

FINANCIAL SECTOR IN MACROECONOMIC MODELS

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WHAT'S THERE IN THE CURRENT LITERATURE? (1)

FINANCIAL CONSTRAINTS TIED DOWN TO NET WORTH

- ❖ CSV setting, past cash-flows drive current wealth $\uparrow \rightarrow$ net worth $\uparrow \rightarrow$ outside financing $\uparrow \rightarrow$ investment \uparrow : Bernanke-Gertler 1989, Bernanke-Gertler-Gilchrist 1999, Holmstrom-Tirole 1997, ... etc
- ❖ TFP causes collateral prices $\uparrow \rightarrow$ net worth $\uparrow \rightarrow$ outside (debt) financing $\uparrow \rightarrow$ investment \uparrow : Kiyotaki-Moore (1997),, etc
- ❖ Cash-flows or TFP causes net worth $\uparrow \rightarrow$ risk bearing capacity \uparrow better form of outside financing (more outside equity) \rightarrow investment \uparrow : He-Krishnamurthy 2013, Brunnermeier-Sannikov 2014, ...

SOME OTHER RECENT ATTEMPTS

- ❖ Adrian-Boyarchenko (VaR constraint, 2013), Moreira-Savov (private money creation, 2014)

WHAT'S THERE IN THE CURRENT LITERATURE? (2)

AMPLIFICATION OF FUNDAMENTAL SHOCKS

- ❖ Macro tradition: log-linear in steady state, then considering shocks; amplifying if constraint is binding;
- ❖ Finance literature puts risk at top priority. Typically study fully solved global solution; constraint is occasionally binding, boom (small amplification) vs crisis (large amplification)

TRY TO EMPHASIZE FINANCIAL SECTOR

- ❖ Say, commercial banks, interbank market (Kiyotaki-Gertler 2010)
- ❖ He-Krishnamurthy-Brunnermeier-Sannikov is more like hedge funds or proprietary trading desk in banks
- ❖ Mutual funds is a big finance area but not that into macro research yet

WHAT'S MISSING (1)

FOCUS ON AMPLIFICATION IN DOWNTURNS;
UPTURNS?

- ❖ There is some risk accumulation in upturns in existing amplification models (in good time, risk bearing capacity \uparrow , more investment)
- ❖ Key: do we think “investment booms” in good time is good or bad? If bad, what is the benchmark?

RISK SHIFTING

- ❖ Casual observation: risk-shifting/overinvestment in booms, not in recession
- ❖ **Static** model will say risk-shifting occurs when net worth is low (so bad times)
- ❖ **dynamic** models, in risk-shifting in good times: Martinez-Miera and Suarez (2013), also with net worth but inefficient risky investment opportunities)
- ❖ Naturally, dynamic concern generates precautionary saving motive, which is in common dynamic net worth models

TRANSIT FROM UPTURN TO DOWNTURN

- ❖ Casual observation: slow recovery, but fast collapse
- ❖ Long-lived risky asset seems to be the right ingredient to get this; Cui (2014), Moreira-Savov (2014)

WHAT'S MISSING (2)

HETEROGENEITY IN FINANCIAL INTERMEDIARIES

- ❖ Abstract and simplification, so far homogeneous intermediary
- ❖ “Model is map, not picture,” Boston airport, Nobu Kiyotaki
- ❖ But heterogeneity in intermediary sector is too significant to ignore
 - ❖ Mutual funds no leverage, hedge fund highly levered;
 - ❖ Hedge funds more liquid assets, commercial banks highly illiquid assets;
 - ❖ Hedge funds have procyclical leverage, commercial banks countercyclical leverage
 - ❖ Regulations are drastically different...

INTERACT WITH BUSINESS CYCLES

- ❖ He, Khang, Krishnamurthy: during the worst time 08Q4-09Q1 before large scale government direct purchase, hedge funds selling toxic assets while commercial banks buying. Investment banks, insurance companies, mutual funds, sovereign wealth funds largely stay put

WHAT'S MISSING (3)

FUNDAMENTAL SHOCKS VS FINANCIAL SHOCKS

- ❖ Amplification models, by its nature, amplifies and propagates “however small” fundamental shocks
- ❖ Narrowly defined fundamental: TFP. But empirical evidence suggesting this crisis TFP barely moves (a bit debate)
- ❖ 1998 LTCM collapse. People viewed it as financial shock. Do not know what will happen if Fed didn't step in to coordinate the bailout
- ❖ 2000-01 tech bubble burst and recession. Commonly viewed as fundamental shocks, no affect on financial system
- ❖ Muir: banking crisis P/D drops a lot; in contrast, during wars D drops but P/D barely moves
- ❖ Adrian-Etula-Muir (2013): two factor asset-pricing model with market plus broker-dealer leverage works pretty well

HOW TO MODEL FINANCIAL SHOCKS

- ❖ macro-finance literature reduced form θ shock (debt equals θK)
- ❖ Adrian-Boyarchenko 2013: households preference shock drive leverage
- ❖ What is financial shock?

WHAT'S MISSING (4)

REAL SIDE FIRMS

- ❖ Firms and banks are combined together in He-Krishnamurthy-Brunnermeier-Sannikov and lots of others

BANKS ARE NOT LIKE BANKS

- ❖ Doug Diamond's complaint to leading macro-finance DSGE models
- ❖ Often, within the model, the bank is as if another financial institution
- ❖ Regulation is studied without micro-foundation

LONG-TERM LOAN IS IMPORTANT IN DIFFERENTIATING FIRMS AND BANKS

- ❖ Long-term loan is an important ingredient, but often ignored
 - ❖ Banks/entrepreneurs were assumed to hold equity of firm
- ❖ Why modelling long-term loans could be interesting?
 - ❖ Long-term assets sitting on the balance sheet of banks
 - ❖ Concave payoff, larger slope after a streak of negative shocks

WHAT'S MISSING (5)

DEFAULT

- ❖ No default in leading models. Default introduce heterogeneity necessarily
- ❖ Actual default not that important in my mind, systemically important banks do not default anyway
- ❖ The effect of potential default (say potential bail out) might be important