

Wealth, Quits and Layoffs

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Introduction

Motivation

- Prevailing concerns about inequality in standards of living.
- Many quantitative studies of inequality treat income as exogenous to wealth.

What we do:

- ① We document a novel channel of feedback from wealth to income.
 - Wealth nontrivially correlates with the likelihood of experiencing a non-employment spell by those currently employed.
- ② How does this wealth-to-income feedback affect:
 - wealth inequality, consumption insurance?
 - the optimal design of government policies?

Introduction

This Paper

Low-wealth and high-wealth workers transition to non-employment more frequently than a median worker. This reduces income and wealth, hence:

- At the bottom: inequality \uparrow ?
- At the top: inequality \downarrow ?

UI benefit reforms more complex:

- Make UI more generous for asset-poor. (taking any jobs, including the riskiest ones?)
- Account for worker controlling their EN probability. (e.g., quitting)

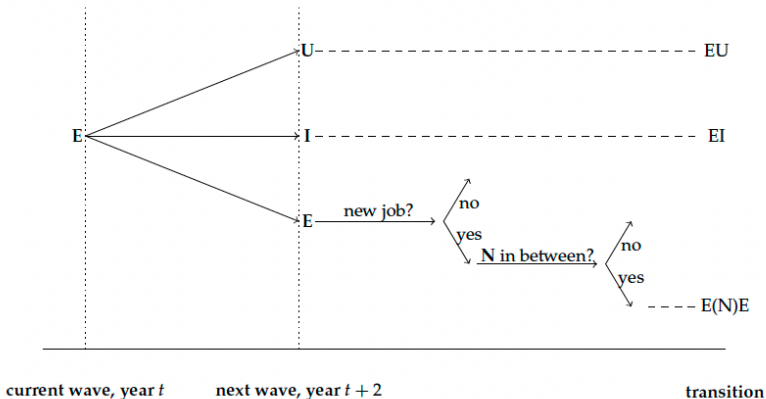
▶ Related Literature

- Panel Survey of Income Dynamics (PSID)
- Ran annually 1968 – 1997, and biannually from 1997– present.

Restrictions

- Core PSID sample, working-age (18 to 65), sensible hourly wage ($\geq 1\$$)
- Consistently the household reference person or spouse.
- Not employed in farming, mining or public administration industries nor ever experience self employment.
- Observed for at least two consecutive waves of the survey
- Availability & consistency of key variables limit sample to 1999 - 2017 but we use earlier waves information on employment history
- Focus on *plausible* period of labour market activity

Figure 1: Labour market status and transitions



Estimation Strategy

Initial Specification

$$Pr(EN_{i,t} | Wealth_{i,t}, \mathbf{X}_{i,t}) = \alpha + \sum_{t=1}^T \delta_t + \sum_{d=1}^D \delta_d W_{i,t}^d + \mathbf{X}'_{i,t} \boldsymbol{\beta} + \varepsilon_{i,t}. \quad (1)$$

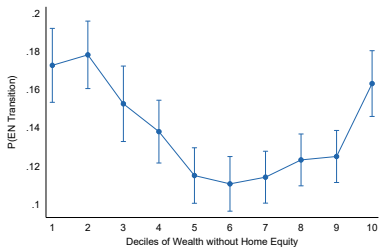
Where:

- $Pr(EN_{i,t} | Wealth_{i,t}, \mathbf{X}_{i,t})$ is the probability of a switch for individual, i , in between wave t and $t + 2$, conditional on personal net wealth being in bin $d(i)$ and $\mathbf{X}_{i,t}$.
- Distinguish total net wealth and net wealth without home equity.
- $\mathbf{X}_{i,t}$ is a vector of characteristics for individual i in time t . This includes: (log) wage, (cubic polynomial) age, gender, years of completed schooling, whether married, number of children and dummies for black and other minority ethnic groups, industry and occupation, region.
- Standard errors are clustered at the individual level.

Empirical Results

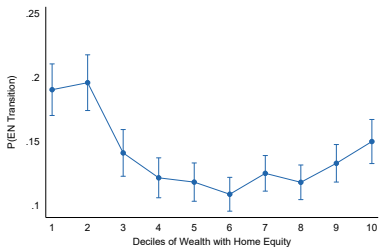
EN Transitions Across the Wealth Distribution

Predictive Margins with 95% Confidence Interval



(a) Liquid Net Wealth

Predictive Margins with 95% Confidence Interval



(b) Total Net Wealth

Note: These figures plot the predictive margins on deciles of wealth from a linear probability model regression as presented in equation 1. Year fixed effects, individual controls and a full set of industry and occupation controls are included. Standard errors are clustered at the individual level. Data is from waves 1999-2017 of the PSID.

Empirical Results

Focusing on the Tails of the Wealth Distribution

	Wealth without Home Equity			Wealth with Home Equity		
	(1)	(2)	(3)	(4)	(5)	(6)
Low Wealth	0.054*** (0.010)	0.039*** (0.010)	0.040*** (0.010)	0.085*** (0.011)	0.056*** (0.011)	0.056*** (0.011)
High Wealth	-0.043*** (0.008)	0.040*** (0.009)	0.037*** (0.009)	-0.053*** (0.008)	0.029*** (0.009)	0.025*** (0.009)
Observations	20604	19128	19051	20604	19128	19051
Individuals	5008	4835	4830	5008	4835	4830
R^2	0.006	0.063	0.070	0.010	0.064	0.070
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	Yes	Yes	No	Yes	Yes
Industry/Occupation	No	No	Yes	No	No	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: Standard errors are clustered at the individual level. Low Wealth and High Wealth correspond to the bottom and the top decile of respective wealth distribution. Base group is the remainder of the wealth distribution. Individual controls include age, education, female, race, marital status, number of children, hourly wage, and region. Industry and occupation dummies are based on 2-digit classifications.

Empirical Results

Consequences of an EN-Transition: Estimation

Next, we focus on the effect of experiencing an *EN*-transition on accumulation of wealth

$$W_{i,t+k} - W_{i,t} = \alpha + \mathbf{X}'_{i,t}\boldsymbol{\beta} + \sum_{t=1}^T \delta_t + \gamma EN_{i,t} + \varepsilon_{i,t} \quad (2)$$

- The dependent variable is the change in individual net wealth k years from current interview date (in thousands of US dollars in 2015).
- In addition to the full set of controls we also add the $EN_{i,t}$ dummy. To avoid the effects of extreme outliers present in the data, we estimate a quantile regression, taking the median as the targeted moment.

Empirical Results

EN Transitions and Wealth Accumulation

Table: EN Transitions and Wealth Accumulation

	Wealth without Home Equity			Wealth with Home Equity		
	(1) t+2	(2) t+4	(3) t+6	(4) t+2	(5) t+4	(6) t+6
EN Transition	-1.239*** (0.288)	-1.037* (0.606)	-3.913*** (1.251)	-2.186*** (0.482)	-3.005*** (1.057)	-10.272*** (2.605)
Observations	14765	8344	4112	14765	8344	4112
Pseudo- R^2	0.009	0.019	0.030	0.027	0.049	0.063
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Occupation	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: Robust standard errors. Individual controls include age, education, female, race, marital status, number of children, hourly wage, and region. Industry and occupation dummies are based on 2-digit classifications.

Empirical Results

Robustness Checks

- Splitting sample into sub-groups ▶ obs. heterogeneity ▶ age
- Individual-specific EN propensity ▶ EN propensity
- Including temporary layoffs in EN transitions ▶ temp. layoffs
- Ranking workers using hh wealth ▶ different wealth measure
- Restricting sample to household heads ▶ heads only
- Alternative estimators ▶ probit

Model

Environment

- Continuous time
- Continuum of workers i of mass one
 - Workers are infinitely lived and discount future at rate $\rho > 0$.
 - They are risk averse, with preferences over the consumption flow, $u(c_t)$ with $u'(c_t) > 0$, $u''(c_t) < 0$
 - Workers can be either employed or non-employed.
- Markets:
 - Output / Consumption
 - Labour market
 - Assets: **Incomplete markets**
 - Non-state-contingent bond, return r
 - Borrowing limits: assets $a_t \geq \underline{a}$

Model

Labour Market

- All jobs have identical productivity y
- When non-employed, workers receive benefits b as income (transfers and home-production)
- All jobs pay the same constant wage, w (Lentz (2005), Koehne, Kuhn (2015))
- Two types of jobs: risky and safe
 - Risky jobs are exogenously destroyed at rate δ_h , safe jobs at rate δ_l and $\delta_h > \delta_l$
 - Risky jobs are easier to get; offers arrive at rates $\lambda(\delta_h) > \lambda(\delta_l)$
- Workers decide which type of job they search for
- Working entails a fixed disutility of effort f , apart from the job being exogenously terminated, workers can voluntarily quit to nonemployment, the opportunity to do so arrives at a Poisson rate ζ

Model

Value Functions

- In each labour market status/job the state variable is the individual level of assets a
- $v^n(a)$ is value of non-employment at asset level a :

$$\rho v^n(a) = \max_{c \geq 0, \delta \in \{\delta_l, \delta_h\}} u(c) + v'_a(a) [b - c + ra] + \lambda(\delta) [v^e(a, \delta) - v^n(a)] \quad (3)$$

- $v^e(a, \delta)$ is value of employment in a job with layoff risk δ and assets a :

$$\rho v^e(a, \delta) = \max_{c \geq 0} u(c) - f + v'_a(a, \delta) [w - c + ra] + \delta(v^u(a) - v^e(a, \delta)) + \zeta [\max\{v^e(a, \delta), v^n(a)\} - v^e(a, \delta)] \quad (4)$$

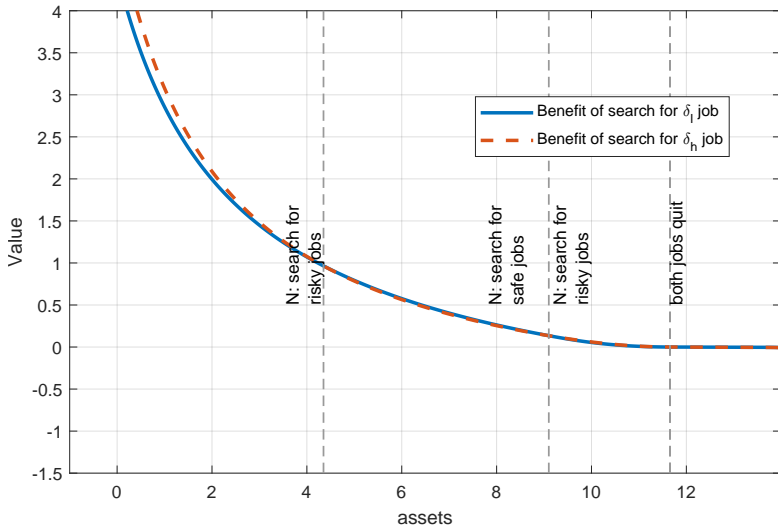
- with $v'_a(a)$ and $v'_a(a, \delta)$ being the derivative of the value function wrt. a (these multiply drift in assets $\dot{a}_t = y - c + ra$ with y either w or b)

Calibration

value functions

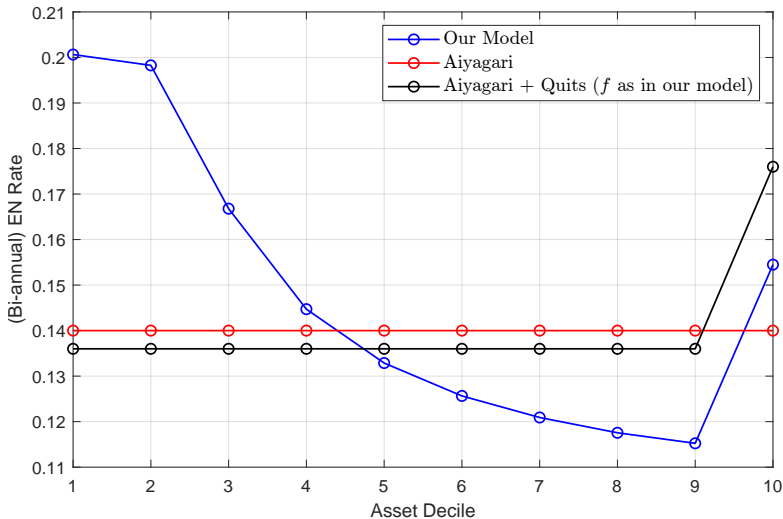
Quantitative Results

Job Search and Quits Policy



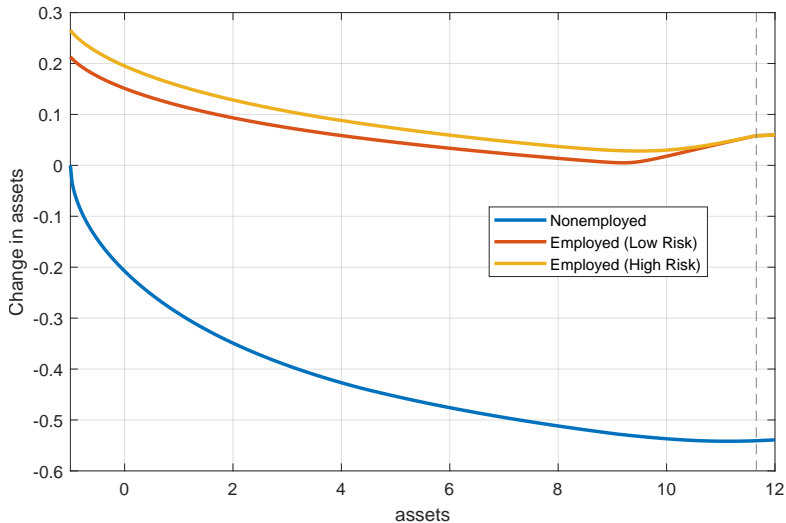
Quantitative Results

Result 1: U-Shape and the Importance of Quits and Job Heterogeneity



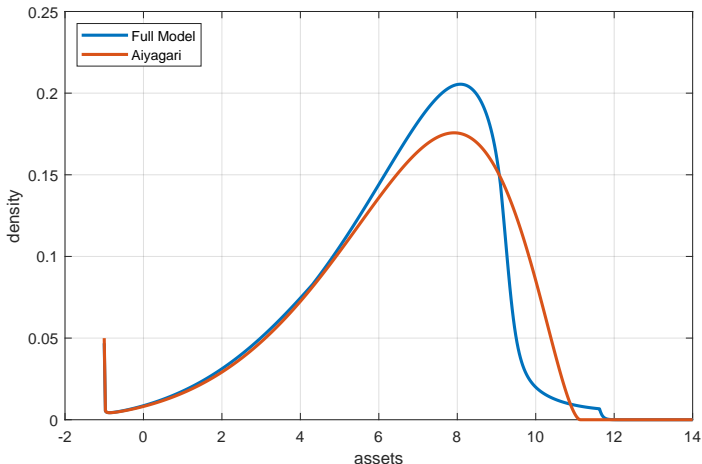
Quantitative Results

Result 2: EN implies wealth decumulation



Quantitative Results

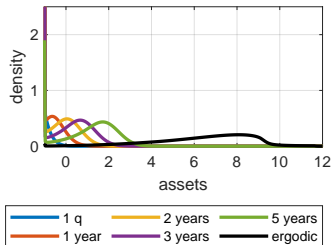
Result 3: Implications of Endogenous Risk for Distribution of Wealth



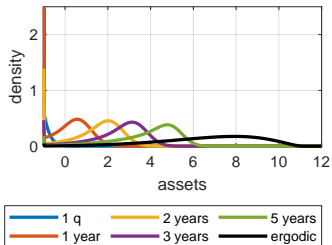
$\sigma C / \sigma Y \uparrow$ from 0.39 in Aiyagari to 0.43 in our model; 6% greater stock of a in Aiyagari at the same r .

Quantitative Results

Result 4: Persistence of Wealth at the bottom



(a) Our model



(b) Aiyagari

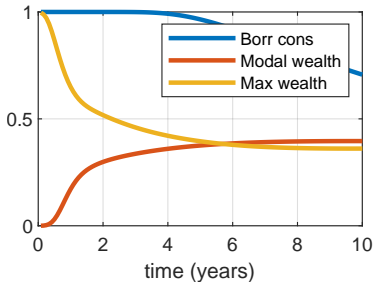
After 5 years both models still *remembers* that an agent was at borrowing constraint, but in our model the gap to ergodic is 2x larger.

At the median

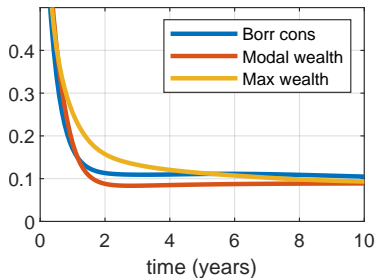
At the top

Quantitative Results

Result 5: Persistence of Job Insecurity



(a) Fraction of Risky Jobs



(b) Non-employment rate

Simulate 3 agents who just move out of non-employment.

Thank you!

Related Literature

- **Incomplete markets:** Aiyagari (1994), Bewley (1983), Huggett (1993) and:
 - **Labour Market Aggregates:** Rendon (2006), Krusell et al. (2010), Sterk and Ravn (2017, 2018), den Haan et al. (2018)
 - **Transitions from Unemployment to Employment:** Acemoglu, Shimer (1999), Lentz, Tranæs (2005), Herkenhoff (2017, ...), Eeckhout and Sepahsalari (2023)
 - **Transitions between Jobs:** Lise (2013), Hubmer (2018), Larkin (2019), Chaumont, Shi (2022), Clymo, Denderski, Mercan, Schoefer (2022)
- **Consumption insurance:** Krueger, Perri (2006), Blundell, Pistaferri, Preston (2008), Guvenen, Smith (2014), ...

This paper:

Non-trivial link between wealth and E-to-N transitions, accounting for that matters for inference on consumption insurance & distributions of wealth/consumption.

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Observed Heterogeneity

Table: EN transitions in major demographic sub-samples

	(1) Men	(2) Women	(3) Single	(4) Married	(5) Low Edu.	(6) High Edu.
Low Wealth	0.029** (0.014)	0.051*** (0.015)	0.070*** (0.020)	0.028** (0.011)	0.067*** (0.021)	0.038*** (0.012)
High Wealth	0.033*** (0.012)	0.036*** (0.013)	0.091*** (0.030)	0.023*** (0.009)	0.014 (0.016)	0.034*** (0.011)
Observations	9949	9102	4405	14646	7502	11549
Individuals	2489	2341	1708	3924	2166	2955
R ²	0.071	0.078	0.090	0.052	0.094	0.055
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Occupation	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: Standard errors are clustered at the individual level. Low Wealth and High Wealth correspond to the bottom and the top decile of respective wealth distribution. Base group is the remainder of the wealth distribution. Individual controls include age, education, female, race, marital status, number of children, hourly wage, and region, unless excluded due to collinearity with sample split. Industry and occupation dummies are based on 2-digit classifications. High Education are individuals who reported more than 12 years of completed schooling. Low Education individuals are those with 12 or less years of completed schooling.

Life Cycle

Table: Focusing on the Tails of the Wealth Distribution by Age.

	Wealth without Home Equity			Wealth with Home Equity		
	(1) 18 – 34	(2) 35 – 49	(3) 50 – 65	(4) 18 – 34	(5) 35 – 49	(6) 50 – 65
Low Wealth	0.049*** (0.015)	0.026* (0.016)	0.062** (0.028)	0.073*** (0.015)	0.035** (0.016)	0.060* (0.034)
High Wealth	0.066** (0.030)	0.031** (0.013)	0.002 (0.013)	0.027 (0.030)	0.026** (0.013)	-0.018 (0.013)
Observations	7310	7681	4060	7310	7681	4060
Individuals	2789	2546	1298	2789	2546	1298
R^2	0.085	0.045	0.033	0.087	0.045	0.033
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Occupation	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: Standard errors are clustered at the individual level. Low Wealth and High Wealth correspond to the bottom and the top decile of respective wealth distribution. Base group is the remainder of the wealth distribution. Individual controls include age, education, female, race, marital status, number of children, hourly wage, and region. Industry and occupation dummies are based on 2-digit classifications.

Employment Status & Flows

Table: Labour Market Status and Flows

	Mean		Mean
Labour Market: Status and Flows		Type of EN transition	
Unemployed	0.051	EU	0.039
Inactive	0.039	EI	0.021
EN	0.140	E(N)E	0.079

Note: The sample contains 27,832 observations on 5,151 individuals. The sample includes individuals aged 18 to 65, who are only added to the sample once they join the labour market. They are then dropped from the sample once they leave the labour market and they do not appear again as employed. We restrict our sample to the core PSID sample who are not self-employed or working for the government or in farming related occupations. Lastly, our sample includes individuals which we observe for at least two consecutive waves.

Propensity towards EN

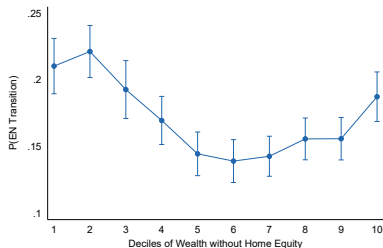
	Wealth without Home Equity			Wealth with Home Equity		
	(1)	(2)	(3)	(4)	(5)	(6)
	β / SE	β / SE	β / SE	β / SE	β / SE	β / SE
Low Wealth	0.037*** (0.010)	0.039*** (0.010)	0.027*** (0.009)	0.052*** (0.010)	0.055*** (0.011)	0.041*** (0.009)
High Wealth	0.036*** (0.008)	0.035*** (0.009)	0.025*** (0.008)	0.024*** (0.008)	0.023*** (0.009)	0.014* (0.008)
Observations	19051	19051	19051	19051	19051	19051
Individuals	4830	4830	4830	4830	4830	4830
R^2	0.075	0.078	0.195	0.075	0.078	0.195
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry/Occupation	Yes	Yes	Yes	Yes	Yes	Yes

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Note: Standard errors are clustered at the individual level. Low Wealth and High Wealth correspond to the bottom and the top decile of respective wealth distribution. Base group is the remainder of the wealth distribution. Individual controls include age, education, female, race, marital status, number of children, hourly wage, and region. Industry and occupation dummies are based on 2-digit classifications. We additionally control for *Past EN Switch* in columns (1) and (4), *Past Nonemployment Share* in columns (2) and (5) and for *Total Nonemployment Share* in columns (3) and (6).

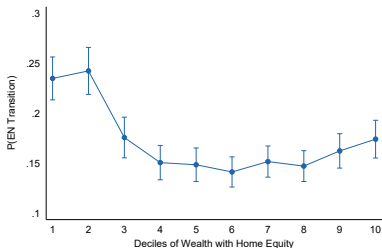
Figure: Margins of Deciles of wealth on the probability of an *EN*-transition (alternative definition of *EN*).

Predictive Margins with 95% Confidence Interval



(a) Liquid Wealth

Predictive Margins with 95% Confidence Interval



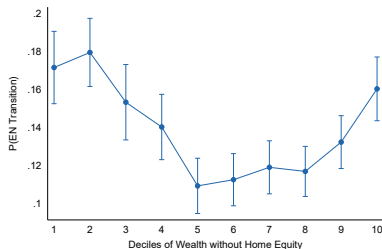
(b) Total Wealth

Note: These figures plot the predictive margins on deciles of wealth from an LPM regression as presented in equation 1 with less strict definition of the $EN_{i,t}$ dummy. Panel 4a includes deciles of wealth without home equity, whilst Panel 4b includes deciles of wealth with home equity. Year fixed effects, individual controls and a full set of industry and occupation controls are included. Standard errors are clustered at the individual level. Data is from waves 1999-2017 of the PSID.

◀ go back

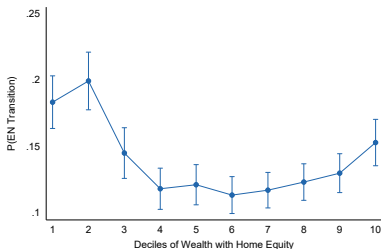
Figure: Margins of Deciles of wealth on the probability of an *EN*-transition (household wealth).

Predictive Margins with 95% Confidence Interval



(a) Liquid Wealth

Predictive Margins with 95% Confidence Interval

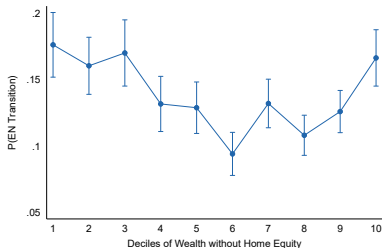


(b) Total Wealth

Note: These figures plot the predictive margins on deciles of wealth from an LPM regression as presented in equation 1 with deciles based on household, and not per-capita wealth. Panel 5a includes deciles of wealth without home equity, whilst Panel 5b includes deciles of wealth with home equity. Year fixed effects, individual controls and a full set of industry and occupation controls are included. Standard errors are clustered at the individual level. Data is from waves 1999-2017 of the PSID.

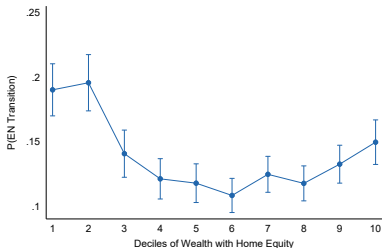
Figure: Margins of Deciles of wealth on the probability of an *EN*-transition (Heads only).

Predictive Margins with 95% Confidence Interval



(a) Liquid Wealth

Predictive Margins with 95% Confidence Interval



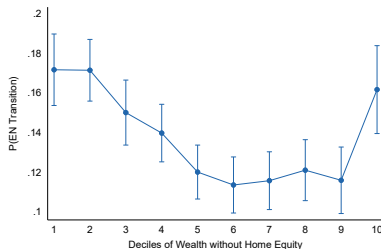
(b) Total Wealth

Note: These figures plot the predictive margins on deciles of wealth from an LPM regression as presented in equation 1 ran on a sample of respondents who were classified as head of household. Panel 6a includes deciles of wealth without home equity, whilst Panel 6b includes deciles of wealth with home equity. Year fixed effects, individual controls and a full set of industry and occupation controls are included. Standard errors are clustered at the individual level. Data is from waves 1999-2017 of the PSID.

◀ go back

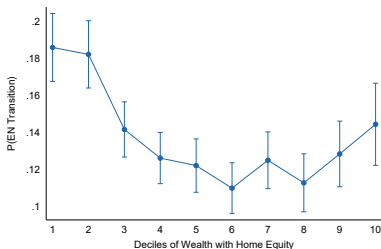
Figure: Margins of Deciles of wealth on the probability of an *EN*-transition (Probit).

Predictive Margins with 95% Confidence Interval



(a) Liquid Wealth

Predictive Margins with 95% Confidence Interval



(b) Total Wealth

Note: These figures plot the predictive margins on deciles of wealth from a probit regression as presented in equation 1. Panel 7a includes deciles of wealth without home equity, whilst Panel 7b includes deciles of wealth with home equity. Year fixed effects, individual controls and a full set of industry and occupation controls are included. Standard errors are clustered at the individual level. Data is from waves 1999-2017 of the PSID.

◀ go back

Table: Distribution of Per-Capita Net Wealth and its Accumulation

Net Wealth	1-st Quartile	Median	3-rd Quartile	Mean	Std. Dev.
with Home Equity					
Level	3.19	25.02	86.88	88.05	259.23
2-year growth	-6.24	8.86	45.03	37.06	263.02
4-year growth	-3.10	19.87	76.08	70.20	294.91
6-year growth	0.51	33.87	106.97	103.21	322.56
without Home Equity					
Level	0.81	9.39	40.37	55.89	229.01
2-year growth	-7.35	2.89	23.39	24.62	249.34
4-year growth	-6.15	6.74	42.62	48.21	273.30
6-year growth	-4.44	10.62	63.77	71.35	297.96

Note: All values expressed in thousands of 2015 US dollars. The sample contains 27,832 observations on 5,151 individuals. The sample includes individuals aged 18 to 65, who are only added to the sample once they join the labour market. They are then dropped from the sample once they leave the labour market and they do not appear again as employed. We restrict our sample to the core PSID sample who are not self-employed or working for the government or in farming related occupations. Lastly, our sample includes individuals which we observe for at least two consecutive waves.

Model

Calibration

Parameter	Description	Value	Source/Target
Predetermined			
w	Wage	1	Normalisation
b	UI Benefits	0.4	40% Replacement Rate
σ	Risk Aversion	4	Hornstein, Krussel, Violante (2011)
ρ	Discount Factor	0.0102	4% Annual
r	Real Interest Rate	0.0063	2% Annual
ζ	Avg. Termination Notice	3	1 Month
\underline{a}	Borrowing constraint	-1	1 Quarter of Wages
Internally calibrated			
δ_l	Safe Jobs EN Rate	0.0136	14% Biannual EN Rate
δ_h	Risky Jobs EN Rate	0.0272	$\frac{\text{EN in decile 1}}{\text{EN in decile 5}} = 1.4$
$\lambda(\delta_l)$	Safe Jobs Arrival Rate	0.17	9% Nonemployment Rate
$\lambda(\delta_h)$	Risky Jobs Arrival Rate	0.23	$\frac{\text{EN in decile 3}}{\text{EN in decile 5}} = 1.33$
f	Disutility of Work	0.5662	$\frac{\text{EN in decile 10}}{\text{EN in decile 5}} = 1.5$

◀ go back

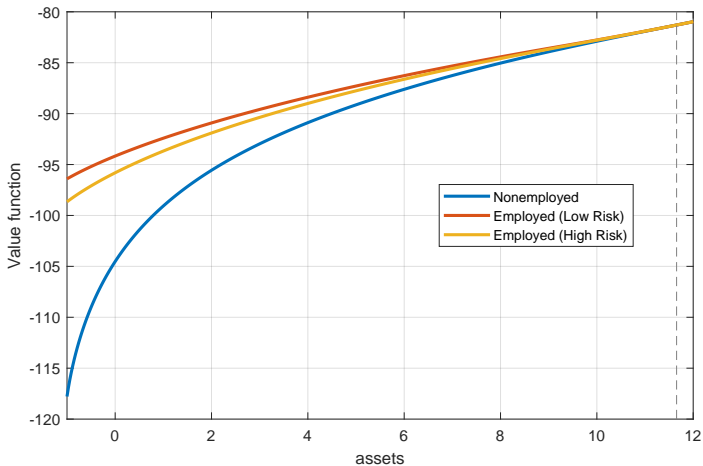
Table: Descriptive Statistics: Individual & Job Characteristics

	Mean	Std. Dev.		Mean	Std. Dev.
Demographics			Industry		
Age	39.36	11.45	Construction	0.07	0.25
Female	0.49	0.50	Manufacturing	0.21	0.41
Married	0.76	0.42	Transportation	0.09	0.28
Number of Children	0.91	1.13	Wholesale Trade	0.05	0.22
African American	0.08	0.27	Retail Trade	0.17	0.38
Other Ethnic Group	0.03	0.16	Finance	0.09	0.28
Years of Schooling	13.74	2.02	Services	0.33	0.47
Wage			Occupation		
Hourly Wage	21.41	29.19	Managerial & Professional	0.30	0.46
			Technical, Sales & Admin	0.33	0.47
			Service	0.11	0.31
			Precision Production, Craft & Repair	0.12	0.33
			Operatives & Labourers	0.14	0.34

Note: The sample contains 27,832 observations on 5,151 individuals. The sample includes individuals aged 18 to 65, who are only added to the sample once they join the labour market. They are then dropped from the sample once they leave the labour market and they do not appear again as employed. We restrict our sample to the core PSID sample who are not self-employed or working for the government or in farming related occupations. Lastly, our sample includes individuals which we observe for at least two consecutive waves. Monetary values expressed in 2015 US dollars.

Quantitative Results

Borrowing Constraint and Effective Risk Aversion

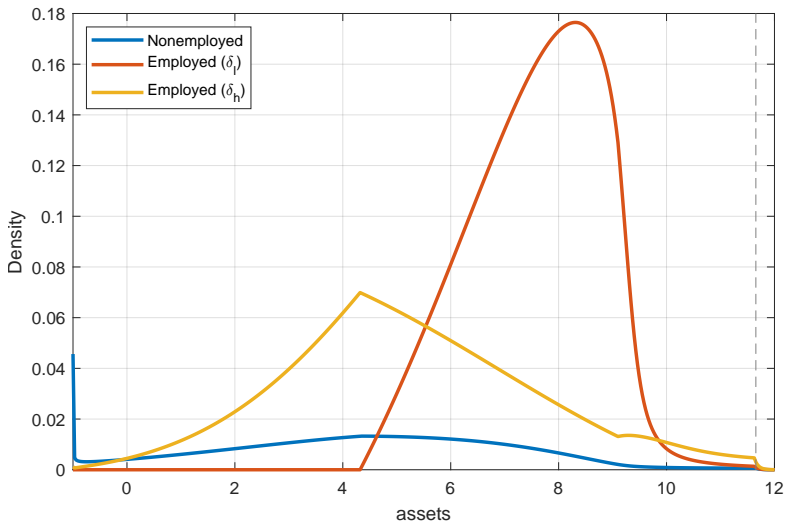


◀ go back

◀ Go Back

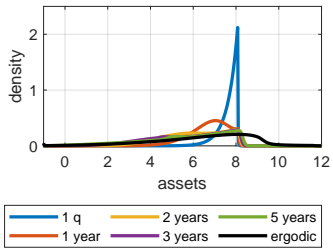
Quantitative Results

Cross-sectional distributions of assets

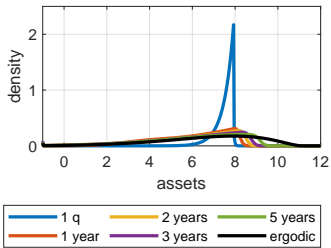


Quantitative Results

Result 4b: No Persistence of Wealth at the median



(a) Our model

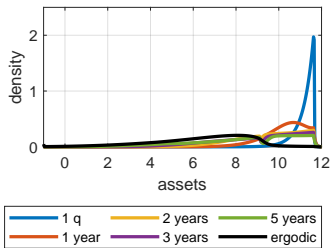


(b) Aiyagari

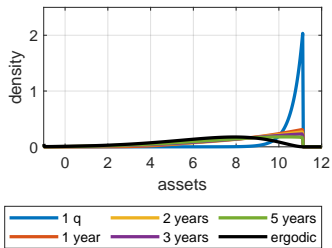
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Quantitative Results

Result 4c: Persistence of Wealth at the top



(a) Our model



(b) Aiyagari

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