A Network Approach to Academic Inclination and Placement

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Abstract

- The variation and randomness in placements of Econ Job Market Candidates (JMCs) highlight the **strategic interactions**.
- Within the same program, a JMC first encounters the competitions against the program "stars" in the same research subfield(s) according to department's **placement policy**.
- A JMC's dilemma: pursuing academic positions or exiting for industry jobs (i.e., actions).
- Apply structures in mechanism design and network models to capture this **candidate–candidate peer effects** and reputational spillovers influencing academic inclination and placement.

KEYWORDS: Peer effect, strategic interaction, externalities, job matching

Illustrative Scenarios

EXAMPLE 1. Job Market Candidates observe public or private information of their peers and decide whether to exert effort for academic positions in the same subfield (**strategic interaction**).

EXAMPLE 2. Job Market Candidates in the same subfield discuss coursework and research together. Their academic choices and pathways tend to converge to some shared portfolio (**homophily**).

EXAMPLE 3. The more JMCs placed at TT positions, the better reputation a department holds. This additional reputation/reward benefits both JMCs and the department (**externality**).

EXAMPLE 4. The placement policy of a department affects JMCs action. If promoting for the overall cohort, the actions' of JMCs are more likely strategic complements. If focusing on "star," then more likely to be strategic substitutions **(intervention)**.

Framework: The Job Market Decision Problem

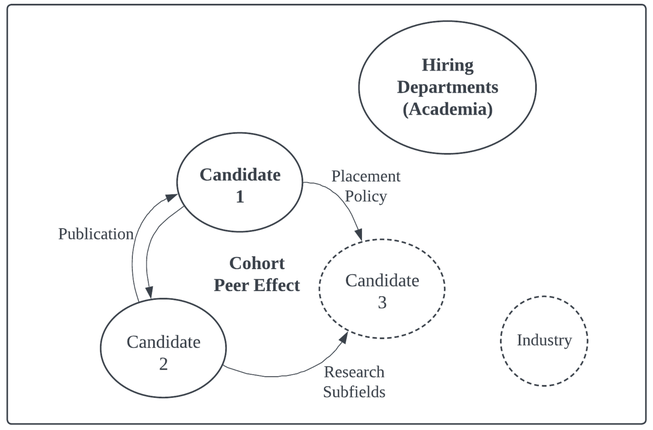

FIGURE 1. Strategic interactions within the Econ Job Market

"What is the incentive for a middle/bottom-ranked candidate to exert effort competing against the program 'stars' for academic positions?"

Overview/Research Question

1. **How do JMCs first interact with peers within-program** to decide whether to go for academic track or industry jobs?
2. This career choice (i.e., action)/payoffs can be peer- and path-dependent providing specific program cohorts, past placement policy, and exogenous market conditions (strategic interaction).
3. An (implicit) ranking mechanism within a program can obviously refrain middle-ranked JMC from going for academia (e.g., signals in the reference letter, expected competition against the program "stars," crowded subfield).
4. **How likely would the department's placement policy affect JMCs' academic inclination and placement?**

Modeling Attempt

$$u_i(\mathbf{c}, \mathbf{W}, M, S) = \underbrace{c_i\left(b_i + (S\sum_{j\in\mathcal{N}} w_{ij}c_j)\right)}_{\text{gain from academic position}} - \underbrace{\frac{1}{2}c_i^2}_{\text{cost of action}} - \underbrace{\bar{r}c_i}_{\text{penalty}} + \underbrace{P_i(c_{-i}, \mathbf{W}, M, S)}_{\text{reputation rewards}}$$

1. Agents:
   finite JMCs $I = \{1, \dots, i\}$ in a given department.
2. Actions:
   a) JMC: effort $c_i \in [0,1]$ academia or industry
   b) Dept: $S = \{s_{overall}, s_{star}\}$, no cost
3. Payoff**:** if choosing academia, a JMC suffers from wage discrepancy $\bar{r}$ (reservation wage) and cost of effort but collectively gain positive reputation rewards.
4. Cohort network: each effort/action decisions creates positive or negative spillovers depending on the placement policy S for strategic interactions.
5. Timing: the department chooses pure S focusing on overall cohort placement or only on "stars." JMCs update their academic inclinations/effort level accordingly.

Selected Bibliography | Econ Job Market: Coles et al. (2010), Conley and Önder (2014), Oyer (2006). Network: Ballester et al. (2006), Galeotti et al. (2020), Jackson et al. (2017). Search: Chade and Smith (2006), Chade and Smith (2014), Epple et al. (2006), Gonzalez and Shi (2010), Peters (2010). General: Fudenberg and Tirole (1991)

Future Directions

*"When there exists a short-run negative shock toward (econ) job market (M<0), individual characteristics and network may weigh **more** for academic placement outcomes than tiers of the program."*

Data Exploration: Market

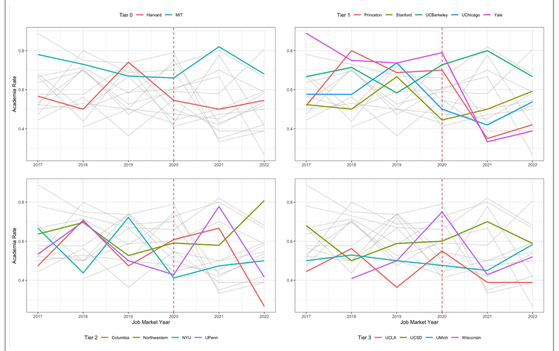

FIGURE 2: Academic placement by tiers 2018-2020

Note: The academia rate denotes the ratio of academic placement over entire cohort within each program. The red dashed line symbols the exogenous shock of the COVID (2019-2020). The actual first COVID-affected Job Market Year was 2020-21 due to the lag effect. The Tier-0 and Tier-2 programs exhibited similar increasing trend post 2020, while the academia rate of Tier-3 resembled that of Tier-1 indistinguishable after the COVID.

Acknowledgement

THIS PROPOSAL THANKS the direct guidance of Prof. Matteo Camboni, suggestions from Prof. Lones Smith, and great support from the Directed Study Program and *Equilibrium* journal, Department of Economics, University of Wisconsin–Madison. I gratefully acknowledge helpful comments from Prof. Christopher Saldaña and SNA Working Group, CALL-ECL Project, the Wisconsin Center for Education Research.