Self-Insurance in Turbulent Labor Markets*

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Abstract

We study how wealth shapes workers' outcomes in turbulent labor markets, where job displacement exposes workers to the risk of skill loss. We develop and quantify a heterogeneous-agent directed search model with incomplete markets, skill dynamics, and job "tiers" with distinct risk–return profiles. Workers self-insure against separation and turbulence risks through savings and search decisions, both within and across tiers, generating post-separation outcomes that vary sharply with wealth. In U.S. data, poor workers face the most significant and most persistent wage losses, driven by wealth-induced downgrades into low-tier jobs. Policy experiments reveal clear trade-offs: unemployment insurance improves welfare, while job-creation subsidies more effectively expand output.

JEL: D31, E21, E24, J24, J31, J63, J64,

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Wealth plays an essential role in shaping labor market outcomes. Much of the literature highlights wealth's long-run effects—through education, parental transfers, health, or neighborhood quality.[1] We bring a different perspective: wealth can also have long-term effects by amplifying transitory shocks. A *single* unemployment spell, for workers with low wealth, can have large and persistent consequences on earnings when jobs are (i) segmented into discrete "tiers" with different risk–return profiles, (ii) mobility across tiers is costly, and (iii) financial markets are incomplete.

Our key innovation is to show that this tier structure gives rise to a new self-insurance margin that we label "precautionary tier mobility." Because job tiers are discrete and mobility between them requires paying a fixed cost, workers cannot finely adjust their job-search risk after a shock. Liquidity-poor workers, therefore, disproportionately downgrade into low-productivity, low-return tiers, mirroring the persistent occupational downgrades documented by Huckfeldt (2022) and the "slippery rungs" highlighted by Jarosch (2023). Wealthier workers, by contrast, can sustain longer search or pay the mobility cost required to remain in, or return to, high-return tiers. This mechanism generates history dependence in wages and mobility that is absent in continuous-submarket models and provides a new explanation for why short unemployment spells can have long-lasting effects.

Workers also self-insure through well-known channels. Savings are a primary source of self-insurance: as in the precautionary-search logic of Eeckhout and Sepahsalari (2023), liquidity enables workers to smooth consumption while searching for good matches. When savings are limited, workers cannot buffer shocks or sustain long unemployment spells—making liquidity constraints central to how workers navigate job loss. In our framework, this incomplete-market environment turns tier mobility into a powerful source of long-run scarring.

In this environment, economic turbulence—the risk of losing skills upon job displacement—amplifies this mechanism. We introduce turbulence as a shock that triggers and deepens the consequences of tier downgrades, following Ljungqvist and Sargent (1998) and Baley, Ljungqvist and Sargent (2023, 2024). When displacement entails skill loss, liquidity becomes even more critical: wealth determines whether workers can re-enter high-tier jobs or are pushed into lower-tier segments where recovery is unlikely. Liquidity constraints, therefore, force sharp and persistent adjustments: constrained workers downgrade into low-return tiers after turbulence, whereas wealthier workers maintain or regain access to high-return tiers. This interaction between turbulence, liquidity, and discrete tier choice generates novel wealth-dependent scarring patterns that we document in US data.

A simple example helps fix ideas. Consider a group of software engineers displaced after a turbulent technological shift that renders part of their skill set obsolete. Workers with sufficient savings can afford a longer and more selective search to regain positions in their previous tier. Those who are liquidity-constrained must instead accept lower-skill support jobs quickly. Crucially, this

[1] See Lovenheim (2011); Fagereng, Guiso, Pistaferri and Ring (2025); Cesarini, Lindqvist, Östling and Wallace (2016), and Chetty, Hendren and Katz (2016).

adjustment is not merely temporary. Because job opportunities are organized into discrete tiers and mobility across tiers is costly, a single displacement can permanently shift workers onto lower career trajectories. Entering a lower tier means not only an immediate wage cut but also a much lower probability of returning to their previous tier. With depleted savings, their ability to search selectively is further reduced. In this way, a short-lived liquidity shortfall during one unemployment spell can translate into long-run, wealth-dependent scarring in both earnings and mobility.

Contributions We make three main contributions. First, on the quantitative front, we develop a dynamic, heterogeneous-agent, directed-search model with incomplete markets, skill dynamics, and discrete job tiers. Workers choose which tier to search in, trading off job-finding rates, wage-growth opportunities, separation risk, and turbulence risk. Precautionary tier mobility emerges as a new self-insurance margin: wealthier workers can afford to search longer or pay the mobility cost required to remain in high-return tiers, whereas liquidity-constrained workers disproportionately target easier-to-find but less productive jobs. This mechanism generates history dependence in wages and mobility that cannot arise in continuous-ladder or frictionless environments. It connects heterogeneous-agent search models (Lise, 2012; Krusell, Mukoyama and Sahin, 2010; Chaumont and Shi, 2022; Kaas, Lalé and Siassi, 2025; Clymo, Denderski and Harvey, 2022) with the literature on dynamic skill persistence (Kambourov and Manovskii, 2009; Fujita, 2018; Huckfeldt, 2022; Postel-Vinay and Sepahsalari, 2023) and the long-lasting negative consequences of job loss (Jacobson, LaLonde and Sullivan, 1993; Davis and Von Wachter, 2011; Burdett, Carrillo-Tudela and Coles, 2020).

Our tier structure builds on the dynamic discrete-choice tradition of the urban and economic geography literature, where idiosyncratic preference shocks and mobility costs are used to model migration and sectoral reallocation (Kennan and Walker, 2011), and more recently extended in environments with precautionary savings (Giannone, Li, Paixao and Pang, 2023; Mongey and Waugh, 2024, 2025). We adopt this structure and tailor it to a labor-market environment in which job opportunities are organized into a small number of discrete "tiers." This parsimonious structure captures lumpy, history-dependent career transitions while remaining tractable in a heterogeneous-agent setting. The same modeling device has proved helpful in contexts where job heterogeneity reflects occupations (Krusell, Luo and Ríos Rull, 2021), contract types (Busch, Gálvez-Iniesta, González-Aguado and Visschers, 2024), or urban job ladders (Zanella, 2025),

Second, on the empirical front, we provide new evidence on the interaction between turbulence, tier mobility, and wealth. Using the NLSY79 matched to O*NET, we construct job tiers from the norms of occupations' skill-requirement vectors and define turbulence as transitions across occupations with low skill-transferability, measured by angular distance in task requirements (Gathmann and Schönberg, 2010; Autor, 2013; Baley, Figueiredo and Ulbricht, 2022). Using our proposed classification, we uncover new facts: (i) turbulent separations generate substantial immediate wage losses; (ii) these losses are concentrated among workers who move to lower tiers; and (iii) persistent losses occur almost exclusively among low-wealth workers. The calibrated model replicates these heterogeneous scarring patterns, thereby unifying evidence on wealth, job search (Griffy, 2021; Andersen *et al.*, 2023; Fontaine *et al.*, 2023), credit constraints and sorting (Herkenhoff, Phillips and Cohen-Cole, 2023; Herkenhoff and Phillips, 2024), and the long-run consequences of skill depreciation.

Third, on the policy front, we study the macroeconomic and distributive implications of unemployment insurance (UI) and job-creation subsidies (JC). Both policies reduce downward tier mobility and mitigate wage losses after turbulence, but they operate through distinct mechanisms and generate sharp trade-offs. UI improves welfare by relaxing liquidity constraints and strengthening self-insurance, but it reduces aggregate savings. JC stimulates high-tier job creation, lowers unemployment duration, and raises output while leaving savings behavior largely unaffected. Prior work on unemployment policy in heterogeneous-agent search models abstracts from mobility frictions across job types (Braxton and Taska, 2024; Souchier, 2024; Bloise and Fancio, 2024). We incorporate tier mobility, showing that these frictions fundamentally shape both policy incidence and workers' long-run outcomes.

1 Model

We develop an incomplete markets model with uninsurable income risk, human capital dynamics contingent on job status, and job heterogeneity. The four key elements of the model are (*i*) heterogeneous jobs, (*ii*) skill dynamics, (*iii*) imperfect financial markets, and (*iv*) directed search in the labor markets. We account for job heterogeneity by positing that workers can search across two tiers of jobs, differing in productivity and risks.

1.1 Environment

Time is infinite and discrete. There is a continuum of workers and potentially operating firms.

Preferences. Ex-ante identical risk-averse workers value consumption c_t, with preferences ordered according to

$$\mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t u(c_t) \tag{1}$$

where $u' > 0$ and $u'' < 0$. Future utilities are discounted at a rate $\beta \equiv \hat{\beta}(1-\rho_r)$, which consists of a subjective discount factor $\hat{\beta} \in (0,1)$ and a constant probability of retirement $\rho_r \in (0,1)$.

Worker heterogeneity. Workers can be employed or unemployed. While unemployed, they search for a new job in a frictional labor market while receiving income b from home production. While employed, they supply one unit of labor inelastically and receive a wage w, taxed at a flat rate $\tau \in (0,1)$. Workers save or borrow financial assets a at the gross risk-free rate $R > 1$ and are subject to an exogenous borrowing limit $a' \geq \underline{a}$, where $\underline{a} < 0$ reflects the severity of financial market incompleteness. Additionally, all workers jointly own all firms and thus receive an equal share of a diversified portfolio of dividends π as capital income.

In addition to their employment status, workers differ ex post in three dimensions: their current skill level, x_i, which can be either low (x_l) or high (x_h); job productivity, y; and asset holdings, a. A retired worker exits the economy, and a newborn, low-skilled, unemployed worker enters. The assets of retired workers are distributed equally among newborn workers.

Technology. Worker-firm pairs are in two tiers $k \in \{A, B\}$. Within a tier, jobs are homogenous in every dimension. Across tiers, jobs differ in terms of a fixed productivity level, a separation probability, and a job-creation cost. Jobs in Tier A are relatively more productive than jobs in Tier B: $y_A > y_B$. A firm in tier k paired with a worker of skill i produces output

$$f_{ik} \equiv f(x_i, y_k). \tag{2}$$

Skill dynamics. Workers stochastically gain ($x_l \to x_h$) or lose ($x_h \to x_l$) skills depending on their employment status and instances of layoffs.

(i) Upgrades: Low-skilled employed workers upgrade skills with probability γ^u.

(ii) Separations: Jobs may be exogenously terminated with probability λ_{ik}, which depends on the worker's skill and the job tier.

(iii) Turbulence risk: Upon separation, high-skilled workers suffer a skill loss with probability γ_k^d.

Labor markets. To hire a worker with skill i in tier k, a firm posts a vacancy at the cost κ_k. The job search in the labor market is directed. Submarkets are indexed by worker skill, job tier, and assets (i, k, a). At the beginning of each period, firms simultaneously announce offered wages w. Workers observe bundles of wages and job-finding probabilities across all submarkets in each tier and choose the combination (w, θ) they wish to apply for. Market tightness in a particular submarket is defined as the ratio of vacancies opened by firms and unemployed workers searching in that submarket, denoted by $\theta \equiv v/u$. Within each submarket, firms and workers are randomly matched at a rate $m_k(u, v)$, which is tier-specific. Thus, a worker applying to submarket θ finds a job with probability $p_k(\theta)$ and a firm fills a vacancy with probability $q_k(\theta)$, where

$$p_k(\theta) = m_k(u, v)/u, \qquad q_k(\theta) = m_k(u, v)/v = p_k(\theta)/\theta. \tag{3}$$

Workers may switch tiers during an unemployment spell. An unemployed worker previously employed at tier k may decide to direct their search to jobs in tier k'. To do this, she must pay a one-time switching cost $\mathcal{M}_{kk'}$ measured in monetary terms. Switching tiers changes the productivity of new job offers from y_k to $y_{k'}$. It also exposes workers to different levels of risks, including separation, skill upgrades, and skill downgrades.

1.2 Value functions

We now describe the value functions of firms and workers. For simplicity, we index value functions by worker skill $i \in \{l, h\}$ job tier $k \in \{A, B\}$, instead of explicitly carrying these states.

Value of a vacancy. Firms pay a per-period cost of vacancy κ_k to open a vacancy. Let V_{ik} be the value of a vacancy posted in tier k to hire a worker with skill i, and let $J_{ik}(w)$ be the value of a filled job in tier k with a worker of skill i that gets paid wage w. The value of a vacancy is:

$$V_{ik} = -\kappa_k + \beta \max_{\theta} \{q_k(\theta) J_{ik}(w(\theta)) + (1 - q_k(\theta)) V_{ik}\}, \qquad \forall (k, i). \tag{4}$$

Since firms are ex ante identical, the trade-off between wages w and market tightness θ (which affects the probability of filling a vacancy) makes them indifferent to hiring workers with different levels of assets or skills.

Value of a filled job. For a firm in tier k, the value of a filled job with a high-skilled worker ($i = h$) at wage w is

$$J_{hk}(w) = f_{hk} - w + \beta [\lambda_{hk} V_{hk} + (1 - \lambda_{hk}) J_{hk}(w)], \tag{5}$$

whereas the value of a filled job with a low-skilled worker ($i = l$) at wage w is

$$J_{lk}(w) = f_{lk} - w + \beta \left[\lambda_{lk} V_{lk} + (1 - \lambda_{lk})((1 - \gamma^u) J_{lk}(w) + \gamma^u J_{hk}(w'))\right]. \tag{6}$$

where $w' \equiv w + y_k(x_{hk} - x_{lk}) = w + (f_{hk} - f_{lk})$ is the wage upon promotion, equal to the baseline wage plus the difference in production caused by skill upgrade.

The value of high-skilled jobs in (5) embeds the risk of an exogenous separation at rate λ_{hk}. In contrast, the value of low-skilled jobs in (6) considers both the risk of an exogenous separation at rate λ_{lk} and the risk of a skill upgrade at rate γ^u. Consequently, firms that employ low-skilled workers factor into the job value the potential output and the corresponding wage increases.

Inner value of unemployment in tier k. Let $U_{ik}(a)$ be the value of an unemployed worker with skill i searching for a job in tier k with assets a. Let $E_{ik}(a, w)$ be the value of a worker with skill x_i employed in tier k at wage w and with assets a.

Given the wage-tightness menu (w, θ) offered by firms, an unemployed worker chooses savings

a' and a submarket θ to maximize:

$$(7) \qquad U_{ik}(a) = \max_{a',\theta} u(c) + \beta \left[p_k(\theta) E_{ik}(a', w(\theta)) + (1 - p_k(\theta)) \mathcal{U}_{ik}(a') \right]$$

$$(8) \qquad a' = Ra + b - c + \pi, \quad a' \geq \underline{a}$$

subject to the borrowing limit $a \geq \underline{a}$. With endogenous probability $p_k(\theta)$, the worker finds a job and obtains the value of employment E_{ik} in the same tier, and with the complementary probability $1 - p_k(\theta)$, the worker remains unemployed. The optimal savings and submarket choices are functions of assets a, skill i, and tier k. While unemployed, a worker receives the value of home production b and, given her asset holdings, decides how much to save and how much to consume.

Outer value of unemployment. Before embarking on a job search, unemployed workers select the tier in which to search for jobs during the next period. The timing is as follows. Unemployed workers first draw preference shocks for working in each tier, ϵ_A and ϵ_B. We assume these shocks are i.i.d. and drawn every period from a type-I extreme-value distribution with a scale parameter $\nu > 0$. Second, given their asset holdings and skill levels, they decide whether to switch by paying the switching cost or remain in the same tier. If assets are insufficient to cover the switching cost, there is no choice but to stay at the current tier. After making the mobility decision, they decide on their savings and the submarket to which they want to apply. Thus, the outer value of being unemployed is given by:

$$(9) \qquad \mathcal{U}_{ik}(a) = \mathbb{E}\left[\max_{k' \in \{A,B\}} U_{ik'}(a - \mathcal{M}_{kk'}) + \nu \epsilon_{k'} \right], \qquad k \in \{A, B\},$$

subject to the borrowing limit. Following McFadden (1973), the distributional assumptions on preference shocks allow the outer value of unemployment in (9) to be written as:[2]

$$(10) \qquad \mathcal{U}_{ik}(a) = \nu \log \sum_{k' \in \{A,B\}} \exp\left(\frac{1}{\nu} \cdot U_{ik'}(a - \mathcal{M}_{kk'}) \right),$$

which implies that the share of unemployed workers with assets a switching from tier k to k', denoted by $\mu_{ikk'}(a)$, is

$$(11) \qquad \mu_{ikk'}(a) = \frac{\exp\left(\frac{1}{\nu} \cdot U_{ik'}(a - \mathcal{M}_{kk'})\right)}{\sum_{k' \in \{A,B\}} \exp\left(\frac{1}{\nu} \cdot U_{ik'}(a - \mathcal{M}_{kk'})\right)}, \quad k \in \{A, B\}.$$

Thus, switching rates take the familiar logit form—ratios of exponentially tilted utilities—and vary smoothly with assets. The parameter ν governs the relative role of wealth and preference shocks: when $\nu \to 0$, mobility is determined by a sharp wealth threshold; when $\nu \to \infty$, wealth plays no

[2] See Appendix B.3 for the proof.

role, and switching is purely taste-driven. For intermediate values, as in our calibration described in the next section, tier choice is continuous in assets.

Value of employment. Employed workers make saving decisions, subject to the budget constraint

$$c + a' \;=\; Ra + (1-\tau)w + \pi, \quad a' \geq \underline{a} \tag{12}$$

where the worker's consumption and saving decisions are based on the after-tax wage and the assets saved from the previous period.

The value of being a low-skilled employed worker in tier k at wage w is:

$$\begin{aligned} E_{lk}(a,w) \;&=\; \max_{c,a'}\; u(c) + \beta(1-\lambda_{lk})\Big[(1-\gamma^u)E_{lk}(a',w) + \underbrace{\gamma^u E_{hk}(a',w')}_{\text{skill upgrade}}\Big] \\ &+\; \beta\lambda_{lk}\mathcal{U}_{lk}(a') \\ w' \;&=\; w \;+\; y_k(x_{hk}-x_{lk}) \end{aligned} \tag{13}$$

A low-skilled employed worker in tier k gains utility from consumption and discounts the future at rate β. If hit by a separation shock, the worker in the next period can decide which island she wants to look for a job on. Otherwise, she will stay in her current job. With probability γ^u, she receives a skill upgrade and her wage increases to a new value w' that accounts for the skill upgrade.

The value for a high-skilled employed worker in tier k with assets a and wage w equals:

$$\begin{aligned} E_{hk}(a,w) \;&=\; \max_{c,a'}\; u(c) + \beta(1-\lambda_{hk})E_{hk}(a',w) \\ &+\; \beta\lambda_{hk}\Big[(1-\gamma_k^d)\mathcal{U}_{hk}(a') + \underbrace{\gamma_k^d\mathcal{U}_{lk}(a')}_{\text{skill downgrade}}\;\Big] \end{aligned} \tag{14}$$

The value accounts for turbulence risk, reflected in the probability γ_k^d of suffering a skill downgrade after a layoff, which happens at rate λ_{hk}.

1.3 Worker Masses and Distributions

Let $\Gamma^E_{ik}(a,w)$ be the joint distribution of employed workers over assets and wages, and $\Gamma^U_{ik}(a)$ be the distribution of unemployed workers over assets, conditional on worker skill and tier (i,k). Then, the masses of employed and unemployed workers by skill and tier are computed as

$$e_{ik} \equiv \int_a\int_w d\Gamma^E_{ik}(w,a), \qquad u_{ik} \equiv \int_a d\Gamma^U_{ik}(a), \tag{15}$$

and the total masses of employed and unemployed workers are

$$e \equiv \sum_{i\in\{l,h\}} \sum_{k\in\{A,B\}} e_{ik}, \qquad u \equiv \sum_{i\in\{l,h\}} \sum_{k\in\{A,B\}} u_{ik}. \tag{16}$$

1.4 Stationary Equilibrium

Given a gross interest rate R and a value of home production b, a stationary equilibrium consists of worker and firm value functions $\{V_{ik}, J_{ik}, \mathcal{U}_{ik}(a), U_{ik}(a), E_{ik}(w,a)\}$; consumption $c_{ik}(a)$ and saving $a'_{ik}(a)$ policies for all workers; the mobility policy for each tier-skill pair (μ_{ik}) and submarket choice $(\theta_{ik}(a))$ for the unemployed workers; wage-tightness profiles $(w(\theta_{ik}), \theta_{ik})$; tax rate τ; tier-skill distribution of employed workers over wages and assets $\Gamma^E_{ik}(w,a)$; and tier-skill distribution of unemployed workers over assets $\Gamma^U_{ik}(a)$ such that the following conditions hold:

1. Consumption $c_{ik}(a)$ and saving policies $a'_{ik}(a)$ maximize workers' values and smooth consumption given risks;

2. Submarket choices $\theta_{ik}(a)$ maximize unemployed workers' values by trading off wages and job-finding rates;

3. Free entry condition holds for firms, so that vacancies earn zero expected profit, i.e., $V_{ik} = 0\ \forall(i,k)$;

4. Tier switching probabilities $\mu_{ikk'}(a)$ maximize unemployed workers' values and are consistent with the steady-state distributions:

$$\Gamma^U_{ik'}(a) = \sum_{k\in A,B} \mu_{ikk'}(a)\Gamma^U_{ik}(a) \tag{17}$$

5. The distributions $\Gamma^U_{ik}(a)$ and $\Gamma^E_{ik}(w,a)$ are stationary and consistent with firm and worker policies.

1.5 Model Solution

The model is block-recursive in policy functions, meaning that prices do not depend on the distribution of vacancies or workers across submarkets (Shi, 2009; Menzio and Shi, 2011). This allows us to solve firms' and workers' problems separately, greatly simplifying the computation of the equilibrium. The solution proceeds in three steps.

First, we exploit the block-recursive structure to link wages and market tightness using firms' Bellman equations in steady state and the free-entry condition, which pins down the vacancy value at zero. Second, given this relationship, we solve for workers' policy functions. Employed workers optimally choose savings, while unemployed workers jointly choose their tier, submarket, and savings. For a given submarket choice, the first-order condition of savings reduces to a standard Euler equation, which we use to accelerate computation. Finally, we recover the stationary distribution of workers over assets and wages. Endogenous choices of submarket, tier, and savings—together with exogenous separation and skill dynamics—define a transition matrix that fully describes workers' movements across states. This matrix yields the stationary distribution.[3]

1.6 Three Self-Insurance Mechanisms

Our framework embeds three channels through which workers can self-insure against labor market risk: precautionary savings, search intensity, and tier mobility. These mechanisms operate jointly to determine how workers smooth their consumption and adapt to shocks. We illustrate each mechanism using policy functions generated under the calibration described in Section 3.

1.6.1 Precautionary Savings

All workers smooth their consumption over time by adjusting their savings. Their asset choices strike a balance between current and future consumption, weighing the probability of finding a job against the risk of remaining unemployed. If reemployed, higher income prospects encourage precautionary saving; if unemployment persists, assets are gradually depleted to sustain consumption. Notably, expectations about future states incorporate both job-finding probabilities and the possibility of switching tiers, so savings decisions are jointly shaped by employment risk and occupational mobility.

Figure 1 illustrates the saving policy, defined as net asset accumulation $(a' - a)$, for both unemployed and employed workers as a function of current asset holdings. The figure highlights the classic precautionary savings channel: risk-averse workers save while employed $(a' - a > 0)$ and dissave while unemployed $(a' - a < 0)$ to smooth consumption over time.

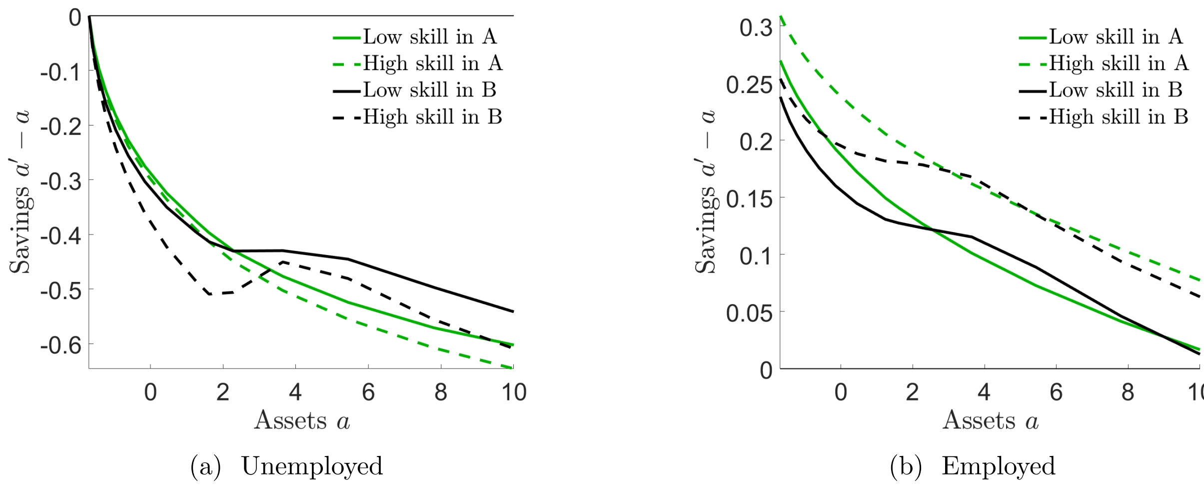
The intensity of the precautionary motive, captured by the slope of $a' - a$, varies systematically with employment status, skill level, and job tier. Unemployed workers gradually deplete their assets while unemployed. For a given level of assets, high-skilled unemployed workers dissave more aggressively than their low-skilled counterparts, anticipating higher wages upon reemployment. Consistently, among the employed, high-skilled workers in both tiers accumulate more wealth than low-skilled workers, reflecting the more substantial precautionary buffer they can build.

1.6.2 Precautionary Within-Tier Search

We next investigate how unemployed workers select their job search strategies as a function of wealth and skill, given that they have already chosen a tier.

[3] Full derivations are in Appendix B, and the equilibrium computation algorithm is in Appendix C.

Figure 1: Saving Policies



Note: Savings equals the change in asset holdings between periods, $a' - a$. The savings of employed workers are evaluated at the average wage of the group. Parametrization from Table 1.

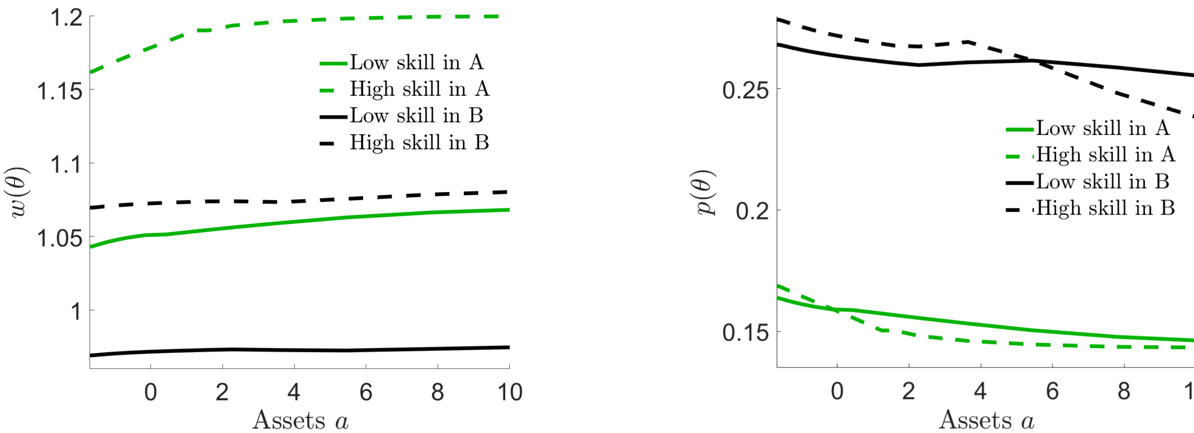
The firms' problem implies that workers always face a trade-off between wages and the probability of finding a job. Firms can offer high wages in slack markets, where vacancies are harder to fill, or lower wages in tighter markets, where hiring is quicker. They are indifferent between the two under the free-entry condition. Because the wage–tightness menu is tier- and skill-specific, workers must decide where to search by weighing higher expected earnings against lower reemployment chances. This trade-off underlies the precautionary search behavior.

Figure 2 plots equilibrium wage (Panel a) and job-finding policies (Panel b) for low- and high-skilled unemployed workers under the baseline calibration. Within each tier, wealthier workers are more willing to take risks: they target higher-paying jobs that are harder to obtain, whereas poorer workers accept lower wages with higher job-finding probabilities. Over time, as unemployed workers dissave to smooth consumption, their targeted reemployment wages decline (Eeckhout and Sepahsalari, 2023). Notably, the decline is steeper for low-skilled workers searching in Tier A.

1.6.3 Precautionary Across-Tier Mobility

Having analyzed within-tier behavior, we now turn to tier mobility, the central novel element of our framework. Figure 3 shows the equilibrium switching probabilities by assets, tier, and skill. Wealthier unemployed workers in Tier B are more likely to upgrade to A, where jobs are better paid but harder to obtain; this tendency is stronger for high-skilled workers, who gain more from complementarities with productive firms. In contrast, poorer unemployed workers in Tier A are more likely to downgrade to B, where jobs are easier to secure but pay less, particularly for the low-skilled, who sacrifice less in leaving Tier A. At higher wealth levels, switching probabilities flatten

Figure 2: Wage and Job Search Policies



(a) Wage policy

(b) Job finding rate policy

Note: Equilibrium wages $w(\theta)$ and job finding rates $p(\theta)$ for unemployed workers in Tier A (green) and Tier B (black). Solid lines for low-skilled unemployed; dashed lines for high-skilled unemployed. Parametrization from Table 1.

as the marginal utility of reemployment declines, reducing incentives to move in either direction.

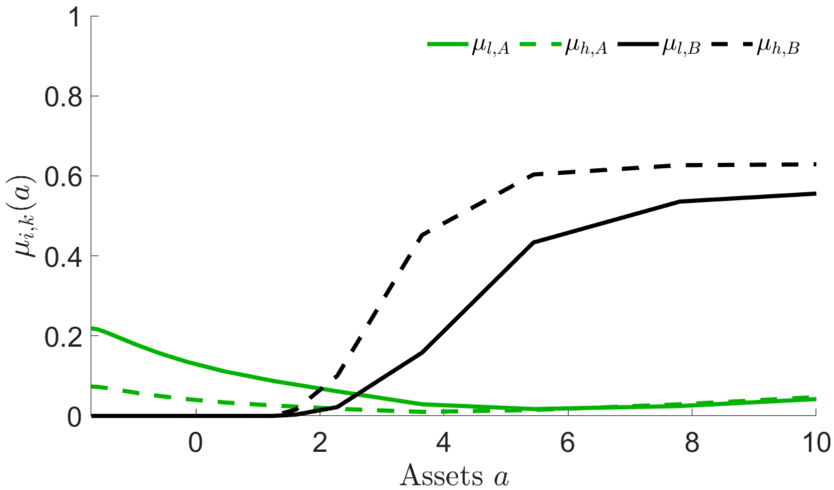
This generates sharp wealth asymmetries. At low asset levels, over 20% of the unemployed in A downgrade, while essentially none can afford to upgrade from B due to switching costs. At high wealth levels, downgrades vanish, and nearly half of unemployed workers in B upgrade to A. For example, a low-skilled worker in A at the borrowing constraint can increase her job-finding probability by 68% by downgrading to B, but suffers a 7% wage loss. Conversely, a wealthy high-skilled worker in B can move to A, trading a 40% lower job-finding probability for a 12% wage gain. We refer to this mechanism as *precautionary tier mobility.* Workers adjust not only their savings and search intensity, but also their tier choice as a form of self-insurance. Importantly, within- and between-tier choices interact: rich workers can afford to wait for better matches within a tier and to apply to more productive tiers, thereby securing more favorable trade-offs between wages and job-finding rates. This additional margin—absent in models without tier heterogeneity—is especially consequential for low-skilled workers.

2 Identifying Job Tiers and Turbulence Risk

To discipline the model, we require empirical counterparts for its two novel components: (i) tier mobility and (ii) turbulence shocks. Tier mobility is endogenous in the model; turbulence is exogenous. In the data, we therefore separate tier changes (driven by behavior) from within-tier skill-mix changes (driven by low transferability).

To operationalize these components, and following evidence that human capital is largely occupation-specific (Kambourov and Manovskii, 2009; Postel-Vinay and Sepahsalari, 2023), we

Figure 3: Tier Mobility Policy



Note: Equilibrium tier mobility rates $\mu_{i,k}(a)$. Green: downgrades from Tier A to B. Black: upgrades from Tier B to A. Solid lines = low-skilled. Dashed lines = skilled. Parametrization from Table 1.

treat occupations as the empirical analogue of "jobs" in the model. Occupations can be viewed as combinations of tasks that require distinct skills (Autor, 2013). These skill requirements map directly to productivity differences (Acemoglu and Autor, 2011; Deming and Kahn, 2017), which define job tiers in the model, and to the risk of human capital loss, since skills used in an occupation may not be transferable to another occupation. Accordingly, we combine occupation-level information from the U.S. Department of Labor's O*NET project with individual-level data from the NLSY79 to measure occupational skill requirements, which we then use to construct empirical measures of job tiers and turbulence risk.

2.1 Occupational Skill Requirements

We represent each occupation at the 3-digit level as a vector of required skills, $q \in \mathbb{R}^J$ (Poletaev and Robinson, 2008; Gathmann and Schönberg, 2010). Our empirical measure of skill requirements is based on the O*NET project, which characterizes occupations using 277 descriptors of required worker attributes and skills. Following Guvenen, Kuruscu, Tanaka and Wiczer (2020) and Baley, Figueiredo and Ulbricht (2022), we aggregate these descriptors into four ($J = 4$) broad skill dimensions—math, verbal, social, and technical. To make them comparable, we normalize each skill dimension to percentile ranks. Each three-digit occupation is thus represented by a four-element skill requirement vector, which we use to construct our empirical objects for (i) job tiers, based on the overall skill intensity captured by the norm $\|q\|$, and (ii) turbulence risk, based on differences in skill composition across occupations and workers' tenure in an occupation.[4]

[4] We use the Manhattan norm, but results are robust to using the Euclidean norm.

2.2 Job Tiers

In the model, Tier A jobs are more productive than Tier B jobs. Motivated by evidence that occupational skill requirements are strongly correlated with productivity and wages (Acemoglu and Autor, 2011; Deming and Kahn, 2017), we define job tiers based on the norm of the skill vector, which summarizes an occupation's overall skill intensity. Let $\mathcal{N}$ denote the median norm across 3-digit occupations. We classify occupations with $\|q\| \geq \mathcal{N}$ as Tier A (high productivity), while those with $\|q\| < \mathcal{N}$ are Tier B (low productivity).

Figure 4a illustrates our empirical approach to job tiers for the case where $J = 2$. The x-axis represents the required level of skill 1, and the y-axis represents the required level of skill 2. Occupations with a norm above the median are classified as Tier A (green segment), while those with a norm below the median are classified as Tier B (black segment). In the example, occupation $O1$ with $\|q_1\| \geq \mathcal{N}$ is in tier Tier A and $O2$ with $\|q_2\| < \mathcal{N}$ is in Tier B. Upward and downward transitions across these segments correspond to tier mobility in the model.

To validate our empirical measure of job tiers, we combine the O*NET skill measures with the individual-level data from NLSY79 and assign each worker-occupation pair to Tier A or Tier B using the 3-digit census occupation codes combined with the norm threshold. The distribution is balanced, with roughly half of all worker–job pairs falling into each tier. Wage differences across tiers are substantial: average hourly wages in Tier A are about 41% higher than in Tier B. Importantly, this tier premium persists even after controlling for differences in individual characteristics across tiers, with Tier A workers earning a conditional wage premium of 17%.[5] These findings support the validity of our occupation-based definition of job tiers.

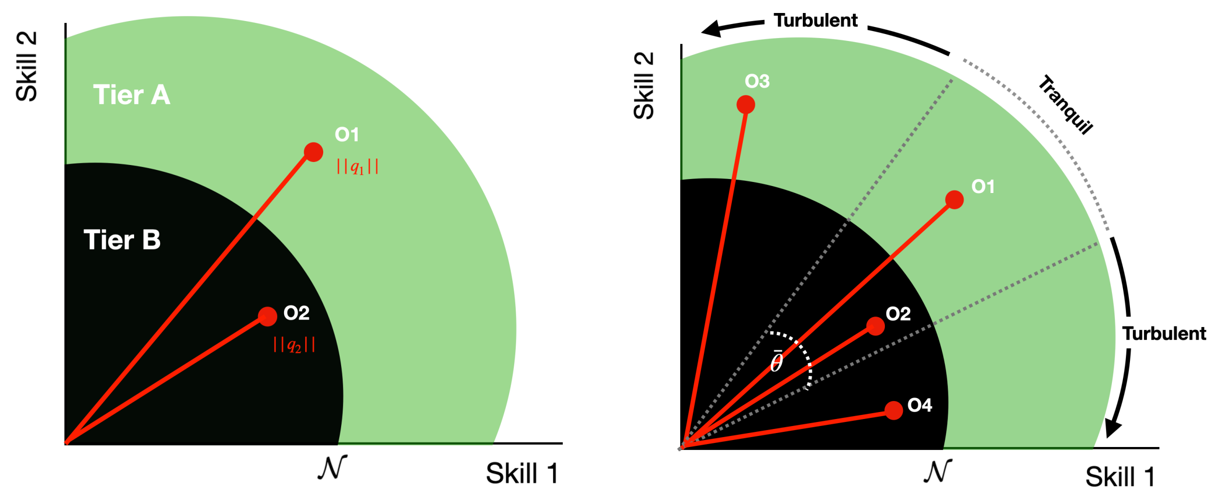
Using the O*NET skill vector norm to construct job tiers has three advantages. First, unlike wages, required skill vectors are not confounded by worker selection, making them a cleaner proxy for job productivity. Second, a median split yields balanced tier sizes, maximizing statistical power in estimating mobility patterns. Third, alternative definitions—such as k-means clustering of occupations or partitioning by wage premia—produce very similar tier classifications. We thus maintain the norm-based median split throughout.

2.3 Turbulence Risk

In our model, turbulence is an exogenous skill loss in human capital that occurs at separation. In the data, we proxy this shock using realized transitions between occupations with low skill transferability. Because we do not observe the exact moment at which skills are lost, we follow the standard approach in the displacement literature and classify turbulence based on the angular distance between pre- and post-unemployment occupational skill vectors. This provides an empirically grounded and behaviorally agnostic measure of skill loss.

[5]The set of controls includes age, age squared, labor market experience, gender, race, education, industry, and year and month fixed effects.

Figure 4: Job Tiers and Skill-Mix Change



(a) Job Tiers (b) Skill-mix Changes

Note: Panel (a) shows the tier definition for the case of 2 skills ($J = 2$). Tier A (green segment) groups occupations with a norm of the skill requirement vector above the median ($||q|| > \mathcal{N}$); Tier B (black segment) groups occupations below the median ($||q|| \leq \mathcal{N}$). Panel (b) shows the classification of skill-mix changes. Skill-mix changes with angular distance below $\bar{\theta}$ are tranquil (e.g., between $O1$ and $O2$). Skill-mix changes with angular distance above $\bar{\theta}$ are turbulent (e.g., between $O1$ and $O3$ or $O4$).

Tenure and skill transferability To measure turbulence risk empirically, we label an Employment to Unemployment to Employment (EUE') transition as turbulent if two conditions hold. The first condition requires that the worker be tenured, defined as having at least two years of experience in an occupation. This ensures that the worker has accumulated occupation-specific skills that are at risk of being lost.[6] This tenure restriction also addresses concerns that some unemployed workers may selectively change occupations after learning about their abilities across skills.[7] Our approach mirrors the displacement literature (e.g., Davis and Von Wachter, 2011; Jarosch, 2023), which similarly conditions on employer tenure to capture involuntary separations.

The second condition requires that, conditional on tenure, skill transferability is low between pre- and post-unemployment occupations be observed. The idea is that accumulated skills are more likely to be lost when the post-unemployment occupation has a markedly different skill mix than the occupation at separation. To measure skill transferability across occupation pairs, we

[6]The two-year cutoff follows prior work in the literature (Fujita, 2018) and evidence that wage returns to occupational tenure peak in the second year (Figure A.1a). Workers with less than two years of tenure are considered untenured. They are excluded from the measurement of turbulence, since they are unlikely to have accumulated substantial occupation-specific human capital.

[7]The underlying assumption is that such learning is most relevant in the early stages of repeated performance observation, as shown by Baley, Figueiredo and Ulbricht (2022). Consistent with this, we find that the probability of switching occupations declines steeply during the first 30 months before leveling off (Figure A.1b).

follow Gathmann and Schönberg (2010) and measure the angular distance between pre- and post-unemployment occupational skill requirements:

$$\theta(q_1, q_2) \;=\; \cos^{-1}\left(\frac{q_1 \cdot q_2'}{||q_1||||q_2||}\right). \tag{18}$$

Angular distance captures changes in skill composition, not merely levels, and is therefore the standard measure of occupation-specific skill transferability. When the required skill sets differ considerably, the human capital specific to the previous occupation becomes irrelevant. Accordingly, we classify any EUE' transition involving a move from an occupation with q_1 to an occupation with q_2 as *turbulent* if and only if $\theta \geq \bar{\theta}$, reflecting low skill transferability and thus a higher likelihood of losing accumulated skills. Otherwise, it is *tranquil*.

Figure 4b illustrates this construction in the case of two skill dimensions. Moving from occupation O_1 to O_2 entails a slight change in skill composition and thus is considered tranquil. Instead, moving from occupation O_1 to O_3 or O_4 entails a radical shift in skill composition and therefore is labeled as turbulent. These transitions are the empirical basis for identifying turbulence risk: large changes in skill mix are classified as turbulent, while smaller changes are considered tranquil.

Angular threshold Following Baley, Figueiredo and Ulbricht (2022), we set the angular threshold that splits transitions between turbulent and tranquil at $\bar{\theta} = 14.8°$. This cutoff implies zero correlation in skill requirements across transitions. Low transferability of skills is interpreted as a form of skill loss. Using this cutoff, approximately 7.8% of EUE' transitions in our sample are classified as turbulent, 22.8% as tranquil, and the remainder correspond to untenured workers we do not consider at risk of human capital loss.

Notably, this threshold implies that the risk of turbulence is independent of workers' wealth upon entering unemployment, consistent with the model's notion of turbulence risk as an exogenous skill-loss shock at separation. Table A.1 shows that workers in turbulent and tranquil transitions are similar, yet those in turbulent transitions earn lower pre-layoff wages. Importantly, at reemployment, turbulent transitions are associated with a 12% wage decline, while tranquil transitions experience no wage change, supporting our identification of skill loss.[8]

2.4 Turbulence Risk and Tier Mobility

EUE' transitions may involve upward or downward movements across tiers, regardless of skill loss. Tier mobility refers to movement up and down the job ladder. In the model, such tier changes are endogenous, whereas turbulence risk is exogenous. For instance, in Figure 4b, moving from

[8]On average, workers undergoing an EUE' transition are approximately 30 years old and have 1.4 years of job tenure at the time of separation. As expected, tenured workers are older, wealthier, and more experienced, reflecting longer tenure in jobs, occupations, and the labor market.

occupation O_1 to O_4 entails both a change in the skill mix and a downgrade from Tier A to Tier B. In the data, 17.1% of EUE' transitions are associated with a tier change. Among turbulent transitions, 22.4% entail a downward movement from Tier A to Tier B, while 21.4% correspond to upward movements from Tier B to Tier A. Among tranquil transitions, 2.1% entail a downward movement from Tier A to Tier B, while 2.2% correspond to upward movements from Tier B to Tier A.

In the model, turbulence affects skills exogenously at separation, whereas movements across job tiers are endogenous responses to liquidity and job-finding considerations. Our empirical procedure mirrors this distinction by classifying turbulence solely based on the transferability of occupational skill sets (i.e., angular distance), and treating tier transitions—movements across high- and low-productivity groups—as endogenous outcomes. This separation ensures that our empirical facts and calibration target the correct model objects.

3 Calibration

This section describes the model calibration using US data. We follow a two-step strategy. First, we discipline parameters that are standard in the labor search literature using well-established empirical benchmarks, ensuring comparability with previous work. Second, because our framework features endogenous tier mobility and turbulence shocks that are not present in standard models, we discipline the additional parameters using newly constructed moments from O*NET and the NLSY79. This separation makes transparent which moments capture the novel features of the model and which reproduce well-known aggregate labor-market facts.

3.1 Functional forms

We adopt standard functional forms for preferences, technology, and matching. Preferences are represented by a CRRA utility function, $u(c) = (c^{1-\sigma} - 1)/(1 - \sigma)$, where σ is the coefficient of relative risk aversion. Output is produced with a multiplicative technology, $f(x_i, y_k) = x_i y_k$ where x_i denotes worker skill and y_k denotes job productivity. The numeraire is one unit of output. Labor market matching follows the CES form in Menzio and Shi (2011), yielding a job-finding rate, $p_{ik}(\theta) = \chi_k \theta/(1 + \theta^\alpha)^{\frac{1}{\alpha}}$. Here χ_k captures tier-specific matching efficiency, while α governs the elasticity of matching to the unemployment rate.

3.2 Externally calibrated parameters

Of the 25 parameters we need to calibrate, 14 are fixed outside of the model and summarized in Part I of Table 1. One model period corresponds to one month. Accordingly, we set the discount factor to $\hat{\beta} = 0.9965$ and the retirement probability to $\rho^r = 0.0021$, which implies an effective monthly discount factor of $\beta = \hat{\beta}(1 - \rho^r) = 0.9944$. The retirement probability corresponds to an average working life of 40 years. The risk-free interest rate is set to $r = 0.003$, consistent with an annual rate of 3%. The coefficient of relative risk aversion is set to $\sigma = 2$, a standard value in the literature. The skill upgrading probability is set to $\gamma^u = 0.041$, consistent with the definition of becoming tenured after two years (recall section 2.3). Since $1/\gamma^u \approx 24$, this implies that the average waiting time for a skill upgrade is 24 months.

Tier-specific parameters. We now turn to parameters that are specific to job tiers in the model. Since only relative skills and productivity matter for mobility decisions, we normalize Tier-B productivity (y_B) and low skill (x_l) to unity. We also normalize the mobility cost from tier A to tier B to zero, $\mathcal{M}_{AB} = 0$. This normalization does not affect tier choices, since only differences in switching costs matter. To inform ourselves about the separation and turbulence risk, we combine worker-level data from the NLSY79 with occupation-level data from O*NET. Worker-job pairs are assigned to Tier A or Tier B based on the tier definition in section 2.2.

To discipline the tier- and skill-specific separation rates λ_{ik}, we estimate the probability of transitioning from employment to non-employment separately for tenured and untenured workers, our empirical counterparts to high- and low-skill workers, in each tier.[9] We obtain separation rates for low-skilled workers at $\lambda_l^A = 2.5\%$ in Tier A and $\lambda_l^B = 3.7\%$ in Tier B, while tenured workers face rates of $\lambda_h^A = 1.6\%$ in Tier A and $\lambda_h^B = 1.9\%$ in Tier B. Lower separation rates in Tier A relative to B reflect the greater job stability associated with Tier A positions.

Finally, to discipline turbulence risk γ_k^d by tier, we compute the fraction of tenured workers who undergo an EUE' transition and are reemployed in an occupation with a substantially different skill composition, as defined in section 2.3. Based on this measure, we find that 18% of tenured workers in Tier A and 28% in Tier B experience a turbulence shock at separation, corresponding to turbulence risks of $\gamma_A^d = 0.18$ and $\gamma_B^d = 0.28$, respectively.

3.3 Internally calibrated parameters

The parameters that remain after the external calibration govern forces that are not directly observable: the strength of borrowing constraints, the relative costs of creating vacancies across tiers, the dispersion of search taste shocks, and the productivity premia. We jointly estimate these parameters using the Simulated Method of Moments, targeting moments that are informative about wealth accumulation, mobility patterns, and labor market frictions.[10] Table 2 compares model-generated moments with their empirical counterparts. Overall, the model reproduces the data well across both aggregate and tier-specific statistics. The estimated parameters are listed in Part II of Table 1.

[9] Separation rates are predicted at the means of the covariates from a logit model including age, labor market experience, gender, ethnicity, industry, education, time fixed effects, as well as a job-tier dummy. Models are estimated separately for tenured and untenured workers.

[10] Implementation details are provided in Appendix C.

Table 1: Parameters

Parameter	**Definition**	**Value**
I. Externally calibrated		
$\hat{\beta}$	discount factor	0.996
ρ_r	retirement probability	0.002
r	interest rate	0.003
σ	relative risk aversion	2.000
γ_u	prob. of upgrade	0.041
x_l	low-skilled productivity	1 (normalization)
Tier-specific:		
y_B	tier-B productivity	1 (normalization)
$\mathcal{M}_{AB}$	switching cost to B	0 (normalization)
λ_h^A, λ_h^B	high-skilled separation	0.016, 0.019
λ_l^A, λ_l^B	low-skilled separation	0.024, 0.035
γ_A^d, γ_B^d	turbulence risk	0.18, 0.28
II. Internally calibrated		
χ_A, χ_B	matching efficiency	0.247, 0.322
κ_A, κ_B	vacancy creation cost	0.220, 0.028
α	matching elasticity	0.770
b	home production	0.350
$\underline{a}$	borrowing constraint	−1.68
y_A	tier-A productivity	1.159
x_h	skill return	1.100
$\mathcal{M}_{BA}$	switching cost to A	0.910
ν	taste shock dispersion	1.203

Labor market frictions are disciplined by mobility and matching outcomes. The average unemployment duration (5.1 months in the model vs. 6.2 in the data) and employment shares across tiers (54% in Tier A vs. 50% in the data) are jointly determined by tier-specific matching efficiencies, $\chi_A = 0.247$ and $\chi_B = 0.322$. Vacancy creation costs also differ sharply across tiers, $\kappa_A = 0.220$ vs. $\kappa_B = 0.028$, reflecting that jobs in Tier B are nearly ten times cheaper to create and easier to fill. The elasticity of UE flows with respect to labor market tightness (0.23 in the model vs. 0.28 in the data, Shimer (2005)) identifies the matching elasticity $\alpha = 0.770$. These parameters also help match the ratio of experienced workers in A relative to B (1.16 in the model vs. 1.21 in the data). The outside option is $b = 0.350$, yielding an average replacement ratio $\mathbb{E}[b/w] = 0.36$, consistent with Shimer (2005).

On the financial side, the borrowing constraint $\underline{a} = -1.68$ helps match the distribution of liquid wealth: the average wealth-to-wage ratio is 0.34 in the model vs. 0.27 in the data, and the share of workers with negative assets is 9.2% in the model and 10.3% in the data.[11]

[11] We measure financial positions using net liquid wealth, defined as the reported market value of easily tradable assets (savings, stocks, bonds, mutual funds, business assets, vehicles, and farms) minus debts in these categories (Chetty, 2008; Lise, 2012; Griffy, 2021). Housing is excluded as highly illiquid.

Table 2: Targeted Moments

Moments	**Model**	**Data**
Unemployment duration (months)	5.11	6.18
Employed in A / Total employed	0.54	0.50
Elasticity of UE to tightness*	0.23	0.28
Average outside option $\mathbb{E}[b/w]^*$	0.36	0.40
Assets-wage correlation	0.34	0.27
Avg. negative asset holders (%)	9.20	10.28
Avg. skill premium in tier A, $(\mathbb{E}[w_h^A]/\mathbb{E}[w_l^A])$	1.12	1.12
Avg. skill premium in tier B, $(\mathbb{E}[w_h^B]/\mathbb{E}[w_l^B])$	1.10	1.08
Ratio of experienced workers (A/B)	1.16	1.21
Switchers to B (% EUE in A)	8.46	9.72
Switchers to A (% EUE in B)	10.92	12.93

Notes: All data moments are from NLSY, except those with $*$ that come from Shimer (2005).

The model also replicates the skill-wage premia observed across job tiers. In the data, we measure these premia as the pay differential within each tier between tenured and untenured workers, our empirical counterparts to the high- and low-skilled workers in the model. Controlling for differences in observables, we find that tenured workers earn on average 12% more than untenured workers in Tier A and 8% more in Tier B.[12] The model reproduces these patterns closely, generating premia of 12% in Tier A and 10% in Tier B. These outcomes in the model are shaped by Tier-A productivity $y_A = 1.159$ and the high-skill return $x_h = 1.100$.

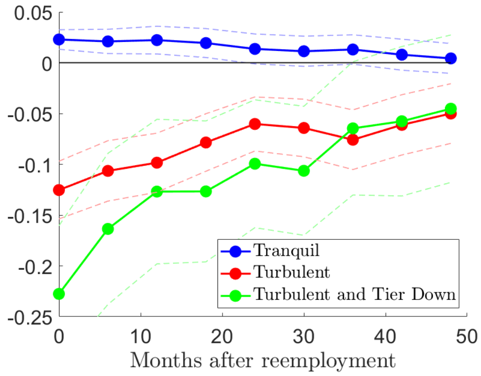
Finally, the model also replicates cross-tier mobility flows: 8.4% of EUE' transitions from A switch to B (9.7% in the data), while 10.9% of EUE' transitions from B switch to A (11.9% in the data). The upgrading switching cost $\mathcal{M}_{BA} = 0.910$ and the dispersion of taste shocks $\nu = 1.203$ shapes these flows.

4 The Cost of Unemployment and Wealth: Data and Model

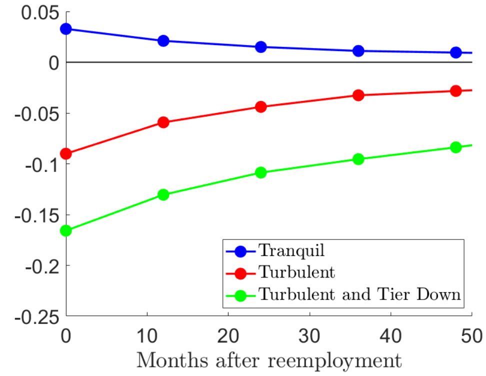
We examine how liquid wealth influences labor market outcomes following job loss, combining reduced-form evidence from the NLSY79 with model-based analysis. We begin by documenting that post-unemployment wages depend not only on the nature of skill loss—turbulent versus tranquil transitions—but also on workers' liquid wealth at the time of separation. We then show that the model quantitatively replicates these wage patterns and that wealth-driven mobility across job tiers accounts for the observed heterogeneity in wage losses along the wealth distribution. Finally, we provide suggestive empirical evidence consistent with this mechanism.

[12]The set of controls includes age, age squared, labor market experience, gender, race, education, industry, and year and month fixed effects.

Figure 5: Wages after Job Loss: Tranquil versus Turbulent Transitions



(a) Data



(b) Model

Note: The figure plots average residual wage growth at reemployment and every six months thereafter, both in the data (Panel a) and in the model (Panel b). The sample covers EUE' transitions observed from 1979 to 2016 in NLSY79.

4.1 Wages after Job Loss

We use individual-level data from the NLSY79, focusing on workers with high occupational tenure who subsequently experience unemployment. This sample provides a natural empirical analogue to the model's high-skill workers facing job loss. Each EUE' transition is classified as *tranquil* or *turbulent* depending on whether the worker switches to an occupation with low skill transferability upon reemployment. We also record whether workers move upward (from tier B to A) or downward (from tier A to B) across job tiers.

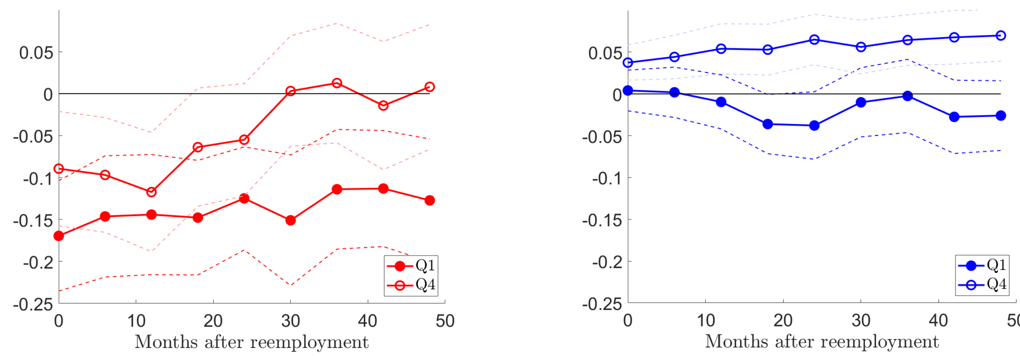
Our main outcome variable is residual wage growth, defined as the log change in real hourly wages j months after reemployment relative to the pre-separation wage, for $j = \{0, \ldots, 48\}$. Wages are residualized with respect to age and its square, cumulative labor market experience, race, gender, education, ability, industry, and time fixed effects, as well as the log wage in the last job.[13]

The Role of Turbulence Risk We begin by showing that we can replicate well-documented findings in the literature. Figure 5a plots average residual wage growth at reemployment and every six months thereafter for tranquil transitions (blue line), turbulent transitions (red line), and turbulent transitions with a tier downgrade (green line). In line with Fujita (2018), we find that turbulent transitions suffer larger wage losses than tranquil ones: wages fall by about 12% at reemployment, compared to a 3% gain for tranquil transitions, and remain 5% lower after 4 years. Importantly, as in Huckfeldt (2022), wage declines are concentrated among turbulent transitions that involve a tier downgrade, with wages dropping by 22% upon reemployment.

Figure 5b shows the model counterpart. As in the data, workers who downgrade job tiers due

[13]Labor market experience is measured as the cumulative number of months worked since first employment. Ability is proxied by scores on the Armed Services Vocational Aptitude Battery (ASVAB) test (Prada and Urzúa, 2016).

Figure 6: Wages after Job Loss by Wealth: Data



(a) Turbulent (b) Tranquil

Note: The figure plots average residual wage growth at reemployment and every six months thereafter. Panel (a) shows turbulent transitions, and Panel (b) shows tranquil transitions. Q1 and Q4 denote the first and fourth quartiles of the household liquid wealth distribution at the start of the unemployment spell. The sample covers EUE' *transitions observed from 1979 to 2016 in NLSY79.*

to turbulence experience larger wage declines that persist for 4 years after reemployment. This result highlights the model's quantitative success, since these moments are not used as calibration targets.

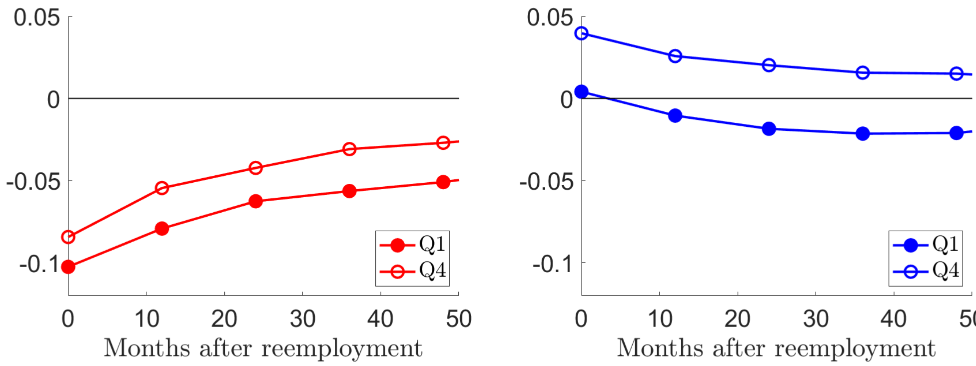
The Role of Wealth Next, we examine how liquid wealth shapes wage dynamics following unemployment. Following Chetty (2008) and Griffy (2021), we use net liquid wealth as a proxy for liquidity constraints at job loss. We measure liquid wealth at separation using the closest pre-unemployment interview and classify workers in the bottom 25% of the liquid wealth distribution before displacement as low-wealth (Q1, constrained), and those in the top 25% as rich (Q4, unconstrained).[14]

Figure 6 replicates Figure 5 but conditioning on transition type and liquid wealth at separation. The results reveal a clear interaction between wealth and turbulence. In turbulent transitions (Panel a), both poor and rich workers suffer significant initial wage losses. However, rich workers recover fully within four years, whereas low-wealth workers remain about 16% below pre-unemployment levels on average. In tranquil transitions (Panel b), wealth differences are more muted. Low-wealth workers exhibit no significant wage change after four years, while rich workers experience an average wage gain of about 4%.[15]

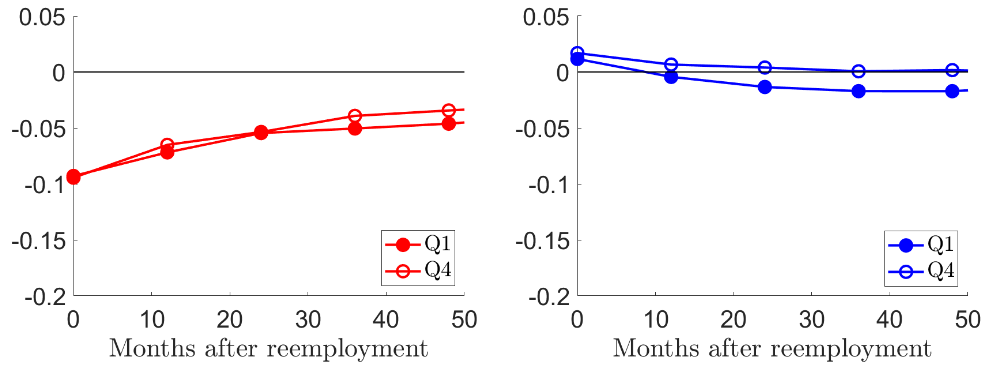
[14] See Footnote 11 for the definition of liquid wealth. At separation, the bottom quartile Q1 holds about \$3.4 thousand, the middle quartiles Q2-Q3 around \$9 thousand, and the top quartile Q4 about \$101 thousand. Wages and assets are converted to 2000 dollars using the Consumer Price Index.

[15] These patterns are robust to a variety of checks reported in Appendix A.4, including: (*i*) controlling for unemployment benefits and spousal income when estimating residuals (Figure A.2); (*ii*) varying the occupational tenure threshold τ (Figure A.3); (*iii*) excluding short unemployment spells to remove voluntary job changes with brief breaks (Figure A.4); (*iv*) restricting to EUE transitions with at least two years of prior job tenure better to capture

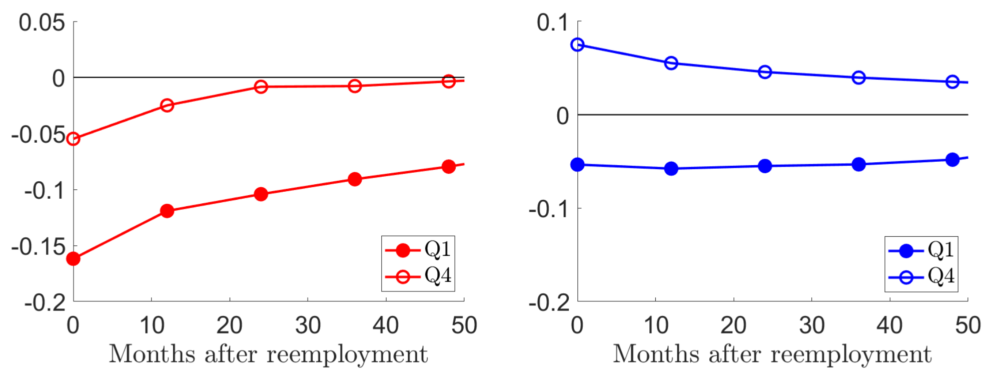
Figure 7: Wages after Job Loss by Wealth: Model



(a) All



(b) Same Tier



(c) Different Tier

Note: Average residual wage growth at reemployment and at six-month intervals thereafter in the model using the baseline calibration. Panel (a) presents all EUE' transitions, while Panel (b) focuses on EUE' transitions where workers remain within the same tier upon reemployment, and Panel (c) on EUE' transitions where workers change tiers upon reemployment. In each panel, the left plot shows turbulent transitions, and the right plot shows tranquil transitions. Q1 and Q4 denote the first and fourth quartiles of the household liquid wealth distribution at the start of the unemployment spell.

Although not directly targeted to match post-unemployment wage trajectories, the model reproduces the scarring effects of unemployment observed in the data. Specifically, the model aligns with the wealth gradient in wages after an unemployment spell. Low-wealth, turbulent workers incur larger and more persistent losses, with wages still well below those of wealthier counterparts after 4 years. By contrast, rich, turbulent workers nearly recover, with wages converging to pre-unemployment levels.

The Role of Tier Mobility To isolate the contribution of tier mobility, Figures 7b and 7c replicate Figure 7a separately for workers who continue searching within the same tier and for those who switch tiers, respectively. Differences in post-unemployment wage dynamics between rich and poor workers primarily arise among those who change tiers upon reemployment, suggesting that tier mobility is the key channel through which liquid wealth influences wage losses after an unemployment spell. Workers who experience a turbulent shock at separation but remain in the same tier incur a 10% wage loss at reemployment, which gradually recovers over time. This loss reflects the skill premium forgone due to the turbulent shock. By contrast, workers who change tiers experience markedly different wage trajectories depending on their liquid wealth at separation. Rich, turbulent workers, despite losing skills, face only a 5% wage loss at reemployment and fully recover within three years. Poor, turbulent workers, however, suffer a 15% wage loss at reemployment and, even after 4 years, their wages remain about 10% below pre-unemployment levels.

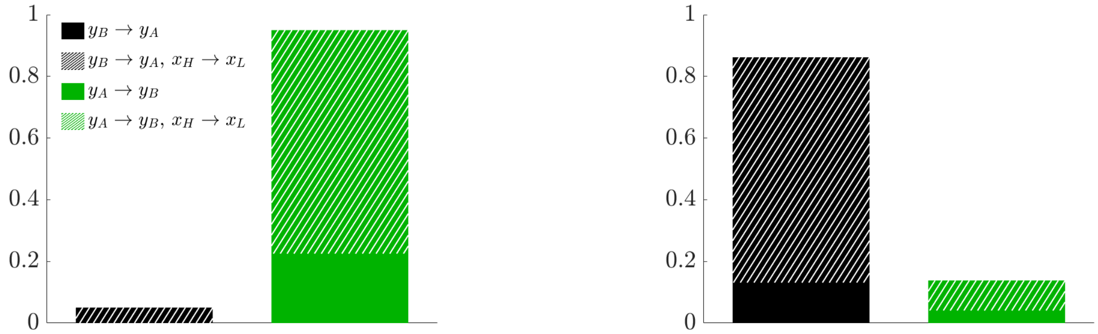
4.2 Wealth-Driven Mobility

Wealth-driven tier mobility is the central mechanism that connects turbulence to persistent scarring. The model generates larger and more persistent wage losses for poor workers who experience a turbulence shock at separation, reflecting their greater likelihood of moving down to Tier B. In contrast, rich workers hit by the same shock tend to recover their initial wage losses, as they are more likely to move upward into Tier A.

Upon becoming unemployed, workers face a trade-off between wages and job-finding probabilities: they can search longer for higher-paying, harder-to-find jobs or accept lower-paying, easier-to-find jobs. Liquid wealth determines how workers navigate this trade-off by providing a buffer that allows them to sustain consumption during unemployment without accepting the first available offer. Lacking such a buffer, low-wealth workers use the labor market—and, in particular, their choice of tier—as a form of self-insurance. As a result, unemployed workers in Tier A with little wealth tend to downgrade to Tier B, where jobs are easier to find but pay less. Conversely, wealthy workers in tier B can afford to pay the mobility cost and upgrade to tier A, where jobs are scarcer

involuntary separations (Figure A.5); and (v) using alternative definitions of liquid wealth (Figure A.6).

Figure 8: Tier Mobility, Wealth and Turbulence



(a) Low-wealth at separation (Q1)　　(b) High-wealth at separation (Q4)

Note: Equilibrium shares of EUE' transitions. Tier upgrades in black bars and tier downgrades in green. Panel (a) shows transitions for poor workers, and Panel (b) shows transitions for the rich. Hashed areas are turbulent transitions.

but wages are higher. In sum, wealth not only enables workers to finance upward mobility but also allows them to search longer for better matches.

Figure 8 shows the equilibrium shares of EUE' transitions that change tier, distinguishing between upgrades to Tier A (black bars) and downgrades to Tier B (green bars), for poor (Panel a) and rich (Panel b). Among workers who change tiers at reemployment, most low-wealth workers downgrade from A to B, whereas most rich workers upgrade from B to A. This asymmetry is particularly pronounced following turbulent separations, when skill losses are more likely. The figure thus illustrates how wealth influences the direction of tier mobility and, in turn, the persistence of wage scarring: rich workers recover more quickly by upgrading to high-paying jobs. In contrast, poor workers face persistent losses as they transition to lower-wage opportunities.

Inspecting the Mechanism To isolate the role of wealth-driven tier mobility in shaping post-unemployment wage dynamics, we conduct two counterfactual exercises that eliminate tier mobility as a channel of self-insurance against labor market risk.

In the first counterfactual, we set the preference shock scale parameter ν to a large value while holding all other parameters fixed. As $\nu \to \infty$, tier choices become purely idiosyncratic, and self-insurance motives no longer influence mobility decisions (see Figure D.4a). Although unemployed workers hit by a turbulent shock still suffer larger wage losses than tranquil workers, these losses are identical across wealth groups: poor and rich workers experience the same initial decline and nearly identical recovery paths over 48 months. This confirms that wealth matters only insofar as it interacts with tier choice; once tier mobility is random, wage trajectories by wealth collapse onto each other.

In the second counterfactual, we remove heterogeneity across tiers by setting all Tier-B parameters equal to those of Tier A. Without tier differences, wealth no longer interacts with job search outcomes (see Figure D.4b). Turbulent workers now experience identical wage losses irrespective of their liquid wealth. In the absence of a lower-paying tier to downgrade into, low-wealth workers remain in the same tier and bear the full 10% skill-loss penalty at reemployment, which gradually dissipates over time.

Together, these experiments demonstrate that wealth-driven tier mobility is the key mechanism behind the heterogeneous wage recovery patterns. When a turbulence shock hits, rich workers can afford to wait and upgrade into higher-paying Tier-A jobs, offsetting the initial skill loss. Poor workers, by contrast, downgrade to Tier B to find jobs more quickly, trading off higher employment probabilities for lower wages. This precautionary downgrading results in persistent wage scars, particularly among liquidity-constrained workers.

Suggestive Evidence Using worker-level data from NLSY79, we now provide suggestive evidence of the model's key mechanism. Let $Y_i \in \{\text{no tier change, downgrade, upgrade}\}$ denote the re-employment outcome for worker i and let $Q4_i$ be a dummy variable that equals one for workers in the fourth wealth quartile and 0 for those in the first quartile. We estimate the following multinomial logit regression:

$$\log\left(\frac{\Pr(Y_i = j \mid Q4_i, x_i)}{\Pr(Y_i = \text{no tier change} \mid Q4_i, x_i)}\right) = \alpha_j + \beta_j Q4_i + \delta_j x_i, \tag{19}$$

where $j \in \{\text{downgrade, upgrade}\}$. x_i is a vector of individual-level characteristics, including the tier before job loss and the angular distance between the old and the new occupation. Consistent with the model, we find that workers in the top quartile are 2.6 percentage points less likely to downgrade from Tier A to Tier B jobs upon re-employment (significant at 1%) and 1.6 percentage points more likely to upgrade from Tier B to Tier A (significant at 5%).

4.3 Unemployment Duration

In our framework, unemployed workers trade off higher target wages against lower job-finding probabilities. Wealthier workers can afford to search longer for high-wage jobs, whereas poorer workers are more likely to accept lower-paying jobs. As a result, higher asset holdings are associated with longer unemployment spells. This prediction aligns with empirical evidence: Card, Chetty and Weber (2007) shows that a lump-sum transfer equivalent to two months of salary reduces job-finding rates by 8–12%, and Chetty (2008) finds that the elasticity of job-finding with respect to unemployment benefits declines with liquid wealth. In our data, unemployed workers in the top wealth quartile at separation remain jobless about 31% longer than those in the bottom quartile after turbulent transitions, and 40% longer after tranquil transitions.

The model reproduces this wealth gradient: wealthy workers experience unemployment rates

10–12% higher than poorer ones, depending on the type of transition. Although the magnitude is somewhat smaller than in the data, the mechanism is fully endogenous, arising from insurance motives that jointly govern job search and tier choice. We next show how this mechanism also accounts for the well-documented pattern of negative duration dependence.

Negative duration dependence Directed-search models with precautionary savings, such as Eeckhout and Sepahsalari (2023), distinguish between two sources of duration dependence. In the cross-section, workers targeting higher wages face lower job-finding probabilities, implying positive duration dependence. Over time, however, unemployed workers deplete their assets, lower their reservation wages, and accept jobs more quickly, generating negative duration dependence, as observed in the data. Our model reproduces this pattern and clarifies how it varies across workers. We estimate the empirical relationship between reemployment wages and unemployment duration by regressing

$$\log(w_i) = \gamma\, dur_i + \beta x_i + \epsilon_i, \tag{20}$$

where w_i is the reemployment wage, dur_i the unemployment spell, and x_i the same control vector used in the empirical analysis.

Table 3 compares the estimated coefficient γ in the data and the model. Negative coefficients indicate that longer unemployment spells are associated with lower reemployment wages (negative duration dependence). In the data, the semielasticity is -0.0049, while the model counterpart is -0.0022, explaining about half of the aggregate relationship.[16] Splitting transitions between tier switchers and stayers reveals that the model almost exactly replicates the empirical elasticity for switchers (-0.0039 vs. -0.0041). In the model, this occurs because workers who exhaust their assets downgrade into Tier B, where jobs are easier to find but pay less. Stayers exhibit a weaker dependence because their search is confined to a single tier.

Table 3: Duration Dependence of Reemployment Wages

Sample	**Data**	**Model**
All transitions	−0.0049	−0.0022
Transitions with tier switch	−0.0041	−0.0039

Note: The table reports the coefficient γ from the regression $\log(w_i) = \gamma\, dur_i + \beta x_i + \varepsilon_i$, where w_i denotes the reemployment wage, dur_i the unemployment duration, and x_i the set of control variables used in the empirical analysis.

This decomposition highlights tier mobility as the mechanism linking wage scarring and unemployment duration. As assets decline, workers transition to lower-tier jobs, resulting in negative duration dependence. Restricting attention to stayers—as in one-tier or homogenous worker models—would miss this channel and substantially weaken the model's explanatory power. The

[16]These numbers are quantitatively similar to those in Eeckhout and Sepahsalari (2023).

observed wealth gradient and negative duration dependence thus stem from the same underlying mechanism: the interaction between wealth and tier choice.

In summary, the calibrated model accounts for the full spectrum of post-displacement earnings dynamics—across wealth levels, across tiers, and across types of separations—without directly targeting these moments. The combination of turbulence risk and tier mobility is essential for reproducing persistent wage losses for low-wealth workers, while allowing high-wealth workers to recover. These results verify that the model captures the central forces shaping heterogeneous scarring in the data and provide a disciplined foundation for the counterfactual policy experiments that follow.

5 Policy Analysis

Our framework uncovers a novel mechanism—precautionary job-tier mobility—that links workers' asset holdings, unemployment duration, and reemployment quality. A natural question is how standard labor market policies interact with this mechanism. We examine two interventions: unemployment insurance (UI), which provides income support to unemployed workers, and job creation programs (JC), which stimulate hiring by firms. Both reduce precautionary tier downgrades but operate through distinct channels: UI mitigates income risk, whereas JC alleviates job-finding risk. To assess these effects, we extend the model to include a government that levies a flat tax on labor income and uses the proceeds to finance these policies. Embedding policy in this environment reveals how turbulence risk shapes their relative effectiveness and trade-offs.

5.1 Unemployment Insurance

We first consider an unemployment insurance (UI) scheme that provides income support to jobless workers. UI acts on the supply side by relaxing liquidity constraints and strengthening workers' ability to self-insure. The policy is parameterized by the transfer size ϕ. The government balances its budget each period by levying a proportional tax τ on wages, ensuring that revenue equals expenditure:

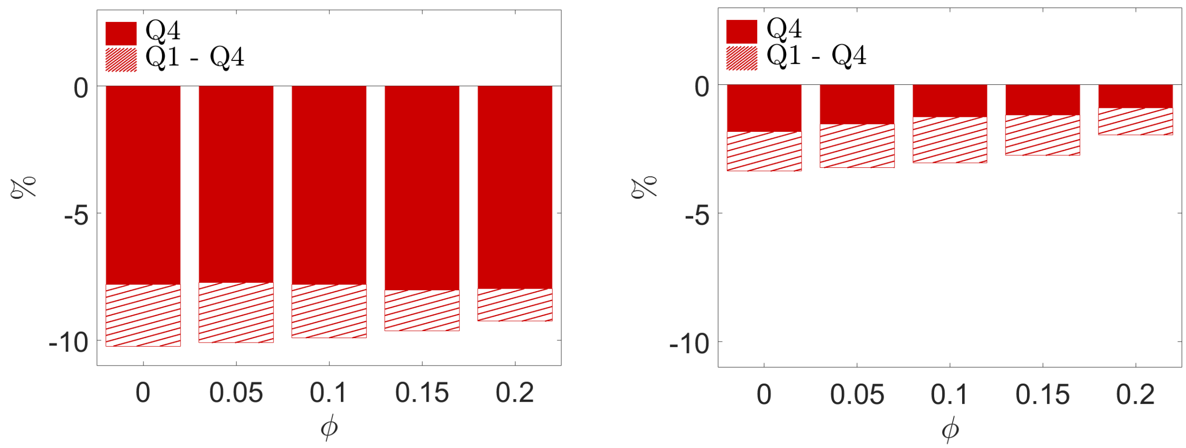
$$\tau \overline{w} e = \phi u, \tag{21}$$

where e denotes total employment and $\overline{w}$ the average wage,

$$\overline{w} \equiv \sum_{i \in \{l,h\}} \sum_{k \in \{A,B\}} \int w \, d\Gamma^{e_{ik}}(a, w)/e. \tag{22}$$

Figure 9 quantifies how different steady-state levels of the UI transfer, $\phi \in \{0, 0.05, 0.1, 0.15, 0.20\}$, shape reemployment outcomes following a turbulent EUE' transition. The maximum transfer corre-

Figure 9: Wage Growth After Turbulent Transitions for Different UI



(a) Short Term ($\log(w_1/w_0)$) (b) Long Term ($\log(w_{48}/w_0)$)

Note: Wage growth following turbulent EUE transitions for various levels of ϕ. Relative to the pre-separation wage, Panel (a) shows average wage growth upon reemployment, and Panel (b) shows four years after reemployment.

sponds to an expenditure-to-output ratio of 1.5%. Panel (a) shows the short-term wage response—average wage growth upon reemployment relative to the pre-separation wage, $\log(w_1/w_0)$. Panel (b) depicts the long-term effect— average wage growth four years after reemployment, $\log(w_{48}/w_0)$. Solid bars represent the rich, while hashed bars indicate the differential effects on poor workers.[17]

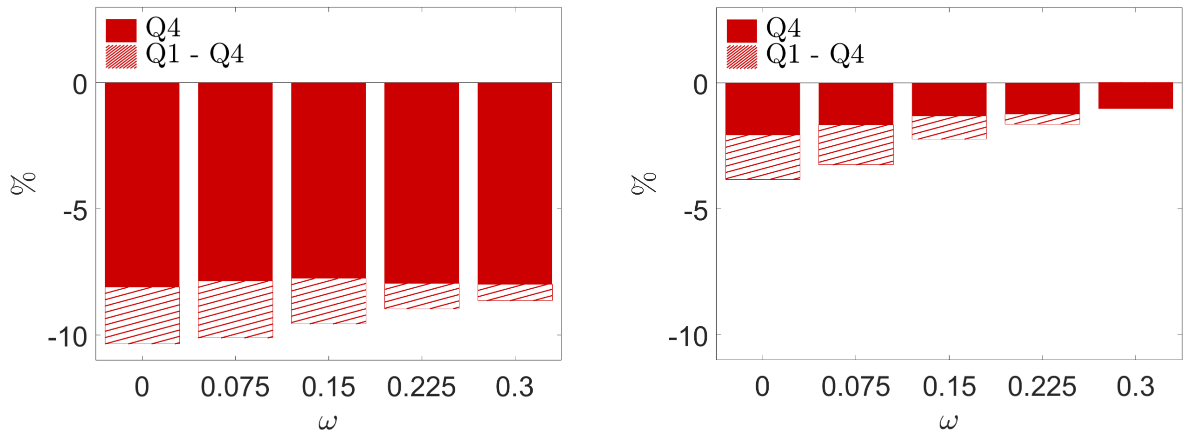
Two results stand out. First, in the short term, more generous UI allows poor workers to search longer and secure higher-quality matches, narrowing the wage gap upon reemployment. Rich workers, who are already well-insured, show little change. Second, in the long run, UI dampens wage scars, substantially reducing persistent earnings losses among poor workers. These effects underscore UI's role in mitigating the consequences of turbulence by providing insurance against income risk.

5.2 Job Creation Programs

While UI policies strengthen self-insurance on the worker side, JC programs act on the demand side of the labor market. Specifically, we analyze a subsidy that covers a fraction ω of the vacancy creation cost κ_A in the high-productivity tier. By lowering the cost of posting vacancies, the policy shifts the risk–return trade-off faced by firms and workers, stimulating job creation in tier A and indirectly influencing workers' savings and search decisions. Government expenditure under this policy depends on the number of vacancies posted in tier A, v_A, so the government's budget

[17]Rich and poor correspond to the wealth levels Q4 and Q1 in the respective steady state.

Figure 10: Wages After Turbulent Transitions for Vacancy Subsidy ω



(a) Short Term ($\log(w_1/w_0)$)

(b) Long Term($\log(w_{48}/w_0)$)

Note: Wage growth following turbulent EUE transitions for various levels of ω. Relative to the pre-separation wage, Panel (a) shows average wage growth upon reemployment, and Panel (b) shows four years after reemployment.

constraint becomes:

$$\tau \overline{w} e = \omega \kappa_A v_A, \tag{23}$$

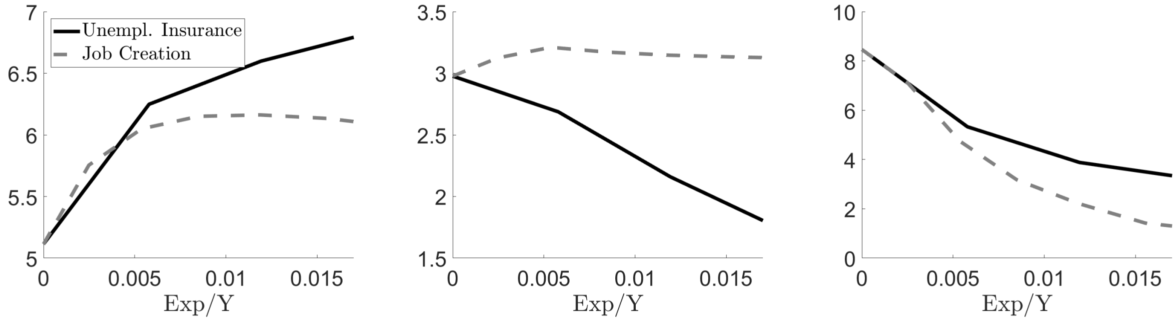
where v_A are determined endogenously through equilibrium search behavior:

$$v_A = \sum_{i \in \{l,h\}} \int \theta_{iA}(a) u_{iA} \Gamma^{u_{iA}}(a)\, da. \tag{24}$$

Figure 10 illustrates how varying the vacancy subsidy affects post-unemployment wage dynamics. We consider $\omega \in \{0, 0.075, 0.15, 0.225, 0.3\}$, where the maximum subsidy corresponds to an expenditure-to-output ratio of 1.5%. At baseline, poor workers in turbulent markets suffer steeper wage losses than rich ones. As subsidies rise, this gap narrows sharply. Panel (a) shows that on-impact wage differences are nearly eliminated, as higher vacancy creation increases job availability in high-tier positions. Panel (b) reveals that long-run scars are also substantially reduced, with poor workers' wage trajectories converging toward those of rich workers.

Figures 9 and 10 illustrate how both policies attenuate wage scarring. The underlying channel operates through a shift in the asset threshold governing tier downgrading. Under UI, the shift arises on the supply side: by relaxing liquidity constraints, UI improves consumption smoothing and allows unemployed workers—especially those with low assets—to remain selective and delay precautionary downgrades to lower-tier jobs. In contrast, JC policies operate on the demand side: by subsidizing vacancy creation in the high-productivity tier, they raise job-finding rates and, in

Figure 11: Three Precautionary Mechanisms: UI vs. JC



(a) Unempl. Duration (b) Average Assets (c) Downgrades (%EUE')

Note: Panel (a) shows average unemployment duration; Panel (b) shows average assets; and Panel (c) shows the share of turbulent EUE' transitions resulting in a tier downgrade. Black solid lines correspond to unemployment insurance (UI) and gray dashed lines to the job creation program (JC). Both policies are expressed as government expenditure relative to total output.

turn, lower the effective downgrading threshold. In both cases, poor workers who would otherwise accept lower-paying jobs in tier B are more likely to remain in, or move into, tier A, reducing unemployment duration, limiting wealth depletion, and narrowing long-term wage scars. We next analyze how these policies translate into differences in workers' precautionary behavior and their macroeconomic implications.

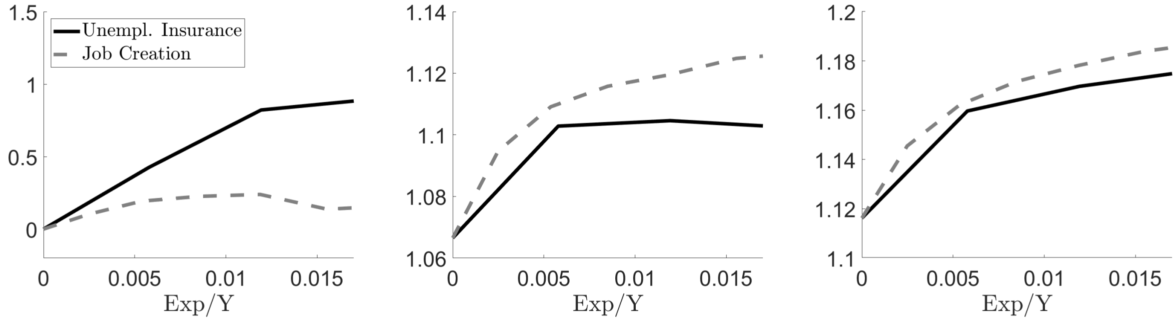
5.3 Macroeconomic and Welfare Effects of Policies

We now examine how the two policies manifest in the aggregate through the three self-insurance margins emphasized in our framework and how they translate into aggregate welfare and efficiency outcomes. We evaluate the aggregate implications of unemployment insurance (UI) and job creation (JC) policies on a common fiscal scale, expressing expenditures as a share of output.

Precautionary mechanisms Figure 11 decomposes the aggregate responses into the three self-insurance margins emphasized in our framework: unemployment duration, asset accumulation, and job-tier downgrades.[18]Panel (a) shows that UI lengthens unemployment spells as insured workers can afford to search longer and be more selective. JC also increases duration because more workers move to tier A, which has a lower job-finding rate than tier B, even though the job-finding rate at tier A decreases with subsidies. Panel (b) shows that UI crowds out private savings, lowering average assets as public insurance substitutes for precautionary buffers, while JC leaves asset accumulation broadly unchanged or slightly higher. Panel (c) shows that both policies reduce downgrades among turbulent EUE' transitions, but through different routes: UI by stabilizing workers' search behavior, and JC by expanding the availability of high-tier vacancies.

[18]We present the results disaggregated by tier in Figure D.5 and Figure D.6.

Figure 12: Welfare, Output and Wages: UI vs. JC



(a) Welfare (b) Total output (c) Avg. Wage

Note: Panel (a) shows welfare gains relative to baseline; Panel (b) shows total output; Panel (c) shows average wage. Black solid lines represent unemployment insurance (UI), and pink dashed lines represent the job creation program (JC). Both policies are expressed as expenditure relative to output (Exp/Y).

Welfare, output, and wages Figure 12 compares aggregate welfare, total output, and average wages as functions of fiscal expenditure.[19] As seen in Panel (a), UI delivers larger welfare gains at all spending levels because it directly insures income risk and reduces the need for precautionary buffers. JC also improves welfare, but more modestly and with stronger diminishing returns, since its effects operate indirectly through employment and wages rather than direct insurance.

Efficiency outcomes favor JC. Panel (b) shows that total output rises more steeply under JC, as lower vacancy costs stimulate job creation and employment in high-productivity matches. UI also raises output at low benefit levels, but the gains flatten as longer unemployment spells and higher taxes offset the benefits of reallocation. Both policies raise average wages by increasing upward mobility into Tier A.[20]

Taken together, the results imply a sharp division of policy roles. UI is the superior tool for welfare maximization, because it directly insures income risk and sharply reduces precautionary behavior among vulnerable workers. JC is the superior tool for efficiency and employment, because it expands high-productivity matches and raises output. Both policies weaken precautionary tier mobility—the key amplification mechanism behind wage scarring—but they do so through different margins. These distinctions highlight why turbulence risk and heterogeneous wealth exposure are central for evaluating labor market interventions.

[19] Welfare is measured as steady-state consumption-equivalent variation (CEV) relative to the benchmark economy. Following Krusell, Mukoyama and Sahin (2010), we hold fixed the benchmark distribution of asset holdings to ensure that welfare is evaluated from the perspective of the same agents. This approach isolates the welfare impact of policy changes from any compositional effects arising from shifts in the asset distribution.

[20] We present the results disaggregated by tier in Figure D.7 and Figure D.8.

6 Conclusion

We shed light on the interplay among wealth, job-tier mobility, and the long-term effects of job loss. Combining new empirical evidence with a structural model, we show that low-wealth workers experience disproportionately large and persistent wage penalties following turbulent separations, while wealthier workers are better equipped to smooth consumption, sustain selective search, and regain access to high-return tiers. These findings underscore the central role of households' self-insurance mechanisms in shaping labor market reallocation and the persistence of earnings inequality after job displacement.

Our results connect to a growing literature showing how wealth and liquidity shape labor-market dynamics. Soenarjo (2024) demonstrates that credit constraints limit movement toward more productive sectors, while Pellegrini (2025) shows that wealth inequality can hinder upward mobility by trapping low-wealth workers in low-paying jobs. Our findings also complement work on precautionary labor-market behavior and skill mismatch (Huang and Qiu, 2024), as well as research on cyclical labor reallocation (Caratelli, 2024) and countercyclical separation risk (Repele, 2025). Together, these contributions highlight multiple channels through which financial frictions shape career trajectories.

More broadly, our findings speak to the debate surrounding technological change and labor-market inequality. Advances in automation and artificial intelligence have been associated with rising inequality (Krusell, Ohanian, Ríos-Rull and Violante, 2000; Acemoglu and Restrepo, 2022), and recent work stresses the importance of financial constraints in workers' adjustment to technological displacement (Beraja and Zorzi, 2022). Our results highlight that these forces interact with the structure of job opportunities. When occupational mobility is costly and skills depreciate upon displacement, liquidity constraints become a central determinant of who adapts successfully to technological change.

Several extensions represent promising directions for future research. Incorporating long-run technological trends (Hanks, 2024), different asset types (Larkin, 2019), or embedding precautionary tier mobility into a business-cycle environment (Schmieder, von Wachter and Heining, 2023) would allow for a richer assessment of how wealth, turbulence, and tier mobility interact across aggregate states and longer horizons. We view these as natural next steps for understanding how financial frictions shape workers' exposure to labor-market risk.

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