Leverage and Liquidity

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Outline of talk

1. Leverage pro-cyclicality - Second Assignment

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Second Assignment - Background

- Since the global financial crisis of 2007–2009, the financial system has undergone deep and remarkable changes;
- On the one hand, in the run-up of the crisis, credit and asset prices increased and deviated from their fundamental trend;
- During such period of exuberance, financial intermediaries lending activity and their stock of debts are high due to an expansion in the aggregate demand. On the other hand, when the process is reversed, due to an exogenous shock, asset prices decrease, the value of collateral diminishes and the borrowers' profitability deteriorates;
- As a consequence, the level of the credit supply in the economy is reduced. That is, financial system is pro-cyclical.

Second Assignment - Background

- The term pro-cyclicality refers to the dynamic interactions between the financial system and the real sectors of the economy (**Bank for International Settlements, 2008**; **Financial Stability Board, 2009**);
- Pro-cyclicality ca be traced to two fundamental sources: (i) the high pro-cyclicality of risk management techniques; (ii) the distortions in incentives;
- In traditional models of the financial accelerator, the pro-cyclicality of asset prices may explain business cycle' booms and recession. The ensuing credit expansion (contraction) fuels, as a financial accelerator, cyclical upturns (downturns) (**Bernanke & Gertler, 1989**; **Kiyotaki & Moore, 1997**);
- **The aim of your task** is to study the way financial institutions manage their balance sheets.

Second Assignment - Data

- The data file contains the following rows:
  1. Dates for each financial entity (quarterly) - Time period 2005:4-2021:2;
  2. Three different types of financial entity: Commercial Banks; Finance Services; Real Estate Finance Services;
  3. Financial systems: United States and China;
  4. Total assets in million of $ and CNY;
  5. Equity market value in billion of $ and CNY;
  6. Price or trade;
  7. Leverage ratio;
  8. Market to Book Value ratio.

First task: basic statistics

- The first part of your task:
  1. Pick up your preferred financial system;
  2. Read the data: excel file "Data set US" or "Data set China";
  3. Create a panel data;
  4. For total assets, leverage and equity market value, take the natural logarithm;
  5. For total assets, leverage and equity market value, compute the growth rate;
  6. Inspect the variables for each financial entity and comment on any exceptional features;
  7. Compute summary statistics for the variables. Comment on the variation in statistics across the financial entities and the implications of this variation. Try to provide some stylized facts.

Second task: panel analysis on the long time period

- The second part of your task is to work out how sensitive the leverage ratio is to the size growth. For the entire panel data (US or China):
  1. Run a regression of the leverage growth$_{i,t}$ on size growth$_{i,t}$, the natural logarithm of leverage$_{i,t-1}$ and time dummy;
  2. Run a regression of the leverage growth$_{i,t}$ on size growth$_{i,t}$, the Market to Book Value Ratio$_{i,t-1}$, the natural logarithm of leverage$_{i,t-1}$ and time dummy;
  3. As an alternative to total assets, use the equity market value;
  4. Interpret the regression coefficients, their *t-ratios* or *p-values*;
  5. Also interpret the R^2 from these regressions.

Third task: panel analysis with marginal effects for financial entities

- The final part of our job. Is leverage procyclicality different for each subperiod and for each financial entity?
  1. Following the four papers on procyclicality, outline at least two subperiods which characterizes the financial distress within the financial market;
  2. Run a series of panel regression for each financial entity separately, where, the dependent variable is always the leverage growth$_{i,t}$ and the independent variables are size growth$_{i,t}$, the Market to Book Value Ratio$_{i,t-1}$, the natural logarithm of leverage$_{i,t-1}$. Control for time dummy;
  3. Run a series of panel regression for each sub period considered but for all financial entities, where, the dependent variable is always the leverage growth$_{i,t}$ and the independent variables are size growth$_{i,t}$, the Market to Book Value Ratio$_{i,t-1}$, the natural logarithm of leverage$_{i,t-1}$;
  4. Run two panel regressions where you capture different behavior on proclycality by each kind of financial entity. Interpret your results.

Second assignment: deadline

- Write up your results into a *"research report"* of at least 1,500 and at most 2,000 words. **Deadline: Wednesday, 11th January 2023**;
- Write up your results into a set of at most 10 slides and be prepared to present your findings to the class. **Conference presentation: Thursday, 22nd December, 2021**;
- Students, who are not going to do the assignment, have to prepare (entirely) for the exam the following paper: **Beccalli, E., Boitani, A., & Di Giuliantonio, S. (2015)**. Leverage pro-cyclicality and securitization in US banking. *Journal of Financial Intermediation*, 24(2), 200-230.

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References

- **Adrian, T., & Shin, H. S. (2010)**. Liquidity and leverage. *Journal of Financial Intermediation*, 19(3), 418-437;
- **Baglioni, A., Beccalli, E., Boitani, A., & Monticini, A. (2013)**. Is the leverage of European banks procyclical?. *Empirical Economics*, 45(3), 1251-1266.
- **Beccalli, E., Boitani, A., & Di Giuliantonio, S. (2015)**. Leverage pro-cyclicality and securitization in US banking. *Journal of Financial Intermediation*, 24(2), 200-230;
- **Cincinelli, P., Pellini, E., & Urga, G. (2021)**. Leverage and systemic risk pro-cyclicality in the Chinese financial system. *International Review of Financial Analysis*, 101895.