

# The Effects of Biased Labor Market Expectations on Consumption, Wealth Inequality, and Welfare

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# Motivation

- Individuals face various sources of risk in labor market  
[employment risk, wage risk, ...]
- Idiosyncratic risk shapes individual economic decision making  
[consumption/saving, job search, portfolio choice, human capital investment]
- Common assumption: Agents correctly assess the risk they face
- Our key empirical observations:
  - ▶ US-workers' subjective labor market expectations are systematically biased
  - ▶ They are strongly **over-optimistic** about their own labor market prospects
- If expectations are systematically biased, the bias does not *"cancel out"* across individuals and likely affects aggregate outcomes
- **We ask:** *"What are the effects of agents' biased labor market expectations on individual choices and macroeconomic outcomes?"*

## 1. Empirics

- ▶ Quantify bias in individual labor market expectations in the US economy
- ▶ Consider different demographic groups
- ⇒ **Optimistic bias is strongly decreasing in skill level**

## 2. Quantitative

- ▶ Bewley–Huggett–Aiyagari model with heterogeneous agents, incomplete markets, idiosyncratic risk
- ▶ Allow subjective probability distribution to differ from actual one
- ▶ Calibrate the model to the US economy
- ▶ Analyze how bias in expectations shapes asset accumulation and wealth inequality
- ⇒ **Over-optimism induces agents to save too little**
- ⇒ **Larger effect for low-skilled**
- ⇒ **Biased expectations increase wealth inequality & reduce aggregate welfare**

## Empirical results

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- NY-Fed's *Survey of Consumer Expectations*
- We use the question asking about the respondents' **subjective probability of being in a given labor market state** in four months
- Survey question:  
*"What do you think is the percent chance that four months from now you will be ...*
  1. *employed, full or part time* (E, employment)
  2. *unemployed and looking for work* (U, unemployment)
  3. *unemployed and not looking for work?* (N, not in the labor force)

## Transition probabilities

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	Subjective (SCE)		
	E'	U'	N'
E	96.1 (0.17)	2.5 (0.11)	1.4 (0.10)
U	61.3 (2.24)	32.1 (1.83)	6.6 (1.22)
N	10.7 (0.80)	14.2 (1.04)	75.1 (1.40)

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Standard errors in parenthesis.

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- **How do subjective probabilities compare to the actual ones?**
- Approach: use the CPS with same definitions and sample restrictions

Descriptives

## Transition probabilities

	Subjective (SCE)			Actual (CPS)		
	E'	U'	N'	E'	U'	N'
E	96.1 (0.17)	2.5 (0.11)	1.4 (0.10)	95.2 (0.03)	1.5 (0.02)	3.3 (0.02)
U	61.3 (2.24)	32.1 (1.83)	6.6 (1.22)	42.5 (0.31)	32.2 (0.30)	25.3 (0.28)
N	10.7 (0.80)	14.2 (1.04)	75.1 (1.40)	10.7 (0.08)	3.0 (0.04)	86.3 (0.08)

Standard errors in parenthesis.

- **How do subjective probabilities compare to the actual ones?**
- Approach: use the CPS with same definitions and sample restrictions

Descriptives



# Transition probabilities

	Subjective (SCE)			Actual (CPS)			Subjective – Actual		
	E'	U'	N'	E'	U'	N'	E'	U'	N'
E	96.1 (0.17)	2.5 (0.11)	1.4 (0.10)	95.2 (0.03)	1.5 (0.02)	3.3 (0.02)	0.9 (0.17)	1.0 (0.11)	<b>-1.9</b> (0.11)
U	61.3 (2.24)	32.1 (1.83)	6.6 (1.22)	42.5 (0.31)	32.2 (0.30)	25.3 (0.28)	<b>18.8</b> (2.27)	-0.1 (1.85)	<b>-18.7</b> (1.25)
N	10.7 (0.80)	14.2 (1.04)	75.1 (1.40)	10.7 (0.08)	3.0 (0.04)	86.3 (0.08)	0.0 (0.80)	<b>11.2</b> (1.04)	-11.2 (1.41)

Standard errors in parenthesis.

- **How do subjective probabilities compare to the actual ones?**
- Approach: use the CPS with same definitions and sample restrictions
- Individuals are **over-optimistic** about their own labor market prospects
  - ▶ They underestimate the likelihood of moving into **bad labor market states**:  $EN'$ ,  $UN'$
  - ▶ They overestimate the likelihood of moving to **good labor market states**:  $UE'$ ,  $NU'$

Descriptives

## Empirical results: heterogeneity

	EE'	EU'	EN'	UE'	UU'	UN'	NE'	NU'	NN'
All	0.9	1.0	-1.9	18.8	-0.1	-18.7	0.0	11.2	-11.2
High school or less	1.8	0.7	-2.5	21.7	-2.8	-18.9	1.3	12.4	-13.8
Some college	0.9	0.8	-1.6	21.4	0.1	-21.5	-0.3	10.4	-10.2
College and higher	0.3	1.2	-1.5	10.6	4.8	-15.4	-2.8	9.4	-6.6

- The level of **over-optimism is decreasing with education**  
⇒ High-skill individuals have more accurate expectations
- Controlling for other observables yields similar results

AME

- Quantitative analysis of how bias in labor market expectations affects individual decision making and macroeconomic outcomes
- This paper: Focus on the consumption/savings decision and the implications for asset accumulation and wealth inequality
- Companion paper: Focus on labor market aspects (job search, wage bargaining ...)

## Model

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- Builds on **Bewley-Huggett-Aiyagari**, many features from Krueger-Mitman-Perri (2016)
  - ▶ **Life cycle**: Individuals are working-age or retired (stochastic aging)
  - ▶ **Preferences**: CRRA over current consumption
  - ▶ **Assets**: with non-state-contingent return
  - ▶ **Production**: Firm with Cobb-Douglas technology
- **Human capital**: Low-, medium-, or high-skill; determined at birth; constant over time
- **Labor market**: Individuals can be **employed**, **unemployed**, or **not in the labor force**  
Transitions are stochastic and governed by a Markov process
- **Stochastic idiosyncratic labor productivity**
- **Government**: (1) Unemployment insurance, (2) Welfare benefits, (3) Social security
- Key implication: Agents accumulate assets to self-insure and to save for retirement.

## Optimization problem: working age

- State variables:

- $a$ : Assets holdings
- $h$ : Human capital
- $s$ : Employment state
- $z$ : Labor productivity

- A working-age individual chooses  $(c, a')$  to solve:

$$W(a, h, s, z) = \max \left\{ u(c) + \beta \theta \sum_{s'} \sum_{z'} \hat{p}_h(s'|s) \pi_h(z'|z) W(a', h, s', z') + \beta(1 - \theta) R(a', h) \right\}$$

subject to

$$c + a' = (1 + r - \delta)a + y(h, s, z) \quad \text{and} \quad a' \geq \underline{a}$$

- $\hat{p}_h(s'|s)$ : **Subjective probability** of switching the labor market state

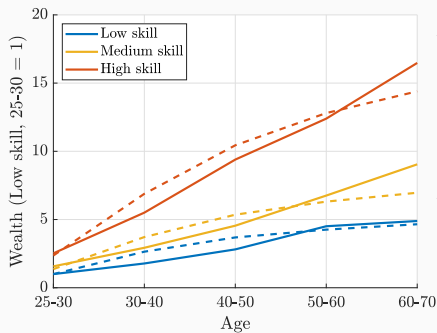
## Quantitative analysis

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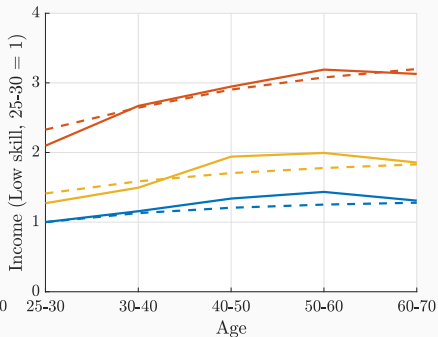
1. Calibrate the model (quarterly U.S. data)
2. Report the quantitative properties of the model and compare to data
3. Counterfactual



# Life-cycle paths of wealth and income



(a) Wealth



(b) Pre-tax income

[Model (dashed) and Data (solid)]

	Data	Model
Q1	-0.9	0.2
Q2	0.8	1.5
Q3	4.4	5.1
Q4	13.0	15.3
Q5	82.7	77.9
90 – 95	13.7	17.5
95 – 99	22.8	26.3
Top 1%	30.9	15.1
Gini	0.77	0.74

- Experiment
  - ▶ Eliminate bias
  - ▶ Give agents correct expectations about labor market transitions
- Guiding question: "**How would the equilibrium look like, if agents had correct beliefs?**"
- Important: No recalibration, keep parameters as in the baseline case

# Savings rate

	Baseline	$\hat{p} = p$
	Savings rate	
E	0.37	0.40
U	0.21	0.29
N	-0.55	-0.45

- Correct assessment of risk
  - ⇒ More precautionary savings in good states.
  - ⇒ Slower de-cumulation of assets in bad state

# Savings rate

	Baseline		$\hat{p} = p$	
Savings rate				
E	0.37		0.40	
U	0.21		0.29	
N	-0.55		-0.45	
Savings rate, by skill				
	Low	High	Low	High
E	0.38	0.37	0.45	0.38
U	0.20	0.21	0.35	0.24
N	-0.68	-0.40	-0.35	-0.54

- Correct assessment of risk
  - ⇒ More precautionary savings in good states.
  - ⇒ Slower de-cumulation of assets in bad state
- Larger effects for low-skilled because they had higher over-optimism

## Wealth inequality

	Data	Baseline	$\hat{p} = p$
Q1	-0.9	0.2	0.7
Q2	0.8	1.5	3.2
Q3	4.4	5.1	7.9
Q4	13.0	15.3	18.3
Q5	82.7	77.9	69.9
90–95	13.7	17.5	16.1
95–99	22.8	26.3	22.6
Top 1%	30.9	15.1	12.3
Gini	0.77	0.74	0.67

- Higher asset accumulation by the low-skilled leads to **less wealth inequality**
- Additional GE-effects via higher  $w$  and lower  $r$

- **More precautionary savings lead to better self-insurance**
- Measure of consumption smoothing:  $\Delta c_{it} = a + b \Delta y_{it} + \varepsilon_{it}$

	Baseline			$\hat{p} = p$		
	$h_L$	$h_M$	$h_H$	$h_L$	$h_M$	$h_H$
<b>b</b>	0.133	0.095	0.075	0.077	0.071	0.069

- Exposure to income fluctuations drops and agents can better smooth consumption

- Would the optimist be better off being a realist?
- Welfare is measured as equivalent variation in expected lifetime consumption

$$\underbrace{E_0 \left[ \sum_t \beta^t u((1 + \phi)c_{it}) \right]}_{\text{Economy w/ bias}} = \underbrace{E_0 \left[ \sum_t \beta^t u(\bar{c}_{it}) \right]}_{\text{Economy w/o bias}}$$

- Compute  $\phi$  for a new born agent with skill  $h$

	All	$h_L$	$h_M$	$h_H$
$\phi$	0.041	0.054	0.038	0.028



## Conclusion and agenda

- We use survey data to quantify bias in individual labor market expectations
- Main empirical finding:  
US workers are strongly **over-optimistic** about their labor market prospects
- Using a heterogeneous agents GE model, we find that worker's over-optimism:
  - ▶ discourages individual asset accumulation and leads to higher exposure to income fluctuations
  - ▶ this effect is stronger for low-skilled individuals, and
  - ▶ it leads to higher wealth inequality, and
  - ▶ reduces welfare.
- Companion papers
  - ▶ Focus on labor market aspects (job search, wage bargaining ...)
  - ▶ Cross-country: *German Angst vs. American Dream*