Drivers and Determinants of Liquidity Across Sectors and Implications for Systemic Risk

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Discussion by

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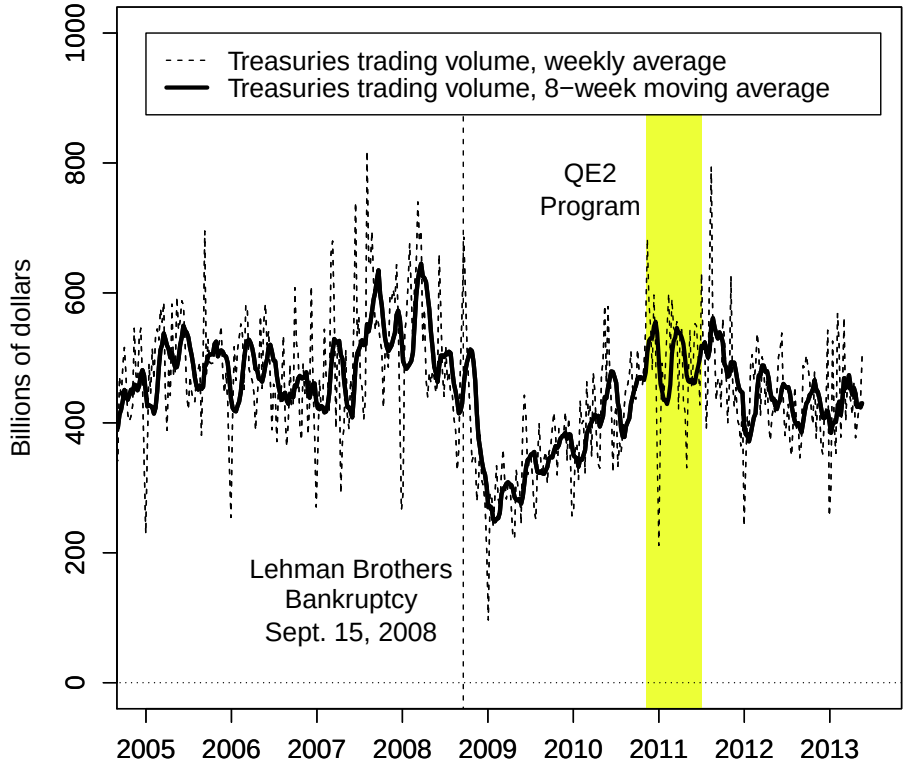
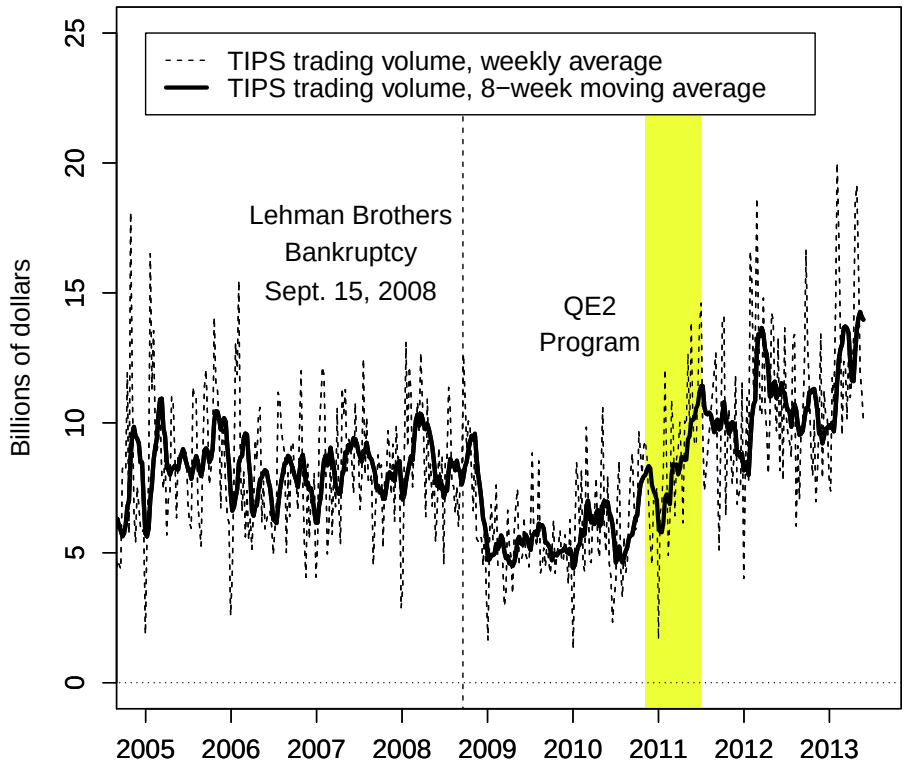
Efficiency and Liquidity of Treasury and TIPS Markets





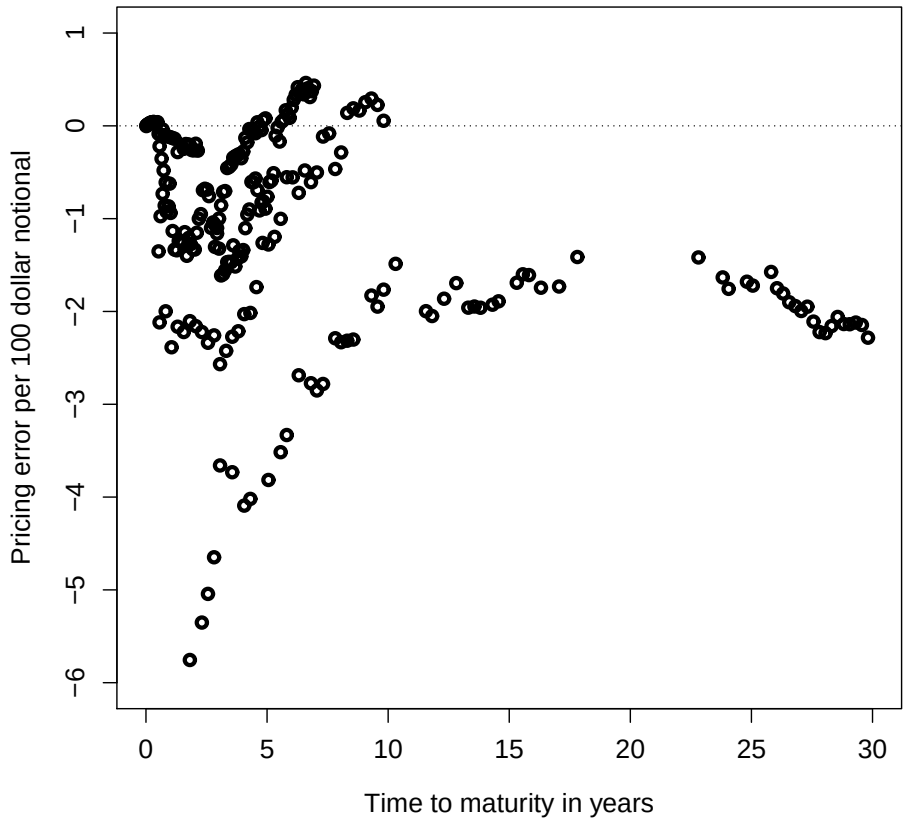
- The Treasury market is a mature giant, while the TIPS market is a growing enfant in comparison.
- First, I discuss some issues related to the efficiency of pricing in the Treasury market.
- Second, I introduce a measure of liquidity premiums in the TIPS and inflation swap markets relative to the Treasury market and show how the TIPS purchases included in the Fed's QE2 program affected the functioning of these markets.

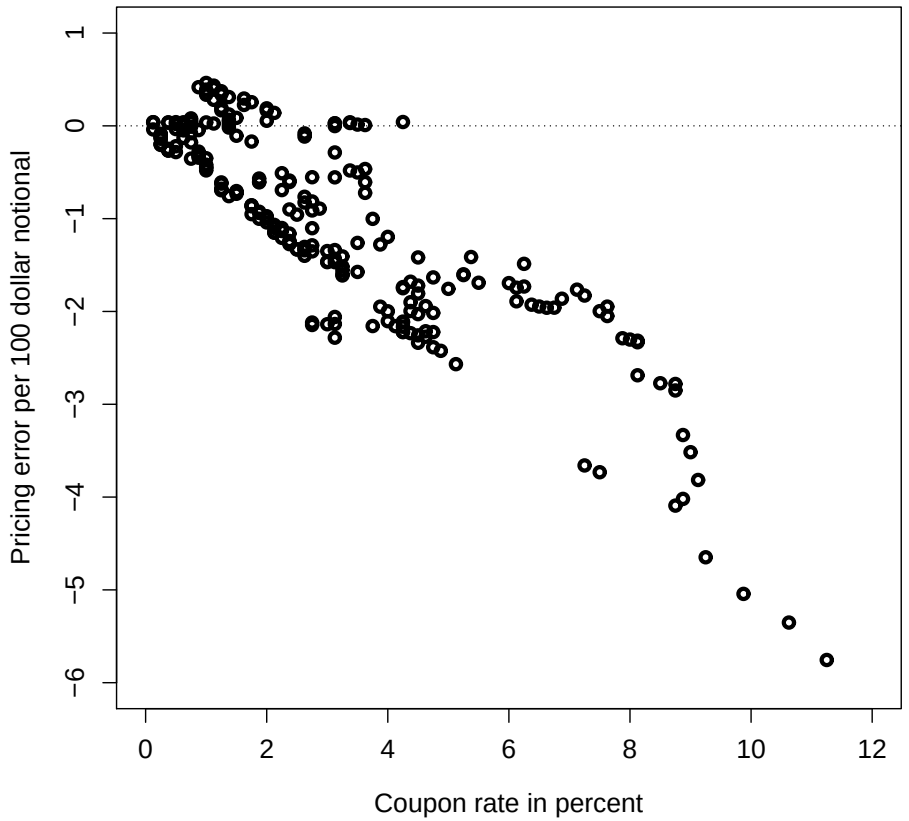
Example: Fair Value of Fed's Treasury Portfolio

Maturity	No.	Value in billions as of April 24, 2013		
		Face value	Bloomberg	Model
All	245	1,744.06	2,042.34	2,061.44
3 years or less	89	66.13	70.61	71.53
4-6 years	79	669.47	742.49	750.00
7-10 years	39	599.89	692.64	695.52
11 or more years	38	408.57	536.59	544.40

- Christensen, Lopez, and Rudebusch (2013) analyze the fair value of the Fed's Treasury securities holdings.
- To do so, we use the Gaussian shadow-rate arbitrage-free Nelson-Siegel (AFNS) term structure model derived in Christensen and Rudebusch (2013).
- This class of models respects the zero lower bound for nominal yields.
- The model is estimated with Treasury yields from Gürkaynak, Sack, and Wright (2007). Note its pricing is accurate compared to Bloomberg data, but with a slight positive bias or overpricing ...

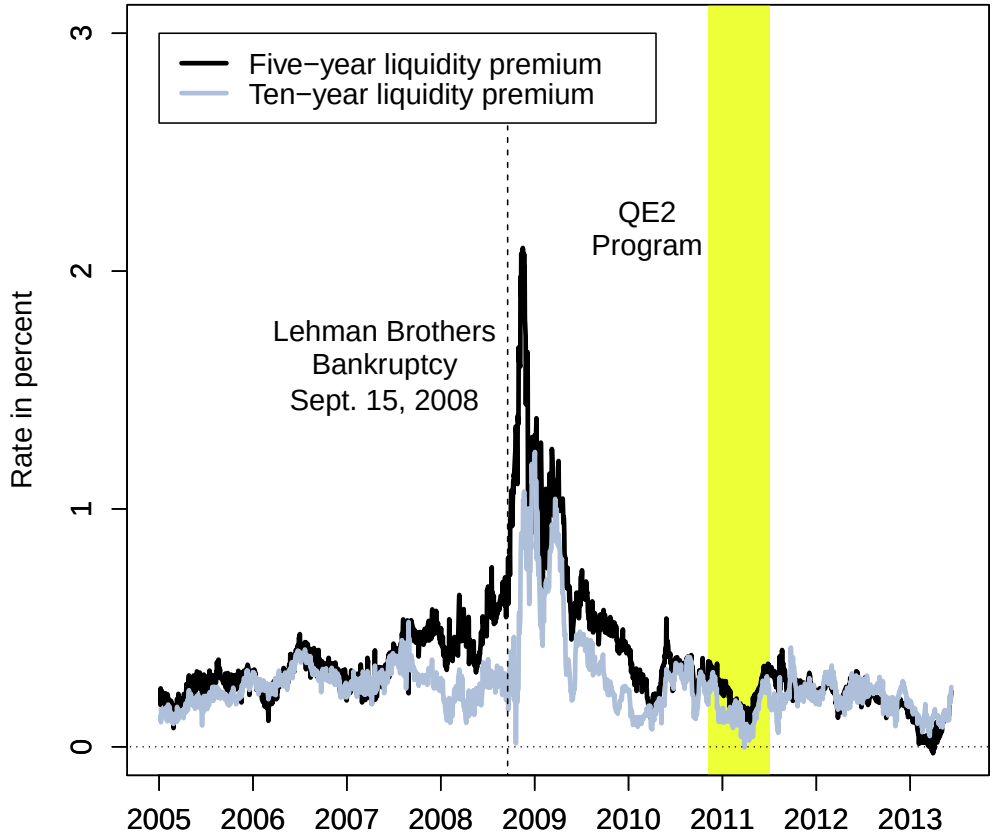
Evidence of Mispricing in the Treasury Market





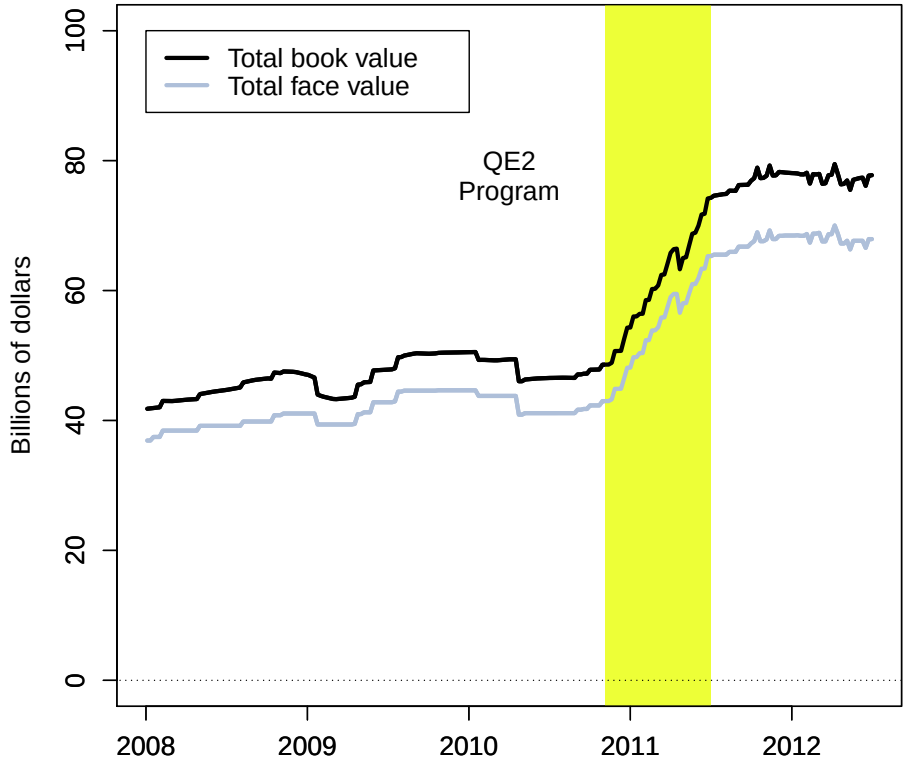
- Illustration of pricing errors in dollars per $100 notional across bond maturities (left) and bond coupon rates (right).
- Even as of April 24, 2013, some pricing errors are notable despite high market liquidity and trading volume.
- Implication: Securities with identical cash flows are trading at very different prices! Most mispricing are for seasoned securities.
- Is this a problem for the sovereign issuer?

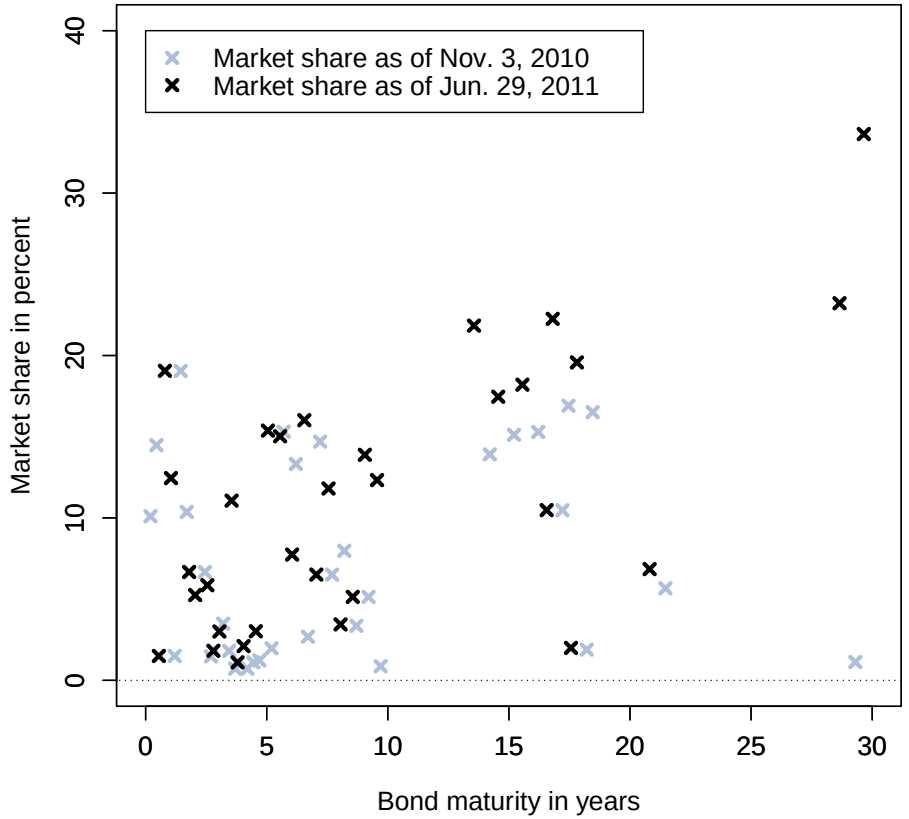
What Does it Take to Affect TIPS Liquidity?



- Christensen and Gillan (2012) demonstrate that the difference btw. TIPS breakeven inflation and inflation swap rates represents the sum of frictions (i.e., liquidity premiums) relative to the Treasury market.
- TIPS purchases included in Fed's QE2 program provides a natural experiment for studying purchase effects.
- Christensen and Gillan (2013) document that these purchases led to significant declines in the frictions in these two markets.

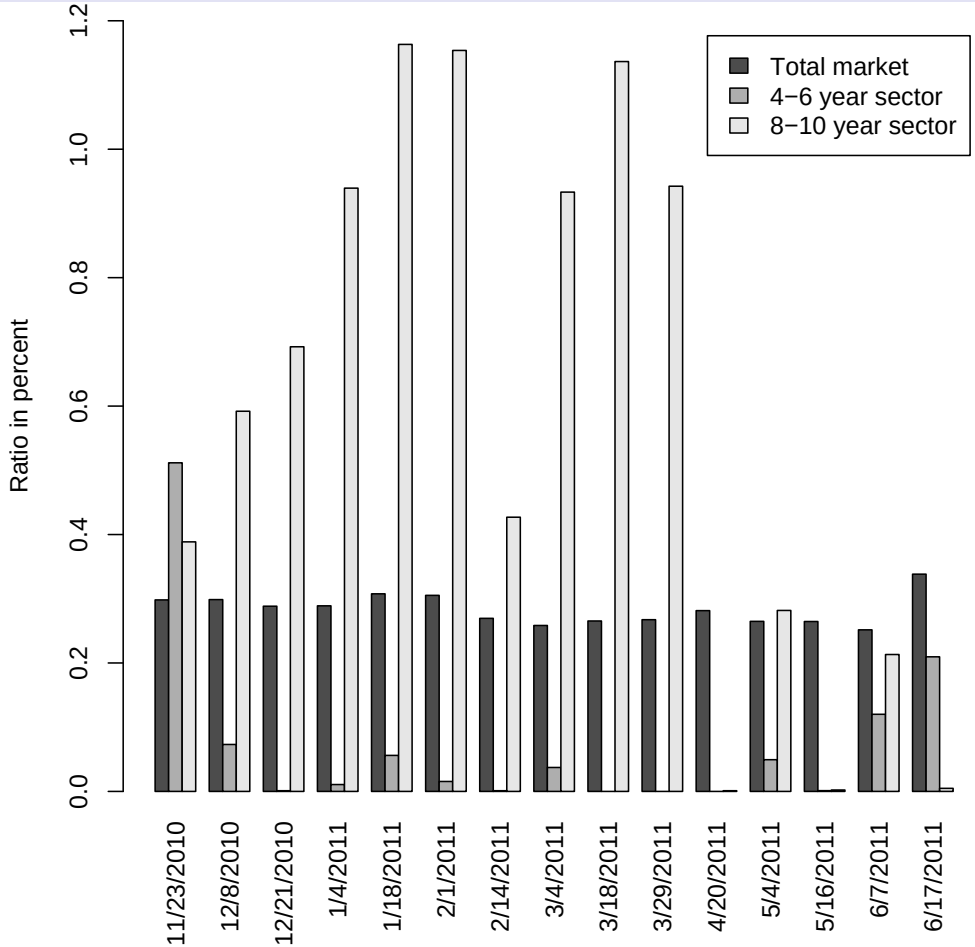
Fed's QE2 TIPS Purchases





- The chart to the left shows the book and face value of the Fed's holdings of TIPS around the time of QE2.
- QE2 increased Fed's TIPS holdings by 53 percent.
- The chart to the right shows the percentage of outstanding TIPS held by the Fed at the beginning and at the end of QE2.
- Fed only held moderate fractions of individual TIPS.

Fed's QE2 TIPS Purchases cont.



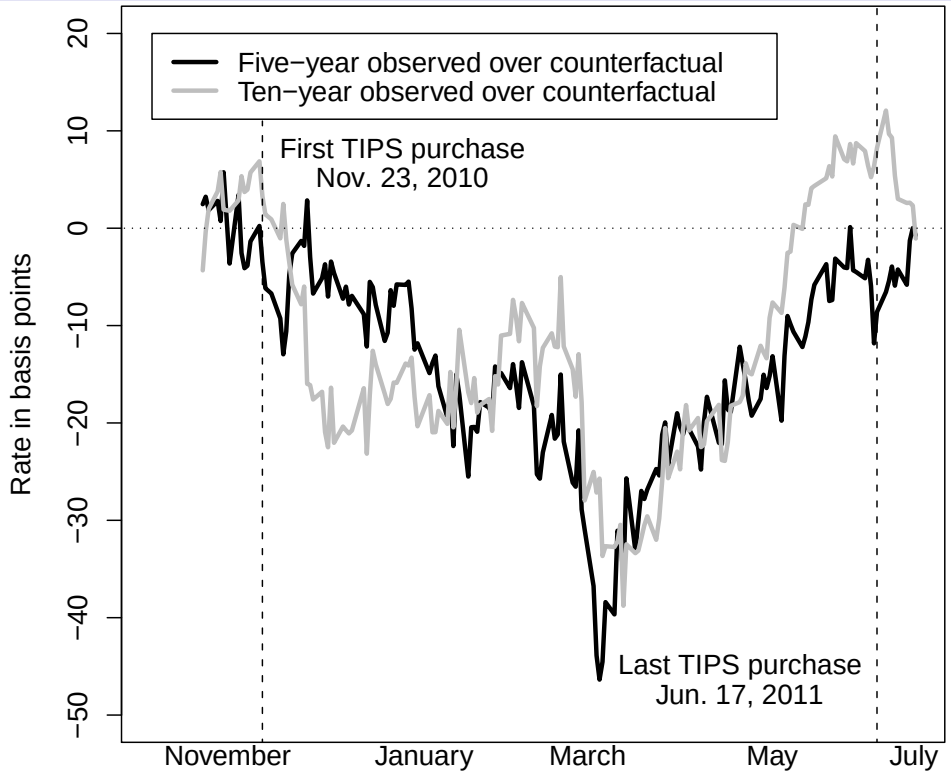
- This chart shows the size of the 15 TIPS purchase operations both relative to the total TIPS market and relative to relevant maturity segments of the TIPS market.
- TIPS purchases were concentrated in the 8-10 year segment.
- What is the effect of buying one percent of a given segment of the TIPS market?

Regression Results with Weighted Purchase Dummy

Explanatory Variables	CG (2012) measure	
	5-year	10-year
Constant	3.16	23.91
	(1.23)	(9.82)
VIX	1.35	0.16
	(21.76)	(2.50)
Off-The-Run Spread	-0.68	0.52
	(-5.88)	(8.83)
AAA Credit Spread	0.32	0.09
	(19.96)	(6.04)
IS Bid-Ask Spread	0.99	1.08
	(7.61)	(6.20)
TIPS Trading Volume	-1.92	-2.66
	(-8.01)	(-9.41)
TIPS Purchase Dummy	**8.47**	**28.61**
4-6 Year Sector	(0.37)	(1.30)
TIPS Purchase Dummy	**-15.37**	**-14.56**
8-10 Year Sector	(-3.43)	(-3.31)
Adjusted R^2	0.81	0.50

- Liquidity premium measure declines by about 15 basis points for each percent of the TIPS market purchased.

Counterfactual Exercise



- We use regression results up to Nov. 2, 2010, to generate a counterfactual for the liquidity premium measure during QE2.
- The chart above shows the difference btw. the observed and counterfactual series.
- Results indicate that frictions in the TIPS and inflation swap markets were reduced from where they would otherwise have been with a peak effect of more than 30 basis points around the middle of QE2.
- Equally important, effect vanished as purchases tapered off.

Conclusion

- Mispricing of very seasoned securities with non-current coupon sizes is widespread in the highly liquid U.S. Treasury market, even under optimal market conditions:
  1. Is this a problem for the sovereign issuer?
  2. This could provide a benchmark for what to expect in other markets regarding pricing of seasoned bonds.
  3. Also, mispricing is not an adequate statistic for assessing market functioning or market liquidity.
- The TIPS market might serve as a more useful benchmark for some of the larger sovereign debt markets around the world as measured by size and trading volume:
  1. Frictions in the markets for TIPS and inflation swaps are sensitive to trading volume or so-called purchase effects.
  2. The Fed's QE2 TIPS purchases represented less than 5 percent of the TIPS market. Still, they reduced our measure of frictions in these markets by about 12-14 basis points on average for the duration of the program.
  3. Thus, even relatively small initiatives or improvements might provide surprisingly large gains.