Invesco Fixed Income
Global Fixed Income Strategy

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Global macro strategy

Global central banks add ballast to financial markets

We, and the market, think it is likely the US Federal Reserve (Fed) will raise interest rates at its Federal Open Market Committee meeting in December – currently the market prices in around a 70% chance.[1] It is reasonable to ask what the impact will be on asset markets from a Fed rate hike as market participants are accustomed to the Fed's actions having direct impacts on interest rates and risk markets. Given the Fed is the central bank of the world's reserve currency, the Fed has traditionally had an outsized impact on all global markets.

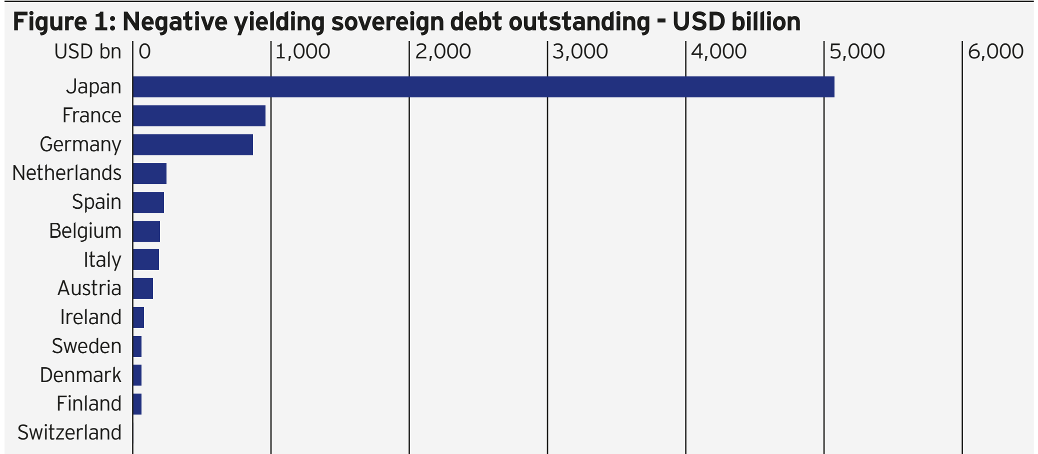
The fact is that other global central banks have been quite aggressive in managing their balance sheets in recent years while the Fed has pretty much been on the sidelines. In particular, the European Central Bank (ECB) and Bank of Japan (BoJ) are pursuing aggressive quantitative easing (QE), and have introduced negative interest rates across much of their domestic government bond yield curves. This combination has been a powerful driver of asset markets this year. In addition, the Chinese central bank (PBoC), which has a balance sheet close to the Fed's in size, has been letting capital flows drive their balance sheet adjustment. Chinese capital outflows led to an aggressive shrinking of the PBoC balance sheet at the beginning of the year, contributing to market volatility in our view.

Currently the large amounts of QE in Europe and Japan, in combination with negative interest rates, are supporting risky asset prices globally, including in the US. This strong technical support is likely to continue regardless of fundamental developments, and may even lead to valuations that look overdone or stretched. These technical forces are likely to offset some of the traditional volatility that investors might see in markets when the Fed raises interest rates in a more normal environment.

The extremely low or negative yields in many markets have caused many non-US investors to look to the US for yield. Investor flows into the US have had an impact on the currency swap market (see following article) and have been supportive of US financial assets.

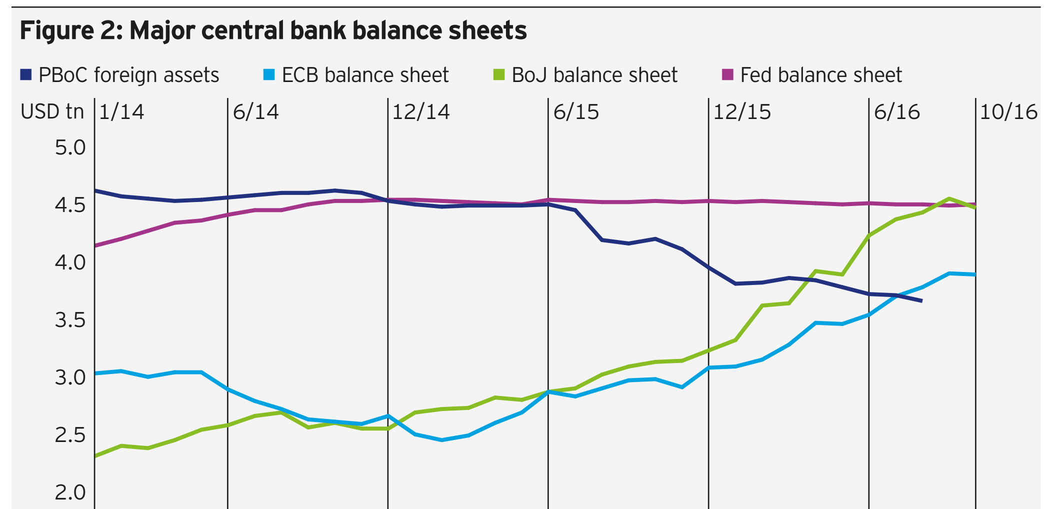
Global growth has been disappointing, and there is considerable debate on the efficacy of negative interest rates and QE to bolster growth in the current environment. We believe the impact of QE and negative interest rates on asset markets is clear, however. QE and negative interest rates are likely to mute the impact of the Fed on financial markets.

Figure 1: Negative yielding sovereign debt outstanding - USD billion



Source: Bloomberg L.P. as of Oct. 27, 2016.

Figure 2: Major central bank balance sheets



Source: Bloomberg L.P. from Jan. 31, 2014 to Oct. 10, 2016.

Rob Waldner, Chief Strategist

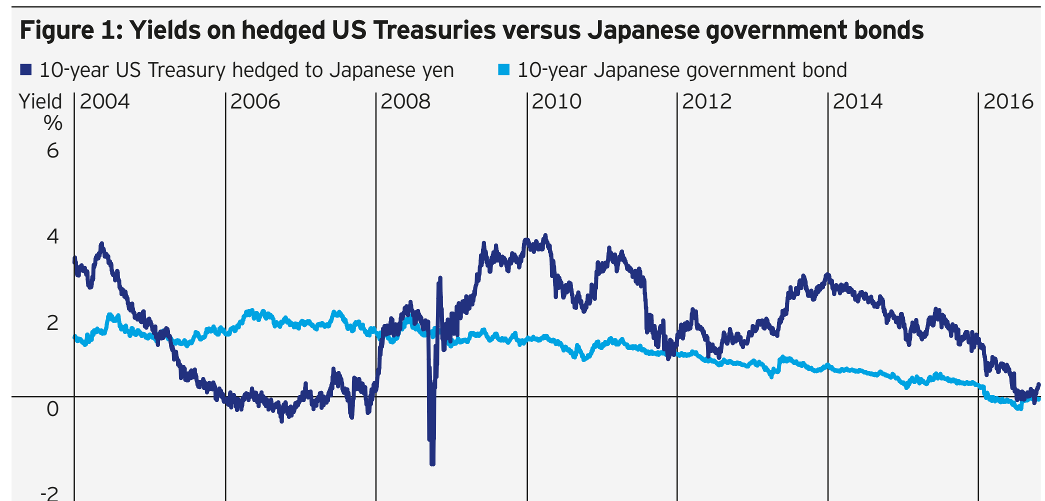
1 Source: Bloomberg L.P., Oct. 24, 2016.

Rising cost of hedging US rates sends non-US investors home

Non-US investors seeking yields higher than those offered by their own markets have supported US credit and rates markets for much of this year. Now, the rising cost of hedging these transactions against currency fluctuations has caused some reversal in these flows. Whether more outflows are on the way will likely depend on whether hedging costs stabilize and how non-US investors adjust their investment strategies. Below, we discuss what this dynamic is likely to mean for US rates markets.

Hedging costs have jumped in recent months, driven by strong demand that has pressured markets for cross currency basis swaps and foreign exchange forwards, key elements of hedging transactions. In recent weeks, hedging costs have risen so far that hedged US bond investments currently offer non-US investors similar or lower returns than comparable investments at home. For example, a 10-year US Treasury hedged back into Japanese yen is now negative-yielding - it yields only a fraction more than a Japanese government bond (see Figure 1).

Figure 1: Yields on hedged US Treasuries versus Japanese government bonds



Sources: Bloomberg L.P., Invesco, data from Jan. 1, 2004 to Oct. 20, 2016.

As a result, Japanese investors have begun to seek yield in their own markets, leading to reduced demand for US Treasuries and higher US Treasury yields, especially for longer-term US Treasuries. However, we do not believe that this marks the end of non-US buying in the US bond market. Japanese investors buy much more than just US Treasury notes, US credit markets still offer significantly greater yield when hedged back into Japanese yen, and not all Japanese investors hedge currency risk (and some only partially hedge), meaning that not all Japanese investors are sensitive to rising hedging costs.

Will the Fed impact this dynamic?

Hedged yields are very sensitive to the level of short-term interest rates. The spread between US and non-US short-term interest rates (combined with supply and demand) determines currency hedging costs. The wider the spread, the higher the hedging cost to non-US investors. As the Fed hikes interest rates, the spread between US and non-US interest rates increases, causing hedging costs to rise, all else equal.

Normally when the Fed raises interest rates, the US Treasury yield curve tends to flatten. However, rising hedging costs would tend to have a net steepening effect, as non-US investors exit the longer-maturity segment of the US Treasury market.

What is the potential impact of higher hedging costs on US rates markets?

We believe the above dynamic is likely to filter through to US rates markets in a few ways. First, we would expect the US yield curve to generally hold its shape if the Fed raises interest rates. In other words, its steepness should stay intact as non-US investors reduce their demand for hedged US Treasuries. In addition, higher hedging costs also make it more attractive for US investors to invest in foreign markets, all else equal. Finally, we believe the increased attractiveness of global markets relative to US markets, for now, limits non-US demand as an important driver of lower long-term US interest rates, placing a potential floor under long-term US interest rates in the near term.

James Ong, Senior Macro Strategist

Interest rate outlook

US: Over the past month, US interest rates have risen and the yield curve has steepened. This is likely due to BoJ actions to steepen it's own yield curve, which has softened Japanese demand for US Treasuries. However, global deflationary forces, QE and negative interest rates across much of the world are generally supportive of US Treasuries and will likely keep US rates below fair value. We believe low term premia suggest that market dislocations are more likely to cause US rates to rise rather than fall from current levels. We continue to believe the Fed is on track to hike interest rates in December.

Europe: The ECB made clear in its October policy meeting that there will be no tapering of bond purchases and, if anything, more easing may be on the horizon. We await the December meeting when we will get updated staff economic forecasts and further indication of ECB policy direction. However, ECB President Mario Draghi suggested that an extension of the QE program could be announced in December. We expect the ECB to start buying bonds yielding below the ECB deposit rate, which could potentially steepen the 2-year – 10-year yield curve. However, overall, we believe the ECB will maintain a dovish stance, which will likely be supportive of European bonds.

China: The onshore government bond yield curve has flattened over the last several weeks, with longer maturity yields moving lower on the back of strong demand from local investors. Also, deflation fears have been abating with the recent return of the producer price inflation rate to positive territory. The producer price index (PPI) rose by 0.1% in September 2016 versus a year ago – the first positive PPI figure since January 2012.[1]

Japan: Inflation continues to come in significantly below expectations, but the BoJ attributes much of this undershoot to external factors. There is no doubt that, despite external factors, the BoJ needs to do more, in our view. The question is, what? The "yield curve control" measures introduced in September, appear to be having the desired effect, but the potential for further interest rate cuts remains high, as the BoJ continues to determine how best to manage with diminishing resources at its disposal.

UK: The UK government has confirmed that it will trigger article 50 before the end of March 2017. Prime Minister, Theresa May, has also suggested that the nature of Brexit will be "hard." This stance is a concern for business leaders and investors alike and has resulted in a sell-off in gilts. Uncertainty is likely to continue over the next 12 months. The government and central bank will likely seek to limit the impact of any downside hit to the economy, but we are watching for a reduction in support for Brexit, especially if house prices start to decline, prices start to rise and people to start to lose jobs. This theme could surface in the first half of 2017.

Canada: Canadian government 10-year yields followed global yields higher in October, pushing to the top end of their recent range. Canadian interest rates should find some support at current levels, in our view, unless global yields continue to push higher. On the data front, measures of inflation continue to come in well below the Bank of Canada's targets. And while September's employment release was surprisingly strong, the underlying details showed heavy reliance on part-time workers. On the regulatory front, the government announced measures to close tax loopholes on foreign home buyers, which is expected to weigh on future housing market activity.

Australia: As expected, the Reserve Bank of Australia (RBA) held its policy interest rate at 1.50% at its October meeting.[2] New Governor, Philip Lowe, kept the statement little changed. The statement noted that housing market growth has slowed overall, but that some markets have recently strengthened. The unemployment rate fell to 5.6% according to the October release, but the report was mixed, as a drop in the participation rate was the main driver for the headline drop.[3] Overall, growth remains strong and employment appears stable. There does not appear to be a need for further rate cuts by the RBA for the remainder of the year.

Rob Waldner, Chief Strategist, James Ong, Senior Macro Strategist, Sean Connery, Portfolio Manager, Brian Schneider, Head of US Rates, Scott Case, Portfolio Manager, Josef Portelli, Portfolio Manager, Ken Hu, CIO Asia Pacific, Alex Schwiersch, Portfolio Manager

1 Source: Bloomberg L.P., Oct. 14, 2016
2 Source: Reserve Bank of Australia, Oct. 4, 2016.
3 Source: Australian Bureau of Statistics, Oct. 19, 2016

Currency outlook

USD: We believe the potential resumption of the hiking cycle is bullish for the US dollar due to stronger potential asset flows and greater market uncertainty. Our growth outlook remains favorable for a Fed rate hike in December, largely due to a gradually strengthening labor market. The pace of US dollar appreciation is likely to be limited, however, unless foreign central banks resume easing through their currency channels.

EUR: The ECB's October policy meeting was generally in line with consensus. The wait and see approach by the ECB relative to the Fed's policy normalization path should drive the euro lower versus the US dollar. We expect currency volatility to rise into the fourth quarter. We expect further declines in the euro and are positioned accordingly.

JPY: The yen continues to trade in a relatively tight range (JPY100-105/USD) against the US dollar.[1] We expect the low end of this range to be maintained in the near term, unless there is a significant deterioration in US economic data. Significant easing by the BoJ does not appear to be imminent, however, even with inflation well short of target. We expect the BoJ to continue fine tuning policy.

GBP: We believe there is the potential for further downside in sterling, especially if the British authorities and their European counterparts continue to play hard ball over Brexit. European officials will likely not be in a position to hold meaningful discussions until the end of 2017, since several must navigate through national elections. This means there will likely be limited opportunities for sterling to appreciate in the interim.

CAD: The Canadian dollar has trended weaker since it peaked in May, despite increased oil prices. A cut in the overnight rate below the Bank of Canada's current 0.5% target remains a possibility, as the economy continues to show relatively lackluster growth.[2] Recent changes in tax laws for foreign purchasers of houses may add to Canadian dollar weakness. We continue to remain short the Canadian dollar as economic weakness persists.

AUD: The RBA held its policy interest rate at 1.50% at its October meeting, as expected.[3] This was Governor Philip Lowe's first meeting since becoming governor of the RBA and only slight changes were made from the previous statement. The RBA did acknowledge that "an appreciating exchange rate" could provide a headwind to growth. With the policy rate at all-time lows, and the economy continuing to seem in good shape, we believe there is no pressure for the RBA to lower rates further. With the RBA on hold, we expect the Australian dollar to be supported at current levels

Ray Uy, Head of Macro Research and Global Multi-Sector Portfolio Management, James Ong, Senior Macro Strategist, Brian Schneider, Head of US Rates, Sean Connery, Portfolio Manager, Scott Case, Portfolio Manager, Alex Schwiersch, Portfolio Manager

1 Source: Bloomberg L.P., data from Aug. 1, 2016 to Oct. 27, 2016.
2 Source: Bank of Canada, Oct. 19, 2016.
3 Source: Reserve Bank of Australia, Oct. 4, 2016

This section highlights the key themes driving Invesco Fixed Income's global macro and credit research process and views. Themes are updated based on evolving trends and expectations.

Global investment themes

Global macro themes

Central banks less market-sensitive

Rationale

Major central banks appear less likely to step in to stabilize financial market volatility. We expect the Fed to hike in December.

IFI strategy

US policy divergence from the rest of the world promotes US dollar strength. Markets at tight valuations are vulnerable to risks. We favor moderate risk budgets.

Asian deflation

Rationale

Outflows from China appear to be picking up and Chinese policy makers appear to be trying to curb leverage in the financial system.

IFI strategy

We favor positioning for Chinese currency weakness.

Global credit themes

Geographical themes

Investment grade (IG): Global central bank forces, credit cycle differences remain

Rationale: US, Europe and Asia IG have seen strong investor demand due to easy global monetary policy. US fundamentals remain challenging with leverage at cycle highs, though recent corporate actions have been credit supportive, especially in energy. European credit markets generally earlier in cycle, less levered, less growth challenged.

IFI strategy: Favor gaining exposure to selected higher quality issuers in energy, pipelines and metals where shorter-term maturities are well covered by liquid assets. Favor select industrials, consumer cyclical, and technology, media and telecommunications (TMT). Remain neutral financials.

Emerging markets (EM): Macro fundamental momentum continues to weaken

Rationale: Oil price stability is a positive, but we expect volatility going into November. The proximate cause is nascent signs of tightening financial conditions. Valuations remain a concern.

IFI strategy: Prefer cautious positioning in US dollars, keeping China beta low. High-yield and commodity-related exposure likely supported in near term.

US commercial mortgage backed securities (US CMBS): Notable decline in primary market issuance

Rationale: Transaction volume and property price appreciation are slowing. Early signs of tighter financial conditions have become apparent. Rent growth remains modest.

IFI strategy: Prefer seasoned US CMBS as cycle progresses. Credit-differentiation is accelerating, placing a premium on selection.

US residential mortgage backed securities (US RMBS): Favorable fundamentals, valuations fair, liquidity inconsistent

Rationale: Legacy non-agency US RMBS offer opportunity where fundamentals are favorable. Credit risk transfer (CRT) deals show solid fundamentals, however, valuations are nearing stretched in below-investment grade segment. Liquidity remains inconsistent, but CRT market depth improving.

IFI strategy: Prefer higher quality legacy prime, alt-A, seasoned CRT. Avoiding sub-prime, option adjustable rate mortgages. Neutral BBB-rated CRT and below-investment grade.

US asset backed securities (US ABS): Value in off-the-run securities, fundamentals normalizing

Rationale: Fundamentals are strong but modestly weaker as collateral performance has moved off historical low delinquency and loss levels. Technicals are supportive. Deep subprime auto market concerns.

IFI strategy: Prefer adding exposure to off-the-run tranches where collateral performance remains stable. Believe wider swap spreads provide opportunities. Believe senior auto US ABS and esoteric issuers can provide opportunities. Avoiding deep subprime auto US ABS.

Sector themes

Commodities: Global rebound in energy, metals but volatility remains

Rationale: Expect global IG credit risk premia to improve as some energy and metals credits transition to high yield. Fundamental credit quality concerns due to modest economic growth and risk of volatility due to OPEC, US election and Fed uncertainty.

IFI Strategy: Favor gaining exposure to selected higher quality energy, pipeline and metals issuers where shorter-term maturities are well covered by liquid assets and positive corporate actions support financial profiles.

Consumer story more nuanced globally

Rationale: Solid US labor market and lower gas prices are supportive, but consumers more value-conscious and international retail demand remains uneven, due partly to volatile capital markets. Watching European consumer for post-Brexit behavior shift.

IFI Strategy: Favor select US consumer sectors including autos, leisure and housing-related sectors. Negative on "big box" retailers that lack differentiated products. Favor EM consumer sectors on a selective basis.

Post-merger and acquisitions (M&A) deleveraging plays

Rationale: M&A activity has moderated but remains a risk, driven by large cash balances, low all-in financing cost, lack of organic growth, and need to reposition business portfolios.

IFI Strategy: Preference to play post-transaction bond issuance typically characterized by size, liquidity, concessions and plans to deleverage. Due to lower but still large M&A-related pipeline, believe a discriminating approach to this strategy is warranted.

Global technology – big data

Rationale: Expect global use of data to grow and transition to cloud-based platforms.

IFI Strategy: Prefer to gain exposure to software and services, cell towers and select wireless issuers. Have avoided hardware original equipment manufacturers.

Yield curve themes

Credit curve positioning, value in long end

Rationale: Global zero interest rate policy has forced cash investors and sovereign wealth funds into 3-5 year part of the credit yield curve, creating steep 5-7 year part of the curve. Lately, sovereign wealth funds have targeted the 10-year part of the curve. We expect demand for 5-10 year paper to be resilient.

IFI Strategy: Prefer 7-10 and select 30-year points on US IG credit yield curve. New issuance at longer maturities has tended to come at healthy concessions.

Rob Waldner, Chief Strategist, Ray Uy, Head of Macro Research and Global Multi-Sector Portfolio Management, Tony Wong, Head of Global Research, Joe Portera, Head of Global High Income, Michael Hyman, Head of Investment Grade

US money market reform spurs asset flows and potential opportunities
US money market reform that took effect on Oct. 14, 2016 not only provided new measures to strengthen the US money market fund industry and enhance protections for US money market investors, but also resulted in a major re-composition of the US money market. This shift may present opportunities for money market investors, which we highlight below.

Under reform, institutional prime and municipal funds (funds that typically invest in corporate securities like commercial paper and certificates of deposit) must now maintain floating net asset values (FNAV), while government money market funds (funds that invest solely in US government securities) may maintain a constant USD1.00 net asset value (CNAV). This dichotomy, among other rule changes, has resulted in a colossal shift in demand away from prime and municipal funds toward government funds over the past several months.

As investors adjusted preferences under the new rules, asset flows in the US money market reached levels that even the most pessimistic prognosticators missed. According to iMoneyNet, Inc., more than USD1.2 trillion in assets vacated US prime and municipal US money market funds during the last year.[1] Notably, a solid majority of those assets (USD1.1 trillion) moved to US government money market funds.[1]

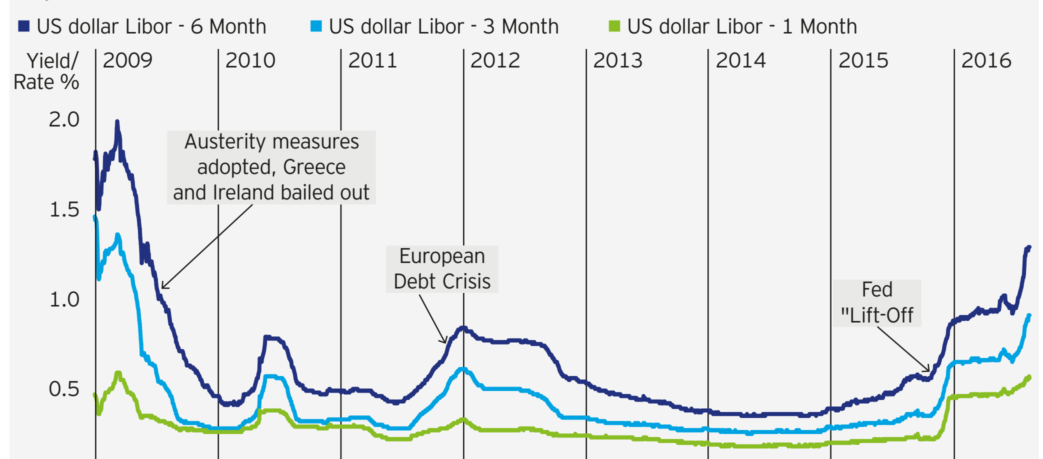
US government money market funds now account for around 80% of all US money market fund assets, compared to around 36% a year ago.[1] New "post-reform" CNAV retail funds account for around 14% of industry assets while FNAV institutional money market funds now make up just 5% of the US money market.[1]

Is there opportunity? Beauty is in the eye of the beholder
Below we highlight three segments of the US money market where interest rates have risen significantly due primarily to reform-related asset shifts: US dollar Libor, short-term foreign bank debt and the US municipal money market.

US dollar Libor
US dollar Libor (London Interbank Offered Rate denominated in US dollars) spiked recently to its highest level in seven years. (Figure 1) Typically, US dollar Libor jumps during times of market stress, and/or when the US Federal Reserve tightens monetary policy. However, the recent rise in US dollar Libor is primarily a result of the decline in demand by US prime money market funds for short-term unsecured money market instruments, such as bank certificates of deposit and corporate commercial paper.

We believe investors that are not subject to US money market fund reform, such as ultra-short bond investors, could benefit, as well as some institutional investors that can invest in institutionally oriented solutions such as global money market funds and separately managed accounts. Existing holders of US dollar Libor-based floating rate notes, such as corporate floating rate notes, some US agency collateralized mortgage obligation floaters and bank loans, could also benefit.

Figure 1: US dollar Libor



Sources: Bloomberg L.P., Intercontinental Exchange, data from Jan. 1, 2009 to Oct. 21, 2016 . Past performance is no guarantee of future results.

Short-term foreign bank debt

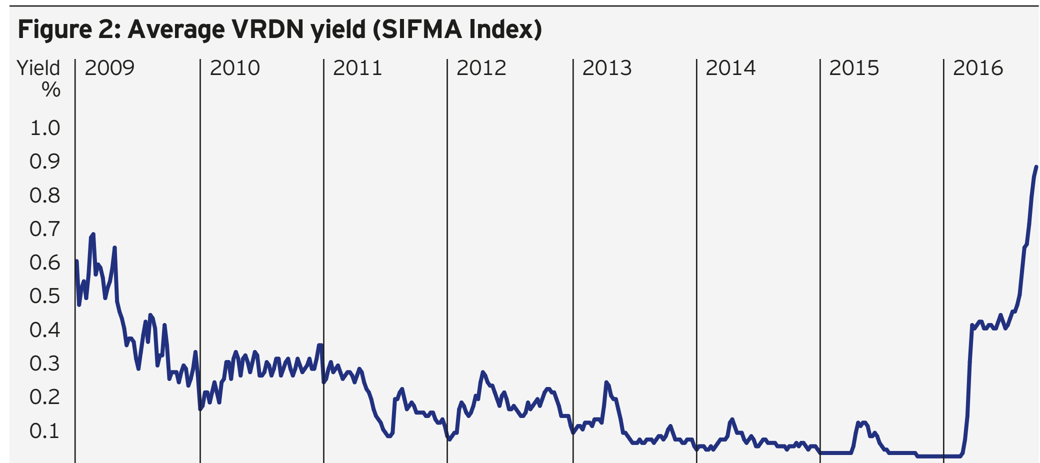
Interest rates on short-term foreign bank debt have re-priced higher along with most other US dollar Libor-based short-term debt. Some money market investors have raised concerns that reduced demand for foreign bank debt could cause liquidity shortages among foreign banks reliant on the US money market for their US dollar funding needs. We have examined this concern and believe that many of these banks are well prepared for the changes entailed by US money market reform and maintain strong liquidity positions. We expect continued credit strength among these banks in the near-to-medium term, even if their short-term financing rates remain elevated, making current attractive yields a potentially compelling opportunity.

Municipal money market securities

The reform-related dynamic has been particularly marked for certain short-term municipal securities, such as variable rate demand notes (VRDNs) whose yields have climbed sharply (Figure 2). VRDNs typically represent a large portion of US municipal money market fund holdings. The asset shift away from municipal money market funds due to money market reform has pressured their yields higher.

We expect yields on VRDNs to remain elevated in the near term due to the major structural changes that the short-term municipal market is currently undergoing due to US money market reform. If VRDN yields drift higher, we would expect incremental buyers to be attracted to this asset class, although this could take time. In the near term, we believe money market investors that take advantage of the recent rise in VRDN yields may potentially reap attractive yields relative to other money market alternatives.

Figure 2: Average VRDN yield (SIFMA Index)



Sources: Bloomberg L.P., Sifma, data from Jan. 7, 2009 to Oct. 5, 2016. Past performance is no guarantee of future results.

Robert Corner, Senior Client Portfolio Manager, Lucas Simmons, Analyst, Brandon Maitre, Portfolio Manager

1 Source: iMoneyNet, Inc., data from Oct. 20, 2015 to Oct. 18, 2016.

Jay Raol
Senior Macro Analyst, IFI

Andrew Waisburd
Global Head of Portfolio Management, IQS

Robert Neilson
Head of EMEA Product Strategy and Solutions, IFI

Andrew Gardner
Chief Administrative Officer, IQS

Read more about factor-based investing in the fourth quarter edition of Risk & Reward.

The bottom line

We speak with Jay Raol, Senior Macro Analyst, Invesco Fixed Income (IFI), Andrew Waisburd, Global Head of Portfolio Management, Invesco Quantitative Strategies (IQS), Robert Neilson Head of EMEA Product Strategy and Solutions, IFI, and Andrew Gardner CAO, IQS, about factor-based investing.

IFI has had a long partnership with IQS. We have deepened this relationship as IFI has researched factor based strategies in Fixed Income. For over 30 years, the IQS team has employed an active, research-intensive investment process designed to benefit our clients over the long-term. The team has over 40 investment professionals and manages approximately USD34 billion in equity and balanced solution portfolios for institutional and retail clients around the globe.[1]

Q: What is factor-based investing?
Jay Raol: Factor-based investing involves building portfolios based on specific factors that have been identified as being meaningful for returns or risk. Similar to more traditional investment processes, factor investing involves taking positions in individual assets. However, unlike more traditional approaches, in which selection of the underlying securities is the objective, in the case of factor investing, tradable securities, such as stocks and bonds, are merely used as instruments to achieve broad and diversified exposure to the underlying investment factors. As such, factor investing is a heavily research driven approach.

Q: What are factors and what are some common examples?
Andrew Waisburd: Factors are the building blocks of factor-based portfolios. Factors can be related to certain styles (for example, momentum or quality) or macro factors such as economic growth or inflation. These characteristics are typically associated with themes related to risk and return. Return-based factors tend to be persistent drivers of return through time. Risk factors, on the other hand, are typically thought to explain the variability of returns but do not necessarily deliver positive expected returns over the long run. For example, investors often associate bonds with having a lower average return than equities. In fact, it is not that bonds, per se, behave this way but that bonds have a lower exposure to the growth factor that drives returns.

Q: How can factor-based investment benefit investors?
Jay Raol: The idea is that portfolio return and risk is largely explained by exposure to certain factors. The implication is that investors are exposed to these factors and would benefit from better understanding their portfolios' exposures and how these factor tilts impact their portfolios' return and risk profiles. Once this is more fully understood, investors may consider actively managing these factors for at least two reasons. First, to the extent that investors subscribe to the rationales associated with return-based factors, they might consider taking active positions in factor portfolios to generate alpha, or excess return. Second, even if systematic investment in return-based factors is not desired by particular investors, they are likely to appreciate that the variability in their portfolios' performance is, at least in part, explained by exposure to these factors. As a result, they would likely benefit from managing this factor risk.

Q: What is Invesco's expertise in factor-based investing?
Andrew Waisburd: Invesco is one of the pioneers in the factor investing space, launching its first strategy in 1983. For decades, Invesco has been investing in factors by operationalizing traditional investment themes using a transparent, structured and well-disciplined approach. Invesco's method is based on the belief that the key determinants of risk and return are quantifiable characteristics such as value, size, momentum, volatility and quality. Traditional or "fundamental" managers typically invest along similar dimensions. However, they rely on bottom-up security selection using research that carefully investigates the current state of each individual company. Invesco's factor-based approach is highly research intensive as well. However, our research tends to be longer-term in nature, focused on identifying the underlying return and risk drivers rather than specific securities, and is heavily reliant on statistical evidence.

Q: How does a factor-based portfolio differ from a traditional portfolio?
Jay Raol: Unlike the traditional portfolio that is constructed around individual security selection, factor-based strategies are implemented through a portfolio of securities that capture the overall themes that factor research identifies as contributing to risk and return. Factor portfolios can be single-factor or multi-factor, focusing on combinations of factors that work well together. By focusing on exposures to key factors rather than individual securities, portfolios are built to harvest factor premia in a systematic fashion via a well-diversified portfolio. In the extreme, the investor who fully embraces a factor-based solution would change the way he views the world from one in which he allocates across assets and asset classes to one in which he allocates to the factors that drive the returns of those securities.

Q: How could investors implement a factor-based strategy?
Andrew Waisburd: In principle, for investors with absolutely no exposures to style and macro factors, the ideal solution is to employ a multi-factor model using sophisticated portfolio construction techniques including careful risk control to deliver a fully optimized factor-based solution. In practice, most clients will already have some exposure to factors, but, unless their factor investments have been intentional, their portfolios are unlikely to be characterized by the ideal factor balance across these investments. For these investors, Invesco may be able to assist investors achieve the optimal balance of factors through a process called "factor completion." This can range from a simple combination of multiple single factor portfolios to rebalance the client portfolio to sophisticated implementations that holistically build around existing portfolios to provide optimal factor blends. These portfolio rebalancing exercises can be performed within a single asset class or across multiple asset classes.

Q: What is Invesco Fixed Income (IFI) currently doing to develop factor-based strategies?
Robert Neilson: The first step in developing IFI's factor-based strategies or solutions is conducting quantitative research to map factors that are important for bond and currency markets. IFI research started in 2015 and is ongoing today. Our initial focus has been on the US bond market but recently this has expanded to the European fixed income markets. Factors governing G20 currencies have also been identified and we continue to refine that research alongside the activity focused on fixed income markets. We are actively developing new strategies that draw on factor-based techniques, either exclusively or in part, as a complement to our fundamental, active investment approaches. We expect to launch new strategies in 2017.

Q: How is IFI collaborating with other Invesco teams to derive factor-based solutions?
Andrew Garder: The efforts of IQS and IFI form part of an overall Invesco-wide initiative to build capabilities in this increasingly important area for global investors. In IQS, we are working closely with our colleagues in IFI to develop the multi-factor platform that will be essential for IFI to provide factor-based solutions globally.

1 Source: Invesco as of Sept. 30, 2016.

Fixed income market monitor

	Coupon (%)	Yield to worst (%)	1 month change in YTW	Option-adjusted spread: current	1 month change in spread	10 year range: min	10 year range: max	Returns: 1 mth (%)	3 mth (%)	YTD (%)	12 mth (%)
Global Aggregate (USD hedged)	2.75	1.13	-0.01	43	-1	23	156	-0.01	0.53	6.44	6.54
U.S. Aggregate	3.09	1.96	0.02	47	0	32	258	-0.06	0.46	5.80	5.19
U.S. Mortgage-backed	3.60	2.06	0.02	14	-1	-16	181	0.28	0.60	3.72	3.61
Global Inv Grade Corporate (USD hedged)	3.70	2.25	0.03	134	3	55	515	-0.19	1.86	8.52	8.59
U.S. Investment Grade Corporate	4.09	2.84	0.05	138	3	76	618	-0.25	1.41	9.20	8.56
Emerging Market USD Sovereign	n/a	4.98	0.00	337	0	157	906	0.40	4.04	14.77	16.20
Emerging Market Corporate	n/a	4.56	0.06	316	6	120	1,032	0.15	3.07	11.11	11.61
Global High Yield Corporate (USD hedged)	6.29	5.74	-0.02	474	2	231	1,845	0.42	5.08	13.44	12.21
U.S. High Yield Corporate	6.54	6.17	-0.14	480	-10	233	1,971	0.67	5.55	15.11	12.73
Bank Loans	4.89	5.11	0.00	n/a	n/a	n/a	n/a	0.84	3.07	7.43	5.32
Municipal Bond	4.77	1.82	0.16	n/a	n/a	n/a	n/a	-0.50	-0.30	4.01	5.58
High Yield Municipal Bond	5.22	5.20	0.12	n/a	n/a	n/a	n/a	0.27	1.29	9.37	11.32

Treasury market monitor

	Coupon (%)	Yield to worst (%)	1 month change in YTW	Returns in local currency: 1 mth (%)	3 mth (%)	YTD (%)	12 mth (%)
United States	2.04	1.26	0.00	-0.13	-0.28	5.07	4.09
Canada	2.42	0.89	-0.04	0.11	0.55	3.76	4.45
United Kingdom	3.73	0.86	0.15	-2.44	2.41	14.74	13.20
Germany	2.16	-0.35	-0.04	0.25	-0.17	6.59	6.21
Italy	3.64	0.77	0.03	-0.26	1.14	4.16	5.87
Japan	1.12	-0.06	-0.03	0.06	-1.96	4.98	6.10
China	3.54	2.70	-0.02	0.49	2.17	4.15	7.26
EM Local Currency Governments	n/a	n/a	n/a	1.12	2.38	10.91	12.63

FX market monitor[1]

	Current	10 year range: min	10 year range: max	Returns: 1 mth (%)	3 mth (%)	YTD (%)	12 mth (%)
EURUSD	1.12	1.06	1.60	0.69%	1.16%	3.43%	0.52%
USDJPY	101.35	75.82	124.77	2.06%	1.82%	18.66%	18.29%
GBPUSD	1.30	1.31	2.11	-1.26%	-2.55%	-11.97%	-14.25%
USDCNY	6.67	6.04	8.28	0.21%	-0.34%	-2.56%	-4.61%
USDCHF	0.97	0.75	1.39	1.29%	0.49%	3.19%	0.20%
AUDUSD	0.77	0.60	1.10	1.96%	2.86%	5.19%	9.20%
CADUSD	0.76	0.72	1.09	-0.16%	-1.54%	5.41%	1.41%
EURJPY[2]	113.92	94.31	169.49	1.30%	0.61%	14.68%	17.62%
EURGBP[2]	0.87	0.70	0.85	-1.95%	-3.67%	-14.90%	-14.70%

Sources: Barclays, J.P. Morgan, Bloomberg L.P., as of Sept. 30, 2016. Credit Suisse Leveraged Loan data as of Sept. 30, 2016. Within the Treasury monitor, United States is represented by Bloomberg Barclays US Treasury Index; Canada is represented by Bloomberg Barclays Global Treasury Canada Index; United Kingdom is represented by Bloomberg Barclays Sterling Gilts Index; Germany is represented by Bloomberg Barclays Global Treasury Germany Index; Italy is represented by Bloomberg Barclays Global Treasury Italy Index; Japan is represented by Bloomberg Barclays Global Treasury Japan Index; China is represented by Bloomberg Barclays China Aggregate Treasuries Index; EM Local Currency Governments is represented by J.P. Morgan GBI_EM Broad Diversified Index. In the Fixed Income Monitor, Global Aggregate is represented by Bloomberg Barclays Global Aggregate (US$ Hedged) Index; US Aggregate is represented by Bloomberg Barclays US Aggregate Index; US Mortgage-backed is represented by Bloomberg Barclays US Mortgaged-backed Index; Global Investment Grade Corporate is represented by Bloomberg Barclays Global Aggregate Corporate (US$ hedged) Index; U.S. Investment Grade Corporate is represented by Bloomberg Barclays Aggregate Corporate Index; Emerging Market USD Sovereign is represented by the J.P. Morgan EMBI Global Diversified Index; Emerging Market Corporate is represented by J.P. Morgan CEMBI Broad Diversified Index; Global High Yield Corporate is represented by the Bloomberg Barclays Global High Yield Corporate (US$ hedged) Index; U.S. High yield Corporate is represented by Bloomberg Barclays U.S. Corporate High Yield Index; Bank Loans is represented by the Credit Suisse Leveraged Loan Index; Municipal Bond is represented by Bloomberg Barclays Municipal Bond Index; High Yield Municipal Bond is represented by Bloomberg Barclays Municipal Bond High Yield Index. Yield to Worst (YTW) is the lowest expected yield calculation given maturity and call features. Option Adjusted Spread (OAS) is the yield difference relative to similar maturity Treasuries that incorporates call, put, sinking fund or paydown features of a bond. Past performance cannot guarantee future results. An investment cannot be made directly in an index. Returns less than one year are cumulative.

1 Positive number represents the currency appreciated against USD, negative number represents currency depreciated against USD.
2 Positive number represents the currency appreciated against EUR, negative number represents currency depreciated against EUR.

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