GTAP Endogenous Migration Model

by:

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Objectives and Motivations

- Impact of taxing income of skilled labor in exporting region.
- Increase tax base
- Expected outcome: Output tax on wages (skilled labor) will improve the welfare of both movers and non-movers in an exporting country.
The Model and Assumptions

- Focus is on endogenous migration of skilled labor force to move abroad due to reduction in their real income.

- Model set-up: labor can only be exported from SAfrica to three selected countries.

- Output tax is used as a proxy for income tax on skilled labor productivity.

- Shock output tax ($t_o$) from -16.42% to -32.00%.
Endogenous migration Equation

\[ \text{LF}(i,r,s) = A(i, c, r) \times \left[ \frac{\text{RWAGEI}(i,c,r)}{\text{RWAGEI}(i,c,c)} \right]^{\text{ESUBMIG}(i,r,s)} \]

Where,

- \( \text{LF}(i,r,s) \) = No. of migrants moving from region \( c \) to region \( r \)
- \( A(i, c, r) \) = constant describing initial equilibrium
- \( \text{RWAGEI}(i,c,r) \) = real wage in labour importing region
- \( \text{RWAGEI}(i,c,c) \) = real wage in labour exporting region
- \( \text{ESUBMIG}(i,r,s) \) = Parameter reflecting the extent to which migrants respond to differences in real wages
Results

Number of New Migrants

Labour Importing Countries

USA: 19.6550
Canada: 6.4370
UK: 12.9960
Results

Changes in Real Incomes of New Migrants

USA: 85.38
Canada: 10.10
UK: 30.97

Values in Millions

Labour Importing Countries

Real Income
Results

Changes in Total Remittances of new Migrants and non-Movers

Values in Millions

<table>
<thead>
<tr>
<th></th>
<th>Movers</th>
<th>Non-Movers</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>159.8</td>
<td>-16.34</td>
</tr>
<tr>
<td>Canada</td>
<td>18.27</td>
<td>-1.95</td>
</tr>
<tr>
<td>UK</td>
<td>59.65</td>
<td>-6.25</td>
</tr>
</tbody>
</table>

- Movers
- Non-Movers
## Results

**Ratio of Return of Primary Factors to CPI** \[\text{pfactreal}(i,r)\]:

<table>
<thead>
<tr>
<th>Factor</th>
<th>USA</th>
<th>Canada</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>0.04</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>Skilled labor</td>
<td>-0.02</td>
<td>-0.06</td>
<td>-0.05</td>
</tr>
<tr>
<td>Unskilled labor</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Capital</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>NatRes</td>
<td>0.05</td>
<td>0.07</td>
<td>0.03</td>
</tr>
</tbody>
</table>
Summary

- Real income of skilled labor migrants improved.

- Total remittances increased.

- Income of non-movers in the host countries reduced due to influx of new migrants which reduces wage rates.