

HIGHER-ORDER INCOME RISK OVER THE BUSINESS CYCLE

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Motivation

- ▶ **Idiosyncratic income risk** important:
 - ▶ Welfare
 - ▶ Individual choices and macro aggregates
 - ▶ Design of tax and transfer policies
 - ▶ ...
 - ▶ Modelling benchmark: shocks with Normal distributions
 - ▶ Recent **empirical work**: deviations from 'Normality'
- ⇒ Question: does this matter?

This paper

1. Characterize idiosyncratic income risk over business cycle
2. Show higher-order risk matters for:
 - ▶ Welfare: losses for strong risk attitudes
 - ▶ Costs of cycles: higher for strong risk attitudes
 - ▶ Self-insurance: worse even though more precautionary savings

Approach

1. PSID: Household income risk over business cycle

- ▶ **Residual** income (pre- and post-government)
- ▶ **Parametric** approach: GMM estimation

2. Macroeconomic implications

- ▶ Life-cycle model, **exogenous income**

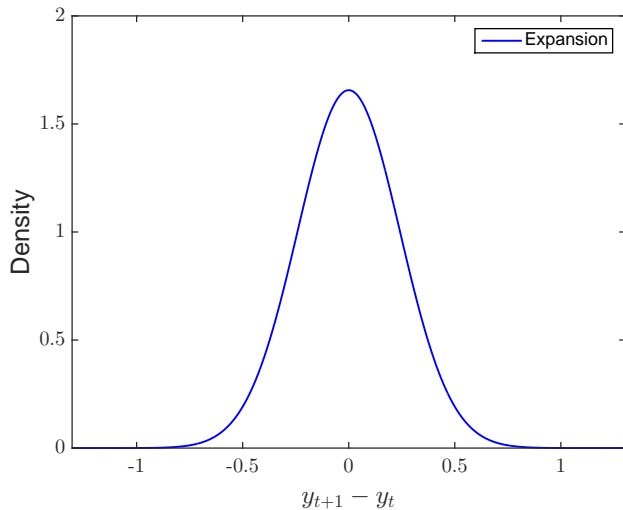
3. Intermediate steps

- Intuition with simple model
- Transparent shock discretization method (moment-based)

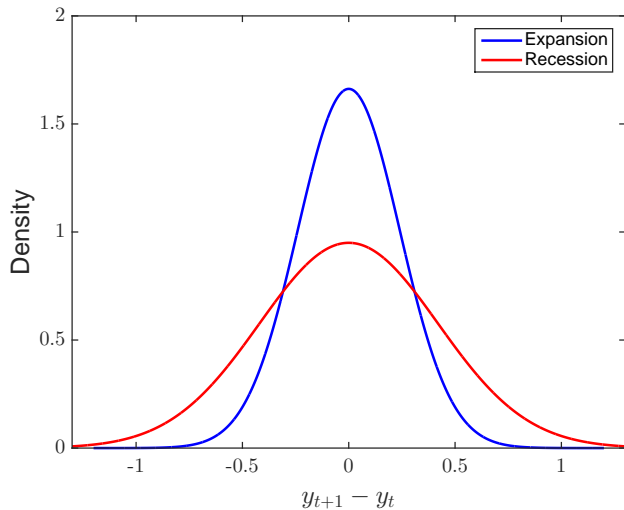
Summary of Empirical Findings

- ▶ GMM estimator of 2^{nd} – 4^{th} moments of transitory and (cyclical) persistent component of income process
- ▶ US (PSID) household income:
 - ▶ Variance of persistent shocks countercyclical
 - ▶ Skewness of persistent shocks procyclical
 - ▶ Highly leptokurtic shocks
- ▶ Role of government taxes and transfers?
 - ▶ Dampen shocks
 - ▶ Reduce left-skewness of persistent shocks
 - ▶ Increase kurtosis of persistent shocks

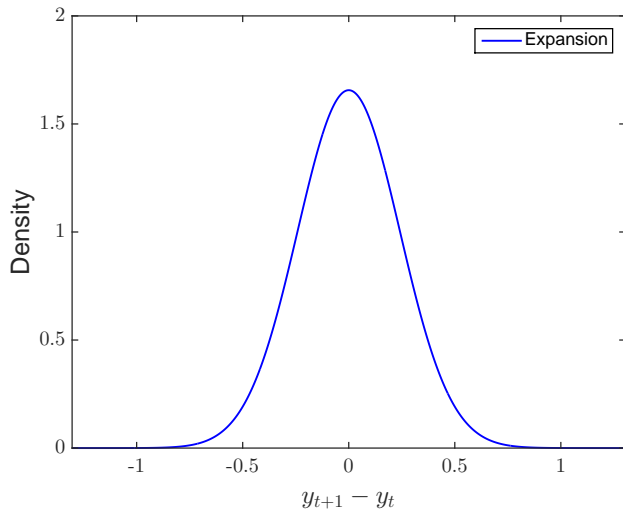
2nd Moment Shock: Symmetric Risk?



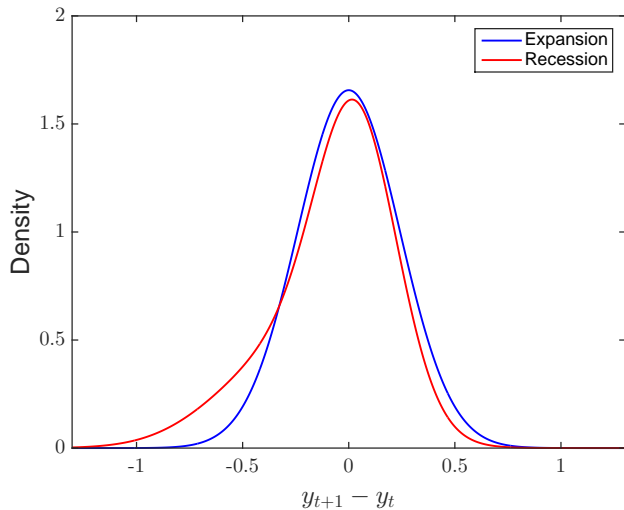
2nd Moment Shock: Symmetric Risk?



3rd Moment Shock: Asymmetric Risk?



3rd Moment Shock: Asymmetric Risk?



Overview of Quantitative Model

- ▶ J -period lived households
- ▶ Working and retirement phase, retirement at age j_r
- ▶ Endowments:
 - ▶ **Exogenous**: estimated income process; **discretized**
 - ▶ Different **scenarios** of shock distributions
 - ▶ Zero borrowing constraint
- ▶ Across Scenarios: Pension budget clears
- ▶ Preferences: Epstein-Zin-Weil: **RA** θ and **IES** γ
 - ▶ Risk attitudes matter for effect
 - ▶ Here: θ pins those down

Summary of Macroeconomic Implications

Left-skewed and Leptokurtic Distribution vs. Normal Distribution

- ▶ (Cyclical) higher-order risk **welfare implications**:
 - ▶ $\theta = 1$: welfare **gain** of approx. .4%
 - ▶ $\theta = 4$: welfare **losses** of approx. 12.5%
- ▶ Quantitatively relevant for welfare costs of business cycles:
 - ▶ For $\theta = 1$, welfare cost of fluctuations **lower** by .2%p
 - ▶ For $\theta = 4$, welfare cost of fluctuations **larger** by 6.4%p
- ▶ **Worse** consumption insurance
 - ▶ More savings out of positive shocks
 - ▶ Negative shocks pass through more
 - ▶ Give higher “insurance coefficient” (a la Blundell, Pistaferri & Preston 2008) → Careful in interpreting coefficient!
- ▶ Robust to GE, CRRA