

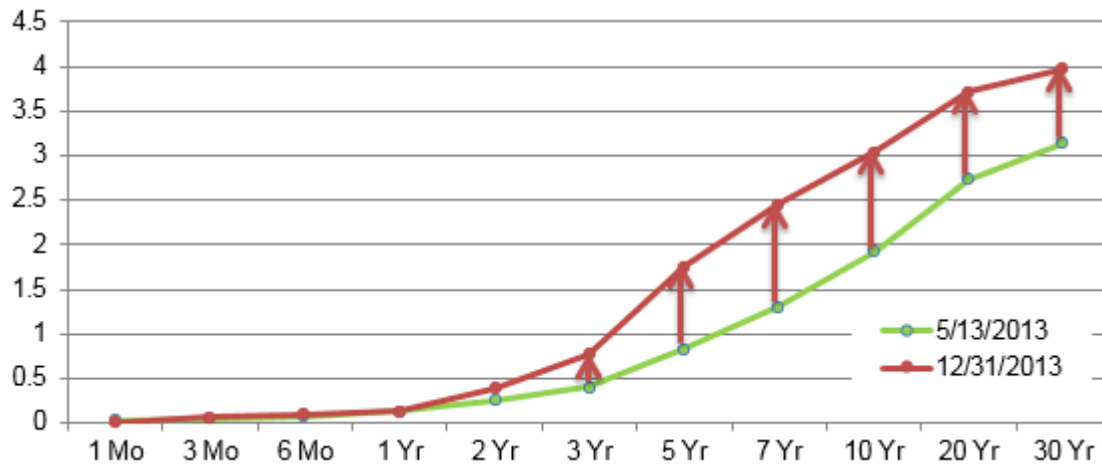
Secondary market for corporate bond markets liquidity in 2014

Scott Weiner | Payden & Rygel | 10 February 2015

The beginning of the so-called "Taper Tantrum" has been pinned to the May 2013 Wall Street Journal article by Jon Hilsenrath that opened up discussion of the Fed's plan to exit its bond buying program.¹ Confirming investors' concerns was the subsequent testimony of the then Federal Reserve Chairman Ben Bernanke before Congress that same month. During the session before the Joint Economic Committee, Bernanke stated that the Fed would taper its purchases of bonds under quantitative easing over a period of time, but that the process would not be necessarily predictable and steady; the purpose of this non-mechanistic or automatic end of the program was to have markets experience uncertainty and not become too complacent or sure of the Fed's policy.²

On this final count, Bernanke succeeded tremendously. An earlier than expected exit from quantitative easing caught the markets off guard, triggering a series of dramatic selloffs during the second half of 2013. Interest rates rose dramatically, particularly in the long end. With this came the corresponding increase in bond yields, with emerging market yields undergoing the most significant changes. Previously suppressed by an intensifying reach for yield in the low interest rate environment, the news that cheap liquidity may be coming to an early end caused many emerging market bonds to look less attractive compared to the absolute risk of such investments given their tight spreads. Seeing the significant backlash both in the bond market and the stock market (which dropped over 4% in 3 days following Bernanke's June reaffirmation of a tapering of quantitative easing)³, the Fed tempered its hawkish position, holding off on winding down bond buying until January 2014. Additionally, the Fed has been forthcoming with its observations and decision-making so far in 2014 with the introduction of more thorough guidance to the markets.

Figure 1: Rising treasury yields during taper tantrum



Source: Treasury

The dramatic price reaction of the bond market, though worrying in its magnitude, belied a more subtle but just as troubling lack of liquidity. The term liquidity can take on many different meanings in varying contexts. For the secondary corporate bond market, the US Treasury laid out four key components to liquidity.⁴

- Tightness– The bid-ask spreads, or the gap between willing prices for transaction
- Depth/Availability– Size of transaction absorbable without affecting price, and overall supply
- Immediacy – The speed a trade order can be fulfilled
- Resiliency– Ease with which prices return to normal

Put succinctly, liquidity refers to the ability for buyers and sellers to transact quickly, in volume, with minimal price impact and little price differential between the two sides of the market. The Treasury also notes that a market requires five “ingredients” that foster liquidity:

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

By examining each liquidity component as they currently stand, then analyzing recent regulatory and macro developments, we can draw conclusions about what may be impairing

liquidity, especially when it is most needed, and what Payden and its investors can do and expect in this new time.

1. LIQUIDITY AS IT STANDS

1.1 Bid-ask offer spreads

The first component of liquidity is the bid ask spread, which simply refers to the separation between the lowest price sellers are willing to sell at and the highest price at which buyers are willing to buy. MarketAxess releases an average Bid-Ask spread index, that tracks the bid-ask spreads of a bucket of high quality corporate bonds using data published by FINRA TRACE, the public information system on trade data, as well as MarketAxess's own proprietary data.⁵ Figures 2 and 3 below demonstrate the trend of decreasing spreads since the 2008 financial crisis brought trading to a halt. Since then, periodic increases, notably in mid-2013, have punctuated periods of significant bid-ask spread tightening. 1-week averages of all investment grade corporate bond spreads (estimated by looking at the differential between dealer's purchase and selling price of securities) compiled by the Federal Reserve suggest a similar decrease in spread, but also reveals many short term spikes that correspond to periodic sell-offs such as the second half of 2013.⁶ Though these spreads may be tighter on an average day today than an average day in 2008, the concern remains that the separation between buyers and sellers could peak right when liquidity is most needed.

Figure 2: High-grade Bid-Ask Spread Index (BASI)TM/CBOE Volatility Index[®]/S&P 500[®] Index (^GSPC)

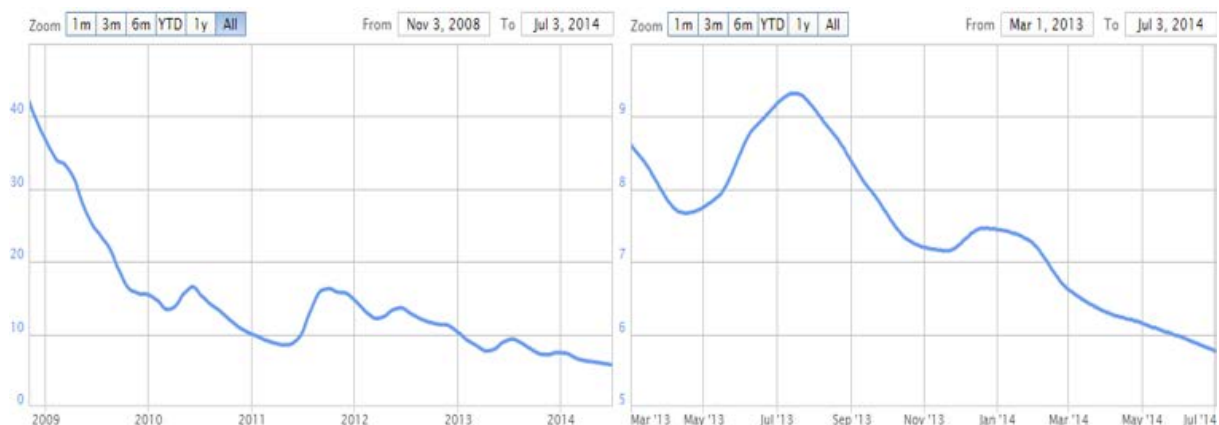


Figure 3: IG corporate bond bid-ask spread (% of bond price)

(1 week rolling average)

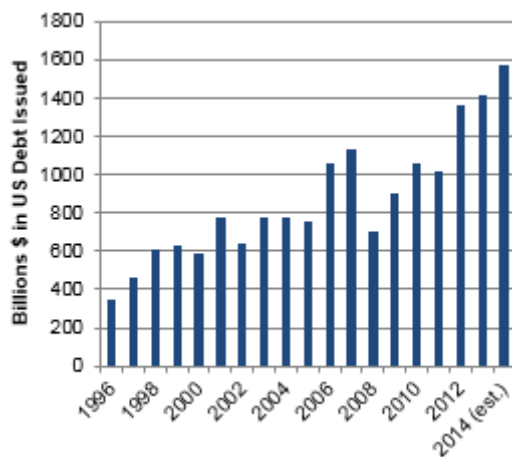


Sources: MarketAxess, Federal Reserve

1.2. Availability/depth

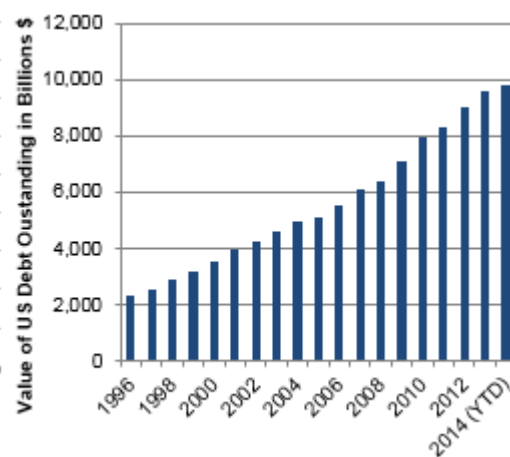
The primary market of corporate debt, where bonds are initially offered onto the market, has experienced tremendous growth over the past few years. Based on data gathered by SIFMA, both the amount of corporate debt issued annually has increased, as has the total base of corporate debt outstanding that could potentially be traded on the secondary market.⁷

Figure 4: Corporate debt issuance



Source: SIFMA

Figure 5: US corporate debt outstanding

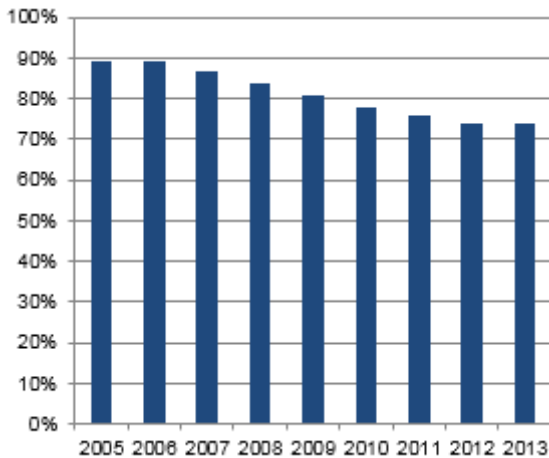


Source: SIFMA

However, this explosion in supply has not created depth within the secondary market. FINRA TRACE data compiled by the Treasury demonstrates that even though bond supplies

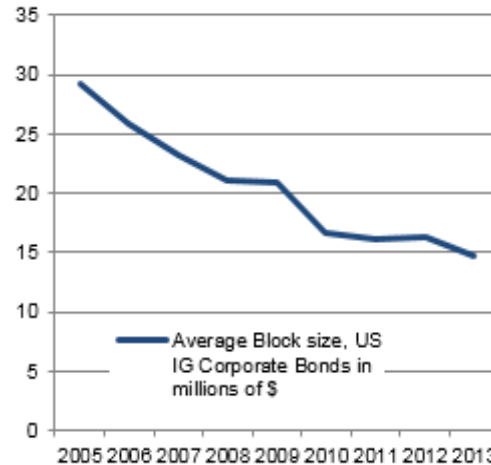
increase, the average size of trading blocks has shrunk by nearly half since 2005, and that fewer large trades are being made.⁸

Figure 6: Proportion trades larger than \$5 million



Source: Treasury Presentation to the TBAC

Figure 7: Corporate bond repurchase agreement (REPO) fails

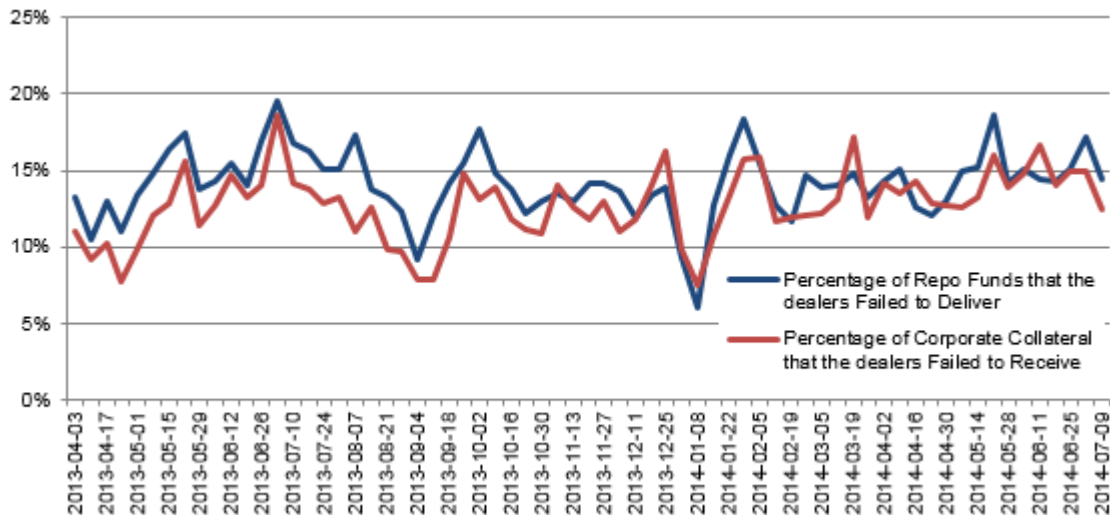


Source: Treasury Presentation to the TBAC

Another important view of liquidity depth considers the repo market. In the repo market, large securities holders can lend desired securities to counterparties for a specific rate, much like a collateralized loan. These transactions can either occur directly between the collateral provider and cash investor, and through a third party such as a bank. Tri-repo is dominated by general collateral repos, which is rather formalized, with collateral posted to a clearing fund, general asset classes that allow many types of securities of different issues to be used equivalently as collateral (corporate bonds not being one of the eligible collateral classes), and the Fixed Income Clearing Corporation acting as the third party to all transactions. Bilateral transactions are all negotiated by both sides (often including banks and hedge funds) and allow for a wider array of trades, including corporates.

When one party is unable to hold its end of a repo transaction, the deal fails, and the total amount of fails is tracked by the Federal Reserve. Significant spikes in repo fails can suggest poor liquidity as investors seeking to obtain funding are not receiving their funds, while the bonds that were being collateralized are not delivered because they couldn't be obtained. Thus, a high "failure to deliver" rate would suggest poor corporate bond liquidity.

Figure 8: Dealer books



Source: New York Fed Dealer Books.

By examining bank transactions in the repo market, we see that in bond sell-offs when we would expect worse liquidity, such as the taper tantrum, especially in the initial portions of the shock. We see this occur in May and June 2013, where the highest peak in repo fails occurs. However, also note that repo fails tend to be very volatile and that there are no significant trends over the past year that can be parsed out. Though regulation has many concerned about the ability of dealers to provide liquidity with government bonds⁹, it's not clear from the data there has been much impact on corporate bond repo.

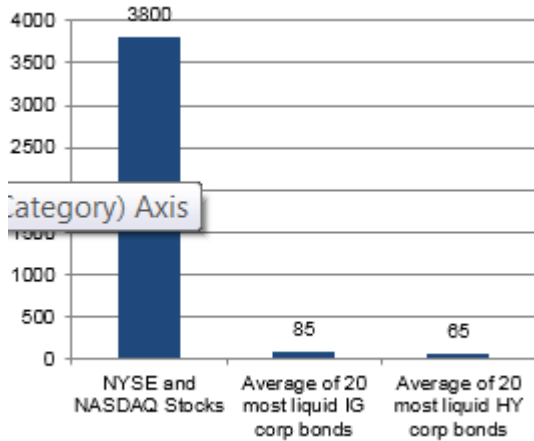
1.3 Immediacy

The next key component to liquidity is the ability to quickly trade bonds; a liquid market means a trade at a desired price should be executable rapidly. To get a sense of the immediacy of the market, one can compare the frequency with which bonds are traded, and compare this to the number of trades made daily for equities.

It is unrealistic to expect turnover for corporate bonds to ever reach equity-like levels. Firstly, while there are around 5000 US equity listings, there are over 37,000 publicly traded, TRACE tracked bonds. Additionally, while the US equity markets have a total capitalization of \$18.7 trillion¹⁰, while overall outstanding corporate debt issuance is just under \$10 trillion, with around \$1.6 trillion of that being issued in the past year.¹¹ Bonds also trade over the counter, so an exchange infrastructure would have to be built to support stock-like trading. Furthermore, a firm can have many issues of debt, but rarely multiple classes of stock, which further complicates trading and discourages less sophisticated investors from participating in corporate debt. For those who do participate, the low turnover means trades are much

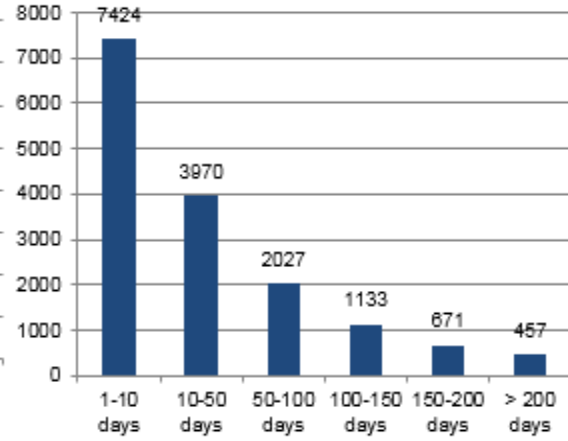
larger and far less frequent than in equities, and thus liquidity risk becomes a critical concern.

Figure 9: Average trading frequency per asset class



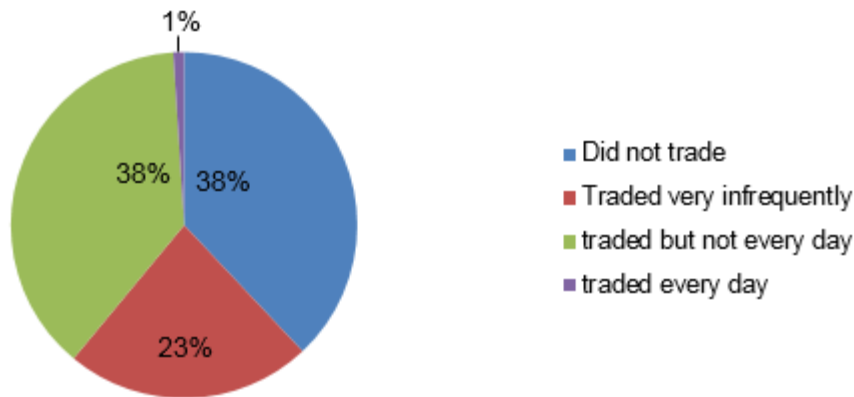
Source: McKinsey & Company

Figure 10: Number of days a bond was traded (2009)



Source: McKinsey & Company

Figure 11: 2012 trading activity of corporate bonds



Source: Oliver Wyman

The data show a large disparity in the trading frequency of stocks versus corporate bonds. While the average stock has around 3800 trades every day, a sample of the most liquid corporate bonds average 1/50th the number of transactions.¹² Additionally, a significantly portion of bonds do not trade very frequently at all. Almost half of all bonds traded in 2009 traded fewer than 10 days of the year.¹³

Examining TRACE records from 2012 reveals that over half of all corporate bonds either did not trade or only traded for a handful of times throughout the year. The secondary corporate market does not seem to have the ambient activity that a liquid market would expect, with

those needing to sell its bonds not being able to very quickly as there are relatively few participants looking to trade on an average issue.

1.4 Resiliency

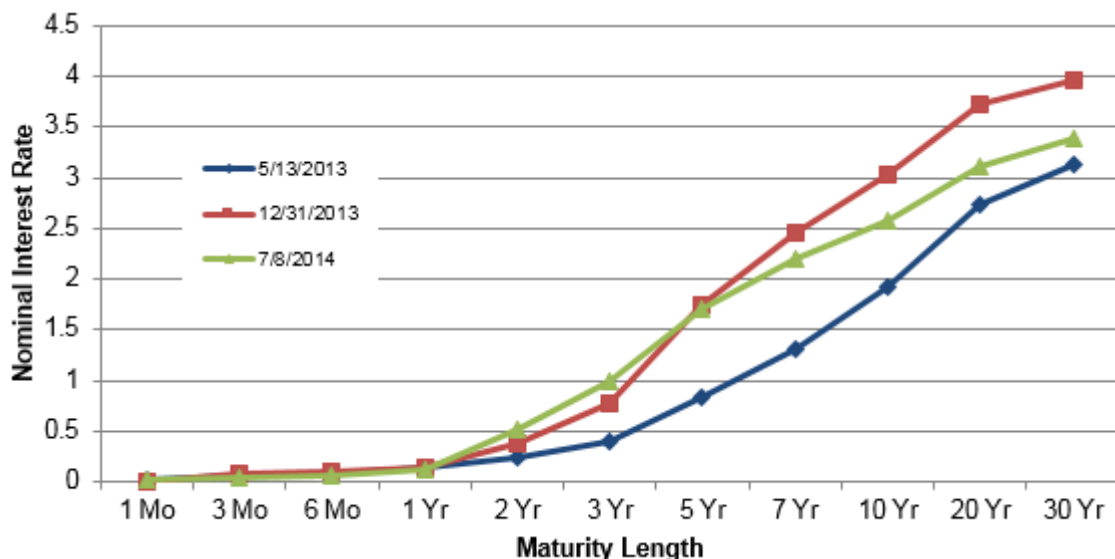
This final axis of liquidity is difficult to measure directly, and there are no obvious proxies. The decrease in average block size may reflect a similar decreased ability of trades to be executed without impacting price. General sentiment seems negative on this component, though it remains hard to quantify price resiliency.

2. MARKETS LIQUIDITY CONCERNS

Looking solely at the components of liquidity generally suggest a market with adequate liquidity for current demand. However, the current environment of tight yield spreads, coupled with changes to the corporate bond market structure has led to the potential of a liquidity drought when it is most needed.

2.1 Low interest rate environment

Figure 12: Treasury yield curves for fixed rate bonds

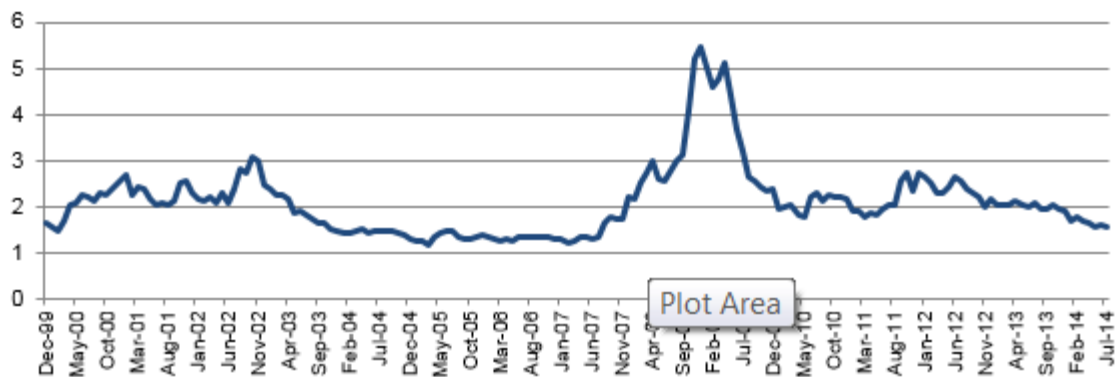


Source: US Treasury

Since the taper tantrum sent yields higher upon expectations of earlier than expected interest rate hikes, most of those increases have reversed, especially in longer-dated

maturities, while medium term bonds remain comparatively cheap, suggesting a strengthening belief in rate hikes later than a year from now.

Figure 13: Average spread between US IG corporate bonds and treasuries



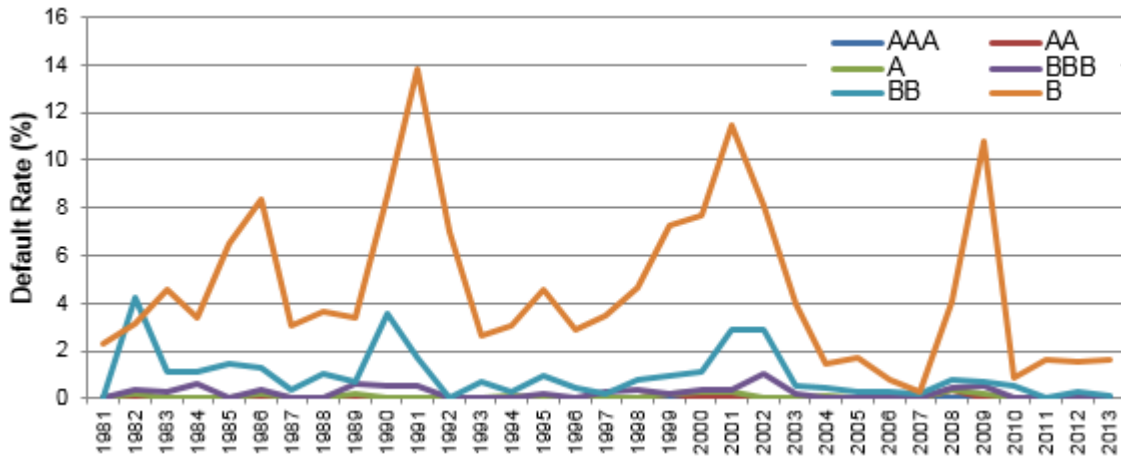
Source: The Yield Book, CitiGroup US Investment Grade Corporate Bond Index

In the meantime, the spread of corporate bonds over the past year have significantly tightened to ranges unseen after the crisis. Observers also note that the tighter corporate bond spreads are seen in a market where credit quality has declined on average (from single-A to single-A-minus) and the duration of bonds on average have increased (from 5.8 years to 7), especially as firms try to finance with rates incredibly low¹⁴. Corporate bond supply has reached record highs both in new issuance and in total outstanding debt, so the primary driving force behind these shrinking spreads is tremendous demand coming for multiple reasons.

2.1.1 Reach for yield

The low-interest rate environment has created an environment where those hoping to generate any meaningful return must look for increasingly risky investments. With government bonds from bonds to gilts to treasuries all trading at very low rates, corporate bonds (especially riskier high yield bonds) have become sought after alternatives, driving spreads tighter. Additionally, corporate default rates have fallen from financial crisis peaks, with just one investment grade default (MF Global) since 2010, further driving down yields with significantly reduced default risk premiums.¹⁵

Figure 14: Global corporate default rate by credit rating

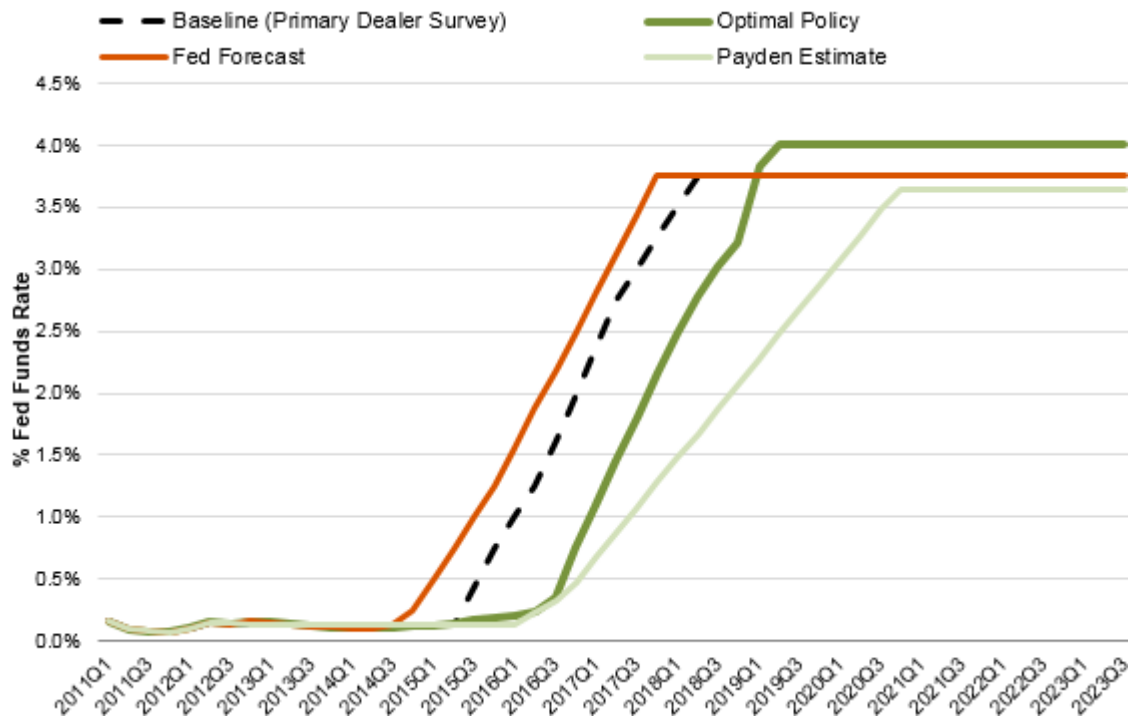


Source: S&P Ratings

2.1.2 Monetary policy

The Fed's role in the current market is undeniable. The Federal Reserve has taken a relatively dovish stance, one set by Bernanke and continued by current Fed chairwoman Janet Yellen. The eventual end of QE (potentially at the October 28–29 FOMC meeting assuming continued positive economic progress)¹⁶ will be followed by the hiking of rates, though the timing of this second move is up for much speculation. Yellen's apparent dovish stance on inflation suggests that the worry of rising prices will be a deemphasized factor in the decision to raise the Federal Funds rate, a factor that would suggest a later (maybe as late as 2nd half of 2015) beginning to the hikes.¹⁷ Complicating the matter of timing has been ambivalent economic data. Though Q1 GDP dropped dramatically (primarily due to weather) and average hourly wages have remained flat,¹⁸ unemployment numbers have fallen far faster than the Fed's own predictions.¹⁹ The Federal Reserve's forward guidance has continued to suggest a desire for optimal control. Optimal control allows for a greater overshoot of inflation than what the Taylor rule would allow; hikes that follow this path would started later compared to Taylor rule expectations but increase more sharply.

Figure 15: The Federal Funds Rate



Source: Yellen, Janet (2012). "Revolution and Evolution in Central Bank Communications"

Additionally, the buildup of the Federal Reserve's balance sheet through quantitative easing has resulted in the purchase of mortgage backed securities and treasuries, restricting those securities' supplies and leading investors to other forms of debt, including corporates. The Fed's holdings have mostly been bought with no immediate intention to trade, effectively shrinking the amount of securities outstanding actually available to be bought and sold. Reducing the Fed's balance sheet would be a long term project, and one that may not even be in best interest of the Federal Reserve. The enlarged balance sheet gives the Fed additional tools to influence interest rates, and the government has earned historic profits from the coupon payments.²⁰ Though concerns remain that the bank may now be too leveraged, the size of its balance sheet actually comes in line with other central banks' holdings.²¹

2.1.3 Flight to quality

Political unrest, particularly in the Ukraine, Iraq, and most recently Israel, have spurred the expected reallocation of funds out of emerging markets and into other sectors of debt that are not exposed to the potential of default. Additionally, uncertainty around Argentine debt and Bulgarian bank runs may also motivate demand in the US corporate market, as

Treasuries remain at near historic lows and corporates have their lowest default rates since the crisis, providing yield for little default risk.

2.1.4 Pension funds reallocating

One further driver of spread tightening has been pension funds. Seeking to lock equity gains from the 5 year US stock market rally, many managers are shifting out of their stock positions and investing more in bonds to lock in their returns.²² The transition since late 2013 has been the greatest outflow from stocks to bonds since 2008, helping to slow and then reverse the taper tantrum's rapid widening of yields. Pensions have done well in narrowing their deficits recently, with funding for 100 top corporate pensions reaching 95 percent of liabilities, reversing the dramatic hits pension funds took in the financial crisis. The impact of pension funds on spreads will be gradual, as equities continue to perform well, especially with the low volatility of the current market.

2.2 Broker-dealers regulation

While tighter spreads alone may not trigger a threat to liquidity, a change in the market structure, especially in the role of banks as broker-dealers, has heightened concerns. Regulation, specifically BASEL III capital requirements and the Volcker rule have motivated banks to dramatically shrink their balance sheets and reduce their role as broker-dealers in the bond markets.

BASEL III, a regulatory standard that concerns bank capital coverage, market liquidity, and stress testing, is being implemented in stages, with full compliance required by 2019. The main change over previous regulations is an increase in the total required capital ratio.²³ Additionally, the US has introduced the SIFI (or systemically important financial institution) designation that requires such institutions (mostly large banks) to undergo more stringent minimum leverage ratios and costly stress-testing that weigh on profitability. The stricter capital requirements give banks more buffer to rely upon during a downturn. The Federal Reserve would also have more time to determine the solvency of an institution and whether a bank is worth rescuing.²⁴

Figure 16



Stricter capital definition

- Increased quality of Tier 1 Capital (going concern)
- Simplification and reduction of Tier 2 Capital (gone concern)
- Elimination of Tier 3 Capital
- New eligibility criteria and limits for capital components

Increased RWAs

- Higher risk weights for (re)securitisations
- Higher capital requirements for trading book positions (Stressed-VaR, Incremental Risk Charge)
- Higher capital requirements for counterparty credit risk exposures arising from derivatives, repo-style transactions and securities financing activities (CVA risk, Wrong Way risk)

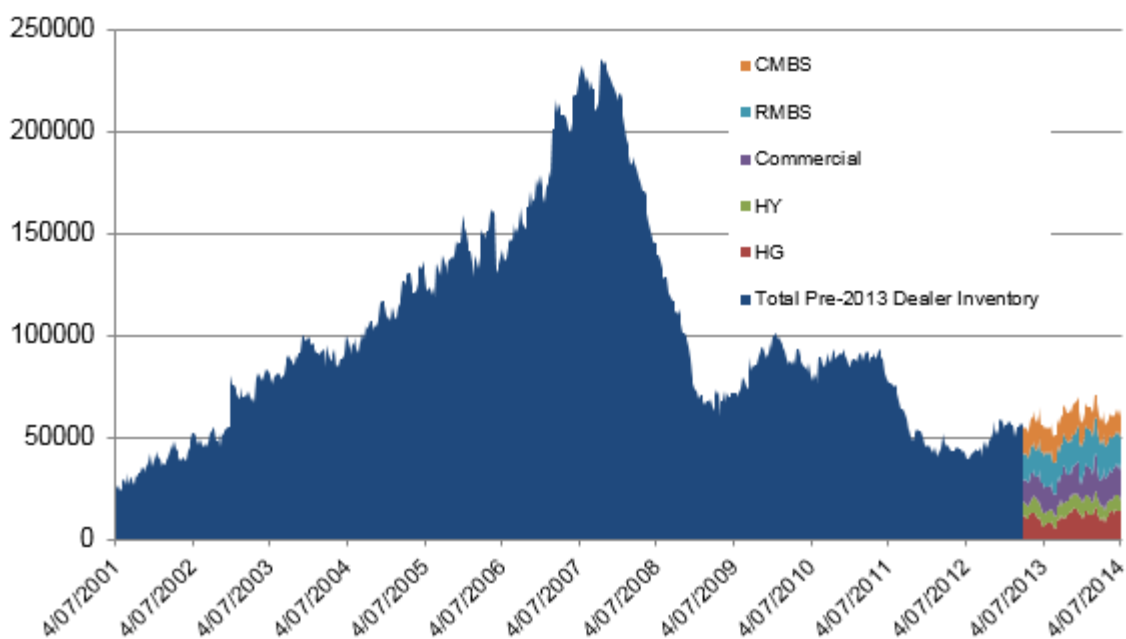
Sources: Accenture

The Volcker Rule more directly targets what businesses banks will pursue. The rule prohibits banks, among other things, from engaging in proprietary trading and requires disclosure of performance based on new metrics. Additionally, the rule doesn't allow banks to keep securities such as corporate bonds on their books for more than 1 month. The lack of clarity

between proprietary trading and the functions of a dealer–broker, as well as the proliferation of metrics that punish risky balance sheets, are driving tremendous reductions in dealer book sizes that can no longer afford holding bonds they may potentially not be able to sell, which aggravates the signs of illiquidity in the bond market.

Banks now are moving to meet BASEL III and Volcker Rule requirements well ahead of the time and keeping very small dealer inventories in many markets, including corporate bonds. This trend is occurring even as corporate debt issuances have expanded dramatically. From their peak of \$234 Billion in late 2007, inventories have fallen as low as \$40 Billion before rebounding to a little over \$60 Billion recently. However, compared to the tremendous increases in new bond issuances, the dealer inventory represents a much smaller portion of the overall bond market than it once did. This limits the ability of banks to act as an intermediary between buyers and sellers in the bond market, and breaking down the traditional way bonds have been traded.

Figure 17: Loss of shock–absorbing capacity: credit market



An Oliver Wyman report notes that from a sample of securities issued in 2009, 27% of total customer trading volume would not be served under holding period limits, with this problem exasperated for lightly traded securities.²⁵ By the report’s estimation, the Volcker Rule would cause a \$90–\$315 B impact on the value of securities due to the increased liquidity costs, as well as continued costs to both issuers and investors due to raised transaction costs. The report also estimates liquidity premiums should increase between 16 and 55 basis points initially, with lower quality debt experiencing the highest increases. These costs don’t include the potential effect of regulation on sovereign liquidity as well, who do not have the

flexibility of corporations to obtain loans when capital markets dry up due to rising liquidity premiums. Rich Tang of RBS notes that liquidity of off-the-run treasuries in the secondary market has already worsened significantly and traders are already hesitant about dealing with treasuries that aren't the most recent issue.

2.3 Conclusion

What is most troubling is that yield spreads, reaching record lows, currently don't seem to reflect the tightened liquidity conditions detailed above. A shock to the market could quickly reveal the lack of liquidity, causing a sharp spike in bond prices to a corrected level which could be disastrous; a gradual pricing in of liquidity could potentially be supported by the market, but a mechanism for such a transition is not clear.

3. OBSERVED AND POTENTIAL IMPACTS OF TIGHT LIQUIDITY

3.1 Liquidity crisis exacerbation

The great fear of quickly evaporating liquidity is the amplified impact of a bond market drop. A significant trigger such as a Federal Reserve surprise or a significantly destabilizing geopolitical event could cause a big bond sell-off in corporate bonds. Generally speaking, in a sell-off, liquidity becomes tighter as less people are willing to buy bonds than sell them, so prices must come down far enough for buyers to match with sellers. A fire sale of an asset by a financial institution like a bank generally follows 5 steps, as outlined by the Federal Reserve Bank of New York.²⁶

- Initial Shock– The intrinsic value of assets decrease
- Direct Losses– Financial institutions with affected assets suffer direct losses
- Asset Sales– Responding to increased leverage and redemptions, institutions must sell assets
- Price impact– Impact of asset sales depends on asset's liquidity and volume of sales
- Spillover losses– Financial institutions holding fire-sold assets suffer spillover losses

The structural changes discussed above have changed these conditions and may make liquidity tighter than before. The shrinking of dealer inventories makes it much harder for the buy side to unload their bonds since the banks will no longer have the inventory for trading or the ability (under new capital coverage ratios) to hold on to more bonds which they don't think they can sell. This increases both the price impact of the direct losses in a fire sale and the spillover losses that can harm otherwise healthy institutions in the broader market. Adjacent markets such as the CDS and ETF bond markets, with their gaining importance in a low liquidity environment as alternatives to holding actual bonds, would be

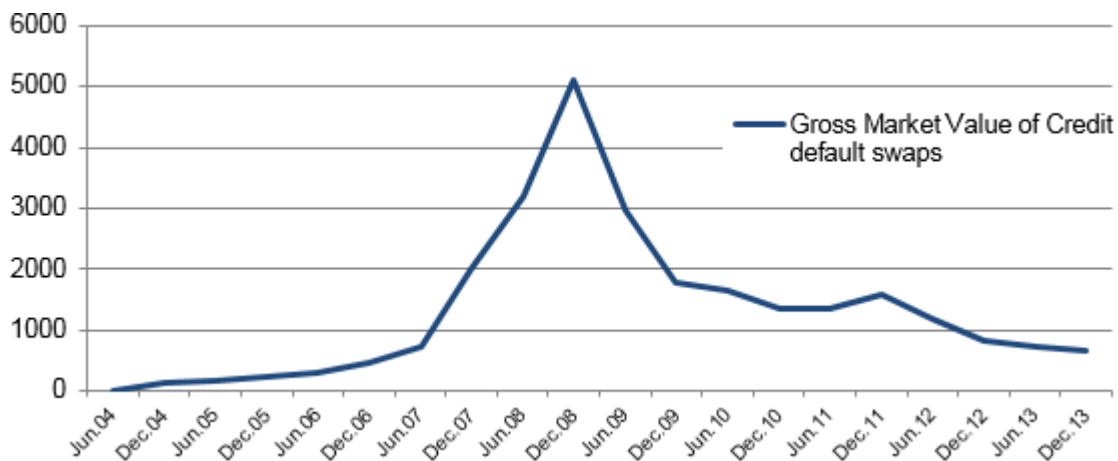
particularly at risk. With spreads and defaults at record lows, there is reason to be concerned that this hidden illiquidity is not being accurately factored into tight pricing.

3.2 Derivatives explosion

Both investors and banks, recognizing the illiquidity of holding actual corporate bonds, have sought other ways to gain exposure to corporate debt. Derivatives bring with them a host of new market stresses, particularly with the retreat of banks and the increased power of clearinghouses.

Various news stories have highlighted derivatives as a method gaining popularity for way getting exposure to the corporate bond market without having to own the debt itself. Bloomberg noted in June that the notional value of OTC contracts has gone up 500% over the past decade to \$710 trillion.²⁷ The Financial Times reported earlier in the year that a CDS index, the CDX IG, has increased dramatically, suggesting that more are selling this default insurance (which (when the CDS seller also holds a similar maturity treasury) is the equivalent of holding the bond²⁸) and gaining bond market exposure synthetically.²⁹ However, single name CDSs remain expensive and thinly traded, so using those derivatives to recreate specific bond exposure has been more difficult.

Figure 18: Gross market value of credit default swaps



Source: BIS Quarterly Review, June 2014

Other data show a less definitive story. Firstly, credit default swaps in aggregate are a much less popular instrument than before the financial crisis, with their net market value this year around 10% of its peak in 2008. CDS spreads have fallen dramatically over the past several months for investment grade bonds, while high yield spreads have actually slightly risen. The fall in IG CDS spreads is consistent with the belief that more and more players are trying to replicate debt exposure and thus this oversupply of CDSs has driven down their price. However, one could also point to lowered default rates and recovering economies as reasons

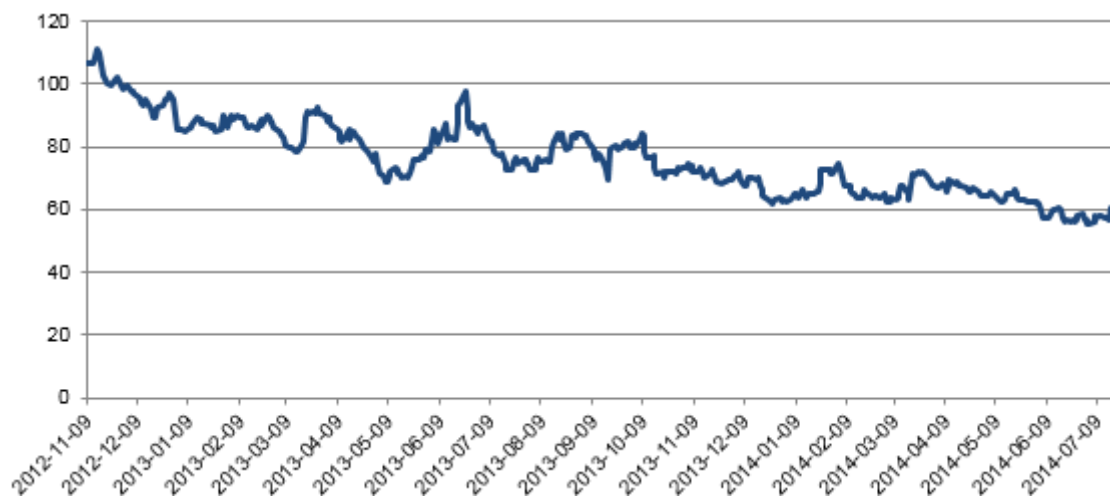
for why default risk is lower and thus CDSs cheaper. The CDX HY is known to be a popular hedge against stocks and commercial real estate as well, so some of its price action and volatility could be attributed to other factors beyond the bonds represented.³⁰ Dealer banks could be refocusing on derivatives as well as they leave a smaller impact on their balance sheet, meaning less capital has to be kept to cover it under BASEL III. However, the total notional and net value of credit default swaps continues to fall relative to the peak in 2008.³¹ Perhaps the use of derivatives are being offset by the expansion of Bond ETFs, which can similarly give exposure to the bond markets without requiring purchase of individual issues, though raise their own set of liquidity dangers.

Figure 19: CDX high yield CDS index



Source: Bloomberg

Figure 20: CDX investment grade CDS index



Source: Bloomberg

In any case, derivatives clearinghouses will become a new focal point of economic stability as banks remain closely monitored and less active players in risky business lines. Derivatives Clearing Organizations (DCOs) are collectively owned organizations that serve as the universal middleman to all derivatives contracts; both counterparties (who must both be clearing members) transact with the clearinghouse, who then nets the two trades.³² The DCO charges a margin from both sides to cover the risk of the other counterparty failing to execute their trade or defaulting. Should the circumstance arise, the clearinghouse goes to the market and buys the other leg of the trade. These DCOs have gained particular importance as Dodd Frank now requires that all derivative transactions be cleared by a clearing house rather than directly between counterparties. This means that now all counterparty risk, and particularly default risk, has been collected in a few systemically critical institutions. This means that clearinghouses could undergo greater scrutiny than before from government agencies, and may necessitate counterparties to post larger margins, reducing the attractiveness of derivatives as a substitute for holding bonds.³³

3.3 Bond ETFs

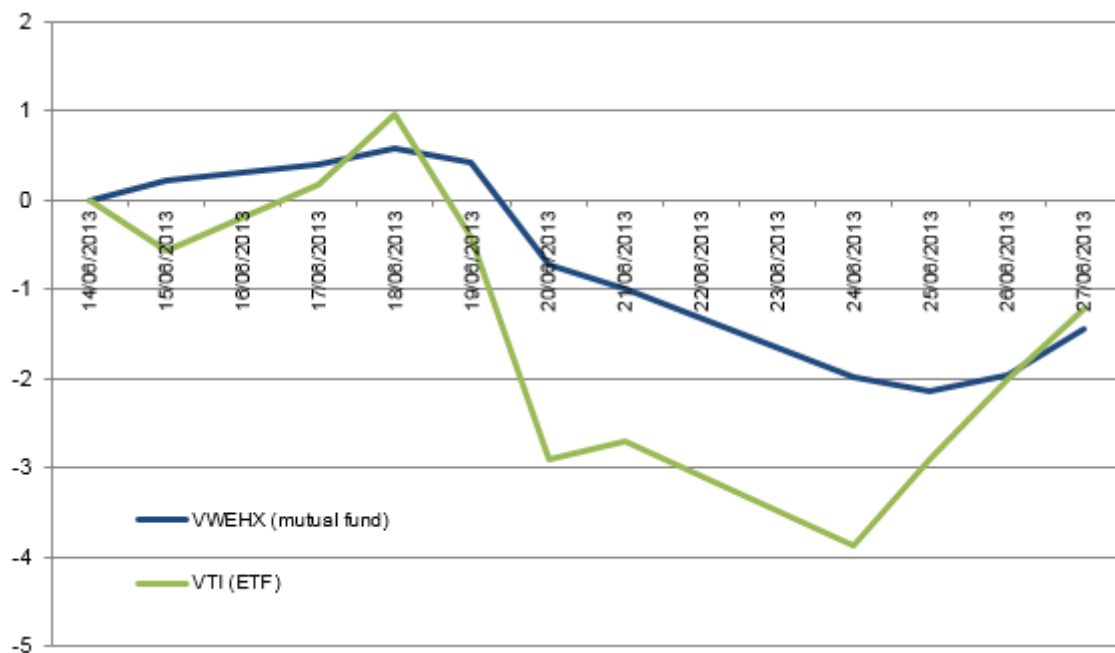
Another notable trend affecting market liquidity is the proliferation of bond ETFs as an alternative method of investing. Like other exchange traded funds, bond ETFs hold a portfolio of bonds that are passively managed, and can be traded like a stock during market hours. Clients are able to buy wide portfolios and get exposure to many different bonds much more simply and quickly than through individual purchases, as the bond market remains opaque and illiquid, especially for retail investors. \$22 Billion were deposited to bond ETFs in the first half of 2014, which now hold \$410 B worth of bonds, around 4% of the value of outstanding corporate bond debt.³⁴ One of the most popular platforms, iShares, is run by BlackRock, and has seen a 20 fold increase in the overall value of its high yield corporate bond ETF since 2008³⁵. In some cases, the assets in ETFs exceed those held in individual bond markets.

Redemption of bond ETFs, however, pose a significant threat to overall liquidity. ETFs are often compared with stocks in their liquidity, and investors will often expect similar ability to exit the market as stocks. However, the bonds themselves are not very easily traded, and so there is a mismatch between the underlying liquidity and the expectations of investors. Additionally, as institutional investors begin to use ETFs in greater amounts, their larger volumes and greater incentive to pull out quickly in a downturn mean the liquidity mismatch could be exacerbated.³⁶ Since bond ETFs also experience volatility more similar to stocks than bonds, there could be wider swings in price and significant deviations from the values of the underlying assets. Though Bond ETFs remain a relatively small portion of the overall bond market, they represent a growing pressure on liquidity whose importance will only increase moving forward.

In a bond panic, ETFs could further contribute to liquidity tightening and market distortions due to the difficulty of index arbitrage. When an ETF is established, a firm known as the authorized participant (often a bank, market maker, or other group with access to the underlying assets of the ETF) is empowered to create and redeem ETF shares. To do so, they borrow or purchase large quantities of securities which are then bundled together and sold to the public.³⁷ After the establishment of the fund, the AP often conducts index arbitrage to make the bulk of its money. For example, if the ETF's value is \$10 but the underlying value of the bonds in the ETF basket is \$10.10, the AP will redeem blocks of ETF shares for the underlying bonds (a transaction that is only allowed when large volumes are involved, and generally reserved for institutional investors like the AP), and sell those bonds for the 10 cent profit. This arbitrage serves the important function of keeping the value of the index and the bonds it tracks roughly in line with one another. However, in a liquidity crunch, the AP would not be able to conduct this arbitrage, causing lost profits for the AP and more dangerously, a wide deviation of the ETF price and the bonds it covers, which is an effective liquidity cost. Thus, redemptions can be costly especially in volatile and illiquid times.³⁸

This precise scenario occurred with high yield corporate bond funds during last year's taper tantrum, which disproportionately affected high yield debt. The HYG and VTI bond ETFs, broadly diversified passive investment vehicles, should generally track the performance of the VWEHX, a mutual fund that trades only once per day at its NAV. However, high volatility from June 18th to June 25th, 2013 caused a wide spread to emerge as the bond ETFs "lost track" of what they should have been following.³⁹

Figure 21: Change in price to funds relative to June 14th, 2013



Source: "Solving the Bond ETF Discount Problem." Forbes

3.4 Electronic platforms

The advent of e-trading that has fundamentally changed equities trading has gained traction in the corporate bond markets. Currently, 24% of bonds are traded electronically as opposed to equities which have over 80% of trades executed on electronic platforms.⁴⁰ The threat of illiquidity could accelerate the proliferation of platforms, as buy-side investors may see an opportunity in disintermediating the broker-dealers while sell-side dealers supplement their current businesses as market-making under current regulatory constraints becomes less profitable.

Buy-side adoption has been slowed by wariness for the technology to establish itself and attain scales that could provide meaningful liquidity. The fear remains that most electronic platforms will suffer the same lack of liquidity as the overall market since not enough parties would be using the platforms to trade with, especially during downturns when managers will prefer using avenues they trust like their broker over fly by night online markets. The buy-side, especially large fund managers who must execute massive trades, will often still prefer to rely on their established dealer relationships for additional color and market access. Until the sell-side can convincingly move toward e-trading, it is unlikely that buy-side created options will take hold. Efforts such as the partnership of TradeWeb and a consortium of banks to start a e-trading platform suggest a sell-side driven transition has already begun.⁴¹

Electronic platforms do carry limitations and risks. Firstly, the nature of bonds means that new ways of trading them may only do so much to improve liquidity. The smaller issue sizes, greater complexity, higher institutional investor concentration, and lack of consistent two-way trading mean that bond trading will never reach equity-like fluidity, with most existing bond e-trading platforms using a request for quote bidding system. Additionally, e-trading platforms could create greater volatility for bond prices as more widespread information about pricing could cause larger block sizes to be even more difficult to execute as opportunistic investors could bid up prices, much like in equity markets. Additionally, the vast majority (75%) of the buy-side highly values anonymity in its trading.⁴² New platforms generally will not post all trading information as happens in the public equity markets, but the increased volatility from greater access to and information about bond markets is a concern.

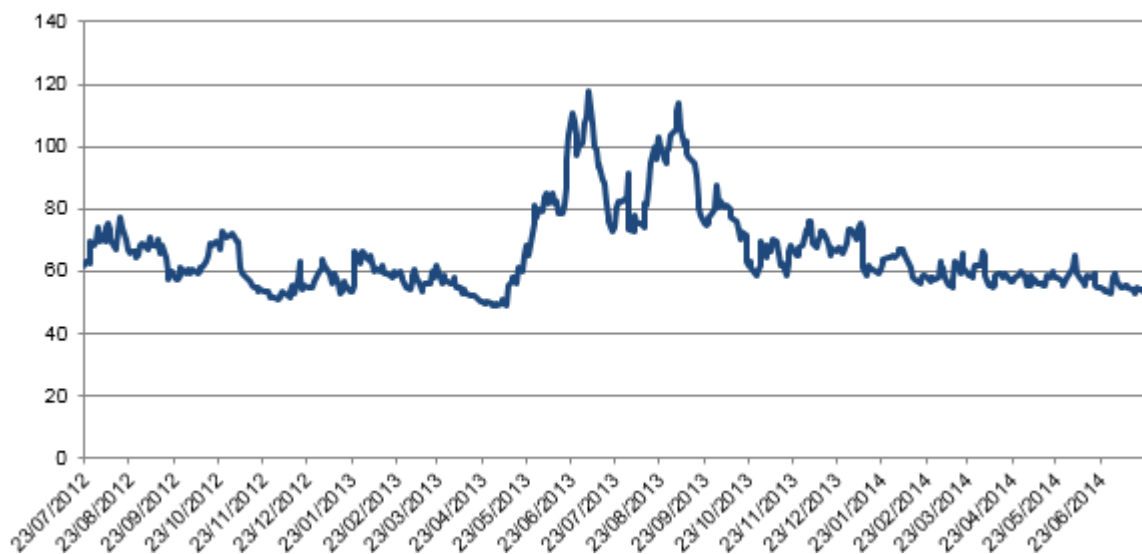
The questionable state of liquidity will drive greater adoption of platforms, but it will probably be slow going as this new trading method needs to gain credibility from both the buy- and sell-side. The importance of e-trading will gradually alter the bond market landscape, but it looks unlikely that it will be able to handle a bond liquidity panic, though such a panic would decisively clarify the need for a more equities-like option for trading bonds.

3.5 Low volatility in the short term

As bond yields continue to grind tighter and the Federal Reserve remains in a holding pattern on policy, the markets have slowed down in activity and volatility on several fronts. Uneasiness has caused less activity in the bond markets as traders lose their appetite for increasingly unattractive bond yields but still feel compelled to participate lest they miss out on potential remaining gains. The banning of proprietary trading has also greatly diminished bond trading at banks, lowering swings in prices and the volume of bonds being traded as a percentage of debt outstanding.⁴³ Economic factors have also been generally ambivalent, with a mixed bag of housing, manufacturing, and employment numbers that suggest a slow and uneven recovery. Though geopolitical threats to stability remain, such as the conflicts in Israel, Iraq, and Ukraine, none (except perhaps the news of a Malaysian Airlines flight being shot down over Ukraine) have done much to move the needle on volatility. The lack of volatility is approaching record levels, as the MOVE index, which tracks treasury volatility, nears all-time lows that were seen right before the Taper Tantrum spiked vol.

Low volatility is often a sign of a bull market, encouraging greater risk taking and potentially overheating. Low volatility is also often a sign of good liquidity, since money should be flowing relatively easily through the market. Indeed, low volatility has encouraged new stock market highs and low bid-ask spreads for corporate bonds in the short run, but as discussed above, that liquidity is not what it seems to be, due to forces beyond basic market forces themselves, like regulation. Janet Yellen has already acknowledged the additional risk taking has been encouraged, but has not given any indication that there will be any policy change in the near future to address that volatility.⁴⁴

Figure 22: MOVE bond volatility index



Source: Bloomberg

Low volatility will have a broader impact on participants in and around the corporate bond market. Trading income has been hurt, especially at dealer-brokers like banks, that earn fees based on volume; with low volatility driven by uncertainty rather than a “euphoric” belief in securities, volumes have fallen significantly; JP Morgan, Goldman Sachs, and Citigroup suffered 10%+ decreases in trading revenue in Q2 of this year vs. last year, though these drops were less than expected, driven by strong primary market issuance which has kept absolute volume up while volume as a percentage of total issuance low.⁴⁵ Low volatility is also affecting derivatives trading, as the demand for hedges and futures has decreased as more buyers feel that current prices will stay relatively flat and predictable. Derivatives are particularly sensitive to geopolitical events, so the recent uptick in armed conflict and some various institutional concerns in peripheral Europe could reverse current stagnation.⁴⁶

Generally speaking, barring a major shift in Fed policy (unlikely to happen until the end of QE in October, especially with the reliance on forward guidance) or geopolitical uncertainty, volatility could remain diminished for the short term.

3.6 Bond fund exit fees

The concerns about bond liquidity have seemed to reach some regulatory agencies. Beginning in June, rumors emerged that the Federal Reserve and SEC were looking into implementing exit fees on bond mutual funds that would discourage retail investors from withdrawing their funds in a crisis, effectively causing a run that could not be covered when liquidity tightens.⁴⁷ Bond funds are particularly vulnerable because they offer relatively quick redemptions while the underlying asset class may not be easily liquidated, especially in a crisis. When asked by the press about the possibility of exit fees, Chairman Yellen denied hearing about such plans, but simultaneously stating that such discussions could be happening under the purview of the SEC.⁴⁸

There are significant concerns from bond funds that such measures could significantly harm their business model. Many investors would preemptively remove their money from bond markets to avoid the possibility of having their money locked up during a crisis. Many asset managers note that this will trigger exactly what the Fed was trying to prevent, and will cause a spike in interest rates (as now bonds will be even more illiquid and less attractive to investors) while their monetary policy has been very dovish.⁴⁹ According to them, the Fed’s easy money has caused excessive risk taking that has caused bonds to become overvalued. This macroprudential policy is an attempt to ease back demand in a controlled manner, as opposed to changing monetary policy like in the taper tantrum that sent markets reeling. While some fund managers, such as BlackRock, do support the imposition of some limited fees, they also would want this adjustment to come as part of a global standard, rather than one unilaterally imposed by the Fed.⁵⁰ Some more conspiratorial minds believe that exit fees are actually a ploy for bond markets to sell off and allow yields and interest rates to combat

repo failures, which have recently spiked and threaten to reduce the ability of banks to provide leverage in the stock market.⁵¹ In any case, bond funds would be under tremendous threat by any imposed fees and the issue of liquidity could be triggered.

3.7 Private capital as dealer–brokers

As a longer term reaction to tightened bond liquidity, issuers may look elsewhere for capital. A correction in the price of bonds to include a right–sized liquidity premium would raise yields to more unattractive but accurate prices, driving much of the new issuance that has taken advantage of suppressed interest rates to seek other channels for investment. Those other channels could include direct lending from hedge funds and private placement by insurance companies. These privately negotiated deals are not liquid and can be difficult to arrange, but if competitively priced versus bonds, they will gain significant popularity from those looking for financing and funds that can execute the deals. Private placements currently hover around \$50 B in new annual issuance⁵² while direct lending has particularly grown in Europe for small and medium sized companies who no longer can obtain bank loans but are too small to access the cheap capital markets.⁵³ These will only grow as bank regulations cause smaller firms to look elsewhere for financing and the bond markets dry up with liquidity issues.

3.8 New broker dealer business model

Faced with less liquid markets and less ability to take risky but profitable trades due to both BASEL III and the Volcker rule, banks may look toward new ways to generate sustainable profits from their trading businesses. McKinsey & Co. outlined several strategies that banks could undertake to improve profitability that would dramatically alter the current way these institutions transact with their clients.⁵⁴ Banks do not charge for holding capital inventory, but that could change now that balance sheet space has become a constrained resource with the introduction of capital requirements. McKinsey also notes that currently, sales are credited based on volume, which does not weigh the amount of time spent on clients or the back office costs associated with each client. By taking a more holistic measure of client profitability, banks could “ruthlessly prioritize” their most valuable clients while scaling back or entirely dropping the bottom 40 percent of clients who generate just 10 percent of revenue.

4. WHAT IS TO BE DONE?

Given the state of liquidity and the immediate effects it has made on the current market, what can and should be done to adapt and prepare for this environment? Much of the preparation is for potential shocks to the bond market that could cause liquidity to seize up. It’s very difficult to find any optimism about the possibility that a bond sell–off can be

averted or would be gradual; right now, it is generally a question of degree of a sudden fall. However, is there a scenario where corporate bond yields could rise slowly without triggering a dramatic sell-off like the one seen in 2008 or 2013?

A gradual sell-off and rising yields would require some of the forces that have forced rates down to ease slowly. Geopolitical or financial crises abroad, by their surprising and sudden nature, would not be conducive for a slower interest rate rise. Rising inflation could put downward pressure on bond prices, and given current inflationary trends (CPI has picked up to about 2% year over year, the Fed's target rate), this by itself could nudge prices up gradually. However, a Fed reaction to rising inflation, if not well signalled to the market or too drastic, could cause a potentially dangerous yield spike not unlike the one in mid-2013. An increase in idiosyncratic defaults may also widen corporate bond spreads. Currently, corporate defaults are at record lows and have allowed investors to treat them as only marginally riskier than traditional riskless assets.⁵⁵ An uptick in defaults could similarly widen out spreads; *however, what none these scenarios cause is the hidden liquidity premium to be recognized by the market.* Prices would come down for other reasons, be it credit or inflation concerns, while the liquidity factor would still not be priced in. Thus the most relevant question is not whether there are ways for interest rates to rise gradually (there are but perhaps not the most likely outcomes) but whether there are mechanisms for the liquidity risk to be gradually reflected in the price of bonds is unclear.

There are many ways one could envision a spike in yields to appear, though the market's lack of volatility and reactivity may mean that a sufficient enough trigger could be a long time in the making. Geopolitical events or financial instability, especially from abroad, could set off a bout of bond selling in riskier credits that brings yields away from their record lows. However, the events of the past year make it appear that the bond markets are less easily motivated by concerns abroad. The potential of a round of Portuguese bank failures has not caused any material increase in rates for treasuries or the corporate bonds whose yields closely track treasuries, and geopolitical events have, if anything, caused a flight for quality and inflows to US treasuries and corporates. Central bank policy that has pumped trillions of cheap dollars into the market has kept volatility suppressed and thus reduced worry about "contagion" risk from events. When central banks do eventually throttle back their activities, however, volatility could return in force, especially with the uncertainty of bank policy affecting prices more chaotically.⁵⁶

Though investment grade corporates seem to be only dully affected by bubbling risk so far, the periphery of the bond market, particularly high yield and emerging market debt that tend to be more volatile and risky, could be beginning to crack under the tightening spreads in the face of questionable risk. High yield bond funds and ETFs have begun to experience withdrawals in July, which are the first in 10 months.⁵⁷ This declining interest in risky sectors could spill over into investment grade bond funds and ETFs as well, where yields have been compressed to historic levels.

4.1 Trading platform preparation

A few actions can be taken to generally improve preparedness for a liquidity crunch. The already fragmented bond market has probably become even more so with the advent of e-trading platforms and a variety of new broker dealers outside the traditional banking channels. It appears that traders are slowly adopting more e-trading platforms in addition to broker purchases to acquire certain issuances of bonds, but that these gains have been when overall liquidity is generally good.⁵⁸ The decreases in e-trading's proportional use in 2013, reversing several years of growth, could not keep up with the growth in overall debt issuance. Focusing on platform aggregators such as Creditstation from InterDealer would be more efficient than tracking the host of individual platforms that have emerged as fragmented markets with little benefit over a broker. Still, in times of illiquidity, having access to as many possible channels to find or sell should be a priority.

On the flip side of new platforms is solidifying existing rapport with brokers. When markets do begin to seize up and banks must be judicious in their use of their balance sheets, reinforcing these relationships could be important from both a market access and an information perspective. The fact that many fixed income strategists consider trading platform connectivity to be the most important priority of the next 12 months suggests that efforts to bolster traditional broker connections could be worthwhile, especially in assessing liquidity of current holdings and upcoming new issues.⁵⁹ This two sided investment in market access will work to keep as many avenues as possible in a time of crisis.

4.2 Allocation strategy

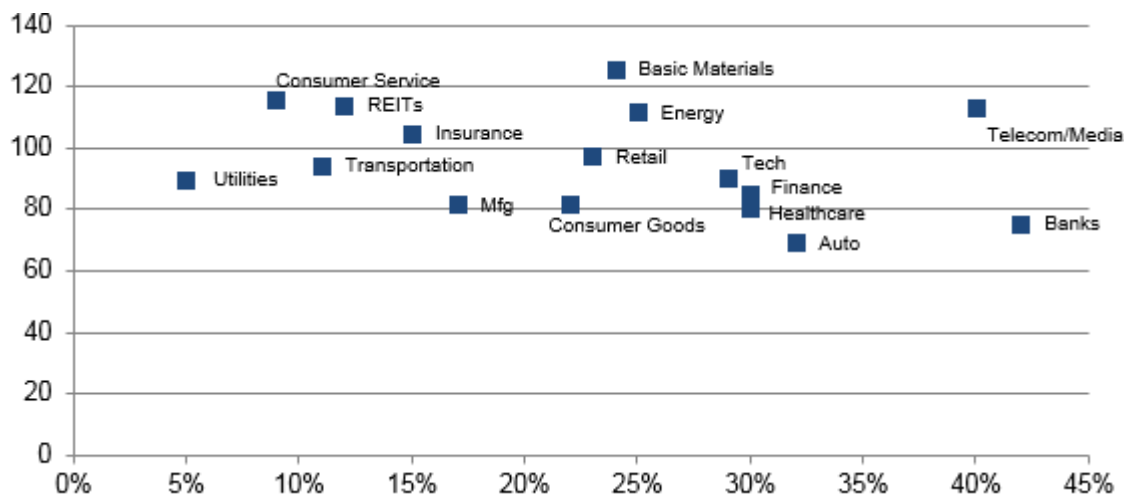
When selecting what credits to target for purchase or sale, a few strategies seem to handle liquidity risk better than nothing. In this uncertain environment, it is not a great time to be experimenting with radical new options on a widespread scale. Generally, firms must diversify their real options and plans to account for different bond market trajectories; it's naive to assume any one strategy will singlehandedly insulate a firm from liquidity risk.

Patient capital has been a trend among many large institutional funds such as pensions that has started to impact liquidity and the thinking of firms that traditionally thrive on trading.⁶⁰ With patient capital, investments are made with the flexibility of holding until either liquidity improves so that the securities can be sold profitably or the bonds mature. This style of investing requires a greater emphasis for absolute value and the risk of default. This strategy requires a level of discipline to avoid simply reaching for yield through risky assets, particularly in high yield and emerging markets, two sectors that were strongly hit by liquidity and default problems in both 2008 and 2013. Again, absolute value should drive investment decisions in this case. This strategy works well with funds that have relatively low liquidity demands, or those with fixed payment schedules, as maturities can be timed to coincide closely with the days a client may need access to its money. Additionally, reducing

the amount of trading could be beneficial as tight spreads mean less potential profit pick-up from rate changes, especially in a low volatility market.

For accounts that demand higher liquidity, different allocation priorities should be considered. These accounts could hold more cash as some funds appear to be doing⁶¹ or stay in particularly liquid assets, namely on-the-run treasuries, which Rich Tang notes have significantly better liquidity than the very small yield pick-up for choosing off-the-run treasuries do not adequately compensate. Matching maturities with outflows when possible can ensure liquidity while not constantly sitting on treasuries. Targeting sectors and companies that have better liquidity is advantageous in case redemptions are unpredictable and idiosyncratic for the account, but such issuances should not be trusted to be easily sold in the case of a widespread bond sell-off. Some sectors that on average have better liquidity include banks and telecommunications.

Figure 23: Sector comparison of spread vs. liquidity score, IG



Source: CitiVelocity Sector Level Liquidity Reports

In all cases, the primary market appears to be the most reliable way to obtain credit exposure in this environment. As secondary liquidity remains poor, it only raises the importance of getting into credit deals with the expectation of holding onto the bonds for the foreseeable future. Bond ETFs and derivatives are only transient methods of creating bond exposure that will increase rather than decrease a firm's liquidity risk. Since it remains to be seen how the new market structure (broker-dealers with a minimized role as liquidity providers and private dealers and e-platforms not yet large enough to pick up the slack), not betting solely on a single potential outcome or strategy remains the most reasonable approach for an uncertain future.

CONCLUSION

The secondary corporate bond market is in a time of significant upheaval. Though volatility remains low, bid-ask spreads appear tight, and debt issuance is at all-time highs, underlying changes to the role of broker dealers due to regulations meant to support the banks has caused a new, insidious liquidity risk. With the bond market still fragmented and traders more heavily reliant on derivatives and ETFs to simulate holding actual bonds, two-sided bond trading has become more difficult as banks no longer are willing to take the other side of a transaction. This has resulted in greater herding behavior in the market that is being exacerbated by cheap money from central banks and incredibly tight spreads. Now, the bulk of bond investors seem hesitant to act as uncertainty about Fed policy, geopolitical risk, and tight spreads are creating worries about a bond sell-off. Should a sell-off begin, a lack of liquidity when it is most needed could cause a fire sale. Trying to time the turn will be next to impossible, but by having a diverse array of flexible strategies to minimize selling holdings during and after a sharp price drop and have the funds to pay redemptions and acquire debt at fire sale prices, it should be possible to weather the storm.

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