Invesco Fixed Income

Global Fixed Income Strategy

August 30, 2017

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Global macro strategy

Why is inflation surprisingly low?

Over the past five months, the US has experienced a string of surprisingly low inflation reports. After peaking at 2.7% in February, annual growth in the Consumer Price Index (CPI) dropped steadily to 1.7% by July.[1] More importantly, "core" inflation, which removes the volatile food and energy components, fell from 2.2% to 1.7% over the same period.[1] Because core inflation is an important determinant of bond prices and US Federal Reserve (Fed) policy, we believe it is important for investors to understand what drives it and how it is likely to evolve in the future.

There are two main drivers of core inflation

At Invesco Fixed Income (IFI), we divide the drivers of core inflation into two buckets.

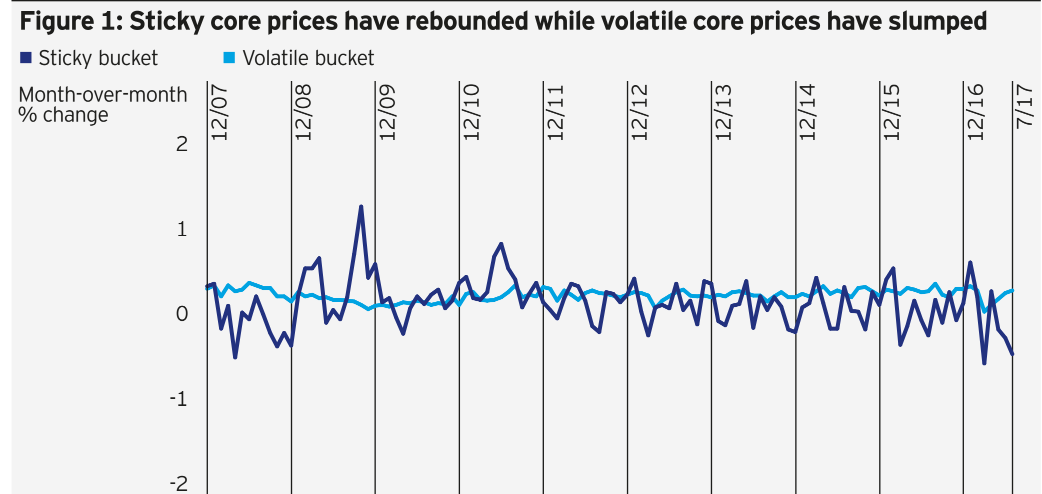
- The first bucket is volatile core prices. These prices (mostly for goods, such as autos and apparel) tend to be driven by both global and domestic supply and demand, commodity prices and the US dollar. Prices of these goods fluctuate widely, but also tend to return to trend, or "mean revert," fairly quickly.
- The second bucket is "sticky" core prices that are resistant to change. These are typically for services (such as housing and health care) that are driven mainly by domestic supply and demand. These prices are generally more stable due to less influence from global price pressures. During the post-crisis recovery, sticky core prices have been supportive of overall rising US inflation.

What has curbed core inflation and what is IFI's outlook?

Several of the initial downside surprises in core CPI were driven by drops in the sticky bucket (mostly services). Typically stable medical care, communication and housing inflation all slowed by unusual amounts. This is important because persistent declines in sticky core inflation could shift the US economy into a lower inflation regime and lower our core CPI outlook. However, this bucket has since stabilized and we believe there is a good chance that overall inflation will mean revert toward historical levels in the medium term.

That being said, volatile core prices continue to fall, potentially holding back inflation. Recently, prices in the volatile basket have been falling almost as fast as they did in 2008 and 2009 after the global financial crisis.

Figure 1: Sticky core prices have rebounded while volatile core prices have slumped



Source: Federal Reserve Bank of Atlanta, data from Dec. 31, 2007 to July 31, 2017. Sticky bucket is Federal Reserve Bank of Atlanta Core Sticky Price Consumer Price Index. Volatile bucket is Federal Reserve Bank of Atlanta Core Flexible Price Consumer Price Index.

IFI believes that inflation will rebound in late 2017 or early 2018. We believe sticky core inflation is set to trend higher. The volatile bucket is more uncertain. Increased tech-driven efficiencies due to innovations like Airbnb, Uber, etc. have contributed to price weakness, an effect that could persist for some time. However, we do not expect volatile core prices to continue falling as fast as they did in the post-crisis period, given the relative health of today's economy.

Global growth should also be a catalyst for higher US volatile core prices: if the US dollar continues to weaken as other economies converge toward the US, and commodity prices rise, prices in the volatile bucket should eventually move higher.

Changing methodologies have played a part
Sometimes statistical adjustments, such as the way that price data are calculated, can have a large, one-off impact on the CPI. One-off price changes in either the volatile or sticky bucket may be large enough to impact the overall price level, but they are typically not repeated. This means that one-off changes can cause a large impact in one month but lose importance over time. Several statistical adjustments have had a significant dampening effect on CPI during the past year. In particular, an adjustment in the price calculation of cellular phone plans reduced inflation by 0.11 percentage points in March.[1] This impact is significant, especially given its small weight of approximately 1.6% in the overall index.[1] We expect this statistical effect to be temporary.

What does low inflation mean for the Fed?
The federal funds rate futures market has discounted the likelihood of another Fed rate hike in 2017. If volatile core prices stay low for the rest of the year, IFI believes the Fed will probably not hike rates in December and the next rate hike could be pushed back to March 2018.

Nevertheless, the Fed looks at inflation in many ways. Because monetary policy takes time to impact the economy, the Fed places particular weight on its inflation forecast. If the Fed believes future core inflation is likely to reach its 2% target, it may still raise rates even if actual core inflation remains soft.

What does this mean for markets?
Bond market prices currently imply a 30% chance that the Fed will hike interest rates in December.[2] IFI believes this is too low and that US Treasury yields could be pressured higher in the next few months. We also believe our expectations for stable core inflation, coupled with a solid growth backdrop, are supportive of credit assets.

As we approach the September Federal Open Market Committee meeting, we see no major hurdles to the Fed launching its announced phase-out of asset reinvestments. We expect limited market impact from this phase-out given its well-telegraphed introduction.

Surprisingly low global inflation
Subdued inflation is not unique to the US. Inflation similarly peaked in the first quarter in most other developed economies, with little in the way of wage pressure. IFI believes this backdrop gives global central banks the flexibility to manage monetary policy in a gradual manner. IFI's macro and credit analysis suggests that global bond markets would likely absorb gradual policy normalization. An unexpected increase in inflation, however, might cause global central banks to accelerate their pace of tightening. This more aggressive policy cycle does not appear to be priced into bond markets and may be disruptive to risky assets. We believe this makes bond markets vulnerable to an upside surprise in inflation that causes an acceleration of tightening. Although not our base case, we believe this risk is worth monitoring.

James Ong, Senior Macro Strategist, Noelle Corum, Associate Portfolio Manager, Ray Uy, Head of Macro Research and Currency Portfolio Management

1 Source: US Bureau of Labor Statistics, March 31, 2017, to July 31, 2017.
2 Source: Bloomberg L.P., Aug. 14, 2017.

Interest rate outlook

US: Inflation data continue to surprise to the downside. This does not mean a December rate hike is off the table, but continued weakness could cause the Fed to question its forecasts. Nevertheless, the Fed remains on track to begin its tapering of reinvestments in September and we expect inflation to show signs of stability in late 2017. This inflation backdrop, together with robust global growth, will likely pressure US yields higher as term premium becomes priced in.

Europe: As European growth continues to perform well and broaden out, a move away from ultra-loose monetary policy seems inevitable and widely expected at this time. We expect the European Central Bank's (ECB) approach to exit from its current unconventional policies to be very gradual and cautious to minimize market disruption, as it assesses the future path of inflation (which remains well below the ECB's 2% target), financial conditions and global growth. We think the ECB will reassess its monetary policy and announce further tapering of asset purchases in October, with a reduction from €60 billion to €40 billion initially, to take effect in January.

China: The onshore Chinese government bond (CGB) yield curve bear steepened last month, as the central bank maintained relatively tight liquidity conditions in the interbank market while local government bond supply and credit extension have been strong. Liquidity conditions could tighten further in September given quarter-end effects - smaller financial institutions could face funding strains, although liquidity conditions for large banks should remain stable. In the medium term, we continue to see room for interest rates to decline, as tighter financial regulations and strengthened financial deleveraging efforts following the National Financial Work Conference are expected to reduce risk appetite and slow broader credit growth.

Japan: Japan just announced its sixth consecutive quarter of growth, the longest unbroken streak in over a decade. What is most impressive is that growth was broad-based and not reliant upon a temporary boost in inventories. More importantly, the consumer continues to play a major part. It is not clear what changed consumers' mindset, but a mild pick-up in wages, positive wealth effect and a rise in full-time employment likely played a part. Looking ahead, we think the Bank of Japan (BoJ) will keep monetary policy unchanged, although a change in stance cannot be ruled out if other global central banks tighten. We expect 10-year Japanese Government Bond yields to remain range bound (0-0.1%) in the near term.

UK: UK economic growth forecasts for the rest of 2017 may be too pessimistic. Many forecasts are based on the consumer making less of contribution than in the past (household savings are at a record low, real wages are negative, property price increases are slowing). But recent data suggest that a slowdown may take longer to play out. The household savings ratio understates the amount that consumers have put away for a rainy day, employment is holding up, inflation is expected to decline and home prices are holding up, so far.
A weaker sterling is also helping exports and the UK government will likely continue to try to demonstrate that it will not allow the economy to fall off a cliff (over Brexit), meaning there is a chance for a positive growth surprise. Brexit discussions could become factious over the coming months, however, and we expect the Bank of England to keep monetary policy unchanged through year-end.

Canada: The Bank of Canada (BoC) has moved firmly into the hawkish camp, leaving the market expecting another rate hike at the October meeting. The benchmark rate was raised to 0.75% in July.[1] Recent economic data continue to surprise to both the upside and downside. Canadian GDP growth leads the developed world at 4.6% year-over-year (as of May), while inflation remains low at 1.2% year-over-year.[2] The 10-year Canadian government bond yield topped out at 2.05% at the end of July, and then promptly turned lower.[3] We believe that risk remains for higher rates in the future.

Australia: The Reserve Bank of Australia (RBA) held its benchmark interest rate steady at 1.50% as expected at the August meeting.[4] Annual inflation remains below the RBA's target band and the unemployment rate remains elevated at 5.6%.[5] The housing market remains robust and that, combined with low inflation and stubborn unemployment and wage growth, should keep the RBA on hold for the foreseeable future. We remain neutral on Australian interest rates.

Rob Waldner, Chief Strategist, James Ong, Senior Macro Strategist, Noelle Corum, Associate Portfolio Manager, Sean Connery, Portfolio Manager, Reine Bitar, Macro Analyst, Brian Schneider, Head of North American Rates, Scott Case, Portfolio Manager, Yi Hu, Senior Analyst, Alex Schwiersch, Portfolio Manager

1 Source: Bank of Canada, July 12, 2017.
2 Source: Statistics Canada, GDP: July 28, 2017, Inflation: Aug. 18, 2017.
3 Source: Bloomberg L.P., July 31, 2017.
4 Source: Reserve Bank of Australia, Aug. 1, 2017.
5 Source: Australian Bureau of Statistics, Aug.16, 2017.

Currency outlook

USD: We expect the US dollar to continue to depreciate over the long term. Our constructive global growth view and outlook for global policy convergence (toward the Fed's tighter stance) will likely weigh on the US dollar against developed market currencies. However, short US dollar positioning currently appears stretched. If positions are unwound, this could lead to a dollar bounce in the near term.

EUR: We remain constructive on the prospects for further euro appreciation. In addition to support from the positive European fundamental backdrop and potential ECB policy adjustments, investors are demanding additional risk premium for US denominated assets, given the current uncertain US political climate.

RMB: We expect the CNY/CNH currency pair to trade relatively strongly in the weeks ahead. Offshore investors' and Chinese corporates' willingness to be long renminbi, together with overall softness in US dollar, are expected to continue to support the renminbi. The gradual pace of renminbi internationalization and capital account opening emphasized by President Xi in the National Financial Work Conference indicates continued capital controls in the foreseeable future and potential stability in the RMB/USD exchange rate. Central bank officials have said they expect the USD/CNY spot rate to trade around 6.5-6.6 by year end.[1] We expect the exchange rate to trade in a range of 6.80-6.99 in the second half of 2017.

JPY: The yen benefitted from a general flight-to-quality during August. We would expect this trend to continue against the majority of other major currencies through September, particularly given the potential for a Brexit stalemate (which would be sterling negative) and the possibility of the ECB not meeting market expectations around the exit from quantitative easing (QE). The trajectory for the yen is less clear against the US dollar, however, given the recent break out of the 110-115 range. We believe a move back into that range is possible.

GBP: Our longer-term view on sterling remains constructive, based on current valuations and our more optimistic view of how the Brexit discussions will eventually play out (i.e. soft Brexit or UK remains in the European Union (EU)). In the short term, however, sterling could come under pressure as the EU27 countries play hard ball over the ongoing status of EU citizens living in the UK, the Irish border status post-Brexit and the UK's divorce settlement, before agreeing to talk about a future trade deal between the parties. Any stall in discussions would likely negatively impact sterling relative to the euro, given the currently perceived financial wellbeing of the two economies.

CAD: The Canadian dollar has rallied significantly this year following the BoC's switch to a hawkish tilt. The combination of reasonably strong growth and the expressed intent of the BoC to remove both emergency rate cuts from 2015 left the market covering shorts in the Canadian dollar. The extreme rally has left the currency susceptible to a short-term retracement, in our view.

AUD: The RBA held its benchmark interest rate steady at 1.50% as expected at its August meeting.[2] The statement was very similar to the prior meeting and the recent strength in the Australian dollar surprisingly had no impact on the RBA's forecasts. Continued concern with the exuberant housing market and stubbornly low inflation should keep the RBA on hold. The Australian dollar has become expensive, but our expectation for still-positive global growth leaves us neutral currently.

Ray Uy, Head of Macro Research and Currency Portfolio Management, James Ong, Senior Macro Strategist, Noelle Corum, Associate Portfolio Manager, Brian Schneider, Head of North American Rates, Sean Connery, Portfolio Manager, Scott Case, Portfolio Manager, Yi Hu, Senior Analyst, Alex Schwiersch, Portfolio Manager

1 Source: People's Bank of China, Aug. 23, 2017.
2 Source: Reserve Bank of Australia, Aug. 1, 2017.

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

Global investment themes

Global credit themes

Geographical themes

Investment grade (IG): Global central bank forces, global growth impulse, fiscal policy changes

Rationale

US, Europe and Asia IG have seen strong investor demand due to easy global monetary policy, so tracking any changes in policy guidance is crucial. Fundamentals are stable-to-improving due to a positive global growth outlook. Leverage remains at cycle highs but is stabilizing ahead of expected balance sheet improvement. US tax policy changes could lead to improving fundamentals and less issuance going forward. European credit markets are generally earlier in the cycle and less levered, although Brexit and political uncertainties remain.

IFI strategy

Favor gaining exposure to selected senior and higher quality subordinate financials, consumer cyclical, technology, media and telecommunications (TMT) and pipelines. Remain cognizant of tight valuations.

Emerging markets (EM): Reversal of reflation trade, favorable financial conditions, growth outlook supportive

Rationale

Rise in core government yields indicates early sign of trend reversal in EM credit and currencies, but no strong evidence yet of overt tightening in financial conditions. Global inflation pressures remain conspicuously absent.

IFI strategy

Prefer high yield bonds due to our positive view on global growth, benign inflation outlook, and continued easy financial conditions. Prefer to take credit over interest rate risk. Favor Latin America over EMEA and Asia. Focus on sovereigns that have underperformed without a meaningful catalyst: Lebanon, Kazakhstan, quasi sovereigns, Oman.

US commercial mortgage backed securities (US CMBS): Notable decline in primary market issuance, watching retail industry fundamentals

Rationale

Negative retail news has dominated headlines. However, we are generally not advocates of selling stronger US CMBS credits since they are often hard to replace. We think the space should continue to benefit from limited supply as property price growth continues.

IFI strategy

We think AAA-rated US CMBS look less attractive. Given the significant move in spread tightening we prefer seasoned US CMBS as cycle progresses. Credit-differentiation is accelerating, placing a premium on selection. Rich valuations and poor hedge-adjusted carry weigh on shorter-term high quality paper.

US residential mortgage backed securities (US RMBS): Favorable fundamentals, valuations fair, Credit Risk Transfer (CRT) securities market depth improving

Rationale

Mortgage underwriting quality remains high, the home price outlook remains supported by limited housing supply, and long-term negative net issuance remains the dominant factor in US RMBS. But following outperformance in recent months in legacy US RMBS and below-IG CRT, valuations appear stretched relative to other asset classes.

IFI strategy

Favor higher quality legacy prime, alt-A, and seasoned BBB-rated CRT. Avoiding sub-prime, coastal concentrations, and option adjustable rate mortgages.

US asset backed securities (US ABS): Value in floaters, fundamentals normalizing, favorable technicals

Rationale

Normalization of credit underwriting and forecast for a healthier economy should support consumer credit performance in 2017. Recent widening in swap spreads and LIBOR rates provide an opportunity to add at fairly attractive levels. As the overall market continues to weigh the longer-term impact of a Trump administration and additional rate hikes this year, such uncertainty should be supportive of a more stable, shorter-duration US ABS market.

IFI strategy

Favor adding exposure to floaters where collateral performance remains stable. Believe senior prime auto US ABS and esoteric issuers can provide opportunities. Avoiding deep subprime auto US ABS.

Sector themes

Commodities: Global supply concerns creating energy volatility, prefer pipelines

Rationale

Expect global IG credit risk premia to remain volatile as energy and metals credits reflect supply imbalances, offset by credit friendly financial engineering. Credit quality in focus due to still-modest economic growth and risk of volatility due to OPEC, US crude supply, fiscal policy implementation and Fed uncertainty.

IFI strategy

Favor gaining exposure to selected higher quality energy issuers where shorter-term maturities are well covered by liquid assets and positive corporate actions support financial profiles. Also favor pipeline credits with favorable parental relationships that provide downside protection at attractive yields.

Consumer story more nuanced globally, watching US fiscal policy influences

Rationale

Solid US labor market and consumer confidence are supportive, but consumers more value and delivery conscious, while international retail demand remains uneven. Watching European consumer for post-Brexit behavior shift.

IFI strategy

Favor selected US consumer sectors including leisure and housing-related sectors. Negative on "big box" and mall-based retailers that lack differentiated products. Favor EM consumer sectors on a selective basis. Incrementally more cautious on automotive original equipment manufacturer (OEM) sector given excess inventory.

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

Rationale

M&A activity has moderated but remains a risk, driven by large overseas cash balances, low all-in financing cost, still soft organic revenue 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. Believe a discriminating approach to this strategy is warranted due to lower, but still large, M&A-related pipeline.

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, long end valuations getting full

Rationale

Global interest rate policy has forced cash investors and sovereign wealth funds into 3-5 year part of the credit yield curve, creating a 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

Favor 7-10 and select 30-year points on US IG and EM credit yield curve. New issuance has remained strong year-to-date but is expected to decline as the pace of mergers returns to normal.

Rob Waldner, Chief Strategist, Ray Uy, Head of Macro Research and Currency Portfolio Management, Tony Wong, Head of Global Research, Joe Portera, CIO High Yield and Multi-Sector Credit, Michael Hyman, CIO Global Investment Grade and Emerging Markets

This section highlights the views of Invesco Fixed Income's credit analysts across a broad range of fixed income assets managed by Invesco.

Global credit strategy

ESG means "active" ownership and investment

Interest in investing responsibly to build a more sustainable future is growing. Invesco is actively committed to promoting the advancement of environmental, social and governance (ESG) issues through our investment approaches and processes.

Invesco's approach

Invesco approaches responsible investing holistically, with a focus on four key areas:

- **Commitment -** Invesco has a dedicated team of professionals charged with delivering on responsible investing principles.
- **Collaboration -** Nearly every aspect of our firm touches ESG principles in some way, from client engagement and thought leadership to fundamental research and proxy voting.
- **Capabilities -** Invesco's ESG investment offerings span the full spectrum from negative/exclusionary screening to full ESG integration.
- **Construction -** Invesco is constantly evolving our in-house research and proprietary tools to best meet our client's ESG objectives.

How Invesco Fixed Income (IFI) incorporates ESG into our research and investment processes

IFI believes the first step in ESG investing is understanding the ESG investment universe. The investment grade (IG) sector is the most widely rated for ESG criteria and standard ESG benchmarks exist comprising "best-in-class" ESG issuers - issuers rated on ESG criteria by index provider MSCI with ESG ratings of BBB or better. Other indices exclude exposure to certain business lines such as tobacco, weapons, gambling or nuclear power. Around 90% of the Bloomberg Barclays US Credit Bond Index is MSCI ESG-rated.[1] Although limiting exposure to issuers rated ESG BBB or better cuts the opportunity set in half, 377 issuers and over 2,000 bonds still remain to choose from when constructing an ESG IG credit portfolio.[1]

In emerging markets (EM), ESG investing shrinks the investment universe more markedly if following the same rules. Roughly 80-90% of the corporate and sovereign index constituents have MSCI ratings, but restricting issuers to ESG BBB or better significantly narrows the range of issuers to approximately 30-45% of the indices.[2] In high yield, the universe shrinks further, with only 61% of high yield issuers having an MSCI rating and only 24% rated ESG BBB or better.[3]

While MSCI ratings are considered an industry standard (given the limited availability of other ratings), we believe that adhering to them is too restrictive. IFI uses its own analysis to ensure as wide an investing universe as possible.

Figure 1: ESG at Invesco – our process

Source: Invesco as of July 31, 2017.

The second step in ESG investing is understanding each client's beliefs and values related to either ESG issues or impact-investing – and highlights the need for active management. It is often helpful to first identify a list of exclusionary criteria or those business activities that violate a client's moral beliefs. In addition to outlining areas to avoid, we determine where clients would like to make the most positive impact with their investment dollars. Here, the United Nation's (UN) Sustainable Development Goals (SDG) can provide a framework for discussion and eventual narrowing of the investment focus. The UN has outlined 17 SDGs to monitor and achieve over the next 15 years.[4] They span topics from hunger, poverty, health and education to clean water, renewable energy, economic growth and infrastructure. These topics help us define our clients' goals related to impact investing or positive screening.

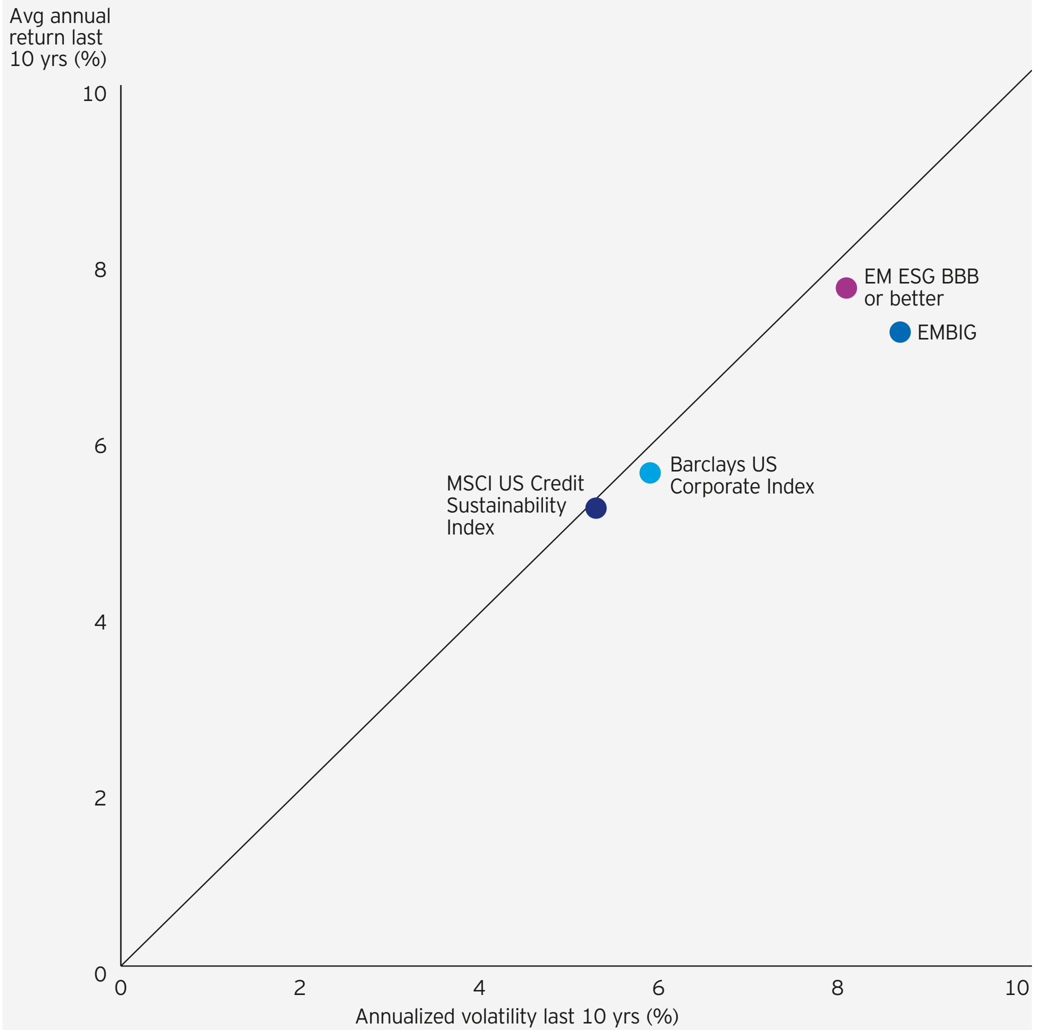
The third step is formulating an ESG-tailored investment strategy with appropriate governance and risk parameters. At this stage, it is important to recognize that, as fiduciaries, we have a dual role when it comes to ESG mandates – we must stay true to our clients' responsible investing goals, but we must also deliver on their return objectives. To achieve the first goal, Invesco believes that "active ownership" is the most effective mechanism to ensure responsible outcomes from our investments. In fixed income, active ownership means actively engaging in the bonds that we own. This includes dialogues with corporate management teams and sovereign entities to ensure they are taking steps to achieve ESG-oriented goals. Indeed, we believe that ESG initiatives may be the most impactful among companies and governments in developing countries.

At IFI, we believe that active management is as essential as active ownership. We independently analyze each issuer's focus on and adherence to ESG norms and weigh them appropriately for each asset type. ESG integration in our active management approach ensures that we are looking at the entire opportunity set, beyond the narrow set of MSCI BBB-rated or better issuers, for the best investments from a risk and return perspective, while staying true to our clients' ESG objectives. And because ESG criteria are part of our process, they are updated in real-time, as opposed to only annually by MSCI and other third party rating providers.

ESG performance record

Our analysis suggests that ESG-focused strategies can deliver attractive risk-adjusted returns compared to traditional non-ESG approaches.[5] In fixed income, higher returns are typically associated with higher risk (lower credit quality) issuers that must pay a premium to raise capital. But over the past ten years, investing in best-in-class ESG IG corporate debt and emerging market sovereign debt produced similar returns to the broader, traditional indices (see Figure 2).[6] And because ESG-focused subsets were of higher credit quality and exhibited lower volatility, their returns were better on a risk-adjusted basis.

Figure 2: ESG returns compare favorably to traditional investment strategies



Bloomberg L.P. and Invesco. Data from Dec. 29, 2006 to July 31, 2017. Indices are: Bloomberg Barclays MSCI US Credit Sustainability Index, Bloomberg Barclays US Corporate Index, JP Morgan Emerging Markets Bond Index-Global Diversified, ESG BBB or better is an index calculated by Invesco using the returns of EMBI countries currently rated ESG BBB or better by MSCI.

But that is not universal. In the high yield and emerging markets corporate sectors, MSCI ESG BBB-rated segments have not outperformed historically.[7] We believe outperformance is possible, however, with an actively managed approach to ESG screening that looks beyond the MSCI ESG BBB-rated or better segments of these asset classes.

At Invesco, we believe we are in the early phase of a growing trend toward socially responsible and impact-oriented investing. While we are off to a good start, we expect the next phase to focus on measuring the positive impact of these investments. As long-term investors, we are committed to working together with our clients to help them achieve their ESG goals and return objectives, as well as understanding how these choices can make a difference.

Julie Salsbery, Senior Client Portfolio Manager and Head of Public Debt,
Shane Gallagher, Associate Client Portfolio Manager

1 Source: MSCI ESG Research, Barclays Research, as of August 28, 2017.
2 Source: Invesco, MSCI ESG Research, as of July 31, 2017.
3 Source: Invesco, MSCI ESG Research, as of June 30, 2017.
4 Source: United Nations, "The Global Goals for Sustainable Development," Sept. 2015.
5 Source: Invesco, Bloomberg Barclays L.P., MSCI ESG, as of July 31, 2017.
6 Source: Invesco, Bloomberg Barclays L.P., MSCI ESG, as of July 31, 2017. We examined how ESG factors affected risk and return. If an ESG index existed, we compared its performance directly to the non-ESG benchmark performance. In the absence of an ESG index, we created our own according to the following: Our study defined the ESG subset of an index as the set of bonds issued by firms whose ESG rating (according to MSCI) is BBB or better. The performance of each bond in this subset is then tracked over time, with each bond weighted commensurate with its historical weighting in the index at that time. While an ideal study would account for constituent turnover and fluctuating ESG ratings, our study was limited by the data available, and further cross validation measures give us confidence that we were capturing the right signal.
7 Source: Invesco, Bloomberg Barclays L.P., JP Morgan, MSCI ESG, as of July 31, 2017. We examined how ESG factors affected risk and return. If an ESG index existed, we compared its performance directly to the non-ESG benchmark performance. In the absence of an ESG index, we created our own according to the following: Our study defined the ESG subset of an index as the set of bonds issued by firms whose ESG rating (according to MSCI) is BBB or better. The performance of each bond in this subset is then tracked over time, with each bond weighted commensurate with its historical weighting in the index at that time. While an ideal study would account for constituent turnover and fluctuating ESG ratings, our study was limited by the data available, and further cross validation measures give us confidence that we were capturing the right signal.

John Anzalone,
Head of Structured Portfolio Management

Jason Marshall,
Head of MBS Portfolio Management

Kevin Collins,
Head of Commercial Credit

David Lyle,
Head of Residential Credit

The bottom line

Developments in US mortgage backed debt

We speak with the Invesco Fixed Income Structured Investments team about US mortgage backed debt and how the US residential and commercial mortgage backed debt markets have evolved since the global financial crisis.

Q: What should investors know about US agency mortgage backed securities (US agency MBS) that might surprise them?
John Anzalone: We love this question because it amazes us how often we encounter gross misconceptions about the historical performance of US agency MBS, particularly with respect to the fallout from the mortgage crisis and the extent that US agency MBS returns were impacted. Many investors may be surprised to learn that US agency MBS actually outperformed the Bloomberg Barclays Global Aggregate Bond Index, the Bloomberg Barclays US Aggregate Bond Index, the Bloomberg Barclays US Corporate Bond Index and the Bloomberg Barclays Euro Corporate Bond Index on an excess return basis during the global financial crisis in 2008 and the European sovereign debt crisis in 2011.[1] We believe this is because US agency MBS are often considered a comparative safe haven during periods of market stress, while they can still provide some spread advantage to US Treasuries.

The Bloomberg Barclays US MBS Index also generated higher total returns per unit of risk (annualized volatility) than US Treasuries and US corporates during the last 10 years.[2] Finally, in the last three Fed tightening cycles in 1994-1995, 1999-2000 and 2004-2006, the Bloomberg Barclays US MBS Index outperformed the Bloomberg Barclays US Corporate Bond Index on a total return and excess return basis in all three periods and outperformed US Treasuries on a total return and excess return basis in two of the three periods.[3] We believe three reasons largely explain this outperformance: (1) net mortgage supply tends to fall as interest rates rise and housing activity declines; (2) bond market volatility tends to decline during tightening cycles; and (3) as interest rates rise, the convexity profile of MBS typically improves as voluntary prepayments fall.

Q: What are the implications of Federal Reserve (Fed) balance sheet tapering for US Agency MBS?
Jason Marshall: The anticipated tapering of Fed mortgage purchases announced several months ago by Fed chair Yellen has become a hot topic in many investor circles given the long period of Fed MBS buying as part of its third round of quantitative easing (QE3). While at first glance the absence of such a large committed buyer in the MBS market might seem ominous, we do not think that the taper will have a material impact on the asset class, aside from a higher equilibrium MBS spread level and somewhat higher MBS spread volatility.

Moreover, we believe that commercial bank and foreign demand for MBS will remain strong over the next several years. With respect to future appetite for MBS among retail investors, due to the sector's attractive historical risk-adjusted return profile, we believe investors will likely recognize that it offers a high quality alternative or complement to other fixed income sectors.

Q: Should commercial real estate debt investors be worried about headlines reporting retail mall store closings?
Kevin Collins: Reports of growing numbers of retail store closures among some very large department store chains and struggling regional shopping centers have caused concern in the retail commercial real estate debt market. Nevertheless, there are a number of factors supporting the health of commercial mortgage backed securities (CMBS) that are not publicized as often. First, retail mall exposures represent a small fraction of the entire collateral pool for CMBS and there is very little overlap of store exposures among CMBS deals. Second, the CMBS market is large and diverse in terms of geography, property type and number of tenants. Third, fundamentals in the commercial real estate debt market continue to be favorable, with steady rental growth rates and vacancy declines and continued property price appreciation. Finally, post-crisis CMBS vintages have improved meaningfully from earlier vintages in terms of stronger underwriting, increased credit enhancement and strong property price appreciation.

Robert Kuster,
Head of Structured Research

Mario Clemente,
Head of Structured Investments

Tony Semak,
Senior Client Portfolio Manager

Q: What have been the changes to/evolution of the US mortgage market?
David Lyle: Arguably no sector has endured a more challenging recovery from the financial crisis than the residential mortgage credit market. Financial reform has had a significant impact, both in terms of restrictive regulations, and in terms of new avenues of growth. To be sure, action was needed to prevent a future recurrence of housing bubbles. But as a consequence of those efforts, mortgage credit conditions remain very constrained and the supply of non-agency residential mortgage backed securities (RMBS) investments is limited. The additional effort and potential liability associated with extending a loan that does not meet the Dodd-Frank-mandated "Qualified Mortgage" standard has led originators to focus largely on government sponsored enterprise (GSE) mortgage loan origination (US agency MBS), thus limiting access to borrowing for millions of imperfect, yet creditworthy, individuals and constraining potential securitization.[4]

While financial reform has reduced the traditional non-agency investment opportunity set, it has helped to open up a new market for Credit Risk Transfer (CRT) securities. Prior to the financial crisis, the GSEs retained all credit risk associated with loans that they guaranteed, eventually leading to a government takeover in connection with escalating default rates. To mitigate the risks of a future taxpayer-funded rescue, the US government mandated that government mortgage guarantors, Fannie Mae and Freddie Mac, must transfer a significant portion of credit risk to the private market beginning in 2013. Since then, to address this directive, these GSEs have issued over USD50 billion of CRT securities, representing an innovative and compelling opportunity for investors, in our view.[5]

Q: What have been the major developments in the commercial real estate market?
Rob Kuster: On the commercial real estate side, the credit risk retention rules for CMBS became effective under the Dodd-Frank Wall Street Reform and Consumer Protection Act last December. These rules create a stronger alignment of interest between those originating loans and the final investor. It requires originators and/or an investor to retain 5% of the fair market value of any new commercial mortgage-backed securitization. Ultimately, the retention of risk can be achieved through a "vertical interest," in which the sponsor is required to retain 5% of the face value of each class of securities issued in the transaction, a "horizontal interest" in which the sponsor (or eligible "B-piece investor") is required to retain the most subordinate class or classes of securities in the transaction, or an "L-shaped" option, which is a combination of the horizontal and vertical interests that together comprise 5% of the transaction on a fair-value basis.[6]

In the first half of 2017, issuance declined as issuers, loan originators and investors adapted to the rule change. It is worth noting that borrower demand also contracted. In contrast, in second half of the year, issuance has increased notably, as volatility has remained muted and investor interest in risk retention-eligible transactions has been strong. Although the impact of the rule is still being widely debated, most investment grade investors have been encouraged to see loan-to-value and debt service coverage ratios slightly improve post-implementation.

We are optimistic that risk retention will help loan underwriting remain more disciplined on the margin and we expect to find attractive opportunities in new issuance as a result. As bank lending has decreased, the share of CMBS in total loan originations has recently increased. Additionally, life insurance companies, mortgage REITs and other specialty lenders have been willing to assist owners of stronger commercial properties in finding financing upon loan maturity.

Q: What may happen with Fannie Mae and Freddie Mac?

John Anzalone: The US government, through Fannie Mae and Freddie Mac, provides implicit guarantees backing the mortgage obligations of residential home loan borrowers (US agency MBS). There is, therefore, a moral dilemma regarding to what degree the American public should bear the burden of backing the credit risk of home loan borrowers - especially when the public is exposed to risks created by poor underwriting, inadequate borrower documentation or borrower misrepresentations. As such, there is an ongoing, widely contested debate concerning how these GSEs should be reformed - to be either privatized, quasi-public/private entities or restructured in a way that further insulates the American taxpayer from undue mortgage credit risk.

We agree with the general consensus, that there is, however, little chance for any meaningful GSE reform in the near term. That said, the emergence of the Credit Risk Transfer program has begun to transform the role of the GSEs, as private capital has now begun to meaningfully replace Fannie Mae and Freddie Mac in absorbing credit risk on conforming mortgages.[7]

1 Source: Bloomberg Barclays Global Aggregate Bond Index, Bloomberg Barclays US Aggregate Bond Index, Bloomberg Barclays US Corporate Bond Index, Bloomberg Barclays Euro Corporate Bond Index , data from Jan. 1, 2008 to Dec. 31, 2008 and Jan. 1, 2011 to Dec. 31, 2011.
2 Source: Bloomberg Barclays US MBS Index, Bloomberg Barclays US Corporate Bond Index, Bloomberg Barclays US Treasury Index, data from March 31, 2007 to March 31, 2017
3 Source: Bloomberg Barclays US MBS Index, Bloomberg Barclays US Corporate Bond Index, Bloomberg Barclays US Treasury Index, data from 2/4/94 to 2/1/95, data from 6/30/99 to 5/16/2000, data from 6/30/04 to 6/29/2006.
4 The Dodd-Frank Act is a US federal law enacted in 2010 that expanded the government's role in regulating the financial industry in response to the financial crisis in 2008. A Qualified Mortgage is a category of home loans that have certain, more stable features defined by federal law to increase the probability that a borrower can afford the loan.
5 Source: Bank of America Merrill Lynch Global Research, August 2017.
6 The "B-piece" is the most subordinate bond class outstanding at any given time, also known as the controlling class.
7 Conforming mortgage loans are loans that conform to Fannie Mae and Freddie Mac guidelines, including, for example, the size of the loan, which, as of 2017, is limited to USD424,100.

Market monitors

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)	2.70	1.59	-0.04	38	-2	23	156	0.33	0.63	1.76	-0.68
U.S. Aggregate	3.06	2.51	-0.04	40	-3	32	258	0.43	1.10	2.71	-0.51
U.S. Mortgage-backed	3.53	2.82	-0.04	28	-4	-16	181	0.45	0.67	1.81	0.19
Global Inv Grade Corporate (USD hedged)	3.56	2.47	-0.09	102	-7	55	515	0.73	1.71	3.90	1.93
U.S. Investment Grade Corporate	4.01	3.12	-0.07	102	-6	76	618	0.73	2.20	4.56	1.55
Emerging Market USD Sovereign	n/a	5.32	-0.05	304	-6	157	906	0.84	1.59	7.08	5.04
Emerging Market Corporate	n/a	4.52	-0.09	248	-7	120	1,032	0.79	1.64	5.84	5.97
Global High Yield Corporate (USD hedged)	6.13	4.79	-0.25	337	-16	231	1,845	1.13	2.15	6.18	10.77
U.S. High Yield Corporate	6.45	5.41	-0.21	352	-13	233	1,971	1.11	2.12	6.09	10.95
Bank Loans	4.94	5.06	-0.01	n/a	n/a	n/a	n/a	0.78	1.10	2.76	6.83
Municipal Bond	4.74	2.17	-0.10	n/a	n/a	n/a	n/a	0.81	2.04	4.40	0.26
High Yield Municipal Bond	5.23	5.39	-0.70	n/a	n/a	n/a	n/a	0.66	1.97	6.83	1.22

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	2.10	1.87	-0.03	0.17	0.66	2.04	-2.55
Canada	2.19	1.74	0.24	-1.79	-2.54	-0.87	-4.62
United Kingdom	3.55	1.19	-0.02	0.30	-1.31	0.47	-2.77
Germany	2.02	0.07	-0.02	-0.05	-1.27	-1.93	-4.66
Italy	3.42	1.29	-0.06	0.60	1.45	-0.33	-3.54
Japan	1.05	0.16	0.00	0.00	-0.45	-0.35	-3.09
China	3.46	3.64	0.05	-0.22	-0.29	-1.27	-2.14
EM Local Currency Governments	n/a	n/a	n/a	0.51	1.93	6.22	6.25

FX market monitor[1]

	Current	10 year range min	10 year range max	Returns: 1 mth (%)	3 mth (%)	YTD (%)	12 mth (%)
EURUSD	1.18	1.05	1.60	3.85	8.29	12.88	5.72
USDJPY	110.36	75.82	124.77	2.72	1.33	6.51	-7.23
GBPUSD	1.32	1.22	2.11	2.03	2.46	7.53	0.18
USDCNY	6.72	6.04	8.28	0.96	2.62	3.49	-1.18
USDCHF	0.97	0.75	1.39	-0.22	3.17	6.01	0.27
AUDUSD	0.80	0.60	1.10	4.02	5.89	10.93	5.75
CADUSD	0.80	0.72	1.09	3.73	9.11	7.21	4.66
EURJPY[2]	130.25	94.31	169.49	-1.09	-6.40	-5.64	-12.25
EURGBP[2]	0.89	0.70	0.89	-1.77	-5.37	-4.73	-5.23

Sources: Bloomberg Barclays, J.P. Morgan, as of July 31, 2017. Credit Suisse Leveraged Loan data as of July 31, 2017. 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.

Invesco Fixed Income

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Recent IFI publications

1. **The US debt ceiling saga resumes,** August 2017, Justin Mandeville, Portfolio Manager
2. **IFI Global Investors' Summit June 2017,** Rob Waldner, Chief Strategist, Head of Multi-Sector, Tony Wong, Global Head of Credit Research, Liquidity and Municipals
3. **Quality currencies can potentially diversify against growth risk,** June 2017, Ray Uy, Head of Macro Research and Currency Portfolio Management, James Ong, Senior Macro Strategist
4. **When US rates rise, it may be time to consider adding emerging market bonds,** May 2017, Julie Salsbery, Senior Client Portfolio Manager
5. **Getting familiar with global portfolio hedging,** April 2017, James Ong, Senior Macro Strategist, Nicole Corum, Macro Analyst
6. **Currency management: a simple roadmap,** April 2017, Ray Uy, Head of Invesco Fixed Income Macro Research
7. **Sizing up Europe's corporate pension gap,** March 2017, Michael Booth, Credit Analyst, Fabrice Pellous, Senior Credit Analyst, David Todd, Head of Global Investment Grade and Emerging Markets Research
8. **Municipal bond market watch Q&A**, March 2017, Stephanie Larosiliere, Senior Client Portfolio Manager

Invesco Fixed Income

Global perspective and deep local market knowledge

Global presence

- Regional hubs in Atlanta, London and Hong Kong
- IFI is in ten locations with additional Invesco colleagues in two
- USD 295.7 billion in assets under management

Experienced team

- 166 investment professionals
- Averaging 18 years of industry experience
- Deep macro and credit research
- Focused and accountable portfolio management

Global locations

Source: Invesco. For illustrative purposes only.

Invesco Fixed Income teams

	Team members	Average years with Invesco	Average years in industry
Portfolio management and trading	74	12	21
Global research	92	9	17
Total investment professionals	166	10	18
Business professionals	54	13	18
Total fixed income employees	220	13	20

Source: Invesco.

As of June 30, 2017. Subject to change without notice.
Investment specific experience for investment professionals.

Notes

Notes

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