

# U.S. Corporate Bond Market Liquidity and Potential Financial Stability Consequences

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# FRAC Charge

- Assess vulnerabilities that may arise from a reduction in corporate bond market liquidity.
- Offer feedback on metrics to monitor liquidity in the corporate bond market.
- Provide recommendations on regulatory, market structure changes, or financial firm best practices.

# Is There Really an Issue with Reduced Market Liquidity?

- Fixed income markets are vastly different today than prior to the Global Financial Crisis.
- Many market participants believe that liquidity conditions have deteriorated dramatically – due to regulatory driven changes in market structure have impacted market depth and increasing the probability of “flash crash” type market moves.
- Fear exists that dealers do not stand ready to provide backstop market liquidity...
- ... Yet, many studies and indicators show limited signs of stress.

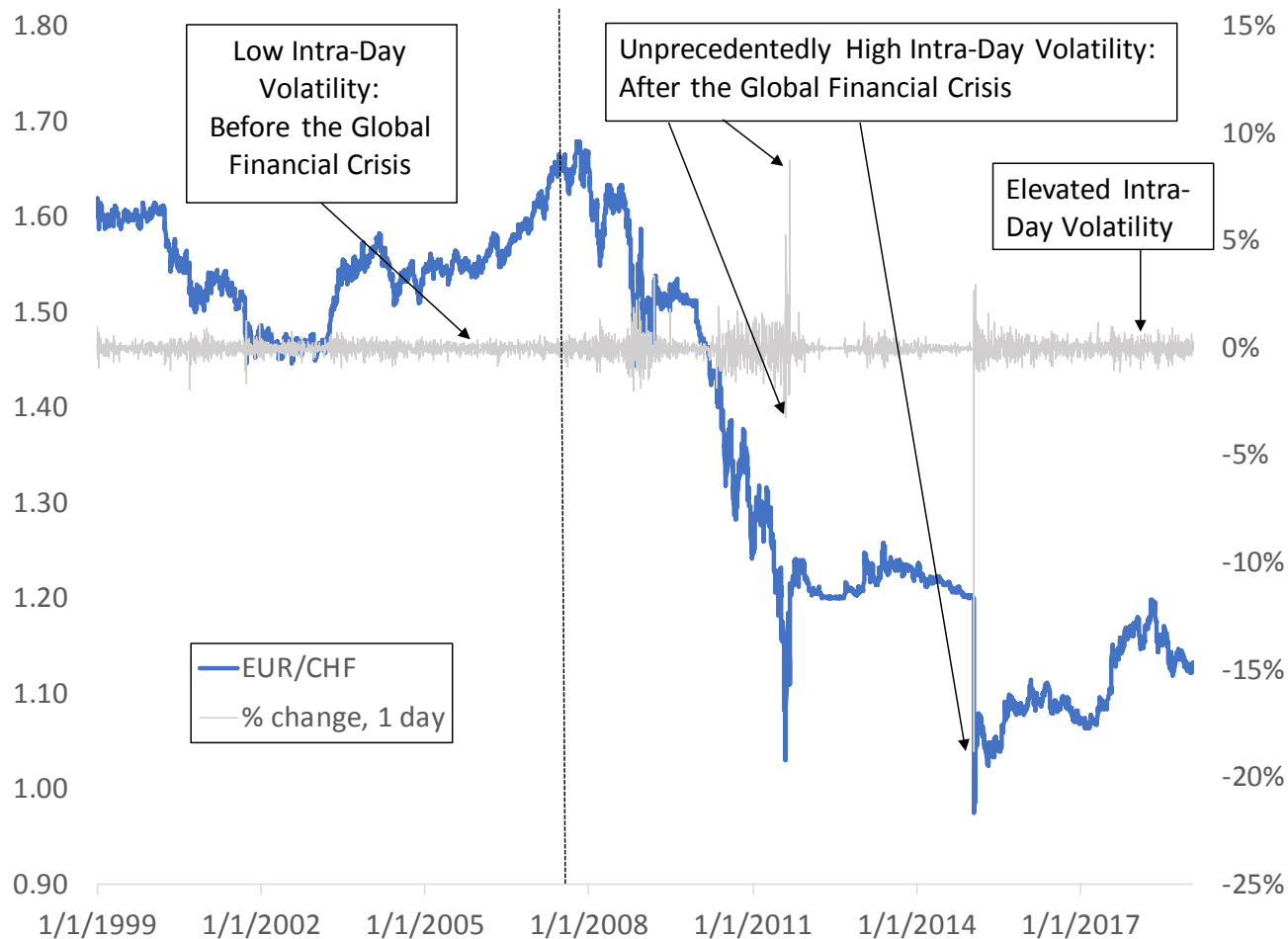
# Process

- Working Group activities.
- Survey of leading academics, asset managers, and broker dealers on a confidential basis.

# Should We Care if There is Reduced Market Liquidity?

- A backdrop characterized by reduced liquidity creates “jump risk” problems for markets – where periods of quiescence are followed by sharp disturbances.
- Market participants often don’t need liquidity...until they do. Terms such as “phantom liquidity” or “liquidity illusion” describe this phenomenon.
- Evidence suggest “jump risk” is increasingly prevalent in traditionally liquid as well as non liquid markets.
- Do these observations exist in the corporate bond market?

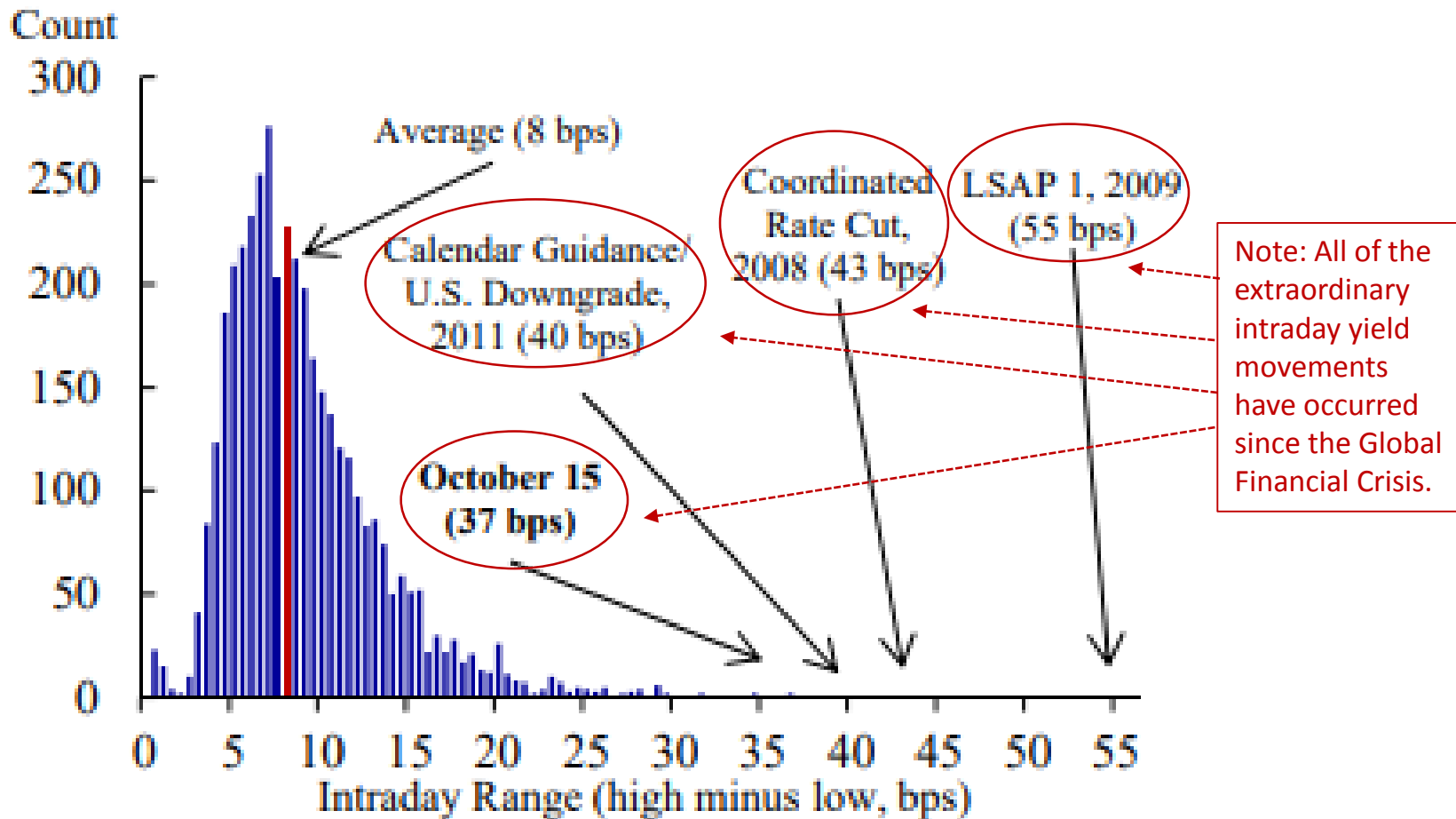
# Unprecedented Drop in the Euro vs the Swiss Franc



Source: Bloomberg LP.

*Another perspective is that there was not a hint of a systemic problem from the Swiss event. The market was stunned initially, but everything was fine.*

# U.S. Treasury 10-Year Flash Rally



Note: Daily Observations; 10/1998-10/2014

Source: Joint Staff Report: The U.S. Treasury Market on October 15, 2014 and Bloomberg LP.

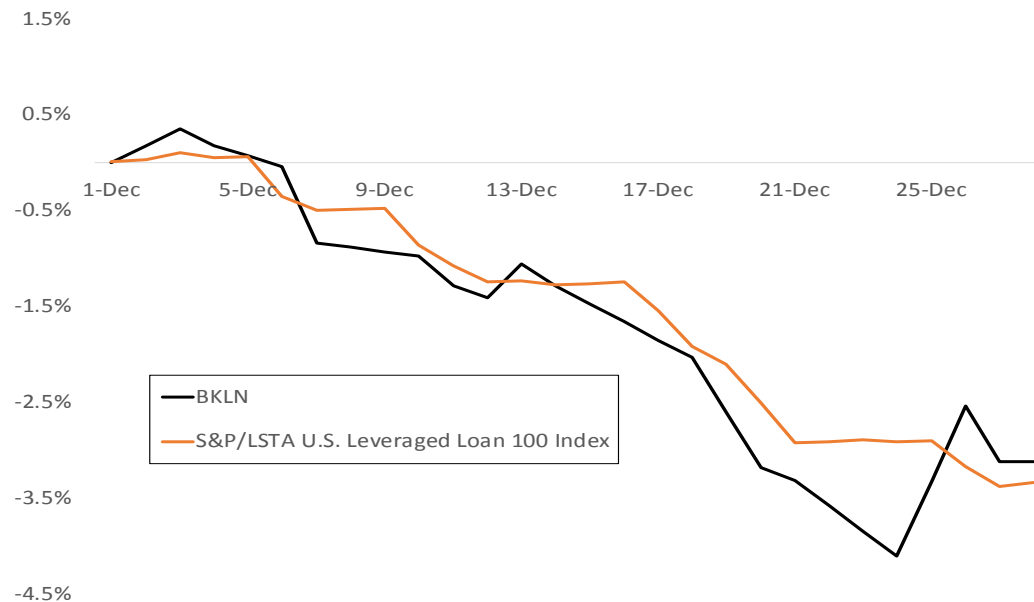


# Leveraged Senior Loan ETF - BKLN

## Divergent views on ETFs

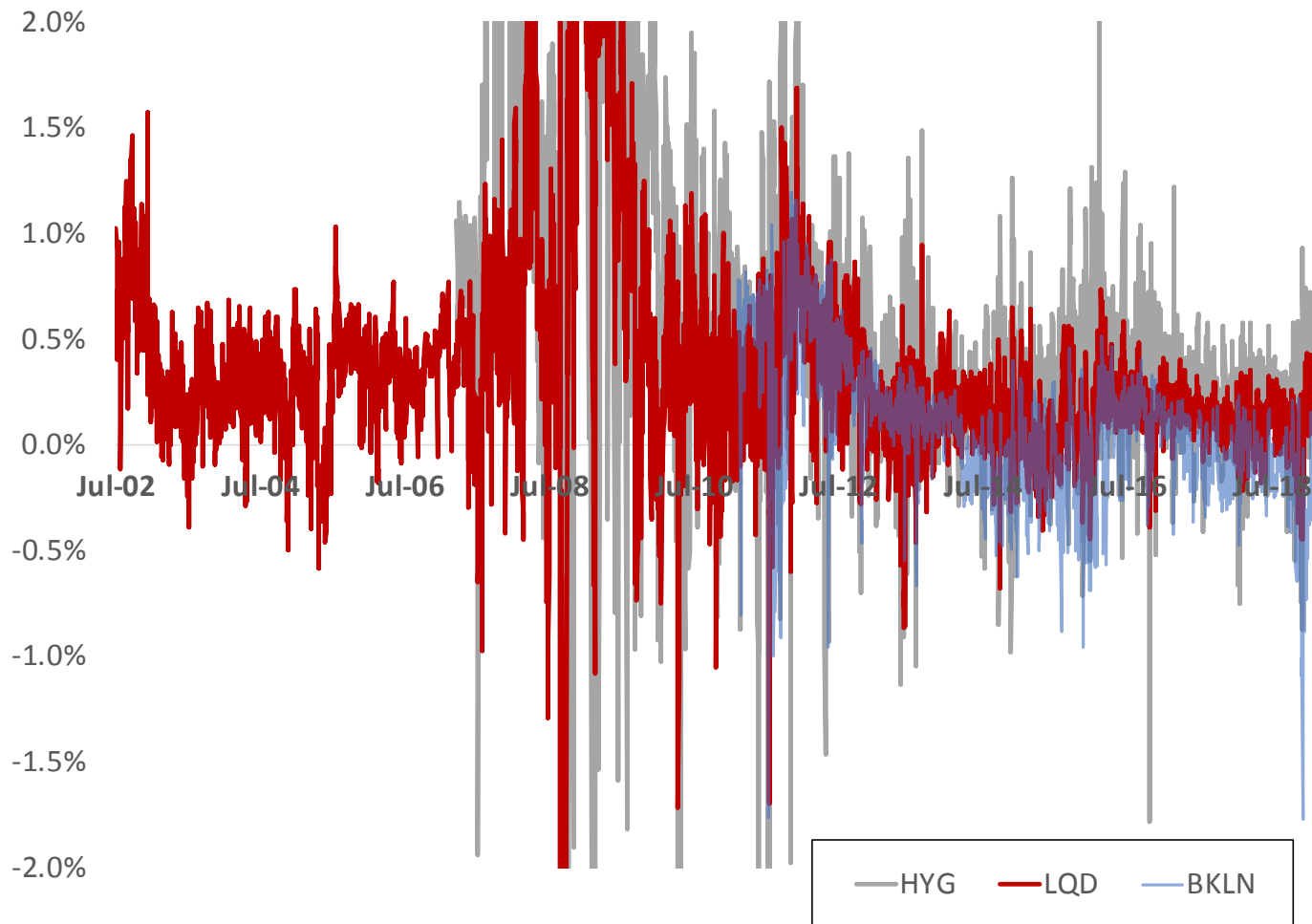
### Diverges from Index during Stress

- Some believe divergence is a sign of vulnerability that can trigger negative price gaps.
- Evidence to date is non-existent. Arbitrage is more difficult during stress, yet episodes have been short-lived.



Source: Bloomberg LP.

# Corporate Bond ETF Price / Net Asset Value (NAV)



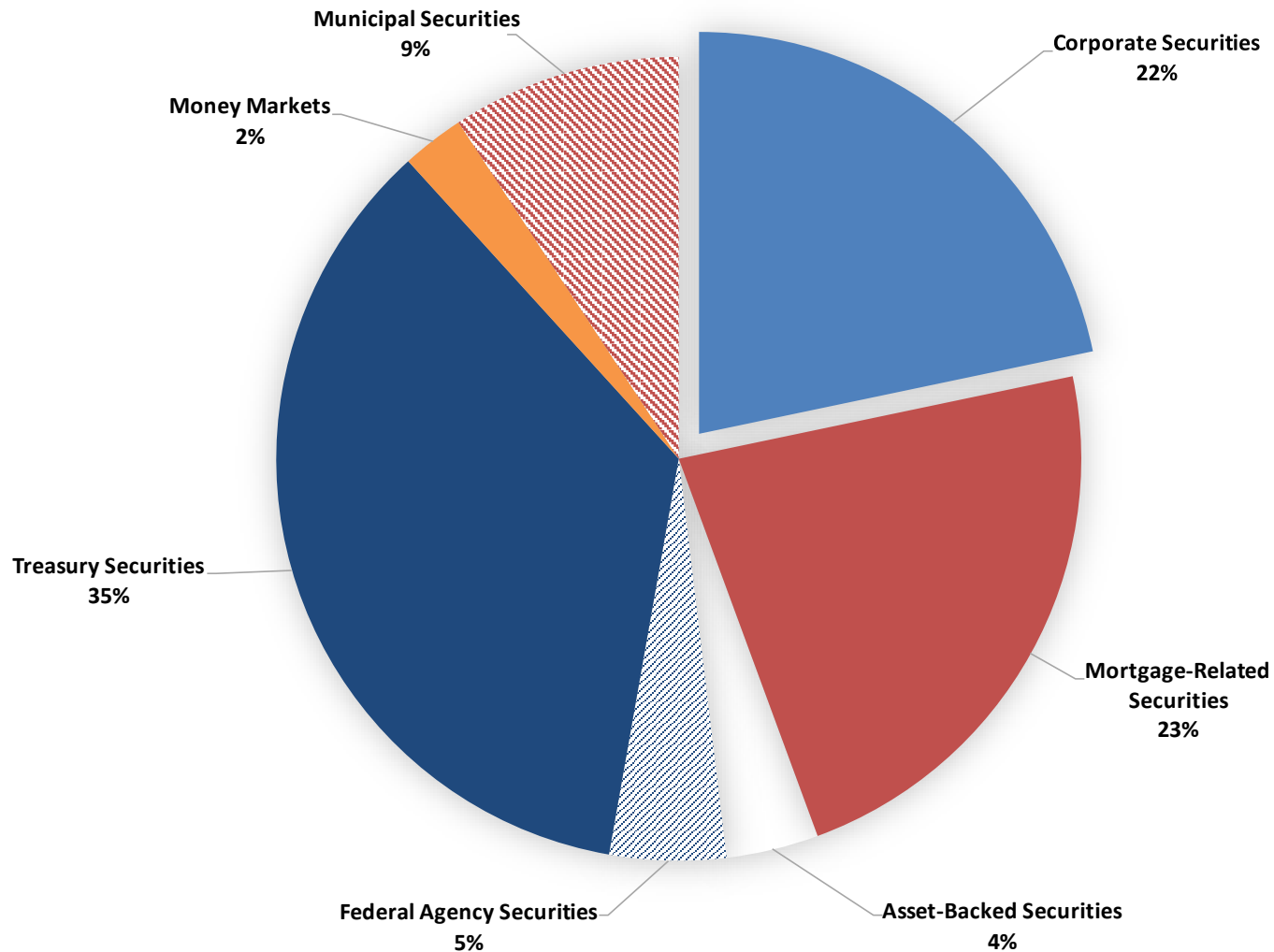
# Systemic Risk and Bond Market Liquidity

- Based on work by the IMF, FSB and BIS for the G20, systemic risk can be defined as

***"a risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy."***

- Illiquid bond market conditions could contribute to deepen or exacerbate a financial crisis – converting a serious event into a systemic crisis.

# Corporate bonds (\$9.1 tn) and the \$41.9 tn US Bond Market Size, Q2 2018



Source: SIFMA.

# Consider liquidity as any or a combination of:

- Time to complete a transaction at an indicated price (time to find buyer or seller) or extreme not at all,
- Cost to complete a transaction (both bid/ask spread and market impact),
- Depth of markets (number and size of transactions that can clear without creating a disruption),
- Breadth of markets (number or percent of CUSIPS with adequate liquidity to clear transactions),
- Consistency of liquidity (does liquidity depth diminish markedly in more volatile/uncertain periods?), and
- Other factors such as risk management of specific activities and guarantees that without such risk management could transmit systemic risk

# Drivers of Liquidity

*A wide range of factors stretching from central banks to regulatory to technology to market structure may diminish financial market liquidity.*

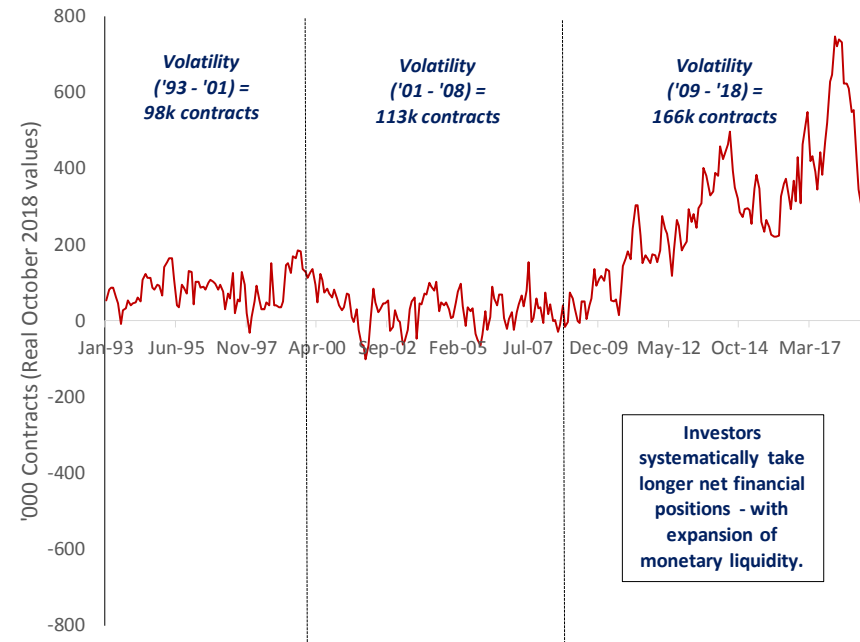
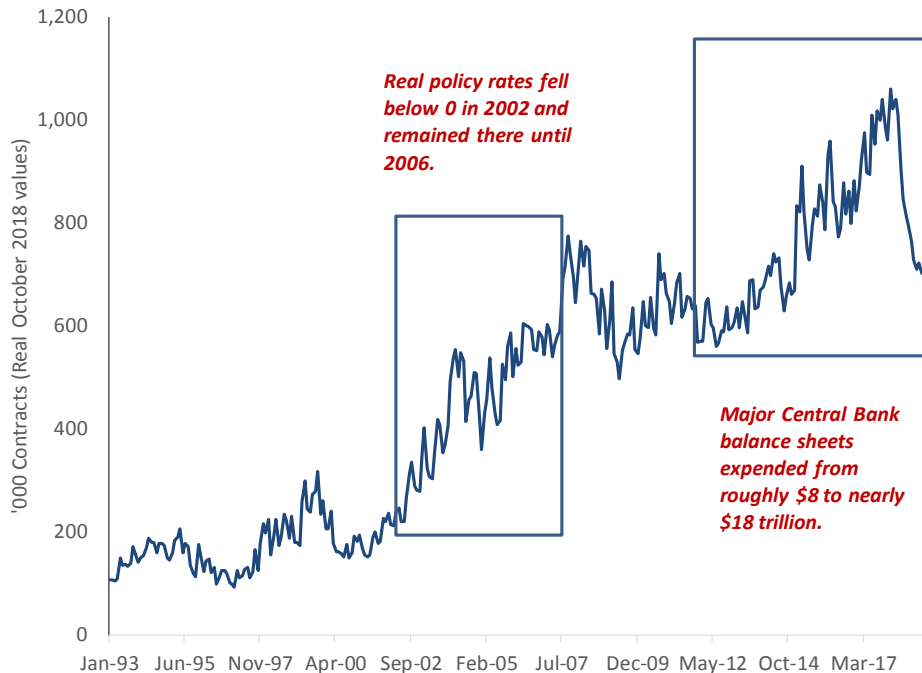
## ***Central Bank Policies***

- Extraordinarily expansionary central bank policies have provided plentiful monetary liquidity at the risk of creating a shortage of financial market liquidity – especially when monetary liquidity is reversed.
- Central bank interventions, forcing the policy interest rate below inflation, incents investors to chase higher-yielding alternatives – which are often riskier and less liquid.
- Skewed exposures mount over time and asset values become increasingly correlated.
- A minor disturbance can unleash a cascade in prices across multiple markets.

# Accommodative Monetary Policy spurs Speculative Investor Behavior

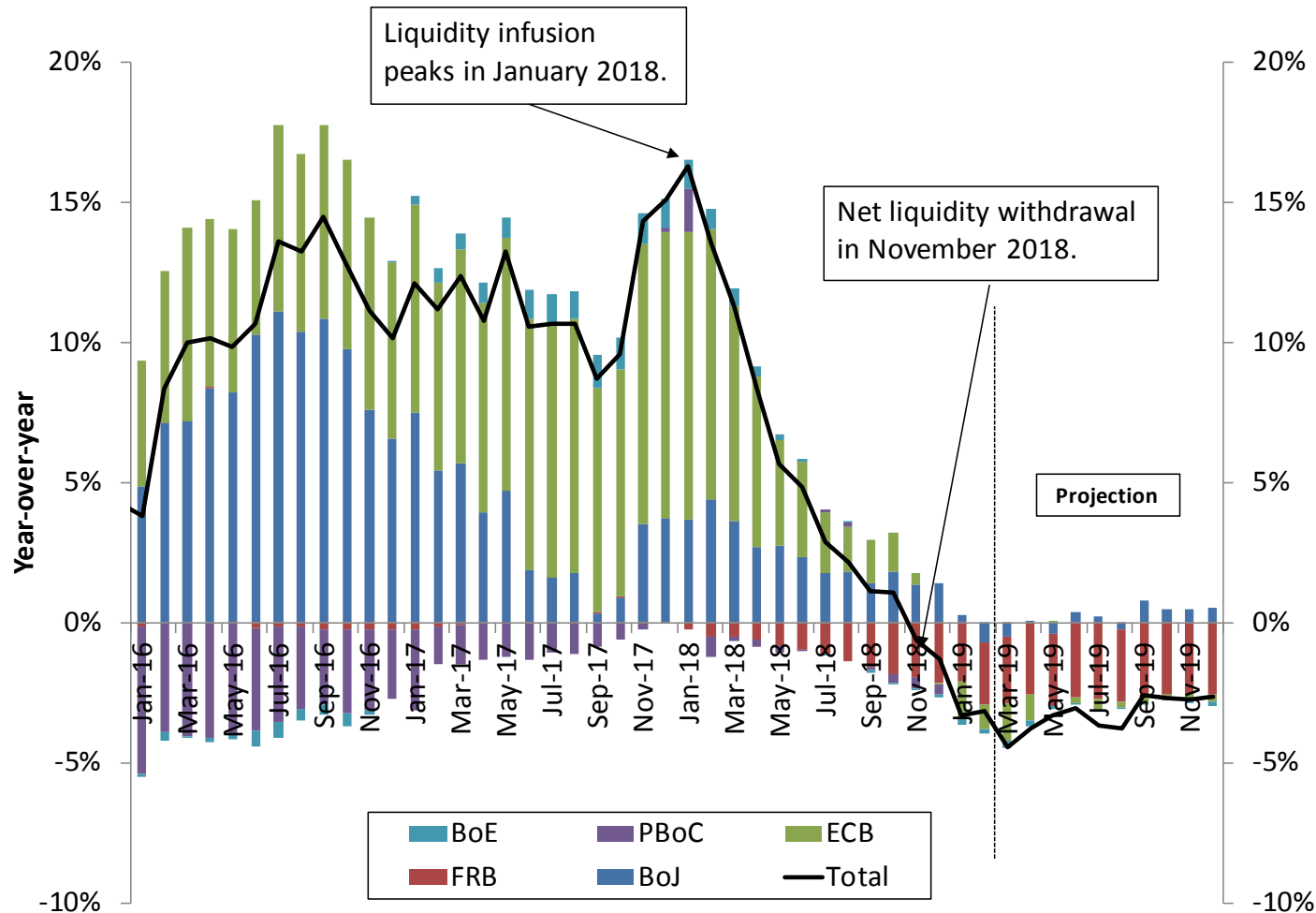
- Size of Speculative Markets Grow

- Net Positions become more crowded...**Herding**



Note: Includes futures positions in NYMEX crude, S&P 500 index, and Nikkei held by speculative investors.  
Source: CFTC, Bloomberg LP, and Center for Financial Stability.

# Global Central Bank Policy Influences Markets/ and Liquidity



Source: Federal Reserve Board, European Central Bank, Bank of Japan, People's Bank of China, Bank of England, and Center for Financial Stability.



# Drivers of Liquidity

## *Regulatory*

- Broad, coordinated post-crisis responses have affected liquidity (and resulted in correlated asset valuations) through regulatory as well as structural market changes that inhibit trading-related exposures and reduce market-making activities to limited positions and primarily when brokering between clients, not providing actual market liquidity
- Capital and leverage requirements, restricting banks' proprietary trading, raising the cost of warehousing assets, and moving the market to be more order-driven
- Stress testing definitions and tests have affected liquidity's definition, demand and cost

# Drivers of Liquidity

## *Developments in Technology*

- Electronic trading platforms (ETPs) and algorithmic traders have reduced trading costs, increased some transparency, and some allow buyer-to-buyer trading; nonetheless, most bond markets are still quote-driven.
- Bonds are different than stocks: Bonds even from the same issuer are diffuse, spread across many (sometimes hundreds or thousands of) CUSIPs, therefore making it rare that true buyers and sellers (rather than market makers) want to transact at the same time
- Transparency of market infrastructure discourages market-makers from large trades (extremely difficult to build in a price concessions when all market participants are immediately aware of market-maker's transaction prices)

# Drivers of Liquidity

**Market Structure** - *Despite increased transparency fostered by technology or required by regulations, corporate bond transactions aren't fully transparent*

- Bifurcation in liquidity may occur since some instruments are less standardized (bespoke characteristics, features and protections) and smaller issuance than “benchmarks”. Liquidity may be concentrated in index trading e.g. synthetics (IG, HY) and ETFs (HYG, BKLN, etc.) where trading is frequent and widely quoted. Securities outside of indexes or ETF baskets incur particular illiquidity.
- Quotes are indicative rather than real-time prices since dealers rarely stand ready to actually transact without first lining up both buyers and sellers.
- Quoted prices and spreads work for relatively small institutional size transactions and are not reflective of clearing levels for more meaningful size. Individual trades in bond markets tend to be of larger value (size) than in other markets since institutional investors hold large percentage of bonds.
- New market participants – hedge funds, regional market makers, and other independent market makers may add liquidity
- Short interest is limited by access to borrowing. For example, repo markets are thinner at least due to regulatory changes

# Stylized Market Facts Signal Risks

- Corporate fixed income liquidity is concentrated in index trading such as synthetics (IG, HY) and ETFs (HYG, BKLN, etc.).
- Corporate finance relies on the corporate loan market which is in turn dependent upon the CLO market.
- A shift in personnel among large dealers likely contributes to future risks. For instance, traders today have been trained as brokers rather than risk takers.

# Countervailing Views Suggests Risks are Overstated

*The level of debate surrounding the impact of shifts in market structure on liquidity is high. Uncertainty prevails in many instances.*

For example:

- Drivers of liquidity changed post-crisis with tremendous growth in bond mutual funds and ETFs replacing, in large part, the provision of liquidity previously supplied by broker-dealers.
- There cannot be much of a pervasive continuous liquidity issue with current, tight bond spreads.
- Some recent research suggests covenant-lite loans are a close substitute for bonds – motivating a shift in funding decisions by some corporations.

# Metrics to Monitor Liquidity

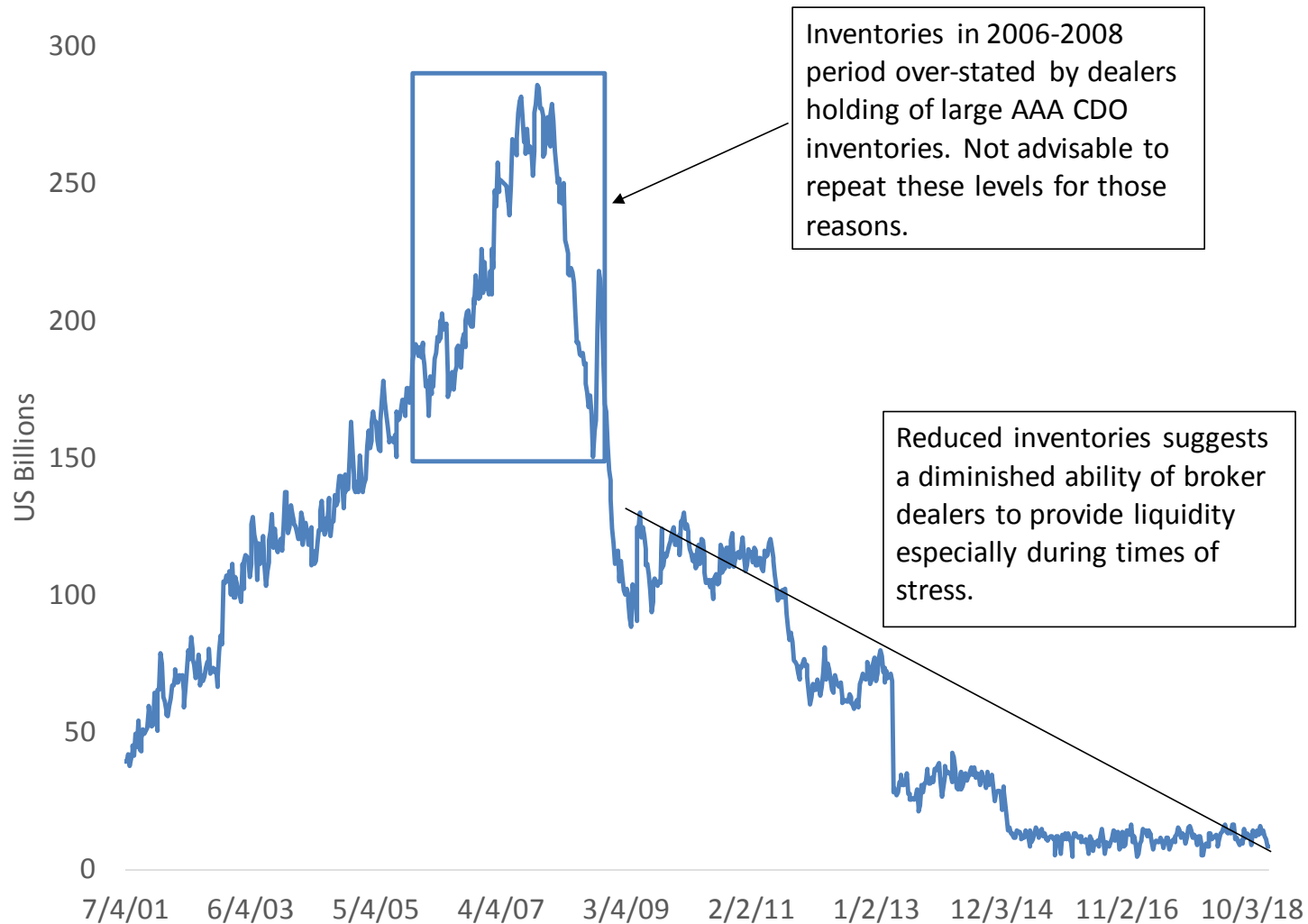
- A variety of traditional metrics exist to measure market liquidity.
- Which are actually best suited to highlight early warning signs of distress?
- Do the metrics change in response to underlying market conditions e.g. varying VIX level?
- What new metrics might add to the assessment of corporate bond market liquidity?

# Metrics to Monitor Liquidity

## *Traditional metrics include:*

- Broker dealer inventories.
- Bond turnover or trading ratio (annual trading volume / total debt outstanding).
- Corporate bond issuance.
- Total size of global bond funds.
- TRACE transactions.
- Bid / offer spreads.
- Best-to-cover level (difference between executed price and second-best dealer bid / offer).
- On-the-run versus off-the-run yield differentials.
- Evis ratio = # mkt participants / # of securities traded.

# Broker Dealer, Net Inventories of Corporate Securities



Inventories in 2006-2008 period over-stated by dealers holding of large AAA CDO inventories. Not advisable to repeat these levels for those reasons.

Reduced inventories suggests a diminished ability of broker dealers to provide liquidity especially during times of stress.

*Although the extend that dealers would add liquidity during crises is questionable, inventories are spread across many more issues.*

Source: NY Fed (pre 2013 Total Net Corp Positions; post 2013 CP, High Grade, High Yield Net Positions)



# The Dealer Inventory Debate

## Low inventories are:

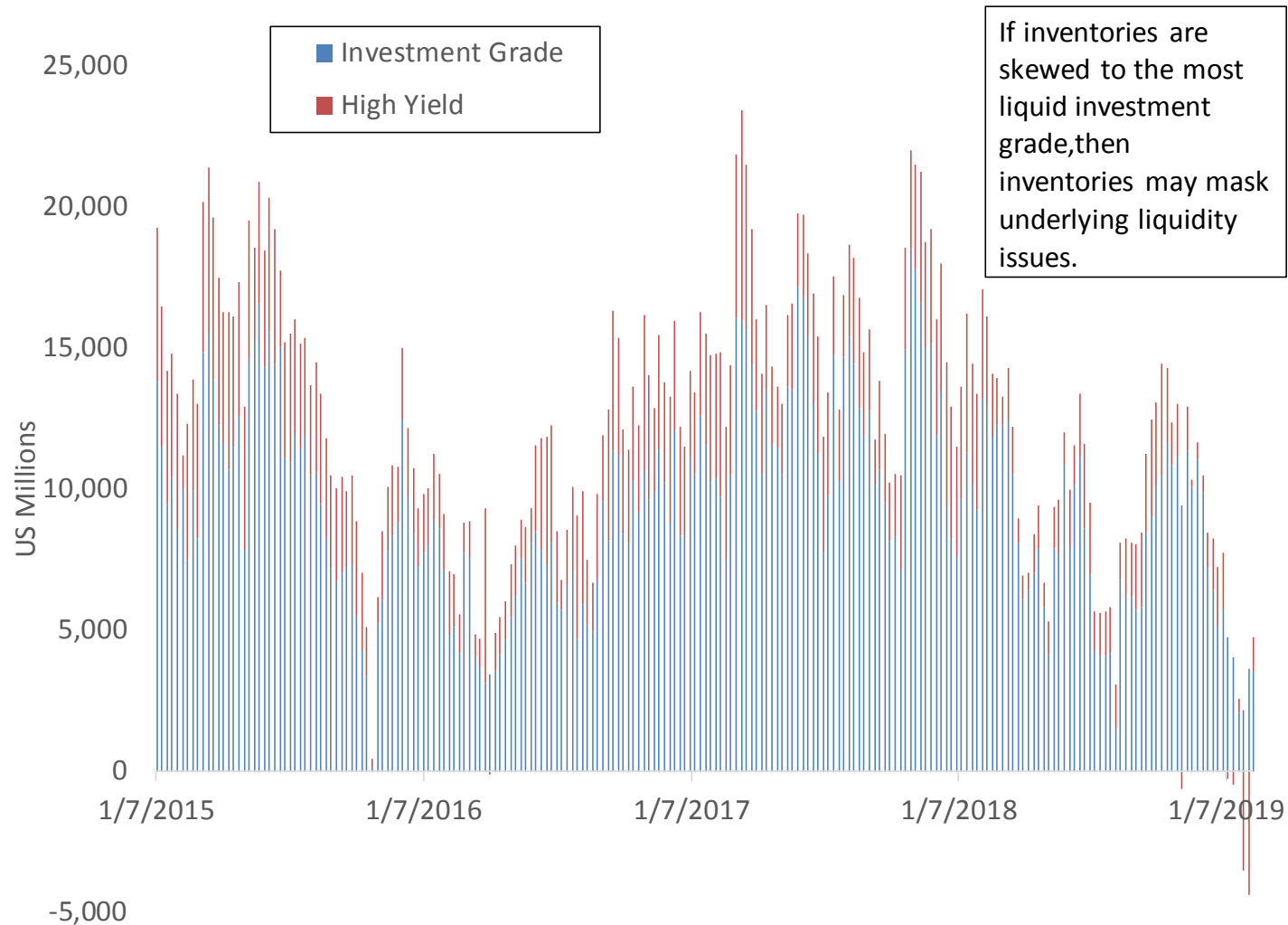
### Not a problem:

- ETFs and index funds are replacing lost dealer inventory.
- There are systemic risk benefits from having broker-dealers with smaller balance sheets.
- With low inventories, there is more capacity to buy during times of stress.
- So, the problem is not the inventories, but the economics of holding inventory.

### A big problem:

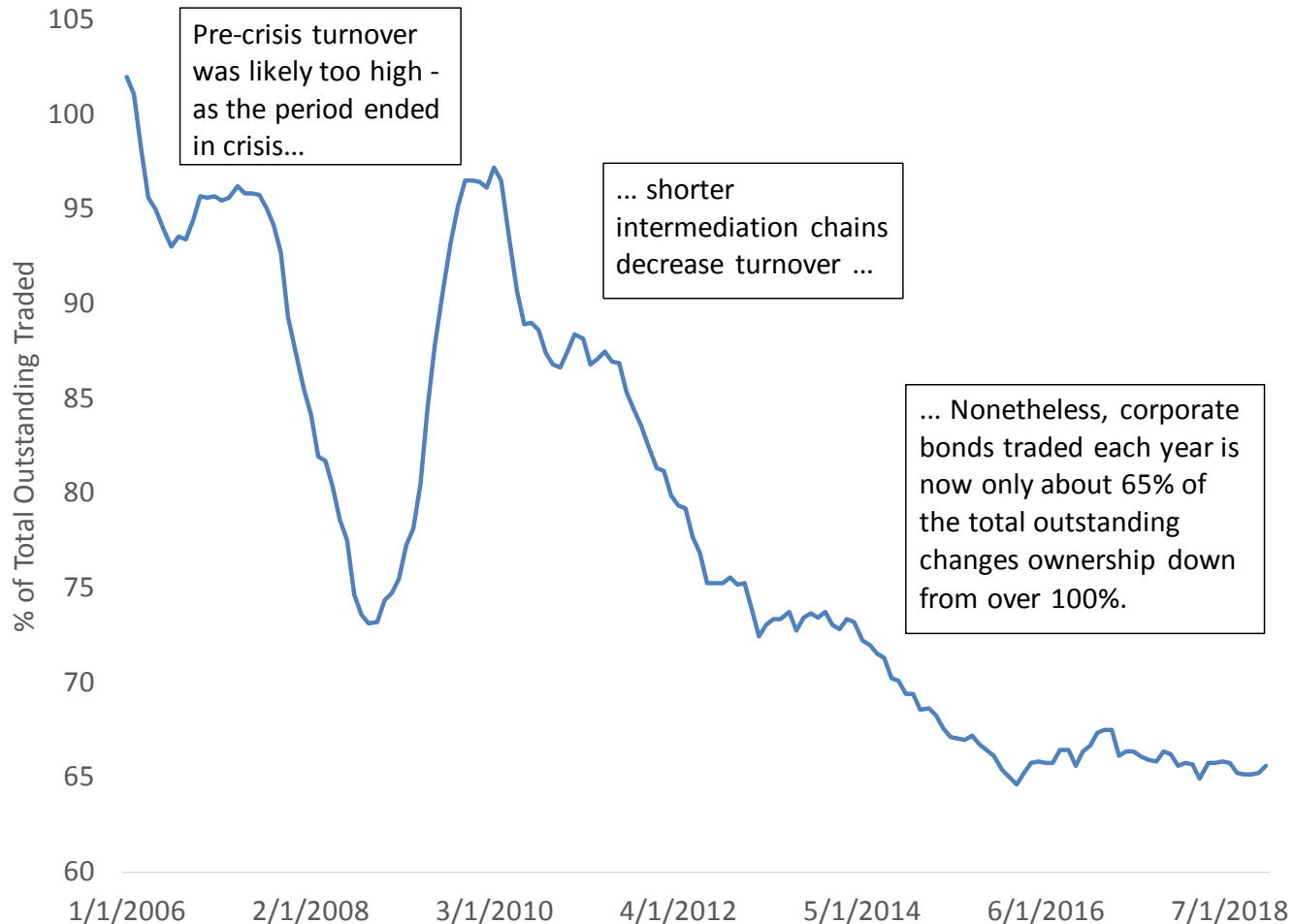
- Reduced inventories diminish the ability of broker dealers to provide liquidity especially during times of stress.
- The drop in dealer inventories is even more notable when contrasted with the substantial growth in the size of the corporate bond market.
- Arguments that reduced dealer balance sheets are "making space" for liquidity provision in strained periods are not consistent with actual dealer behavior.
- Dealers carefully manage balance sheet size to pass a battery of regulatory tests including GSIB, CCAR, SLR, LCR etc.

# Inventories of Corporate Securities by Investment Grade and High Yield



Source: Federal Reserve Bank of New York and Bloomberg.

# Investment Grade Bond Turnover or trading ratio

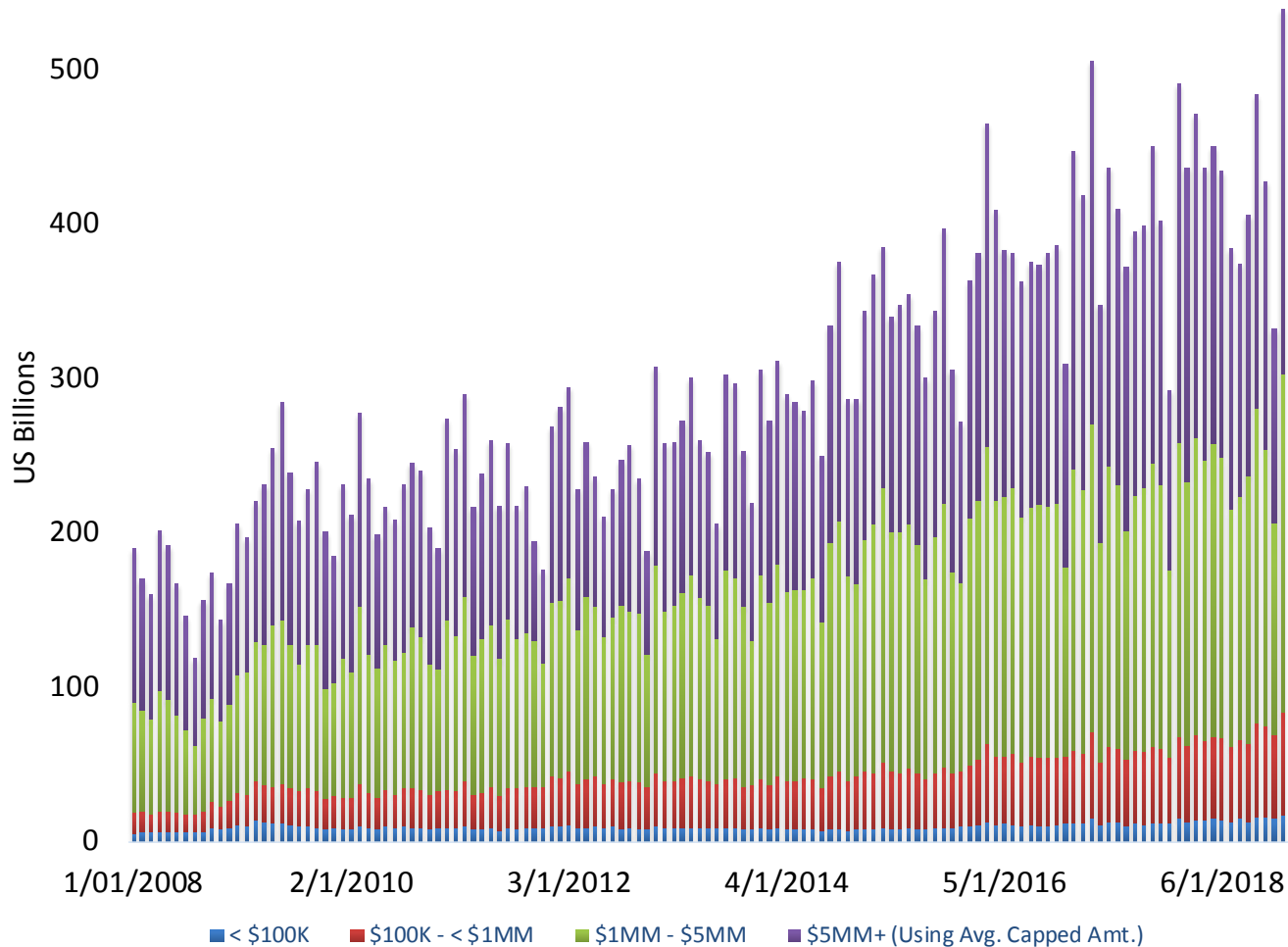


Note: annual trading volume / total debt outstanding  
Source: TRACE via Market Axess

# Market Depth

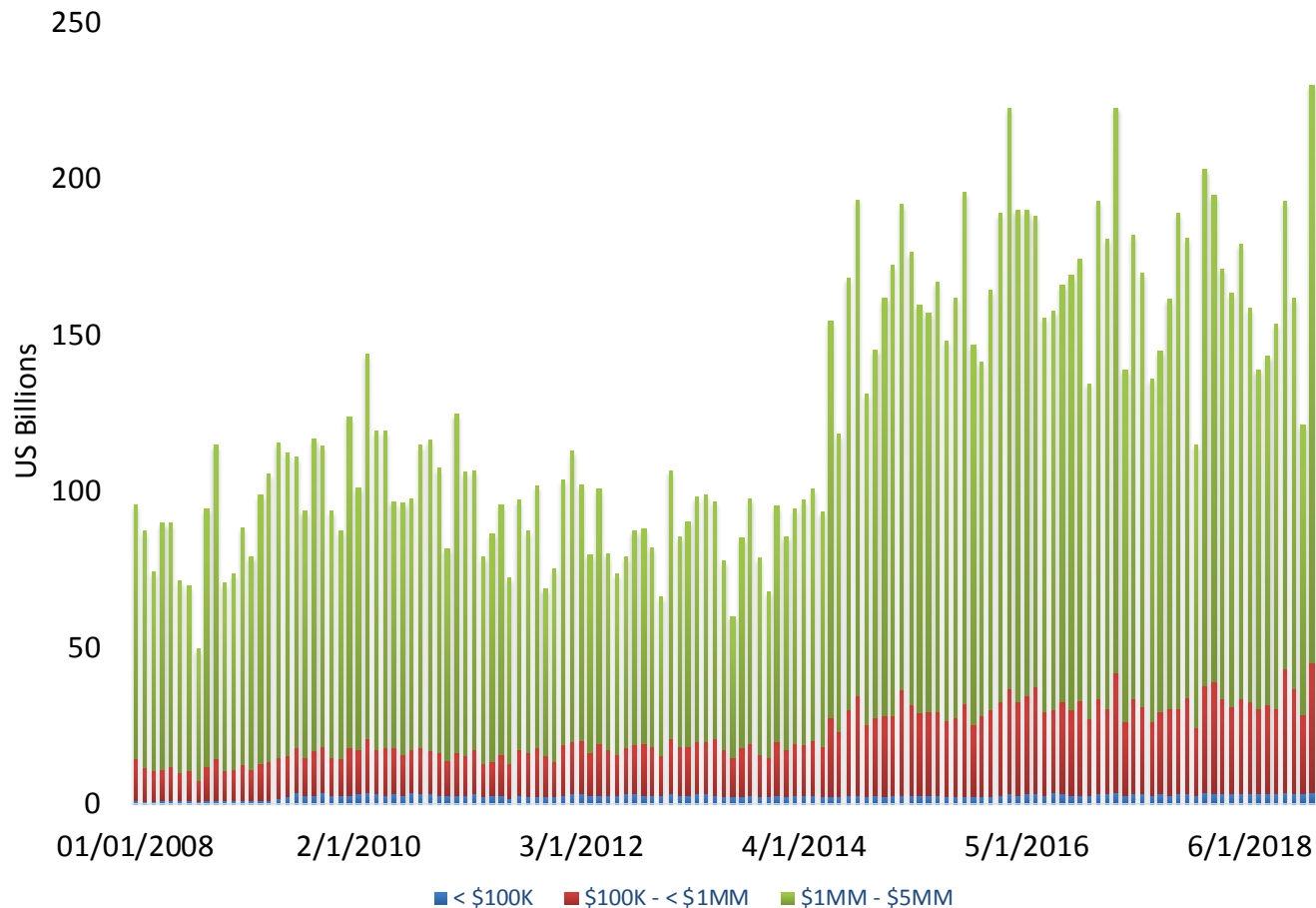
- Many firms raise concerns mostly about trades done in the largest pieces and a lack of liquidity there.
- History has shown that trading in transparent markets is very different than trading in opaque markets.
- In corporate bond markets, the largest trades are generally done in pieces over time.
- Price transparency appears to have provided better information on the fair market value of a trade, but it has made it harder to get the largest trades done.

# Investment Grade Corporate Bond Trading Volumes, \$ billions



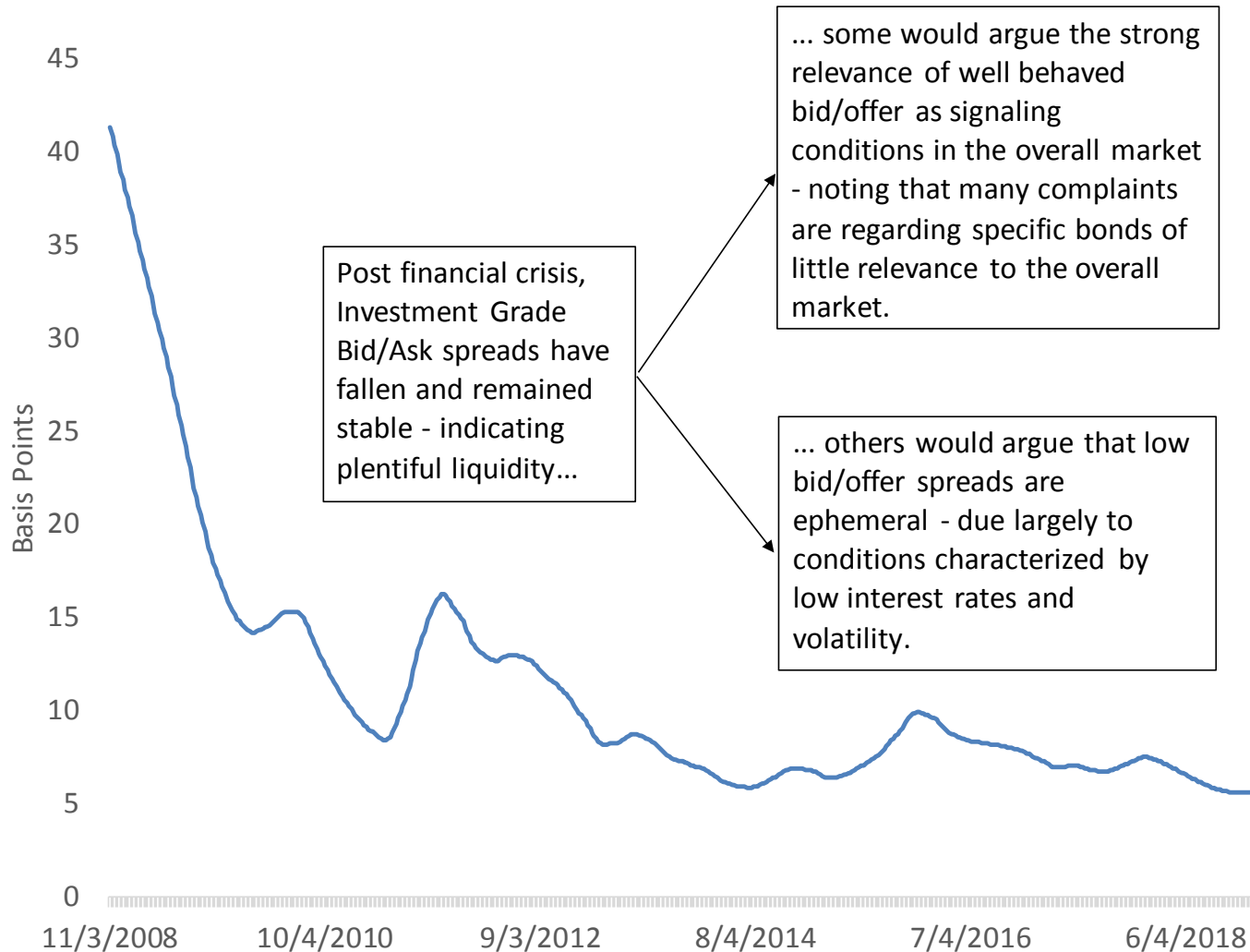
Source: TRACE via Market Axess

# High Yield Corporate Bond Trading Volumes, \$ billions



Source: TRACE via Market Axess

# Bid / Offer spreads on Investment Grade Corporate Bonds



# Conclusions and Recommendations

## Conclusions:

- Strongly differentiated opinions exist among knowledgeable observers and participants e.g. academics, broker dealers, hedge funds, asset managers, ETF originators, etc., regarding the absence or presence of liquidity issues.
- Meaningful shifts in market structure alter and limit sources of liquidity.
- The move from “principal” markets – where dealers hold large inventories – to “agency” markets – where transactions are brokered has enormous implications for liquidity.
- Broker dealer inventories are substantially reduced – limiting the traditional role of banks to step in as liquidity providers and modulate fluctuations.
- Electronic trading is viewed as a source of weakness with high frequency trading creating a “liquidity illusion,” but also a potential source of strength for “all to all” and “peer-to-peer” transaction capabilities. The advent of technology to gather and disseminate information on markets quickly to all participants provides a strong foundation for markets today.
- ETFs have clearly been liquidity enhancers under present market conditions. Debate rages whether ETFs will be a key source of liquidity during more volatile market conditions or a source of illiquidity and market stress.



# Conclusions and Recommendations

## Policy Issues:

- The European Central Bank (ECB) and other official entities are exploring whether investment funds may be creating market liquidity risks.
- Our assessment suggests that 1) funds are different from banks; 2) liquidity examined focuses largely on specific fund liquidity rather than liquidity in the financial system; and 3) many investment managers stress test their own funds and take liquidity into consideration. SEC Rule 22e-4 has helped.
- Preliminary evidence suggests macro-prudential measures would likely be ineffective and costly.
- To the extent funds pose risk, funds that provide T+1 liquidity in underlying assets may be more vulnerable to price swings under stressed market conditions.

# Recommendations for OFR and FSOC

- **Regulatory Study:** Create an event study evaluating the potential impact of regulatory measures e.g. GSIB, CCAR, SLR, LCR etc. on liquidity. It is ironic that these macroprudential stress tests are at times the source of specific significant market disruptions.
- Inventory all of the rules (e.g. capital, liquidity, clearing, margin) on the cost of a holding to determine if the integrative regulatory impact reflects risk
- **Electronic Trading:** Carefully monitor electronic trading. Platforms that allow more participants are generally preferred. But perceived liquidity provided by non-committed liquidity providers (e.g. hedge funds, HFT, etc.) should be discounted especially in stress scenarios.
- **Exchange Traded Funds (ETFs):** ETFs should be evaluated both on the basis of the ETF liquidity, and the liquidity of the underlying assets. Measurements should be recorded and monitored of recurring significant deviations from reported NAV. Examine how ETFs might perform in a crisis where there is less liquidity.
- **Corporate Loan Obligations (CLOs):** Liquidity in the corporate loan market has become increasingly reliant on the CLO market. Measures of CLO liquidity, investor breadth, etc. should be monitored across the capital stack.

# Recommendations for OFR and FSOC

- **TRACE:** More analysis on TRACE data in a more systematic way
- A great deal of data is collected but not analyzed in a way that provides a foundation for policy making - look at activity levels in bonds versus total outstanding or the number of holders for a particular bond.
- TRACE could work to catch more detail in the reported counterparties; evaluate the granularity of bond inventory data; think through exactly what questions the data should address in an analytic way.
- Possibly create a group of market participants to address these issues.

# Conclusions

- ***The Bottom Line:*** Financial market crises will remain an on-going challenge for officials and investors.
- Structural shifts are altering the availability of liquidity in the corporate bond market.
- The market for corporate bonds is unlikely to ever be as liquid or contain as much information as its equity counterpart.
- Yet, measures and further study can help mitigate risks.

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