The Interplay between Liquidity Regulation, Monetary Policy Implementation, and Financial Stability

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Achieving Financial Stability: Challenges to Prudential Regulation
Introduction

- The Basel III liquidity regulations (LCR, NSFR) aim to promote financial stability by encouraging banks to:
  - hold a more liquid portfolio of assets
  - and rely less on short-term, wholesale funding

- Seem likely to affect behavior in interbank lending markets ...

- ... where many central banks implement monetary policy
  - the precise form these effects will take is not obvious

Q: What are the implications of liquidity regulation for:
  - central banks’ ability to steer market interest rates to target?
  - the optimal design of central banks’ operational frameworks?
My aim

- Present a simple framework to serve as a starting point
  - answers are difficult to come by, but ...
  - providing some structure is (hopefully) a useful first step

- Focus on the Liquidity Coverage Ratio (LCR)
  - seems likely to have a stronger effect on money markets
  - already being phased in

- Highlight what appears to be a fundamental tension between:
  - implementing monetary policy effectively, and
  - using liquidity regulation to promote financial stability

- Offer some thoughts on how to manage this tension
Outline

1. Implementing monetary policy pre-LCR (and pre-crisis)
2. What changes with an LCR requirement?
   - a new premium arises in term interest rates
3. How might a central bank respond to this premium?
   - discuss different approaches
4. Implications for the design of an operational framework
Implementing monetary policy pre-LCR

- Start with a central bank operating a corridor system
  - could be symmetric (ECB) or asymmetric (Fed)

- Equilibrium interest rate on interbank loans:

\[ r^* = r_{IOER} + p(R) \]

- \( p(R) \) is a *premium* that reflects the *scarcity value* of reserves
Repeating: \[ r^* = r_{IOER} + p(R) \]

Different models deliver different functions \( p \)

- Poole (1968), Bech and Keister (2015), Afonso & Lagos (2015), many others
- \( p \) may also depend on the distribution of reserves across banks
- and may be negative in some situations

Implementing monetary policy is about using \( R \) (+ other tools) to move \( r^* \) to target
Term structure of interbank rates

- Focus on two types of interbank loans
  - overnight and term $T > 30$ days

- Assume central bank targets the overnight rate
  - and target is expected to remain constant (for simplicity)

Then

$$r_T^* = r^* + s$$

- think of spread $s$ as (roughly) independent of $r_{IOER}$ and $R$

Key point:

$$r_T^* = r_{IOER} + p(R) + s$$

- by changing $p(R)$, the central bank moves all rates up/down
Liquidity regulation

- What changes when the LCR is introduced?

- Bank $i$ must satisfy a new requirement:

$$ LCR^i = \frac{\text{High Quality Liquid Assets (HQLA}^i\text{)}}{\text{Net Cash Outflows (NCOF}^i)} \geq 1 $$

- Focus on excess LCR liquidity, that is: $HQLA^i - NCOF^i$
  - overnight borrowing/lending has no effect
  - term borrowing raises it (and term lending lowers it)

- Term borrowing now brings two benefits:
  - bank receives reserves
  - and improves its LCR position
Equilibrium with an LCR

- Overnight interest rate is unchanged as a function of $R$
  \[ r^* = r_{IOER} + p(R) \]
  scarcity value of reserves

- But the term interest rate has a new component
  \[ r_T^* = r^* + s + \hat{p}(R + B) \]
  scarcity value of “LCR liquidity”

- where $\hat{p} = value$ of term borrowing for LCR purposes

- New premium depends on the amount of *excess LCR liquidity* in the banking system
  - affected by fiscal policy, demand for bonds by non-banks, etc.
Central bank can still move all interest rates up/down

But ... LCR introduces a new “wedge” in the monetary transmission mechanism

- this wedge could potentially be large and variable over time

Q: What should a central bank do about the LCR premium?

1. Simply adjust $r^*$ to offset changes in $\hat{p}$ if desired
   “passive”

2. Manipulate $\hat{p}$ for monetary policy purposes
   “active”
A passive approach

Do not try to directly influence the LCR premium $\hat{p}$
- let it be “purely” market determined

Adjust $r^*$ to offset changes in $\hat{p}$ as desired
- similar to current practice when other spreads change

Under this approach, $\hat{p}$ may be large, variable over time

Having a large $\hat{p}$ is not necessarily bad
- gives banks an incentive to raise their LCR by other means
  - ex: hold more bonds; seek more stable funding sources

However ...
Three potential problems with the passive approach:

(A) Variability in $\hat{p}$ may present communication problems
   - could require frequent changes in announced target rate

(B) Large $\hat{p}$ makes the lower bound on $r^*$ more binding
   - more likely to end up in situations where the central bank’s ability to affect interest rates is impaired

(C) Large $\hat{p}$ represents an arbitrage opportunity
   - Shadow banks (or banks not subject to the LCR) could:
     - borrow overnight from a bank subject to the LCR and lend the same funds back at term
     - raises the LCR of the subject bank; generates a profit for the shadow bank
     - arrangement could reset every night ("evergreen")
     - could “dress up” the arrangement to be less obvious
The LCR rules puts some limits on this activity
- but there may still be substantial scope for it
- plus limits may be circumvented by clever arrangements

Raises clear financial stability concerns
- short-term maturity transformation is moving outside of the (LCR)-regulated banking system

Note the tension between monetary policy and financial stability here
- regulatory arbitrage helps the transmission of monetary policy
  - some might even view it as desirable
- but tends to undermine the goals of liquidity regulation

For these reasons: central bank may want to actively manage the size of the LCR premium \( \hat{p} \)
(2) Active approaches

- Central bank could instead aim to directly influence $\hat{p}$
  - that is, operate on both overnight and term rates ($p$ and $\hat{p}$)
  - there are several ways this could be done

(A) OMOs against non-HQLA assets
- increase supply of reserves without removing govt. bonds
  - increases the total supply of HQLA in the economy
- would likely need to be term (>30-day) operations
- perhaps like the ECB’s Long-Term Refinancing Operations

(B) Term lending to banks (against non-HQLA collateral)
- like the Term Auction Facility or a term discount window
- provides reserves to banks without increasing outflows
Both approaches affect excess LCR liquidity in the banking system
⇒ allow the central bank to steer \( \hat{p} \)

However: these operations create reserves

the central bank may or may not be able to sterilize these effects

If effects are not fully sterilized...

- efforts to control LCR premium \( \hat{p} \) will have spillover effects
  ⇒ change both \( p(R) \) and the overnight rate \( r^* \)
- the interaction between \( p \) and \( \hat{p} \) can be intricate
- controlling either \( r^* \) or \( r_T^* \) can become substantially more difficult

(C) Introduce a term bond-lending facility

- rather than increasing $R$ when banks face an LCR shortfall ...
- offer to lend bonds (against non-HQLA collateral)
  - like the TSLF or the Bank of England’s Discount Window
- allows the central bank to change excess LCR liquidity in the banking system without affecting reserves ($R$)

Notice the symmetry here:

- central banks traditionally change $R$ to affect $p(R)$
  - “to provide an elastic currency”
- a bond-lending facility changes $R + B$ to affect $\hat{p}(R + B)$
  - to provide an elastic supply of LCR liquidity(?)
- in this sense $\Rightarrow$ a natural extension of monetary policy
Three (critical) questions

(1) What level of \( \hat{p} \) should the central bank aim for?
   - presumably want the premium to be positive ...
     - to give banks and incentive to raise their LCR by other means
   - ... but no so large as to:
     - limit the effectiveness of monetary policy, or
     - create incentives for (too much) regulatory arbitrage
   - how does one find a “happy medium”?

(2) What assets?

(3) Does having the central bank “produce” LCR liquidity undermine the goals of liquidity regulation?
   - answers are not clear (at least to me)
A proposal

- Discussion suggests some features that might be desirable for the CB’s operational framework

- Let me try to put them together into a coherent proposal

- Floor system:
  - set \( r_{LOER} = \) target rate
  - set \( R \) to aim for \( p(R) \approx 0 \)
  - advantages:
    - eliminates the distortions associated with reserve avoidance activity (Goodfriend, 2002)
    - an implementation of the Friedman rule
    - allows the central bank to have a larger balance sheet
Reserve supply is set in part based on payments needs
- assuming a range of values of \( R \) would deliver \( p(R) \approx 0 \)
- aim for a level that minimizes daylight overdrafts, delay in the payments system

And a bond-lending facility
- shift composition of central bank’s assets to aim for a low, stable \( \hat{p} \)
  - low: limit incentives for regulatory arbitrage
  - stable: improve the transmission of monetary policy

This framework neatly separates policy objectives
- and provides distinct tools to address distinct objectives

How well does it fit with the objectives of the LCR?
Conclusion

- Liquidity regulation has created a new set of challenges

- One challenge: implementing monetary policy may become more difficult
  - effects not yet apparent because of near-zero interest rates and large central bank balance sheets
  - but will likely appear when (and if) conditions normalize

- Simple models can identify some potential tradeoffs
  - implementing monetary policy is easier if the central bank is willing to actively change the composition of its assets
  - but ... is this a good idea?

- We need more thought about (and better models of) the issue of optimal policy design