Macroeconomics and Search
Part I

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Introduction

- lots of existing surveys of search theory
- our paper is a critical assessment of the role of search in macro
- two big issues
  - business cycles
  - cross-country
Two Questions

- is search useful for understanding macroeconomic phenomena?
  - label workers as unemployed
  - descriptive model of individual experiences
  - match a variety of labor market facts
  - focuses our attention on firms’ recruiting

- does search affect model outcomes?
  - gives rise to match-specific rents (Manning)
  - acts like an adjustment cost on labor
  - sectoral shocks lead to time-consuming reallocation
  - frictions create asymmetries in unemployment rate
  - increasing returns in search create multiple equilibria
“Though search theory is still an active area of research, as this Handbook shows, few economists still look to its mechanisms for much of the explanation of observed fluctuations.”

– Lilien and Hall (1986), *HOLE* vol. 2
little fluctuations in labor force over the business cycle

regularities in labor market flows

- much harder to find a job during a recession
- unemployment incidence rises, but less

matching function is a good description of this data

the “labor wedge” is countercyclical

- as if there is a countercyclical labor income tax

possible summary: unemployment is caused by drop in job vacancies
Hours, Employment, and Labor Force

![Graph showing deviations from trend in hours, employment, and labor force over the years 1975 to 2005. The graph displays fluctuations around a trend line, with shaded areas indicating significant deviations.]
Hours, Employment, and Labor Force
Hours, Employment, and Labor Force

Year

Deviation From Trend

-4 -2 0 2 4
Transition Probabilities

EU

UE

IE

EI

UI

IU
Unemployment and Vacancies

Unemployment Rate

Vacancy Rate
$m_t = m(u_t, v_t), \text{ constant returns}$
Matching Function

\[ m_t = m(u_t, v_t), \text{ constant returns} \]

\[ \Rightarrow F_t = m_t/u_t = \mu(v_t/u_t) \]
Matching Function

Job Finding Probability $F_t$ in Percent

Market Tightness $v_t/u_t$

Year

2001 2002 2003 2004 2005 2006 2007 2008 2009
Labor Wedge

- marginal rate of substitution equals after-tax wage
- marginal product of labor equals wage
- labor market clearing

\[ \tau = 1 - \frac{\text{MRS}}{\text{MPL}} \]
Labor Wedge

- marginal rate of substitution equals after-tax wage
- marginal product of labor equals wage
- labor market clearing
  \[ \tau = 1 - \frac{MRS}{MPL} \]
- long-run restrictions pin down MRS and MPL
  - Cobb-Douglas production function
  - balanced growth preferences
  - Frisch labor supply elasticity \( \varepsilon \)
  - consumption-labor complementarity is unimportant
- requires only data on hours and consumption/output ratio
Deviation From Trend

\[ \varepsilon = \frac{1}{2} \]
\[ \varepsilon = \frac{1}{2} \]

\[ \varepsilon = 1 \]
Deviation From Trend

Year

\( \varepsilon = \frac{1}{2} \)

\( \varepsilon = 1 \)

\( \varepsilon = \infty \)
no unemployment in standard market clearing model

- workers choose how much to work

in a search model, the unemployed cannot find jobs

- inelastic labor supply
- labor wedge? countercyclical?

unemployment rises when firms do not create many vacancies

- leads to a decrease in the job finding probability

but why don’t firms create vacancies?

- requires writing down the model
“standard” neoclassical growth model, except:

- existing workforce is divided between recruiting and production
- recruiters attract new workers, constant returns at firm level
- wages are negotiated via Nash bargaining (match-specific rents)

Resolution of Macro Puzzles?

- impulses
  - literature focuses on productivity, monetary policy shocks
  - search does not help here at all

- adjustment cost creates minimal propagation

- amplification
  - adjustment cost dampens employment fluctuations
  - large fluctuations in calibrations that would deliver really large fluctuations without search costs (Hagedorn and Manovskii 2008)

- theoretical labor wedge is procyclical
“Backward-Looking” Wages

- does not really help with impulse mechanisms
- propagates shocks
- amplifies shocks
- pushes towards a countercyclical labor wedge
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- does not really help with impulse mechanisms
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- but did we need search frictions to do this?
  - anything that creates match-specific rents frees up wage setting
  - could even do it without match-specific rents