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Discussion of QE papers

Greg Duffee, Johns Hopkins

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

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The question

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

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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")

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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

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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.

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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)

Can QE affect risk premia?

K&VJ evidence

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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

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Can we isolate the effect on Treasury yields of QE changes in supply?

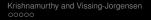Krishnamurthy and Vissing-Jorgensen
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Empirical methodology

- 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 . . .

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"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

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"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

	Notes	Bonds	Near on-the-run	Far off-the-run	> 15 years	< 15 years
Own Purchases (IV)	0.56	0.65***	-0.05	1.72***	0.18	1.53***
	(0.45)	(0.26)	(0.46)	(0.39)	(0.41)	(0.29)
Purchases of near substitutes (IV)	0.11***	0.20***	0.17***	0.15***	0.16*	0.06
(maturity w/in 2 yrs of own)	(0.04)	(0.04)	(0.06)	(0.05)	(0.09)	(0.04)

- Then why do changes in supply of other bonds matter?

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"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

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Does the quantity of interest rate risk embedded in publicly-held
Treasury debt predict excess returns to Treasury securities?

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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

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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

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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