Discussion of "Self-fulfilling Asset Prices" by Alexander Zentefis (Yale SOM)

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Brief Summary

- A dynamic model to deliver multiple equilibria regarding asset pricing

- Equilibria reshuffling driven by extrinsic variations, i.e. non-fundamental shocks to cash flows/discount rates.

- Key results along the dimensions of contributions
  1. equilibrium multiplicity gives room for self-fulfilling crashes/booms of asset price vs. self-fulfilling fluctuations of real quantities in the economy (series of Benhabib et al. papers here)
  2. non-linear / unstable asset pricing dynamics vs. locally stable linearized system (Kiyotaki and Moore, 1997; along with mainstream macro business cycle literature)
  3. endogenous choice in one-market trading or doing arbitrage across markets vs. exogenous market segmentation (Gromb and Vayanos, 2002)

My Roadmap

- Model Overview

- Inspecting the Key Mechanism

- Comments and Questions

Model Overview

▶ Ex-ante identical infinitely-lived investor with log utility per period

▶ Two long-lived risky asset ($j \in \{A, B\}$) and risk-free asset of one-period maturity

1. individualistically risky: two risky assets give perfectly and negatively correlated cash flow $D_{j,t} \in \{\bar{D}, \underline{D}\}$

2. no aggregate uncertainty: $D = \bar{D} + \underline{D}$ with $\bar{D} = \lambda D$; aggregate state variable $\lambda_t = X_t \in H, L$ transits via Markov chain

- Critical Model Ingredients

1. leverage shifted by collateral constraint defined over future price of collateralizable asset

   - $-\phi_{f,t}^i R_{f,t} \leq (1 - \phi_{f,t}^i)\phi_{coll,t}^i R_{coll,t+1}^{min}$ with debt position $\phi_{f,t}^i < 0$

   - Kiyotaki and Moore (1997): $b_t \leq \frac{\theta q_{t+1} k_t}{R_f, t}$ and Townsend (1979) CSV model: $b_t \leq \theta \frac{R_{coll,t+1}^{min}}{R_f, t}$ to rule out default

2. cost associated with investing in low payoff asset κ

   - incentive to trade high payoff risky asset to avoid such fixed cost

Inspecting the Key Mechanisms

▶ Model Rationale

1. $\kappa = 0$, no aggregate uncertainty $\Rightarrow$ fixed investment opportunity (risky assets symmetrically identical payoff structure) $\Rightarrow \bar{P}_t + \underline{P}_t = A$ (total asset $= W + Y$) with fraction of allocation $\sigma_t = \bar{P}_t / A$ having unique steady state $\Rightarrow$ symmetric equilibrium

2. With $\kappa > 0$ + without borrowing $\Rightarrow$ incentive to trade high payoff asset $\Rightarrow$ removing arbitrage opportunity between strategies gives arbitraging over risk-free assets $\Rightarrow$ no symmetric equilibrium

3. With $\kappa > 0$ and borrowing constraint binds for "arbitrageurs" $\Rightarrow$ two strategies: trades across risky asset markets & single market investment in high payoff asset $\Rightarrow$ indifference condition gives asymmetric equilibrium, and characteristic features of constraint yields the equilibria multiplicity

▶ dynamic implications: asset price crashes/booms, slow price recovery, price overshoot/mis-firing, leverage cycles

▶ Key for self-fulfilling prices: expected asset price $\uparrow$ $\Rightarrow$ collateral values $\uparrow$ $\Rightarrow$ leverage and asset demand $\uparrow$ $\Rightarrow$ realized asset price $\uparrow$

Comments

▶ Assumption: perfect negative correlation of two risky asset cash flows

▶ By construction, mirror image of price dynamics.

- extrinsic/non-fundamental/sentiment shocks deliver sharp decline of asset value of one risky asset (quick rebounds of the other) and slow recovery of price afterwards (gradual decline of the other), *how to take this desynchronization seriously to the data?*

- abrupt disruption of asset prices of a comprehensive coverage of asset classes in a very short period of time (think of fire sale binds credit constraint like KM 1997, BGG Model 1999), driven by fundamental shocks? differed from model-implied disynchronized asset prices due to extrinsic variations to price beliefs? to differentiate nature of shocks?

- Very complex interpretations: p33, 1) asset prices of two risky assets when no state transition (okay) 2) some asset prices paths that are stochastically associated with two different asset classes. (identify in the data?)

Stock Leverage Dynamics

US Stockmarket Leverage

US Stockmarket Leverage (Net Margin Debt + Net Leveraged ETFs + Net Speculative Futures positioning)

US$ Billions

Source: Topdown Charts, FINRA, CFTC, Thomson Reuters

topdowncharts.com

- ▶ quick deleveraging and slow build-up? vs Figure 7 and 14 of the opposite

- ▶ interpretation of the $1 - P_t$ and arbitraging efforts? what type of leveraging the model highlights? to better connect to the data?

Something More

- Varying the magnitude of negative cash flows between risky assets?

- Sentiment shocks to aggregate uncertainty? Role for information?

- No. of risky assets > 2 with some elasticity of substitution?

- Overshooting (varying κ investment cost) and mis-firing (varying Y external funds supply), impacts on asset prices given interactions of fundamental and sentiment shocks of ζ_t? Belief shocks endogenously shift Y? GE effects?

- Interpretations of κ: currently, the information cost / cost of maintaining arbitrage position, but how about price informativeness? endogenously shifts the cost of investing in low-pay risky assets?

- Room for prudential policy that shifts $\phi^i_{coll,t}$? for monetary policy that affects $R_{f,t}$? selecting good equilibrium vs. preventing bad equilibrium? welfare evaluation?

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- enjoyed reading a lot! a very well-executed paper with super rich implications

Thank You Very Much