Institutional Asset Pricing with Segmentation and Household Heterogeneity

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Summary

Q: How does regulation affect households across the wealth distribution?

- Builds a **macro-finance** model with **heterogeneous-agents**
- Three main contributions:
  1. Framework nesting Brunnermeier-Sannikov, Vayanos-Vila, and Gertler-Kiyotaki
     - Bridges intermediary asset pricing and macro literature
  2. Deep-learning solution handling HA, portfolio-choice, and aggregate risk
  3. Analyzes the effect of different financial regulations (and demographic)

Summary

- **Growth-stability-inequality trade-off**. Stricter regulations imply:
  - Restricted financial intermediation, which increases return spreads
  - Results in reduced volatility but lower investment and increased inequality
- Funds act as natural “backstop” during recessions. Key mechanism:
  - During recessions, long-term liabilities fall in value (unlike short-term deposits)
  - Provides funds the space to purchase assets and stabilize capital markets

Relation to Literature

Macro-finance:

- Financial intermediaries and endogenous risk: Brunnermeier, Sannikov (2014); He, Krishnamurthy (2013); Koijen, Yogo (2023)
- **This paper:** BS + HA + risky capital

Deep learning methods

- Fernández-Villaverde et al. (2023); Azinovic et al. (2022); Gu et al. (2023)
- **This paper:** long-term assets with stochastic KFE

Heterogeneity in financial intermediaries

- Coimbra, Rey (2024); Begenau, Landvoigt (2022)
- **This paper:** long-term vs. short-term liabilities

Wealth inequality and Asset Pricing

- Gomez (2025); Fernández-Villaverde, Levintal (2024); Cioffi (2021); Fagereng et al. (2025)
- **This paper:** endogenizes price volatility

Main Comments

- Better **leverage framework strengths**
  - Financial crises instead of TFP shocks
  - More effects of and on distributions (welfare effects and changes in inequality)
- **Quantitative realism**
  - Model is already quantitative, but could be even more. Especially on:
    - Wealth inequality
    - Regulation

Leverage Framework Strengths

Financial Crises and Inequality

- Focus on **financial crises** rather than TFP shocks
  - Analyze **cyclical properties** under the different scenarios
  - How does HA change understanding of standard macro-finance contexts?
    - Analyze **winners and losers** from regulation
    - What is the effect of **changes in inequality**?
- Extends Brunnermeier and Sannikov (2014) but
  - BS core mechanism: endogenous risk amplification
  - **Volatility paradox? History dependence?**
  - Not clear how relevant in current framework
- Closer to Fernandez-Villaverde et al. (2023) but distinct contribution
  - Framework is quite different
  - Focus on role of risk

Quantitative Realism

Inequality and Regulation

- Model is obviously quantitative, but needs tweaking to **improve realism**
- Two main concerns: **wealth distribution** and **regulatory constraints**

- **Inequality** far too low:

	Data	Model
Gini	0.8	0.1
Top 1%/median	99	1.8

- **Regulatory constraints** not disciplined by data

Quantitative Realism

Inequality far too low

- Natural because lacking almost all key mechanisms
  - In the data wealth inequality builds upon earnings inequality (Gini 0.6)
- However, difficult to believe distributional effects
  - Distribution response to changes in regulation depends on "scaling effect"
  - If only captures 5-10% of observed inequality, hard to trust model predictions
- Not a problem *per se*; there are still relevant things to analyze but **either**:
  1. **Acknowledge** focus on "financial wealth" conditional on omitted factors
  2. **Extend** the framework to match data

Quantitative Realism

Regulatory Constraints

- Banks and Funds face **flow portfolio penalties:**

$$\frac{\psi_j}{2}\left[\max\{0,\theta_{j,t}-\bar{\theta}_{j,t}\}^2+\min\{0,\theta_{j,t}\}^2\right]a_{j,t}\Xi_{j,t}$$

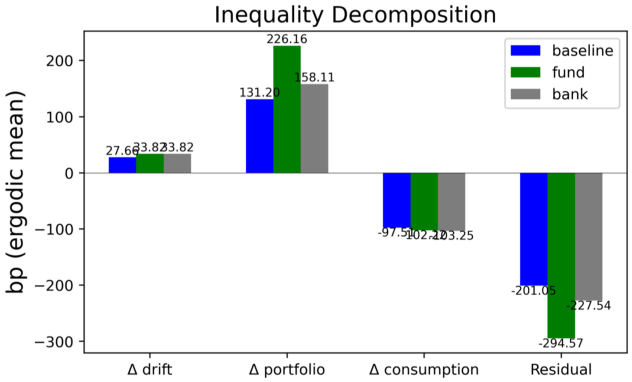
- Not clearly disciplined by data:
  - Mapping from actual regulation to model parameters is unclear
    - Basel-style risk-weighted capital requirement? Leverage ratio? Portfolio-concentration limit?
  - Basel III counter-cyclical capital buffers not examined
    - Current framework with aggregate shocks well-suited for state-dependent regulation
- Can (in theory) be violated, which raises two questions:

Q1: Do intermediaries violate constraints in equilibrium (e.g. in response to shocks)?

Q2: What happens to proceeds from penalties? (not in government BC)

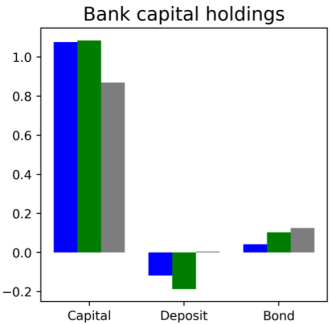
Specific “issues”

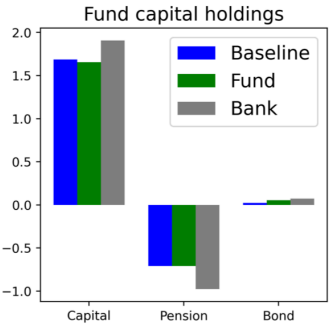
$$\underbrace{\mu_{j,t} - \mu_{i,t}}_{\Delta \text{ Drift}} = \underbrace{\left(\theta^k_{j,t} - \theta^k_{i,t}\right)\left(r^k_t - r^d_t - \ldots\right)}_{\Delta \text{ Drift } (k)} + \underbrace{\left(\theta^n_{j,t} - \theta^n_{i,t}\right)\left(r^n_t - r^d_t - \ldots\right)}_{\Delta \text{ Drift } (n)} - \underbrace{\left(\omega_j - \omega_i\right)}_{\Delta \text{ consumption}} + \underbrace{\lambda_h \psi_h \left(\frac{1}{\eta_{j,t}} - \frac{1}{\eta_{i,t}}\right)}_{\text{Residual}}$$

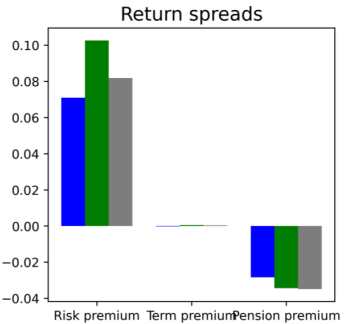


- Most of the difference in the **residual** term:
  - Model does not have much to say about that
- LHS ≠ RHS: what is missing?

Specific “issues”







- Capital holdings change little from “baseline” to “fund”-restricted
- Yet capital return spread increases drastically
  - Elasticity of return to capital supply potentially very high
  - Key mechanism: might be relevant to match

Specific “issues”

Death Shocks

- Supposed to match average households life of 35 years
  - $\lambda_h = 0.1$ implies average life of 10 years
  - Crucial because insurance demand drives entire fund sector

Shock Absorption or Risk Transfer?

- Claim is that ”funds act as **shock absorbers**”
- Funds rebalancing imposes losses on poorer households: **risk transfer**
  - Use framework to identify winners and losers

Other Points

- Heterogeneity in portfolios entirely driven by participation constraints
  - Calibration targets median share but functional form not empirically justified
  - Key to determine shape and dynamics of wealth distribution
  - Sensitivity of results to specific functional form is unclear
- Classic sensitivity analysis of calibration would prove quantitative “realism” of counterfactuals
- Stabilizing role of funds due to value of long-term contracts falling in recessions
  - Reduction in value of fund liabilities
  - Portfolio rebalancing by fund
  - Decomposition between the two would clarify if mechanism operates through “accounting” effects or endogenous decisions

Other Points

- Would be useful to have metric of solution accuracy that is economically interpretable (e.g. like Euler-equation errors)
- A systematic build-up of the model could be useful to explain its inner workings:
  - Model combines numerous frictions (participation costs, retirement shocks, regulation, long-term assets)
  - While comprehensive, this complexity obscures which features drive the main results
  - Could be useful to build-up from simpler nested cases (e.g. banks only first, then add funds, then add HA)