Discussion of

How the LSAPs Influence MBS Yields and Mortgage Rates?

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Overview

• How does quantitative easing (QE) work?

• Three possible mechanisms:
  ◦ **Signaling**: Commits the Fed to low rates for a long time → Expectations hypothesis lower LT yields
  ◦ **Portfolio Balance**: Demand curves are downward sloping, less Q → higher prices (i.e., lower risk premia)
  ◦ **Recruitment Channel**: Low rates = reaching for yield → increased demand for risky assets and lower risk premia
    • Can amplify both the signaling and portfolio balance channels.

• Isolating independent effects of QE is important for policy.
  ◦ If there is no effect on risk premia, forward guidance is enough.
  ◦ QE may also carry some costs in terms of financial stability/market functioning.
Paper’s Approach

- Most previous work uses event studies.
- The authors run regressions like
  \[ MBSYield_t = \alpha + \beta_1 \cdot Swap_t + \beta_2 \cdot YieldSpread_t + \beta_3 \cdot FedShare_t + \varepsilon_t \]
- Assign any variation in MBS Yields that can be ascribed to the swap yield or the yield spread as signaling.
- Interpret a negative coefficient on FedShare as evidence of the portfolio balance channel.
- Find evidence consistent with an economically meaningful portfolio balance channel.
  - Treasury purchases have reduced MBS yields by 76 bps.
  - MBS purchases have reduced yields by 73 bps.
  - Results are stronger in levels than differences.
Portfolio Balance and Market Segmentation

- The LSAPs are large-scale relative to the historical size of the Fed balance sheet.
  - $3.2 trillion of Treasuries and Agencies in portfolio as of 2013Q2.

- But they are small relative to the total quantity of risk in credit markets.
  - According to the Flow of Funds, there were approximately $37 trillion of debt securities outstanding in 2013Q2.
  - And another $30 trillion of corporate equity.

- So segmented markets are likely an important part of any story where the portfolio balance channel has an impact.
  - But complete segmentation means that Treasury purchases won’t affect MBS yields.
  - Need partial segmentation, which is not unreasonable.
Signaling

- Signaling important: Expected future Fed Funds after “taper talk”.
- But recent Fed communication focused on separating QE and forward guidance.
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Empirical Approach

- A simple formulation of MBS yields:
  \[ MBSS_{Yield_t} = Swap_t + MBSS_{Specific_t} \]

- Break \( MBSS_{Specific_t} \) into cost of prepayment option and residual (including liquidity).
  \[ MBSS_{Specific_t} = OptionCost_t + \varepsilon_t \]
  - No obvious channel for signaling to affect liquidity.
    - May affect option cost, but option is struck at-the-money so rate volatility should be particularly important.
  - Portfolio balance can affect both pieces.
    - Can increase or decrease liquidity premium.
    - May reduce option premium.

- For MBS specific components, important that the Fed purchase MBS as opposed to Treasuries.
Empirical Approach

- Break $\text{Swap}_t$ into expectations hypothesis piece and term premium piece.

  $$\text{Swap}_t = E[\text{ShortRate}_{t\rightarrow T}] + \text{TermPremium}_t$$

  - Signaling affects expectations hypothesis piece.
  - Portfolio balance affects term premium piece.
  - Recruitment channel links the two pieces.

- If Treasury and MBS markets are integrated, purchasing either MBS or Treasuries should affect term premium.

- Basic empirical approach is to count all variation in $\text{MBSYield}_t$ that can be ascribed to $\text{Swap}_t$ as signaling.

  - This is conservative: $\text{Swap}_t$ contains term premium, which portfolio balance may reduce if markets are integrated.
Empirical Approach

- Why do Treasury purchases have a larger effect than MBS purchases?
  - In my formulation, need partial segmentation between Treasury/MBS/swap markets to have any effect at all.

- Should the coefficient on the swap yield be constrained to be 1?
  - Obtain coefficients very close to 1 if you use Bloomberg data.
  - But this may be model driven.

- Could the denominator of *FedShare* be driving things?
  - Purchases are very predictable.
  - *FedShare* is relatively low when MBS issuance is high → typical downward sloping demand story says that MBS yields should be high.
  - This is not inconsistent with portfolio balance.
Portfolio Balance vs. Slow-Moving Capital

- We think that market segmentation is not permanent.
  - Capital may move slowly, but it moves eventually.
  - In fact, transmission to corporate debt markets may require portfolio rebalancing away from MBS/Treasuries.

- This suggests that portfolio balance effects may weaken over time.
  - Event studies may be overstating long-term effects of QE announcements.

- The authors could look at this with their empirical setup.

\[ MBSYield_t = \alpha + \beta_1 \cdot Swap_t + \beta_2 \cdot YieldSpread_t + \beta_3 \cdot FedShare_t + \beta_4 \cdot T_t + \beta_5 \cdot FedShare_t \times T_t + \varepsilon_t \]

where \( T_t \) is the time since the last QE announcement.
Transmission to Mortgage Rates

- We are ultimately interested in rates available to borrowers, not prices in secondary markets.
- In mortgage markets, originators (banks) are an important layer of intermediation between borrowers and markets.
- Some evidence that market power in this layer affects transmission to borrowers (Scharfstein and Sunderam, 2013).
- Authors look at this, running

\[
MortgageRate_t = \alpha + \beta_1 \cdot MBSYield_t + \beta_2 \cdot Capacity_t + \varepsilon_t
\]

where *Capacity* is the ratio of refinancings to employees.

- Don’t find much evidence that capacity matters.
What is the Null? A Simple Model

- Think of MBS yield $r$ as an input cost for mortgage originators.
- Capacity utilization as measured will be highly correlated with quantities.
  - So the specification is a bit like running prices on quantities and costs.
- What would this yield in a simple Cournot competition model with $N$ firms competing?
- Suppose demand is given by $P(Q) = \varepsilon_D - bQ$.
- Firms solve $\max_q P(Q)q - rq$
- Assume $\varepsilon_D$ and $r$ are stochastic and independent with standard deviations $\sigma_D$ and $\sigma_r$ respectively.
What is the Null? A Simple Model

- In the symmetric equilibrium we have
  \[ Q^* = \frac{\varepsilon_D - r}{b} \frac{N}{N+1}, \quad P^* = \frac{\varepsilon_D + rN}{N+1} \]

- Competition/capacity \( N \) affects transmission of MBS yields into prices and sensitivity of quantities to MBS yields:
  \[
  \frac{\partial P^*}{\partial r} = \frac{N}{N+1}, \quad \frac{\partial Q^*}{\partial r} = -\frac{1}{b} \frac{N}{N+1}
  \]

- Regressing \( P^* \) on \( r \) and \( Q^* \) yields
  \[
  \hat{\beta} = \begin{bmatrix}
  \sigma_r^2 & \text{Cov}(Q^*, r) \\
  \text{Cov}(Q^*, r) & \text{Var}(Q^*)
  \end{bmatrix}^{-1}
  \begin{bmatrix}
  \text{Cov}(P^*, r) \\
  \text{Cov}(Q^*, r)
  \end{bmatrix}
  \]

  \[
  = \begin{bmatrix}
  1 \\
  b \frac{N+1}{N}
  \end{bmatrix}
  \]
A Different Take on Pass-through

\[ \Delta Rate_{i,t} = \alpha + \beta_1 \cdot \Delta MBS \text{ Yield}_t + \beta_2 \cdot \text{Top 4}_{i,t-1} + \beta_3 \cdot \Delta MBS \text{ Yield}_t \times \text{Top 4}_{i,t-1} + \epsilon_{i,t} \]

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Minor Comments

- Newey-West standard errors for regressions in levels.
  - Reduces the t-statistics quite a bit in my data, though everything is still significant.

- GSE holdings of MBS.
  - Whether you want to count these as held by the private market or not depends on how much the GSEs are hedging the interest rate/prepayment risk.
  - I was under the impression they are doing a lot of hedging and so the private market is bearing that risk.

- Interest rate volatility
  - Seems natural this should affect MBS yields. Add controls?

- Data definitions
Conclusion

- Very interesting paper on an important subject.

- Encourage the authors to flesh out the discussion of the components of the MBS yield that QE is operating on.

- Thanks!