Assessing fixed income market liquidity
Presentation to TBAC
July 2013
Since the 2008 financial crisis, there have been a number of developments in financial markets, such as new regulations, changes in market structure, and technological advancements.

To varying degrees, these developments have had an impact on the landscape and structure of the global financial marketplace. We would like the Committee to comment on the extent to which these changes could impact liquidity in fixed-income markets.

What is the outlook for fixed-income liquidity over the longer-term?
Executive summary

● Market turnover has if anything increased since the financial crisis

● But liquidity is about much more than turnover
  – Tendency to disappear abruptly when really needed

● Primary liquidity not really a problem; major issues all in secondary

● Neither turnover nor the street have been able to keep pace with the massive expansion in markets

● Regulations have created multiple constraints likely to curtail liquidity when it is really needed:
  – Most have pushed liquidity towards Treasuries, reducing it in risky assets:
    • Basel risk-weightings, swaps clearing, LCR requirements
  – Now, supplementary leverage ratios risk curtailing it even in Treasuries: dealers likely to meet requirements by reducing assets rather than raising capital

● Effects of regulations to date have been offset by Fed policy pushing investors in the opposite direction:
  – Significant demand for fixed income assets in general, and risky assets in particular

● Technology and shifts in market structure have added to the appearance of liquidity, but done little to add depth

● Potential for significant dislocation when investor flows reverse
Agenda

Trends in fixed income liquidity

Effects of new regulations

Effects of policy and market structure
Simple market turnover

Turnover in Treasuries & Agencies
Average daily traded volumes ($bn)

Turnover in credit
US traded volumes in credit ($bn, daily)

Dollar turnover suggests no great drop since 07

Source: SIFMA, Agency and MBS data uses primary dealer transactions. TRACE-reported volumes are much lower.

Source: SIFMA, FINRA TRACE, Haver Analytics.
But what do we mean by liquidity?

The four dimensions of liquidity

- **Tightness**: difference between bid and offer
- **Depth**: size of transaction that can be absorbed without affecting prices
- **Immediacy**: speed with which orders can be executed
- **Resiliency**: ease with which prices return to “normal”

Ingredients for a liquid market

- Competitive market structure
- Low fragmentation
- Minimization of transaction costs
- Heterogeneity of market participants
- Sound infrastructure

Volumes up; liquidity not

10y UST off-the-run on-the-run premium, bp vs average daily traded Treasury volume, $bn

Source: BIS Committee on the Global Financial System, CGFS issues recommendations for the design of liquid markets, BIS (1999).

Liquidity has many facets
Bid-offer tends to be spiky

**Trend improving, spikes not**
Cost to trade 2k TY futures, yield bp

**Prone to sudden spikes**
Modelled* bid-offer in credit, 15-day rolling, median, bp

Liquidity typically fine – until you actually need it
Assessing liquidity in primary

Record volumes in primary…
Gross new issuance of $ corporates (fin+nonfin, fixed + floating), $bn

… though direct participation may lead to secondary “opacity”
Treasury auction participation, %

Primary markets are generally not a problem

Source: Dealogic. 2013 data are annualized from first seven months.

Source: NY Fed.
Assessing liquidity in secondary

Corp turnover concentrated in very few bonds
Corporation bonds ranked by annual traded volume in block trades, $bn

Post-crisis, balance sheet costs more
Asset swap spread of TIP Jan25, bp

Secondary trading requires risk warehouses

Source: TRACE.
Accounting for the growth in the market

The street has become more efficient…
US traded volumes (IG+HY, $bn) vs inventory ($bn) and ratio

…but has not kept pace with outstandings
Turnover, multiple of outstandings, annual, times

Markets have grown rapidly; neither turnover nor the street has kept up

Source: FINRA TRACE, Haver Analytics.

Source: SIFMA, TRACE.
How are investors responding?

Fewer large trades...
Block trade volume as % total traded volume, US

...and even those are smaller
Average block trade size, US IG, $m

Making trades smaller – or not trading at all

Source: FINRA TRACE.
Agenda

Trends in fixed income liquidity

Effects of new regulations

Effects of policy and market structure
A tighter regulatory framework

- **Volcker Rule**
- **Basel 3 RWA**
- **Supplementary leverage ratio**
- **Orderly liquidation**
- **Mandatory swaps clearing**
- **Executive compensation**
- **SIFI Surcharge**
- **CRD 4**
- **OCI**
- **EU FTT**
- **MiFID**
- **LCR**
- **NSFR**

**Reduced risk – but also reduced liquidity**
Capital cost under Basel 3

3x cost for investment grade
Risk-weighted asset charges ($m)

- 1.0x
- 3.4x

5x cost for high yield
Risk-weighted asset charges ($m)

- 1.0x
- 5.0x

Bond Description

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<th>Basel 1</th>
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Note: Capital Impact from Basel 1 to Basel 3 is based on single bonds and does not take into account portfolio diversification effects

3-5x increase in charges for corporate bonds
Swaps clearing

A market out of balance…
Imbalance between OTC swaps payers and receivers, $bn DV01

…even before margins were hiked
Initial margin requirements (% notional)*

Activity migrating from swaps towards futures

Source: Dealer estimates.

Source: CFTC. * Calculated from current VaR levels.
Higher balance sheet charges have affected:

**What the street holds**
Primary dealer positions by asset class, $bn

**What the street is willing to finance**
Primary dealer financing (reverse repo) by asset class, $bn

Dealers can no longer afford to act as credit warehouses
Supplementary leverage ratios

The silently beating heart of the market
Primary dealer total financing ($tn) vs total daily traded volume across US fixed income ($bn)

- Key leveraged players in fixed-income markets consume dealer balance sheet via repo
  - Relative value players police the Treasury yield curve
  - REITs, hedge funds police the MBS basis
- Supplementary leverage ratios could significantly reduce dealer repo activity (low margin, balance sheet intensive)
- Would increase yield curve and agency MBS basis volatility

Source: SIFMA. Dealer financing = repo + reverse repo.

Leverage ratios will leave dealers less willing to provide repo financing and to hold USTs
How much might leverage ratios cost?

Cut assets, or raise more capital?
Changes in leverage ratio (bp) produced by shifts in balance sheet ($bn) and capital ($bn)

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10bp higher ratio can be offset by $2.5bn in capital, or by shedding $50bn in assets.
**OCI changes**

- Large banks must now reflect mark-to-market gains/losses in tier-1 capital
- Recent 100 bp sell-off in Treasury market dented tier-1 capital by ~$40 bn
- Worsened tier-1 capital ratio by ~0.3%

**And that was only the first 100bp**
Net unrealized gains (losses) on available-for-sale securities, domestic commercial banks, $bn

Source: Federal Reserve H.8.

**Will reduce banks’ role as stabilizer in agency MBS**
Agenda

Trends in fixed income liquidity

Effects of new regulations

Effects of policy and market structure
Regulations and monetary policy in conflict

Liquidity moving towards Treasuries…
Distribution of daily market turnover, %

Investors moving away from them
Net mutual fund sales, $bn

Regulations moving one way; investors moving the other
Credit awash with inflows

Tourist influx?
Percentage growth in credit holdings since Sep09

Entrance with no exit?
US credit mutual fund assets vs dealer inventory ($bn, IG+HY)

Liquidity likely to prove a problem on the way out

Source: Federal Reserve, Haver Analytics.

ETFs

Small, but growing fast...
ETF outstandings vs underlying mkt size, %

...and vulnerable to any rush for the exit
US HY JNK ETF discount to net asset value, %

Source: ICI, Haver Analytics.
Source: Bloomberg.

Still small, but symptomatic of a broader issue
E-trading: phantom liquidity personified

Massive growth in electronic inquiry…
Number* of price inquiries on Market Axess by size, IG Corp, annual

…shame so much is in small sizes
$ volume of Market Axess inquiries by size*, IG Corp, $bn

Much volume, little depth

Source: Market Axess. 2013 data is annualized from 1H.
* Uses single dealer data thought to be representative of broad market.
Shifts in market structure

**Dominated by the Fed and foreigners**
Holders of US Treasuries, % outstandings

**Total return investors on the rise**
Holders of US Corporate bonds, % outstandings

Reduced heterogeneity
The impact of monetary policy (1)

Net issuance down from $4tn to $1tn
Net iss. of new securities minus central bank* interventions, 12m rolling, $tn

No one dares fight the Fed
US BIG Corporate spread (bp) vs Fed security holdings ($bn)

Not just increased demand – also reduced supply

Source: Haver Analytics. *: Federal Reserve, BoJ & ECB
Source: Federal Reserve.
The impact of monetary policy (2)

It also works in equities
S&P 500 vs Fed security holdings ($bn)

It even works week by week
Weekly Fed purchases vs associated market move in credit and equities, Jan09-Apr13

<table>
<thead>
<tr>
<th>Fed buying ($bn)</th>
<th>S&amp;P Chg pts</th>
<th>Chg %</th>
<th>US BIG Chg bp</th>
<th># Weeks</th>
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<td>&gt;5bn</td>
<td>570</td>
<td>54%</td>
<td>-401</td>
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<td>&lt;5bn</td>
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<td>&lt;0</td>
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<td>-2%</td>
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Source: Bloomberg, Haver Analytics.

Investors just following the Fed

Source: Haver Analytics.
Beware the potential for reversal

No longer following fundamentals
US IG credit spreads (bp) vs nonfin corp leverage (times)

June will happen again, and worse
Net flow into US credit mutual funds, % outstandings, 3m sum

Potential for sudden dislocations

Source: Federal Reserve Flow of Funds, Bloomberg.

Source: ICI, Haver Analytics.
Conclusion

Turnover up; liquidity not

Regulations creating ever greater constraints

What happens when policy and investor flows turn?

Liquidity significantly more challenged than has been visible to date