Since mid-2013, global market volatility has become more pronounced and frequent, while interest rates have remained low. Given the increasing level of market volatility, it can be a challenge to generate income and mitigate risk in a low interest rate environment.

Historically, investors could rely on a steady stream of coupon payments from fixed income securities and relatively safe Treasury bonds to generate sustainable income return. However, as the Group of Seven (G7) central banks in Europe and North America have lowered interest rates and maintained an accommodative monetary policy, the risk-free rate has continued to decline (the average G7 cash rate is actually negative) and traditional strategies have only modestly enhanced yields.

Quantitative easing (QE) in the US has already reversed course, and the Fed currently maintains a tightening bias. Therefore, it is necessary to address the risk of rising interest rates and the potential impact of capital losses from fixed income investments. The following chart shows that while the 10-year US Treasury yield has remained low, the Fed rate is gradually increasing.

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The so-called “Bernanke put” starting in mid-2013, coupled with spillover from the Fed’s accommodative monetary policy, has increased volatility across major asset classes over the past three years. These can be seen in the rolling 12-month volatility numbers for the S&P 500 Index and 10-year US Treasury bonds.

As a result, return volatility can easily consume most or potentially all of the income return from a single asset class. The next figure shows how the income component has slowly declined, while the capital component has remained volatile.
Given the direction of US interest rates, the Fed's tightening bias could translate to a stronger US dollar and indirectly cause some asset classes to underperform. So, it is important to not just generate income, but also to manage risk in order to protect returns. Some non-traditional sources of yield include emerging market debt, US high yield debt, dividend-paying stocks, real assets and commodities. These assets can generate a higher income versus the risk-free rate, but also are subject to singular asset bias and, perhaps more importantly, interest rate risk. Therefore, it is critical to have a diversified portfolio of assets to generate income and help mitigate risk.

Volatility is dynamic

Historically, volatility has factored into investment decisions, for example, allocating to a balanced portfolio of stocks and bonds in order to diversify risk. However, the global financial crisis forced investors to reexamine their approach to volatility.

As volatility becomes more pronounced and more frequent, we believe the risk level investors actually experience over the short term is unlikely to match their long-term risk tolerance. Volatility, as measured by the standard deviation of rolling one-year S&P 500 Index returns, has averaged 12% since 1950 and severe market swings – defined as volatility that exceeds one standard deviation above average volatility (18.4%), have occurred roughly once every six to seven years.

During the post-WII period, S&P 500 Index median volatility has increased from 10.3% between 1950 and 1980 to 13.8% in the subsequent 20 years. Median volatility increased again to 16.8% in the period between 2000 and 2007. In the years since the financial crisis, volatility averaged 17.7%. Thus, the average investor who began saving for retirement in the 1980s and 1990s would have incorrectly assumed low levels of volatility into their financial planning.

1 Extract from The Invesco White Paper Series “Seeking better investment outcomes by managing volatility” published in July 2016
In addition to magnitude, the frequency of high volatility episodes has increased over the past 65 years. For example, the frequency of high volatility events – marked by volatility higher than one standard deviation above the mean – has increased from 4% in the period between 1950 and 1980 to more than 40% in the period since 2000. Another reflection of volatility involves short-term daily movements in market returns. The number of days during which the S&P 500 Index fluctuated more than 2% (up or down) has increased from 2% in the period between 1950 and 1980 to more than 10% in the period since 2008.

Traditionally, many investors have targeted a level of volatility based on their risk tolerance, and have sought to manage volatility in their portfolios through a static allocation to assets they believed would move independently of each other. One commonly used example is a balanced portfolio comprising 60% stocks and 40% bonds. However, data since 2000 indicate that investing in a 60/40 portfolio does not always provide the diversification benefits investors seek. Moreover, it does not account for the changing dynamics of stronger and more frequent volatility over time.

**Volatility is likely here to stay**

- China’s growth recession remains the biggest risk to the global economy for the foreseeable future.
- Depreciation of Chinese renminbi (yuan) has triggered investor concern – not just for Chinese capital flows, but also for overall emerging market (EM) capital flows.
- A stronger US dollar has coincided with weaker aggregate demand, while low commodity prices have raised concerns about overall growth in EM countries.
- Europe as a whole is still recovering, with Brexit now a minor concern, but Greece and Spain are still showing economic weakness.
- US economic growth has remained steady, but external weakness originating from EM to Europe persists.
- Since the global financial crisis, many central banks have provided stimulus in the form of accommodative monetary policy, which has helped support and stabilize the financial markets, while compressing yields.
As a result of accommodative monetary policy, interest rates have stayed too low, but global growth remains sluggish.

Given the above, macroeconomic issues may surface that could easily create more volatility across assets, countries and regions.

**Key principles for an income portfolio in a low interest rate environment**

There are three main principles for an income portfolio in a low interest rate environment:

- **Diversification potential**
  - Ability to diversify away from singular asset risk and across other asset classes
  - Ability to reduce exposure to systematic risk inherited from certain asset classes to minimize overall portfolio risk

- **Adaptability of investment style and asset mix**
  - Flexibility to change investment styles and asset mix may allow underlying investments to adjust more closely to economic cycles
  - Adopting a dynamic mix of assets may allow investors to lock in income and capital returns

- **Capacity to hedge various type of risks**
  - The market, interest rates and, to a lesser extent currently, inflation can pose a significant risk to income potential
  - Having the capability and flexibility to use different hedging instruments is vital to the overall stability of the portfolio returns in the long run
  - Likewise, idiosyncratic risk from company exposure can also be stripped out by using hedging tools to maintain a certain level of income return

**Portfolio management techniques**

A multi-asset strategy with targeted risk controls is a form of managed volatility strategy that incorporates all of the above mentioned principles. It is most suitable for income portfolios in low interest rate environments.

With multi-asset strategies, the asset allocation process plays a slightly more important role than security selection when making day-to-day investment decisions and managing portfolios.

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**Strategic Asset Allocation (SAA)**

Strategic asset allocation (SAA) is also known as policy allocation. It involves establishing a long-term target allocation in major asset classes such as equities, fixed income and cash based on a portfolio's risk-return objective, such as risk tolerance and time horizon. In the long run, SAA is the most crucial determinant of a diversified portfolio's total return, since it incorporates important assumptions around the return distribution of various asset classes.

**Tactical Asset Allocation (TAA)**

Tactical Asset Allocation (TAA) is a bridging process that attempts to pair active portfolio management techniques with a top-down macroeconomic perspective in order to generate additional portfolio returns (alpha) above those of the market. Conversely, active portfolio management can also help to decrease portfolio risk by changing the asset mix based on temporary imbalances in equilibrium assumptions.
Intuitively, the alpha generated from TAA is similar to the traditional alpha generated from idiosyncratic or non-systematic risk, i.e. company risk. At its most fundamental level, TAA attempts to add value relative to SAA by timing and capitalizing on temporary price dislocation. This can be done by overweighting asset classes that are expected to outperform and underweighting asset classes that are expected to underperform in the short run.

The mechanism behind the TAA process is based on a set of financial and economic variables that produce “flags.” These flags can be used to predict performance from a period of one month to a maximum of 12 months for different asset classes. The process also assigns a short-term weighting based on prescribed risk perimeters to the designated asset class in order to gain exposure and achieve the portfolio objective.

| Return Attribution                      |  |
|----------------------------------------|  |
| Systematic risk                        | Non-systematic risk                   |
| \( \beta \)  SAA – Return from systematic risk |  |
| \( \alpha \)  TAA – Return from timing of risk factors | Traditional \( \alpha \) – Return from security selection |

For illustrative purposes only.

**Alpha generation**

The availability of an investible opportunity set between the TAA process and traditional security selection process can meaningfully affect alpha(\( \alpha \)) since there are only a limited number of asset classes available for the TAA process and, by contrast, an unlimited number of substitutes for security selection. Hypothetically, it is easier to generate alpha from the security selection process than the TAA process.

Nonetheless, there are also some benefits from the TAA process:

- Major asset classes tend to behave independently or have a low correlation with each other. This can be particularly useful for portfolio diversification.
- TAA focuses on low-cost and liquid instruments for implementation, since the TAA process is short term in nature. It is both efficient and transparent to use instruments like ETFs and future contracts to gain exposure. Cost savings can also be substantial, as the turnover rate for the TAA process is generally higher than for security selection.

**Volatility control**

Managed volatility strategies, such as multi-asset strategies with targeted risk control, attempt to constrain volatility to a specified level. They do this by using the TAA process to shift the risk across various asset classes as market conditions change. In other words, the strategy tries to remove the edge from the volatility of the portfolio. This is referred to as “taking the edge off”.

With downside protection and volatility control, managed volatility strategies aim to achieve lower volatility and reduced downside risk in falling markets, while still delivering competitive risk-adjusted returns. By design, these strategies tend to lag in a highly volatile and sideways market.

For illustrative purposes only.
Conclusion: low rates and low visibility
A low interest rate environment has become the 'new normal' for the overall market, so it is still appropriate to maintain exposure to assets that offer meaningfully positive carry. But after the cautious optimism of this past summer, political uncertainty, together with subdued growth and a rate hike bias in the US, has resulted in high volatility and low visibility. For this reason, we believe it is rational to adopt a strategy with more focus on risk, such as the multi-asset strategy with target risk control.

Invesco's approach to managed volatility
Invesco's Global Investment Solutions Development and Implementation team has extensive experience designing and implementing managed volatility strategies that can be either applied to existing portfolios or serve as stand-alone products, with the aim of mitigating portfolio volatility by dynamically adjusting asset allocations in response to market conditions.

The team uses a GARCH-based algorithm to forecast portfolio volatility, and proprietary optimization software that seeks to create a portfolio that meets the overall target level of risk with the smallest futures position possible. The team's unique approach to managing volatility is predicated on the following tenets:

- **Stability over noise.** While modeling has evolved toward capturing faster-moving signals, which we believe offers less stability from day to day, we have adopted an approach that incorporates a more stable signal. This affords us greater confidence in our simulations and more fluid transition from research to implementation.

- **Conservative modeling.** Our extensive experience in research and implementation has led to the development of models that seek to incorporate more realistic simulations of risk by reflecting realistic lags and frictions, rather than best-case scenarios.

- **Focus on risk reduction.** We focus our research and position our simulations to control risk, rather than produce the greatest total return.

- **Liquidity and hedging.** Because managed volatility strategies often require trading into a choppy, volatile and less liquid market, it is important to select instruments with ample excess liquidity and implement alternatives for hedging in the event that our primary instruments are not tradable at any given time.

- **Responsive rebalancing.** Using proprietary models, we hedge and rebalance the portfolio in response to volatility spikes as they occur, seeking to reduce trading costs and improve our hedging ability relative to competitors.