

# Part VI: Labor Mobility

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# Labor Mobility

- Most economic analysis of migration decisions view migration as a human capital investment
- Similar framework to school choice decision outlined earlier
  - Worker compares *NPV* of future income earned by staying in current location to *NPV* of future income earned in new location
  - Moving has some cost  $C$ 
    - Includes both explicit costs (e.g., moving costs, visa costs, etc) and implicit costs (e.g., psychic costs of stress, being away from family, etc)
    - One-time cost incurred at the time of migration

# Labor Mobility

- Wage in home country:  $w^H$
- Net present value of earnings:

$$NPV^H = \sum_{t=0}^T \frac{w_t^H}{(1+r)^t} = w_0^H + \frac{w_1^H}{(1+r)} + \frac{w_2^H}{(1+r)^2} + \dots + \frac{w_T^H}{(1+r)^T}$$

- Wage in foreign country:  $w^F$
- Net present value of earnings:

$$NPV^F = \sum_{t=0}^T \frac{w_t^F}{(1+r)^t} = w_0^F + \frac{w_1^F}{(1+r)} + \frac{w_2^F}{(1+r)^2} + \dots + \frac{w_T^F}{(1+r)^T}$$

# Labor Mobility

- Net gain to migration:

$$NPV^F - NPV^H - C$$

- Worker will choose to migrate if the net gain is positive:

$$\underbrace{NPV^F - NPV^H}_{\text{Marginal Benefit of migrating}} > \underbrace{C}_{\text{Marginal cost of migrating}}$$

- 1 Better economic opportunities in the destination country increases the net gains to migration  $\Rightarrow$  more likely to migrate (**Pull factors**)
- 2 Worse economic opportunities in the host country increases the net gains to migration  $\Rightarrow$  more likely to migrate (**Push factors**)
- 3 Increased migration costs lowers net gains to migration  $\Rightarrow$  less likely to migrate

## Application: Angelucci (2015)

- Migration and Financial Constraints: Evidence from Mexico
- Motivation: Cash transfer program in Mexico could potentially induce migration by relaxing financial constraints (either through a direct effect or by allowing for borrowing)
- Oportunidades is a conditional cash transfer program targeting poor Mexican households.
- 506 poor rural villages selected based on eligibility for Oportunidades.
- Randomization of transfers (at village level) for the first 18 months introduces exogenous variation needed to analyze program effects.

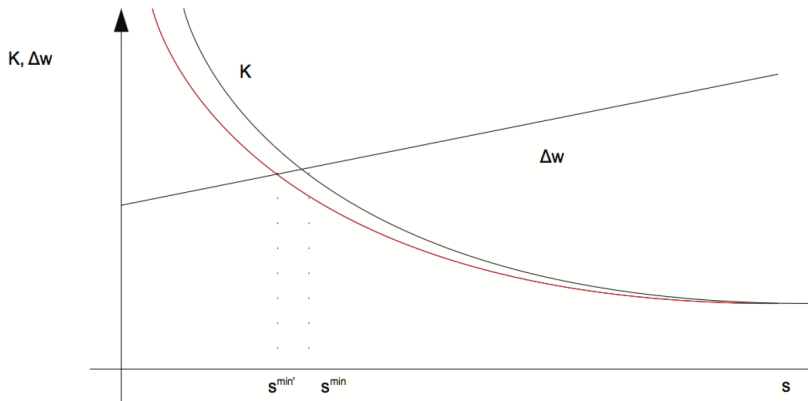
## Application: Angelucci (2015)

- Individuals with varying skills  $s$  and two locations: home ( $h$ ) or away ( $a$ ).
- Present value of lifetime earnings:  $w(s)^h$  and  $w(s)^a$ : Both increasing in  $s$ .
- Migration costs  $K(s)$  are decreasing in  $s$ .
- Individuals migrate if the net benefits are positive:

$$\underbrace{\Delta w}_{w(s)^a - w(s)^h} > K(s)$$

- $\Delta w$  increasing in  $s$

# Application: Angelucci (2015)





## Application: Angelucci (2015)

- Model implication: Lowering migration costs will induce more low-skill individuals to migrate
- Results:
  - Migration rates in treatment villages are significantly larger than that in control villages (50% increase).
  - Absolute migration rates remain low. Increases from .7% to 1.1% and the average treatment effect is .36%.
  - Transfer is mostly consumed and there is little evidence that trips are financed through dissaving.
  - Data on loans is used to show that entitlement to program transfers enhances household ability to obtain loans  $\Rightarrow$  greater ability to borrow is likely the mechanism through which the program increases propensity to migrate

# Migration

## Example

*Suppose that an individual just turned 18 years old and is choosing whether to migrate. If she migrates, she will earn a salary of \$45,000 each year until she retires at age 60. Assume she gets paid in one lump-sum at the end of each year. She will pay a one-time migration cost of \$38,000 at the time of migration. If she decides to stay, she will earn \$34,000 each year. Assume her discount rate is 5%.*

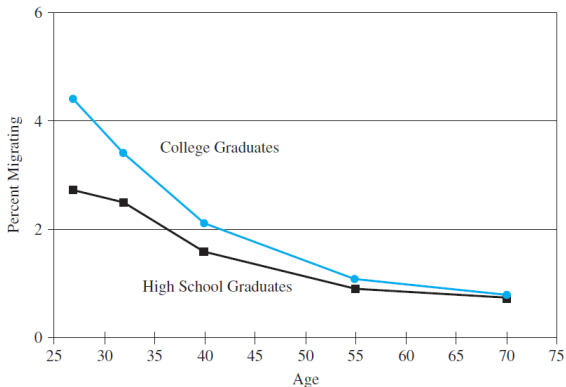
- a) What is the net present value of her earnings if she chooses to migrate?*
- b) What is the net present value of her earnings if she chooses to stay?*
- c) What is her optimal decision?*

# Labor Mobility in the US

- Demographic characteristics also seem to play a large role in migration decisions

**FIGURE 8-1**  
Probability  
of Migrating  
across State  
Lines in 2005  
to 2006, by  
Age and  
Educational  
Attainment

Source: U.S. Bureau of the Census, "Table 6. General Mobility of Persons 25 Years and Over, by Region, Age, and Educational Attainment," [www.census.gov/population/www/socdemo/migrate/cps2006.html](http://www.census.gov/population/www/socdemo/migrate/cps2006.html).



# Labor Mobility in the US

- Return migration is very common. Why?
  - 1 Uncertainty in the migration decision  $\Rightarrow$  lower than expected earnings, bad economic conditions, etc
  - 2 Might actually maximize present value of lifetime earnings  $\Rightarrow$  accumulate HC in one area, returns in other areas may increase as well
- Question: If regional wage gaps are persistent, why isn't there more migration?
  - High migration costs very likely the inhibiting factor

# Family Migration

- So far we've modeled the migration decision as an individual choice
- Individual moves as long as  $NPV^F - NPV^H - C > 0$
- However, migration decisions are often not made at the individual level, but at the household level
- Similar decision rule: Only migrate if the whole family will be better off

# Family Migration

- Set up:
  - $\Delta PV^H$ : Change present value of husband's earnings stream if he were to move (includes migration costs)
  - $\Delta PV^W$ : Change present value of wife's earnings stream if she were to move (includes migration costs)
- Individually, each would migrate if  $\Delta PV^i > 0$
- As a family unit, migrate if and only if

$$\Delta PV^H + \Delta PV^W > 0$$

# Family Migration

- Optimal decision for the family is not necessarily the same as the optimal choice for an individual (see graph)
- Tied stayer: Family member who stays because net family gains are negative, even though individual gains would be positive
- Tied mover: Family member who moves because net family gains are positive, even though individual gains would be negative

- Borjas 8.1-8.3



# Economic Assimilation

- Question: How do migrants perform in the U.S. labor market?
- Typical equation estimated (in cross-section):

$$w_i = \beta X_i + \delta LOS_i + \varepsilon_i$$

- $w_i$ : Wages earned by individual  $i$
- $LOS$ : Length of stay (Age at survey minus age at migration)
- $X$ : Observed characteristics (age, experience, schooling, etc.)
- $\delta$ : Captures how earnings grow with the assimilation process

# Economic Assimilation

- Chiswick (1978): *The Effect of Americanization on the Earnings of Foreign-born Men*
- Early study that used U.S. Census (cross-section) to trace the age-earnings profiles of immigrants and compared it to that of natives
  - Cross-section: One-time snapshot of current status
  - Allows for comparison of current earnings of new migrants to current earnings of previous migrants to current earnings of native workers

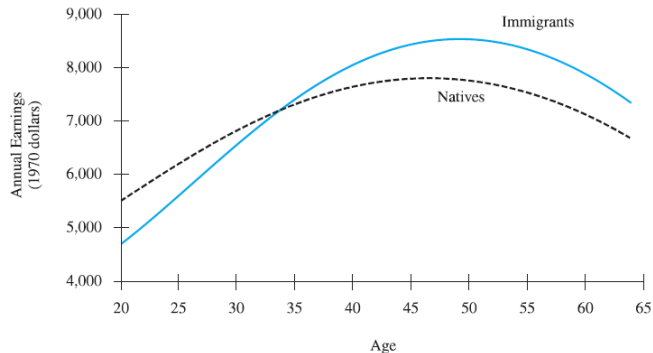
# Economic Assimilation

- Why might the wages of natives and foreign workers be different?
  - Recent arrivals have less knowledge about customs, language, job opportunities, and less country/firm-specific training
  - As time passes, migrants attain more knowledge, skills, and other human capital that allows their wages to grow
  - Over time, economic assimilation occurs  $\Rightarrow$  migrant earnings begin to converge to the earnings of natives
    - Only happens if age-earnings profile for migrants is steeper than that of natives
- Both the initial earnings deficiency and steepness of earnings profile depend on similarity of the home and foreign country

# Economic Assimilation

**FIGURE 8-4**  
**The Age-Earnings Profiles of Immigrant and Native Men in the Cross Section**

Source: Barry R. Chiswick, "The Effect of Americanization on the Earnings of Foreign-Born Men," *Journal of Political Economy* 86 (October 1978): Table 2, Column 3.



# Economic Assimilation

- Observe both an earnings deficiency for recent migrants and a steeper age-earnings profile
- Why do we see that migrant earnings overtake that of natives?
  - Possibly a “positive selection” story: Individuals that choose to migrate are more skilled, motivated, etc. compared to those that choose to not migrate
  - More on self-selection later

# Economic Assimilation

- Many other cross-section studies also found a significant and positive effect of length of stay on wages ( $\delta > 0$ )
- Issue with cross-sectional studies: We are comparing the earnings of individuals who migrated years ago to those who migrated more recently
  - Assumption that economic experience of newer migrants will be identical to that of previous cohorts is likely not reasonable
  - Migrant cohorts may differ in their observable and unobservable characteristics
- As a result, estimates of  $\delta$  are likely biased
  - Upward bias: Average “quality” of cohorts decreased over time
  - Downward bias: Average “quality” increased over time

# Economic Assimilation

- To illustrative, consider the following example:
  - 1960 cohort: Highly productive, age-earnings profile above that of natives
  - 1980 cohort: Equally productive, age-earnings profile equivalent to that of natives
  - 2000 cohort: Lowly productive, age-earnings profile below that of natives
  - For simplicity, assume there is no wage convergence (age-earnings profiles are parallel) and all migrants arrived at age 20
- What happens if we use 2000 Census data to compare earnings of migrants and natives?

# Economic Assimilation

- Borjas (1985): *Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants*
- Uses two waves of census data to study earnings growth of specific immigrant cohorts
- Empirical model:

$$w_{it} = \beta X_{it} + \delta LOS_{it} + \phi_t + C_i + \varepsilon_{it}$$

- $\phi$ : Time-trend capturing economic fluctuations
- $C$ : Captures cohort-specific unobserved heterogeneity

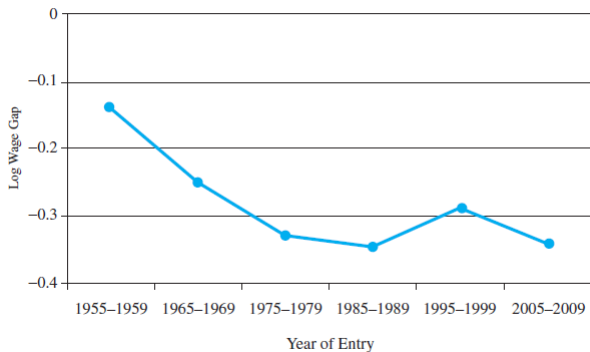


# Economic Assimilation

- Finding: Within-cohort wage growth is significantly smaller than what was predicted by cross-sectional studies
- Likely driver: Declining quality of migrant cohorts admitted to the U.S.
- Can also be caused by selective return migration

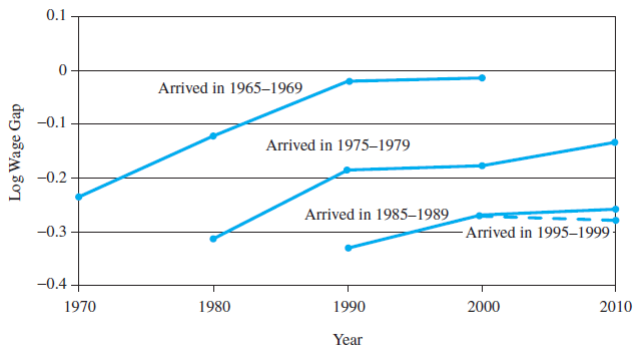
# Economic Assimilation

Source: *Immigration Economics*, Cambridge, MA: Harvard University Press, 2014, p. 46.



# Economic Assimilation

Source: George J. Borjas, *Immigration Economics*, Cambridge, MA: Harvard University Press, 2014, p. 46.



- Borjas 8.4-8.5

# Self-Selection

- Much variation in migrant labor market performance depending on country of origin
- Likely driven by degree of skill transferability between home and host country

**TABLE 8-2**  
Wages of  
Immigrant  
Men in 1990,  
by Country  
of Birth

Source: George J. Borjas, "The Economics of Immigration," *Journal of Economic Literature* 32 (December 1994): 1686.

| Country of Birth   | Percent Wage Differential between Immigrants and Natives |
|--------------------|--|
| Europe             |  |
| Germany            | 24.5   |
| Portugal           | -3.1   |
| United Kingdom     | 37.2   |
| Asia               |  |
| India              | 17.6   |
| Korea              | -12.0  |
| Vietnam            | -18.9  |
| Americas           |  |
| Canada             | 24.0   |
| Dominican Republic | -29.2  |
| Mexico             | -39.5  |
| Africa             |  |
| Egypt              | 12.2   |
| Ethiopia           | -21.0  |
| Nigeria            | -18.9  |

# Self-Selection

- Migrants are not a randomly selected subset of the home country's population
- Question: Which subset of workers in a given source country finds it worthwhile to migrate to the United States?
  - What factors drive this “self-selection” into migration?

# Self-Selection

Table 2: Comparison of Adult Migrants and Non-Migrants<sup>a</sup>

|                                   | Non-Migrants<br>( <i>N</i> = 22,864) | Migrants<br>( <i>N</i> = 762) | Mean-Comparison<br>t-test p-values <sup>b</sup> |
|-----------------------------------|--------------------------------------|-------------------------------|---|
| Age                               | 38.20<br>(17.51)                     | 28.56<br>(13.26)              | .0000   |
| Male                              | .46<br>(.50)                         | .62<br>(.49)                  | .0000   |
| Household Size                    | 4.54<br>(2.03)                       | 5.10<br>(2.21)                | .0000   |
| Number of Children                | 1.51<br>(1.47)                       | 1.94<br>(1.71)                | .0000   |
| Married <sup>c</sup>              | .53<br>(.50)                         | .43<br>(.49)                  | .0000   |
| Education <sup>c</sup>            | 2.71<br>(1.16)                       | 2.78<br>(.97)                 | .1023   |
| Household Log Income <sup>d</sup> | 10.46<br>(1.21)                      | 10.26<br>(1.14)               | .0000   |
| Rural                             | .39<br>(.50)                         | .57<br>(.49)                  | .0000   |
| Water (%)                         | 86.57<br>(22.92)                     | 83.98<br>(28.74)              | .0142   |

<sup>a</sup> Adult migrants are classified as those aged greater than 14 at the time of the first survey.

<sup>b</sup> The p-values are from a t-test comparison of means between migrant and non-migrant individuals.

<sup>c</sup> Calculated for individuals older than 16.

<sup>d</sup> Only includes households with available income data.

Figure: MXFLS Migration Stats

# Self-Selection

- Widely used model of self-selection: The Roy model (Roy 1951)
- Model widely applicable to wide set of situations where self-selection is present (e.g., migration, college choice, etc)
- Applied to migration context in seminal paper by Borjas (1987)
- Goal: Determine what factors drive positive or negative selection in terms of immigrant flows
- Positive selection: Immigrants have above-average skills relative to home country population
- Negative selection: Immigrants have below-average skills relative to home country population



# Self-Selection

- Assumptions:
  - Earnings in home and host country only depend on skill level  $s$
  - Skills are perfectly transferable across countries
- As always, each worker makes migration decision by comparing earnings in the home and host country (net of migration costs)
- For now, assume migration costs are zero

# Self-Selection

- Case 1: Rate of return to skills is greater in the host country
- Translation: Payoff to an an additional unit of “skill” (i.e., human capital) is higher in the host country vs the home country
- Result: Wage-skills line is steeper for the host country
- Implications for selection?

# Self-Selection

- Case 2: Rate of return to skills is greater in the home country
- Translation: Payoff to an an additional unit of “skill” (i.e., human capital) is higher in the home country vs the host country
- Result: Wage-skills line is steeper for the home country
- Implications for selection?

# Self-Selection

- Key implication: The relative payoff for skills across countries is what drives the composition of the immigrant workforce
- Evidence tends to back this: Negative correlation between home country's level of income inequality and earnings of migrants in the US

# Self-Selection

- What happens if we change “base level” of income in either the home or host country?
- Result: Selection process remains the same!
- However, magnitude of migrant flows will change

# Self-Selection

- What about including migration costs?
- For simplicity, assume migration costs are constant regardless of skill level (reasonable?)
- Migration costs essentially act to shift down the wage-skills line in the host country
- Acts just like a decrease in the income level in the host country (no change in selection process, but will change magnitude of migrant flow)

# Self-Selection

- Thus, parallel shifts of wage-skill lines (of either country) do not change direction of selection
- Only changes in returns to skills (in either country) will (potentially) change the direction of the selection process

- Borjas 8.6



## Case 1: Perfect Substitutes

- We've already seen how immigrants can adversely impact the surplus of native workers with similar skills
- Additionally, we saw that perfect substitute immigration increased the surplus of native firms by driving wages down
- Overall, the net impact on total surplus was positive

## Case 1: Perfect Substitutes

- Now, we will focus on analyzing the magnitude of gains from immigration in the host country
- What factors impact this gain?
- Do these effects last in the long run?

## Case 1: Perfect Substitutes

- Consider the case of perfect substitutes if labor is supplied inelastically
- Effect of  $M$  immigrants on employment and wages?
  - $E^* \uparrow$
  - $w^* \downarrow$
- Effect on surplus?
  - $\downarrow$  Native WS
  - $\uparrow$  Native FS
  - $\uparrow$  Total surplus
- Increase in national income accruing to natives if called the **immigration surplus**

## Case 1: Perfect Substitutes

- Immigration surplus arises because the wage rate equals the productivity of the *last* immigrant hired
- Essentially, immigrants contribute at least as much as they are paid
- What factors impact the size of the surplus?
  - Number of immigrants
  - Elasticity of labor demand curve

## Case 1: Perfect Substitutes

- How much does immigration add to national income?

$$\frac{\text{Immigration Surplus}}{\text{National Income}} = \frac{1}{2} \times \% \Delta w \times \% \Delta E \times (\text{labor's share of income})$$

- Note that the estimate of immigration surplus is for the short-run
- In the long-run, return to capital and wage rate are not affected by immigration
- Thus, in long-run the immigration surplus is zero

## Case 2: Complements

- What about the case of complements?
- Migration of high-skill individuals may generate human capital externalities or spillovers

## Case 2: Complements

- In the case of complements, the  $VMP_E$  of native workers increases  $\rightarrow$  labor demand shifts right
- Assume spillover effect is greater than labor supply effect  $\rightarrow$  labor demand increases more than labor supply
- Effect on employment and wages?
  - $\uparrow E^*$
  - $\uparrow w^*$
- Effect on surplus?
  - $\uparrow$  Native WS
  - $\uparrow$  Native FS

- Borjas 8.7-8.8