

Central Banks and Dynamics of Bond Market Liquidity

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1. Introduction

When the Reserve Bank of India (RBI) pumps money into the market, does the bond market get more or less liquid?

Trading liquidity; i.e. ease of buying and selling financial assets in bond markets has recently become the focus of growing concern for global investors, regulators and banks. In Spring 2015, a series of sharp market moves in German, US and Japanese government bonds demonstrated that liquidity deterioration had reached the strongest and most active segments of bond markets.

Funding liquidity; i.e. how much money market participants have and trading liquidity are in principle, intimately linked. This is because when funding liquidity is abundant, traders have the resources to finance trading positions that smooth price shocks and improve trading liquidity.

One context in which this relationship between funding and trading liquidity plays out is the actions by central banks. Recently, people have been debating whether funding liquidity injections by the central banks – for example, quantitative easing post 2008 crisis by the U.S. Fed and other central banks around the world – help or hurt trading liquidity in the bond markets. Funding liquidity should improve trading liquidity. But some observers worry that actions by dominant players like the central banks may crowd out other participants and deteriorate trading liquidity. So which way does the effect go? Regulators and stock exchanges need to understand this relationship between funding liquidity and trading liquidity better as it helps them predict and monitor trading liquidity, which in turn helps smooth functioning of financial markets.

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To gain deeper insights on this issue in the Indian context, our study looks at the effect of funding liquidity injections by the RBI on trading liquidity and volatility in the Indian government bond market over the period 2007-2014.

2. Are RBI Actions Important for the Bond Markets?

The RBI is a large and active participant in Indian fixed-income markets. The last decade has seen the central bank make, on average, 7-8 changes per year to the key policy rates or reserve requirements. The period of our study has seen substantial tightening and substantial easing. RBI manages the funding liquidity in the financial system via direct intervention in the government bond market, as well as via repo and foreign exchange markets. The size of these interventions is quite large compared to the size of the bond market. For 2007-2014, the average absolute weekly liquidity injection by RBI is INR 2.84 trillion, more than 300% of the average weekly volume traded in the government bond market. For comparison, the U.S. Federal Reserve purchased on average USD 0.05 trillion bonds per month between December 2008 to December 2013 via its Large Scale Asset Repurchase program. This was mere 0.5% of the monthly volume in the U.S. Treasury markets during the same period.²

3. Our Study

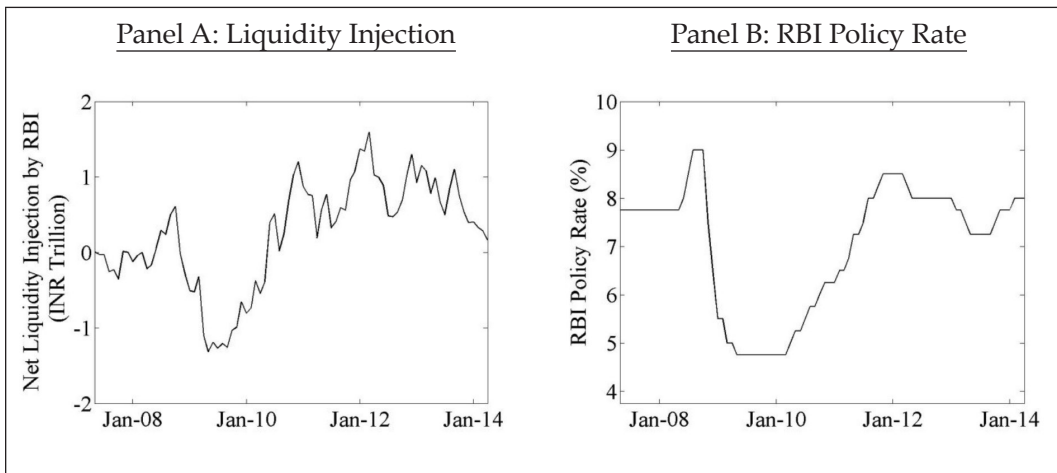
We focus on how the trading liquidity of the most active Government of India bond in the 9-10 year maturity range changes with RBI policies. We examine the trading liquidity using the orders and trades data from the electronic order matching platform NDS-OM where nearly 80% of the trading in government bond happens.

First we look at the general level of liquidity in the 10-year bond. Typically, buying moves prices up and selling moves them down. The bond is more illiquid when a given amount of trading moves the price of the bond a lot. This is because larger the price impact, costlier it is to trade. We find that during normal times, trading of one billion INR moves the bond price by 1.8 basis points. This price impact of 1 billion INR trade can vary a lot from time to time – ranging from fractions of a basis point to more than 10 basis points.

2 Based on data from http://www.federalreserve.gov/monetarypolicy/bst_openmarketops.htm and Securities Industry and Financial Markets Association (SIFMA).

Next, we examine how the trading liquidity changes with RBI policies. We consider two variables as proxies for funding liquidity provision by the RBI – net liquidity injections and the primary policy rate. Net liquidity injection by RBI is the sum of net repurchase agreements (repos), liquidity provided through marginal standing facility and net changes in cash reserves required to be held by the banks. The primary policy rate is the RBI repo rate. When the net liquidity injection is higher, more money is available to market participants, holding everything else constant. When RBI repo rate is lower, funding cost for the market participants are lower. Thus, higher net liquidity injection or lower policy rate means greater funding liquidity in the market. Figure 1 plots the monthly median values of the two policy variables.

Figure 1: RBI Policy Variables

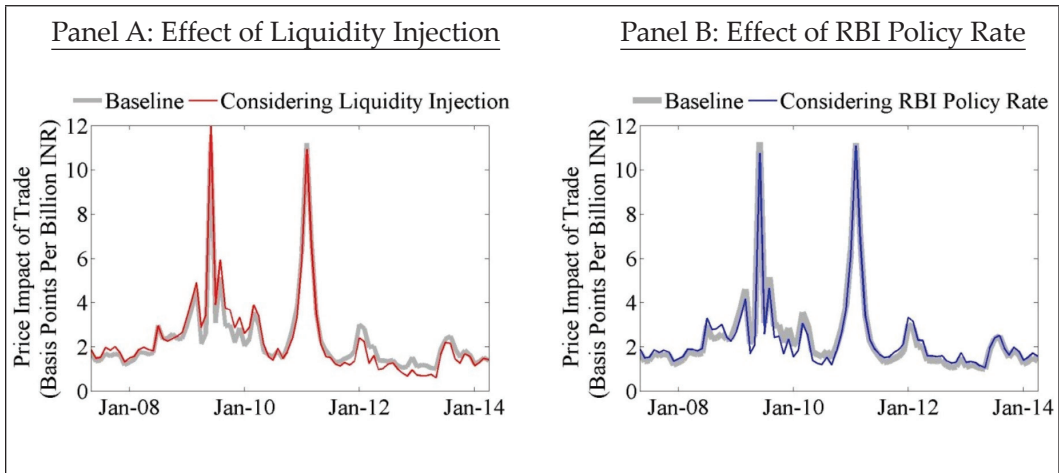


We find that when the RBI provides more funding liquidity; either net liquidity injection is higher by INR 0.74 trillion (one standard deviation) or the RBI policy rate is lower by 1.3 percentage points (one standard deviation) – price impact of trade in bond markets is lower by 15% to 20%. This finding supports the idea that more funding liquidity is better for trading liquidity.

Figure 2 shows the effect of the two policy variables on the baseline illiquidity in the bond market. From Panel A of Figure 2, we can see that, during periods of positive net liquidity injections by the RBI (for example, the second half of our sample), price impact of trade is lower than what it would have been without the liquidity injection. Similarly, in Panel B of Figure 2, we can see that during periods of low policy rate (for

example, around January 2010) the price impact of trade is lower than what it would have been without such a low rate.

Figure 2: Effect of RBI Policy Variables on Bond Market Liquidity



The effect of RBI’s monetary policies on market liquidity is quite modest as can be seen from Figure 2. Thus, there doesn’t seem to be any reason for concerns that large actions by the central bank – liquidity provision or withdrawal – would be destabilizing for the market.

Further, we find that more funding liquidity is associated with dampening of bond price volatility – thus reinforcing the idea that funding liquidity results in price stability. Also, funding liquidity increases volatility of trade flows slightly. Thus, there is no support for the worry that RBI’s liquidity injections might be crowding out other market participants – they seem to be trading more not less, when RBI injects liquidity in the market.

There is additional reason not to worry about funding withdrawal by the RBI. We find that bond market liquidity improves with net liquidity injections by the RBI but does not deteriorate with net liquidity withdrawals. A possible reason for this asymmetric effect is that the RBI withdraws money when market has access to other sources of funding liquidity. We also examine the effect of two such channels on bond market liquidity: (i) flows by foreign portfolio investors (FPIs) into Indian markets and (ii) U.S. monetary policy. We find that FPI inflows and accommodative U.S. monetary policy improve Indian bond market liquidity modestly, without changing the effect of RBI’s policy.

4. Conclusions and Policy Implications

This study establishes that:

1. Trading of 1 billion INR in the benchmark 10-year Government of India bond moves the bond price by about 1.8 basis points in normal times. This price impact of trade – a measure of trading illiquidity – varies a lot from time to time, ranging from less than 1 basis point to more than 10 basis points.
2. Funding liquidity provision by the RBI reduces this price impact; i.e. improves bond market liquidity. A daily liquidity injection of INR 0.74 trillion or lowering the repo rate by 1.3 percentage points reduces the price impact of trade by 15% to 20%.

The Expert Committee to 'Revise and Strengthen the Monetary Policy Framework' chaired by Dr. Urjit R. Patel has recommended that the RBI increase use of trading on the NDS-OM platform to conduct open market operations. The results of this study can be used for calibration while implementing these recommendations.

The main objectives of the RBI's monetary policy are to boost economic growth and control inflation. This study finds that the effect of funding liquidity provision by the RBI on bond market liquidity is benign and modest in size. Thus, RBI can continue its monetary policy implementation without worrying about the destabilizing effects on bond market liquidity.