Migration Module
Class 1: Internal migration

Melanie Morten (Stanford)
Featured speaker: Travis Baseler (Rochester)

April 7, 2022
Two scenes from Indonesia

(a) Jakarta

(b) Rural Java
Two questions for today’s class

1. Would people be better off if they migrated (e.g., from rural Java to Jakarta)?

2. If it’s a good idea to move, why aren’t more people migrating?
Why internal migration?

- Internal migration important: globally, 1 in 8 people are internal migrants (UNDP, 2009)

- Four times as many as international migrants

- Despite migration, still have large wage gaps
  - One measure: productivity gap between rural and urban, within same country is between 2.2-2.6 times higher, even after making adjustments for education, hours of work, etc. (Gollin et al., 2014)

- Obvious policy implication: migration as a poverty-alleviation strategy?
High rates of internal migration: IPUMS SSA

- Migration = living outside region of birth

![Graph showing migration rates, heads of household](image)

Source: Census data from IPUMS International. Note that region sizes differ across countries. Migrants are identified using region of birth.
Income distribution across space (Tanzania)

Household income by district, Tanzania 2009

90/10 income gap: 4.35.
Source: FAO RIGA-H database.

Household income in Tanzania, 2009

Mean income is 1005822 shillings (762 USD). Source: FAO RIGA-H database.
Distribution of wages in the US

Figure 2. Distribution of average hourly nominal wage of high school graduates and college graduates, by metropolitan area. Notes: This figure reports the distribution of average hourly nominal wage of high school graduates and for college graduates across metropolitan areas in the 2000 Census of Population. There are 288 metropolitan areas. The sample includes all full-time US born workers between the age of 25 and 60 who worked at least 48 weeks in the previous year.

(Moretti, 2011)
Substantial within-sector migration

- Here: birth migration (source: SUSENAS)
- Indonesia annualized rural-urban migration rate from IFLS: 1.1% (Lagakos, 2020)

Table 1: Migration rates by origin, Indonesia

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural</th>
<th>Urban</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Migration rate</td>
<td>32.3</td>
<td>35.8</td>
</tr>
<tr>
<td></td>
<td>Moves within category</td>
<td>31.1</td>
<td>74.6</td>
</tr>
<tr>
<td>2011</td>
<td>Migration rate</td>
<td>38.7</td>
<td>33.7</td>
</tr>
<tr>
<td></td>
<td>Moves within category</td>
<td>24.4</td>
<td>84.2</td>
</tr>
<tr>
<td>2012</td>
<td>Migration rate</td>
<td>38.9</td>
<td>34.1</td>
</tr>
<tr>
<td></td>
<td>Moves within category</td>
<td>25.4</td>
<td>83.8</td>
</tr>
</tbody>
</table>

Notes:
- Data source: 1995 Supas; 2011 Susenas; 2012 Susenas. Migration is measured as living in a regency other than the birth regency. Regencies are classified as rural or urban based on the share of their population that report being rural; we choose the cutoff to classify the regency as rural to match the national urbanization rate for each year.

Bryan and Morten (2019)
Outline

Setting the scene

Basic migration framework
  Wages
  Cost of living
  Amenities
  Migration costs

Extensions

Migration module

Conclusion
A simple partial equilibrium model of migration

Migrate from origin (o) to destination (d) if:

\[ w_d - \text{cost of living}_d + \text{amenities}_d - \text{migration cost}_{od} \geq w_o - \text{cost of living}_o + \text{amenities}_o \]

Migration depends on:

- Wages
- Costs of living
- Amenities
- Migration costs

(Modified from Rosen-Roback model (Rosen, 1979; Roback, 1982))
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Conclusion
We already saw evidence of wage dispersion

But average wages not what we need
  - We want the return to migration for the individual migrating to be positive
  - Obvious selection problems: perhaps wages higher in city because urban people are more educated

Range of estimates of wage premium of migrating
  - Average / residualized wages
  - Event studies of migration (individual FE)
  - RCT
Cross-sectional, observational, experimental gains to migrating

- Cross-sectional: combines any wage differences + avg selection effects
- Observational: combines wage differences for those who choose to migrate
  - People migrate based on returns and costs
  - High return migrants may also have high costs – not observed
  - Fixed effects also only control for permanent, not temporary, shocks
- Experimental
  - e.g., In RCT subsidizing Bangaldeshi migrants: observational return: 9%.
    Experimental return: 36% (Bryan et al., 2014; Lagakos, 2020)
With individual FE: no increase in earnings after migrate to urban in Indonesia

Figure 1: Productivity Gap in Total Earnings

(A. Agriculture/Non-Agriculture, Indonesia)

0.239
0.077
FE, earnings
FE, wages

0.715
0.376
Raw
Adjusted

1.381
1.075
IFLS

(B. Agriculture/Non-Agriculture, Kenya)

0.219
0.123

0.778
0.604
KLPS

(C. Rural/Urban, Indonesia)

0.219
0.123

0.778
0.604
KLPS

(D. Rural/Urban, Kenya)

0.219
0.123

0.778
0.604
KLPS

Notes:
GLW refers to estimates from Gollin, Lagakos, and Waugh (2014), Online Appendix Table A4. For comparability, the figure reports log transformed numbers from their columns 4 and 5 for Indonesia and Kenya, respectively. Symbols here represent point estimates, and vertical lines represent 95% confidence intervals. Panel A estimates from the IFLS come from Table 4, panel A: “Raw” is the mean difference estimate from column (1); “Adjusted” is the regression adjusted mean difference estimate from column (3); “FE, earnings” is the fixed effects regression estimate of log earnings with hours controls in column (7); and “FE, wages” is the fixed effects regression estimate of wages from column (8). Corresponding estimates from the KLPS come from Table 4, panel B. Estimates in panels C and D come from the same columns in Table 5, panels A and B, respectively. Note that the confidence intervals for the estimates from the IFLS are smaller than the size of the symbols and are therefore not visible.

(Hicks et al., 2021)
Table 3: Observational Returns to Migration in Six Developing Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Column (1)</th>
<th>Column (2)</th>
<th>Column (3)</th>
<th>Column (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>0.545***</td>
<td>0.161***</td>
<td>0.012</td>
<td>0.226***</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.028)</td>
<td>(0.064)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>Ghana</td>
<td>0.410***</td>
<td>0.148</td>
<td>-0.173</td>
<td>0.339**</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.122)</td>
<td>(0.220)</td>
<td>(0.148)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.625***</td>
<td>0.145***</td>
<td>0.039</td>
<td>0.167***</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.019)</td>
<td>(0.031)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Malawi</td>
<td>0.520***</td>
<td>0.048</td>
<td>-0.350***</td>
<td>0.189</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.089)</td>
<td>(0.123)</td>
<td>(0.134)</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.737***</td>
<td>0.212***</td>
<td>0.028</td>
<td>0.291***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.022)</td>
<td>(0.044)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Tanzania</td>
<td>0.666***</td>
<td>0.112***</td>
<td>0.101**</td>
<td>0.213***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.030)</td>
<td>(0.045)</td>
<td>(0.043)</td>
</tr>
</tbody>
</table>

- Individual FE: No, Yes
- Year FE: No, Yes
- Sample: Full, Start Urban, Start Rural

Note: This table presents the estimated coefficients of urban dummy variables from regressions of log consumption per adult on urban dummies and other covariates in the six countries. Column (1) presents the cross-sectional estimates, with no other controls. Column (2) adds year and individual fixed effects, plus quadratic controls for age and household size. Column (3) has year and individual fixed effects, plus quadratic controls for age and household size, and restricts the sample to only those starting in an urban location. Column (4) is the same model as in column (3), but restricts the sample to only those starting from a rural location. Robust standard errors, clustered at the level of the wave 1 household, are in parenthesis. **p<.1, **p<.05, ***p<.01

(Lagakos, 2020)
Outline

Setting the scene

Basic migration framework
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Extensions

Migration module

Conclusion
Cost of living

- Migrating often means higher costs
  - Housing, food, transportation

- Important: real wage, not nominal wage, matters

- Wage gaps usually survive cost-of-living adjustment

- One specific cost of living (could also think of as a migration cost)
  - Cultural costs of migration: Indian migrants from places which eat a lot of rice pay a “caloric tax” to continue to eat expensive rice when move to wheat-heavy areas (Atkin, 2016)
Table 1: Rural-Urban Wage Gaps in India in 2004

<table>
<thead>
<tr>
<th>Sector</th>
<th>Wage (nominal)</th>
<th>PPP-adjusted (rural consumption)</th>
<th>PPP-adjusted (urban consumption)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>62.66</td>
<td>54.05</td>
<td>57.58</td>
</tr>
<tr>
<td>Rural</td>
<td>42.54</td>
<td>42.54</td>
<td>42.54</td>
</tr>
<tr>
<td>% gain</td>
<td>47.30</td>
<td>27.06</td>
<td>35.35</td>
</tr>
</tbody>
</table>

Source: National Sample Survey. Wages are measured as daily wages for individuals with less than primary education. PPP-adjustment is based on rural and urban consumption bundles, respectively, for those individuals.

Table from (Munshi and Rosenzweig, 2015)
Still substantial gaps after taking out living costs: Brazil

(Arrow shows 10-90 percentile range.
90/10 wage gap is 1.05 log points (285.8%).
Adjusted 90/10 wage gap is 0.53 log points (169.6%).

(Same data as (Morten and Oliveira, 2018))
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Amenities: compensating differential for lower wages?

- Cities may have negative amenities
  - Ed Glaeser’s “demons of density”: pollution, congestion, crime (Bryan et al., 2019)

- Evidence that e.g., pollution directly affects migration and labor supply decisions
  - Mexico: improved air quality increased hours of work (Hanna and Oliva, 2015)
  - China: skilled people more responsive to pollution than unskilled (Chen et al., 2022; Khanna et al., 2021)

- Gollin et al. (2017) find that most amenities in SSA are positively, not negatively, correlated with density
  - Suggests amenities may not help explain the positive wage premium in cities

- Some of the amenities may be local network effects
  - e.g., friends and family at home or in the destination
  - Kaivan will cover networks and migration in Lecture 3 (21 April)
Higher urban quality of life (broad amenities)

A BMI (body mass index) of less than 18.5 is a commonly used indicator of serious malnutrition. For example, someone who is 5'8" tall (172 centimeters) would have to weigh just 122 pounds (55 kilograms) to have a BMI of 18.5. In both countries, your chance of having such a low BMI would be about 50 percent higher in rural areas than in cities.

Of course, well-being depends on a host of other factors other than the few presented here, and some of these are harder to measure. A full accounting of urban-rural differences might also take into consideration the value (positive or negative) placed on the hustle and bustle of urban centers or the security of traditional kinship ties in rural villages. However, the observable differences are so large that it is hard to believe that rural-urban gaps are simply artifacts of inaccurate measurement. The real issue is how to interpret these gaps and whether policy should try to do anything about them.

In this essay, I first set the stage by offering some more systematic evidence on the size and prevalence of the urban-rural gap from a variety of recent data sources. I then discuss whether the urban-rural gap can be explained by sorting; after all, it is clearly the case that those in urban areas tend to have more education, and they are probably selected on other less observable abilities as well. In addition, I review an array of evidence on outcomes of worker migration and find that rural-to-urban migrants do typically obtain higher incomes, which suggests that the pre-migration

Table 1
Real Urban and Rural Living Standards in India and Nigeria

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent with finished floors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>70.4</td>
<td>40.3</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>88.1</td>
<td>60.8</td>
</tr>
<tr>
<td>Percent with toilet facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>89.5</td>
<td>45.9</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>84.6</td>
<td>67.5</td>
</tr>
<tr>
<td>Percent with electricity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>97.5</td>
<td>83.2</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>82.7</td>
<td>38.9</td>
</tr>
<tr>
<td>Percent owning a television</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>87.0</td>
<td>55.5</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>70.7</td>
<td>30.0</td>
</tr>
<tr>
<td>Under-five mortality (per 1,000 births)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>36</td>
<td>59</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>88</td>
<td>155</td>
</tr>
<tr>
<td>Percent with BMI below 18.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India:</td>
<td>15.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Nigeria:</td>
<td>9.6</td>
<td>14.4</td>
</tr>
</tbody>
</table>

Note: Compiled from the Demographic and Health Surveys, funded by the US Association for International Development and publicly available at https://dhsprogram.com/. The statistics are calculated in the most recent year available, which is most commonly 2018.

Table from (Lagakos, 2020). Also see (Gollin et al., 2017)
Outline

Setting the scene

Basic migration framework
- Wages
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- Amenities
  - Migration costs

Extensions

Migration module

Conclusion
Migration costs

- It may be costly to migrate
  - Financial: pay for bus ticket, upfront costs for accommodation, food etc.
  - Utility (psychic): miss being away from family and friends, familiar culture

- Some specific examples
  - Road building in Brazil: (Morten and Oliveira, 2018)
  - Physical barriers on the US-Mex border: (Allen et al., 2019)
  - China: Hukou migration restrictions - have access to public goods (e.g., health, education) only if live where registered. Moving to urban area without registration means can’t access public goods (Tombe and Zhu, 2019)

- Psychic (utility) costs of migration are also estimated to be large
  - Essentially, residual costs that we can’t otherwise explain – see choice experiments in (Lagakos et al., 2018)
Building new roads in Brazil ...

- Roads constructed to connect Brasilia with rest of country

(Morten and Oliveira, 2018)
... reduced migration costs, increasing migration

(Morten and Oliveira, 2018)
Building walls on the US/Mx border...

- Secure Fence Act (2006)
- 550 miles of fence built along US-Mx border
One hour drive from San Diego
.. also reduced relative migration

... but primarily displaced, not reduced, overall migration

(Allen et al., 2019)
Outline

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Conclusion
Several extensions to the baseline model I

- New economics of labor migration: (Stark and Bloom, 1985)
  - Not just individual person migrating: part of a family unit
  - e.g., India: poorer households engage in longer-distance marriages, perhaps to increase spatial diversification of family for insurance purposes (Rosenzweig and Stark, 1989)
  - Dean will cover remittances in Lecture 2 (April 14)

- Networks and informal insurance
  - People have insurance in villages, so while average income is low, variability (of consumption) may also be low
  - Permanent migration: (Banerjee and Newman, 1998; Munshi and Rosenzweig, 2016)
  - Temporary migration: (Morten, 2019; Meghir et al., 2020)
  - Kaivan will cover networks in Lecture 3 (April 21)

- Risk/uncertainty
  - Not just average income, but risk associated with it (Harris and Todaro, 1970)
Several extensions to the baseline model II

▶ Mushfiq will cover risk in lecture 4 (29 April)

▶ Imperfect property rights: if you may lose your land if you don’t farm it, then you have to stick around to keep it. Harder to migrate even seasonally.

▶ (Janvry et al., 2015): Study looks at impact of Mexican land certification program from 1993 to 2006; finds that households obtaining land certificates were subsequently 28% more likely to have a migrant member.
What would be the aggregate impacts of reducing migration frictions?

- As migrants leave their origins, do wages adjust?
- As migrants move to their destination, do wages adjust?
- What are the aggregate impacts of reducing migration frictions?
- Rich literature that uses models that help separate out migrant selection, general equilibrium effects, and undertake counterfactuals.
- One example: Bryan and Morten (2019) who find that reducing migration costs in Indonesia to US-levels would lead to approx. 7% GDP increase
Table 5: Output gain from reducing migration barriers

<table>
<thead>
<tr>
<th></th>
<th>(1) Mig costs</th>
<th>(2) Amenities</th>
<th>(3) Mig costs, amenities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>1.075</td>
<td>1.127</td>
<td>1.217</td>
</tr>
<tr>
<td>No selection</td>
<td>0.914</td>
<td>1.127</td>
<td>1.133</td>
</tr>
</tbody>
</table>

Notes: Table shows the output gain from removing the barrier completely. Data is 1995, 2011, 2012 for Indonesia. No selection recalculates the output gain shutting down the role for comparative advantage.
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Conclusion
Class 1: Internal migration

Featured speaker: Travis Baseler
(Rochester)
Class 2: International migration

Dean Yang (Michigan)

Featured speaker: Gaurav Khanna (UCSD)
Class 3: Networks

Kaivan Munshi (Yale)

Featured speakers:
Joshua Blumenstock (UC Berkeley)

María Esther Caballero (World Bank)
Class 4: Risk

Mushfiq Mobarak (Yale)

Featured speakers:
Marieke Kleemans (UIUC)

Maheshwor Shrestha (World Bank)
Class 5: Policy

David McKenzie (World Bank)

Featured speakers:
Tijan Bah (Navarra) and Caroline Theoharides (Amherst)
Outline

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Conclusion
Concluding thoughts

- Large wage gaps, even within countries

- Experimentally, see large returns to migration

- Open set of questions about what stops people doing this themselves
  - Complementary frictions in e.g., credit market?
  - Non-utility costs
  - Infrastructure costs
  - Network costs
  - Land market costs
  - Information failures

- Further set of questions: theoretical models, need to account for selection

- Will see more evidence on all these issues over next five weeks
Featured speaker: Information frictions

Featured speaker: Travis Baseler
(Rochester)
References II


