Macro-prudential policies and firm financing

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<u>Broad Question</u>: Do macro prudential tools restrict credit to certain types of borrowers?

Data:

- 1.3 million firms from 2002 to 2011
- 59 countries
- 12 different macro prudential tools

Data:

- Firm level data from Orbis
  - Includes listed and unlisted firms (so also large and small firms)
  - 59 countries (including many emerging market economies)
  - Both short-term debt (maturity less than 1 year) and long-term debt (maturity more than 1 year)

- Macro prudential index constructed from IMF survey
  - 12 tools
    - 2 borrower-specific tools: loan-to-value and debt-to-income ratios
    - 10 institution-specific tools: (1) dynamic loan loss provisioning, (2) counter-cyclical capital buffers, (3) leverage ratio, (4) capital surcharge for SIFIs, (5) limits on interbank exposures, (6) concentration limits, (7, 8) limits on foreign or domestic currency loans, (9) reserve requirement ratios, and (10) taxes/levies on financial institutions.
  - Create two measures:
    - BOR ranges from 0 to 2
    - FIN ranges from 0 to 10

Main specification:

$$y_{ijt} = \alpha + \beta_1 \text{Macropru}_{j,t-1} + \beta_2 \text{FirmSize}_{it} + \beta_3 \text{Macro}_{j,t-1} + \beta_4 \text{GFC}_t + \delta_i + \varepsilon_{ijt}$$

- y_{ijt}: changes in short-term debt, long-term debt, or total financing
- $\text{Macropru}_{j,t-1}$: Macro prudential index

Test:

- $\beta_1 < 0$ implies that if more macro prudential tools are available then some form of firm financing decreases

- Run specification for many sub-samples to see where there is explanatory power.

Comment #1: Identification using this macro pru index

- In ideal set-up, we would observe [an exogenous] change to the counter-cyclical capital buffer and then observe firm financing decisions to get the causal effect.

- However, this index does not provide any information on the "intensity" (or usage) of the tools.
  - For example, many countries gave regulators the ability to impose a counter-cyclical capital buffer but most countries have not started using it.
  - Or perhaps even though a country now has an LTV requirement, it is unclear that this is necessarily a "change" compared to industry norms.

- Perhaps using Cerutti et.al (2017) would help this issue as it focuses on the intensity of macro pru changes.

Comment #2: Macro pru vs. structural change?

- Some of the tools in the index would vary with the business cycle such as counter-cyclical capital buffers or dynamic provisioning.

- Others, such as limits on interbank exposures, were implemented more as a structural change in the banking sector.

- Do we care about this distinction? If there is just a structural change in the banking sector, driven by something like implementation of Basel III, then attributing these changes in lending to solely macro pru tools may be problematic.
  - Perhaps running the regressions at the individual tool-level, instead of the composite index could provide some color as to which specific tools drive the result.

Comment #3: Trends in firm financing prior to macro pru changes

- The first part of the paper discusses aggregate credit across many countries and aggregate macro prudential tool usage but is currently disconnected from the empirical analysis.

- This section is descriptive and not used for identification.

- But is there a way to analyze financing growth at the firm level and see if there is a trend-break around changes in the macro pru index?

Other comments:

- The results seem to be driven by the "Borrower" tools and small firms. But to interpret the results clearly, it would be interesting to know which specific tool(s) drive the results.
  - For example, LTV seems to target mortgage lending. If regulations restrict mortgage lending by increasing lending standards then there could be an increase in business lending.

- Authors run separate regressions for small and large firms to distinguish between firms that are more (and less) likely to be bank dependent.
  - Could also use the Rajan-Zingales financial dependence measures by industry.
  - Or could use whether a firm is listed, because if it is listed you'd expect it to have (better) access non-bank financing.
  - Or could potentially use the availability of collateral across firms. One could expect firms will little pledge able collateral would be the first to lose financing.

- Authors run separate regressions for emerging and advanced economies to distinguish between bank-based and market-based economies but could use measures in the literature of bank intensity (like bank credit/GDP) and market intensity (like market cap/GDP) and split the sample along those lines.