

Banking Regulation, Market Liquidity, and the Macroeconomy

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Discussion by Tim Landvoigt
Wharton & NBER

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Idea of Paper

- ▶ Scope for macro-prudential policy in models with
 - ▶ pecuniary externalities in constraints (e.g. Lorenzoni 2008)
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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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 - ▶ Substitution towards shadow banks?
- ▶ 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

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 - ▶ Trade loans in **interbank** market

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 - ▶ Efficient holder of all loans is bank with highest q^ℓ
 - ▶ But due to moral hazard, banks can at most borrow

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

- ▶ Banks optimally either borrow ϕ_t , or completely “sell” their loans and lend the proceeds, depending on q^ℓ , with cutoff

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- ▶ Resulting allocation
 - ▶ Low- q^ℓ lenders earn $r_t^i \ell_t$ in interbank market
 - ▶ High- q^ℓ borrowers earn $r_t^\ell q^\ell (\ell_t + \phi_t) - r_t^i \phi_t$
 - ▶ Market clearing $(1 - \mu_\ell(\bar{q}_t^\ell)) \phi_t = \mu_\ell(\bar{q}_t^\ell) \ell_t$

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- ▶ Banks do not know q^ℓ -type when raising equity \Rightarrow hold equity to be able to borrow more in case of high q^ℓ draw

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$$\phi_t = \frac{\ell_t}{\zeta} (\textcolor{red}{r}_t^i - \zeta + \mathcal{F}(\textcolor{red}{e}_t, b_t^b))$$

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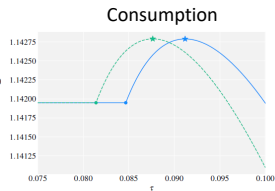
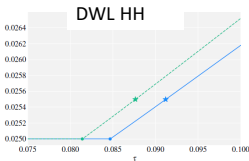
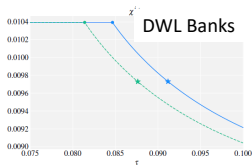
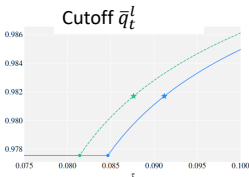
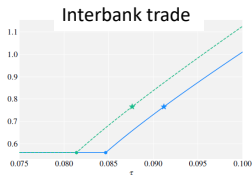
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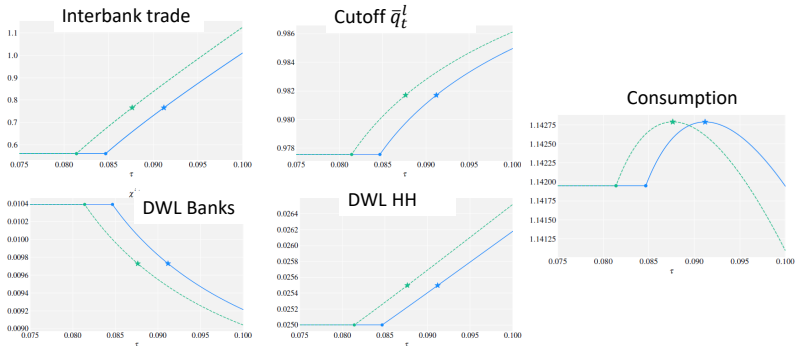
- ▶ In either case, $\phi_t \uparrow \Rightarrow r_t^i \uparrow \Rightarrow \bar{q}_t^\ell \uparrow$
- ▶ Loans allocated to more efficient holder!

Main Trade-off



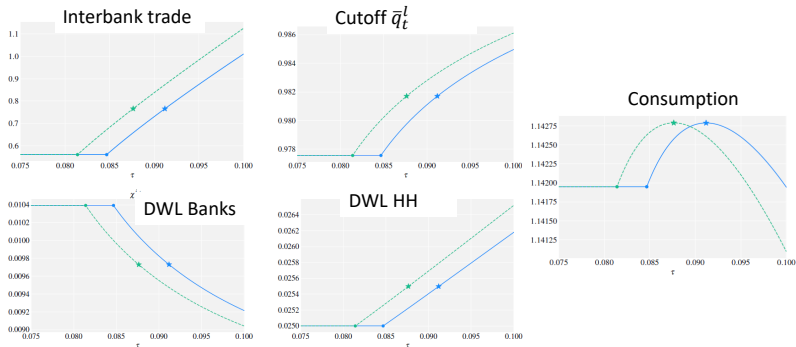
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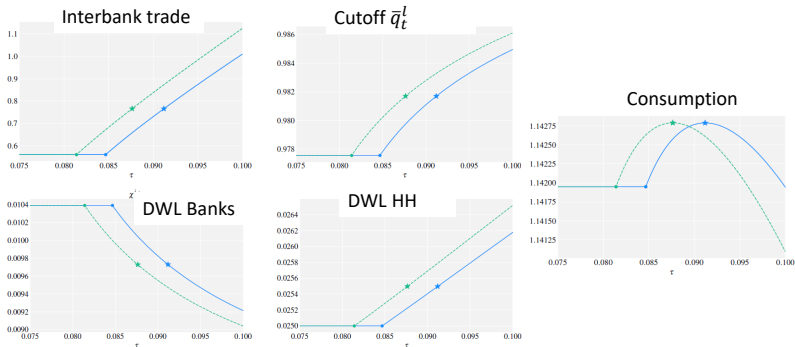
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- ▶ which reduces DWL in banking sector,
- ▶ but raises DWL on HH side due to equity transaction cost
- ▶ At optimum, get smaller but more efficient banking sector

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
- ▶ 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
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- ▶ Model: loans and bonds perfect substitutes for firms, $r_t^\ell = r_t^b$
- ▶ Schwert 2018: $r_t^\ell - r_t^b = 140$ 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

Comment #4: Calibration

Target	Values	Data sources
r^b	1.0428	Federal Reserve Bank of Saint Louis FRED database; <i>Moody's seasoned Baa corporate bond yield</i> ©; BAA
r^i	1.0194	Federal Reserve Bank of Saint Louis FRED database; <i>Federal funds effective rate</i> ; RIFSPFF_N.A
b/ℓ	1.3019	US Financial Accounts; Firms; <i>Bond-to-loan ratio</i> ; FL104122005.A/FL104123005.A
$e/(d+e)$	0.0814	US Financial Accounts; Depository institutions; <i>Leverage ratio</i> ; (FL704194005.A-FL704190005.A)/FL704194005.A
$(b^b - s_t)/(d+e)$	0.0386	US Financial Accounts; Depository institutions; <i>Liquidity ratio</i> ; FL703063005.A/FL704194005.A
ω	0.0100	Adrian et al. (2017) <i>Share of time deposits</i> ; FL703130005.A/(FL703130005.A+FL703127005.A)
$\chi^i/(d+e)$	0.0230	FDIC Tables CB07 and CB09; banks' total non-interest expenses to total assets
χ^a/a	0.0250	Foerster et al. (2017); Households; <i>Asset-management-expenses-to-total-asset ratio</i>
Λ	0	The shadow cost of the leverage ratio rule is zero

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r^b	1.0428	Federal Reserve Bank of Saint Louis FRED database; <i>Moody's seasoned Baa corporate bond yield</i> ©; BAA
r^l	1.019	<ul style="list-style-type: none"> 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
b/ℓ	1.301	
$e/(d+e)$	0.081	
$(b^b - s_t)/(d+e)$	0.038	
ω	0.0100	Adrian et al. (2017) <i>Share of time deposits</i> ; $FL703130005.A/(FL703130005.A+FL703127005.A)$
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r^b	1.0428	<ul style="list-style-type: none"> Liquidity ratio serves as target for bank bond warehousing ratio Most likely treasury and agency securities held for liquidity reasons? Not related to market making for corporate bonds?
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b/ℓ	1.3019	<ul style="list-style-type: none"> • 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
$e/(d+e)$	0.0814	
$(b^b - s_t)/(d+e)$	0.0386	
ω	0.0100	
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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