{a}Institute for Economic Analysis, CSIC, and Barcelona GSE

\textsuperscript{b}Center for International Development, Harvard University, Bar-Ilan University, and EQUIPPE, University of Lille

November 2010
Plan

1. Introduction
2. Model
3. Applications
4. Conclusion
Poverty reduction (domestic or international) has a dimension of public good (altruism or self-interest)

Whenever a country does something (ODA, debt relief program, letting more poor immigrants come) that alleviates global poverty, this creates a positive externality for others.

The international community has designed specific institutions to address this free rider problem for aid, debt relief, but not immigration.

Hence the current global management of international migration is inefficient.
Restrictive immigration policies often justified by non-economic costs (social cohesion, national identity) which translate into negative attitudes and constitute a political barrier to freer labor mobility.

Differences in perceived costs across countries may come from different demographic structures, histories of previous immigration, or just inherited preferences for ethnic, religious and cultural diversity.

We do not dispute preferences. Being altruistic toward a poor person as long as she remains in her home country is perfectly fine.

Statics: TIQs result in xenophobic countries compensating more immigration-friendly ones for their contribution to poverty reduction.

Dynamics: once the costs of xenophobic preferences are internalized, people may have incentives to become less xenophobic.

The essence of the argument is about information revelation on the true costs and benefits of letting more migrants in.
**Introduction**

**Sequence of the argument**

- Can a TIQs system go part of the way towards addressing these inefficiencies, and is it feasible?
- Theory: adapting tradable quotas to international migration from poor to rich countries, including a matching mechanism to take migrants’ preferences into account
- Feasibility: incrementalist approach, with two possible initial applications seen as precursors of a generalized TIQs system: resettlement of refugees, and extension of the US diversity lottery visa.
Introduction

Going for the real gains

- Globalization advanced for everything but low-skill labor mobility; yet a small liberalization would yield huge gains compared, e.g., to a full liberalization of trade (US$ 288 v. 65 billions (World Bank, 2009).

- Direct effect on migrants’ income: experimental v. non-experimental gains (x4 in McKenzie et al., JEEA2010), higher than for any in situ development policy (Clemens et al., 2008).

- "Extraction" out of poverty: Clemens and Pritchett (PDR2008) use three poverty standards at US$1, 2 and 10 per day (in PPP). Respectively 50, 75 and 93 percent of all Haitian "naturals" (people born in Haiti) live below these poverty lines. Out of the 25% of all Haitians between the first two lines, 26% are US immigrants. Out of the 18% between the last two lines, 82% are US immigrants.
Going for the real gains

- By the latter measure, among the 56% of all Mexicans between the last two lines, 43% are US immigrants. Conservative estimate as neglects GE effects on low-skill wages (Mishra, 2007), distribution of remittance income, and migrants counterfactual earnings (e.g., evidence of negative selection both on observables and unobservables, meaning that migrants would on average earn less in Mexico if they had not migrated than those who did not migrate (Fernández-Huertas Moraga, RESTAT2011)).

- Finally, migration and induced remittances tend to reduce inequality, especially in the long-run, as network effects make migration affordable for people/households down on the income ladder (McKenzie and Rapoport, JDE2007, RESTAT2010).
Comparing foreign aid to migration
"Visas, not aid"? Remittances (305 billions in 2008) higher than ODA flows, decentralized, and more effective at reducing poverty.

Figure 1: Remittance v. ODA flows
Comparing foreign aid to migration

- The international community has called repeatedly for the rich nations to contribute to ODA on a fair basis, setting quantitative objectives such as "0.7 percent of GDP"
- Are contributions to development through welcoming immigrants originating from poor countries shared fairly? NO!
- On average, OECD high-income countries contribute .3% of GDP to foreign aid, with just a few contributing more than 1%
- USA: one third of total GDP, 22% of ODA, but host to more than 50% (57%) of the immigrants’ stock (flow) from LICs in 2000.
- Australia, Canada or the UK welcome more than twice as much immigrants from poor countries than their GDP shares, against less than half for Germany or Italy; extreme case of Japan (12% of GDP, less than 2% of immigration)
Table 1: OECD high-income countries’ respective contribution to Foreign Aid and to immigration from Low-income countries.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>102</td>
<td>2.5</td>
<td>2.4</td>
<td>7.1</td>
<td>5.1</td>
<td>4.7</td>
</tr>
<tr>
<td>Canada</td>
<td>97</td>
<td>3.7</td>
<td>3.9</td>
<td>8.1</td>
<td>8.2</td>
<td>7.6</td>
</tr>
<tr>
<td>France</td>
<td>96</td>
<td>7.0</td>
<td>8.9</td>
<td>6.5</td>
<td>8.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Germany</td>
<td>96</td>
<td>8.9</td>
<td>11.2</td>
<td>8.2</td>
<td>3.6</td>
<td>3.5</td>
</tr>
<tr>
<td>Italy</td>
<td>83</td>
<td>5.6</td>
<td>4.0</td>
<td>1.6</td>
<td>1.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Japan</td>
<td>83</td>
<td>12.0</td>
<td>7.8</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Spain</td>
<td>76</td>
<td>3.9</td>
<td>5.6</td>
<td>2.8</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>112</td>
<td>1.2</td>
<td>3.8</td>
<td>1.3</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>UK</td>
<td>94</td>
<td>6.5</td>
<td>9.3</td>
<td>6.2</td>
<td>13.0</td>
<td>11.2</td>
</tr>
<tr>
<td>USA</td>
<td>100</td>
<td>34.5</td>
<td>22.2</td>
<td>42.7</td>
<td>50.2</td>
<td>57.3</td>
</tr>
</tbody>
</table>

Total: $41 trillion, $124 billion, 57 million people, 4 million people, 2 million people.
Introduction

Related literature

- De la Croix and Gossseries (2007) discuss verbally the possibility of TIQs for temporary unskilled migrants.
- Pritchett (2006) discusses variants of guest-worker programs, where migration is temporary and workers have no political rights.
- Closest paper: De la Croix and Docquier (2010): same rationale with focus on participation constraints (maximize world welfare holding receiving countries’ welfare constant) and compensation through taxes/subsidies administered by a global fund.
- In contrast we focus on information revelation, aim at Pareto improvements (possibly with losers) and feasibility through an incrementalist approach.
Plan

1. Introduction
2. **Model**
3. Applications
4. Conclusion
Model with homogenous agents

- Each country $i$ decides how many immigrants to receive ($m_i$) given net perceived total cost $c_i(m_i)$.
- The cost function (reduced form including components such as immigration surplus, net fiscal contribution, social and political costs) is convex and has an interior positive minimum.
- Migrants are homogenous in the sense that they are indifferent between the $N$ possible destinations.
- Solution of the total cost minimization problem: $c_i'(m_i^{NC}) = 0$
- Given the externalities, the non-cooperative equilibrium does not satisfy a general optimal level $M^*$:

$$\sum_{i=1}^{N} m_i^{NC} \equiv M^{NC} < M^*$$
Assume now that $N$ countries sign a multilateral agreement, or a central authority steps in, to coordinate these countries towards a higher level of total international migration $M$ such that $M^{NC} < M < M^*$. The total minimum cost problem to be solved is:

$$\min_{\{m_i\}_{i=1}^N} \sum_{i=1}^N c_i(m_i)$$

subject to:

$$\sum_{i=1}^N m_i \geq M$$

The first order conditions are:

$$c_i'(m_i^{TMC}) = \lambda \quad \forall i = 1...N$$

where $\lambda$ is the multiplier associated to the constraint.
Model with homogenous agents

- It must also be true that:

\[ \lambda \left( M - \sum_{i=1}^{N} m_i^{TMC} \right) = 0 \]

- Since \( \sum_{i=1}^{N} m_i^{NC} = M^{NC} < M \) because of the presence of a positive externality, we can be sure that \( \lambda > 0 \), implying that:

\[ M = \sum_{i=1}^{N} m_i^{TMC} \]

- The optimal solution equalizes marginal costs across destination countries for a given number of immigrants \( M \).
The above solution can be implemented by creating a market for immigration quotas that would open for a limited time, after which immigrants would receive visas for their final destinations.

Each country is assigned an initial quota of immigrants $m_{i0}$ that can then be traded at unit price $p$: $M = \sum_{i=1}^{N} m_{i0}$

The initial distribution of quotas is agreed upon multilaterally or decided by the central authority according to some predetermined rule.

Each country now solves the following problem:

$$\min_{m_i} c_i (m_i) - p (m_i - m_{i0})$$

If the market is competitive, the first order condition will be $c'_i (m_{iM}) = p$ and the market clears: $M = \sum_{i=1}^{N} m_{i0} = \sum_{i=1}^{N} m_{iM}$

The market solution will be efficient ($m_{iM} = m_{iTMC}$) as long as it can be proved that $p = \lambda$ (see paper).
Model with homogenous agents
At this point we have a sequence \( \{ m_i^M \}_{i=1}^N \); we need to assign visas to migrants taking into account the latter’s preferences: top trading cycles mechanism (Abdulkadiroglu and Sonmez, JET1999); with no previous rights, this is equivalent to a random serial dictatorship:

1. Each immigrant ranks all potentially desired destinations.
2. An ordering of immigrants is randomly chosen.
3. Assign the first immigrant her first choice, the second immigrant her first choice and so on until an immigrant chooses first a country whose quota is filled. Assign that immigrant her second choice or, if that one is also filled, her third choice and so on.
4. If all the quotas are filled for the countries for which the immigrant would be willing to go, that particular immigrant is taken out and substituted for another one initially out of the total number \( M \).
The described mechanism is:

- Pareto improving: ensures total welfare of participating host countries goes up (compensation criteria – see appendix for model with participation constraints)
- Pareto efficient: no mutually beneficial exchanges among migrants
- Incentive compatible (truthful revelation): no immigrant/country has an incentive to misrepresent her preferences whatever the strategies others use

The cost-minimization problem of the central authority is completely equivalent to the homogenous case (ie, equalize marginal costs across countries), which can be replicated by a TIQs system (see proof in the paper).
Taking migrants’ preferences (heterogeneity) into account

Only potential problem: if one of the $N$ destinations is such an undesirable place that no immigrant would consider going there. If a central planner never assigned migrants to undesired destinations, two issues:

- An immigrant can increase her chances of entering preferred destinations by not listing less preferred ones.
- Countries can become more xenophobic to discourage applications.

How to avoid this possibility (minute in reality as the mechanism goes down the list until quotas are filled)?

- Allow for the case where the overall number $M$ is not realized and the country pays the price $p$ for the unfilled part of its quota. This acts as a penalty meant at eliciting truthful revelation of preferences on both sides – see details in the paper.
Plan

1. Introduction
2. Model
3. Applications
4. Conclusion
Application 1: Resettlement of refugees

- Definition of a refugee (Geneva Refugee Convention of 1951, now signed by 145 countries, Article 1):

  "A person who is outside his/her country of nationality or habitual residence; has a well-founded fear of persecution because of his/her race, religion, nationality, membership in a particular social group or political opinion; and is unable or unwilling to avail himself/herself of the protection of that country, or to return there for fear of persecution".

- This is where the idea of tradable quotas for people (refugees) was first discussed:

  - Schuck (1997), Hathaway and Neve (1997): Bilateral negotiations
  - Bubb, Kremer and Levine (2009): complement this system by a screening device to separate true refugees from economic migrants.
Application 1: Resettlement of refugees

Numbers:

- 8.8 million people under HCR refugee protection in 2003 (does not include e.g. UNWRA)
- 6.2 million having "protracted" (long-term) status and for which resettlement is relevant.
- Resettlements in 2008: 89,000.
### Table 2: Resettlement Arrivals of Refugees (2008). Source: www.uhcr.org

<table>
<thead>
<tr>
<th>Country of arrival</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>11,006</td>
</tr>
<tr>
<td>Canada</td>
<td>10,804</td>
</tr>
<tr>
<td>Denmark</td>
<td>552</td>
</tr>
<tr>
<td>Finland</td>
<td>749</td>
</tr>
<tr>
<td>Others</td>
<td>391</td>
</tr>
<tr>
<td>Netherlands</td>
<td>693</td>
</tr>
<tr>
<td>New Zealand</td>
<td>741</td>
</tr>
<tr>
<td>Norway</td>
<td>741</td>
</tr>
<tr>
<td>Sweden</td>
<td>2,209</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>722</td>
</tr>
<tr>
<td>United States*</td>
<td>60,192</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>88,800</td>
</tr>
</tbody>
</table>

*United States: refers to US Fiscal Year.
What about "climate refugees"?

- Estimates range between 20 million and 1 billion permanently displaced by 2050 (the Myers 200 million figure is the most widely accepted).
- Most of these "refugees" are expected to be IDPs (internally displaced persons).
- However, international migration is regarded by many international organizations (IOM, UNHCR) as one of the strategies required to cope with climate change.
- Necessarily so for "disappearing countries" (at least 1 million climate refugees would come from disappearing island states).
Application 2: Extending the US Diversity Lottery Visa

- **Background:** Program created in the 1980s to increase diversity in immigration (political economy)
- **Principle:** 50,000 visas granted to citizens of countries with low-immigration (less than 50K in the past 5 years)
- **2010 Campaign:** 13.5 million applicants, 110K randomly selected (with quotas favoring small countries), of which 50K are chosen after screening. Allowed to bring spouse and children
Proposal:

- Extended to other OECD receiving countries joining the mechanism
- Targeting poor (or at environmental/political risk) countries
- Practical issues: common screening (approved by all) or decentralized, prices v. quantities
Application 2: Extending the US Diversity Lottery Visa

Simulation (for illustrative purpose):

- Maintain a 50K initial quota for the US and assign initial quotas proportional to GDP, giving a total quota of 145K
- Cost functions (for immigrants beyond what they would unilaterally choose, with $\gamma_i$ indicating aversion to further immigration):

$$c_i (m_i) = \frac{\gamma_i}{2} \frac{m_i^2}{pop_i}$$

allowing to write marginal costs as linear in the new migration share:

$$c'_i (m_i) = \gamma_i \frac{m_i}{pop_i}$$
## Application 2: Extending the US Diversity Lottery Visa

<table>
<thead>
<tr>
<th>Countries</th>
<th>Initial quotas</th>
<th>$\gamma_1$: ISSP 2003</th>
<th>Market Quota 1</th>
<th>Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>3,602</td>
<td>16.8</td>
<td>4,168</td>
<td>2%</td>
</tr>
<tr>
<td>Canada</td>
<td>5,326</td>
<td>10.2</td>
<td>10,655</td>
<td>100%</td>
</tr>
<tr>
<td>France</td>
<td>10,134</td>
<td>35.4</td>
<td>5,750</td>
<td>19%</td>
</tr>
<tr>
<td>Germany</td>
<td>12,948</td>
<td>44.3</td>
<td>6,054</td>
<td>28%</td>
</tr>
<tr>
<td>Italy</td>
<td>8,171</td>
<td>26.0</td>
<td>7,515</td>
<td>1%</td>
</tr>
<tr>
<td>Japan</td>
<td>17,423</td>
<td>20.2</td>
<td>20,697</td>
<td>4%</td>
</tr>
<tr>
<td>South Korea</td>
<td>3,296</td>
<td>9.1</td>
<td>17,386</td>
<td>1827%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3,090</td>
<td>37.8</td>
<td>1,419</td>
<td>29%</td>
</tr>
<tr>
<td>Spain</td>
<td>5,691</td>
<td>13.2</td>
<td>11,270</td>
<td>96%</td>
</tr>
<tr>
<td>UK</td>
<td>9,487</td>
<td>50.9</td>
<td>3,942</td>
<td>34%</td>
</tr>
<tr>
<td>USA</td>
<td>50,000</td>
<td>23.7</td>
<td>41,897</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>145,099</td>
<td>26.2</td>
<td>145,099</td>
<td>24.17%</td>
</tr>
<tr>
<td>Quotas traded</td>
<td></td>
<td></td>
<td></td>
<td>22%</td>
</tr>
</tbody>
</table>
# Application 2: Extending the US Diversity Lottery Visa

<table>
<thead>
<tr>
<th>Countries</th>
<th>Initial quotas</th>
<th>$\gamma_2$: inverse flows</th>
<th>Market Quota 2</th>
<th>Cost Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>3,602</td>
<td>243</td>
<td>6,877</td>
<td>83%</td>
</tr>
<tr>
<td>Canada</td>
<td>5,326</td>
<td>236</td>
<td>11,000</td>
<td>113%</td>
</tr>
<tr>
<td>France</td>
<td>10,134</td>
<td>686</td>
<td>7,084</td>
<td>9%</td>
</tr>
<tr>
<td>Germany</td>
<td>12,948</td>
<td>1279</td>
<td>5,012</td>
<td>38%</td>
</tr>
<tr>
<td>Italy</td>
<td>8,171</td>
<td>1998</td>
<td>2,338</td>
<td>51%</td>
</tr>
<tr>
<td>Japan</td>
<td>17,423</td>
<td>3975</td>
<td>2,508</td>
<td>73%</td>
</tr>
<tr>
<td>South Korea</td>
<td>3,296</td>
<td>40087951</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3,090</td>
<td>718</td>
<td>1,787</td>
<td>18%</td>
</tr>
<tr>
<td>Spain</td>
<td>5,691</td>
<td>2520</td>
<td>1,411</td>
<td>57%</td>
</tr>
<tr>
<td>UK</td>
<td>9,487</td>
<td>295</td>
<td>16,275</td>
<td>51%</td>
</tr>
<tr>
<td>USA</td>
<td>50,000</td>
<td>286</td>
<td>83,090</td>
<td>44%</td>
</tr>
<tr>
<td>Total</td>
<td>145,099</td>
<td>2008946</td>
<td>145,099</td>
<td>99.87%</td>
</tr>
<tr>
<td>Quotas traded</td>
<td></td>
<td></td>
<td></td>
<td>16%</td>
</tr>
</tbody>
</table>
Plan

1. Introduction
2. Empirical analysis
3. Implications
4. Conclusion
Conclusion

- Providing international migration opportunities (visas) for poor country inhabitants contributes to reducing world poverty, an international public good.
- However, the provision of visas is suboptimal due to a free-rider problem.
- We propose a market for tradable immigration quotas (TIQs) to alleviate this externality, allocating a larger overall number of international migrants at a lower total cost.
- Countries with high marginal costs for receiving additional immigrants would pay countries with low marginal costs to host them.
- In addition, our proposal would take into account migrants’ preferences by using a matching mechanism to assign them to their preferred destinations.
The main advantage of TIQs over alternative proposals rests on its ability to elicit information on the true country-specific costs of hosting additional migrants.

Realistic applications: market for refugee resettlement quotas as part of the Annual Tripartite Consultations by which the UNHCR currently agrees to resettle around 100,000 refugees yearly in different rich countries; resettlement of "climate change" refugees; and extension of the US Diversity Visa program to High Income OECD countries to target migrants from poor or at risk countries (simulation with 150K).

Feasibility: morally legitimacy (?), prices v. quantities, incrementalist approach allowing for learning and experimentation.
Extensions: Market-based immigration reforms

- Same mechanism can address other types of immigration externalities, positive or negative. Exemple: assume an EU pension system (or fiscal federalism) where each country chooses m according to its own needs but neglects the externality on other countries. Everyone would gain from increasing immigration, and from doing this at minimal cost (through a TIQs system).

- Other market-based mechanism: auctioning of visas/work permits to firms bidding to hire immigrants (Orrenious and Zavodny, 2010) to ensure efficiency in the allocation of immigrants (go where they are most productive).

- Any type of mechanism can be implemented for temporary/permanent migrants, skilled/unskilled, etc.