Market Bulletin

June 11, 2015

Living in a less liquid world: The do's and don'ts for bond investors

In Brief

- Investors are confronted with a diminished supply of bond market liquidity, amid regulatory changes and reduced dealer inventories. At the same time, demand for liquidity has increased, as the share of the U.S. corporate bond market controlled by mutual funds and ETFs has nearly doubled since the financial crisis.
- Lack of liquidity does not trigger spikes in volatility; events do. Yet scarcer dealer liquidity and increased demand for it likely amplifies volatility once an event occurs. Even in a world of constrained bond liquidity, periods of high volatility are followed by periods of low volatility.
- Insurers, pension funds and foreign buyers provide long-term pillars of support for the U.S. corporate bond market. Although they do not step in to markets to buy bonds overnight, they do step in over time.
- From our list of do's and don'ts for bond investors: Do consider what event causes spreads to widen; do diversify your fixed income allocation away from single factor interest rate risk. Don't rush out of a corporate bond fund if fundamentals have not changed; don't bet on one set of rates and credits.

AUTHORS

Anastasia V. Amoroso, CFA
Executive Director
Global Market Strategist

Ainsley E. Woolridge
Market Analyst

Introduction

The bond liquidity issue is one of the hottest topics in finance today. But what exactly is it? Is liquidity lower today and, if so, why? Most importantly, what does it mean to investors? In this bulletin we explore these timely subjects, focusing primarily on liquidity in the corporate bond market. We conclude with a list of do's and don'ts for bond investors to consider.

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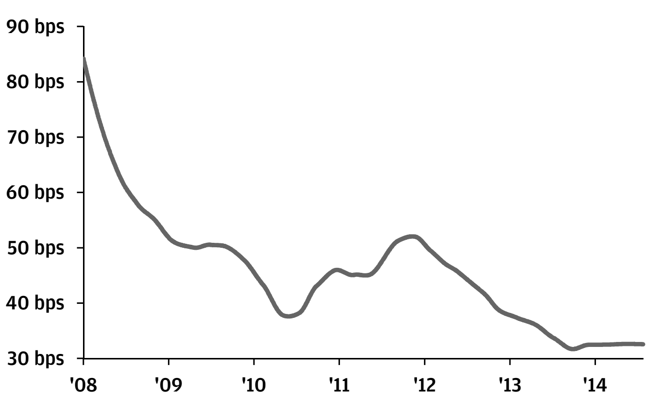
WHAT IS LIQUIDITY AND WHY IS IT LOWER TODAY?

If you ask three people in different parts of the capital markets to define bond market liquidity, chances are you will receive three different answers. Some describe liquidity as the ability to get the trade done no matter the price; others cite the price and the cost of getting the trade done (the bid-ask spread); and still others talk about the depth of the market, which can be observed by looking at the average trade size. All of these definitions describe a different facet of liquidity. We prefer a definition of our colleague, Nicholas Cox, Global Head of Fixed Income Trading at J.P. Morgan Asset Management. He put it this way: “Can I get the size I want at the price I can accurately predict?” The answer to that question today is a solid maybe.

The bid-ask spread, which has moved tighter since the crisis in, for example, U.S. high yield bonds, does not point to any unusual developments **(Exhibit 1).** However, the average trade size in the corporate (and Treasury) bond market does. The average trade size in both markets is smaller today than it was pre-crisis. The depth of the market has diminished, complicating the ability of an investor to promptly execute the trade if the intended size is large **(Exhibit 2)**.

Since the financial crisis, bid-ask spreads have tightened

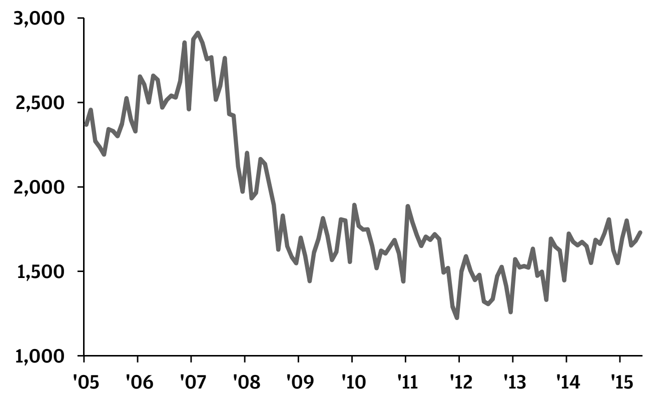
EXHIBIT 1: HIGH YIELD BID-ASK SPREAD INDEX



Source: MarketAxess, J.P. Morgan Asset Management. Data are as of May 26, 2015. For illustrative purposes only.

Smaller trade size reflects deleveraging and regulatory change

EXHIBIT 2: AVERAGE SIZE OF TRADES GREATER THAN 100,000 NOTIONAL (THOUSANDS)

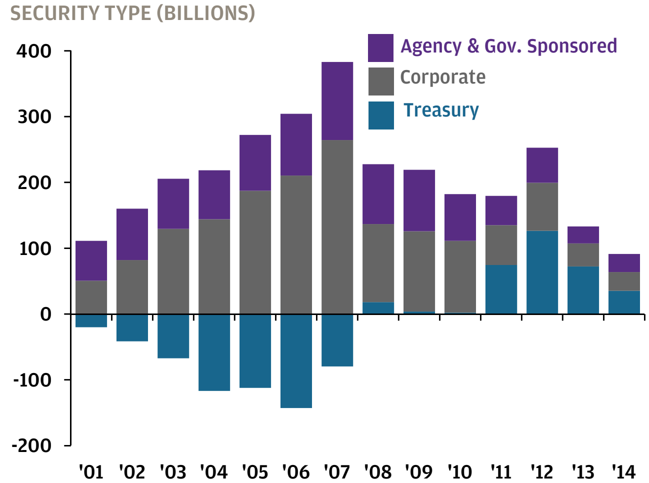


Source: MarketAxess, J.P. Morgan Asset Management. Data are as of May 31, 2015. For illustrative purposes only.

Today’s smaller trade size reflects deleveraging and regulatory change, which means that dealers are not in a position to absorb and hold large blocks of inventory. Dealers have not only reduced their inventory, but they have also de-risked it (reducing the overall risk level in their holdings). Corporate bonds today represent a small fraction of dealer inventories compared to 2007 **(Exhibit 3)**.

Dealers have not only reduced their inventory, they have also de-risked it

EXHIBIT 3: NET OUTRIGHT POSITIONS OF PRIMARY DEALERS BY SECURITY TYPE (BILLIONS)



Source: FRB, J.P. Morgan Asset Management. Data are as of December 31, 2014. For illustrative purposes only.

Three regulatory changes have contributed to both of these developments:

1. Volcker Rule: Before the financial crisis, dealer inventory statistics included proprietary trading desks. Today, they do not. That is because the Volcker Rule (part of the Dodd-Frank financial reform law) bans proprietary trading activity at commercial banks, albeit with a few exceptions.

2. Capital requirements: Banks today face much more stringent capital requirements. For example, under Basel III, regulations that redefine global standards for bank capital, liquidity and leverage, as of Jan. 1, 2015, banks are required to maintain a minimum Common Equity Tier 1 (CET1) capital ratio of 4.5%. When a capital conservation buffer is included, the minimum CET1 capital requirement ramps up to as high as 9.5% for some global systemically important financial institutions (G-SIFI) by Jan. 1, 2019. The numerator of the ratio represents shareholder common equity and retained earnings, and the denominator represents risk-weighted assets. The riskier the asset, the higher the weighting, which means that holding risky assets requires banks to set aside more capital. To meet this capital requirement, banks have focused on not only increasing their equity but also minimizing their risk-weighted assets, which has meant lower and less risky dealer inventories and other holdings.

3. Liquidity requirements: Another Basel III requirement impacting dealer inventories and banks is the liquidity coverage ratio. Under this rule, banks must retain enough high quality liquid assets (HQLA), which include cash, excess reserves at the Federal Reserve (Fed) and Treasury securities, to meet banks' liquidity needs during a 30-day stress scenario. The need to accumulate HQLAs decreases a bank's ability to buy and hold higher risk assets.

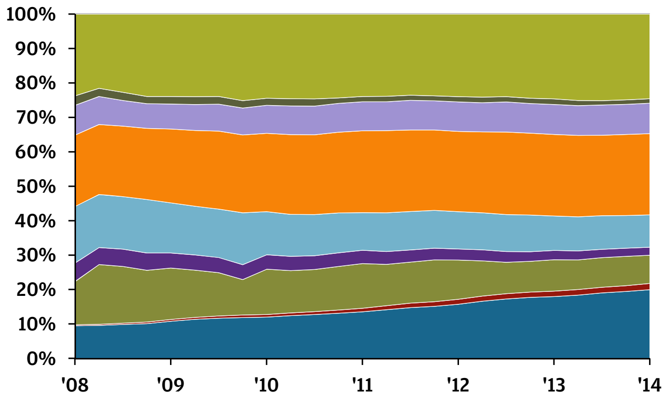
With this regulatory background in mind, how might a dealer address a large size order? If the trade is of a meaningful size, instead of providing a quote for the entire intended volume of the trade, the dealer might split up large orders into smaller ticket lots, provide a quote for one of the smaller lots, and "work the order" to find the buyer (or seller) for the remaining smaller lots. In this way, banks try to avoid a capital charge that would be incurred if assets were brought onto the dealer balance. The opportunity cost for this "work the order" process is borne by the investor, because while time is always of the essence in trading it is especially critical in a period of market declines when longer execution time can adversely impact total return. Bite-size execution (splitting the larger order into smaller tickets) may also explain why the price an investor sees is not always the price he gets. To put it another way: the price may not always be predictable—and predictability is a key component in our definition of liquidity.

DIMINISHED LIQUIDITY EXACERBATED BY RISING DEMAND

While the supply of dealer bond liquidity and banks' appetite for corporate bonds have declined, the demand for this liquidity has increased. **Exhibit 4** (next page) shows the evolution of corporate bond market ownership. The chart and the accompanying table highlight that the share of the corporate bond market controlled today by mutual funds and ETFs has doubled since the financial crisis. These vehicles offer daily or intraday liquidity.

The share of the U.S. corporate bond market controlled by mutual funds and ETFs has doubled since the financial crisis

EXHIBIT 4: PERCENTAGE OWNERSHIP OF CORPORATE BONDS OUTSTANDING



Breakdown of ownership*	% Ownership		Outstanding corporate bonds ($ bn)	Total financial assets ($bn)
	2008	2014	2014	2014
Foreign	23.7%	24.5%	2,839	22,765
Closed-end & MM Funds	2.8%	1.3%	153	2,973
Pension Funds	8.7%	8.8%	1,021	17,682
Insurance Companies	20.7%	23.6%	2,732	7,845
Financial Institutions	16.4%	9.4%	1,085	28,021
Government	5.4%	2.3%	267	11,258
Households	12.6%	8.2%	949	67,992
ETFs	0.3%	1.8%	210	1,969
Mutual Funds	9.5%	20.0%	2,312	12,574
Total			$ 11,569	$ 173,079

Source: FRB, J.P. Morgan Asset Management. *Graph key: Series name corresponds to label color in corporate bond ownership table. Data are as of December 31, 2014. For illustrative purposes only.

Who ultimately controls these funds? The retail investor. Some 62% of mutual fund assets are directly controlled by retail investors. The remaining 28% of these funds are held through pension plans; most of those assets (77%) are held in defined contribution (DC) plans, which, in many cases, are ultimately controlled by retail investors.

Fixed Income/Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise.

WHAT DOES LOWER LIQUIDITY MEAN TO AN INVESTOR?

The increase in the share and dollar amount of the corporate bond market held by retail investors is important because while this category of investors has helped absorb large volumes of new bond issuance, historically retail investors have also been quick to sell. Flows into U.S. investment grade and high yield mutual funds have been remarkably strong since 2009 **(Exhibits 5 & 6)**, but in the spring and summer of 2013, retail investors rushed to redeem their investment grade bond funds amidst the so-called “taper tantrum.”

Flows into U.S. investment grade and high yield bond funds have been strong since 2009, but in 2013, retail investors rushed to redeem

EXHIBIT 5: INVESTMENT GRADE BOND FLOWS AND FLOWS AS A % OF ASSETS (BILLIONS)

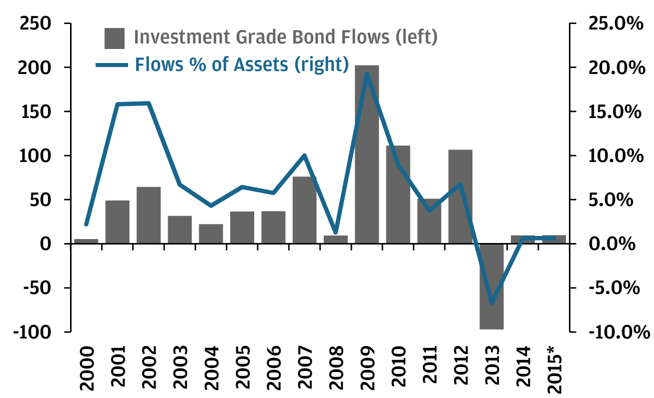
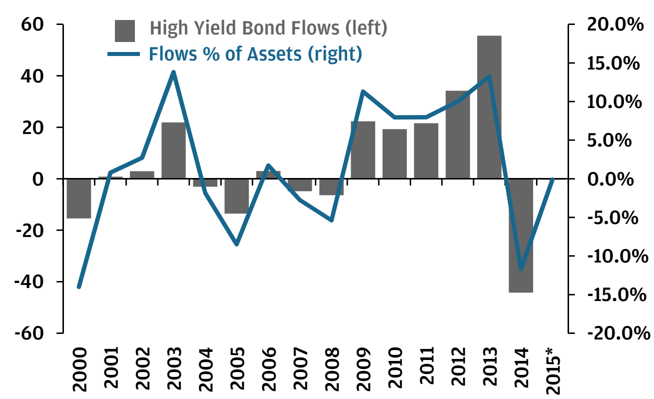


EXHIBIT 6: HIGH YIELD BOND FLOWS AND FLOWS AS A % OF ASSETS (BILLIONS)

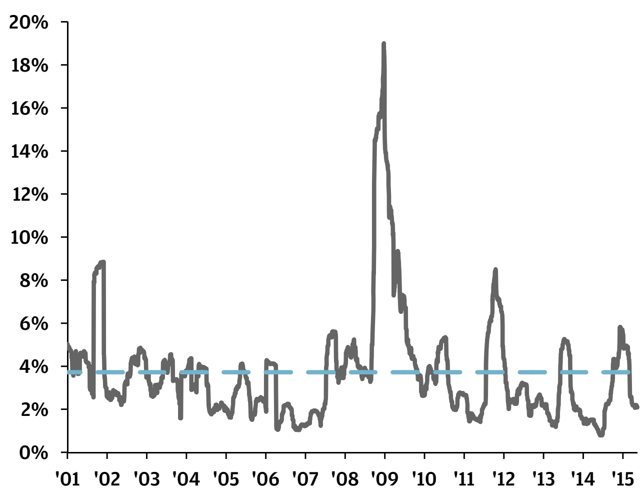


Source: Investment Company Institute, J.P. Morgan Asset Management. Data are as of April 30, 2015. For illustrative purposes only. *2015 data YTD through April 2015.

In 2014 investors redeemed their holdings of high yield bonds as they became concerned about excessively tight spreads (noted by Fed Chair Janet Yellen in a June 2014 press conference) and the state of the energy high yield market, which experienced major spread widening as oil prices collapsed. Despite outflows in 2014, in 2015 spreads have tightened, and issuance and buying once again have resumed. But if the tide turns again (perhaps around the date of the first Fed rate hike), the buyers of corporate bonds become sellers and there is less scope for dealers to absorb the sell volumes, it will result in faster discounting of prices and extra volatility in the bond market. Also, the minimum credit spread required in the bond market today could be higher than it has been in the past because investors realize that when they buy a bond they may have fewer market participants to sell it to. As a result they may require compensation for this liquidity risk.

Volatility episodes since 2009 have been somewhat more frequent relative to the 2003-2007 time period and also more pronounced

EXHIBIT 7: 3-MO. STANDARD DEVIATION OF DAILY % CHANGE IN PRICE



Source: J.P. Morgan Global Economic Research, J.P. Morgan Asset Management. Annualized standard deviation of the J.P. Morgan Domestic High Yield Index. Data as of May 28, 2015. For illustrative purposes only.

We take a look at the historical volatility in high yield bonds in **Exhibit 7**, and make three observations:

Lack of liquidity does not trigger episodes of volatility—events do. Even before the financial crisis and the more stringent regulations that reduced dealer inventories, there was no shortage of volatility episodes in the high yield markets. For example, in the spring of 2005, there was a spike in volatility and meaningful spread widening as investors worried about rising oil prices, rising inflation and potentially slowing growth. In the second half of 2007, even as corporate dealer inventories reached their peak of $265 billion by the end of the year, credit spreads surged—not because of a lack of dealer inventories, but because of growing concerns about the subprime mortgage crisis and corporate defaults, which ultimately led to a credit crunch.

Lack of dealer and bank liquidity and increased demand for it likely amplify volatility once an event occurs. The volatility episodes since the recovery began in 2009 have been somewhat more pronounced relative to the 2003-2007 time period. This could be the result of more frequently occurring "events," such as several instances of the European sovereign bond crisis (in 2010, 2011 and 2012), the taper tantrum in 2013 and the oil market rout in 2014. But the higher volatility experienced during some of these episodes could also be due to today's combination of lower supply of dealer liquidity and greater investor demand for immediate liquidity. Indeed, dealer inventories today are just 0.6% of the total corporate debt outstanding vs. 10.2% in 2007 and only 1.2% of total dollars controlled by corporate mutual funds vs. 29.8% in 2007. The best thing a trading desk can do is quickly match up sellers with buyers. But today, a dealer is not as able (or willing) to take assets onto the balance sheet, even temporarily, while trying to complete the matching process. As hasty mutual fund and ETF redemption volumes can exceed demand from immediately interested buyers (which will no longer be dealers or banks), it might take some time to find out exactly at what price and which investors are willing to step in. This slower matching process leads to wider spreads, lower prices and greater volatility.

One thing that hasn't changed: Even in a world of lower bond liquidity, the high tide of volatility tends to recede with time. Periods of high volatility are followed by periods of low volatility, and vice versa. As the catalysts that caused volatility to spike recede, volatility in bond prices tends to decline. The stabilization in bond prices following periods of volatility also occurs because over time it is evident that there is a large cohort of willing buyers for these bonds, especially at higher yields.

WHO ARE THE LONG-TERM BUYERS?

While the assets under management in corporate bond mutual funds and their share of the corporate bond market have doubled, and the presence of financial companies in the corporate bond market has declined, three other categories of investors are significant owners of U.S. corporate bonds, as illustrated in **Exhibit 4** on page 4.

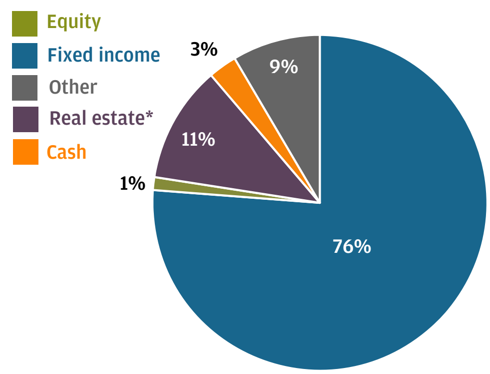
- Insurance companies are large holders of corporate bonds and have grown their market share since 2008.
- Pension funds represent a smaller share but are very stable investors.
- Foreign buyers have a steady and meaningful presence in the U.S. corporate bond market.

These market participants represent the long-term pillars of support for the U.S. corporate bond market. Although these investors do not step in *overnight* to buy bonds (and they can't alleviate the short-term lack of liquidity), they do step in *over time* as their investment needs dictate.

Insurance companies control $7.8 trillion in financial assets and, as shown in **Exhibit 8**, the vast majority of these assets (76% for life insurance companies) are held in bonds. Furthermore, most of the fixed income assets for life insurers are held in corporate bonds. Insurers' bonds are bought to be held, not traded, because regulations do not require them to mark these holdings to market. In purchasing a bond, insurers care most about yield to maturity.

Insurers help provide long-term support for the U.S. corporate bond market

EXHIBIT 8: LIFE INSURANCE COMPANIES' ASSET ALLOCATION

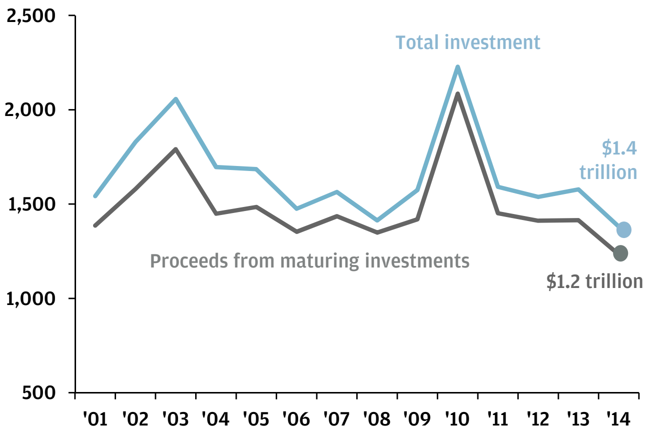


Source: SNL, JPMAM Strategy Team, J.P. Morgan Asset Management. *Real estate allocation is primarily to mortgage loans. Data as of December 31, 2014. For illustrative purposes only.

Insurance companies have large annual investment needs, as shown in **Exhibit 9** (next page). These stem from reinvesting the proceeds from maturing securities, coupon payments from existing holdings and investment of the operating income from net premium collections. In 2014, these investment needs amounted to $875 billion for life insurers and $506 billion for property and casualty (P&C) insurers, and approximately $630 billion was purchased in corporate bonds. This is equivalent to 27.2% of assets in corporate bond mutual funds, well above the magnitude of the investment grade bond funds outflow experienced during the 2013 taper tantrum.

Insurance companies control $7.8 trillion in financial assets and have large annual investment needs

EXHIBIT 9: INVESTMENT COSTS AND PROCEEDS FOR LIFE AND P&C INSURERS (BILLIONS)



Source: SNL, JPMAM Strategy Team, J.P. Morgan Asset Management. Data are as of December 31, 2014. For illustrative purposes only.

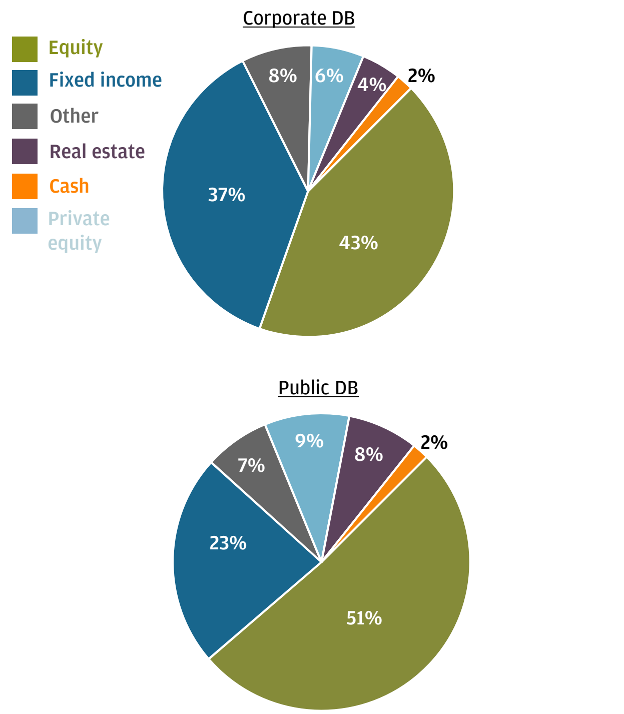
Pension funds are another potential buyer of corporate bonds. Defined benefits plans, corporate and public, and DC plans, hold a combined $17.7 trillion in assets. Because asset allocation in DC plans is largely controlled by individual investors, we focus here on corporate and public (state and local only) DB plans, which hold $8 trillion in combined assets. The average corporate plan has a current allocation to fixed income of 37% of assets and the average public plan has an allocation to fixed income of 23%, as shown in **Exhibit 10.**

Although the share of fixed income in the pension plan asset mix is not as large as it is for insurance companies, and the estimated annual contributions from private DB plans average only $75 billion per year from 2014 through 2024,[1] an improvement in the funded status could mean a sizable reallocation to high quality corporate bonds. The funded ratio of U.S. corporate pension plans today stands at 80.5% **(Exhibit 11).**

[1] See *The Rising Tide of Pension Contributions Post 2013: How Much and When?* Society of Actuaries, February 2015.

Corporate and public defined benefit plans hold a combined $8 trillion

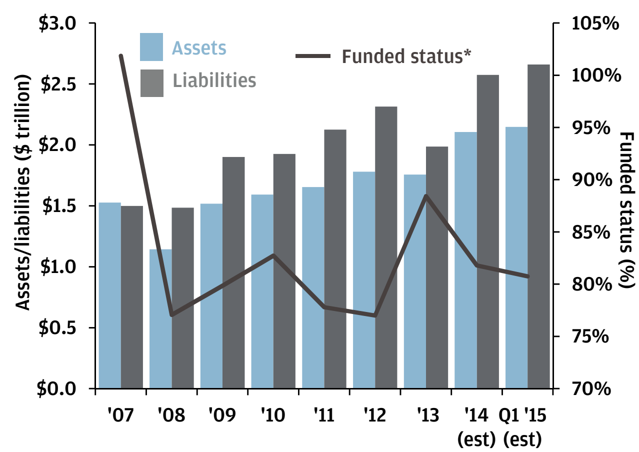
EXHIBIT 10: ASSET ALLOCATION MIX FOR CORPORATE AND PUBLIC PENSION FUND ASSETS



Source: Pensions & Investments, JPMAM Strategy Team, J.P. Morgan Asset Management. Data are as of December 31, 2014.

For corporate pension plans, an improvement in funded status could mean a sizable reallocation to investment grade corporate bonds

EXHIBIT 11: DB FUNDING STATUS: RUSSELL 3000 COMPANIES



Source: JPMAM Strategy Team, Bloomberg, J.P. Morgan Asset Management. *Funded status for 2015 and 1Q15 estimated using market returns and not contributions. Pension assets, liabilities and funded status based on Russell 3000 companies reporting pension data. All information is shown for illustrative purposes only. Data are as of May 15, 2015.

Low interest rates (the “discount rate” in pension liability valuation) have helped to increase the value of plan assets, but they have increased the value of the liabilities more. As rates move higher and well-performing growth assets (equities) increase the funded ratio, many corporate plans will shift their focus to de-risking as they adopt a liability-driven investment approach—allocating to assets whose duration matches the duration of their liabilities. As pension plans cross certain funded ratio triggers set out in their investment policy statements (IPS), these funds intend to reduce their equities and increase their fixed income allocations. Within fixed income, they will focus more heavily on investment grade credit because these bonds provide a closer match to a pension liability discount rate than U.S. Treasuries. Suppose, very simplistically, that corporate pension funds increase their allocation to corporate credit by 5%. This would result in an additional $155 billion in flows into that asset class. That equates to approximately 6.7% of assets held in corporate bond mutual funds today.

Finally, **foreign buyers** held another $2.8 trillion in corporate bonds at the end of 2014. Who exactly are these buyers of U.S. corporate bonds? They are not the foreign official institutions, such as national government-owned investment funds or central banks, which tend to buy U.S. Treasuries to manage their foreign exchange reserves. As much as 95% of foreign buyers of these corporate bonds are non-official private institutions and households and 63% of them are European. European insurers and pension funds are today confronted with a no-yield or low-yield environment in most of Europe. Increasingly their investment decisions have to be a function of what else might be available globally, with regulatory caveats in mind. Indeed, 13% of sovereign bonds in Europe have a negative yield today and, perhaps even more importantly, 83% of sovereign bonds have a yield of less than 2%. As long as the European Central Bank, with its sizable bond purchase program, continues to depress yields in the eurozone, the U.S. corporate bond market should continue to be attractive to European investors who serve as an important source of demand.

DO’S AND DON’TS FOR BOND INVESTORS

As the supply of dealer and bank bond liquidity declines and the demand for it rises, in times of market dislocation bond prices may experience faster discounting and greater uncertainty. However, as rates rise and spreads widen, a large cohort of willing buyers, such as institutional and international investors, could help stabilize the market over time. The Fed can also play a role by preemptively addressing liquidity concerns and proactively ensuring proper bond market functionality to promote financial stability. The Fed’s Office of Financial Stability Policy and Research, established after the financial crisis, is tasked with this responsibility.

Armed with an understanding of liquidity challenges and bond market dynamics, what should investors do? Here are some do’s and don’ts for bond investors:

- **Do consider carefully what event causes spreads to widen.** The onset of volatility may be exacerbated by a lack of liquidity, but is initially triggered by an event. Has the event, whenever it occurs, fundamentally shifted the quality or the default risk of a corporate bond? If the answer is yes, then it may be time to sell. If not, selling might not be the best answer, particularly because in times of market dislocation, potential buyers may require too big a “haircut” to buy (a “haircut” refers to the difference between the market value of an asset and the purchase price paid).

- Suppose it is the first Fed rate hike that causes spreads to widen. If lift-off does occur, it will be because the Fed believes the economy to be on a sustained path to full employment and 2% inflation—a good thing for corporate cash flows. In this environment, the default assumptions on corporate bonds should not deteriorate but could in fact improve, justifying tighter, not wider, spreads. **Don't sit on the sidelines forgoing valuable coupon income and don't rush out of your corporate bond fund if the fundamentals have not changed.** Volatility is like the tidal cycle, it rises and then it recedes.

- **Do ask your mutual fund providers what they are doing to address liquidity concerns.** Holding cash and other liquid assets as a buffer against forced selling during redemptions can be an effective strategy. Access to multiple trading avenues may improve outcomes. Size and quality of the relationship of the mutual fund provider with a trading desk is important because bonds are traded on a negotiated basis. **Do make sure you have the right negotiator working for you.**

- **Do diversify your fixed income allocation away from single factor interest rate risk. Do** consider non-traditional and global bond funds as well as relative value fixed income hedge funds because they give you optionality to benefit from potential dislocations and help diversify your interest rate exposure. In today's truly global bond market, **don't bet on one set of rates and credits, and instead do capitalize on many.**

Investing in **foreign countries** involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies in foreign countries can raise or lower returns. Also, some markets may not be as politically and economically stable. The risks associated with foreign securities may be increased in countries with less developed markets. These countries may have relatively unstable governments and less established market economies than developed countries. These countries may face greater social, economic, regulatory and political uncertainties. These risks make securities from less developed countries more volatile and less liquid than securities in more developed countries. **Diversification** does not guarantee and does not eliminate the risk of loss. Diversification among investment options and asset classes may help to reduce overall volatility.

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