Discussion of: Macroeconomic Effects of Banking Sector Losses across Structural Models (Guerrieri et al., U.S. Board of Governors)

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Motivation (1)

Financial intermediation (banking and shadow banking) key for macroeconomy

Capital shortfalls in financial intermediation sector can trigger severe downturns

How large impact on aggregate economic activity? Little insight from macroeconomic research till recently (Gertler and Karadi, JME 2011). Most prior research on banks and macroeconomy qualitative

Motivation (2)

Key issue for policy making: "*past not be repeated again* [...] ECB "*make sure banks have clean balance sheets, enough capital*. If this key objective reached, "*not have to worry about banks deleveraging*." (Draghi, October 2013)

Stress test in U.S.: most severe scenario (unemployment 12.1%, equity prices -50%, house prices -20%). Projected losses 18 bank holding companies: $462 billion in nine quarters

Tier 1 capital ratio from 11.1% (2012:Q3) to 7.7% (2014:Q4)

Objective of this paper

Compare quantitative impact of capital shortfall in financial intermediation sector across five DSGE models (Iacoviello (I.); Covas and Driscoll (C.D.); Kiley and Sim (K.S.); Queralto (Q.); Guerrieri and Jahan-Parvar (G.J.-P.)

Shock of interest: transfer of funds from banking sector to household sector. Sized to match most severe stress test scenario

Transfer mimics capital shortfall. Also, pure financial shock, no destruction real resources $\Longrightarrow$ spillovers from financial to real sector

Models - Key Differences

i) *Banks' access to equity*; ii) *Structure assets, liabilities*.
To grasp these, bankers' *budget constraint*:

$$\text{I}: \quad L_t = D_t + R_t^L L_{t-1} - R_{t-1}^D D_{t-1} - C_{B,t} - \xi_t$$

$$\text{G.JP.}: \quad Q_t K_t = D_t + \varepsilon_t R_t^K Q_{t-1} K_{t-1} - R_t^D D_{t-1} - \xi_t$$

$$\text{C.D.}: \quad L_t = D_t + R_t^L \widetilde{g}(L_{t-1}) - S_t + \widetilde{h}(S_{t-1}) - R_{t-1}^D D_{t-1} - C_{B,t} - \xi_t$$

$$\text{Q}: \quad Q_t K_t = D_t + \varepsilon_t R_t^K Q_{t-1} K_{t-1} + q_t E_t - R_t^E q_{t-1} E_{t-1} - R_t D_{t-1} - \xi_t$$

$$\text{K.S.}: \quad Q_t K_t(i) = D_t(i) + \varepsilon_t(i) R_t^K Q_{t-1} K_{t-1}(i) + q_t E_t(i) - R_t^E q_{t-1} E_{t-1}(i) - R_t^D D_{t-1}(i) - \xi_t$$

$+$ *capital constraint* (in C.D. also liquidity cover. ratio constraint, but inactive here)

Models - Other Differences

	Borr. cons.	*Hid. risk*	*Stag. price*	*Real estate*	*Other financ.*	*Solut. Meth.*	*Calibr. Lab.sup.*
I.	Yes	No	No	Yes	No	1st ord.	2
C.D.	Yes	No	No	No	No	Nonlin.	0
K.S.	No	Yes	Yes	No	No	1st-2nd	3
Q.	No	No	Yes	No	No	1st ord.	3
G.J.-P.	No	No	Yes	No	Yes	Piec.lin.	1

Findings

Large variation effects of shock across models.

- Bank equity (magnitude): from 10% drop in Guerrieri, Jahan-Parvar to 50% in Covas, Driscoll. Key driver: *drop asset prices* (?)
- Bank equity (persistence): high across the board, except Kiley-Sim. Key driver: *flexibility equity issues*
- Investment: from 2% (Covas, Driscoll) to 14% (Iacoviello) drop. Various drivers, e.g. *substitutability bank credit*
- Consumption: increase in Covas, Driscoll, drop in Queralto and Guerrieri, J.-Parvar. Key driver: *nature of shock* (transfer to households), *bank dividend cuts* (retain earnings)
- Output: from 0.5% drop in Guerrieri, J.-Parvar to 5% in Iacoviello. Various drivers: *substitutability bank credit*; *different transmission channels*; but also *calibration* (e.g., labor supply elasticity)

Comments (1) - General

- Very interesting and insightful paper! Crucial understand impact bank capital shocks. High quality comparison exercise
- Naturally, difficult exercise. Models differ multiple dimensions. What drives differences?
- Main interest: how impact capital shortfalls shaped i) by intermediaries' access to equity market; ii) by their asset, liability structure (and, possibly, of business sector)

Comments (2) - Sharpening comparison

- Share calibration choices, e.g., labor supply elasticity (from 0 to 3). Remove some modelling differences (real estate, borrow. constra.)
- Also, why not benchmark each model with *own* frictionless counterpart? Compare *contribution* of financial frictions *relative* to frictionless benchmark, across five models
- Shock size should fit model's equity, asset, liabilities structure. Assets: stress test, 1/5 loss (97/462 bil.), due to trading and other such losses; 13 bil. securities in investment portfolios. Also, stress test posits no dividend changes or equity issues
- Discriminate among equity, asset, liabilities structures trying to match pattern of equity flows in data (see, e.g., Jermann, Quadrini, AER, 2012)

Comments (3) - Modelling equity (shareholders, mor. haz.)

- Model intermediaries' access equity market: equity issues not mechanical capital additions. Draghi: ([...] *European banks can refinance themselves in private market, like U.S. banks after 2009 stress test (e.g., UniCredit raise €7.5 billion in market).* BIS (2013): 1% out of 2.9% bank global capital adustment

- Shock abstracts from stock market conditions. In stress test, large (20%) equity drop. Effect banks' ability/incentive to recapitalize

- "*Trust current shareholders incentive purchase deeply discounted new equity*. *When rights issues not feasible, equity offerings new shareholders*"$\Longrightarrow$tension existing$-$new shareholders, moral hazard

- Thus, impact equity issues on banks' moral hazard (*existing*$-$*new shareholders*$-$*depositors*) (Acharya et al., 2011)

Comments (3) - Modelling equity (the equity market)

- Externalities across banks in seasoned equity offerings (stronger than across firms, Slovin, Sushka, Polonchek, JFE 1992). Growing recent literature on role of externalities among firms (Lorenzoni, RESTUD 2007)

- Interaction with corporate sector: banks compete with firms in equity market (no model allows jointly for access firms and banks to equity market)

- Large bank heterogeneity (stress tests). Thus, not only heterogeneous access finance in corporate sector (e.g., G.J.-P.), but large heterogeneity in banks' access to equity market (lemons problem?). Note: shock drawan on stress test large banks, but large banks much easier access to equity market

Comments (4) - Modelling asset, liability structure

- More realistic asset, liability structure. Capture fragility due to maturity mismatch; "creative manufacturing of assets" or, even simpler, changes asset mix to boost Tier 1 ratio
- Commercial repo paper liability side; distinguish short and long term debt. How equity issues affect tension maturity mismatch and/or incentive to alter asset mix (Acharya et al., wp, 2011)
- Also, asset side, substantial drop in trading revenues and losses securities

Comments (5) - Fiscal backstops

- Study recapitalization policies similar to uncoventional credit policies Gertler and Karadi (JME, 2011), but here referring to equity
- If we allow for bank heterogeneity (e.g., K.S.) should large banks be targeted? Or well capitalized banks? Failure of Japanese recapitalization programs in 1990s: small and not targeted (Kashyap, Hoshi, IMF 2009)
- Policy making can be informed: use of conversion option (tradeoff government upside vs. potential-dilution shareholders)

Overall...

Very interesting and useful comparison exercise! Recommend reading it

Nicely informs growing literature role of banks in business cycle and in financial crises

Future (major) challenge: less mechanical financial intermediation sector in DSGE models