# The first precarious step: Labor market prospects for new entrants

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# Motivation

- The first step in a worker's career often is particularly hard.
  - Job-finding rate for entrants is roughly half of the other unemployed *(Adhikari et al, 2025)*.
  - One third of entry level positions posted on LinkedIn require minimum three years of experience.
- Long-lasting effects of early career shocks *(Kahn, 2010; von Wachter, 2020)*.
- Particularly sensitive to aggregate conditions (evidence on the effects of AI in *Brynjolfsson et al, 2025*).
- Labor Market Entrants — workers searching for their **first** job — are a key segment of early careers, yet have received **relatively little attention** in the macro-labor literature.
- Yet, **all** workers in the economy begin their career as labor market entrants!

# Motivation II: The entry wedge

- Most workers begin their careers with a period in which they must demonstrate that they can be reliable and productive employees (entry-level, junior positions).
- This establishment process is a general feature of labor market entry.
- Yet, its implications for labor market outcomes (employment, participation) remain widely unknown.
- **Question**: How does barriers faced at entry affect aggregate participation and employment?

## This paper

1. Document two facts about entrants using data from France, Spain, UK and the US
   - entrants (workers searching for their first job):
     a) find jobs at lower rates than experienced unemployed
     b) exit labor force at higher rates.
2. Search and matching model with entry vs regular jobs and endogenous labor market participation
   - with entrants' compulsory establishment process
     a) employing entrants entails a flow supervision cost
     b) entrants face a probationary period
   - calibrated to match key moments of the US and French labor market.
3. Use the model as laboratory to:
   - quantify the role of the establishment process for unemployment and participation
   - run policy experiments: unemployment insurance benefits.

## Preview of findings

- Conditional on standard labor controls:
  - **Fact 1:** entrants find jobs at 30–43% lower rates than experienced unemployed (4 countries)
  - **Fact 2:** entrants exit the labor force at 30–70% higher rates than experienced unemployed.
- Model with entry jobs and endogenous participation jointly explains both facts $\Longrightarrow$ entry wedge depresses match surplus and vacancy creation.
- **Quantitative:** removing entry barriers $\uparrow$ participation by $\sim$7 pp (US) and $\sim$8 pp (France); entry technology is offsetting France–US gaps.
- **Policy:** UI generosity has a negative spillover onto entrants (ineligible) by lowering the surplus of entry-level positions.

## Literature

- Determinants of labor force participation
  - Garibaldi & Wasmer (2005); Krusell, Mukoyama, Rogerson & Şahin (2017); Elsby, Hobijn & Şahin (2015)
  - Contribution: Add frictions that operate at the labor market entry stage
- NEETs, youth unemployment and school-to-work transitions
  - Clark & Summers (1982); Scarpetta et al. (2010); Genda, Kondo & Ohta (2010)
  - Contribution: Focus on the establishment process
- Labor market flows and unemployment heterogeneity
  - Shimer (2007); Elsby, Hobijn & Şahin (2010); Barnichon & Figura (2015); Ahn & Hamilton (2022)
  - Contribution: Focus on entrants vs non-experienced

# Empirical Evidence

# Data

- Microdata from France, Spain, UK and the US
- Each country's labor market survey: Labor Force Survey (LFS) and Current Population Survey (CPS)
  - European surveys are quarterly; CPS is monthly!
  - Rotating panel (longitudinal)
- Years 2005-1018, restricted to non-enrolled workers, aged 16-64
- Entrant: unemployed searching for their first job

# Descriptive Statistics: entrants vs experienced workers

| | France [18.4%] | | Spain [7.9%] | | UK [18.5%] | | US [12.3%] | |
|---|---|---|---|---|---|---|---|---|
| | Entrants | Exp. | Entrants | Exp. | Entrants | Exp. | Entrants | Exp. |
| Male | 0.491 | 0.509 | 0.428 | 0.526 | 0.581 | 0.581 | 0.559 | 0.563 |
| Age 16–24 | 0.657 | 0.136 | 0.593 | 0.111 | 0.777 | 0.214 | 0.872 | 0.452 |
| Age 25–44 | 0.272 | 0.487 | 0.331 | 0.565 | 0.184 | 0.436 | 0.107 | 0.369 |
| Age 45–64 | 0.071 | 0.377 | 0.076 | 0.324 | 0.039 | 0.350 | 0.021 | 0.179 |
| Primary or less | 0.114 | 0.108 | 0.218 | 0.183 | 0.307 | 0.244 | 0.359 | 0.192 |
| High school | 0.332 | 0.258 | 0.359 | 0.390 | 0.270 | 0.238 | 0.424 | 0.406 |
| Vocational | 0.391 | 0.445 | 0.202 | 0.225 | 0.188 | 0.212 | 0.125 | 0.249 |
| Tertiary | 0.159 | 0.187 | 0.221 | 0.202 | 0.183 | 0.245 | 0.092 | 0.153 |
| Long-term unemp. | 0.332 | 0.349 | 0.544 | 0.498 | 0.123 | 0.098 | 0.379 | 0.312 |
| Mean UE | 0.171 | 0.203 | 0.137 | 0.220 | 0.223 | 0.261 | 0.133 | 0.245 |
| Mean UN | 0.235 | 0.177 | 0.234 | 0.139 | 0.152 | 0.150 | 0.378 | 0.213 |
| Observations | 45,716 | 203,353 | 50,281 | 552,832 | 10,014 | 52,993 | 28,860 | 216,693 |

*Notes:* Sample restricted to non-enrolled unemployed workers aged 16–64, 2005–2018. Entrant share (in brackets) is the fraction of unemployed who are entrants. All shares computed using sampling weights.

# Facts about job-finding and labor force exit rates

- We estimate the gap in transition rates between entrants and experienced unemployed

$$flow_{i,t} = \beta_0 + \beta_1 entrant_{i,t} + X'_{i,t}\delta + \varepsilon_{i,t}$$

  where $flow = \{\text{UE}, \text{UN}\}$

- $\beta_1$: conditional difference in $flow$ between entrants and experienced

- $X_{it}$ includes education, sex, long-term unemp., marital status, age, year and region fixed-effects

# Entrant penalty: estimated coefficient on entrants

| | UE | | | UN | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| France | -0.027*** | -0.064*** | -0.065*** | 0.081*** | 0.072*** | 0.057*** |
| | (0.002) | (0.003) | (0.003) | (0.002) | (0.003) | (0.003) |
| Obs. | 193,678 | 193,411 | 189,500 | 193,678 | 193,411 | 189,500 |
| Spain | -0.088*** | -0.102*** | -0.095*** | 0.144*** | 0.117*** | 0.098*** |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.002) |
| Obs. | 474,067 | 474,066 | 432,041 | 474,067 | 474,066 | 432,041 |
| UK | -0.051*** | -0.079*** | -0.066*** | 0.076*** | 0.064*** | 0.029*** |
| | (0.004) | (0.005) | (0.005) | (0.003) | (0.004) | (0.004) |
| Obs. | 77,904 | 73,710 | 59,600 | 77,904 | 73,710 | 59,600 |
| US | -0.094*** | -0.093*** | -0.089*** | 0.211*** | 0.122*** | 0.118*** |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.002) | (0.003) |
| Obs. | 449,258 | 449,258 | 169,745 | 449,258 | 449,258 | 169,745 |
| Controls | No | Yes | Yes | No | Yes | Yes |
| Sample | All | All | Non-enrolled | All | All | Non-enrolled |

- Fact 1: Entrants have lower job-finding probability

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- Fact 1: Entrants have lower job-finding probability
- Fact 2: Entrants are more likely to exit the labor force

# Facts about job-finding and labor force exit rates

- Fact 1: Entrants have lower job-finding probability
  - Coefficient is negative across countries
  - Robust to controls and sample of not-enrolled
  - In the US, entrants$\rightarrow$ 8.9 pp lower job-finidng prob. than experienced
- Fact 2: Entrants are more likely to exit the labor force
  - In the US, entrants$\rightarrow$ 11.8 pp lower job-finding prob. than experienced
- In relative terms, compared to experienced, entrants' job-finding probability is:
  - 57% lower in Spain;
  - $\approx$ 30% lower in France, US and UK [Figures]

# The Model

# Environment

- Labor market model a la Diamond-Mortensen-Pissarides
- Unit mass of risk-neutral individuals and a continuum of firms
- Agents discount future at rate $r$
- Individual exit and enter population at exogenous rate $\delta$
- Individuals can be inactive, employed or unemployed
  - Entrants: unemployed searching for their first job

## Career-ladder with entry jobs

- Entrants (type-$0$) can only access entry jobs:
  - require supervision/evaluation flow cost $\kappa$
  - evaluation period ends at rate $\eta$
  - with exogenous probability $\gamma$ the evaluation is successful $\implies$ promoted to a regular job
- If successful after evaluation $(\gamma) \implies$ Established worker (type-$1$) $\rightarrow$ can access regular jobs
- If failed after evaluation $(1-\gamma) \implies$ Non-established worker (type-$2$) $\rightarrow$ can access only entry jobs

## Endogenous participation margin

- At rate $\phi$ all workers draw a value of home production $x \sim H(x)$.

- Additionally, the unemployed periodically reconsider participation with idiosyncratic iid shocks:
  - at rate $\xi$ they are hit by a Type I extreme value shock
  - this channel is needed to capture large flows between unemployment and inactivity

- Reduced-form way to capture **all** channels relevant for participation other than the establishment process

## Search and matching

- The labor market is segmented into two search markets $j$:
  - Entry-job market ($j = 0$): entrants and non-established workers
  - Regular market ($j = 1$): established workers
- In each market, standard matching function $M(v_j, \tilde{u}_j)$:
  - Job-finding rate $f_j = M(v_j, \tilde{u}_j)/\tilde{u}_j$, where $\tilde{u}_o = u_0 + u_2$; $\tilde{u}_1 = u_1$
  - Job-filling rate $q_j = M(v_j, \tilde{u}_j)/v_j$
- Job matches produce $p$ units
- All jobs are subject to exogenous job destruction $\lambda$

# Value Functions: Employment

$$(r+\delta)W_0 = w_0 + (\eta\gamma)(W_1 - W_0) + \big[\eta(1-\gamma)+\lambda\big](U_2 - W_0) + \phi\int_{x_{0w}}^{\bar{x}} \big(N_2(x) - W_0\big)\, dH(x)$$

- Entrants (type-0) must enter establishment process $(\gamma, \eta)$
- Move to inactivity if $x > x_{iw}$, where $N_i(x_{iw}) = W_i$

▸ Wage bargaining

# Value Functions: Employment

$$(r+\delta)W_0 = w_0 + \underbrace{(\eta\gamma)}_{\substack{\text{successful}\\ \text{eval.}}} \underbrace{(W_1 - W_0)}_{\rightarrow \text{ established.}} + \Big[\underbrace{\eta(1-\gamma)}_{\text{failed eval.}} + \underbrace{\lambda}_{\text{sep.}}\Big] \underbrace{(U_2 - W_0)}_{\text{EU flow}} + \underbrace{\phi \int_{x_{0w}}^{\bar{x}} \big(N_2(x) - W_0\big)\, dH(x)}_{\text{draw } x > x_{0w} \rightarrow \text{ EN flow}}$$

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$$(r+\delta)W_2 = w_2 + \eta\gamma\,(W_1 - W_2) + \left[\eta(1-\gamma)+\lambda\right](U_2 - W_2) + \phi\int_{x_{2w}}^{\bar{x}} \left(N_2(x) - W_2\right) dH(x)$$

$$(r+\delta)W_1 = w_1 + \lambda(U_1 - W_1) + \phi\int_{x_{1w}}^{\bar{x}} \left(N_1(x) - W_1\right) dH(x)$$

- Entrants (type-0) must enter establishment process $(\gamma, \eta)$
- Move to inactivity if $x > x_{iw}$, where $N_i(x_{iw}) = W_i$

▸ Wage bargaining

# Value Functions: Unemployment

$$(r+\delta)U_0 = \underbrace{f_0}_{\substack{\text{find.}\\ \text{entry job}}} \underbrace{(W_0 - U_0)}_{\text{UE}} + \underbrace{\phi \int_{x_{0w}}^{\bar{x}} \big(N_0(x) - U_0\big)\, dH(x)}_{\text{draw } x > x_0 \to \text{UN flow}} + \underbrace{\xi\big(EIV_0 - U_0\big)}_{\text{taste shock} \to \text{UN flow}}$$

- $U_0$: entrant — no UI benefit $z$; searches entry market at rate $f_0$

- $\xi(EIV_i - U_i)$: stochastic participation term (taste shocks toward inactivity)

▸ Stochastic participation ▸ Wage bargaining

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$$(r+\delta)U_1 = z + f_1(W_1 - U_1) + \phi \int_{x_1}^{\bar{x}} \big(N_1(x) - U_1\big)\, dH(x) + \xi\big(EIV_1 - U_1\big)$$

$$(r+\delta)U_2 = z + f_0(W_2 - U_2) + \phi \int_{x_2}^{\bar{x}} \big(N_2(x) - U_2\big)\, dH(x) + \xi\big(EIV_2 - U_2\big)$$

- $U_0$: entrant — no UI benefit $z$; searches entry market at rate $f_0$
- $U_1$: established — receives $z$; searches regular market at rate $f_1$

- $\xi(EIV_i - U_i)$: stochastic participation term (taste shocks toward inactivity)

▸ Stochastic participation ▸ Wage bargaining

# Value Functions: Unemployment

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- $U_0$: entrant — no UI benefit $z$; searches entry market at rate $f_0$
- $U_1$: established — receives $z$; searches regular market at rate $f_1$
- $U_2$: non-established — receives $z$; searches entry market at rate $f_0$
- $\xi(EIV_i - U_i)$: stochastic participation term (taste shocks toward inactivity)

▸ Stochastic participation ▸ Wage bargaining

# Value Functions: Inactivity

$$(r+\delta)N_i(x) = x + \phi H(x_i)\big(U_i - N_i(x)\big) + \phi \int_{x_i}^{\bar{x}} \big(N_i(x') - N_i(x)\big)\, dH(x'), \quad i \in \{0,1,2\}$$

- $x$: current home production (flow payoff while inactive)
- $\phi H(x_i)(U_i - N_i)$: re-entry — new productivity draw falls below threshold $x_i$
- $\phi \int_{x_i}^{\bar{x}} (\cdots)\, dH$: stay inactive with updated home productivity
- Threshold: $N_i(x_i) = U_i$ (indifference between inactivity and unemployment)

▸ SS flow equations

# Value Functions: Jobs

$$(r+\delta)J_0 = p - \kappa - w_0 + \Big[\lambda + \phi(1 - H(x_{0w})) + \eta(1-\gamma)\Big](V_0 - J_0) + \eta\gamma(J_1 - J_0)$$
$$(r+\delta)J_1 = p - w_1 + \Big[\lambda + \phi(1 - H(x_{1w}))\Big](V_1 - J_1)$$
$$(r+\delta)J_2 = p - \kappa - w_2 + \Big[\lambda + \phi(1 - H(x_{2w})) + \eta(1-\gamma)\Big](V_0 - J_2) + \eta\gamma(J_1 - J_2)$$

- $J_0$, $J_2$: entry jobs $\rightarrow$ firm pays supervision cost $\kappa$. In equilibrium $J_0 = J_2$
- $J_1$: regular jobs $\rightarrow$ no supervision cost
- Entry jobs: extra separation from failed evaluation ($\eta(1-\gamma)$); success ($\gamma$) promotes to $J_1$

▸ Surpluses

# Value Functions: Vacancies

$$rV_0 = -c + q_0 J_0$$

$$rV_1 = -c + q_1 J_1$$

- Flow posting cost $c$ in both markets
- $V_0$: entry vacancy filled at rate $q_0$. Note $J_0 = J_2 \Rightarrow$ expected value is $q_0 J_0$
- $V_1$: regular vacancy filled at rate $q_1$
- Free entry $\Rightarrow V_j = 0$ in equilibrium $\Rightarrow q_j J_j = c$

▸ Surpluses ▸ SS flow eqs.

# Calibration

# Calibration

- Maps the model to US and French data
- Two groups of parameters: exogenously set and calibrated internally
- Eight parameters internally calibrated to match (among others):
  - Entrant and experienced job-finding rate
  - Entrant share of unemployment
  - Aggregate separation rate, exit (UN) rate and participation rate
  - Entrant UEU rate

[Exogenously set parameters]

# Calibration: Parameters and Fit

**Internally calibrated parameters**

| Parameter | US | France |
|---|---|---|
| $\kappa$ supervision cost | 0.648 | 0.529 |
| $c$ vacancy-posting cost | 4.258 | 27.732 |
| $\delta$ pop. turnover rate | 0.0009 | 0.0006 |
| $\lambda$ separation rate | 0.0120 | 0.0051 |
| $\gamma$ establishment prob. | 0.367 | 0.456 |
| $\xi$ participation-shock rate | 2.455 | 0.798 |
| $x_{\text{high}}$ upper support $H$ | 1.039 | 1.0134 |
| $\phi$ home prod. shock rate | 0.062 | 0.021 |

**Calibration fit** (rates in pp, monthly)

| | US | | France | |
|---|---|---|---|---|
| Moment | Data | Model | Data | Model |
| Entrant JFR $f_0$ | 16.6 | 16.6 | 5.18 | 5.18 |
| Experienced JFR | 27.7 | 27.7 | 7.82 | 7.82 |
| Entrant share $u_0/u$ | 12.3 | 12.3 | 18.40 | 18.40 |
| Separation rate | 1.4 | 1.4 | 0.61 | 0.61 |
| Entrant UEU rate$^\dagger$ | 1.7 | 1.7 | 3.60 | 3.60 |
| UN rate | 26.6 | 26.6 | 6.90 | 6.90 |
| Participation rate | 81.1 | 77.9 | 75.2 | 74.5 |
| NU rate | 5.5 | 5.5 | 1.9 | 1.9 |

$^\dagger$ Two-month (US); two-quarter (France).

- Compared to the US, in France:
  - supervision cost $\kappa$ is lower
  - lower job-finding rate $\implies$ higher $c$
  - lower job-separation $\implies$ lower $\lambda$
  - lower job-separation + lower $f_0$ + similar $EUE$ $\implies$ higher $\gamma$
  - lower NU rate $\implies$ lower $\phi$

# Numerical Exercises

# Two quantitative questions

- What is the quantitative importance of the entrants establishment process
  - No-barrier counterfactual
  - Shapley decomposition of cross-country differences (not today)
- Comparative statics on unemployment insurance generosity

# No-barrier counterfactual

- Set $\kappa$ and $\eta$ to zero, while holding all other parameters at baseline values.
  - $\rightarrow$ matching with a non-established worker is identical to a regular-job match
  - $\rightarrow$ entrants find jobs at the same rate as established workers.
- Quantification of the main model mechanism (not policy evaluation)

# No-barrier counterfactual ($\kappa = \eta = 0$): model implications

| | United States | | | France | | |
|---|---|---|---|---|---|---|
| | Baseline | No barrier | $\Delta$ | Baseline | No barrier | $\Delta$ |
| Unemployment rate | 5.43% | 4.05% | $-1.38$ pp | 8.41% | 6.25% | $-2.16$ pp |
| Participation rate | 77.84% | 85.24% | $+7.40$ pp | 74.40% | 82.79% | $+8.39$ pp |
| Entrant share of unemployment | 12.32% | 8.24% | $-4.08$ pp | 18.34% | 14.01% | $-4.33$ pp |
| Entrant job-finding rate $f_0$ | 0.17 | 0.31 | $\times 1.89$ | 0.05 | 0.09 | $\times 1.68$ |
| Experienced job-finding rate $f_{\text{exp}}$ | 0.28 | 0.31 | $\times 1.13$ | 0.08 | 0.09 | $\times 1.11$ |
| Entrant UN rate | 38.28% | 23.07% | $-15.21$ pp | 11.87% | 7.67% | $-4.20$ pp |
| Experienced UN rate | 25.04% | 21.56% | $-3.48$ pp | 5.78% | 5.01% | $-0.77$ pp |

- Participation increases by 7.4 pp in the US and 8.39 in France

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- Entrants' job-finding rate x1.9 in the US and x1.7 in France

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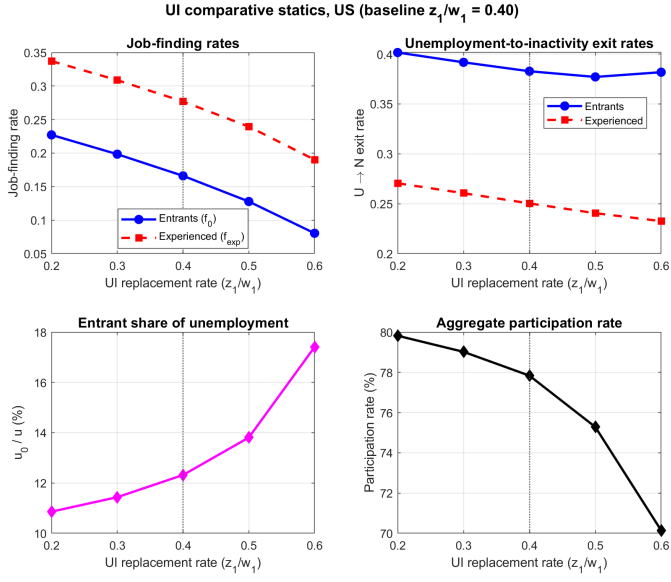
- Unemployment ↓Both unemployment and participation more responsive in France

# Impact of Unemployment Insurance (UI) generosity

- We vary the UI replacement rate for experienced workers $z_1/w_1$
- Entrants are not eligible for UI $\implies$ effect of $z_1$ on entrants (if any) is an equilibrium spillover
- Two channels:
  - direct: entrants search together with non-established workers who receive UI (lower ex ante surplus)
  - anticipatory: $z_1$ raises $U_1$ and $U_2 \to \uparrow w_1$ but also $w_0$
  - both $\implies \downarrow$ entry level job creation, $\uparrow$ entrant unemployment and $\downarrow$ participation

# Comparative statics in the UI replacement rate $z_1/w_1$: United States



# UI Experiment: Takeaways

- A 10 pp increase in the UI replacement rate $z_1/w_1$ (from baseline to 0.5) :
  - $\downarrow$ entrants' job-finding rate by $\approx$12% $\implies$ $\uparrow$ Unemployment rate
  - $\downarrow$ participation by $\approx$2 pp

- **Mechanisms:**
  - $\uparrow z_1 \Rightarrow \uparrow U_1, U_2 \Rightarrow \uparrow$ outside option in entry-wage bargaining $\Rightarrow \uparrow w_0$
  - $\uparrow w_0 \Rightarrow \downarrow$ entry-job surplus $S_0 \Rightarrow \downarrow$ entry-level vacancy creation
  - $\downarrow$ entry vacancies $\Rightarrow \downarrow$ entrant job-finding rate $f_0 \Rightarrow \uparrow$ entrant unemployment
  - $\downarrow f_0 \Rightarrow \downarrow$ value of labor force participation for entrants $\Rightarrow \uparrow$ labor force exit (UN)

France

# Conclusion

- Entrants' face lower job-finding probability and higher exit rates to inactivity
  - Robust to controls and labor market institutions (US, France, Spain, UK)
- Simple search and mathing model with establishment process can explain those facts
- Removing entry barriers raises participation by $\sim$7.4 pp (US) and $\sim$8.4 pp (France)
- Entry technology is offseting $\rightarrow$ it reduces France-US participation and unemp. gap
- UI generosity has a negative spillover onto entrants who are not eligible for benefits

# Future Work

- **Calibration improvements:**
  - More countries (Spain, UK) to discipline cross-country heterogeneity in $\kappa$ and $\gamma$
  - Improve identification of participation shock parameters ($\xi$, $x_{\text{high}}$)
- **Endogenize / extend the model:**
  - Endogenous establishment technology: firms choose $\kappa$ and $\eta$ (screening intensity)
  - Human capital: successful establishment raises worker productivity, not just market access
  - Business cycle: scarring effects of recessions
- **Policy:**
  - Entry-targeted subsidies (e.g. wage subsidies for first-job hires)
  - UI eligibility for entrants: welfare and employment effects
  - Optimal probationary period regulation

Thank you!

# Appendix

# A Decomposition of the US–France Gap

- Split parameters into groups:
  - $A = \{z_1, \lambda, c\}$: institutions
  - $B = \{\kappa, \gamma\}$: Entry technology
  - $C = \{\xi, x_{\text{high}}, \delta\}$: Participation.
- Benchmark decomposition is two-group: Entry technology ($B$) vs. rest ($A \cup C$).
- Compute two counterfactual economies:
  - US with French entry technology $= Y(US_B)$
  - France with US entry technology $= Y(FR_B)$
- Two marginal effects of $B$:
  - Effect on the US: $\Delta_B^{US} = Y(US_B) - Y(US)$
  - Effect on France: $\Delta_B^{FR} = Y(FR) - Y(FR_B)$
- Shapley contribution of entry technology on gap: $\phi_B = \frac{1}{2}\left(\Delta_B^{FR} + \Delta_B^{US}\right)$

# Shapley decomposition of the US–France gap

**Panel A: Two-group decomposition**

| Outcome | Total gap (FR − US) | $\phi_B$ | $\phi_{\text{rest}}$ |
|---|---|---|---|
| Unemployment rate | $+12.95$ pp | $-1.92$ pp | $+14.87$ pp |
| Participation rate | $-5.90$ pp | $+2.65$ pp | $-8.55$ pp |

**Panel B: Contributions and one-dimensional swaps**

| Swap | Δ Unemployment rate | Δ Participation rate |
|---|---|---|
| $B$ swap into US environment | $-0.66$ pp | $+2.44$ pp |
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- French entry tech applied to the US ↓ UR in 0.66 pp ⟹ Currrent US institutions reduce the gap slighly.
- US entry tech applied to France ↑ UR in 3.17 pp ⟹ Current French institutions reduce the gap.

# Stochastic Participation Component

- At rate $\xi$, unemployed worker $i$ reconsiders participation under i.i.d. Type-I extreme-value shocks. **Choice-specific values:**

$$\tilde{V}_i^U = U_i + \varepsilon_U, \qquad \tilde{V}_i^N(x) = N_i(x) + \varepsilon_N,$$

where $\varepsilon_U, \varepsilon_N \overset{\text{i.i.d.}}{\sim}$ Type-I EV$(\sigma)$. Worker chooses the option with the higher realization.

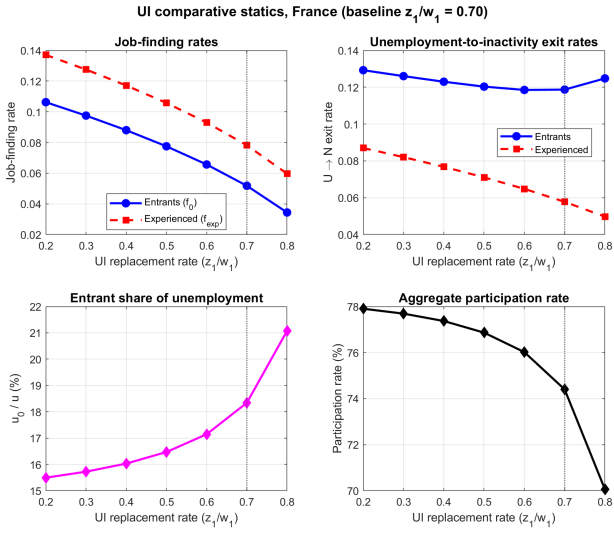
**Expected value of optimal choice:**

$$EIV_i = \int_{\underline{x}}^{\bar{x}} \sigma \log\Big(\exp\Big(\tfrac{U_i}{\sigma}\Big) + \exp\Big(\tfrac{N_i(x)}{\sigma}\Big)\Big)\, dH(x)$$

- $\sigma$ governs the smoothness of the participation decision ($\sigma \to 0$: deterministic threshold rule)
- Since entrants have weaker prospects ($f_0 < f_1$, no UI $z$): $U_0 < U_1 \implies EIV_0 > U_0$ more likely $\implies$ higher UN rate
- Allows matching large UN flows without unrealistically large $\phi$ or $\bar{x}$

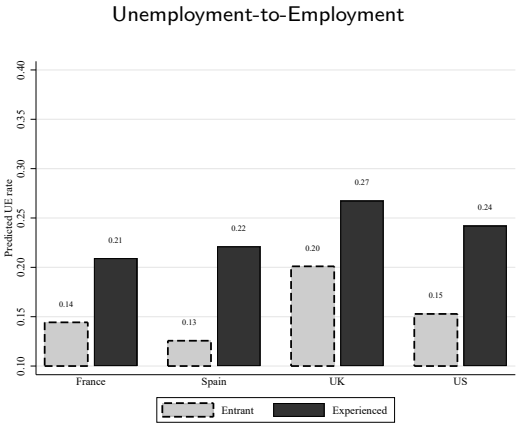
[back]

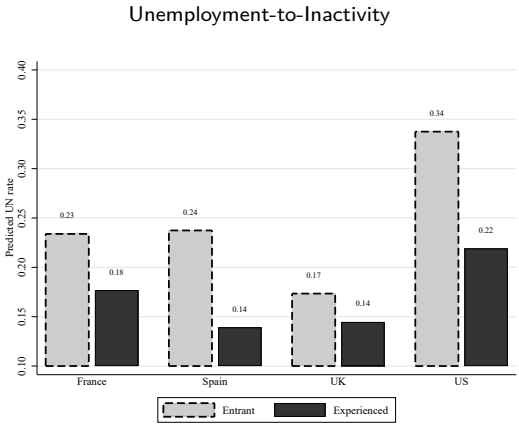
# Comparative statics in the UI replacement rate $z_1/w_1$: France




[back]

# Predicted transition rates: entrants vs. experienced

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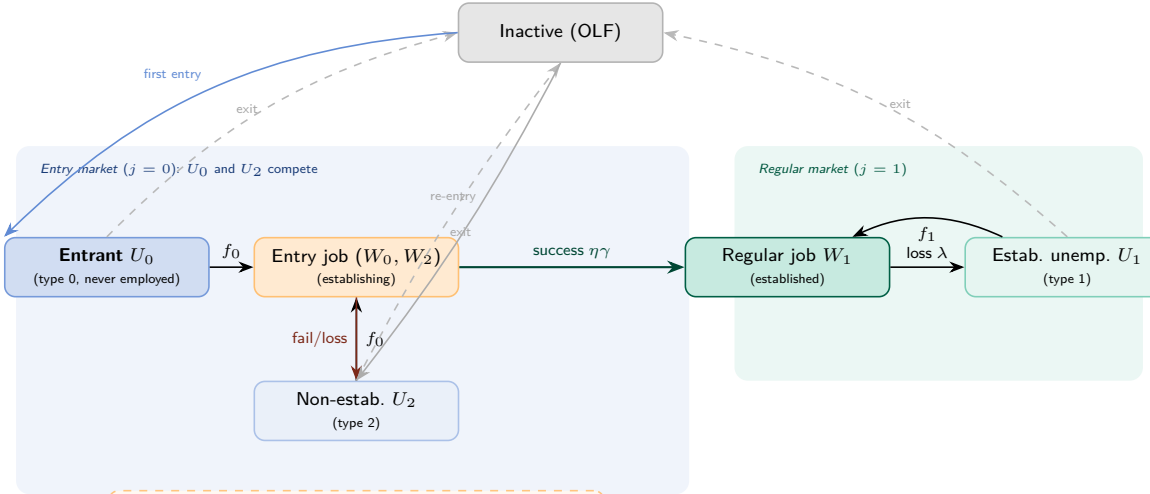
# The Career Ladder: State Space



## Wage Bargaining

$$\beta S_1 = W_1 - U_1, \qquad S_1 = J_1 + W_1 - U_1 - V_1$$

$$\beta S_0 = W_0 - U_2, \qquad S_0 = J_0 + W_0 - U_2 - V_0$$

$$\beta S_2 = W_2 - U_2, \qquad S_2 = J_2 + W_2 - U_2 - V_0$$

- $\beta$: workers' bargaining power
- Key: entrant (type-0) disagrees against $U_2$ (not $U_0$) — upon accepting an entry job the worker immediately becomes non-established
- $S_0 = S_2$ and $J_0 = J_2$ in equilibrium (identical bargaining problems)

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# Match Surpluses

$$S_1 = \frac{p - z - \frac{\phi}{r+\delta+\phi}\int_{x_1}^{x_{1w}} (x - x_1)\, dH(x) - \xi(EIV_1 - U_1)}{r + \delta + \lambda + \beta f_1 + \phi(1 - H(x_{1w}))}$$

$$S_0 = S_2 = \frac{(p - \kappa) - z - \beta f_0 S_0 + \eta\gamma(S_1 + U_1 - U_2) - \frac{\phi}{r+\delta+\phi}\int_{x_2}^{x_{0w}} (x - x_2)\, dH(x) - \xi(EIV_2 - U_2)}{r + \delta + \lambda + \eta + \phi(1 - H(x_{0w}))}$$

- $\kappa$ reduces numerator and $\eta$ increases denominator $\Rightarrow S_0 < S_1$
- $\eta\gamma(S_1 + U_1 - U_2)$: option value of successful promotion into regular market

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# Steady-State Flow Equations

**Unemployment:**

$$
\begin{aligned}
n_0\,\phi H(x_0) &= \Big[f_0+\delta+\phi(1-H(x_0))+\xi\bar{P}_0\Big]u_0\\
e_1\lambda + n_1\,\phi H(x_1) &= \Big[f_1+\delta+\phi(1-H(x_1))+\xi\bar{P}_1\Big]u_1\\
\Big[\lambda+\eta(1-\gamma)\Big](e_0+e_2) + n_2\,\phi H(x_2) &= \Big[f_0+\delta+\phi(1-H(x_2))+\xi\bar{P}_2\Big]u_2
\end{aligned}
$$

**Employment:**

$$
\begin{aligned}
u_0 f_0 &= \Big[\lambda+\delta+\eta+\phi(1-H(x_{0w}))\Big]e_0\\
u_1 f_1 + \eta\gamma(e_0+e_2) &= \Big[\lambda+\delta+\phi(1-H(x_{1w}))\Big]e_1\\
u_2 f_0 &= \Big[\lambda+\delta+\eta+\phi(1-H(x_{2w}))\Big]e_2
\end{aligned}
$$

**Out of the labor force:**

$$
\begin{aligned}
\delta+\Big[\phi(1-H(x_0))+\xi\bar{P}_0\Big]u_0 &= \Big[\phi H(x_0)+\delta\Big]n_0\\
\Big[\phi(1-H(x_1))+\xi\bar{P}_1\Big]u_1+\phi(1-H(x_{1w}))e_1 &= \Big[\phi H(x_1)+\delta\Big]n_1\\
\Big[\phi(1-H(x_2))+\xi\bar{P}_2\Big]u_2+\phi(1-H(x_{2w}))e_2+\phi(1-H(x_{0w}))e_0 &= \Big[\phi H(x_2)+\delta\Big]n_2
\end{aligned}
$$

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## Exogenously set parameters

| Parameter | Description | Value | Source |
|---|---|---|---|
| $r$ | Monthly discount rate | $0.004$ | Annual rate of 5% |
| $p$ | Match productivity | $1$ | Normalization |
| $\varepsilon$ | Matching elasticity | $0.5$ | Petrongolo and Pissarides (2001) |
| $\beta$ | Worker bargaining power | $0.5$ | Hosios condition |
| $\eta$ | Evaluation rate | $1/6$ | Six-month evaluation period |
| $x_{\text{low}}$ | Lower support of $H$ | $0$ | Normalization |
| $z_0$ | Entrant flow value | $0$ | Entrants ineligible for UI |
| $z_1$ | Experienced flow value | $0.4\,w_1$ (US); $0.7\,w_1$ (FR) | OECD replacement rates |
| $\sigma$ | Logit scale | $0.05$ | Smoothness device |

*Notes.* All values are common across the US and French calibrations except $z_1$, the flow value of unemployment for experienced workers, which differs across countries to reflect the substantially higher generosity of French UI.

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