Heterogeneity in labor mobility and unemployment flows across countries – Tables

Jonathan Créchet[*]

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[*]Department of Economics, University of Ottawa; jcrechet@uottawa.ca.

Table 1: Calibrated parameter values

Preset / normalizations

β	discount factor	0.9967
γ	worker's bargaining power	0.3
η	elasticity of matching function	0.5
δ	exogenous separation	0.0039
$[\underline{z}, \bar{z}]$	support of stochastic output component	$[0,1]$
μ_x	mean of log match quality	-0.100
$\mu_{u,y}$	unemployment log-skill mean	0
χ	skill-match quality complementarity	1
F	firing costs	0
ϕ	output tax	0

Internal

A	efficiency of matching	0.587
c_v	vacancy-posting cost	1.683
b	non-work income	1.371
ξ	EE relative search efficiency	0.564
λ	probability of match output shock	0.193
σ_x^2	log match quality variance	0.199
κ	search cost, linear component	1.718
$\underline{s}$	passive-search threshold	0.540
$\mu_{e,y}$	employment log-skill mean	0.064
ρ_y	log-skill persistence	0.967
σ_ε^2	log-skill disturbance variance	0.008

Notes: calibrated parameter values. See table 2 for targeted calibration statistics.

Table 2: Targeted data and model aggregate statistics

	Data	Model
Aggregate transition rates (%)		
UE	30.48	30.46
EU	1.71	1.75
EE	2.29	2.27
log-wage variance	0.3180	0.3129
Age-specific UE transition probability (%)		
20-24	33.44	32.88
25-29	31.95	33.30
30-39	31.20	32.83
40-49	29.52	31.65
50-54	26.97	26.75
Age-specific EU transition probability (%)		
20-24	3.40	3.40
25-29	2.14	2.13
30-39	1.68	1.43
40-49	1.38	1.36
50-54	1.20	1.34

Notes: empirical targeted and model statistics. Data source: IPUMS CPS, 1995-2018. UE, EU, and EE aggregate monthly rates and age profile of the UE and EU rates are computed from Basic Monthly CPS worker-flow data. The log-wage variance is computed from Ongoing Rotation Group data. See data appendix **??**.

Table 3: Decomposition of quantitative model steady-state flow semi-elasticities

	F	b	ϕ	A
UE elasticity contribution (%)				
skill distribution	-9.9	-2.1	-1.1	-0.3
conditional transition	-25.7	-3.4	-2.2	-1.4
tightness	*-0.1*	*-1.0*	*-0.9*	*-0.3*
search	*-0.9*	*-0.8*	*-0.5*	*-1.1*
selection	*-24.7*	*-1.7*	*-0.8*	*-0.0*
Total	-35.6	-5.5	-3.2	-1.7
EU elasticity contribution (%)				
skill distribution	-0.3	-0.0	0.0	0.0
job distribution	31.9	-5.9	-2.4	0.3
conditional transition	-94.1	10.3	4.2	-0.3
retention	*-101.9*	*10.3*	*4.0*	*-0.6*
(no) reallocation	*7.8*	*0.1*	*0.2*	*0.3*
Total	-62.4	4.4	1.8	-0.0
EE elasticity contribution (%)				
skill distribution	0.8	-0.1	-0.1	-0.0
job distribution	4.0	-0.9	-0.0	0.7
conditional transition	-26.7	-0.5	-1.0	-2.1
contact	*3.3*	*-1.3*	*-1.1*	*-1.3*
selection	*-30.0*	*0.8*	*0.1*	*-0.8*
Total	-21.9	-1.5	-1.1	-1.5

Notes: decomposition of quantitative model aggregate steady-state UE, EU, and EE semi-elasticities with respect to the following parameters: F: firing costs; b non-work utility; ϕ: match-output proportional tax; A: matching efficiency. The decomposition is based on (**??**), (**??**) and (**??**). Each entry represents the percentage-point value of a component in the total elasticity. The semi-elasticities take as reference: a unit numéraire increase in F; a one-percentage point increase in the replacement ratio $\zeta = b/E(w)$ and the effective tax rate $\phi_w = \phi E(f(x,y,z))/E(w)$; a one percent decrease in matching efficiency.

Table 4: Decomposition of quantitative model steady-state unemployment semi-elasticities

	F	b	ϕ	A
UE contribution (%)	35.7	5.6	3.2	1.7
distribution	*9.9*	*2.1*	*1.0*	*0.3*
conditional transition	*25.8*	*3.5*	*2.1*	*1.4*
EU contribution (%)	-74.8	4.3	1.8	-0.0
distribution	*37.9*	*-5.7*	*-2.3*	*0.3*
conditional transition	*-112.7*	*10.0*	*4.0*	*-0.3*
Distribution, total	47.8	-3.6	-1.2	0.6
Transition, total	-86.9	13.5	6.2	1.1
Total unemployment elasticity	-39.1	9.8	4.9	1.7

Notes: decomposition of quantitative model aggregate steady-state unemployment semi-elasticities with respect to the following parameters: F: firing costs; b non-work utility; ϕ: match-output proportional tax; A: matching efficiency. The decomposition is based on (**??**), (**??**) and (**??**). Each entry represents the percentage-point value of a component in the total elasticity. "Distribution, total", and "transition, total" sum up the components associated with the UE and EU elasticities. The semi-elasticities take as reference: a unit numéraire increase in F; a one-percentage point increase in the replacement ratio $\zeta = b/E(w)$ and the effective tax rate $\phi_w = \phi E(f(x,y,z)/E(w)$; a one percent decrease in matching efficiency.

Table 5: Parameters in calibrated alternative models

| | Benchmark | Alternative models | | |
		(i)	(ii)	(iii)
U.S. calibration				
A	0.59	0.79	0.31	0.35
b	1.37	0.73	2.15	0.35
λ	0.19	0.03	0.07	0.04
ξ	0.56	0.50	0.24	0.85
ζ	0.61	0.51	0.62	0.42
European policies				
A	0.58	0.33	0.24	0.10
b	1.29	0.72	2.06	0.36
ϕ	0.16	0.17	0.16	0.18
F	1.80	1.19	2.89	0.68

Note: parameter values in models with alternative heterogeneity specifications. The table also reports equilibrium effective unemployment income replacement ratio ζ. Benchmark: full quantitative model. Alternative model (i): no worker skill heterogeneity; (ii) no permanent match-quality (job) heterogeneity; (iii) no worker nor job heterogeneity. *U.S. calibration* refers to the calibration to the U.S. labor-market flows and *European policies* refers to the calibration with policy targets averaged across France, Germany, Italy, Spain, and Portugal discussed in the main text. A; matching efficiency; b: non-work utility; λ: probability of match-specific productivity shock; ξ: employment-search relative matching efficiency; ϕ: match-output proportional tax; F: firing costs.

Table 6: Sources of U.S.-Europe differences in unemployment flows in alternative models

| | Benchmark | Alternative models | | |
		(i)	(ii)	(iii)
UE rate, contribution (%)				
Policies	99.1	56.7	31.7	28.9
Firing costs	*37.8*	*2.6*	*-1.0*	*2.1*
Unem. benefits and taxes	*71.2*	*54.5*	*28.4*	*26.6*
Matching efficiency	0.9	43.3	66.3	71.1
Residual	-0.0	-0.0	2.0	-0.0
EU rate, contribution (%)				
Policies	39.2	8.7	31.1	28.8
Firing costs	*66.1*	*20.2*	*45.2*	*47.4*
Unem. benefits and taxes	*-28.3*	*-8.8*	*-16.5*	*-19.6*
Matching efficiency	-0.4	-0.8	9.0	-16.7
Residual	61.2	92.1	59.9	87.9

Note: policy and matching-efficiency contribution to relative differences in cross-country UE and EU flows across models with alternative heterogeneity specifications. Benchmark: full quantitative model. Alternative model (i): no worker skill heterogeneity; (ii) no permanent match-quality (job) heterogeneity; (iii) no worker nor job heterogeneity. Policies: combined contribution of firing costs, non-work utility and taxes implied by parameter differences in table 5. *Firing costs*: contribution of firing costs, in isolation. *Unem. benefits and taxes*: combined contribution of unemployment benefits and taxes together. Matching efficiency: marginal contribution of matching-efficiency differences (table 5) given policy differences. Residual: relative difference in flows after imposing policy and matching-efficiency variation. See main text for additional details.

Table 7: Europe-U.S. Secular unemployment differences

| | (i) *High complementarity* | | (ii) *Low complementarity* | |
	U.S.	Eur.	U.S.	Eur.
Parameter				
χ	1	1	0.75	0.75
F	0	1.8	0	1.2
b	1.4	1.3	0.87	0.82
ϕ	0	0.16	0	0.17
Outcome (%)				
U rate	5.42	15.96	4.95	7.82
UE	30.46	6.31	36.29	14.60
EU	1.75	1.20	1.89	1.24
EE	2.27	1.12	2.50	1.48

Note: comparison of outcomes of the benchmark calibrated economy with high complementarity between skills and match quality as captured by χ (i) and an economy with low complementarity (ii). Values of χ are chosen to generate changes in log-wage variance consistent with **?** (see the text). These economies are compared across different policy regimes: a "U.S.' regime (the benchmark calibrated policy parameters) and a "Europe' regime (see min text). The parameters are: χ: complementarity between skills and match quality; F: firing costs; b non-work utility; ϕ: match output proportional tax.