

Discussion of:
“Uncertainty shocks, asset supply and pricing
over the business cycle”
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Summary

- Set up and estimate “small-scale”, flex-price DSGE model with:
 - ① Financial frictions, endogenous leverage choice
 - ② Time-varying ambiguity: stochastic confidence and volatility
- Ambitious and technically impressive:
 - business cycles, asset prices and financial frictions
 - estimation using stock price data!

Discussion

- 1 Model
- 2 Estimation

Financial frictions

- Standard ingredients:
 - ① 1 period risk-free debt, tax advantage
 - ② Cost of adjusting dividends
 - ③ Increasing cost of debt
 - ④ Shock to cash-flow f
- Concavity \Rightarrow smooth debt and equity payouts
- Microfoundations for these ingredients?

Stochastic structure

- Agents ambiguous about:
 - mean of TFP and mean of cash flow shock f
- Do not form prior - worst case scenario

$$\log f_t = (1 - \rho) \log \bar{f} + \rho \log f_{t-1} + \mu_f + \sigma_{f,t} \varepsilon_{f,t}$$

$$\mu_f \in [-a_t, a_t]$$

$$a_t = \eta_{f,t} \sigma_{f,t}$$

- Ambiguity driven by confidence η and uncertainty σ
- $\eta_{f,t}, \sigma_{f,t}$ are 2-state Markov chains
- TFP similar, but (i) some continuous shocks to a , (ii) direct correlation with level of TFP

Stochastic structure

- Motivation for this formulation:
 - psychology
 - model detection probability
 - regime switches in volatility
- Still:
 - specification seems somewhat arbitrary
 - empirical motivation?
 - are we modeling ambiguity about the right things?
 - no high-frequency changes in volatility

Solve discrepancy between model and surveys ER

- Data: low asset prices forecast high (excess) returns
- A standard rational asset pricing story:
 - higher uncertainty \Rightarrow higher risk premia \Rightarrow lower prices
 - hence, reproduce data correlation
- But if you survey investors...
 - when prices are low, people expect low returns, not high returns!
 - Amromin and Sharpe, Greenwood and Scheifer
- Ambiguity can help!
 - agents pessimistic about cash flows \Rightarrow lower prices
 - agents' expected return roughly constant
 - realized return higher than expected return

Asset prices and belief shocks

- To fit asset prices, we need investors to have wildly varying beliefs:
 - expectations of very high future growth
 - very large uncertainty about future
 - risk of Great Depression
 - here: confidence varies
- Many of these shocks have similar implications
- Distinguishing among them possible with RE...
- Confidence shock is the residual, unobservable

Estimation Results

- Fit 5 variables:
 - Investment
 - Debt/Equity
 - Equity/GDP
 - Dividends/GDP
 - risk-free rate
- Only 2 shocks Z, f + Markov switches.

Key results

- Big role of shocks to f in accounting for stock market changes
 - shock has almost no effect on investment...
- Replicate behavior of debt vs. equity payouts
 - Higher ambiguity \implies \downarrow debt, \uparrow equity payout
 - High cash flows \implies \uparrow debt, \uparrow equity payout
- Few volatility switches, more frequent confidence switches

Questions we'd like estimation to answer

- Does the model fit?
- Are parameters plausible?
- Does fitting asset prices matter for business cycles?
- Counterfactuals: do financial frictions matter?
- Counterfactuals: policy?
- Which mechanism is important for asset price variation?

Setting up a horse race?

- Estimation procedure forces a bit the results:
 - data: equity/gdp moves a lot
 - model: “only” reason it can move is shock to ambiguity
 - volatility is observable ex-post
 - hence, confidence acts as a residual
- Volatility matters only through effect on ambiguity
- More ambitious: allow competing explanations:
 - e.g. shocks to trend growth, volatility (w/ high risk aversion), disaster risk, measurement error

Summary

- Ambitious, technically impressive paper
 - motivate more the specification of ambiguity
- Emphasis on estimation
 - need more interpretation of parameters/results
 - would like horse race between potential explanations of stock market behavior