LOW HANGING FRUIT ON THE DEVELOPMENT TREE: Patterns of Global Migration & Opportunities

Çağlar Özden
Development Research Group (DEC)
Trade & International Integration
November 5, 2013
I. MIGRANTS EVERYWHERE

Real Madrid vs. Juventus

UEFA Champions League
Group B
November 5, 2013, 20:45, Turin
I. MIGRANTS EVERYWHERE

Côte d'Ivoire
World Cup Champion 😊
2014
I. MIGRANTS EVERYWHERE

2010-12 Academy Awards for Best Director

2013 Nobel Prize in Chemistry
I. MIGRANTS EVERYWHERE

DECRG Management
November 2013
I. MIGRANTS EVERYWHERE – NOT REALLY !!!

Share of the Population Applying for the US Diversity Visa 2012 (%)
I. MIGRANTS EVERYWHERE – NOT REALLY !!!

The World Migrant Stock as a Share of World Population

- **Total Migrant Stock**
- **Total Stock excluding intra-Soviet Union and intra-South Asia migration**
GLOBAL MIGRATION PATTERNS

“In God we trust, all others must bring data”
Edward W. Deming
I. GLOBAL BILATERAL MIGRATION DATABASE

DATABASE #1
“Where on Earth is Everybody?”
The Evolution of Global Bilateral Migration 1960-2000
2011, WBER
w/ C. Parsons, M. Schiff, T. Walmsley

MAIN FEATURES

A. Bilateral matrix 226 * 226 countries/regions/areas
B. Gender
C. 5 census years, 1960-2000
D. In collaboration with UNPD, UNSD, OECD
E. Raw data from over 3,500 census records
I. GLOBAL BILATERAL MIGRATION DATABASE

MAIN CHALLENGES

A. How to define countries consistently—Soviet Union!
B. Origin regions in censuses are not standard—South Asia, Ex-French Africa
C. Non-harmonized census dates
D. Definition of a migrant—place of birth vs nationality
E. MISSING CENSUS ROUNDS!
I. GLOBAL BILATERAL MIGRATION DATABASE


- Total Migrant Stock
- Total Stock excluding intra-Soviet Union and intra-South Asia migration
I. GLOBAL BILATERAL MIGRATION DATABASE

Evolution of Main Migration Corridors
I. GLOBAL BILATERAL MIGRATION DATABASE

Immigrant Population as fraction of Destination Country Population
I. GLOBAL BILATERAL MIGRATION DATABASE

Emigrant Population as fraction of Origin Country Population
II.  GLOBAL SKILLED MIGRATION DATABASE

DATABASE #2
“Global Assessment of Human Capital Mobility”
2013, working paper
w/ E. Artuc, F. Docquier, C. Parsons,

MAIN FEATURES

A. 3 Education levels!
B. Labor force data (age 15+)
C. Bilateral matrix 190 * 190 countries/regions/areas
D. Gender
E. 2 census years, 1990-2000
F. In collaboration with UNPD, UNSD, OECD
II. GLOBAL SKILLED MIGRATION DATABASE
II. GLOBAL SKILLED MIGRATION DATABASE

MAIN CHALLENGES

A. LIMITED AVAILABLE DATA!

i. 100 countries in 2000

ii. 61 countries in 1990

B. METHODOLOGY

   Modified (multi-stage) Gravity Model
II. GLOBAL SKILLED MIGRATION DATABASE

Estimation methods allow us to:

- **Identify the importance of different gravity variables**
  - Distance
  - Border
  - Language
  - Colonial links
  - Diaspora

- **Determine how these variables change over time, by skill level and gender**

- **Predict the migration levels for missing corridors and construct a full global migration matrix**
## II. GLOBAL SKILLED MIGRATION DATABASE

### Full Picture of Migration Patterns

<table>
<thead>
<tr>
<th></th>
<th>OECD</th>
<th>non-OECD</th>
<th>Imputed</th>
<th>Imputed (%)</th>
<th>TOTAL</th>
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<td>20.9</td>
<td>5.4</td>
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<td>38.3</td>
<td>30.5</td>
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<td>83.1</td>
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<td><strong>Males</strong></td>
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<td></td>
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<tr>
<td>College graduates</td>
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<td>3.1</td>
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<td>15.1</td>
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<tr>
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<td>18.4</td>
<td>16.5</td>
<td>7.3</td>
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<td>42.3</td>
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<td><strong>Females</strong></td>
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<td></td>
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<td>40.8</td>
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<tr>
<td><strong>1990</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>42.5</td>
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<tr>
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<td>30.0</td>
<td>10.9</td>
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<td>69.0</td>
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<tr>
<td><strong>Males</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>College graduates</td>
<td>6.7</td>
<td>0.9</td>
<td>1.4</td>
<td>16%</td>
<td>9.0</td>
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<td>Less educated</td>
<td>14.3</td>
<td>6.9</td>
<td>14.3</td>
<td>40%</td>
<td>35.4</td>
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<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College graduates</td>
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<td>0.3</td>
<td>1.1</td>
<td>15%</td>
<td>7.3</td>
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<td>4.1</td>
<td>13.8</td>
<td>41%</td>
<td>33.6</td>
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</tbody>
</table>
II. GLOBAL SKILLED MIGRATION DATABASE

<table>
<thead>
<tr>
<th></th>
<th>OECD destinations</th>
<th>non-OECD destinations</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>40%</td>
<td>23%</td>
<td>31%</td>
</tr>
<tr>
<td>College graduates</td>
<td>66%</td>
<td>114%</td>
<td>77%</td>
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<tr>
<td>Less educated</td>
<td>28%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td>38%</td>
<td>21%</td>
<td>29%</td>
</tr>
<tr>
<td>College graduates</td>
<td>58%</td>
<td>96%</td>
<td>68%</td>
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<tr>
<td>Less educated</td>
<td>29%</td>
<td>12%</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td>40%</td>
<td>26%</td>
<td>33%</td>
</tr>
<tr>
<td>College graduates</td>
<td>75%</td>
<td>136%</td>
<td>88%</td>
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<tr>
<td>Less educated</td>
<td>27%</td>
<td>17%</td>
<td>21%</td>
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</table>
## II. GLOBAL SKILLED MIGRATION DATABASE

### Bilateral Statistics

<table>
<thead>
<tr>
<th>ORIGINS</th>
<th>High-income</th>
<th>Developing</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-skill (%)</td>
<td>38.2</td>
<td>21.5</td>
</tr>
<tr>
<td>Women (%)</td>
<td>52.6</td>
<td>47.7</td>
</tr>
<tr>
<td>Growth (%)</td>
<td>8.6</td>
<td>12.5</td>
</tr>
<tr>
<td>High-skill (%)</td>
<td>30.5</td>
<td>10.4</td>
</tr>
<tr>
<td>Women (%)</td>
<td>46.8</td>
<td>48.9</td>
</tr>
<tr>
<td>Growth (%)</td>
<td>55.6</td>
<td>7.1</td>
</tr>
</tbody>
</table>
II. GLOBAL SKILLED MIGRATION DATABASE

High Skilled Immigration as Percentage of Total Immigration
II. GLOBAL BILATERAL MIGRATION DATABASE

High Skilled Emigration as Percentage of Total Emigration
**II. GLOBAL BILATERAL MIGRATION DATABASE**

Largest migration Corridors in 2000

<table>
<thead>
<tr>
<th>Origin</th>
<th>Destination</th>
<th>Stock</th>
<th>High skill (%)</th>
<th>Women (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>United States</td>
<td>6,374.8</td>
<td>14.4</td>
<td>45.2</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>India</td>
<td>3,211.9</td>
<td>2.1</td>
<td>48.0</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Russia</td>
<td>3,024.2</td>
<td>25.2</td>
<td>52.1</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>Cote d'Ivoire</td>
<td>2,238.5</td>
<td>0.3</td>
<td>44.7</td>
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<tr>
<td>Russia</td>
<td>Ukraine</td>
<td>2,183.7</td>
<td>17.5</td>
<td>61.5</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Russia</td>
<td>1,837.3</td>
<td>21.3</td>
<td>53.6</td>
</tr>
<tr>
<td>China</td>
<td>Hong Kong</td>
<td>1,620.5</td>
<td>12.9</td>
<td>50.6</td>
</tr>
<tr>
<td>India</td>
<td>Pakistan</td>
<td>1,613.3</td>
<td>2.7</td>
<td>42.4</td>
</tr>
<tr>
<td>Russia</td>
<td>Kazakhstan</td>
<td>1,611.1</td>
<td>60.5</td>
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<td>Pakistan</td>
<td>India</td>
<td>1,288.2</td>
<td>4.4</td>
<td>47.5</td>
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<td>Turkey</td>
<td>Germany</td>
<td>1,272.0</td>
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<td>45.8</td>
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<td>Philippines</td>
<td>United States</td>
<td>1,163.6</td>
<td>71.7</td>
<td>58.6</td>
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<td>UK</td>
<td>Australia</td>
<td>969.0</td>
<td>39.4</td>
<td>50.0</td>
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<tr>
<td>China</td>
<td>United States</td>
<td>841.7</td>
<td>51.6</td>
<td>52.6</td>
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<tr>
<td>Belarus</td>
<td>Russia</td>
<td>837.0</td>
<td>22.8</td>
<td>55.2</td>
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</table>
### II. GLOBAL BILATERAL MIGRATION DATABASE

Largest High Skilled Destinations in 2000

<table>
<thead>
<tr>
<th>Country</th>
<th>Immigrants (mil.)</th>
<th>Women (%)</th>
<th>Growth (%)</th>
</tr>
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<tbody>
<tr>
<td>United States</td>
<td>10.3</td>
<td>50.0</td>
<td>67.1</td>
</tr>
<tr>
<td>Canada</td>
<td>2.7</td>
<td>48.4</td>
<td>45.2</td>
</tr>
<tr>
<td>Russia</td>
<td>2.2</td>
<td>49.0</td>
<td>-66.9</td>
</tr>
<tr>
<td>Australia</td>
<td>1.6</td>
<td>49.3</td>
<td>39.5</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>1.4</td>
<td>45.8</td>
<td>203.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.2</td>
<td>50.2</td>
<td>122.9</td>
</tr>
<tr>
<td>Germany</td>
<td>1.0</td>
<td>45.2</td>
<td>87.4</td>
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<td>France</td>
<td>0.6</td>
<td>46.6</td>
<td>80.6</td>
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<td>Uzbekistan</td>
<td>0.6</td>
<td>52.3</td>
<td>-7.1</td>
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<tr>
<td>Ukraine</td>
<td>0.6</td>
<td>52.8</td>
<td>-79.5</td>
</tr>
</tbody>
</table>

*65% of high-skilled immigrants move to USA, Canada, Australia and the UK*
### II. GLOBAL BILATERAL MIGRATION DATABASE

**High Skilled Emigration Rates (%)**

<table>
<thead>
<tr>
<th></th>
<th>GROSS</th>
<th>NET</th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>To all</td>
<td>To OECD</td>
<td>To non-OECD</td>
<td>Total</td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>WORLD</td>
<td>8.1</td>
<td>5.9</td>
<td>2.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>OECD</td>
<td>4.8</td>
<td>4.4</td>
<td>0.4</td>
<td>-5.5</td>
<td>-5.4</td>
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<td>HIGH INCOME</td>
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<td>4.4</td>
<td>0.5</td>
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<td>-6.8</td>
<td>-6.4</td>
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<td>DEVELOPING</td>
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<td>7.0</td>
<td>9.6</td>
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<td>LOW</td>
<td>20.3</td>
<td>13.0</td>
<td>7.3</td>
<td>16.0</td>
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<td>21.2</td>
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<td>LDC</td>
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<td>7.0</td>
<td>16.6</td>
<td>14.9</td>
<td>21.0</td>
</tr>
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<td>USA</td>
<td>0.6</td>
<td>0.5</td>
<td>0.1</td>
<td>-11.6</td>
<td>-12.0</td>
<td>-11.2</td>
</tr>
<tr>
<td>Can., Aust. NZ</td>
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<td>0.2</td>
<td>-30.9</td>
<td>-32.4</td>
<td>-29.5</td>
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<td>EU27</td>
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<td>2.4</td>
<td>2.4</td>
<td>2.3</td>
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<td>GCC</td>
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<td>10.7</td>
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<td>-32.2</td>
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<td>9.8</td>
<td>11.9</td>
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<td>2.2</td>
<td>3.6</td>
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<td>5.4</td>
<td>4.7</td>
<td>7.0</td>
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<td>1.5</td>
<td>5.2</td>
<td>3.7</td>
<td>9.2</td>
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<td>MENA</td>
<td>17.5</td>
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<td>6.4</td>
<td>9.0</td>
<td>10.3</td>
<td>6.6</td>
</tr>
</tbody>
</table>
II. GLOBAL BILATERAL MIGRATION DATABASE

Gross versus Net High Skilled Emigration Rates (%)
II. GLOBAL BILATERAL MIGRATION DATABASE

Emigration rates of high-skilled women and men
III. PLACE OF BIRTH vs. TRAINING

DATABASE #3
“Who Really is an African Doctor?”
2013, working paper
w/ D. Phillips

MAIN FEATURES

A. Separate location of birth, training and migration dynamics of 20,000 African doctors in the US
III. PLACE OF BIRTH vs. TRAINING

BORN IN EGYPT
Census
4,867

TRAINED IN EGYPT
AMA
4,062
III. PLACE OF BIRTH vs. TRAINING

TOTAL NUMBER OF “EGYPTIAN” DOCTORS IN THE US: 5,401
III. PLACE OF BIRTH vs. TRAINING

- Born in Egypt: 3,528
  - Trained in another African Country: 37
  - Trained in the United States: 1,077
  - Trained in the rest of the world: 225
- Total: 65% of total

- Trained in Egypt: 365
  - Born in another African Country: 44
  - Born in the United States: 124
  - Born in the rest of the world: 365
- Total: 10% of total

25% of total
III. PLACE OF BIRTH vs. TRAINING

Cumulative probability distribution of Age of Migration of doctors trained at home
IMPACT OF IMMIGRATION ON OECD COUNTRIES
I. LABOR MARKET IMPACT OF MIGRATION

“The Labour Market Effects of Immigration and Emigration in OECD Countries”
Forthcoming, Economic Journal
w/ F. Docquier, G. Peri

MAIN FEATURES

A. Analyze impact of both immigration and emigration on labor market outcomes of natives in different OECD countries.
B. Use global migration database discussed earlier
I. LABOR MARKET IMPACT OF MIGRATION

- Database allows us to look at the impact of immigration and emigration at the same time...
- Evaluate long-run aggregate impact of immigration and emigration on wages – both for skilled and unskilled – native workers in OECD countries
- Test how sensitive the results are to assumptions on elasticities - substitutability, skill externalities, agglomeration effects
I. LABOR MARKET IMPACT OF MIGRATION

• *Critical issue is the skill composition of different labor flows. In most OECD countries, the skill composition has the following order:* 

\[
\text{EMIGRANTS} > \text{IMMIGRANTS} > \text{NON-MIGRANTS}
\]

• *Emigration matters more than immigration for most European countries!!*

• *Accounting for educational quality and skill downgrading, undocumented migration, post-2000 flows do not change the qualitative results*
I. LABOR MARKET IMPACT OF MIGRATION

Effects of Immigration on Less Educated Native Wages

Effects of Immigration on Less Educated Native Employment
I. LABOR MARKET IMPACT OF MIGRATION

Effects of Emigration on Less Educated Native Wages

Effects of Emigration on Less Educated Native Employment
IMPACT OF IMMIGRATION ON A MIDDLE-INCOME COUNTRY: MALAYSIA
II. LABOR MARKET IMPACT OF MIGRATION

“Immigrants versus Natives? Displacement and Job Creation”
2013, working paper
w/ M. Wagner

MAIN FEATURES

A. Evaluate overall labor market impact (on wages and employment) of immigration in a middle-income country
B. Part of a large cross-support project on skills and labor markets
II. LABOR MARKET IMPACT

MALAYSIA

Migrant Workers as a Share of Labor Force

% of Labor Force
% of 15+ population
II. LABOR MARKET IMPACT

Sectoral Distribution of Migrant Workers

- Agriculture
- Construction
- Other services
- Wholesale-retail
- Accommodation and restaurant
- Mfg wood
- Mfg meas-med-com
- Business services
- Mfg food-bev-tob
- Metal-machinery-equip
- Mfg chem-rub
- Logistics
- Mfg transp equip
- Mfg paper-furn
- Mfg textile
- Real estate
- Mfg transp equip
- Mfg paper-furn
- Mfg textile
- Health
- Education
- Public administration
- Post and telecom
- Mining
- Finance
- Utilities

II. LABOR MARKET IMPACT

Origin Country Distribution of Migrant Workers

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>56%</td>
</tr>
<tr>
<td>Philippines</td>
<td>15%</td>
</tr>
<tr>
<td>Thailand</td>
<td>7%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>6%</td>
</tr>
<tr>
<td>Other SE Asia</td>
<td>6%</td>
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<tr>
<td>Singapore</td>
<td>6%</td>
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<tr>
<td>Rest</td>
<td>3%</td>
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</table>
II. LABOR MARKET IMPACT

Share of Migrant Workers in Different Sectors

- Finance
- Public administration
- Education
- Post and telecom
- Health
- Utilities
- Real estate
- Logistics
- Wholesale-retail
- Business services
- Mfg textile
- Mfg paper-furn
- Mining
- Mfg meas-med-com
- Metal-machinery-equ
- Accommodation and restaurant
- Mfg chem-rub
- Mfg food-bev-tob
- Mfg transp equip
- Construction
- Agriculture
- Other services
- Mfg wood
II. LABOR MARKET IMPACT

MALAYSIA
Education Distribution

Malaysian workers (25-35)

Migrant workers (25-35)

Source: Malaysian Labor Force Surveys, 1990-2010,
Del Carpio, Ozden, Testaverde, Wagner (2013)
II. LABOR MARKET IMPACT

Endogenous Location Choices
II. LABOR MARKET IMPACT

Endogenous Location Choices

Substitution versus Scale Effects in Labor Markets
II. LABOR MARKET IMPACT

• **In Malaysia, Scale effect is stronger than the substitution effect!!**

• An additional 10 immigrant workers in a local market (sector/region/year) leads to reallocation of 4.6 native workers from other markets into that market.

• Immigration virtually has no impact on national employment level

• 10% increase in immigration leads to:
  
  0.1% increase in native wages

  4.0% decline in migrant wages

  0.4% decline in national wages
II. LABOR MARKET IMPACT

Employment Impact by Education Level

At most primary | Lower Secondary | Upper Secondary | Certificate / Diploma | Degree and Above

Impact values: -0.4, -0.3, -0.2, -0.1, 0, 0.1, 0.2, 0.3, 0.4
II. LABOR MARKET IMPACT

Actual and Counterfactual Skill Premium

Log Wage Points

- At most primary
- Lower Secondary
- Upper Secondary
- Certificate / Diploma
- Degree and Above

Actual
Counterfactual ( @ 1990 immigration level)
II. LABOR MARKET IMPACT

Country Dialogue!!
“EXCITING” NEW ISSUES
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

A. Can mobility solve global demographic imbalances?
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

Dependency Ratios
1970-2070

1.00
0.80
0.60
0.40
0.20
0.00

1970 1990 2010 2030 2050 2070

OECD
East Asia
South Asia
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

Dependency Ratios with "Free Mobility"
1970-2070
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

Dependency Ratios
1970-2070

OECD
South Asia
South Asia + OECD

1970 1990 2010 2030 2050 2070
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

A. Can mobility solve global demographic imbalances?

Likely Answer: NO

- Fertility is declining in developing countries faster than it did in the West
- Migrants demographic norms quickly converges to the natives’ norms
- Migrants will age and need pensions in the destination countries
- Type of migration matters – permanent vs temporary etc
- DATA, DATA, DATA....
I. AG(E)ING
THE OTHER PATH TO EXTINCTION?

*Caveat: Do not Trust UN Population Projections!!!*
II. ENDOGENOUS EDUCATION

A. How do people adjust their education level in response to potential immigration opportunities abroad?

*It depends on the “opportunities!” (potential for brain gain effect)*

*In Mexico, significant negative effect of migration on schooling attendance and attainment (McKenzie & Rapoport, 2011)*

*In Fiji, political crisis and high rates of emigration by tertiary-educated Indians raised their investment in tertiary education. (Chand & Clemens, 2008)*
II. ENDOGENOUS EDUCATION

B. How do people adjust their education level in response to potential arrival of emigrants from abroad?

*It again depends on the “type of migrants”*

*Post-1992 influx of Soviet mathematicians led “low-quality” American mathematicians to move to other areas whereas “high-quality” ones benefited from spillovers. (Borjas, 2012)*

*What about arrival of low-skilled workers?*
II. ENDOGENOUS EDUCATION

MALAYSIA “ for the last time 😊 “

% of 15-19 Natives in School

% of Migrants in Labor Force
III. FEMALE LABOR FORCE PARTICIPATION

A. How do women adjust their labor force participation, education or fertility decisions when they have access to cheap household services?

Low-skilled immigration increases labor supply of high skilled women in the US, Hong Kong and Taiwan (Cortes, 2011 and 2013)

Little evidence on fertility decisions..
III. FEMALE LABOR FORCE PARTICIPATION

B. How do women adjust their labor force participation, education or fertility decisions when they can immigrate to high-income countries?

Or are women different than men in their responses?
III. FEMALE LABOR FORCE PARTICIPATION

Share of women among university students

<table>
<thead>
<tr>
<th>Country</th>
<th>2010</th>
<th>1990</th>
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<tbody>
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<td>Brazil</td>
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<td>Chile</td>
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<td>Romania</td>
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Share of singles among college educated migrant women to the US (age 25-35)

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Thank You!

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