Discussion of Risk Allocation, Debt Fueled Expansion and Financial Crisis by Paul Beaudry and Amartya Lahiri

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Summary

- Model of risk premia & macro quantities
- Two familiar ingredients
  1. Risk premia matters for production decisions
  2. With heterogenous agents, wealth distribution matters for risk premia
- Discussion
  - isolate two main ingredients
  - how they are put together in paper
  - relate paper to literature
  - what is this a model of?

Risk premia matter for production

- 2 period RBC model; resources Y given today
- Linear technology with productivity A, realized tomorrow
- Risk premia reflect representative agent (RA) risk aversion
- Social planner chooses capital/savings today to maximize

$$E\left[U\left(C_1, C_2\right)\right] = E\left[U\left(Y - K, AK\right)\right]$$

- Epstein-Zin utility with risk aversion γ, IES σ :

$$K = \frac{Y}{1 + \beta^{-\sigma} CE(A)^{1-\sigma}}$$

with certainty equivalent

$$CE\left(A\right) = E\left[A^{1-\gamma}\right]^{\frac{1}{1-\gamma}}$$

- With $\sigma > 1$, higher risk aversion $\Longrightarrow$ lower CE, K, output tomorrow.

Decentralization: risk premia and RA risk aversion

- Two equally likely states tomorrow $A_h > A_l$; state prices p_h, p_l
- Representative agent optimality

$$\frac{p_h}{p_l} = \left(\frac{A_h K}{A_l K}\right)^{-\gamma}$$

- RA risk aversion drives risk premium p_h / p_l
- If firms issue shares, firm FOC is

$$p_h A_h + p_l A_l = p_s$$

- Riskless bond price $p_b = p_h + p_l$, equity premium $E[A]\, p_b / p_s$
- Risk premia matter for production if business cycle model allows for time-varying risk premia (Rudebusch-Swanson, Fernandez-Villaverde et al., Guvenen)

Heterogeneity in risk aversion

- many agents i with power utility, but different risk aversion γ_i
- complete markets
- MRS for all agents = MRS of representative agent with felicity v

$$\left(\frac{C_h^i}{C_l^i}\right)^{-\gamma_i} = \frac{v'\left(\sum_i C_h^i\right)}{v'\left(\sum_i C_l^i\right)} = \frac{p_h}{p_l}$$

2 effects

1. Low risk aversion agents take riskier positions
   - they are more exposed to bad shock
   - their share in total consumption declines if bad shock
2. RA exhibits "wealth-weighted" risk attitude
   - if agent i very rich (high share in aggregate consumption), then RA risk aversion close to γ^i
   - if low risk aversion agents poorer, RA becomes more risk averse!

Simple version of dynamics

- Concatenate many two period economies; iid shocks
- Dynasties of high/low risk aversion agents, who inherit share of parental wealth
- On a lucky path, good shocks arrive,
  - low risk aversion agents become relatively richer
  - representative agent becomes less risk averse
  - risk premia fall, output rises
- Bad shock $\Rightarrow$ RA more risk averse, higher risk premia, lower output
- Shutdown of contingent claims markets also bad if it shuts out low risk aversion agents

In paper:

- commit to labor (not capital)
- risk neutral financiers & risk averse workers
- disruption to markets from lemons problem

Risk premia and heterogeneity

- Large literature on heterogenous agent models in finance
  - explain countercyclical risk premia:
    low prices forecast high excess returns
  - observed in many markets (stocks, long bonds, foreign exchange etc.)
- Two types of agents: Alan and Ben
  - Alan likes claims on aggregate risk (e.g. stocks) more
- State prices reflect average of state prices if Alan and Ben were alone
  - with power utility: average is wealth weighted
  - true also if incomplete markets, borrowing constraints etc.
- Story for countercyclical risk premia:
  - good times for risky claims $\Rightarrow$ Alan's wealth rises more

  $\Rightarrow$ Alan's preferences reflected more in state prices

  $\Rightarrow$ Price of risky claims rises; risk premia fall $\Rightarrow$ low excess returns
  - bad times for risky claims $\Rightarrow$ Alan's wealth falls more

  $\Rightarrow$ Ben's preferences reflected more in state prices

  $\Rightarrow$ Price of risky claims falls; risk premia rise $\Rightarrow$ high excess returns

Features of existing models

1. Different appetites for risky claims
   - risk aversion (Chan-Kogan, Gomes-Michaelides)
   - age (Garleanu-Panageas)
   - participation constraints (Saito, Basak-Cuoco, Guvenen)
   - beliefs (Detemple-Murthy, Cao)
   - investor sophistication (Chien-Cole-Lustig)
2. No representative agent for dynamic model: wealth distribution a state variable w/ long-lived agents
3. Stationary wealth distribution process, although permanent differences between agents
   - preference features (external habit, heterogenous IES)
   - exit and entry of agents
   - trading constraints
   - incomplete markets

- Literature has moved to quantitative analysis of asset price volatility, excess return predictability
- Production implications: Guvenen, Garleanu-Panageas

What is this a model of?

- Basic themes are sensible, present in many models
- They may be interesting for thinking about crisis
- But the details matter
  - stock price = wage?
  - period length?
  - precommitting labor?
- Hard to tell what is first order
- Need a structure that more easily connects to data
- Policy?
  - efficiency within-period suggests no scope for policy
  - but: concatenated dynasties = market incompleteness
  - welfare?