More inclusive, more stable?
The financial inclusion - stability nexus in the global financial crisis

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This paper

Does financial inclusion contribute to financial stability?
Outline

- Motivation
- Literature review
- Data and methodology
- Results
- Discussion
Motivation

Policymakers (Rahman 2014, Dema 2015) and financial inclusion advocates (GPFI, CGAP, AFI):

Financial inclusion
• not only beneficial for development and growth
• but also for financial stability
• Is there evidence for this claim?
• Does raising financial inclusion represent a policy approach for increasing financial resilience?
Diversification

• Loans: a diversified loan portfolio is robust to adverse shocks (Diamond 1984)

• Deposits: retail deposits more stable than wholesale deposits
  (however: more depositors does not necessarily imply less wholesale deposits – mature economies)
Literature review
• However, a (rapid) rise in financial inclusion might also lead to financial instability.

• Inclusion of new and unknown customers with little prior financial experience and low levels of financial literacy (Dell’Ariccia and Marquez 2006, Klapper et al. 2013, Boz and Mendoza 2014, Example: Microfinance crises)

• Does a rapid rise in financial inclusion mitigate or reinforce the destabilizing effect of a rapid rise in credit growth?
Empirical evidence

• is scarce due to a lack of data
• early evidence: a higher level of financial inclusion is associated with more stability (Han and Melecky 2013, Morgan and Portines 2014)
• More recent evidence: early findings are subject to caveats, i.e. proper banking supervision (Sahay et al. 2015) or non-robust (Čihák et al. 2016)
• no test of financial stability implications of changes in inclusion

➢ We contribute to this literature
Key challenges

- Appropriate variables depicting inclusion and stability. No consensus on this.

- Inclusion: range of indicators
  (# of accounts, depositors and borrowers, ATMs, bank branches, loans to specific target groups (SMEs) etc.)

- Stability: range of indicators
  (Z-score, NPL-ratio, financial crisis indicators)
Contribution

• Financial instability: boom and bust
  (Mendoza and Terrones 2008, Schularick and Taylor 2012)

• Global financial crisis as example

• Our financial instability variable:
  • depth of the credit crunch after the Lehman default
  • dependent variable: drop in credit growth from 07 to 09
Contribution

- Financial instability variable

![Graph showing financial instability variable](DROPREDIT0709)
Data and methodology
Data

- IMF Financial Access Survey (FAS), 189 economies over the period 2004-2014, but much less countries with financial inclusion information for 2004 – 2010
- Sample of 60 countries when studying the impact of the pre-crisis change in financial inclusion over the pre-crisis period
- Sample of 75 countries when analyzing the stability impact of the pre-crisis level of financial inclusion
Variables

Financial inclusion variables
- **Level**: number of borrowers served by the banking sector (percentage of the adult population)
- **Change**: Growth in the number of borrowers served by the banking sector

Key control variables:
- **Compound pre-crisis (04-07) credit growth rate**
- **Interaction terms** (Pre-crisis credit growth * Pre-crisis level of financial inclusion, Pre-crisis credit growth * Pre-crisis growth in financial inclusion)
Other controls

• Banking sector indicators
  Pre-crisis Z-SCORE, LIQUIDITY, CONCENTRATION, LOANS-TO-DEPOSIT ratio

• Macroeconomic Variables
  Pre-crisis GDP growth, inflation

• Structural Variables
  POPULATION, GDPPERCAPITA, Capital Account Openness (KAOPEN)
Methodology

• Cross section analysis, OLS models (applying robust standard errors)

• Focus here on two questions [Boom-bust relationship of financial inclusion also covered in the paper]

Question 1:

• Does a higher level of financial inclusion enhance financial stability?

• \[ \text{DROPCREDIT0709}_i = \beta_1 + \beta_2 \text{SHAREBORROWERS08}_i + \beta_3 \text{CreditGrowth0407} + \beta_4 \text{Interaction term} + \beta_5 X_i + \varepsilon_i \]
Question 2:

- What is the impact of a rapid rise in financial inclusion on financial stability?

\[
\text{DROPCREDIT0709}_i = \beta_1 + \beta_2 \text{INCLUSION0407}_i + \\
\beta_3 \text{CreditGrowth0407} + \beta_4 \text{Interaction term} + \beta_5 X_i \\
+ \varepsilon_i
\]
Results
Results - level of FI

• A higher level of financial inclusion does not have a stabilizing effect as such

• Some evidence that a higher level of financial inclusion is associated with a mitigating impact on the destabilizing effects of higher credit growth in the pre-crisis period
## Results – level of FI

Table 6: Credit growth drop in the financial crisis and the level of financial inclusion

<table>
<thead>
<tr>
<th>Financial Stability Indicators (pre-crisis)</th>
<th>DROP</th>
<th>CREDITGROWTH 0709</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHARE BORROWERS 08</td>
<td>-0.0766</td>
<td>-0.1100</td>
</tr>
<tr>
<td></td>
<td>(-0.67)</td>
<td>(-1.03)</td>
</tr>
<tr>
<td>Financial Stability Indicators (pre-crisis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CREDIT GROWTH 0407</td>
<td>0.977***</td>
<td>1.197***</td>
</tr>
<tr>
<td></td>
<td>(6.10)</td>
<td>(6.87)</td>
</tr>
<tr>
<td>INTERSHARE 08CREDIT GRW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Results - level of FI

- Result is fairly robust with one exception
- Interaction term fails to be significant in IV specification
- Endogeneity concerns
Results – change in FI

• A rapid rise in financial inclusion does not impact financial stability if controlling for credit growth

• The financial instability implications of a rapid rise in credit growth are neither mitigated nor enhanced if rapid credit growth is accompanied by a rapid rise in financial inclusion
### Results – change in FI

**Table 7: Credit growth drop in the financial crisis and pre-crisis borrower growth**

<table>
<thead>
<tr>
<th>DropCredit</th>
<th>Growth 0709</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCLUSION0407</td>
<td>0.247**</td>
</tr>
<tr>
<td></td>
<td>(2.40)</td>
</tr>
<tr>
<td>INTERCREDITBORRW0407</td>
<td>0.582</td>
</tr>
</tbody>
</table>

**Financial Stability Indicators (pre-crisis)**

<table>
<thead>
<tr>
<th>Credit Growth 0407</th>
<th>DropCredit</th>
<th>Growth 0709</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.121***</td>
<td>0.929**</td>
</tr>
<tr>
<td></td>
<td>(3.69)</td>
<td>(2.05)</td>
</tr>
</tbody>
</table>

#### Robustness checks
Other robustness checks

- parsimonious approach
- orthogonalization of pre-crisis borrower and credit growth
- Different samples (countries > 1 million population, excluding advanced economies)
- Different financial inclusion variable and financial instability proxies
- Instrumental Variable

Results remain fairly robust
Discussion
Limited evidence that a more inclusive system is more stable, which is in line with more recent studies (Sahay et al. 2015, Čihák et al. 2016)

Key takeaways:

1) Non-robust positive level effects of financial inclusion. Possibility that countries with more inclusive financial systems engage in larger efforts to limit instability than countries with a less inclusive system
2) Credit booms associated with rising financial inclusion do not indicate that “this time is different” (Reinhart and Rogoff 2008)

- Raising financial inclusion does not represent a policy option for increasing financial resilience when confronted with a credit boom
Thank you very much for your attention
Additional slides
Results

• Financial inclusion has been subject to a boom-bust cycle

Table 5: Borrower growth in the financial crisis

<table>
<thead>
<tr>
<th></th>
<th>DROP IN BORROWER GROWTH 0709</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCLUSION0407</td>
<td>1.129*** 0.970*** 1.035*</td>
</tr>
<tr>
<td></td>
<td>(4.69) (3.21) (1.86)</td>
</tr>
</tbody>
</table>

Financial Stability Indicators (pre-crisis)

<table>
<thead>
<tr>
<th></th>
<th>CREDIT GROWTH 0407</th>
<th>INTERCREDITBORRW0407</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0.4590</td>
<td>-0.1980</td>
</tr>
<tr>
<td></td>
<td>(1.55)</td>
<td>(-0.13)</td>
</tr>
</tbody>
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