Discussion of QE papers

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Monetary Policy at the Zero Lower Bound
Federal Reserve Bank of SF, February 2011
The question

In evaluating the effectiveness of QE1 and QE2, what interest rate(s) should we care about?
Evaluating the effectiveness of QE

- Effect of QE on Treasury yields is not what we care about in evaluating *policy* effectiveness
  - Decrease in Treasury supply raises price of “safety” component of Treasury bonds (K & VJ, “Aggregate Demand for Gov Debt”)
Evaluating the effectiveness of QE

• Effect of QE on Treasury yields is not what we care about in evaluating *policy* effectiveness
  • Decrease in Treasury supply raises price of “safety” component of Treasury bonds (K & VJ, “Aggregate Demand for Gov Debt”)

• Other financial instruments measure more directly the relevant effects
  • Inflation swap yields reveal effects on *(Q-measure)* expected inflation
  • TIPS reveal effects on real rates
What about corporate bond yields?

Reason to look at corporate bond yields is *not* because changes in yields = changes in incentives to invest

- Corporate yields depend on
  - Expected inflation, Inflation risk premium, default risk, real rates

- Real rate part relevant to investment; others wash out

- Corporate bond yields minus default component from CDS minus inflation swap yields is another measure of real yields
  
  Uncontaminated by TIPS-specific features, but noisy
Evaluating the effectiveness of QE

- QE1: Announcements raised expected inflation $\sim 40$ b.p., lowered real yields $\sim 150$ b.p.
- QE2: Raised expected inflation $\sim 5$ b.p., lowered real yields $\sim 25$ b.p.
Can QE affect risk premia?

K&VJ evidence

- Duration risk story not supported in data; effects of QE not linear in duration
- Risk premia in illiquid, segmented markets may fall, but might just be better liquidity (Agency MBS)
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My non-rigorous thinking

- Yes, for aggregate risk premia by changing investors’ beliefs about likelihood of economic recovery (signaling)
- No, for aggregate risk premia by altering quantities
  - $55 trillion in real financial assets, then add human capital
  - $1 trillion decline in risky assets is a bad day on the stock market

More relevant example: unexpectedly good weather lowers duration of total wealth
Can we isolate the effect on Treasury yields of QE changes in supply?
Empirical methodology

- At CUSIP level: regress changes in log prices on Fed purchases of that bond, nearby-maturity bonds, relative to changes in log prices on other Treasury bonds
  - Cross-sectionally over entire QE1 period ("stock")
  - On days when purchases were made and day after ("flow")

Strips out effect of changing investor expectations of inflation, economic growth, future government policy . . .
“Stock” effects

- Paper shows economically and statistically strong positive effect of purchases on prices; own and nearby maturities
- Preferred-habitats interp: asset-specific supply matters
“Stock” effects

- Paper shows economically and statistically strong positive effect of purchases on prices; own and nearby maturities
- Preferred-habitats interp: asset-specific supply matters
- But: changes in own supply do not affect prices of securities within five issues of on-the-run

Table 5. Stock Effects (IV)—Subsamples

<table>
<thead>
<tr>
<th>Notes</th>
<th>Bonds</th>
<th>Near on-the-run</th>
<th>Far off-the-run</th>
<th>&gt; 15 years</th>
<th>&lt; 15 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Purchases (IV)</td>
<td>0.56 (0.45)</td>
<td>0.65*** (0.26)</td>
<td>-0.05 (0.46)</td>
<td>1.72*** (0.39)</td>
<td>0.18 (0.41)</td>
</tr>
<tr>
<td>Purchases of near substitutes (IV) (maturity w/in 2 yrs of own)</td>
<td>0.11*** (0.04)</td>
<td>0.20*** (0.04)</td>
<td>0.17*** (0.06)</td>
<td>0.15*** (0.05)</td>
<td>0.16* (0.09)</td>
</tr>
</tbody>
</table>

- Then why do changes in supply of other bonds matter?
“Flow” effects

- **Evidence**: Treasury prices rise a little the day the Fed buys, mostly drop back the next day
  
  My interp: Wall Street taking advantage of a large inelastic trader hitting the market

- **Evidence**: Nearby ineligible securities also rise on same day
  
  My interp: Other inelastic traders who must buy on same day, but want to stay away from the Fed’s maturities
Does the quantity of interest rate risk embedded in publicly-held Treasury debt predict excess returns to Treasury securities?
Model intuition

- Preferred habitat logic: Variations in supply must be held by arbitrageurs (public)

  Arbitrageurs care about net risks they face; when high, demand higher excess returns

- Add up “level,” “slope,” “curvature” risk in the bonds, use these three measures to predict excess returns, future yields
Results and questions

- Empirically, big forecast power (71% $R^2$ for annual returns to two-year bond!)
- But why doesn’t month-$t$ T-security risk show up in shape (level, slope, curvature) of month-$t$ term structure?
- If true, should forecast excess returns to any investment exposed to level, slope, curvature risks

Pricing factors in two-pass regressions for stock portfolios
The zero-bound model

- Currently at bound, fixed $Q$-probability of jumping off
  Will never be at bound again

- If term structure steepens while at bound, does not mean more likely to jump off
  Means that when we leave, short rates are $Q$-expected to jump to a higher level than previous $Q$-expectation

- What does it mean to impose a zero bound on a Gaussian model?
  When jump off bound, probability of future realizations of negative rates is nonzero