Discouragement Traps

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Abstract

I introduce a simple measure of the extent of discouragement among potential job seekers—the discouragement rate—and show that this measure rose sharply during the Great Recession and has not recovered to its pre-crisis level. To explain this, I propose a theory in which fears of prolonged joblessness can become self-fulfilling, drawing the economy into a high-discouragement, low-participation state: a discouragement trap. Intuitively, when job losers fear it will be difficult to find work if they remain jobless for too long, they search aggressively, crowding out those at the back of the queue, inducing labor force withdrawal, and rationalizing fears of prolonged joblessness. This mechanism emerges naturally from a model of ranking in the spirit of Blanchard and Diamond (1994) when workers make participation decisions and submit multiple applications. The model gives rise to multiple Pareto-ranked steady states with significantly different rates of labor force participation but similar, and in some cases identical, unemployment rates. The high-participation state is saddle-point stable, while the (Pareto-inferior) low-participation state is a sink—a discouragement trap. I study global dynamics, conditions under which an economy is susceptible to such traps, and implications for policy.

Introduction

This paper introduces a measure of the extent of discouragement in the economy—the discouragement rate—and proposes a simple theory of multiple equilibria to help explain its dynamics.

The Discouragement Rate

- *Question*: What share of potential job seekers has given up searching?
- *Idea*: Partition non-employed workers:
  1. Searched (U)
  2. Didn't search + could have (D)
  3. Didn't search + could not have

  } Potential job seekers
- *Concept:* Discouragement Rate (d) ⟶ $d \equiv \frac{D}{U+D} \overset{\text{Pre-1994}}{=} \frac{u_4 - u_3}{u_4(1-u_3)}$

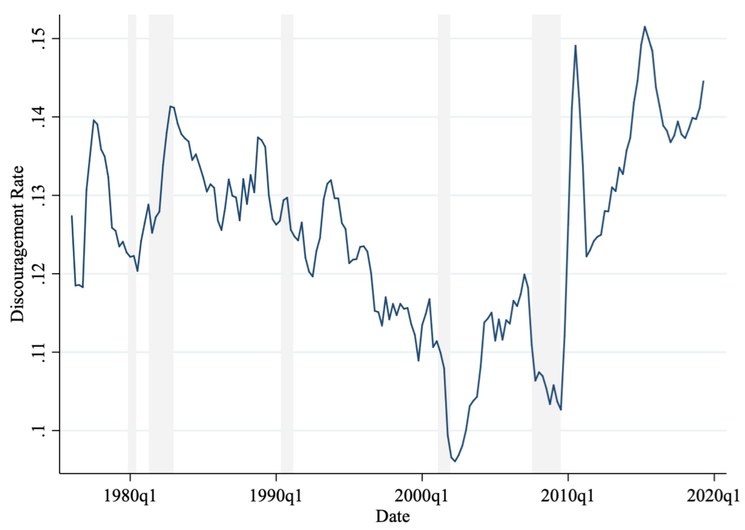

Figure 1: Discouragement Rate: 1976-present (CPS)

Theory

I propose a simple theory in which fears of prolonged joblessness give rise to strategic complementarities in search and lead to multiple equilibria.

Overview

- Discrete-time variation on Blanchard and Diamond (1994)
- *Ex-ante* identical workers:
  - Employed (e_t)
  - Short-term jobless (s_t)
  - Long-term jobless (l_t)
    ↪ Training cost: Ψ

  ⟶ Search effort decision:
  - Extensive margin: Participation
  - Intensive margin: # of applications ($a \in \mathbb{N}$)

Labor Market

The labor market is central to the mechanism. Figure 2 depicts the labor market in a typical period.

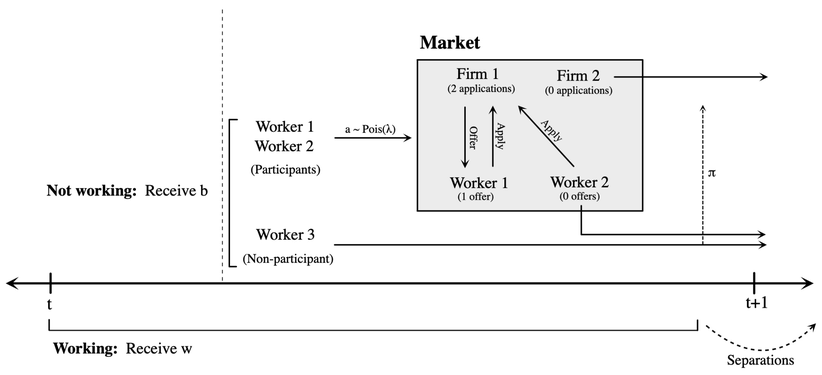

Figure 2: Timing of events

Details and Notation
- Search: Random
- Wages: Nash bargaining
- Tightness: $\theta \equiv v/u$
- Search intensity: $\lambda \in \mathbb{R}^+$
- Applications/worker: $a \sim Pois(\lambda)$
- Applications/firm: $m \sim Pois(\lambda/\theta)$
- Meeting rate (non-participants): π

Key assumptions:
1. Participants can send multiple applications.
2. Non-participants are residual claimants to vacancies.
3. Firms can only make one offer per period.

Equilibrium

I conjecture that there exists a ranking-sorting equilibrium in which (i) all short-term jobless choose to participate in the labor market, (ii) all long-term jobless choose *not* to participate in the labor market, and (iii) firms receiving applications from multiple workers choose to make an offer to the worker with the shortest duration.

Value functions:

Employment: $$V_t^e = w_t + \delta V_{t+1}^e \quad (1)$$

Non-employment (ST): $$V_t^s = \max_{\lambda_t} \left\{ b_t - \phi(\lambda_t) + \delta \left[p_t^s(\lambda_t) V_{t+1}^e + (1 - p_t^s(\lambda_t)) V_{t+1}^l \right] \right\} \quad (2)$$

Non-employment (LT): $$V_t^l = \eta b_t + \delta \left[\pi p_t^l V_{t+1}^e + (1 - \pi p_t^l) V_{t+1}^l \right] \quad (3)$$

Vacancy: $$V_t^v = -\kappa + \delta \left[q_t^s V_{t+1}^j + q_t^l (V_{t+1}^j - \Psi) \right] + (1-\rho)(1 - q_t^s - q_t^l) V_{t+1}^v \quad (4)$$

Filled job: $$V_t^j = y_t - w_t + \delta V_{t+1}^j \quad (5)$$

Equilibrium conditions:

Short-term LOM: $$s_{t+1} = 1 - \delta \quad (6)$$

Long-term LOM: $$l_{t+1} = \delta[s_t(1 - p_t^s) + l_t(1 - \pi p_t^l)] \quad (7)$$

Search FOC: $$\frac{\phi'(\lambda_t) e^{\lambda_t z_t}}{\delta z_t (1 - \pi \tilde{p}_t^s)} = w_{t+1} - b_{t+1} + \delta(1 - \pi p_{t+1}^l) \frac{\phi'(\lambda_{t+1}) e^{\lambda_{t+1} z_{t+1}}}{\delta z_{t+1}(1 - \pi \tilde{p}_{t+1}^s)} \quad (8)$$

Vacancies LOM: $$v_{t+1} = (1-\rho)(1 - q_t^s - q_t^l) v_t + f(V_t^v)^\xi \quad (9)$$

Wages: $$w_t = \arg\max (V_t^e - V_t^s)^\chi (V_t^j - V_t^v)^{1-\chi} \quad (10)$$

Search Effort Reaction Function

How do Discouragement Traps arise? For exposition, consider a steady-state partial equilibrium version of the preceding model with (i) $w = \nu y$ (fixed proportion wage) and (ii) $\xi = 0$ (Blanchard-Diamond vacancies). Then, recently unemployed worker i's effort, λ^i, can be expressed as an implicit function of average effort λ:

$$\phi = \frac{\partial p^s(\lambda^i, \lambda)}{\partial \lambda^i} \left[V^e - V^l(p^l(l(\lambda), \lambda)) \right]$$

1. Return to search (−): $\lambda \to \lambda^i$
2. Dynamic crowding (−): $\lambda \to l \to p^l \to V^l \to \lambda^i$
3. Vacancy depletion (+): $\lambda \to p^l \to V^l \to \lambda^i$

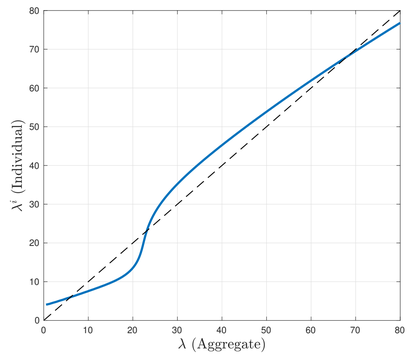

Figure 3: Search reaction function: $\lambda^i(\lambda)$

Aggregate search effort (λ) affects individual effort (λ^i) through the three channels, described above. The first and second are standard in search models. The third, which creates strategic complementarities in search effort and leads to muliplicity, arises because non-participants are residual claimants to vacancies.

Steady State(s) & Global Dynamics

I calibrate the model to pre-2007 data, using standard values from the literature where applicable.

Direct:

Bargaining parameter:	$\chi = 0.7$
Flow value of non-empl:	$b = 0.7$
Training cost (units of output):	$\Psi = 0.5$ (1 quarter)
Job creation elasticity:	$\xi = 0.265$ (Coles et. al.)

Indirect (pre-2007 data):

Job creation:	$f = 0.021$
↪ Discouragement Rate (d)	
Search cost:	$\phi = 0.005$
↪ Apps/job, λ(Barron & Bishop)	

I solve for the perfect foresight global dynamics in terms of the discouragement rate (d) and search effort (λ). Strategic complementarities in search effort (Figure 3) lead to multiple steady states, as depicted at the intersection of the job-finding locus (blue) and the search effort locus (red) in Figure 4. The low-discouragement state is saddle-point stable, while the high-discouragement state is a sink—a Discouragement Trap.

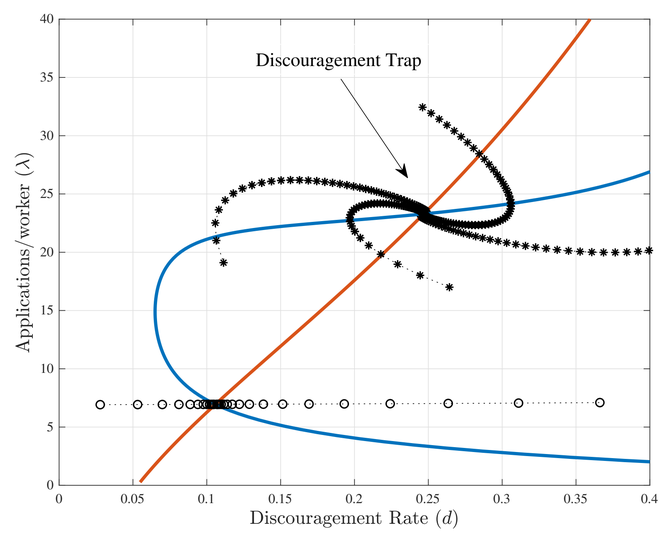

Figure 4: Global dynamics

Discouragement Traps can only exist when search costs are low, so that the search effort locus (red) is high. Otherwise—as we might expect prior to online job search—only the low-discouragement equilibrium exists. This provides a possible explanation for why the discouragement rate has not stayed high after past recessions.

Welfare and Policy

The model highlights the role for policies that affect search effort. For example, policies that make long-term joblessness less difficult (e.g. UI extensions; welfare) affect welfare by rotating the search effort locus (red).

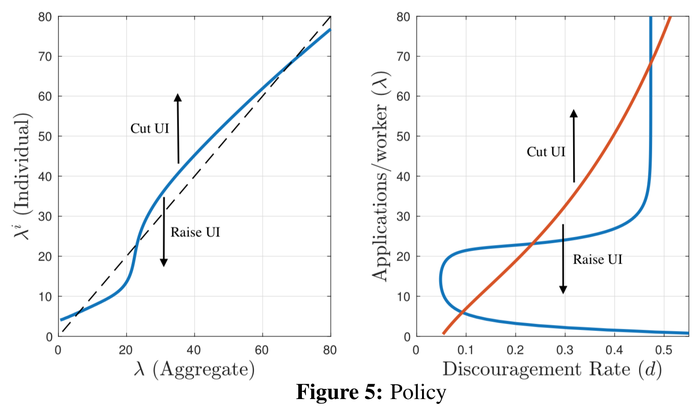

Figure 5: Policy

Policy lessons:
1. Policy can potentially eliminate Discouragement Traps by sufficiently discouraging search.
2. Optimal policy depends on the equilibrium:
   (a) Low-discouragment eq: Interior optimum: $b^* \approx 0.75$
   (b) High-discouragement eq: For $b \in (\underline{b}, \bar{b})$, $\frac{dWelfare}{db} \approx \frac{dWelfare}{d\lambda}\frac{d\lambda}{db} < 0$. Note that $\frac{dWelfare}{d\lambda} < 0, \frac{d\lambda}{db} > 0$!

Summary

- New concept: Discouragement rate. Spiked during Great Recession, hasn't recovered.
- Theory of multiple equilibria in participation generated by self-fulfilling fears of prolonged joblessness.