Abstract

Introduction: Overeducation Concerns

- Overeducation: individuals have more education than it is necessary for their occupations.
  - A worker with a bachelor’s degree works as a Starbucks barista.
- Duncan and Hoffman’s Specification
  \[ \log(\frac{w_i}{a}) = \alpha' S_i + \alpha' S_i^2 + \alpha' S_i^3 + X_i \beta + e_i \]
  \[ S_i = 4 \text{ years of required school by occupation} \]
  \[ S_i = 3 \text{ years of underschooling} \]
  \[ S_i = 5 \text{ years of overschooling} \]
- Meta analysis of 151 studies (32 for North America, 94 for Europe, 18 for Asia) finds:
  - A worker with a bachelor's degree works as a Starbucks barista.
  - Within occupation schooling dispersion, heterogeneous return to human capital.
  - Cognitive Ability vs. Schooling: Substitutes or Complements?
  - Does the within occupation schooling difference imply that some individuals’ education investment are sub-optimal? No
  - What can be learned about a worker’s human capital function?
  - What can we learn about the labor market frictions, or other competing labor market theories?
  - Information Friction vs. Search Friction? Human Capital vs. Signaling?

Research Questions

- Are the ‘observed within occupation schooling dispersion’ and lower returns to the ‘surplus’ schooling evidences of skill mismatch and inefficient allocation? No
- What can be learned about a worker’s human capital function?
- Cognitive Ability vs. Schooling: Substitutes or Complements?
- What can we learn about the labor market frictions, or other competing labor market theories?
- Information Friction vs. Search Friction? Human Capital vs. Signaling?

Model: Static & Full Information

- A finite number of occupations, indexed by \( k \in \{1, 2, \ldots, K\} \). Occupations are ranked in the order of increasing output prices.
  - \( P_1 < P_2 < \cdots < P_K \)
- Workers differ by human capital \( H_i = A_j + S_i \). Workers sort into different occupations according to the single-dimension human capital index \( H \).
- An occupation wants to obtain a fixed profit \( \Pi \) to any worker who is willing to take this contract.
  \[ w_i(H_i) = P_i H_i - \Pi_i \]
- High ranked occupations extract higher profits.
  \[ \Pi_1 > \Pi_2 > \cdots > \Pi_K \]
- Occupation Sorting Rule: Worker \( H_i \) sort into occupation \( k \) if
  \[ B_k < H_i \leq B_{k+1} \]
- Cost of schooling is \( C(S, A) = \frac{S^2}{2A} \)

Static Model Implications

1. Proposition 1: More able workers sort into higher ranked occupations.
2. Proposition 2: Conditional on occupation choice \( k \), and labor market experience \( t \), overeducated workers on average have lower ability.

Diagram 1: Illustration of Vertical Sorting

Calibration & Simulation

- Proposition 3: Overeducation is more persistent for low ability workers.
- Define: \( P^* = \text{Prob}(H_{i_{k+1}} > B_{k+1}(F_t)) \)
- \( P^* \) is the probability that an overeducated individual \( i \) switches up to higher rank occupation \( \rightarrow \) out of overeducation.
  \[ \frac{\partial P^*}{\partial A} < 0 \]
  Overeducation Spells: \( \beta_k + \beta_A AFQT + X \)

Test Dynamic Model Predictions

- Proposition 4: The hazard rate out of overeducation (undereducation) is decreasing in labor market experience \( t \).
  \[ P = \text{Prob}(H_{i_{k+1}} \leq B_{k+1}(F_t)) \]
  \[ \frac{\partial P}{\partial \frac{t}{A}} < 0 \]

Conclusions

1. Low ability workers acquire more schooling to compensate for their innate abilities \( \rightarrow \) Rationalize the observed within occupation schooling dispersion without the implication of sub optimal educational investment.
2. Had those low ability workers not obtained enough schooling, they would end up in lower ranked occupations. \( \rightarrow \) Worse off.
3. The conventional wage specification in the literature suffers from specification errors \( \rightarrow \) cannot be interpreted as evidence for misallocation or against the human capital model.

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