The Selection of Migrants and Returnees: Evidence from Romania and Implications

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Objectives of this study

• 1) Quantify the magnitude of migration and return for Eastern Europe

• 2) Characterize the selection of Migrants and Returnees Using micro data on Romanian non migrants, Migrants and Returnees 2002-2003

• 3) Measure the premium to migrate and return, and its variation by skill

• 4) Quantify the effect of migration and return on skills and wages in Romania.
Challenges

• 1) Measuring returnees: data availability and compatibility across countries

• 2) Measuring Selection and premium: Importance of omitted variables

• 3) Interpreting the finding and using them to understand the effect of migration policies.
Existing Literature

- Migration from industrializing countries “drains” them of the best workers hurting their perspective for human capital accumulation
  - Gruber and Scott, 1966,
  - Bhagwati, 1976,
  - Bhagwati and Hamada, 1974,
  - Bhagwati and Rodriguez, 1975

- However there can be a positive incentive effect on schooling and migrants’ families gain much from migration
  - Beine, M., F. Docquier and H. Rappoport (2001)
  - Clemens Michael, Claudio Montenegro and Lant Pritchett (2008)

- Moreover a large share of migrants returns with enhanced skills and help entrepreneurship and growth
  - Constant and Massey, 2002,
  - McCormick and Wahba, 2001
  - Luo and Wang, 2002
Focus on Eastern Europe

• Interesting case of opening borders (in early 1990’s) after relative isolation.

• Large migration 1990-2003 to Western Europe and US-Canada. Increasing flows up to 2007.

• Often positively selected migrants, hence worries for brain drain. Are the economies of the sending countries likely to be affected negatively?

• Freedom of migrating to the West is increasing after accession to EU and as transitory clauses come to an end. As the economy recover more migration will be seen.
Table 1
Stock of Emigrants to OECD countries
as percentage of the population in the home country

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>1990</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>0.162</td>
<td>0.190</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>0.060</td>
<td>0.080</td>
</tr>
<tr>
<td>Croatia</td>
<td>0.123</td>
<td>0.140</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0.021</td>
<td>0.027</td>
</tr>
<tr>
<td>Estonia</td>
<td>0.028</td>
<td>0.054</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.042</td>
<td>0.041</td>
</tr>
<tr>
<td>Latvia</td>
<td>0.020</td>
<td>0.033</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.057</td>
<td>0.054</td>
</tr>
<tr>
<td>Macedonia</td>
<td>0.138</td>
<td>0.169</td>
</tr>
<tr>
<td>Poland</td>
<td>0.041</td>
<td>0.044</td>
</tr>
<tr>
<td><strong>Romania</strong></td>
<td><strong>0.020</strong></td>
<td><strong>0.031</strong></td>
</tr>
<tr>
<td>Russia</td>
<td>0.003</td>
<td>0.006</td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>0.069</td>
<td>0.091</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.044</td>
<td>0.072</td>
</tr>
</tbody>
</table>
Aggregate flows of migrants and returnees

• 1) Measure from the Docquier data the net increase of migrants from country j to country i 1990-2000.
  – Data based on censuses of receiving countries.

• 2) Use the UN "Trends in International Migrants Stocks: The 2008 Revision" data on total migrant flows from country j to country I each year 1990-2000.
  – Selected receiving countries.

• 3) The difference is the re-migration and a large share of that is return migration.
Table 2
Imputed return relative to gross migration flows (any OECD destination)
1990-2000;
Selected Eastern European source countries

<table>
<thead>
<tr>
<th>Source</th>
<th>Return Flows (imputed)</th>
<th>Gross flows</th>
<th>Return/Gross</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>20476</td>
<td>34207</td>
<td>0.60</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>24353</td>
<td>42109</td>
<td>0.58</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>24230</td>
<td>18697.5</td>
<td>1.30</td>
</tr>
<tr>
<td>Estonia</td>
<td>5859</td>
<td>12099</td>
<td>0.48</td>
</tr>
<tr>
<td>Hungary</td>
<td>54450</td>
<td>40535</td>
<td>1.34</td>
</tr>
<tr>
<td>Lithuania</td>
<td>2824</td>
<td>12010</td>
<td>0.24</td>
</tr>
<tr>
<td>Latvia</td>
<td>3053</td>
<td>9713.5</td>
<td>0.31</td>
</tr>
<tr>
<td>Poland</td>
<td>282984</td>
<td>306841.5</td>
<td>0.92</td>
</tr>
<tr>
<td>Romania</td>
<td>54197</td>
<td>132311.5</td>
<td>0.41</td>
</tr>
</tbody>
</table>
### Table 4
**Romania: Migrants and returnees, by education**
(from aggregate and NDS data)

**Stocks**

<table>
<thead>
<tr>
<th>Sample:</th>
<th>Romania NDS, 2003</th>
<th>OECD Country Census 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>returnee as % of population</td>
<td>living abroad (OECD) as % of population</td>
</tr>
<tr>
<td>all</td>
<td>0.049</td>
<td>0.032</td>
</tr>
</tbody>
</table>

**education groups**

<table>
<thead>
<tr>
<th></th>
<th>ROMANIA NDS, 2003</th>
<th>OECD Country Census 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>tertiary</td>
<td>0.058</td>
<td>0.126</td>
</tr>
<tr>
<td>secondary</td>
<td>0.056</td>
<td>0.126</td>
</tr>
<tr>
<td>primary completed</td>
<td>0.034</td>
<td>0.016</td>
</tr>
<tr>
<td>No degree completed</td>
<td>0.015</td>
<td>0.039</td>
</tr>
</tbody>
</table>
Overall

• Return flows are likely to be very significant relative to gross migration flows (on average one returnee per 2 migrants for Eastern Europe)

• Stock of returnees is of the same order of magnitude as stock of migrants
  – Other paper for Albania (de Coulon and Piracha 2008) and other Eastern European countries find similar magnitudes.
Selection of Migrants and returnees

• Consider relevant observable features affecting skills: Education (4 groups), Age (10 groups), Gender (2 groups), Family Status (4 groups).

• Each cell, $x$, is defined by a unique combination of those characteristics (320 cells, fully saturated).

• Consider the average logarithmic wage for non migrants (Romania) for each cell. That is a measure of the wage-earning skill of that group. We will call such measure simply skill of group $x$. 
Measuring average skills

Skill of group x (Education, Age, Gender, Family type), evaluated at Romanian skill-price:

\[
\ln \hat{w}(x) = \left(1/NM_x\right) \sum_{i \in x} \ln w_{i,NM}
\]

Average skill of non-migrants:

\[
\ln w_{NM,0} = \sum_{x \in X} \ln \hat{w}(x) f_{NM}(x)
\]

\[
f_{NM}(x) = NM_x / \sum_{z \in X} NM_z
\]

Skill distribution of non-migrants at Romanian wages:
Average observable skills of migrants and returnees

• Average skills of migrants to country c

\[
\ln w_{Mc,0} = \sum_{x \in X} \ln \hat{\omega}(x) f_{Mc}(x)
\]

\[
f_{Mc}(x) = \frac{M_{cx}}{\sum_{z \in X} M_{cz}}
\]

Average skills of returnees

\[
\ln w_{R,0} = \sum_{x \in X} \ln \hat{\omega}(x) f_{R}(x)
\]

\[
f_{R}(x) = \frac{R_{x}}{\sum_{z \in X} R_{z}}
\]
Average Selection on Observables:

Selection of migrants

\[ OS_{Mc,NM} = \ln w_{Mc,0} - \ln w_{NM,0} \]

Difference in wage earning abilities of migrants to country c and non migrants evaluated at “prices” of Romania

Selection of returnees

\[ OS_{R,NM} = \ln w_{R,0} - \ln w_{NM,0} \]

Difference in wage earning abilities of returnees and non migrants evaluated at “prices” of Romania
Corrections

• For participation: using population cells for migrants and impute the employment-population rate of that cell in Romania.

• For unobservable selection: cannot do too much with the data; We look at previous papers (Fernandez Huertas-Moraga 2008, Clemens et al 2008, Kaestner and Malamud 2010) who find small selection on unobservable either on the same type of selection on observables or negligible (Mexico, Philippines).
Average Premium

- Average Wage Premium for returnees

\[
\sum_{x \in X} \ln w_R(x)f_R(x) - \sum_{x \in X} \ln w_{NM}(x)f_R(x) = PR_{R,0} + US_{R,NM}
\]

- Average difference in wage of returnees and non-migrant, evaluated at the skill composition of returnees

- Average Wage Premium for migrants to country c

\[
\sum_{x \in X} \ln w_{cM}(x)f_{Mc}(x) - \sum_{x \in X} \ln w_{NM,0}(x)f_{Mc}(x) = PR_{Mc,NM} + US_{Mc,NM}
\]
Premium and Selection

- In a simple utility theory of migration the premium and selection in each cell $x$ should be positively related. Higher premium, for randomly distributed migration/return costs should cause higher frequency of migration/return.

\[
f_{M_c}(x)/f_{NM}(x) = a(x) + b \times PR_{M_c}(x) + u(x) \text{ for } x \in X
\]

\[
f_R(x)/f_{NM}(x) = \alpha(x) + \beta \times PR_R(x) + \nu(x) \text{ for } x \in X
\]
Data

• Romania National Demographic Survey 2002, individual data with information on personal characteristics, having been resident abroad and wages. All in 2003 US $.

• Census Romania 2002, to check for the representativeness of data.

• USA, Census 2000, characteristics (frequency across skills) and wages of Romanian immigrants

• Austria and Spain, Census 2001, characteristics of Romanian immigrants (frequencies across skills), occupation + industry allow to construct wages using EU-SILC 2004, or Spanish “enquesta salarial” 2003.
Table 5

*Main Countries of Destinations for Romanian Migrants*

<table>
<thead>
<tr>
<th>Country of Destination</th>
<th>Migrants as share of Romanian migrated to OECD countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>0.230</td>
</tr>
<tr>
<td>Germany</td>
<td>0.164</td>
</tr>
<tr>
<td>Italy</td>
<td>0.113</td>
</tr>
<tr>
<td>Canada</td>
<td>0.102</td>
</tr>
<tr>
<td>Spain</td>
<td>0.083</td>
</tr>
<tr>
<td>Austria</td>
<td>0.068</td>
</tr>
</tbody>
</table>
Figure 1: Selection over Education

Panel 1: Non Migrants and Returnees  (Romania Census)

Panel 2: Non Migrants and Migrants to USA (US census)

Panel 3: Non Migrants and Migrants to Austria  (Austria census)

Panel 4: Non Migrants and Migrants to Spain (Spanish Census)
Figure 2: Selection over Age

Panel 1: Non Migrants and Returnees (Romania Census)

Panel 2: Non Migrants and Migrants to USA (US census)

Panel 3: Non Migrants and Migrants to Austria (Austria census)

Panel 4: Non Migrants and Migrants to Spain (Spanish Census)
Table 6
Average Selection on Observable Skills, relative to Non Migrants
Romania, 2003

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Selection on Skills</td>
<td>+0.14</td>
<td>+0.12</td>
<td>+0.13</td>
<td>+0.13</td>
<td>+0.14</td>
</tr>
<tr>
<td>NDS 2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average selection Correcting for Participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Census 2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Returnees
- +0.14
- +0.12
- +0.13
- +0.13
- +0.14

Migrants to US
- +0.16
- +0.13
- +0.20
- +0.14
- +0.15

Migrants to Austria
- 0.03
- 0.01
- +0.04
- +0.03
- 0.02

Migrants to Spain
- -0.11
- -0.13
- -0.07
- -0.13
- -0.10

Average selection on Observables Wage-earning abilities (Excluding Ethnic minorities)
Figure 3
Kernel density of non migrants and returnees over skill, Census 2002

Monthly wages, in 2003 US $
Figure 4
Kernel density of migrants and returnees over skill, Census 2002

Monthly wages, in 2003 US $

Panel 1: Based on employment

Panel 2: Based on Population

In(Monthly Wage)

$400 - $2980$

In(Monthly Wages)

$400 - $2980$

Non Migrants  Migrants to USA
Migrants to Austria  Migrants to Spain

Multi-Donor Trust Fund
Labor Markets, Job Creation & Economic Growth

Social Protection & Labor
The World Bank
Selection on observable skills

• Positive for returnees and Migrants to US
• Neutral for migrants to Austria
• Negative for migrants to Spain

• Is this compatible with the premium structure?
Figure 5: Migration premium: Wages in the Destination country and in Romania

**Migrants to US**

- Average premium = 112% of Romanian wage = $990 per month

**Migrants to Austria**

- Average premium = 100% of Romanian wage = $882 per month

**Migrants to Spain**

- Average premium = 34% of Romanian wage = $300 per month

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**Multi-Donor Trust Fund**

*Labor Markets, Job Creation & Economic Growth*

---

**Social Protection & Labor**

*The World Bank*
Table 7: 
Migration- and Return- Premium and their correlation with wage-earning skills

Linear monthly Wage premium

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Specification:</th>
<th>Return Premium</th>
<th>Migration to US Premium</th>
<th>Migration to Austria Premium</th>
<th>Migration to Spain Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln(Wage Non Movers)</td>
<td>Basic</td>
<td>0.36**</td>
<td>1.14**</td>
<td>-0.04</td>
<td>-0.75**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.01)</td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.04)</td>
</tr>
<tr>
<td></td>
<td>With Control for age effects</td>
<td>0.49**</td>
<td>1.28**</td>
<td>0.14**</td>
<td>-0.44**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td></td>
<td>With Control for Family structure</td>
<td>0.40**</td>
<td>1.16**</td>
<td>-0.01</td>
<td>-0.65**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
</tbody>
</table>

\[ PR_{Mc}(x) = a(x) + b \ln \hat{w}(x) + u(x) \text{ for } x \in X \]
Table 8
Correlation between Migration- and Return- frequencies and migration and return premium
Linear monthly Wage premium

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relative frequency of return</td>
<td>Relative frequency of migration to US</td>
<td>Relative frequency of migration to Austria</td>
<td>Relative frequency of migration to Spain</td>
</tr>
<tr>
<td>Premium In Population cells</td>
<td>0.38**</td>
<td>0.24**</td>
<td>0.30**</td>
<td>0.63**</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>Premium In Employment Cells</td>
<td>0.21**</td>
<td>0.27**</td>
<td>0.18**</td>
<td>0.27**</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Premium Controlling for age and family effects</td>
<td>0.11**</td>
<td>0.33**</td>
<td>0.15**</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
</tbody>
</table>

\[
\frac{f_{MC}(x)}{f_{NM}(x)} = a(x) + b \ast PR_{MC}(x) + u(x) \text{ for } x \in X
\]
Hence:

- Evidence is consistent with rational migration and return.
- There seem to be a premium to returnees on top of their positive selection.
- Migration to some country and return is compatible with optimal choice.
Interpretation within a Model and incentive effects

- Agents live 2 periods. Choose education and migration (1st period) and then whether to return or not (2nd period).

- There is a skill premium for migrating. There is a probability of succeeding when attempting to migrate (p) as in brain gain models. Freer migration policies imply higher p.

- There is a premium to skilled accumulated abroad. Hence a premium to return and it increases with skills.

- Use the estimated returns to schooling, return premium and cost of migration and return (to match current flows of returnees, about half of total migrants)
Key intuition and results

• 1) For the observed return premium we have positive selected migration and even more positively selected returnees as highly skilled have significant return premium.

• 2) Migration and return increase incentives to schooling and increase average schooling even of non-migrants. The increase depends on costs of schooling chosen to match the schooling distribution of Romania in 1990.

• 3) As \( p \) increases the two effects become stronger.
Table 9
Simulated effects of increasing freedom of migration, \( p \), in Romania on schooling and wages
Parameter as in Romania 2003; Migration and return

<table>
<thead>
<tr>
<th>( p )</th>
<th>0</th>
<th>0.05</th>
<th>0.10</th>
<th>0.15</th>
<th>0.20</th>
<th>0.25</th>
<th>0.30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Years of Schooling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Schooling of young</td>
<td>12</td>
<td>12.16</td>
<td>12.33</td>
<td>12.49</td>
<td>12.64</td>
<td>12.78</td>
<td>12.91</td>
</tr>
<tr>
<td>Average schooling of old</td>
<td>12</td>
<td>12.32</td>
<td>12.66</td>
<td>13.01</td>
<td>13.37</td>
<td>13.75</td>
<td>14.15</td>
</tr>
<tr>
<td>Average schooling, overall</td>
<td>12</td>
<td>12.24</td>
<td>12.50</td>
<td>12.76</td>
<td>13.03</td>
<td>13.30</td>
<td>13.59</td>
</tr>
<tr>
<td>Wages (standardized to 1 with no migration)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average wages, young</td>
<td>1</td>
<td>1.01</td>
<td>1.02</td>
<td>1.04</td>
<td>1.05</td>
<td>1.07</td>
<td>1.08</td>
</tr>
<tr>
<td>Average wages, old</td>
<td>1</td>
<td>1.04</td>
<td>1.09</td>
<td>1.15</td>
<td>1.22</td>
<td>1.29</td>
<td>1.36</td>
</tr>
<tr>
<td>Average wages, overall</td>
<td>1</td>
<td>1.03</td>
<td>1.06</td>
<td>1.10</td>
<td>1.14</td>
<td>1.18</td>
<td>1.23</td>
</tr>
<tr>
<td>Average wage No primary</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
<td>0.47</td>
</tr>
<tr>
<td>Average wage Primary-Secondary</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
</tr>
<tr>
<td>Average wage tertiary-young</td>
<td>1.41</td>
<td>1.43</td>
<td>1.45</td>
<td>1.48</td>
<td>1.50</td>
<td>1.52</td>
<td>1.55</td>
</tr>
<tr>
<td>Average wage tertiary-old</td>
<td>1.41</td>
<td>1.48</td>
<td>1.56</td>
<td>1.64</td>
<td>1.73</td>
<td>1.82</td>
<td>1.92</td>
</tr>
<tr>
<td>Migration Rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of emigrants</td>
<td>0</td>
<td>0.045</td>
<td>0.091</td>
<td>0.137</td>
<td>0.183</td>
<td>0.230</td>
<td>0.276</td>
</tr>
<tr>
<td>Share of returnees among</td>
<td>0.471</td>
<td>0.482</td>
<td>0.492</td>
<td>0.502</td>
<td>0.512</td>
<td>0.521</td>
<td></td>
</tr>
</tbody>
</table>
In Summary

• Romania shows large return-rates among migrants.

• Strong positive selection of returnees (+12%) consistent with positive premium to return that increases with skills.

• Migrants to USA are strongly positively selected while to Spain are negatively selected reflecting the skill premium of migrating to each country.

• More international migration would benefit wages of Romanian through return premium and increasing the incentives to get more schooling.