Long Live the Vacancy!

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Introduction Flow vacancies vs. long-lived vacancies

Constant vs.

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- LLV and endogenous

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- MP Simplifying Assumption I: A vacancy must be "recreated" every period. Free Entry (Infinite elasticity of vacancy creation).
 - "Long-lived vacancies" (LLV) arise if there is a setup-up cost. Once the cost is paid, the vacancy will exist until destroyed.

Very few papers use LLV:

- Fujita and Ramey (2007) suggests that LLV make it even harder to explain U fluctuations (smaller amplification)
 Shao and Silos (2013)
 - LLV generate realistic autocorrelation of vacancy stock.
 - LLV generate large U fluctuations
 - ... in the context of a model with capital, too volatile investment

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جامعة نيويورك أبوظبي NYU ABU DHABI Constant vs. endogenous separations

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- MP Simplifying Assumption II: constant separation rate. Motivated by Shimer (2012): U fluctuations mostly caused by variations in job finding rate, not variations in **separation rate**.
- Despite ample evidence of counter-cyclical **job destruction**.
- Papers with time-varying separation rate:
- Mortensen and Pissarides (1994), den Haan, Ramey, and Watson (2000): endogenous separation; only small negative correlation between U and vacancies (Beveridge curve).
- Coles and Moghaddasi Kelishomi (2014): exogenous job destruction shocks.

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Coles and Moghaddasi Kelishomi (2014)

LLV

- Exogenous shocks to job separation: abrupt spikes, negatively correlated with productivity shocks ($\rho_{p,\sigma} = -0.6$)
- Mechanism: spike in job separation increases unemployment, depletes the stock of vacancies, thereby reduces the job finding probability.
 Job separation explains job finding!

Our methodological contribution:

- Only one shock: labor productivity
- Endogenous separation, explaining both job and match destruction
- Clarify role of LLV vs. endogenous separation

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Both long-lived vacancies (LLV) and endogenous job separation, and their interaction, help to reconcile the labor market matching model with the data.

- LLV reduce the need to generate large variability in new vacancy posting.
- Endogenous job separation opens a second margin for productivity fluctuations to affect the labor market.
- Model with long-lived vacancies (LLV) and endogenous job separation matches a large set of moments very well.
- One-shock model explains almost all fluctuations in US labor market 1951-2014.

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One aggregate shock: labor productivity

$$\ln y_t = \rho_y \ln y_{t-1} + \sigma_y \epsilon_t. \tag{1}$$

A worker-firm pair produces y_t .

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Every period there is a unit mass of potential vacancies. that Firms want to open а vacancy one-time stochastic pay а vacancy postcost $\kappa_v \sim \mathcal{V}$ (Fujita and Ramey 2007; ing Coles and Moghaddasi Kelishomi 2014). Flow of new vacancies:

$$n_t = \mathcal{V}(V_t^V). \tag{2}$$

A vacancy remains open until exogenously destroyed with probability δ_v , or filled with filling probability ϕ_t^f .

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■ Value of a vacancy:

$$V_t^V = -\kappa_i + \phi_t^f V_t^C + (1 - \phi_t^f) \beta \mathbb{E}_t \left((1 - \delta_v t + 1) V_{t+}^V (3) \right)$$

where

- •
- V_t^C : continuation value of being matched with a worker.
 - κ_i : cost of idle capital

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Value of a vacancy:

$$V_t^V = -\kappa_i + \phi_t^f V_t^C + (1 - \phi_t^f) \beta \mathbb{E}_t \left((1 - \delta_v t + 1) V_{t+1}^V \right)$$

where

- V_t^C : continuation value of being matched with a worker.
- κ_i : cost of idle capital
- When producing, firms pay
 - wage w_t
 - capital cost κ_k
 - Value of a filled job:

$$V_t^J = y_t - w_t - \kappa_k + V_t^C.$$
(4)

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- Occasional costs need to be paid in order to maintain an employment relationship.
- Upon separation of an employment relationship, the job can either survive (match destruction) or be destroyed (job destruction).
- A job destruction event occurs with probability λ_j : firms draw a job maintenance cost κ_j from distribution \mathcal{J} . Firm pay cost and continue match if $\kappa_j \leq V_t^J$. Otherwise, match is destroyed, no vacancy.

Hence, a job is destroyed with probability

$$\delta_{j_t} = \lambda_j \left(1 - \mathcal{J} \left(V_t^J \right) \right).$$

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Separations, ctd.

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- Similarly, a match destruction event occurs with probabil-ity λ_m .
- Upon arrival of a match destruction event, firms draw a match maintenance cost κ_m from distribution \mathcal{M} .

If $\kappa_m \leq V_t^J - V_t^V$, firms pay the cost and continue the relationship. Otherwise the match dissolves and the vacancy enters the existing stock of vacancies to be refilled.

Hence, a match is destroyed with probability $\delta_m = (1 - \lambda_j)\lambda_m \left(1 - \mathcal{M}\left(V_t^J - V_t^V\right)\right).$ The overall separation rate is consequently given by $\delta_t = \delta_{mt} + \delta_{jt}.$

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Firm-continuation value of an employment relationship

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$$V_{t}^{C} = \beta \mathbb{E}_{t} \Big\{ (1 - \lambda_{j})(1 - \lambda_{m})V_{t+1}^{J} \\ + \lambda_{j} \left[\mathcal{J} \left(V_{t+1}^{J} \right) V_{t+1}^{J} - \int_{-\infty}^{V_{t+1}^{J}} \kappa_{j} d\mathcal{J}(\kappa_{j}) \right] \\ + (1 - \lambda_{j})\lambda_{m} \Big[\left(1 - \mathcal{M} \left(V_{t+1}^{J} - V_{t+1}^{V} \right) \right) (1 - \delta_{v}) V_{t+1}^{V} \\ + \mathcal{M} \left(V_{t+1}^{J} - V_{t+1}^{V} \right) V_{t+1}^{J} \\ - \int_{-\infty}^{V_{t+1}^{J} - V_{t+1}^{V}} \kappa_{m} d\mathcal{M}(\kappa_{m}) \Big] \Big\}$$
(5)

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Workers

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- Every worker who is employed in period t receives wage w_t ,
- \blacksquare every searcher receives b.
 - Searchers find jobs with probability ϕ^w_t

Values for being employed (V_t^E) and unemployed (V_t^U) :

$$V_{t}^{E} = w_{t} + \beta \mathbb{E}_{t} \left\langle V_{t+1}^{E} - \delta_{t+1} \left(V_{t+1}^{E} - V_{t+1}^{U} \right) \right\rangle, \quad (6)$$

$$V_{t}^{U} = b + \beta \mathbb{E}_{t} \left\langle V_{t+1}^{U} + \phi_{t+1}^{w} \left(1 - \delta_{t+1} \right) \left(V_{t+1}^{E} - V_{t+1}^{U} \right) \right\rangle (7)$$

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CRS matching function in unemployment u_t and vacancies, v_t :

$$M\left(u_t, v_t\right) = A u_t^{\alpha} v_t^{1-\alpha}$$

Job finding and filling probability:

$$\phi_t^w = \frac{M\left(u_t, v_t\right)}{u_t}, \quad \phi_t^f = \frac{M\left(u_t, v_t\right)}{v_t}$$

Dynamics of unemployment

$$u_t = \delta_t e_{t-1} + (1 - \phi_{t-1}^w (1 - \delta_t)) u_{t-1}$$

$$e_t = 1 - u_t.$$

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Vacancy dynamics

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$$v_t = \left(1 - \delta_v t - \phi_{t-1}^f (1 - \delta_{mt})\right) v_{t-1} + \delta_{mt} e_{t-1} + n_t.(8)$$

Vacancies in period t are

- surviving vacancies of the previous period
- less successful matches (those vacancies that were matched and not immediately separated by match destruction).
- plus inflow from employment relationships separated by match destruction
- plus newly formed vacancies, n,

Wages

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Alternate-offer bargaining (Hall and Milgrom 2008)

- I Threatpoint in bargaining is not separation, but delay; reduced effect of unemployment on wage bargaining.
- With probability δ_b negotiations break down, the worker returns to the unemployment pool
- Firm makes first offer; if worker accepts, they produce, if not:
- Worker makes counter offer in next period; if firm accepts, they produce,

if not: firm makes counter offer next period, etc.

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US: 1951 – 2003 for calibration US: 2003 – 2014 'out of sample'

Data sources: FRED, Business Dynamics Statistics, CPS, JOLTS.

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Calibration targets

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- Time period: one day (60th part of a quarter)
- Steady state wage of 64 percent of production,
 - Discount factor eta to 0.99 quarterly.
 - Vacancyfillingrate ϕ^f :1/3perweek(Fujita and Ramey 2007;Coles and Moghaddasi Kelishomi 2014).
- Cost of an idle vacancy: 23 percent of average production (Hall and Milgrom 2008)
- Autocorrelation coefficient of labor productivity: $\rho_y=0.92^{1/60}$,
- Unemployment replacement
 rate: 40 percent (Shimer 2005;
 Christiano, Eichenbaum, and Trabandt 2016).
- Firm profit: 2.255 percent (Hagedorn and Manovskii 2008).

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Calibration

Introduction	Parameter			Target
Madal	capital cost	κ_k	0.005	firm surplus
WIDdel	worker utility unemployed	b	0.004	replacement rate
Data and Calibration	worker utility disagreement	b_b	0.007	steady state wage
Dete	mean job maintenance cost	μ_{j}	0.062	mean job destr.
Data	dispersion job maint. cost	σ_{j}	0.172	var. job destr.
Calibration targets	mean job maintenance cost	μ_m	0.267	mean total sep.
Calibration	dispersion job maintenance cost	σ_m	0.141	var. total sep.
	probability break-up barg.	δ_b	0.006	variance U
Results	elasticity matches w.r.t U	α	0.647	variability vacancies
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Long Lived Vacancies:

	ι	Jrate	Vac	ancies	Findi	ng rate	Sep	. rate	real	GDP
Rel. stdev	7.27	(7.27)	7.39	(7.39)	5.18	(4.51)	2.87	(2.87)	1.00	(1.00)
Autocor.	0.95	(0.94)	0.95	(0.94)	0.95	(0.93)	0.87	(0.82)	0.93	(0.94)
Cor. GDP	-0.97	(-0.91)	0.97	(0.85)	0.97	(0.89)	-0.97	(-0.70)	1.00	(1.00)
Cor. U	1.00	(1.00)	-1.00	(-0.91)	-1.00	(-0.96)	0.88	(0.71)	-0.97	(-0.91)
WRespons	e 0.78									
ShimerCF	70.9									

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Long Lived Vacancies:

		Urate	Vac	ancies	Findi	ng rate	Sep	. rate	real	GDP
Rel. stdev	7.27	(7.27)	7.39	(7.39)	5.18	(4.51)	2.87	(2.87)	1.00	(1.00)
Autocor.	0.95	(0.94)	0.95	(0.94)	0.95	(0.93)	0.87	(0.82)	0.93	(0.94)
Cor. GDP	-0.97	(-0.91)	0.97	(0.85)	0.97	(0.89)	-0.97	(-0.70)	1.00	(1.00)
Cor. U	1.00	(1.00)	-1.00	(-0.91)	-1.00	(-0.96)	0.88	(0.71)	-0.97	(-0.91)
WRespons	e 0.78									
ShimerCF	70.9									

Hall Milgrom:

	Urate		Vacancies		Finding rate		Sep. rate		real GDP	
Rel. stdev	7.27	(7.27)	7.39	(7.39)	7.92	(4.51)	0.00	(2.87)	1.00	(1.00)
Autocor.	0.92	(0.94)	0.80	(0.94)	0.89	(0.93)	-	(0.82)	0.91	(0.94)
Cor. GDP	-0.99	(-0.91)	0.94	(0.85)	1.00	(0.89)	-	(-0.70)	1.00	(1.00)
Cor. U	1.00	(1.00)	-0.89	(-0.91)	-0.97	(-0.96)	-	(0.71)	-0.99	(-0.91)
WRespons	se 0.79									
ShimerCF	_									

Introduction	Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
Model	1 Hall/Milgrom	6	71	1 1	\sim	100.0	10	0.70
Data and Calibration		C	1 1	T • T	∞		4.0	0.19
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Introduction	Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
Model	1 Hall/Milgrom	 C	71	1.1	∞	100.0	4.0	0.79
Data and Calibration		•	. –		00	100.0	0.7	0.70
Results	2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
Results Benchmark Results Estimated parameter values, Intuition Estimated parameter values, Variable Opportunity Cost Relative standard deviations, different models Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Market Variables for								
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Variabeiske/Reiter

	-/ -
Estimated	Model

Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
3 HM,highProf	С	40	2.3	∞	100.0	1.2	0.56

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Variabeikter Estimated Model

Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
3 HM,highProf	С	40	2.3	∞	100.0	1.2	0.56
4 HM,inelastic	С	40	2.3	1.0	100.0	0.1	0.20

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Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
3 HM,highProf	С	40	2.3	∞	100.0	1.2	0.56
4 HM,inelastic	С	40	2.3	1.0	100.0	0.1	0.20
5 HMLLV	С	40	2.3	1.0	2.2	2.5	0.70

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Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
3 HM,highProf	С	40	2.3	∞	100.0	1.2	0.56
4 HM,inelastic	С	40	2.3	1.0	100.0	0.1	0.20
5 HMLLV	С	40	2.3	1.0	2.2	2.5	0.70
6 LLVE,BM	е	40	2.3	1.0	2.2	3.9	0.78

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Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
2 HM,highRR	С	40	1.1	∞	100.0	2.7	0.79
3 HM,highProf	С	40	2.3	∞	100.0	1.2	0.56
4 HM,inelastic	С	40	2.3	1.0	100.0	0.1	0.20
5 HMLLV	С	40	2.3	1.0	2.2	2.5	0.70
6 LLVE,BM	е	40	2.3	1.0	2.2	3.9	0.78
7 LLVE,elastic	е	40	2.3	∞	2.2	4.2	0.81
8 FVEndog	е	40	2.3	∞	100.0	0.6	0.36
9 FVIowProf	е	71	1.1	∞	100.0	3.3	0.70

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Estimated parameter values, Variable

ξ

1.0

1.0

 ∞

 δ_v

2.2

2.2

100.0

 δ_b/δ

3.9

2.3

4.0

DWR

0.78

0.82

0.79

Pr

2.3

2.3

1.1

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20 HM, PropOut 71 100.0 1.8 0.79 1.1С ∞ Results Benchmark Results Estimated parameter values, Intuition Estimated parameter values, Variable **Opportunity Cost** Relative standard deviations, different models Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market

RR

40

40

71

Sep

е

е

С

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6

1

LLVE, BM

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Hall/Milgrom

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Relative standard deviations, different

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		pueW	peuW	nMatch	nVac	VJ
	Data	4.46	2.74	3.22		
1	Hall/Milgrom	7.92	0.00	1.88	7.39	6.36
6	LLVE,BM	5.18	2.87	2.09	1.73	1.48
14	LLVE,Prof=9	5.42	2.87	1.92	0.59	0.24
16	LLVE,xi=2	5.08	2.87	2.22	2.41	1.80
19	LLVE,dV*10	5.05	2.87	2.26	1.56	3.51
21	LLVE, PropOut	5.14	2.87	2.13	1.74	1.38

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Dynamic correlations

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Benchmark Results Estimated parameter values, Intuition Estimated parameter values, Variable Opportunity Cost Relative standard deviations, different models

Dynamic correlations

Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variabeske, Reiter Estimated Model



Long Live the Vacancy! – 23 / 48

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Dynamic correlations

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Dynamic correlations

Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variabesker/Reiter Estimated Model



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Dynamic correlations

Dynamic correlations Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model



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Dynamic correlations

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Dynamic correlations Dynamic correlations

Dynamic correlations

Dynamic correlations

Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables Key Reiter Estimated Model



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Dynamic correlations

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- Benchmark Results Estimated parameter values, Intuition Estimated parameter values, Variable Opportunity Cost Relative standard deviations, different models
- Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations

Dynamic correlations

Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model



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Dynamic correlations

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- Benchmark Results Estimated parameter values, Intuition Estimated parameter values, Variable Opportunity Cost Relative standard deviations, different models
- Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations

Dynamic correlations

Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables Key Reiter Estimated Model



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Estimated Model Key Labor Market

Va**riabetiske**/ Reiter Estimated Model

Key Labor Market Variables for Estimated

Model



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Key Labor Market Variables for Estimated

Model



Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables (Peiter

Estimated Model

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Key Labor Market Variables for Estimated

Model



Model

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Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Dynamic correlations Key Labor Market Variables for Estimated Model Key Labor Market Variables for Estimated Model Key Labor Market Variables for **Estimated Model** Key Labor Market Variabeske, Reiter Estimated Model



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Introduction

Variables for Estimated Model

Key Labor Market Variables for Estimated

Model



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2020

Conclusions

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Conclusions Thank You

Key Features:

- Long-lived vacancies;
 - Diamond Entry;
 - no separation upon disagreement in wage bargaining; endogenous separations.

Backup

Robustness

Conclusions

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- Conclusion
- Conclusions Thank You

Backup

Robustness

Key Features:

- Long-lived vacancies;
- Diamond Entry;
- no separation upon disagreement in wage bargaining;
 endogenous separations.
- Key Results

- reasonable model dynamics;
 - substantial endogenous persistence;
 - sizeable unemployment fluctuations;
 - robust to time varying opportunity cost of employment;
- one-shock model matches data well.

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Thank You

Introduction
.... very much for your attention.

Model

Data and Calibration

Results

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Conclusions

Thank You

Robustness

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Conclusions Thank You

Backup

Robustness

Christiano, L. J., M. S. Eichenbaum, and M. Trabandt (2016). Unemployment and Business Cycles. *Economet-rica 84*(4), 1523–1569.

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Haefke/Reiter

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Contribution of job finding to unemployment

Introduction

Model

Data and Calibration

Results

Conclusion

Backup

Contribution of job finding to unemployment fluctuations Relative standard deviations, different models Correlation with U. different models Impulse responses, benchmark Impulse responses, benchmark Impulse responses, benchmark Impulse responses, benchmark Implied Labor **Productivity Shock** vs. Various Suggested Implied Labor Productivity Shock vs.Haeifke/Reiter Suggested Implied Labor

Shimer (2012) approximation:

Contribution of job finding: keep separations constant:

 $u_t \approx \frac{\delta_t}{\delta_t + \phi_t^w}$

$$u_t^{Find} \approx \frac{\delta}{\overline{\delta} + \phi_t^w}$$
 (10)

- US data: job findings account for ≈ 75 % of U fluctuations; even more in last 20 years ("SCF")
- Contribution based on LLVE model:
 - Use constant separation rate
 - Use new vacancy postings from LLVE model solution

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(9)

Relative standard deviations, different

models

Introduction			pueW	peuW	nMatch	nVac	VJ
Model		Data	4.46	2.74	3.22		
Data and Calibration	1	Hall/Milgrom	7.02		1.88	7 30	6 36
Results	T		1.92	0.00	1.00	7.59	0.50
Conclusion	2	HM,highRR	7.92	0.00	1.88	7.39	6.36
Backup	3	HM,highProf	7.92	0.00	1.88	7.39	6.36
Contribution of job finding to	4	HM,inelastic	7.88	0.00	1.69	7.39	11.73
unemployment fluctuations	5	HMLLV	7.78	0.00	1.15	2.34	2.92
Relative standard deviations_different	6	LLVE,BM	5.18	2.87	2.09	1.73	1.48
models	7	LLVE,elastic	5.05	2.87	2.62	4.48	2.14
different models	8	FVEndog	5.05	2.87	2.63	7.38	9.24
benchmark	9	FVIowProf	5.05	2.87	2.63	7.38	9.24
benchmark	10	HM,Prof=0.2	7.92	0.00	1.88	7.39	6.35
benchmark	11	HM,Prof=0.5	7.92	0.00	1.88	7.39	6.35
benchmark	12	HM,Prof=3	7.92	0.00	1.88	7.39	6.36
Productivity Shock	13	LLVE,Prof=5	5.35	2.87	1.96	0.93	0.48
Suggested	14	LLVE,Prof=9	5.42	2.87	1.92	0.59	0.24
Productivity Shock	15	LLVE,xi=0.5	5.32	2.87	1.98	1.08	1.14
vs. Haefke/Reiter Suggested	16	5 LLVE,xi=2	5.08	2.87	Long Live 2.22	the Vacano 2.41	1.80^{-37}

Correlation with U, different models

Introduction		Vac	pueW	peuW	nMatch	gdp	n`
Model	Data	-0.91	-0.96	0.74	0.93	-0.91	
Data and Calibration	1 Hall/Mi	grom -0.90	-0.97		-0.22	-0.99	
Conclusion	2 HM,high	nRR -0.90	-0.97		-0.22	-0.99	-0
Backup	3 HM,high	Prof -0.90	-0.97		-0.22	-0.99	-0
Contribution of job finding to	4 HM,inel	astic -0.92	-0.98		-0.25	-0.98	-C
unemployment	5 HMLLV	-0.96	-0.99		-0.37	-0.92	-0
Relative standard	6 LLVE,BI	M -1.00	-1.00	0.86	1.00	-0.97	С
models	7 LLVE,ela	astic -0.91	-0.98	0.97	0.90	-0.99	С
different models	8 FVEndo	g -0.90	-0.98	0.97	0.89	-0.99	-C
benchmark	9 FVIowP	rof -0.28	-0.81	0.79	0.40	-0.87	-0
benchmark	10 HM,Pro	f=0.2 -0.89	-0.97		-0.22	-0.99	-0
benchmark	11 HM,Pro	f=0.5 -0.90	-0.97		-0.22	-0.99	-C
benchmark	12 HM,Pro	f=3 -0.90	-0.97		-0.23	-0.99	-C
Productivity Shock	13 LLVE,Pr	rof=5 -0.99	-1.00	0.78	0.98	-0.97	С
Suggested	14 LLVE,Pr	rof=9 -0.99	-1.00	0.75	0.96	-0.98	С
Productivity Shock	15 LLVE,xi=	=0.5 -0.99	-1.00	0.79	0.98	-0.97	C
vs Hæerke/Reiter Suggested	16 LLVE,xi=	=2 -1.00	-1.00	0.90 ^{Long}	Live the Vaca 0.99	ncy! - <u>38</u> / ' -0.97	⁴⁸ C
Implied Labor							

Impulse responses, benchmark



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Impulse responses, benchmark

Vac

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newVac



Impulse responses, benchmark



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Impulse responses, benchmark



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Surplus

Introduction	Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
Model	1 Hall/Milgrom	С	71	1.1	∞	100.0	4.0	0.79
Data and Calibration	6 LLVE, BM	е	40	2.3	1.0	2.2	3.9	0.78
Conclusion	10 HM,Prof=0.2	С	71	0.2	∞	100.0	10.2	0.96
Backup	11 HM,Prof=0.5	С	71	0.5	∞	100.0	7.0	0.90
Robustness	12 HM,Prof=3	С	71	3.0	∞	100.0	0.6	0.41
Surplus ξ. δα	13 LLVE,Prof=5	е	40	5.0	1.0	2.2	3.7	0.79
- 1 - U	14 LLVE,Prof=9	е	40	9.0	1.0	2.2	3.5	0.79

ξ, δ_v

Introduction	Model	Sep	RR	Pr	ξ	δ_v	δ_b/δ	DWR
Model	6 LLVE,BM	е	40	2.3	1.0	2.2	3.9	0.78
Results	15 LLVE,xi=0.5	е	40	2.3	0.5	2.2	3.9	0.79
Conclusion	16 LLVE,xi=2	е	40	2.3	2.0	2.2	3.9	0.78
Backup	17 LLVE, xi=3	е	40	2.3	3.0	2.2	3.9	0.78
Robustness	18 LLVE,dV*2	е	40	2.3	1.0	4.4	3.7	0.77
Surplus ξ, δ_v	19 LLVE,dV*10	е	40	2.3	1.0	20.1	2.6	0.66