Organization and Inequality in a Knowledge Economy

- Agents produce 1 unit of output if solve any problems that come up.

- z knowledge, map z go $q(z)$ so that can solve problems q (percent) of time.

- α ability, has distribution

- $c(\alpha, t) = t - \alpha$, learning cost per unit of problems one can solve.

- h units of time to communicate problems, paid for in time of manager

Special Case: Autarky

$$\max_q q - c(\alpha, t)z(q)$$

- Gets interesting when have hierarchy. Suppose have two layers, q_0 production workers.

- n_0 production workers, one manager at layer 0

- $n_0(1 - q_0)$ problems addressed by manager

- Takes $n_0(1 - q_0)h$ units of time

- So if pick q_0 and q_1, then output is

$$q_1 n_0 - c(\alpha, t) z(q_1) - n_0 c(\alpha, t) z(q_0)$$

- Set up as a profit maximization problem

$$
\begin{aligned}
\Pi(L) &= \max_{\{q_l, n_l, \alpha_l\}_{l=1}^{L}} q_L n_0 - \sum_{l=1}^{L} n_l \left[c(\alpha_l, t) z(q_l) + w(\alpha_l) \right] \\
h n_0 (1 - q_{L-1}) &= n_L = 1 \\
h n_0 (1 - q_{L-2}) &= n_{L-1} \\
&\ldots \\
h n_0 (1 - q_0) &= n_1
\end{aligned}
$$

- Of course at optimum

$$w'(\alpha) = -c'(\alpha; t) z(q)$$

- Definition of equilibrium: what you would expect

- Characterization of Competitive Equilibrium =Social Planner's Solution

  - Assortative matching: hiring better workers enables higher skilled indivudals solve harder problems. See obvious gains from trade.

  - Equilibrium knowledge function $q(\alpha)$ is increasing.

  - Relative to autarky, organization increases knowledge of entrepreneurs (L guy) and decreases the knowledge of production workers. So marginal value of worker skill decreases for pdouction workers and increases for entrepreneurs.

- Comparative statics with h and t.

Antras, Garicano, and Rossi Hansberg

Offshoring in a Knowledge Economy

- Take setup and put it in two country model
- Skill exogenous
- Assume q uniform in each country, but different distributions
- Drive analytic characterization of equilibrium
- Compare integration with no integration

Can imagine kinds of results of integration

- Mass of southern production workers, northern managers increases

- Matching?
  - southern workers who were workers get better match
  - soutern who stay managers get worse workers
  - southern managers who become workers get matched with nothern managers

- Best workers in the south work for northern managers and get higher wages than southern workers employed by southern managers

- Globalization increases within-worker inequality in the South. Increases the marginal return to skill at all skill levels.