

The Marginal Efficiency of Active Search

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Background

- ▶ Consider non-employed workers willing to accept a job... (as in CPS)
 - ▶ **Active non-employed**: e.g., contacts an employer about a position
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 - ▶ **1/2 of new hires** from non-employment come from **OLF**
 - ▶ **Passive non-employed** improve fit of **matching function**
 - ▶ **OLF** \rightarrow **U** flows generate **recessionary increase** in **unemployment**

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 - ▶ **Passive non-employed** improve fit of **matching function**
 - ▶ **OLF** \rightarrow **U** flows generate **recessionary increase** in **unemployment**
- ▶ Contemporary literature **incorporates non-participation** into **DMP** (including flows from **OLF to employment**)
 - ▶ e.g., Krusell et al (2017), Faberman et al (2022)

Maintained assumption: **proportional job-finding rates**

What I do

- ▶ Document crowding-out of active search during recessions:
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 - ▶ Rejection of DMP w/ active/passive as perfect subst's
 - ▶ Consistent with diminishing marginal efficiency of active search

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- ▶ Show formally: violation of **proportional job-finding rates**
 - ▶ Rejection of DMP w/ active/passive as perfect subst's
 - ▶ Consistent with diminishing marginal efficiency of active search
- ▶ Incorporate **diminishing marginal efficiency** of **active search** into three-state DMP, test/estimate, and explore implications:
 1. Active search less important during a recession
 2. Bailey-Chetty formula prescribes recessionary increase in UI
 3. Decentralized allocation not efficient under Hosios condition

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6. Fail to reject restriction
7. Structurally estimate parameters of CES aggregator

#

Why we should care

- ▶ Novel implications of three-state DMP under estimated CES:
 1. Active search less important during recessions
 2. Disincentive effect of UI less distortionary during recessions
 3. Failure of Hosios condition (i.e., scope for policy)
- ▶ Implications follow from
 - ▶ Inclusion of participation margin
 - ▶ Imperfect substitution of active and passive search
- ▶ Reinforces importance of **three-state** DMP model for understanding unemployment dynamics and role of policy

A general model

Goal

- ▶ Write down labor-supply block of DMP model incorporating
 - ▶ Extensive and intensive margins of **active search**
 - ▶ Curvature in **marginal utility of consumption**
- ▶ Show how job-finding probabilities depend on active search
- ▶ Derive theoretical **restriction** relating
 - ▶ Active-passive ratio of job-finding probabilities
 - ▶ Average quantity of **active** search
- ▶ Then take restriction to data

Setting

- ▶ All jobs generate y_t units of output (can relax)
- ▶ Large measure of firms post v_t vacancies
- ▶ Representative family à la Andolfatto (1995) and Merz (1996)
 - ▶ Unit measure of workers indexed by i within each family
 - ▶ u_t workers are non-employed and search $1 - u_t$ are employed
(Allows for curvature in marginal utility of consumption)
- ▶ Search of non-employed can be *passive* and/or *active*
- ▶ Contacts generated through matching function m_t
 - ▶ Note: matching efficiency can vary with t
- ▶ Going forward, focus on *labor supply*

Active and passive search

- ▶ Non-employed inelastically provide one unit of **passive** search
- ▶ Non-employed workers choose $s_{i,t}^A$ units of **active** search, subject to
 - ▶ Fixed costs, $s_{i,t} \sim \Gamma$ drawn *iid* at rate λ
 - ▶ Convex costs, $c(s_{i,t}^A)$
- ▶ Flexible to different notions of active search:
 - ▶ Intensive & extensive margin: $s_{i,t}^A \in \mathbb{R}_+$ (FMST 2022)
 - ▶ Extensive margin only: $s_{i,t}^A \in \{0, 1\}$ (KMRS 2017)

Matching function and job-finding probabilities

- ▶ Job-finding rate, $f_{i,t}$

$$f_{i,t} = s_{i,t} \cdot \left(\frac{m_t(s_t, v_t)}{s_t} \right) \quad (*)$$

with CRS matching function, $m_t(s_t, v_t)$

- ▶ Search efficiency, $s_{i,t}$

$$s_{i,t} = \omega \cdot s_{i,t}^A + (1 - \omega) \cdot 1 \quad (**)$$

(Can allow for ω_t)

- ▶ Aggregate active search, $s_{A,t}$

$$s_{A,t} = \int_i s_{i,t}^A d\Gamma_t^u$$

- ▶ Aggregate search efficiency, s_t

$$s_t = \omega \cdot s_{A,t} + (1 - \omega) \cdot u_t$$

Optimal active search

- ▶ Fixed cost of active search is $\varsigma_{i,t}$
- ▶ Can show
 - ▶ Active search $s_{i,t}^A$ increasing in fixed cost $\varsigma_{i,t}$ up to some $\check{\varsigma}_t > 0$
 - ▶ Workers with $\varsigma_{i,t} > \check{\varsigma}_t$ set $s_{i,t}^A = 0$

Thus, **flow surplus** of employment is increasing in $\varsigma_{i,t}$ up to $\check{\varsigma}_t$

- ▶ Active search $s_{i,t}^A$ and threshold $\check{\varsigma}_t$ are increasing in ω
- ▶ Generates endogenous distributions Γ_t^u and Γ_t^e of workers over $\varsigma_{i,t}$
- ▶ Thus, $\Gamma_t^u(\check{\varsigma}_t)$ of non-employed are engaged in active search

Restriction: active-passive ratio and average active search

- Restriction in active-passive ratio: $\bar{f}_t^A / \bar{f}_t^P$ and \bar{s}_A^*

$$\frac{\bar{f}_t^A}{\bar{f}_t^P} - 1 = \frac{\left(\omega \cdot \bar{s}_t^{A,*} + (1 - \omega) \right) \left(\frac{m_t(s_t, v_t)}{s_t} \right)}{(1 - \omega) \left(\frac{m_t(s_t, v_t)}{s_t} \right)} - 1 = \left(\frac{\omega}{1 - \omega} \right) \cdot \bar{s}_t^{A,*}$$

from eqn's (*) and (**)

- Unit elasticity in $\bar{s}_t^{A,*}$ – all other quantities drop out!
 - Match efficiency differenced out
 - Unobserved heterogeneity of non-employed enters through $\bar{s}_t^{A,*}$
- Similar restr'n appears in KMRS (2017, AER) & FMST (2022, ECTA) & ...

Bringing the restriction to
the data

CPS, 1996-2019

- ▶ Starting in 1996, CPS records following for jobless respondents:
 - ▶ Whether the respondent would be **willing** to **accept a job**
 - ▶ Whether the worker is engaged in nine methods of **active search**
 - ▶ If **# search methods** = 0, why no active search?
- ▶ Non-employed worker willing to accept a job is
 - ▶ **Active searcher** if **# search methods** > 0
 - ▶ **Passive** searcher: if **# search methods** = 0 & “able” to accept work
- ▶ **Time spent searching** near linear in **# of search methods** (Mukoyama, Patterson, and Sahin 2018) \Rightarrow **measure of search effort**
- ▶ Note: exclude temporary-layoff for practical and conceptual reasons

The active and passive non-employed

| | Active non-employed | Passive non-employed | $\frac{A-NE}{A-NE+P-NE}$ | Avg. # of search methods |
|---------------|------------------------|-------------------------|--------------------------|-----------------------------|
| mean(x) | 4.9 | 1.3 | 0.79 | 1.85 |
| std(x)/std(Y) | 11.0 | 5.7 | 1.50 | 2.65 |
| corr(x, Y) | -0.89 | -0.70 | -0.75 | -0.64 |

Note: Data from CPS, 1996-2019. *A-NE* and *P-NE* refer to active and passive non-employed *Y* indicates quarterly GDP. For second and third row, series are taken as (1) quarterly averages of seasonally adjusted monthly series, (2) logged, then (3) HP-filtered with smoothing parameter of 1600

- ▶ Both **frac. searching** & **# of search methods** is **countercyclical**
- ▶ See also Osberg (1993), Shimer (2004), Faberman and Kudlyak (2016), Elsby, Hobijn and Sahin (2015), Mukoyama, Patterson, and Sahin (2018)

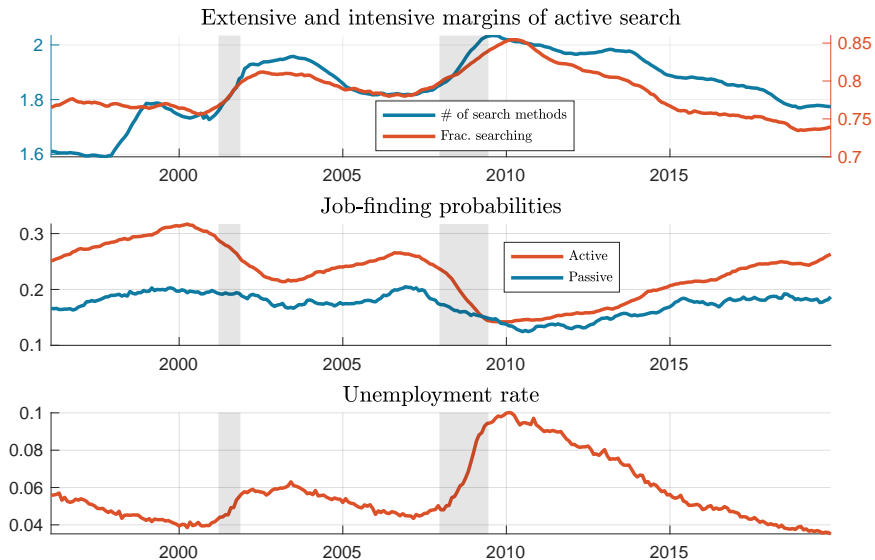
Job-finding rates of the active and passive non-employed

| | $A-NE \rightarrow E$ probability | $P-NE \rightarrow E$ probability | $A-P$ ratio |
|-----------------------|-------------------------------------|-------------------------------------|----------------|
| mean(x) | 0.23 | 0.17 | 1/1.32 |
| std(x)/std(Y) | 8.67 | 8.87 | 9.53 |
| corr(x, Y) | 0.85 | 0.32 | 0.48 |

Note: Data from CPS, 1996-2019. $A-NE$ and $P-NE$ refer to active and passive non-employed, " $A-P$ ratio" refers to active-passive ratio of job-finding probabilities, Y indicates quarterly GDP. For second and third row, series are taken as (1) quarterly averages of seasonally adjusted monthly series, (2) logged, then (3) HP-filtered with smoothing parameter of 1600

- ▶ Mildly procyclical job-finding probability of passive non-employed
- ▶ Highly procyclical job-finding probability of active non-employed
- ▶ Thus, procyclical active-passive ratio in job-finding probabilities

Search and job-finding probabilities



Testing the restriction

- Recall restriction:

$$\log \left(\frac{\bar{f}_t^A}{\bar{f}_t^P} - 1 \right) = \log \left(\frac{\omega}{1 - \omega} \right) + 1 \cdot \log \bar{s}_t^{A,*}$$

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- ▶ Estimated elasticity from data: **-5.85** (SE= 0.873)
- ▶ Robust to:
 - ▶ Inclusion of time trend, cyclical indicator
 - ▶ Restricting active searchers to low duration of unemployment
 - ▶ Controls for cyclical composition along observable dimensions ...
 - ▶ Time-varying ω (introduces **upward bias** into estimated elasticity)

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- ▶ **Rejection** of DMP with active and passive as perfect substitutes

When is active search most effective?

- ▶ **Question:** is job-finding probability increasing in active search effort?
 - ▶ Not an obvious question given evidence from aggregate data!
 - ▶ Next, look at **individual-level** data and introduce
 - ▶ Time fixed effects
 - ▶ Rich individual controls
 - ▶ Will show that when aggregate **active** search is high,
 - ▶ **Active search** effort is **less effective**
 - ▶ **Penalty** from purely **passive** search is **lower**
- Suggestive of **crowding-out** via diminishing returns

When is active search most effective?

| Dependent variable: Indicator for moving to employment in subsequent period | | | |
|--|----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) |
| $s_{i,t}^A$ | 0.006*** (0.0003) | -0.002*** (0.0004) | 0.028*** (0.0048) |
| $s_{i,t}^A \times$ relative quantity of active search in aggr. | — | — | -0.003*** (0.0005) |
| $\mathbb{I}\{s_{i,t}^A \neq 0\}$ | — | 0.040*** (0.0013) | 0.202*** (0.0125) |
| $\mathbb{I}\{s_{i,t}^A \neq 0\} \times$ relative quantity of active search in aggr. | — | — | -0.016*** (0.0012) |
| N | 865,079 | 865,079 | 865,079 |
| Time fixed effects? | Yes | Yes | Yes |
| Region fixed effects? | Yes | Yes | Yes |

Note: Sample of active and passive non-employed, 1996-2019. Includes controls for education, gender, race, marital status, a quartic for age, and fixed-effects for time and region.

An unrestricted
CES search aggregator

What went wrong

- ▶ Reject restriction from perfect substitution of active/passive
 - ▶ Perfect substitutes \iff CES with elasticity of subst. $= \infty$
- ▶ Additional findings from micro-level data:
 - ▶ Active search less effective when aggregate search is higher
 - ▶ Penalty to passive searchers decreasing in aggregate search
- ▶ Suggests efficiency of active search diminishing in aggr. active search
 - ▶ w/ CES, requires elasticity of subst. $< \infty$
- ▶ Next: estimate parameters of unrestricted CES

CES aggregator for search effort

- Aggregate search effort s_t given by CES aggregator over $s_{A,t}$ and $s_{P,t}$

$$s_t = \left(\omega (z_t \cdot s_{A,t})^\rho + (1 - \omega) s_{P,t}^\rho \right)^{\frac{1}{\rho}}$$

w/ exogenous z_t

- Aggregate active & passive search satisfy

$$s_{A,t} = \int^{\check{z}_t} s_{i,t}^A d\Gamma_t^u = (\Gamma_t^u(\check{z}_t) u_t) \cdot \bar{s}_{A,t}^*, \quad s_{P,t} = \int d\Gamma_t^u = u_t$$

- $ME_{A,t}$ and $ME_{P,t}$ are marginal efficiencies of active and passive search

$$ME_{A,t} = \frac{\partial s_t}{\partial s_{A,t}} = \omega \cdot z_t^\rho \cdot \left(\frac{s_t}{s_{A,t}} \right)^{1-\rho}, \quad ME_{P,t} = \frac{\partial s_t}{\partial s_{P,t}} = (1 - \omega) \cdot \left(\frac{s_t}{s_{P,t}} \right)^{1-\rho}$$

Returns to search

- ▶ The job-finding probability $f_{i,t}$ of a worker with search efficiency $s_{i,t}$ is

$$f_{i,t} = s_{i,t} \cdot \left(\frac{m_t(s_t, v_t)}{s_t} \right)$$

- ▶ The search efficiency $s_{i,t}$ of a worker supplying $s_{i,t}^A$

$$s_{i,t} = ME_{A,t} \cdot s_{i,t}^A + ME_{P,t} \cdot 1$$

by linear homogeneity of the CES search aggregator

- ▶ Nests prior case when $\rho = 1$ & $z_t = 1$:

$$s_{i,t} = \omega \cdot s_{i,t}^A + (1 - \omega) \cdot 1$$

Restriction from theory, redux

- ▶ Relative job-finding probabilities, **active** vs. **passive** search

$$\begin{aligned}\frac{\bar{f}_t^A}{\bar{f}_t^P} - 1 &= \frac{\left(ME_{A,t} \cdot \bar{s}_t^{A,*} + ME_{P,t} \right) \left(\frac{m_t(s_t, v_t)}{s_t} \right)}{ME_{P,t} \left(\frac{m_t(s_t, v_t)}{s} \right)} - 1 \\ &= \left(\frac{\omega \cdot z_t^\rho}{1 - \omega} \right) \left(\frac{1}{\Gamma_t^u(\check{s}_t) \bar{s}_t^{A,*}} \right)^{1-\rho} \cdot \bar{s}_t^{A,*}\end{aligned}$$

- ▶ Thus,

$$\log \left(\frac{\bar{f}_t^A}{\bar{f}_t^P} - 1 \right) = \log \left(\frac{\omega}{1 - \omega} \right) + \rho \cdot \log z_t + (\rho - 1) \cdot \log \Gamma_t^u(\check{s}_t) + \rho \cdot \log \bar{s}_t^{A,*}$$

- ▶ Return to data: test restriction in ρ , estimate ω and ρ

Regression estimates

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|--|--------------------------|--------------------------|--|--------------------------|--------------------------|
| β_{Frac} | -5.997** (2.9035) | -3.752*** (0.8383) | -7.767*** (2.8319) | -1.422 (3.1452) | -2.844*** (0.7974) | -4.342 (3.1475) |
| $\beta_{\#}$ | -1.766 (1.1270) | -2.752*** (0.8383) | — | -2.272** (1.1373) | -1.844** (0.7974) | — |
| β_0 | 0.121 (1.1943) | 1.140*** (0.4423) | -0.807 (1.1468) | 1.680 (1.3329) | 1.102** (0.4336) | 0.282 (1.3093) |
| Additional controls | Time trend | | | Time trend + unempl. rate | | |
| Constrain $\beta_{\text{Frac}} + 1 = \beta_{\#}$ | No | Yes | — | No | Yes | — |
| F-test | $p(\beta_{\text{Frac}} + 1 = \beta_{\#})$ = 0.350 | $p(\rho = 1)$ = 0.000 | $p(\rho = 1)$ = 0.008 | $p(\beta_{\text{Frac}} + 1 = \beta_{\#})$ = 0.615 | $p(\rho = 1)$ = 0.000 | $p(\rho = 1)$ = 0.172 |
| N | 204 | 204 | 204 | 204 | 204 | 204 |
| Implied ρ | — | -2.752 | -8.767 | — | -1.844 | -5.342 |
| Implied ω | | 0.758 | -8.767 | | 0.751 | 0.570 |

Note: CPS, 1996-20019

Quick takeaway

$$\log \left(\frac{\bar{f}_t^A}{\bar{f}_t^P} - 1 \right) = \log \left(\frac{\omega}{1 - \omega} \right) + \rho \cdot \log z_t + (\rho - 1) \cdot \log \Gamma_t^U(\check{\zeta}_t) + \rho \cdot \log \bar{s}_t^{A,*}$$

- ▶ **Reject** restriction $\rho = 1$ (i.e., **existing** framework)
- ▶ **Fail to reject** restriction $\beta_{\Gamma(\check{\zeta})} + 1 = \beta_{\bar{s}^{A,*}}$ (i.e., **unrestricted** framework)
 - ▶ (But cannot allow $z_t = 1$)
- ▶ Elasticity of substitution $\frac{1}{1-\rho}$ is about 1/4
- ▶ Easy interpretation (more later):
 - ▶ For the worker: active search as a strategic substitute
 - ▶ For the firm: stable ratio of hires from referrals to outside applications

Application 1:

The marginal efficiency of active search over the business cycle

What is a CES search aggregator?

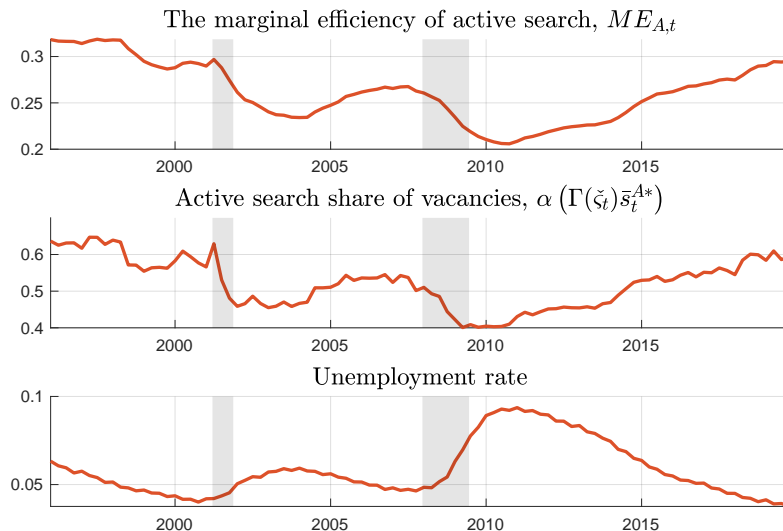
- **Equivalence**: separate submarkets for **active** and **passive** search

$$m_t(s_t, v_t) = m_t(\textcolor{brown}{ME}_{A,t} \cdot s_{A,t}, \alpha_t \cdot v_t) + m_t(\textcolor{brown}{ME}_{P,t} \cdot s_{P,t}, (1 - \alpha_t) \cdot v_t)$$

$$\text{with } \alpha_t = \alpha(s_{A,t}/s_{P,t}) = \frac{\textcolor{brown}{ME}_{A,t} \cdot s_{A,t}}{s_t} = \frac{s_{A,t}^\rho}{s_{A,t}^\rho + s_{P,t}^\rho}, \quad \rho \leq 1$$

- (Obtains through constant returns)
- **Vacancy share** of **active search** α_t analogous to **factor share**
 - $\rho < 0 \Rightarrow \alpha_t$ decreasing in $(s_{A,t}/s_{P,t})$
 - Countercyclical $(s_{A,t}/s_{P,t}) \Rightarrow$ Procyclical α_t
- $\textcolor{brown}{ME}_{A,t}$ and α_t both fall during recessions

Backing out the marginal efficiency of active search



Application 2: Bailey-Chetty Formula

Appl. 2) Bailey-Chetty Formula

- ▶ Optimal UI described by Bailey-Chetty formula:

$$\underbrace{\frac{d \log u}{d \log R}}_{\text{increasing in } R} = \underbrace{\left(\frac{U'(c^u)}{U'(c^e)} - 1 \right)}_{\text{decreasing in } R} \quad (\text{BC})$$

where u is unemployment and R is the replacement rate

- ▶ Landais et al. (2018): if wages are perfectly rigid (+ other conditions), (BC) describes optimal replacement rate R
- ▶ Micro-elasticity $\frac{d \log u}{d \log R}$ typically taken as constant $\Rightarrow R$ constant
- ▶ But $\frac{d \log u}{d \log R}$ is proportional to the marginal efficiency of active search...

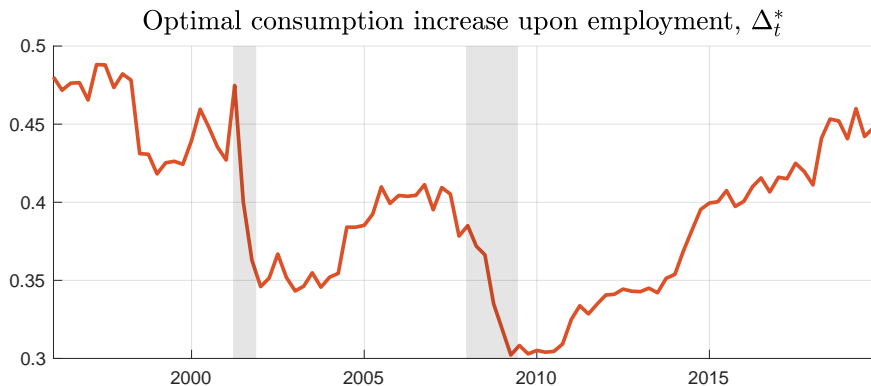
Appl. 2) Bailey-Chetty Formula, cont'd

- Write micro-elasticity as

$$\begin{aligned}\frac{d \log u}{d \log R} &= \frac{d \log u}{d \log f} \cdot \frac{d \log f}{d \log R} \\ &\approx -(1 - \tilde{u}) \cdot \frac{d \log f}{d \log s} \cdot \frac{d \log s}{d \log s_A} \cdot \frac{d \log s_A}{d \log R} \\ &= -(1 - \tilde{u}) \cdot \sigma \cdot \left[\omega \cdot \left(\frac{s_A}{s} \right)^\rho \right] \cdot \frac{d \log s_A}{d \log R}\end{aligned}$$

- Note, $\rho < 0$, so the elasticity is not constant!
- Next, (i) take avg. $-\frac{d \log f}{d \log R}$ to be equal to 0.42 (Katz and Meyer, 1990), (ii) compute average $\frac{d \log s}{d \log s_A}$, and (iii) solve for $\frac{d \log s_A}{d \log R}$
- Use to obtain time series for $\frac{d \log u}{d \log R}$

Appl. 2) Bailey-Chetty Formula, cont'd



- ▶ Define the *consumption increase upon employment*: $\Delta_t = (c_t^e/c_t^u) - 1$
- ▶ Assume $U(c) = \log c$. Then, (BC) $\Rightarrow \frac{d \log U}{d \log R} = \Delta_t^*$
- ▶ Δ_t^* lower during recessions due to **marginal efficiency** of **active search**

Application 3:

Failure of Hosios condition

Appl. 3) Failure of Hosios condition

$$rU_i = \max_{s_{A,i}} \left\{ \frac{b - \varsigma_i \cdot \mathbb{I}\{s_{A,i} > 0\} - c(s_{A,i})}{\mu} + (ME_A \cdot s_i^A + ME_P) \cdot \left(\frac{m(s, v)}{s} \right) \cdot (V_i - U_i) - \dot{U}_i \right\}$$

- Congestion externality: searchers fail to internalize how $s_{A,i}$ affects s
- Here: searchers also fail to internalize how $s_{A,i}$ affects ME_A and ME_P
- $s_{A,i}^* \uparrow \Rightarrow ME_A \downarrow$ and $ME_P \uparrow$

Appl. 3) Failure of Hosios condition, cont'd

- Optimal search, worker's problem:

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- Two allocations only coincide if
 1. No persistent heterogeneity in fixed cost of search ($\lambda \rightarrow \infty$)
 2. Constant marginal efficiency of active search, ME_A

Conclusion

Conclusion

- ▶ Active-passive ratio in job-finding prob's fluctuates over cycle
- ▶ During recession,
 - ▶ Active search goes up
 - ▶ Active-passive ratio in job-finding probabilities goes down

Inconsistent with perfect substitutability of active and passive search

- ▶ Imperfect substitutability of active and passive search generates crowding-out of active search
- ▶ Reinforces importance of participation margin for understanding unemployment dynamics

Extra slides

Problem of the unemployed

- Annuity value of unemployment:

$$rU_{i,t} = \max_{s_{i,t}^A} \left\{ \frac{\gamma - \varsigma_i \cdot \mathbb{I} \{ s_{i,t}^A > 0 \} - c(s_{i,t}^A)}{\mu_t} + (\omega_0 + \omega_1 \cdot s_{i,t}^A) \cdot \left(\frac{m_t(s_t, v_t)}{s_t} \right) \cdot (V_{i,t} - U_{i,t}) - \dot{U}_{i,t} \right\}$$

- Marginal utility of consumption, μ_t
- Flow value of leisure, γ
- Values of employment and unemployment, $V_{i,t}$ and $U_{i,t}$
- $\dot{U}_t \neq 0$ given jump process for $\varsigma_{i,t}$, etc

Optimal active search

- ▶ Optimal quantity of active search (intensive margin):

$$s_{i,t}^{A,*} = (c')^{-1} \left(\mu_t \cdot \omega_1 \cdot \left(\frac{m_t(s_t, v_t)}{s_t} \right) (V_{i,t} - U_{i,t}) \right) \quad \text{when } s_{i,t} < \check{s}_t$$

- ▶ Optimal participation in active search (extensive margin):

$$s_{i,t} \leq -c(s_{i,t}^{A,*}) + \omega_1 \cdot s_{i,t}^{A,*} \cdot \left(\frac{m_t(s_t, v_t)}{s_t} \right) \cdot \mu_t \cdot (V_{i,t} - U_{i,t}) \quad (\dagger)$$

where \check{s}_t defined by $s_{i,t}$ s.t. (\dagger) holds with equality

Time spent searching (MPS 2018)

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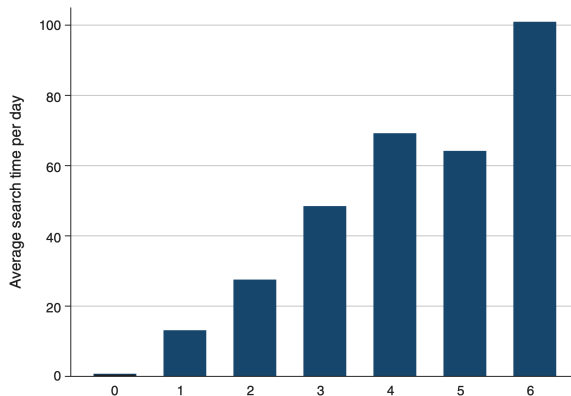


FIGURE 1. THE AVERAGE MINUTES (*per day*) SPENT ON JOB SEARCH ACTIVITIES BY THE NUMBER OF SEARCH METHODS

Notes: Each bin reflects the average search time in minutes per day by the number of search methods that the individual reports using in the previous month. Data is pooled from 2003–2014 and observations are weighted by the individual sample weight.

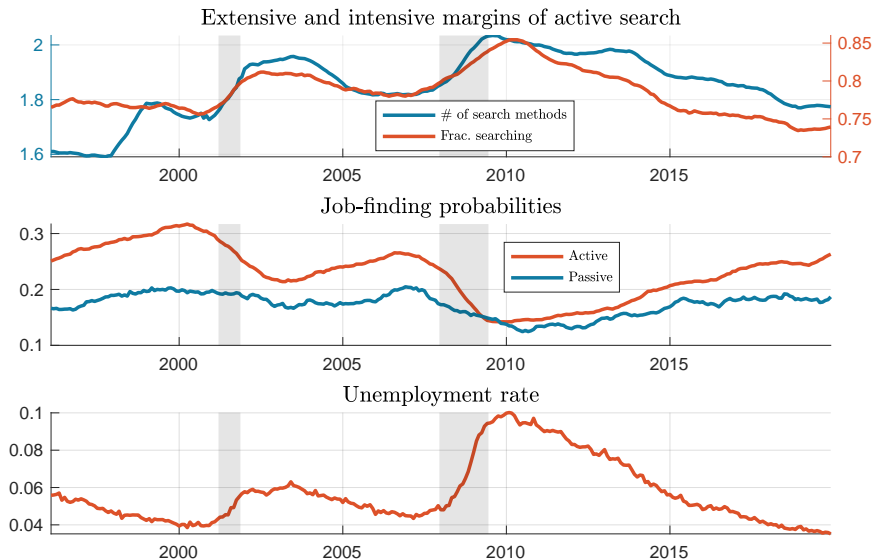
Definitions of job search (MPS 2018)

TABLE 2—DEFINITIONS OF JOB SEARCH METHODS IN CPS AND ATUS

| |
|---|
| Contacting an employer directly or having a job interview |
| Contacting a public employment agency |
| Contacting a private employment agency |
| Contacting friends or relatives |
| Contacting a school or university employment center |
| Checking union or professional registers |
| Sending out resumes or filling out applications |
| Placing or answering advertisements |
| Other means of active job search |
| Reading about job openings that are posted in newspapers or on the internet |
| Attending job training program or course |
| Other means of passive job search |

Note: The first nine are active, the last three are passive.

Search and job-finding probabilities



Elasticity of active-passive ratio in job-finding probabilities

| Dependent variable: Log active-passive ratio in in job-finding probabilities (minus one) | | | |
|---|-----------------------|-----------------------|------------------------------|
| | (1) | (2) | (3) |
| Log # of search methods | -5.854*** (0.8729) | -5.017*** (0.9411) | -2.977*** (0.9620) |
| Additional controls | None | Time trend | Time trend + unempl. rate |
| $p(\beta_{\#} = 0)$ | 0.000 | 0.000 | 0.003 |
| $p(\beta_{\#} = 1)$ | 0.000 | 0.000 | 0.000 |
| N | 264 | 264 | 264 |
| CPS, 1996-2019 | | | |

Elasticity of the active-passive ratio: duration dependence

| Dependent variable: Log active-passive ratio in in job-finding probabilities (minus one) | | | |
|---|-----------------------|-----------------------|------------------------------|
| | (1) | (2) | (3) |
| Log # of search methods | -2.410*** (0.5178) | -2.259*** (0.6372) | -2.431*** (0.7242) |
| Additional controls | None | Time trend | Time trend + unempl. rate |
| $p(\beta_{\#} = 0)$ | 0.000 | 0.001 | 0.001 |
| $p(\beta_{\#} = 1)$ | 0.000 | 0.000 | 0.000 |
| N | 287 | 287 | 287 |
| CPS, 1996-2019 | | | |

Elasticity of active-passive ratio: cyclical composition

| Dependent variable: Log active-passive ratio in in job-finding probabilities (minus one) | | | |
|---|-----------------------|-----------------------|------------------------------|
| | None | Time trend | Time trend + unempl. rate |
| <i>1. Gender</i> | | | |
| Log # of search methods | -6.447*** (0.9040) | -5.760*** (1.0593) | -3.004*** (0.9476) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 266 | 266 | 266 |
| <i>2. Race</i> | | | |
| Log # of search methods | -6.150*** (0.7947) | -5.355*** (0.9732) | -3.439*** (1.0255) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 265 | 265 | 265 |
| <i>3. Age</i> | | | |
| Log # of search methods | -6.211*** (0.8260) | -4.998*** (0.9519) | -2.117*** (0.7850) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 267 | 267 | 267 |

| Dependent variable: Log active-passive ratio in in job-finding probabilities (minus one) | | | |
|---|-----------------------|-----------------------|------------------------------|
| | None | Time trend | Time trend + unempl. rate |
| <i>4. Marital status (by gender)</i> | | | |
| Log # of search methods | -6.126*** (0.7903) | -5.465*** (0.9173) | -2.520*** (0.8010) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 265 | 265 | 265 |
| <i>5. Education</i> | | | |
| Log # of search methods | -5.744*** (0.9564) | -4.961*** (1.0153) | -3.458*** (1.1548) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 223 | 223 | 223 |
| <i>6. Region</i> | | | |
| Log # of search methods | -5.870*** (0.8166) | -4.910*** (0.9365) | -2.659*** (0.9044) |
| $p(\beta_{\log \#} = 1)$ | 0.000 | 0.000 | 0.000 |
| <i>N</i> | 265 | 265 | 265 |

TABLE 5. Summary statistics: cyclical composition

| Subgroup | $\bar{\omega}_j^A$ | \bar{f}_j^A | $\bar{s}_{j,t}^{A,*}$ | $\bar{\omega}_j^P$ | $\bar{f}_{j,t}^P$ |
|---|--------------------|---------------|-----------------------|--------------------|-------------------|
| <i>1. Gender</i> | | | | | |
| Female | 0.46 | 0.22 | 1.84 | 0.46 | 0.16 |
| Male | 0.54 | 0.24 | 1.86 | 0.54 | 0.19 |
| <i>2. Race</i> | | | | | |
| Black | 0.08 | 0.21 | 1.81 | 0.09 | 0.16 |
| White | 0.70 | 0.25 | 1.86 | 0.70 | 0.18 |
| Other non-white | 0.22 | 0.18 | 1.84 | 0.21 | 0.14 |
| <i>3. Age</i> | | | | | |
| 16-24 | 0.32 | 0.26 | 1.69 | 0.24 | 0.19 |
| 25-55 | 0.57 | 0.22 | 1.95 | 0.47 | 0.20 |
| 56-64 | 0.08 | 0.16 | 1.92 | 0.13 | 0.13 |
| 65+ | 0.03 | 0.13 | 1.60 | 0.16 | 0.08 |
| <i>4. Marital status (male/female)</i> | | | | | |
| Married | 0.17/0.15 | 0.24/0.21 | 2.00/1.85 | 0.19/0.19 | 0.20/0.16 |
| Previously married | 0.07/0.09 | 0.22/0.20 | 1.92/1.95 | 0.08/0.11 | 0.15/0.12 |
| Never married | 0.30/0.22 | 0.24/0.23 | 1.77/1.78 | 0.27/0.16 | 0.19/0.18 |
| <i>5. Education</i> | | | | | |
| Less than high school diploma (or equivalent) | 0.11 | 0.21 | 1.71 | 0.13 | 0.16 |
| High school diploma (or equivalent) | 0.23 | 0.21 | 1.85 | 0.25 | 0.16 |
| Some college | 0.19 | 0.22 | 1.99 | 0.19 | 0.16 |
| BA/ Four years of college | 0.11 | 0.23 | 2.14 | 0.12 | 0.19 |
| BA+/ More than four years of college | 0.04 | 0.22 | 2.18 | 0.06 | 0.19 |
| <i>6. Region</i> | | | | | |
| Northeast | 0.18 | 0.21 | 1.88 | 0.20 | 0.17 |
| Midwest | 0.21 | 0.23 | 1.80 | 0.20 | 0.17 |
| South | 0.36 | 0.23 | 1.84 | 0.36 | 0.17 |
| West | 0.25 | 0.23 | 1.88 | 0.25 | 0.18 |

Note: