

Discussion of: Leverage, Balance-Sheet Size and Wholesale Funding

Fourth BIS Consulting Council for the Americas Research Conference
(Santiago)

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April 2013

Broad questions:

- Is leverage of financial institutions procyclical?
- How does this depend on access to funding markets (e.g., to wholesale funding?)
- Does procyclical pattern of leverage induce aggregate volatility?

Important for *policy*: regulation mitigate cyclical behavior of leverage?

Important for *theory*: what links market liquidity to funding liquidity?

Implementation (i)

Data on balance sheets 136 Canadian banks for 1994-2009

- Procyclicality of leverage: "positive correlation asset value-leverage"
Reflects asset management (and leverage targeting): suppose increase asset prices boosts equity, banks increase liabilities. Thus, leverage drops less
- Procyclicality stronger when
 - i) access to liquid, wholesale funding
 - ii) better economic conditions
- Procyclicality of leverage induces equity market volatility?

Implementation (ii)

Two stage estimation approach

- First stage: month-by-month, regressions of (log) change in leverage over (log) change in assets
Finding: *Leverage and assets positively correlated*
Banks in three subsamples: high, low, no, wholesale funds
Finding: *Stronger positive correlation when high wholesale funds*
- Second stage: regression coefficients over changes repos, commercial paper, bank acceptances (proxies liquidity wholesale markets), GDP
Finding: *Coefficients larger when larger changes in wholesale funds and GDP growth higher*

Volatility Toronto Stock Exchange Index over correlation leverage-assets

Finding: *Correlation leverage-assets helps predict equity market volatility*

Really enjoyed this paper!

Timely and important topic

Data of nice quality; empirical analysis conducted with lot of care and competence

Analysis contributes to literature on cyclical pattern of leverage of financial institutions (e.g., Adrian and Shin, JFI 2010)

(Perhaps better discuss relationship and differences from Adrian and Shin and other studies)

Comments: Interpretation Results (i)

Empirical analysis mostly based on asset price shocks hitting equity and resulting into liability adjustment ("asset management")

- **A bank capital channel view.** Checked influence of unweighted regulatory leverage ratios. What about Tier 1 capital ratios? Are there banks with Tier 1 ratio close to binding?

Pattern of leverage can reflect binding capital requirements (Panetta and Angelini, 2009)

Also, risk structure, hence tightness of capital requirement, can be related to liability structure, hence, to share wholesale funding

- **A bank lending channel view.** Suppose monetary policy shock squeezes retail deposits and equity. In bank lending view, banks with access to wholesale funding compensate for drop retail deposits with wholesale funds

Thus, lower leverage procyclicality for such banks (when equity goes down leverage more stable). Are results consistent with bank lending channel?

Perhaps effect of GDP only for high wholesale-funding banks captures bank lending channel. Insert other macro proxies? Monetary policy proxies?

- **Equity sluggishness.** Change in lending or investment opportunities or risk appetite. Equity responds with sluggishness, more so for banks unable to recapitalize
Have some proxy for ability to recapitalize? Perhaps result for GDP captures difficulty to recapitalize when depressed economic conditions

First Stage

- **Endogeneity.** Causality (from asset value to leverage, as in paper motivation) or only correlation? Two-stage approach only mitigates problem of unobservables jointly affecting leverage and assets
Wholesale funding exogenous, can we safely use to subsample?
Wholesale funds influenced by shocks that affect equity and assets?
- **Is really wholesale funding?** Some variables highly correlated with wholesale funding? Bank size, informational transparency. Subsample using variables highly correlated with wholesale funding? Should also include proxies maturity mismatch?

First Stage (cont.)

- **Timing.** Month-by-month regressions, implicit assumption response financial institutions almost instantaneous. But banks appear to have incentive to smooth

- **Specification**

- i) Why not (also) interact assets with continuous measure of wholesale funding, avoiding problem of switches across subsamples?
- ii) Why in regressions liquidity expressed in levels?

Second Stage

- *Actual* changes wholesale funding proxy for market liquidity

Risk incorporating result in regressions? Structural proxies market liquidity (trading technology, regulation)

Also, repo and corporate paper volumes scaled by money stock

Problematic if monetary policy shocks to assets. Include other macro indicators, e.g., monetary policy proxies (risk taking depends on interest rates, affect leverage procyclicality)

- Results suggest institutions that benefit more from market liquidity are those that already have better access. Expected?

Impact on volatility

Unobservables drive leverage-asset correlation and equity market volatility?

Further Comments (i)

- Structure Canadian banking system differs from other countries, e.g., U.S. where less concentration. IMF (2008): leverage channel for U.S. banks and top ten German banks. But Panetta and Angelini (2009): evidence only for U.S. and U.K., arm's length banking systems

Details on credit relationships in Canada

- How do results extend to other countries? Comparison with structure other banking systems
- *Structural* changes that affected leverage procyclicality? Remote banking-credit scoring, competition, financial innovation

Further Comments (ii)

- More emphasis on quantitative importance of results
- Results also hold for six largest banks: somewhat puzzling. These banks should all have easy access to wholesale funding