Lectures 11+12 outline:
Wage Distribution, Sorting, and Mobility

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Examples of wage distributions

Pareto’s observation: log-log plot of income density is a line
→ \( F (w) = 1 - (w/w_0)^{-\alpha} \), \( \alpha > 1 \)
- generating processes, e.g. Champernownn (EJ 1953)

Scale-of-operations / span-of-control effects
- Mayer (REStat 1960), e.g. Lucas (BellJE 1978)

Complementarity effects
- Matching models, e.g. assignment models in Sattinger (JEL 1992)
- Team production, e.g. Kremer’s O-ring theory (QJE 1993)

Interaction with learning models (within-cohort skewness)

Uncertainty, risk preferences

Selection effects [Roy model in next lecture]
Many-sided heterogeneity. e.g. worker ability $a$, firm productivity $b$

Production function at the level of a "match" $y(a, b)$
- Output produced by matching in fixed proportions (1:1, 1:n, ...)

Economic question: equilibrium matching and incomes, distributional spillovers

There is no equalization for the prices of embedded factors

$y_{ab} > 0 \rightarrow$ positive assortative matching $\rightarrow$ skewing incomes

Ricardo's land rent model a special case where one side homogeneous
Trends in wage distributions

- Stylized facts across countries. Most up-to-date survey in Roine and Waldenström (2015)
- Skewness U-curves over time, esp. in the Anglosphere
  - Driven by earnings not capital income
  - Driven by top vs rest, rather than middle vs bottom.
    - US top 1% share from 10% to 20% in 40 years
  - Is Continental Europe different or at an earlier phase?
- Top 1% inequality vs within 99% inequality
  Earnings gap between median college and HS-only households grew 4 times more (28 k$) than their share loss of 99% to top 1%
  - See Science Magazine special section, No. 6186 (2014). Autor, etc.
- Returns to education over time
- Polarization
Why are earnings distributions getting more skewed?  
(In OECD since 1970s) Some arguments

- Supply and demand: "the race between education and technology"
  - slowdown in supply of useful skills
  - acceleration of demand for top skills
- Technological change [Three lectures from now ] or composition effects?
- Lower transport costs $\rightarrow$ trade and offshoring [Two lectures from now ]
- Performance pay. Lemieux, MacLeod and Parent (QJE 2009)
- Taxation, norms. -Piketty
- Institutions, e.g. U.S. de-unionization
Roy Model

(Roy 1951, Borjas 1987)

- Optimal self-selection to two occupations
- Bivariate normal distribution of latent (log) wages $x, y$
- Potential outcomes $\leftrightarrow$ "selection biases"

$$
\begin{bmatrix}
  x \\
  y
\end{bmatrix}
\sim N
\left(
\begin{bmatrix}
  \mu_x \\
  \mu_y
\end{bmatrix},
\begin{bmatrix}
  \sigma^2_x & \rho \sigma_x \sigma_y \\
  \rho \sigma_x \sigma_y & \sigma^2_y
\end{bmatrix}
\right)
$$

"selection biases" solved in terms of bivariate parameters and std normal CDF $\Phi$ and PDF $\phi$ because

$$
E[u|u > z] = \frac{\phi(z)}{1 - \Phi(z)}
$$
Intergenerational mobility

- IG mobility $y_{child} = \alpha + \beta y_{parent} + \varepsilon$
  - measurement: lifetime vs snapshot
- Log-income mobility vs quantile mobility
  - copula vs marginal distributions
- Adoptee studies - e.g. Björklund, Lindahl and Plug (QJE 2006)
- Surname-dynastic approach - Gregory Clark
- The Great Gatsby curve? Corak (JEP 2013)
- Trends in IG mobility not clear (anymore)
Becker-Tomes model

- Parent-child transmission (altruistic motive)
  - exogenous human capital endowment
  - optimal investment to human capital
  - borrowing possible
- Extension to imperfect borrowing
- Outcome: steady state IG correlations
  - parents income matters for earnings conditional ability
  - helps interpret IG income regressions
Other mobilities

- Within-lifetime income mobility
  - Kopczuk et al (QJE 2010)
- Mobility between occupations
  - Groes, Kircher, and Manovskii (RES forthcoming).