Financial Stability and Financial Inclusion: Case of SME Lending

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Outline

1. Relation between financial stability and financial inclusion
2. Previous empirical work
3. Data and issues
4. Stylized facts
5. Methodology and results
6. Conclusions and further work
1. Relation of Financial Stability and Financial Inclusion

- Definitions and dimensions of financial stability
- Definitions and dimensions of financial inclusion
- Channels for interaction between financial stability and financial inclusion
1. Definitions of Financial stability

- Many attempts—financial stability notoriously difficult to define—a complex notion with multiple dimensions, unlike inflation
- Perhaps easier to recognize “financial instability”
- One example:

  **Financial stability** “…can be defined as a condition in which the financial system – comprising of financial intermediaries, markets and market infrastructure – is capable of withstanding shocks and the unravelling of financial imbalances, thereby mitigating the likelihood of disruptions in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities.”

  *ECB Financial Stability Review, 2012*
Definitions of Financial Inclusion

• “Financial inclusion aims at drawing the “unbanked” population into the formal financial system so that they have the opportunity to access financial services ranging from savings, payments, and transfers to credit and insurance.”
  (Hannig and Jansen 2010)

• “… the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost. It primarily represents access to a bank account backed by deposit insurance, access to affordable credit and the payments system.”
  (Khan 2011)
Expected Impacts of Financial Inclusion on Financial Stability

• Positive
  – Financial sector diversification
    • Larger and more diverse bank assets contribute to resiliency
    • Small savers contribute to deposit base size and stability, reducing dependence on “non-core” financing
  – Better transmission of monetary policy
  – Improved surveillance of money laundering

• Negative
  – Promotion of inclusion could lower asset quality (sub-prime lending)
  – Outsourcing by banks could increase reputational risk
  – New risks from specialized MFIs

Source: Khan (2011)
2. Previous empirical work

• Adasme, Majnoni and Uribe (2006)
  – NPLs of small firms have quasi-normal loss distributions, while those of large firms have fat-tailed distributions, so systemic risk of former is less

• Han and Melecky (2013)
  – Greater share of people with bank deposits tends to reduce volatility of total bank deposits during economic downturns
  – a 10 percent increase in the share of people that have access to bank deposits can reduce the deposit growth drops (or deposit withdrawal rates) by 3-8 percentage points
- Cihak, Mare and Melecky (2016)
  - Comprehensive cross-country study using many definitions of financial stability and financial inclusions
  - On average, they find that there appears to be a trade-off between financial inclusion and stability that should be considered by policy makers
  - However, both trade-offs and synergies are found in cross-country experience depending on the indicator of stability and inclusion one is examining
  - Greater financial inclusion, particularly associated with extensive borrowing by individuals, may also increase the risk of extreme events, unexpected losses of the financial system, and ultimately more frequent banking crises
3. Data sources and issues

- World Bank Global Findex (164 countries, 52 years)
- IMF Financial Access Survey (193 countries, ~11 years)
- Data on financial stability relatively available
- Basic problem is relatively short span of data on financial inclusion
  - Up to 10 years on number of bank branches, etc.
  - Only 1-2 years on small firm access
  - Missing data for many countries and years leads to very sparse datasets
Financial stability and financial inclusion variables used

- Financial stability measures
  - Bank Z-score
  - Non-performing loan ratio (NPL%)
- Financial inclusion measures
  - Ratio of SMEs with line of credit to total SMEs
  - Number of SME borrowers as a proportion of the total number of borrowers from commercial banks
Financial stability measures used

- Bank Z-score
  - Commonly used measure of bank stability (World Bank 2013)
  - Measures probability of bank failure (higher Z-score => lower probability of failure)
  - Z-score = (ROA + Equity/assets)/Std dev of ROA
  - Numerator measures total equity cushion available against losses
  - Ratio effectively measures the number of standard deviations that a bank’s rate of return on assets can fall in one period before it becomes insolvent

- NPL ratio (Impaired loans/Gross loans)
  - Higher NPL ratio implies greater potential drain on capital, and hence higher probability of bank failure
4. Stylized facts: Simple correlation of SME lending share with bank NPLs

5. Methodology & Results

• To formally verify the link between financial access and financial stability, the regression model below was used:

\[ finstab_i = \alpha(finaccess_i) + \beta X_i + \varepsilon_i \]

• \(finstab_i\) : cross-country \((i)\) data on Bank Z-score \((bzs_i)\) and Bank NPLs \((npl_i)\)

• \(finaccess_i\) : cross-country \((i)\) data on:
  - Ratio of SMEs with line of credit to total SMEs \((smeb_i)\) (%)
  - Number of SME borrowers as a proportion of the total number of borrowers from commercial banks (%) \((smel_i)\)
Methodology (2)

• Vector of control variables ($X_i$) includes:
  - constant term,
  - GDP per capita ($lggdp_i$),
  - Private credit by deposit money banks and other financial institutions to GDP (%) ($cgdp_i$),
  - Liquid assets to deposits and short-term funding (%) ($liq_i$),
  - Non-FDI capital flow to GDP (%) ($nfdi_i$), and
  - Financial openness ($opns_i$)

• Unbalanced panel data for 2005-2011

• Estimation method: System-GMM dynamic panel

• Results
  – Both $smeb$ and $smel$ are significant and imply that higher share of SME lending is positive for both financial stability measures
## Estimation results

<table>
<thead>
<tr>
<th></th>
<th>(1) Bank Z-score ($bzs_{i,t}$)</th>
<th>(2) Bank Z-score ($bzs_{i,t}$)</th>
<th>(3) Bank NPLs ($npl_{i,t}$)</th>
<th>(4) Bank NPLs ($npl_{i,t}$)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$bzs_{i,t-1}$</td>
<td>$bzs_{i,t-1}$</td>
<td>$npl_{i,t-1}$</td>
<td>$npl_{i,t-1}$</td>
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<td></td>
<td>-0.96 (0.04)**</td>
<td>0.61 (0.20)**</td>
<td>0.17 (0.04)**</td>
<td>0.92 (0.11)**</td>
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<td>$npl_{i,t-1}$</td>
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<td></td>
<td>smel$_{i,t}$</td>
<td>24.59 (6.06)**</td>
<td>-5.70 (3.19)*</td>
<td>-41.35 (19.38)**</td>
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<td>sme$_{i,t}$</td>
<td>92.07 (44.58)**</td>
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<td></td>
<td>lgdp$_{i,t}$</td>
<td>2.07 (0.93)**</td>
<td>13.79 (5.81)**</td>
<td>-11.57 (1.64)**</td>
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<td>cgd$p_{i,t}$</td>
<td>-0.09 (0.4)**</td>
<td>-0.18 (0.05)**</td>
<td>0.21 (0.05)**</td>
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<td></td>
<td>liq$_{i,t}$</td>
<td>0.13 (0.05)**</td>
<td>0.28 (0.10)**</td>
<td>0.20 (0.05)**</td>
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<td>nfdi$_{i,t}$</td>
<td>-0.01 (0.06)</td>
<td>-0.02 (0.06)</td>
<td>-0.27 (0.05)**</td>
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<td>opns$_{i,t}$</td>
<td>0.004 (0.002)*</td>
<td>0.002 (0.008)</td>
<td>-0.002 (0.002)</td>
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<td></td>
<td>No. of observations</td>
<td>168</td>
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<td>No. instruments</td>
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<tr>
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<td>AB test AR2</td>
<td>[0.82]</td>
<td>[0.86]</td>
<td>[0.14]</td>
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<td>Hansen J test</td>
<td>[0.50]</td>
<td>[1.00]</td>
<td>[0.62]</td>
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Notes: All estimations include unreported intercept and time dummies. Estimated system-GMM are based on two-step standard errors based on Windmeijer (2005) finite sample correction. Standard errors are reported in parentheses. The values reported in brackets are p-values. "AB test AR2": p-value of the Arellano–Bond tests that average autocovariance in residuals of order 2 is 0. The Hansen J test p-values are for the test of over-identifying restrictions, which are asymptotically distributed as $\chi^2$ under the null of instrument validity.

*, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' calculations.
6. Conclusions and further work

• Financial inclusion could have both positive and negative implications for financial stability
  – Positive: Diversification of bank assets, increased stability of deposit base
  – Negative: Erosion of credit standards, etc. (sub-prime)

• Financial inclusion data problematic because of short time span and sparsity

• We find some evidence that an increased share of lending to SMEs aids some measures of financial stability, mainly reducing the share of NPLs and lowering the probability of default by financial institutions

• Further work: Examine other financial stability variables; possible non-linear effects?
Thank you