Banking Regulation, Market Liquidity, and the Macroeconomy

by Frédéric Boissay, Fabrice Collard and Ulf Lewrick

Discussion by Tim Landvoigt
Wharton & NBER

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September 28, 2018
Idea of Paper

- Scope for macro-prudential policy in models with
  - pecuniary externalities in constraints (e.g. Lorenzoni 2008)
  - moral hazard due to bailout guarantees (e.g. Bianchi 2016)
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- Bank regulation is specific macro-pru policy
  - Capital requirement can make financial system safer, but may also reduce its output,
    - Risky lending vs. liquidity provision
      (e.g. Begenau 2015, Davidyuk 2017)
    - Severity of crises vs. size of economy
      (e.g. Elenev, Landvoigt, Van Nieuwerburgh 2018)
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- This paper explores new mechanism through which capital regulation may be welfare improving
  - Better risk sharing in interbank market when banks have more capital
  - Spill-overs to corporate bond market?
Outline

- Review model setup
- Key mechanism and result
  - Capital regulation and the interbank market
  - Lending efficiency vs. funding mix
- Comments
  1. Where could we look for evidence on mechanism?
  2. Benefits and costs of capital regulation
  3. Role of bond market
  4. Calibration
Model Setup

1. Neoclassical producers
   - Fully depend on credit finance $r_t = r_t^b = \text{MPK}_t$
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2. Households consume and invest in bank equity, deposits, and corporate bonds
   ▶ Portfolio choice in steady-state through transaction cost functions $\mu_j(q^j)$, for $j = e, d, b^h$
   ▶ Transaction costs are true resource costs

   ▶ Originate and hold loans $\ell_t$ "on balance sheet"
   ▶ Buy bonds $b_t$ and pass through bonds to HH
   ▶ Need to keep bond inventory proportional to volume $b_t \geq (1 + \kappa)s_t$
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   ▶ Trade loans in **interbank** market
Interbank Market: Setup

- After making loans $\ell_t$, but before interbank trade, each bank draws shock $q^\ell$ such that effective payoff $q^\ell r_t \ell_t$.
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- Credit frictions in interbank market
  - Efficient holder of all loans is bank with highest $q^\ell$
  - But due to moral hazard, banks can at most borrow

$$\phi_t = \frac{\ell_t}{\zeta} (r_t^i - \zeta + F(e_t, b_t^b))$$

- Banks optimally either borrow $\phi_t$, or completely “sell” their loans and lend the proceeds, depending on $q^\ell$, with cutoff

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Interbank Market: Setup

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- Resulting allocation
  - Low-$q^l$ lenders earn $r_t^i l_t$ in interbank market
  - High-$q^l$ borrowers earn $r_t^l q^l (l_t + \phi_t) - r_t^i \phi_t$
  - Market clearing $(1 - \mu_l(\bar{q}_t^l)) \phi_t = \mu_l(\bar{q}_t^l) l_t$
Interbank Market: Key Effects

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3. **Selection** effect on lending efficiency
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   - Equity relaxes funding constraint
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3. **Selection** effect on lending efficiency
   - In either case, \( \phi_t \uparrow \Rightarrow r_i^t \uparrow \Rightarrow \bar{q}_t^\ell \uparrow \)
   - Loans allocated to more efficient holder!
Main Trade-off

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- which reduces DWL in banking sector,
- but raises DWL on HH side due to equity transaction cost
- At optimum, get smaller but more efficient banking sector
Comment #1: Direct Evidence on Mechanism

- “Interbank” market in paper involves three real markets
  1. Wholesale funding market (e.g. commercial paper, repo)
  2. Secondary market for loans (e.g. syndicated loans)
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- Main mechanism connects all three markets: greater bank equity increases banks capacity to borrow non-deposit funds (wholesale funding market), which they only raise from other banks (interbank market), and they use these funds to participate in the secondary market for loans
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- Empirical question to which extent these connections exist
  - Sensible that equity alleviates credit constraints for non-deposit borrowing
  - But banks raise lots of non-deposit funds from non-banks
  - Greater use of non-deposit funds linked to participation in secondary market for loans?
  - Interbank market mainly about insuring liquidity shocks (no direct connection to secondary loan market)
Comment #2: Benefits and Costs of Regulation

- Paper proposes novel trade-off

- But what about costs and benefits of capital regulation more broadly?

- Underestimate benefits: avoiding financial crises
  - Was hoping for crises a la Boissay, Collard, Smets 2016!
  - In practice, biggest benefit emphasized by regulators
  - Currently only steady-state analysis, so no trade-off between mean and volatility of consumption

- Overestimate costs: no equity finance for firms
  - Leverage of non-financial corporate sector in U.S. is 35-40%
  - Equity (retained earnings) most important source of funds
  - In model, firms 100% credit financed
Comment #3: Role of Bond Market

- Model predicts substitution to bonds
  - Decreased deposit demand from banks pushes down deposit rate
  - Households shift portfolio to bonds
  - Depends on elasticity of substitution between bonds and deposits in household transaction cost functions

- Possible empirical target: business cycle elasticity of substitution between bonds and loans documented in Becker and Ivashina 2014

- Schwert 2018: $r_\ell t - r_b t = 140$ bps spread for same firm

- Bank loans come bundled with services, credit lines, renegotiation options (Berg, Saunders, Steffen 2014)

- Xiang 2018: complementarity at the firm level
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### Comment #4: Calibration

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<th>Values</th>
<th>Data sources</th>
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<tbody>
<tr>
<td>$r^b$</td>
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<td>Federal Reserve Bank of Saint Louis FRED database; <em>Moody’s seasoned Baa corporate bond yield</em>; BAA</td>
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<td>US Financial Accounts; Firms; <em>Bond–to–loan ratio</em>; FL104122005.A/FL104123005.A</td>
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<td>$e/(d + e)$</td>
<td>0.0814</td>
<td>US Financial Accounts; Depository institutions; <em>Leverage ratio</em>; (FL704194005.A-FL704190005.A)/FL704194005.A</td>
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<td>Adrian et al. (2017); <em>Share of time deposits</em>; FL703130005.A/(FL703130005.A+FL703127005.A)</td>
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<td>$\chi^a/a$</td>
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- Bond market target rate seems to be risky long-term rate, but model only has one-period short term debt
- Should adjust rate by credit and term spread
- Will imply much less costly bond intermediation

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- Banks’ non-interest expenses and HH asset management expenses are counted as deadweight losses
- Not very generous view of financial industry!
- Probably some value-added; should rebate some of these expenses to households
Summary

- Elegant GE model with new rationale for capital regulation
- Direct empirical evidence supporting mechanism needed
- Model should include crises a la Boissay, Collard, Smets 2016, and allow equity financing of firms
- Calibration based on counting all non-interest expenses of banks as DWL may overstate effects