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Dynamic Banking and the Value of Deposits

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Comments by Larry D. Wall, Federal Reserve Bank of Atlanta

The views expressed here are mine alone and not necessarily those of the Federal Reserve Bank of Atlanta, or the Federal Reserve System.

Review of key parts of the model

The big picture

- Conventional wisdom pre-pandemic was that bank franchise value was increasing in its deposits (or at least its core deposits)
- Yet banks are complaining about having too much deposits during the pandemic
- This paper provides a model in which more deposits can reduce shareholder value

- I like the goal of the paper
- Unfortunately, the model's assumptions and resulting bank behavior differ substantially from our pandemic experience
- Model may better match experience with a few tweaks

Bank balance sheet

- A = Risky assets = loans and other investments
 - Expected return on risky assets exceeds the risk-free rate
 - Risk adjusted return on risky assets subject to a random shock
 - Bank can adjust the amount of risky assets without affecting expected return
- B = Money market borrowing or lending
 - Positive values indicate borrowing, negative indicate lending
 - Both borrowing and lending are done at the riskless rate
- X = Deposits
 - Deposits subject to non-random withdrawals
 - Banks pay less than the risk free rate as deposits provide a convenience yield,
 - Inflow of deposits a positive function of rate paid
 - Deposits subject to a random flow shock
 - Bank cannot refuse to accept deposits
- K = Capital
 - Can always issue new capital to avoid violating capital requirements
 - Costly to issue external capital (in most of the analysis)
 - Bank pays dividend if value is higher to risk neutral shareholders

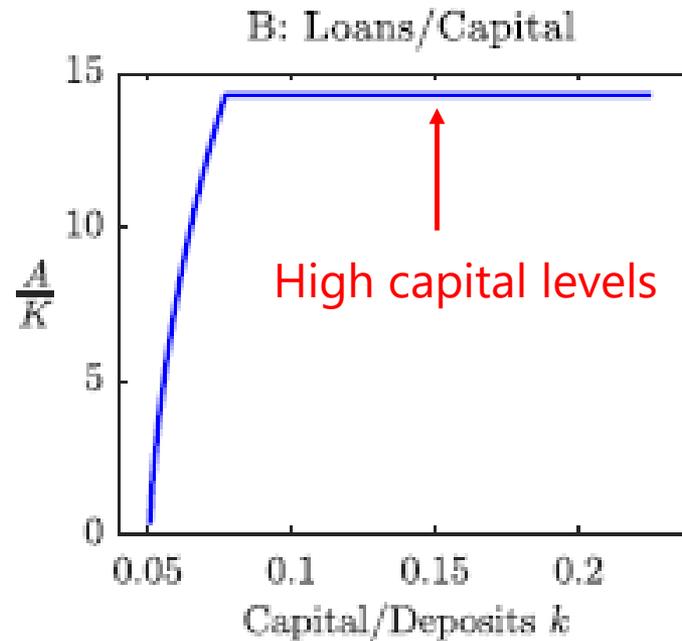
Capital requirements

- Two capital requirements
 - Risk-based capital (RBC): $A/K < \xi_K$
 - Leverage (SLR): $(A-B) / K < \xi_L$ -- When B is an asset (negative)
 - $A / K < \xi_L$ -- When B is a liability (positive)
- Ordinarily only the RBC should be binding
- As bank approaches RBC violation, it avoids issuing capital by
 - Reducing the deposit rate to reduce deposits
 - Reducing A and offsetting with by increasing B
- Deposit rates are subject to a zero lower bound so bank's ability to shed deposits is limited
- As A goes to zero, SLR becomes the binding constraint and bank may be forced to issue costly equity

Drivers of the main result

- At high levels of capital to deposits, the RBC constraint binds at 7% risky assets to capital

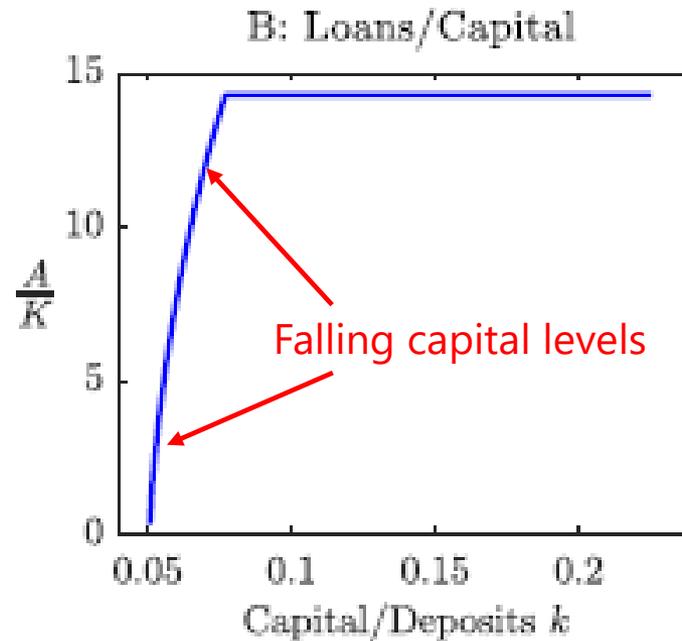
Figure 2B from Bolton et al.



Drivers of the main result

- At high levels of capital to deposits, the RBC constraint binds at 7% risky assets to capital
- As capital falls, the bank
 - Lowers deposit rate
 - But it cannot refuse deposits
 - Reduces risky assets
 - Increases short-term investments

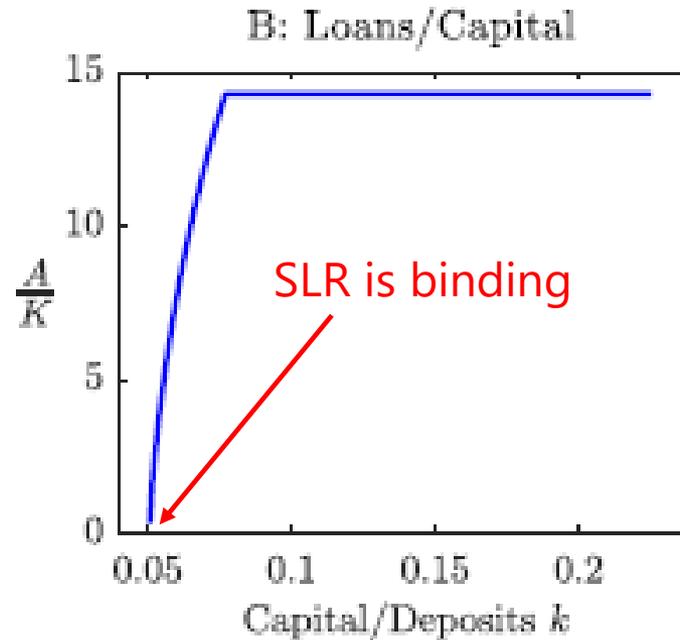
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Drivers of the main result

- At high levels of capital to deposits, the RBC constraint binds at 7% risky assets to capital
- As capital falls, the bank
 - Lowers deposit rate
 - But it cannot refuse deposits
 - Reduces risky assets
 - Increases short-term investments
- When capital to deposits ratio hits 5% the SLR binds and the bank must issue costly new equity

Figure 2B from Bolton et al.



Model vs. experience

Overview of what happened to banks

- COVID-19 was a massive adverse shock to all economies
- Big banks have generally not reported negative earnings or reduced capital
- Bank loan demand started strong but rapidly weakened
- Federal Reserve responded aggressively to economic weakness
 - Set target for overnight, risk-free rates set near zero
 - QE (or better LSAP) restarted with the Fed buying Treasuries and MBS
 - Fed pays in reserves which are deposited in seller's bank accounts resulting in increased deposits

Bank's actual experience

- JP Morgan CFO Jennifer Piepszak on April 14, 2021 earnings call

The growth in bank leverage has been driven by deposits and therefore, cannot be cured by reducing lending. In fact, the opposite would be true.

If we had more loan growth, it would help because it would absorb excess risk-based capital. The issue is that we've had muted loan demand to date. And even if it starts to pick up, it's hard to envision that organic loan growth could keep pace with further QE.

Other differences from experience

- Banks can and have refused to accept deposits but this is also costly
 - JP Morgan CFO Jennifer Piepszak on April 14, 2021

And finally, when a bank is leverage constrained, this lowers the marginal value of any deposit, regardless if it is wholesale or retail, operational or nonoperational. ... raising capital against deposits and/or turning away deposits are unnatural actions for banks and cannot be good for the system in the long run.
- Banks are also issuing less costly, qualifying preferred stock to meet the SLR – but ratio of preferred to common is capped

Suggested revisions to the model

Most important changes to the assumptions

- With some positive probability economy is in a weak state where
 1. QE is driving increase in deposits,
 - Model as serially correlated positive deposit flow shocks
 2. Loan demand is low, which could be modeled by
 - a) Setting a cap on total risky assets, or
 - b) Having a decreasing marginal, risk-adjusted return on risky assets and allow the expected return to go below the risk-free rate
- Allow the bank to refuse deposits but make such refusal costly
 - Existing model has cost in form of forgone opportunity to issue deposits at rates below the risk free rate
 - Consider increasing the cost of refusing deposits
 - Such as by arguing deposits provide cross-selling opportunities

Expected results

- Marginal value of increased deposits can become negative as in the paper
 - Especially at rates near the effective lower bound on deposit rates
- Binding SLR reduces bank franchise value by decreasing the value of customer relationships



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Additional comments
If time permits

Elements missing from the extended model

1. Substitution of preferred for common in meeting the SLR
 - Issuance cost of preferred stock is less than that for common equity
 - Qualifying preferred stock is counted in the SLR but the amount is capped at a fraction of the total capital
 - Economic cost of preferred equals direct issuance cost plus reduced opportunity to substitute preferred for common stock in the future
 - Preferred issuance is empirically relevant but the cost of accurately modeling preferred stock is probably not worth the benefits
 - Instead consider having an increasing marginal cost of issuing equity to reflect how issuing preferred moves the bank closer to the cap
2. The SLR may restrict bank's ability to act market makers in bond markets
 - Important cost of a binding SLR but also likely difficult to model
 - Consider writing a new paper building on this model with banks allocating capital to market making

Interbank market

- Paper's modeling of the interbank market as a reduction in the variability of deposits is misleading
- Interbank market can help deal with unexpected changes to deposits, replacing lost deposits and providing investment for unexpected inflows
- However it's not so helpful for unexpected inflows if the SLR is potentially binding
 - Interbank loans are counted as assets for regulatory capital ratios
- Existing interbank market mostly irrelevant to the pandemic period
 - Interbank market (Fed Funds) consists almost entirely of GSEs lending to banks
 - Relative to the period before 2008, Fed Funds transactions between banks are rare because reserve levels are so high