Asymmetric Labor Income Risk: Implications for Risk-Taking in Financial Markets

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Outline

Why Labor Income Risk Matters—and What's Missing

Risk is not just *how much*—it's *which direction*

- **Why it matters:** Idiosyncratic risk is only partially insurable, it amplifies wealth inequality and heterogeneity in returns and MPC.
- **What is missing:** Empirics rely on variance-only measures; we lack micro evidence on how higher-order risk maps into decisions.
- **What I do:** Measure *tail-dependent* risk (variance *conditioned on* the length of tails) using public SIPP micro data.
- **Key contributions:** Resolve the "variance puzzle" and identify a downside-risk channel that explains why younger households participate less and hold smaller equity shares than canonical life-cycle models predict.

Conventional Estimation of Labor Income Risk

Two common approaches to measuring *individual* income risk

1. **Long–panel, person–level (e.g., JFE 2014, Bonaparte et al.).**
   - *Pros:* Identifies idiosyncratic risk at the individual level with minimal functional assumptions.
   - *Requirements:* Long panels (e.g., $\geq$ 4–5 years/individual) with clean earnings histories.
   - *Cons:* Effectively assumes within-person risk is time–invariant; limited ability to study year-to-year shifts in risk.
2. **Annual, group–based (e.g., JFE 2012, Betermier et al.; JF 2024, Catherine et al.).**
   - *Pros:* Delivers year–by–year risk measures; scalable to short panels and broad samples.
   - *Implementation:* Pool workers into cells (e.g., industry $\times$ education) and compute cell-level moments.
   - *Cons:* Assumes within–cell homogeneity; estimates reflect "cell risk" rather than pure individual risk.

When Risk Has a *Shape*

The standard practice

- **Empirical norm:** measure labor income risk with a single number – the variance.
- **Implicit assumption:** shocks are *Gaussian* $\Rightarrow$ upside and downside moves are *equally likely*.

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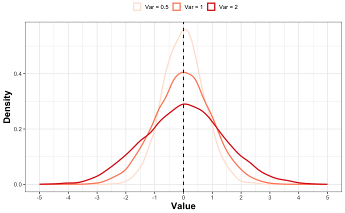
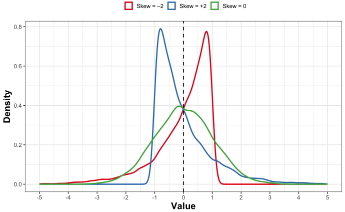
Reality check

- Earnings surprises are rarely symmetric (layoffs vs. promotions, recessions vs. booms).
- Adds a **shape dimension** – skewness – so that *variance* tells us *how big* the shocks are, while *skewness* tells us *where* they are likely to hit.



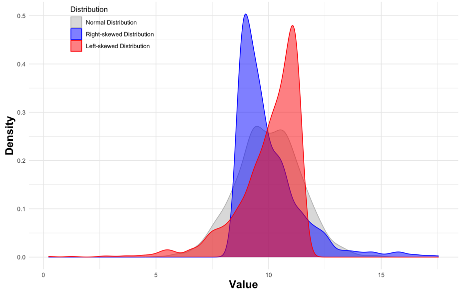
Same shape, different scale



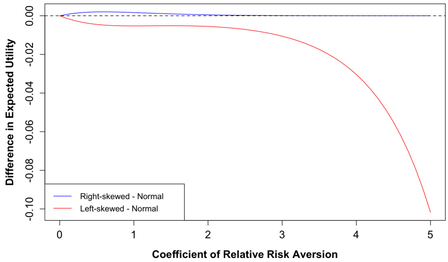
Same scale, different shape

Tail Risk in Theory: Utility of CRRA Agent

Utility difference between distributions with identical first and second moments



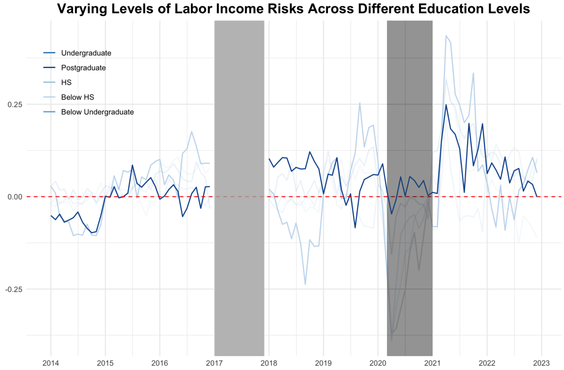
(a) Distributions

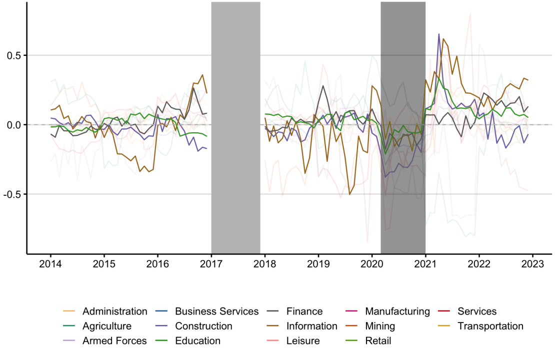


(b) Utility premium

Note. Panel (b) shows the change in utility when introducing a skewed shock vs. a Gaussian shock—i.e., the premium for $\tilde{y}_{\text{skewed}}$ relative to $\tilde{y}_{\text{normal}}$ under CRRA.

Tail Risk in Real Life: A Quick Preview





A Parsimonious Tail-Dependent Risk Index

Reduced-form metric

$$\underbrace{\text{Individual Volatility}_{i,Y}}_{\text{Individual risk}} \times \underbrace{\text{Length of Tail}_{g(i,M)}}_{\text{Event risk}}$$

- **What it represents.**
  - *Exposure (LHS):* Each individual has a *predetermined* idiosyncratic income variance *associated* with their job or contract.
  - *Shocks (RHS):* Industry–education cells experience time-varying changes in tail shape (right-/left-tail length).
  - *Identifying variation:* Common tail-shape shocks have *differential* effects across individuals with different exposures.

Testable Predictions

1. **Variance channel.**
   Under standard portfolio choice theory, higher idiosyncratic labor income variance ($\sigma^2 \uparrow$) lowers optimal equity exposure–i.e., it reduces households' risky asset holdings.
2. **Tail (Skewness) channel.**
   1. $L5010$ **(left-tail / disaster).**
      Broad-based: downside risk depresses equity demand for (nearly) all investors.
   2. $L9050$ **(right-tail / opportunity).**
      Selective: upside risk raises equity demand mainly for investors with higher risk tolerance; muted or no effect for others.
3. **Wealth channel.**
   Both variance and skewness corrections shrink with wealth: the variance term scales with $1/W$, while the skewness term scales with $1/W^2$. Hence, as $W \to \infty$ the portfolio rule converges to the myopic Merton share π^*.

Outline

This Paper: Two Challenges

1. Measurement

How can we quantify higher-order labor income risk in a reduced-form framework using publicly available microdata?

- Doing so typically requires high–frequency, granular earnings records—hence the focus of most existing work on restricted administrative data.
- I propose a set of transparent assumptions that make estimation feasible with SIPP microdata.

Having devised a new risk measure, the next step is to test whether it actually matters.

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2. Perception

How does the ***shape*** *of the income growth distribution affect households' equity holdings?*

- Re-examine a classic question using measures that capture *skewness-conditional* volatility rather than variance alone.

Two Puzzles in Household Finance

Empirical Regularities that Standard Models Miss

1. **Variance-Share Paradox**
   Across households, higher *earnings variance* is *positively* correlated with the portfolio share of risky assets. Table

2. **Youth Participation Gap**
   Relative to canonical life-cycle predictions, *young* households hold *far less* equity.

This Paper's Contribution

- The previously positive variance effect is mostly driven by shocks in the *upper* tail of the earnings distribution.
- Young households – whose balance sheets are dominated by human capital – are the most responsive to *downside* (disaster) risk.

Outline

Income Volatility and Portfolio Choice

Micro evidence

- **Hedging motive.** Bonaparte et al. 2014, *JFE*; Catherine et al. 2024, *JF*.
- **"Variance puzzle."** Betermier et al. 2012, *JFE*; d'Astous & Shore 2024, *JFE*.
- **Tail risk.** Tail-conditioned labor income risk resolves the variance puzzle directly—no instruments or experiments needed.

Models

- **Canonical prediction.** wage risk $\uparrow \Rightarrow$ risky share $\downarrow$ (Merton 1971; Kimball 1993; Constantinides & Duffie 1996; Heaton & Lucas 1996, 2000).
- **Incomplete markets.** Uninsurable idiosyncratic risk shapes portfolio choices in equilibrium (Aiyagari 1994).
- **Life-cycle calibration.** Regime-switching earnings volatility helps match the modest rebalancing seen in admin data (Chang et al. 2022).

Tail Risk across Literature

Asset pricing

- **Gabaix (2012); Wachter (2013):** time-varying disaster risk $\Rightarrow$ time-varying risk premia.
- **Ghysels et al. (2016):** optimal portfolios tilt toward less negatively skewed markets.
- **Aït-Sahalia et al. (2025):** premia earned for *uncertainty* beyond volatility.
- **Schmits (2025):** labor income tail risk feeds into asset prices in equilibrium.

Household finance

- **Guvenen et al. (2014):** countercyclical labor income risk affects equity demand.
- **Catherine (2022):** calibrates countercyclical tail risk in a life-cycle model.
- **Catherine et al. (2024):** Reduced-form evidence that corroborates Catherine (2022).
  Details
- **This paper.**

Outline

Data Source and Sample ◂ Visualization ◂ Stat

1. **Source:** Survey of Income and Program Participation (SIPP).
2. **Coverage:** 2013–2022; exclude 2017 (due to a new survey wave).
3. **Sample:** investor; ages 25–65; non-missing labor earnings and core covariates; person weights.
   - More than 120,000 individuals are used to estimate labor income moments, and about 22,000 are investors–comparable to the active PSID sample in 2021–and, with person weights, the sample is nationally representative.
   - Households stay out of the stock market for reasons unrelated to labor income risk–e.g., participation costs, beliefs, or alternative opportunities.
4. **Why SIPP?** Monthly frequency $\Rightarrow$ precise growth/residuals; richer than SCF/PSID for month-to-month risk. ◂ Details

Earnings Growth and Idiosyncratic Shock

$$Y_{i,t} : \text{labor earnings}, \quad \ell_{i,t} \equiv \ln Y_{i,t}$$

$$\ell_{i,t} = f(V_t) \times \lambda_t + y_{i,t}, \quad y_{i,t} = z_{i,t} + \varepsilon_t, \quad z_{i,t} = z_{i,t-1} + \eta_{s_i,t}$$

$$\Delta y_{i,t} = y_{i,t} - y_{i,t-1} \tag{1}$$

$$\Delta y_{i,t} \;=\; \eta_{s_i,t} + \tilde{\varepsilon}_{i,t} \tag{2}$$

- $f(V_t) \times \lambda_t$: **factor structure** of labor earnings.
- λ_t: **aggregate shock**.
- $\Delta y_{i,t}$: **idiosyncratic** earnings-growth innovation (predictable parts removed).

State Variables

Shape (group tails). Let $g(M)$ be the industry–education cell in month M.

$$\text{Kelly Skewness}_{g(M)} = \frac{(P90_{g(M)} - P50_{g(M)}) - (P50_{g(M)} - P10_{g(M)})}{P90_{g(M)} - P10_{g(M)}} \tag{3}$$

$$L9050_{g(M)} = P90_{g(M)} - P50_{g(M)} \quad \text{(right tail; ``opportunity'' risk)}, \tag{4}$$

$$L5010_{g(M)} = P50_{g(M)} - P10_{g(M)} \quad \text{(left tail; ``disaster'' risk)}. \tag{5}$$

Skewness summarizes asymmetry for the full distribution, whereas L9050 and L5010 isolate the right and left tail contributions by measuring each tail's percentile spread.

Portfolio Outcomes

Risky share (direct stock %):

$$\text{Risky Share}_{i,M} = RS_{i,M} \equiv 100 \times \frac{\text{Value of Stocks and Mutual Funds}_{i,M}}{\text{Value of Financial Assets}_{i,M}}. \tag{6}$$

Participation (extensive margin):

$$\text{Participation}_{i,M} = \text{PART\_STMF}_{i,M} \equiv \mathbf{1}\{RS_{i,M} > 0\}. \tag{7}$$

- **Financial Assets:** assets held at financial institutions, stocks and mutual funds, retirement accounts, other interest-earning assets, educational savings accounts, and other assets.

Tail-Dependent Labor Income Risk (Core Regressors)

Tail-conditioned volatility:

$$\text{Opportunity risk}: \quad L9050_{g(i,M)} \times \mathrm{Var}_{i,Y}, \tag{8}$$

$$\text{Disaster risk}: \quad L5010_{g(i,M)} \times \mathrm{Var}_{i,Y}. \tag{9}$$

- Implements the theory: the effect of volatility depends on *shape* of risk.
- Right-tail exposure attenuates the disutility of risk; left-tail exposure amplifies it.

Baseline Empirical Design

Risky share (OLS with person weights):

$$
\begin{aligned}
RS_{i,M} = \alpha \; & + \beta_1 \, \mathrm{Var}_{i,Y} + \beta_2 \, L9050_{g(i,M)} + \beta_3 \, L5010_{g(i,M)} \\
& + \beta_4 \, L9050_{g(i,M)} \, \mathrm{Var}_{i,Y} + \beta_5 \, L5010_{g(i,M)} \, \mathrm{Var}_{i,Y} \\
& + \mathbf{X}'_{i,M}\gamma + \lambda_{\mathrm{IND}} + \lambda_{\mathrm{YM}} + u_{i,M}.
\end{aligned}
$$

- $\mathbf{X}'_{i,M}$ collects household covariates: log labor income, log total wealth, education, age and age^2, gender, unemployment status, and housing status.
- λ_{IND} is the Industry fixed effect.
- λ_{YM} is the Year-Month fixed effect.

Identification

- **Design:**
  - *Exposure* = pre-determined idiosyncratic income risk.
  - *Shocks* = within–industry×education×month tail-shape movements.
- **Ex-ante Expectation:** Tail risk alters investors' expectations about future income, prompting preemptive portfolio reallocation.
- **Mapping to theory:** The interaction is a person-specific, *state-dependent* background-risk index: right-tail (opportunity) vs left-tail (disaster) yields opposite portfolio responses, scaled by human capital share and risk aversion.

▸ Skewness over time   ▸ Variance over life cycle

Outline

Risky Asset Share and Tail-Dependent Labor Income Risk

	Dependent variable: % of direct stock holdings					
	(1)	(2)	(3)	(4)	(5)	(6)
Opportunity ($L9050$)	0.341***		0.336***	0.132		0.161*
	(3.91)		(3.85)	(1.49)		(1.80)
Disaster ($L5010$)	−0.243***		−0.246***		−0.203***	−0.211***
	(-3.31)		(-3.36)		(-2.74)	(-2.81)
Idiosyncratic variance		0.057***	0.057***	−0.084***	0.055**	−0.059**
		(3.51)	(3.49)	(-3.36)	(2.44)	(-2.22)
Opportunity × variance				0.146***		0.173***
				(7.36)		(8.04)
Disaster × variance					0.003	−0.047***
					(0.19)	(-3.00)
Household controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year–month FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.028	0.028	0.028	0.028	0.028	0.028
Observations	259,485	259,485	259,485	259,485	259,485	259,485

Theory

Main Result: Risky Share Depends on Shape×Scale

Findings:

- $L9050_{g(i,M)} \times \mathrm{Var}_{i,Y}$ (*opportunity risk*) raises equity share.
- $L5010_{g(i,M)} \times \mathrm{Var}_{i,Y}$ (*disaster risk*) lowers equity share.
- Var-only coefficient turns negative once $L9050_{g(i,M)}, L5010_{g(i,M)}$ and interactions enter.

Comparative statics implied by theory:

- Upside tail ($L9050_{g(i,M)} \uparrow$) attenuates the cost of volatility $\Rightarrow \partial RS/\partial \mathrm{Var}_{i,Y} > 0$ when $L9050_{g(i,M)}$ large.
- Downside tail ($L5010_{g(i,M)} \uparrow$) amplifies the cost of volatility $\Rightarrow \partial RS/\partial \mathrm{Var}_{i,Y} < 0$ when $L5010_{g(i,M)}$ large.
- Effects scale down with wealth: sensitivity declines as W rises.

Extensive Margin: Stock-Market Participation

Table 6: Determinants of Stock Market Participation

	Dependent variable: Stock Market Direct Participation (Binary: 1/0)				
	(1)	(2)	(3)	(4)	(5)
Labor income risk					
Individual Risk (Variance)	0.002**	0.001	−0.004**	−0.003*	−0.004***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Opportunity (L9050)			−0.001	0.008	−0.001
			(0.005)	(0.005)	(0.005)
Disaster (L5010)			−0.002	0.007*	0.008**
			(0.004)	(0.004)	(0.004)
L9050×Var			0.07***	0.006***	0.006***
			(0.01)	(0.001)	(0.001)
L5010×Var			−0.001	−0.001	−0.001
			(0.01)	(0.001)	(0.001)
Demographics & Controls					
Log labor income	0.005*	−0.003	0.005*	0.003	−0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Log total assets	0.267***	0.261***	0.267***	0.268***	0.261***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Education	0.0004***	0.0004***	0.0004***	0.0003***	0.0004***
	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
Age	−0.039***	−0.036***	−0.039***	−0.039***	−0.036***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age squared	0.0003***	0.0003***	0.0003***	0.0003***	0.0003***
	(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Male (1=Yes)	0.059***	0.064***	0.059***	0.060***	0.064***
	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)
Unemployed (1=Yes)	0.014	−0.052*	0.016	−0.003	−0.050*
	(0.028)	(0.029)	(0.028)	(0.029)	(0.029)
Fixed effects					
Industry FE		✓		✓	✓
Year–Month FE		✓			✓
Observations	259,485	259,485	259,485	259,485	259,485

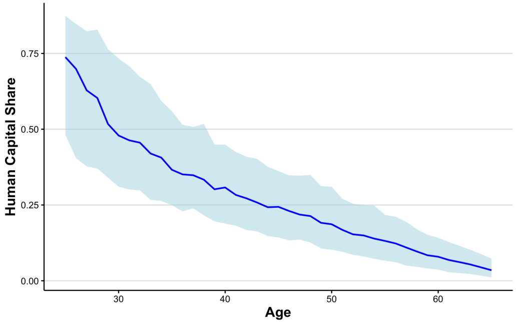
Notes. This table presents the results of Probit regressions, where the dependent variable is the a binary variable indicating direct stock market participation, and the independent variables include measures of income risk, and control variables such as income, wealth, age, age squared, gender, education level, and housing status. Columns (2) and (5) account for Industry and Year-Month fixed effects. Robust standard errors are shown in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Age $<$ 36: Stock-Market Participation

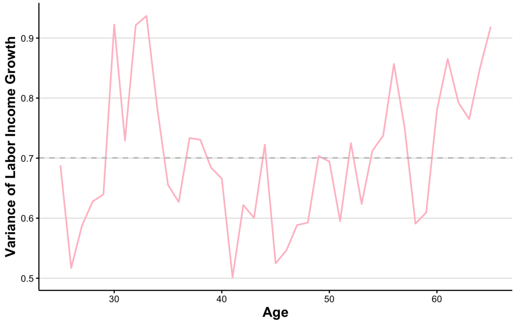
	Dependent variable: Stock Market Direct Participation (1/0)		
	(1)	(2)	(3)
Labor-income risk			
L9050×Var	0.008**	0.007*	0.006
	(0.004)	(0.004)	(0.004)
L5010×Var	−0.017***	−0.018***	−0.017***
	(0.004)	(0.004)	(0.004)
Fixed effects			
Industry FE		✓	✓
Month–Year FE			✓
Observations	49,034	49,034	49,034

Heterogeneity by Human-Capital Share

$$\text{Human Capital Share}_{i,M} = \frac{\text{Human Capital}_{i,M}}{\text{Human Capital}_{i,M} + \text{Value of Financial Assets}_{i,M}}$$

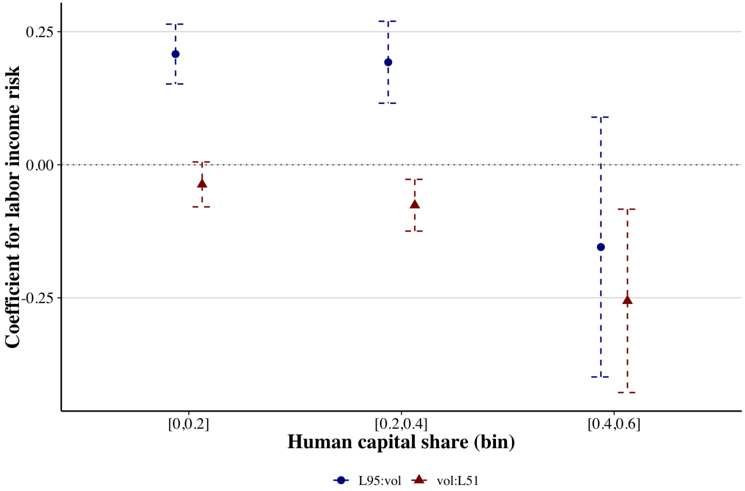


Life-cycle human-capital share

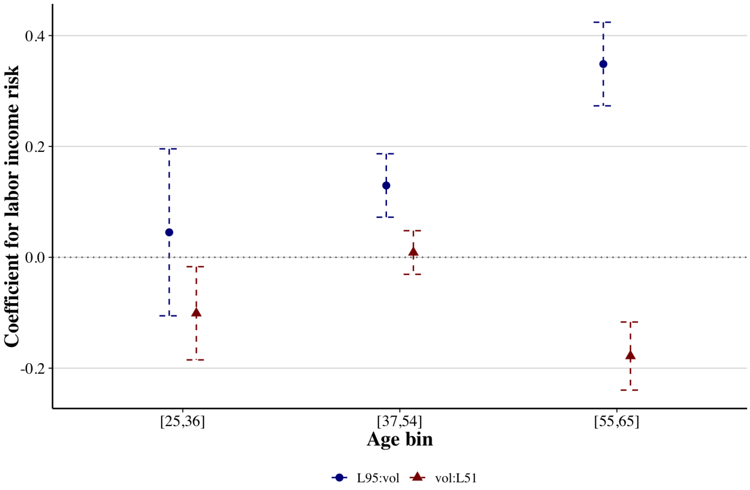


Life-cycle variance of earnings growth

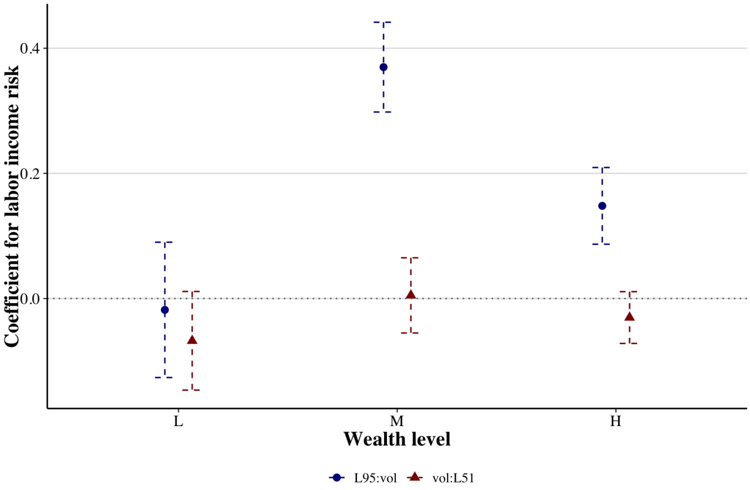
State-Dependent Risk by Human-Capital Share



State-Dependent Risk by Age



State-Dependent Risk by Wealth



Outline

Contributions

- **Distribution-aware risk:** Move beyond variance-only. Estimate volatility *conditioned on the length of tails* with public SIPP microdata.
- **Main result:** Volatility boosts equity demand when *right tail is long*.
- **Household perception:** First direct evidence that households respond to higher-order moments of labor income risk when making portfolio decisions.
- **Variance puzzle resolved:** Isolating tail effect flips the variance coefficient from positive to significantly negative.
- **Return heterogeneity channel:** Left-tail (disaster) risk bites hardest for human-capital–rich (young/low-wealth) households.
- **For theory:** Life-cycle calibrations should allow *non-Gaussian* earnings shocks to match observed rebalancing and participation.

Research Pipeline

Empirical roadmap

- *High-frequency earnings.* Paycheck/payroll–level data (hours, bonuses, overtime) to recover skewness, spikes, and job-switch dynamics; ideally link to brokerage or bank transactions.

Examples for data style:

- Earnings Instability, ganong et al., NBER WP 2025
- Spending and Job-Finding Impacts of Expanded Unemployment Insurance, ganong et al., AER 2024

Structural roadmap

- *Life-cycle model without aggregate TFP shocks (Aiyagari-type).* Replace aggregate productivity shocks (à la Krusell–Smith) with *distributional* earnings shocks.
- *Tractability.* No aggregate state variable; use a Markov process for $\upsilon_{g,t}$ across groups (industry$\times$education) for computational feasibility while matching the paper's micro facts.
- **Goal:** Close the data$\leftrightarrow$model loop on *non-Gaussian* labor income risk: measure at high frequency, validate in reduced form, and embed in a tractable life-cycle model for policy.

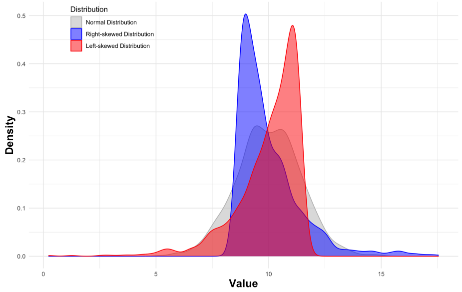
Thanks!

Thank you for your time and feedback.

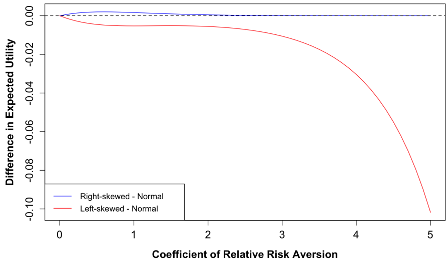
Site: `tlyeungae.github.io`

CRRA Agent Facing Tail Risk

Utility difference between distributions with identical first and second moments



(a) Distributions

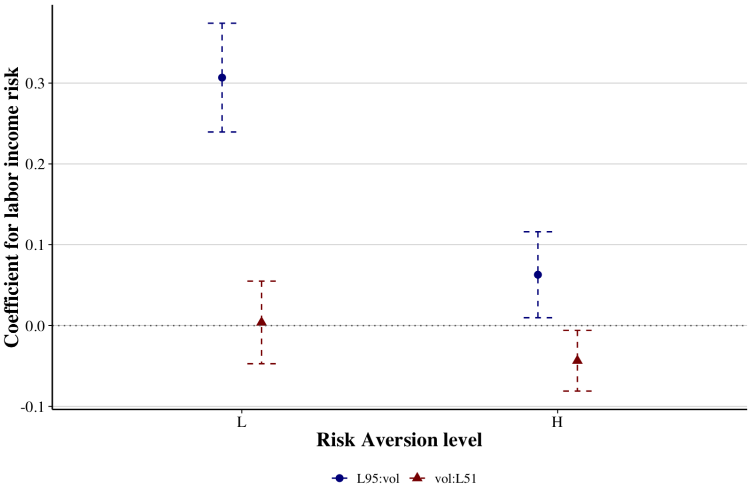


(b) Utility premium

Note. Panel (b) shows the change in utility when introducing a skewed shock vs. a Gaussian shock—i.e., the premium for $\tilde{y}_{\text{skewed}}$ relative to $\tilde{y}_{\text{normal}}$ under CRRA.

State-Dependent Risk by Risk Aversion

Return



CRRA Agent Facing Risk

Return

Setup. Let $u(C) = \frac{C^{1-\gamma}}{1-\gamma}$ with $\gamma > 0$ and let $\tilde{y}$ be a (small) zero-mean risk added to consumption C.

Utility premium

$$\theta(C) \;\equiv\; u(C) \;-\; \mathbb{E}\big[u(C+\tilde{y})\big]$$

Third-order approximation (Taylor around C)

$$\theta(C) \;\approx\; \underbrace{\tfrac{1}{2}\big(-u''(C)\big)\,\mathrm{Var}(\tilde{y})}_{\text{variance (cost)}} + \underbrace{\tfrac{1}{6}\big(-u'''(C)\big)\,\mathbb{E}[\tilde{y}^3]}_{\text{skewness (sign matters)}}$$

Hence for CRRA agent:

$$\boxed{\theta(C) \;\approx\; \frac{\gamma}{C^{\gamma+1}}\left(\frac{\sigma^2}{2} - \frac{\gamma+1}{6C}\,\mathbb{E}[\tilde{y}^3]\right)}$$

JFE 2012 Swedish

Table 6
Effects of wage volatility on the portfolio shares of stocks and mutual funds in 2002.

We report second-stage estimates of portfolio holdings of directly held stocks and mutual funds as a percentage of financial assets in 2002. The sample is restricted to households with positive holdings. Two separate ordinary least squares regressions are run. The dependent variables are the share of directly held stocks over financial wealth and the share of risky mutual funds (equity and mixed) over financial wealth. Financial wealth is defined as the sum of cash (checking and savings accounts, money market funds), bond-only mutual funds, stocks, and risky mutual funds. Lambda is the inverse Mills ratio from the first-stage estimation of the decision to participate in the stock market. We report the *t*-statistics for the bootstrapped standard errors. All the goodness-of-fit Chi-squared tests are statistically significant at the 1% level. Other explanatory variables in the vector $X_{h,02}$ (see Table 5) are included, but we do not report the results.

	Stocks		Mutual funds	
Variable	Estimate	*t*-Statistic	Estimate	*t*-Statistic
Wage vol.	0.238	4.89	−0.37	−8.08
Wage vol. same ind.	−0.002	−0.001	−0.07	0.16
Public	−0.009	−2.73	0.02	5.05
Private	0.012	4.41	−0.019	−6
X variables	Yes	Yes	Yes	Yes
Lambda	0.607	11.59	−0.315	−5.14
Number of observations	69,097		69,097	
Chi-squared	3,048		7,885	

Table 4
Tobit and Heckman asset allocation regression estimates.

This table reports estimates from Tobit and Heckman regressions. The dependent variables are the portfolio shares in stocks (*PropSTK*), mutual funds (*PropMF*), and stocks and mutual funds (*PropSTKMF*). The control variables in regressions 3, 6, and 9 in Panels B and C are the same as in corresponding specifications in Panel A. Panel C reports estimates with before-tax income. All regressions include year fixed affects. In regressions 3, 6, and 9, in Panels B and C, the coefficient estimates for the control variables (log of net worth, household size, age, age^2, education, male, unemployed, retired, good health, and risk aversion) are suppressed. Regressions 10 and 11 of Panel A report estimates from a Heckman model.

Panel A: Estimates using correlation between income growth and market returns

	PropSTK (1–3)			PropMF (4–6)			PropSTKMF (7–9)			PropSTKMF Heckman (10–11)	
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Corr(Rm, dy)	−0.124	−0.129	−0.110	−0.098	−0.103	−0.075	−0.128	−0.130	−0.102	−0.030	−0.022
	(−6.52)	(−6.53)	(−5.55)	(−5.71)	(−5.54)	(−3.74)	(−7.75)	(−7.39)	(−5.82)	(−5.40)	(−3.86)
Ln(y)		0.191	0.011		0.190	−0.008		0.211	0.000	0.037	0.003
		(13.56)	(0.82)		(14.19)	(−0.56)		(17.38)	(0.03)	(13.64)	(0.90)
St. Dev(dy)		0.359	0.153		−0.026	−0.234		0.163	−0.075	0.069	0.028
		(8.01)	(3.42)		(−0.62)	(−4.80)		(4.01)	(−1.81)	(5.22)	(2.08)
Ln(Net Worth)			0.088			0.101			0.107		0.018
			(14.93)			(18.51)			(22.37)		(17.58)
HH size			0.005			−0.044			−0.027		−0.005
			(0.70)			(−6.08)			(−4.45)		(−2.70)
Age			0.004			0.003			0.004		0.002
			(4.30)			(3.92)			(5.83)		(6.97)
Age$^2 \times 100$			0.009			0.009			0.011		0.004
			(2.43)			(2.11)			(3.21)		(3.30)
Education			0.004			0.073			0.057		0.016
			(0.29)			(4.46)			(4.03)		(3.48)
Male			0.008			−0.007			−0.012		0.001
			(0.39)			(−0.37)			(−0.69)		(0.15)
Unemployed			0.012			−0.014			−0.009		−0.004
			(0.49)			(−0.54)			(−0.39)		(−0.59)
Retired			0.058			0.046			0.068		0.038
			(2.26)			(1.73)			(3.01)		(5.27)
Good health			−0.006			0.006			0.005		0.006
			(−0.53)			(0.56)			(0.56)		(1.91)
Risk aversion			−0.130			−0.102			−0.127		−0.036
			(−27.32)			(−27.38)			(−38.36)		(−31.62)
N	13,999	11,961	9,133	13,999	11,961	9,133	13,999	11,961	9,133	2,004	205
Pseudo R^2	0.011	0.047	0.326	0.010	0.044	0.197	0.010	0.045	0.273		
Lamda										−0.06	−0.040
										(−12.56)	(−5.48)

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Table III

Equity Share and Countercyclical Income Risk

This table reports results of Tobit regressions of the equity share on measures of countercyclical income risk, controlling for worker and households characteristics. Absolute t-statistics reported in parentheses are clustered by industry $\times$ education group.

	(1)	(2)	(3)	(4)	(5)
Cyclical skewness	−1.113			−0.878	−0.298
	(2.92)			(5.17)	(3.22)
Count. variance		−0.647		−0.216	0.532
		(0.84)		(0.69)	(2.64)
Covariance			−0.517	−0.445	0.168
			(0.70)	(1.45)	(0.94)
Skewness				−1.969	−1.765
				(3.18)	(5.49)
Variance				0.675	−0.039
				(4.34)	(0.42)
Age				−0.002	−0.001
				(7.64)	(2.76)
Sex				−0.003	−0.008
				(0.44)	(2.25)
Immigrant				−0.141	−0.143
				(28.64)	(30.54)
Household size				−0.009	−0.009
				(10.83)	(14.63)
Entrepreneur				−0.009	−0.004
				(2.07)	(1.14)
Log Total assets				0.136	0.124
				(40.56)	(48.58)
Financial/Total wealth				1.403	1.440
				(32.09)	(33.66)
Real estate/Total wealth				−0.540	−0.459
				(23.24)	(24.00)
Pension/Total wealth				0.025	0.013
				(1.77)	(0.96)
Debt/Total wealth				−0.487	−0.504
				(10.81)	(10.62)
Education FE					Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	32,934,044	32,934,044	32,934,044	32,933,774	32,933,774
Pseudo R^2	0.006	0.004	0.004	0.190	0.198

◂ Return

Countercyclical Tail Risk and *Pure* Tail Risk ◂ Return

Pure tail risk

- **Object:** The *skewness* itself
- **State dependence:** Effect identified by $\mathrm{Var}_{i,t} \times \mathrm{Skew}_{g,t}$
- **Level:** micro, reduced-form
- **Question:** *How* the earnings-risk **shape** changes equity demand?

Countercyclical tail risk

- **Object:** The *cyclicality* of skewness
- **Identification:** Tails that co-move with the market $\mathrm{Cov}(\text{skewness}, r_s)$
- **Level:** macro, structural
- **Question:** *Why* portfolios move over the cycle as tails shift with r_s?

Complementary lenses; different questions.

SIPP vs. PSID ◂ Return

SIPP

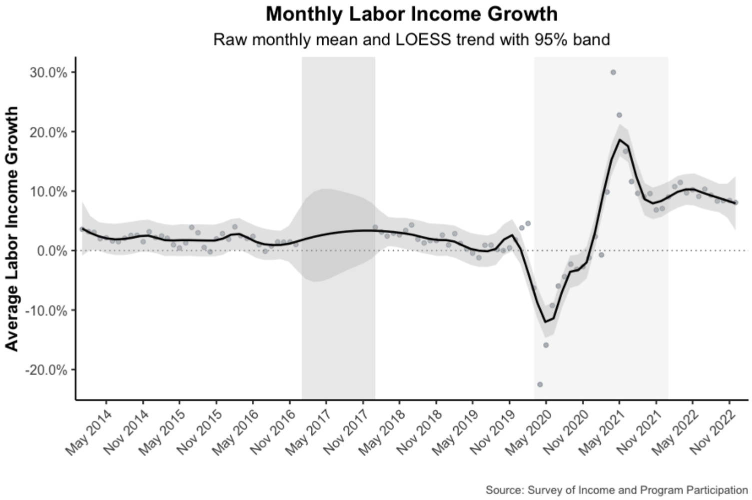
- *High frequency:* monthly earnings and employment spells (captures within–year dynamics).
- *Breadth:* large panels; rich labor market and asset allocation information.
- *Coverage:* strong cross-section for subgroup analysis; nationally representative weights.
- *Validity:* Conducted by the U.S. Census Bureau, lending benchmark measurement rigor.

PSID

- *Depth:* multi-decade longitudinal panel (since 1968) for life-cycle and persistence.
- High data quality; rich demographics; intergenerational links; periodic wealth modules.
- Annual/biennial frequency – limited within-year variation.
- Smaller effective samples for some subgroups; attrition over long horizons.

SIPP is ideal to recover quasi-monthly income shock and higher-moment dynamics; PSID excels at long-run persistence but is less informative about cross-sectional risk.

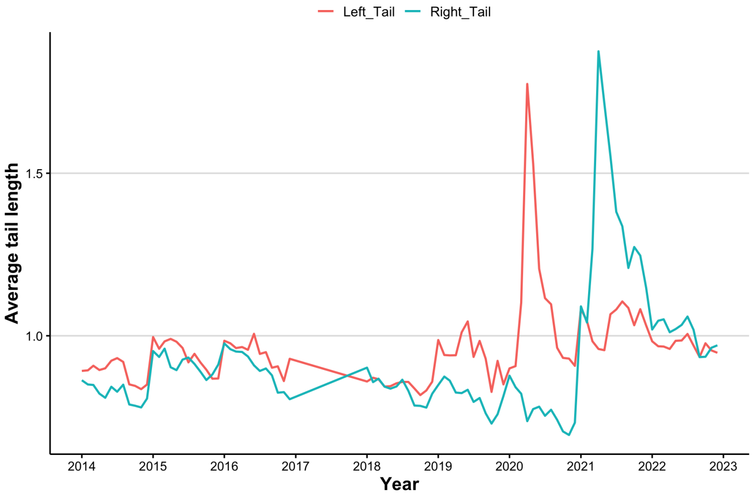
Within–Year Income Instability



◂ Hour

Monthly Dynamics of Tail Risk

Return



Tail events are cross-sectional, rather than aggregate (Schmidt, 2025)

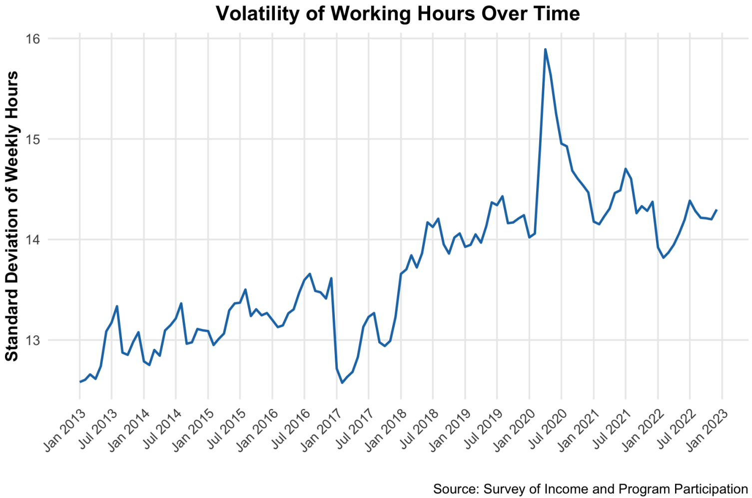
Summary Statistics ◂ Return

Table 1: Descriptive statistics (households from age 25 to 65)

	All		Participants	
	Mean	Standard Deviation	Mean	Standard Deviation
Income				
Monthly labor income ($)	4,852	6,311	7,430	9,744
Variance (short term)	0.69	2.80	0.72	3.01
Variance (long term)	2.35	7.58	2.63	8.30
Skewness	−0.04	1.44	0.01	1.52
Kelly skewness	−0.01	0.22	−0.01	0.22
Wealth				
Stock and mutual fund ($)	21,278	154,454	96,798	333,493
Deposit in bank ($)	16,346	58,196	43,037	105,801
Retirement account ($)	72,533	277,066	202,407	504,738
Secured debt ($)	63,049	361,784	126,401	734,422
Unsecured debt ($)	9,980	35,909	10,109	36,805
Total net worth ($)	258,969	1,825,956	722,779	3,108,161
Equity share (direct holding)	0.05	0.16	0.19	0.27
Demographic characteristics				
Age	44.78	11.95	47.14	11.57
Male	0.49	0.50	0.54	0.50
High school dummy	0.90	0.31	0.99	0.09
Post-high school dummy	0.37	0.47	0.64	0.48
U.S. citizen dummy	0.92	0.27	0.96	0.18
Individuals	125,910	–	22,601	–
Observations	3,173,696	–	633,119	–

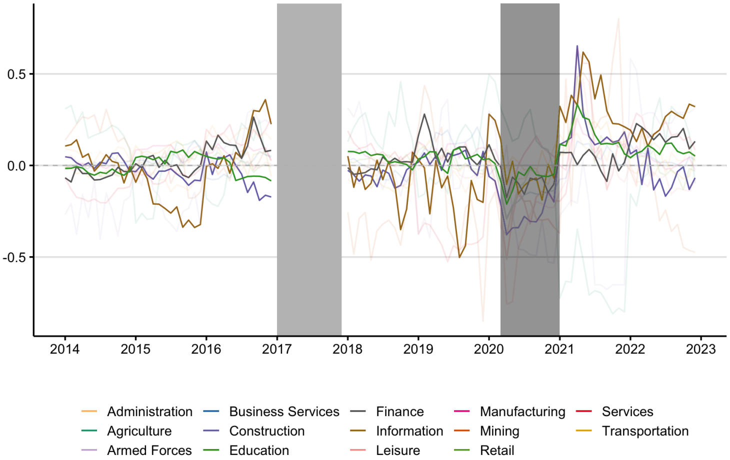
Notes. The table summarises the moments of income, wealth, and demographic variables for the full U.S. sample (cols. 1-2) and for the subsample of equity-market participants (cols. 3-4) over the 2013-2022 period. The long term variance is, for each individual, the variance of labor income innovations computed over the full observation window; the short term variance is the variance of labor income innovations computed at the annual frequency (within year) for that individual.

Hour


Volatility of Working Hours Over Time
Standard Deviation of Weekly Hours
16
15
14
13
Jan 2013
Jul 2013
Jan 2014
Jul 2014
Jan 2015
Jul 2015
Jan 2016
Jul 2016
Jan 2017
Jul 2017
Jan 2018
Jul 2018
Jan 2019
Jul 2019
Jan 2020
Jul 2020
Jan 2021
Jul 2021
Jan 2022
Jul 2022
Jan 2023
Source: Survey of Income and Program Participation

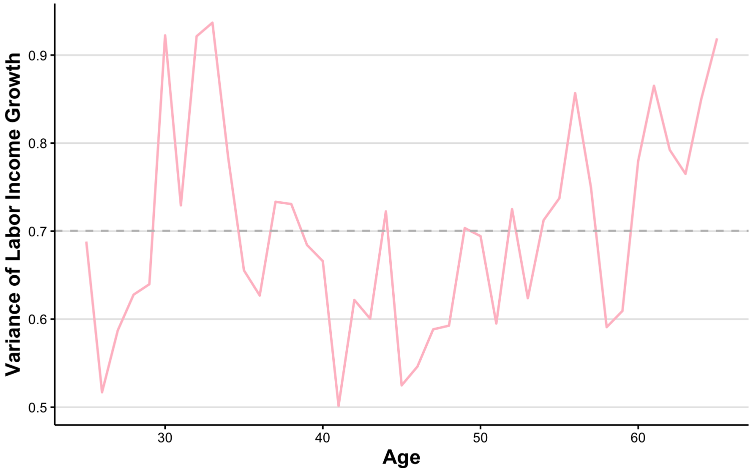
Return

Skewness over time



Return

Variance over life cycle



◂ Return