Alternatives Update

4th Quarter 2017

The 4th quarter of 2017 was filled with a lot of green across the performance scoreboard as it capped a great year for risk assets in general, global equities in particular (see Figure 1). The news cycle was not disappointing either as it produced a constant stream of attention grabbing highlights on what seemed to be a daily basis. Financial markets saw new highs (equities), new lows (volatility), continued firsts (European BBB corporates selling at negative yields), mania (cryptoassets) and a global shift in tone from the central banks. Equity bears have become an endangered species with the advent of what appears to be a synchronized reawakening of growth across the major economies and a bull market that has the resilience of a tardigrade. Volatility traders could also be added to the endangered species list because you can't trade what isn't there.

Cryptocurrencies burst on to the scene with triple digit gains in the quarter and quadruple digit gains for the year. The blockchain concept, which underlies much of the cryptoasset sector, has garnered widespread support. Despite many competing technologies vying for acceptance, the concept of an encrypted, distributed ledger/database is viewed as perhaps the most likely enduring element of the cryptotechnology movement. We believe the more controversial and intriguing aspect of the asset class is the valuation of the many cryptocurrencies. There are compelling bull and bear arguments to support almost any valuation level. A reasonable approach might be to draw parallels to e-commerce stocks in the late 1990s during the Internet Bubble. The many transformative promises did come to pass over time, and saw the birth of behemoths such as Alphabet (Google) and Amazon. However, in the midst of the fervor, many valuations were ridiculous and for every winner, there were scores of losers. The launch of two futures contracts on bitcoin will likely serve to greatly enhance transparency and create a regulatory umbrella that is more comforting for investors, in our view.

Alternative investment ("Alternatives") returns were modest by comparison to very strong returns for traditional long-only risk assets. For the 4th quarter, 10 of the 11 alternative categories had positive returns. Commodities was the best performing category and short biased, by far, the worst (see Figure 2). Exposure to equity beta was certainly helpful, however the alignment between correlation with the S&P 500 and returns continues to be muted as other themes are coming into play. Managed futures, which tend to be dominated by trend followers, likely upped their equity exposure given the unwavering march of stocks upward. Commodities and global macro benefitted from the global growth story, talk of central bank balance sheet normalization and the expected uptick in rates (see Figure 3). Real assets (commodities, real estate, gold), did well across the board in the 4th quarter with an average return of 3.02%. Commodities led the way, up 4.71% but only posted a slight positive gain for the year (see Figure 4). Gold and real estate dominated the year-to-date (YTD) performance. The desire to secure inflation hedges seems to have been in place all year long and could be a prevalent theme in 2018, in our opinion.

Managed futures, commodities, and macro strategies have historically shown low correlation and beta to stocks and bonds, thus they serve as potentially strong portfolio diversifiers. Strategies such as credit arbitrage, event driven, hedged equity, et al., which have higher correlations with equities and bonds, may provide attractive risk/return profiles through lower volatility. We believe these characteristics may allow investors to broaden their investment choices and create more efficient portfolios.

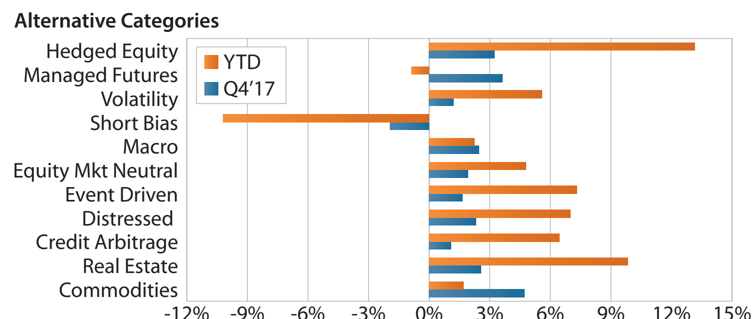
U.S. equity volatility (as measured by closing values of the VIX Index) touched a low of 9.14 in November, the lowest on record, before ending the quarter at 11.04 (see Figure 5). The average daily VIX level in the 4th quarter is now the lowest reading since the creation of the VIX Index (see Figure 6),

Figure 1: **Asset Class Returns**

	4Q17	YTD
S&P 500	6.64%	21.83%
MSCI EAFE	4.23%	25.03%
MSCI Emerging Markets	7.44%	37.28%
U.S. Treasury	2.48%	8.99%
Real Estate	2.57%	9.84%
Commodities	4.71%	1.70%
High-Yield Bonds	0.19%	6.81%
Aggregate Bonds	0.39%	3.54%

Source: Bloomberg, 12/29/17. Past performance is no guarantee of future results. An investor cannot invest directly in an index.

Figure 2: **2017 Performance**



Source: Bloomberg, 12/29/17. Past performance is no guarantee of future results. An investor cannot invest directly in an index.

Figure 3: **Correlations (2-Year) & Returns**

	S&P 500	4Q17
Hedged Equity	0.87	3.24%
Event Driven	0.77	1.65%
Real Estate	0.71	2.57%
Credit Arbitrage	0.62	1.07%
Distressed	0.58	2.31%
Equity Market Neutral	0.51	1.92%
Volatility	0.47	1.21%
Commodities	0.14	4.71%
Macro	-0.10	2.46%
Managed Futures	-0.23	3.62%
Short Bias	-0.68	-1.94%

Source: Bloomberg, 12/29/17. Past performance is no guarantee of future results. An investor cannot invest directly in an index.

Figure 4: **Real Assets**

	4Q17	3Q17	2Q17	1Q17	YTD
Real Estate	2.57%	1.13%	2.59%	3.22%	9.84%
Commodities	4.71%	2.52%	-3.00%	-2.33%	1.70%
Gold	1.79%	3.11%	-0.62%	8.43%	13.09%
Average	***3.02%***	***2.25%***	***-0.34%***	***3.10%***	***8.21%***

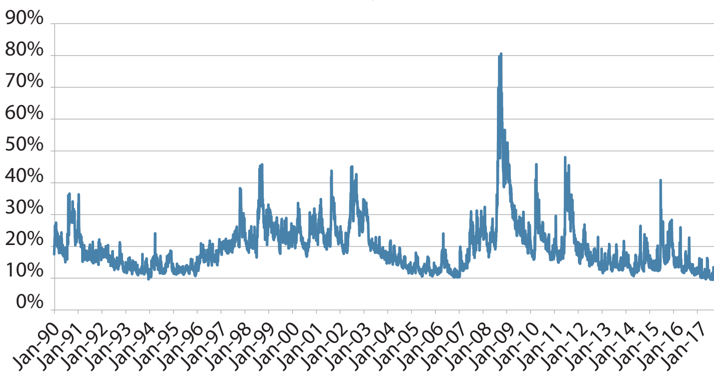
Source: Bloomberg, 12/29/17. Past performance is no guarantee of future results. An investor cannot invest directly in an index.

supplanting the prior low reading in the 3rd quarter of 2017. In fact, 2017 had 4 of the 5 lowest quarterly readings for average daily VIX levels on record. Sorting all daily VIX closing levels since inception and then examining the lowest 1% readings, one will find the greatest number (65), occurred in 2017. That is an increase from the 3rd quarter analysis in which 2017 had 44 readings (see Figure 7). No other yearly total comes close. 2017 was a truly extraordinary year as viewed through the lens of volatility. Credit spreads continued to tighten (23 basis points (bps) from the end of the 3rd quarter) (see Figure 8) and spreads are now in the lower quarter of historical decile rankings (see Figure 9)

There are some concerns that the move in U.S. stocks and global credit has embedded perfection into valuations, low volatility has bred too much complacency and combined, they portend a not so happy ending. While the debate about spreads, earnings, growth, trade, regulation and valuation could take up many pages, we believe there is another perspective to consider when analyzing the current state of the capital markets (valuation, lack of volatility, etc.).

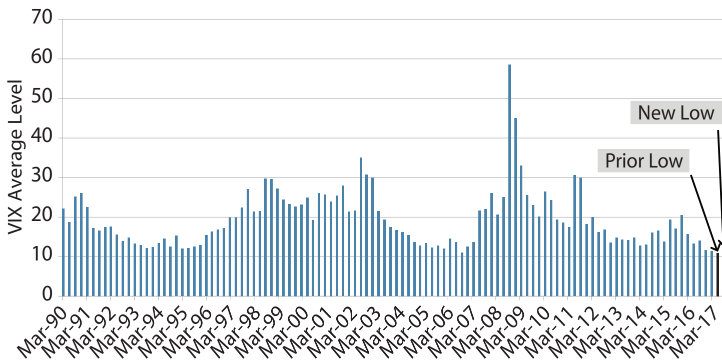
The Federal Reserve and other major central banks have intervened in the capital markets in an unprecedented manner and in an unprecedented magnitude since 2008 (see Figure 10). There are those who believe zero or negative interest rates, asset purchases of all types, balance sheets orders of magnitudes larger than even before the financial crisis, have disrupted the price discovery mechanism of the markets. Concurrently, the aforementioned actions have made explicit the "central bank put" on risk assets. In other words, the upside is still there, but the left tail of the distribution of returns (large losses) has been removed because the central banks will effectively insure investors against large losses. Who is to say that the next time the Federal Reserve won't expand its asset purchases to equities like the Bank of Japan or the Swiss Central bank or push interest rates negative like the European Central Bank? If returns for risk assets now

Figure 5: **U. S. Volatility Benchmark (VIX)**



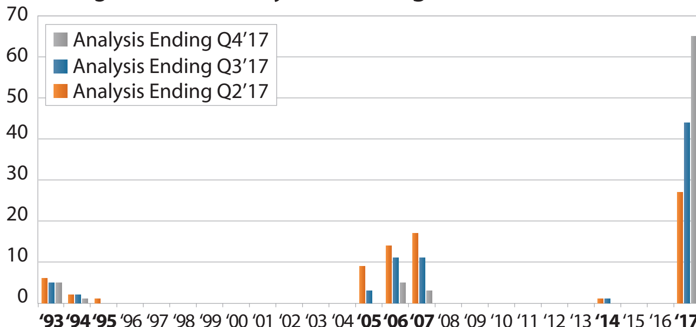
Source: Bloomberg. Data through 12/29/17.

Figure 6: **Daily VIX Level - Quarterly Average**



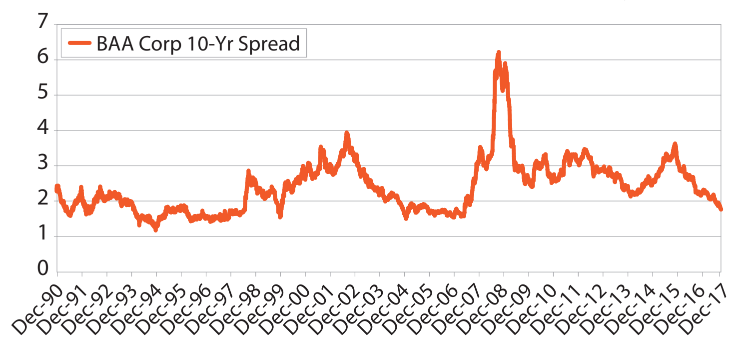
Source: Bloomberg. Data from 3/30/90-12/29/17.

Figure 7: **# of Daily VIX Closings in Lowest 1%**



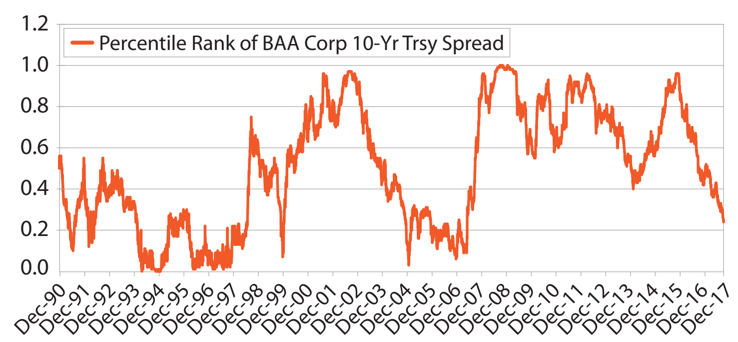
Source: Bloomberg. Data from 1/2/93-12/29/17.

Figure 8: **Credit Spread vs. 10-Year U.S. Treasury**



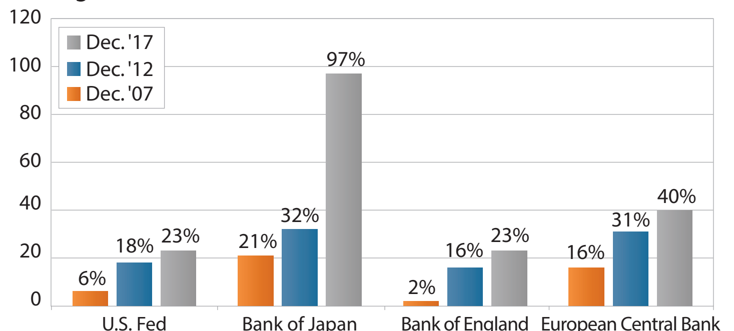
Source: Bloomberg. Data through 12/29/17.

Figure 9: **Credit Spread Percentile Rank**



Source: Bloomberg. Data through 12/29/17.

Figure 10: **Central Bank Balance Sheet as a % of GDP**

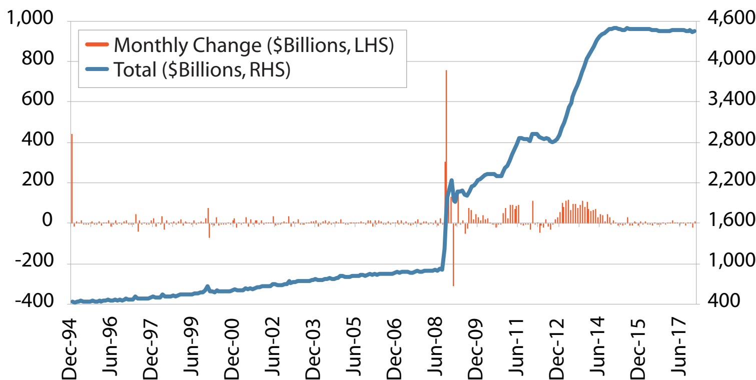


Source: Bloomberg.

have a reasonable expectation of asymmetric payoffs, we believe the revaluation of assets and the historic drop in volatility starts to look more plausible even absent positive economic and earnings news. Risk becomes the new risk-free. While the truth may lie somewhere in between, it does have interesting implications for asset allocation. In this framework, one potential strategy would be to barbell a portfolio or sleeves within a portfolio. Balance higher risk assets with hedged assets to maintain the current risk level or derisk with a barbell of lower volatility and lower correlated assets.

The Federal Open Market Committee (FOMC) has continued on its path of increasing rates in quarter point increments with a December quarter point raise and the suggestion of three or possibly four hikes (data dependent of course) expected to come in 2018. The FOMC also looks to stick to its previously outlined path of a very slow unwinding of its quantitative easing bloated balance sheet. Other major central banks have shifted their tone hinting at an end to injecting liquidity, but they appear to be at least a year or two behind the Federal Reserve. The impact of the "great unwind" remains to be seen, however at this point, there is a lot of rhetoric about unwinding but not much action (see Figure 11). U.S. Treasury 10-year yields rose from 2.33% to 2.41% during the quarter. The long end of the Treasury curve fell 12 bps to a yield of 2.74% (see Figure 12). The T-bills to 30-Year Treasury spread narrowed substantially (46bps) reflecting a continued flattening. Since the beginning of the year the curve has flattened 121 bps (see Figure 13). With the FOMC seeking rate normalization, the curve is now flatter than it has been in several years. Prior to December of 2017, December 2007 and January 2008 were the last times the Treasury curve has been this flat, albeit the absolute level of interest rates were appreciably higher (see Figure 14).

Figure 11: **Federal Reserve Balance Sheet**

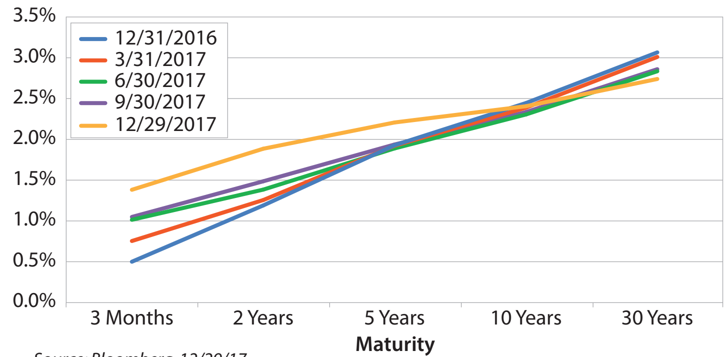


Source: Bloomberg. Data through 12/29/17.

Figure 12: **U.S. 30-Yr. Treasury Yield**

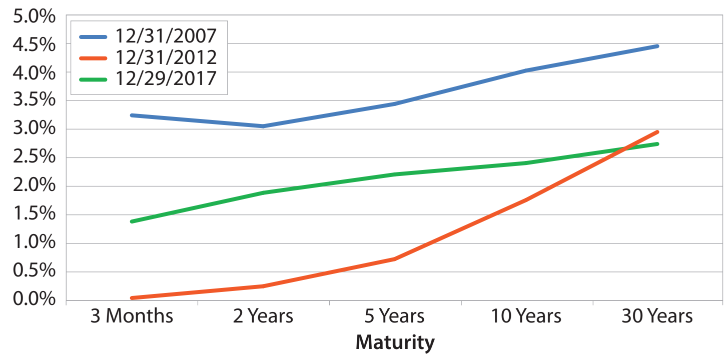
Source: Bloomberg, 12/29/17.

Figure 13: **U.S. Treasury Yield Curve**



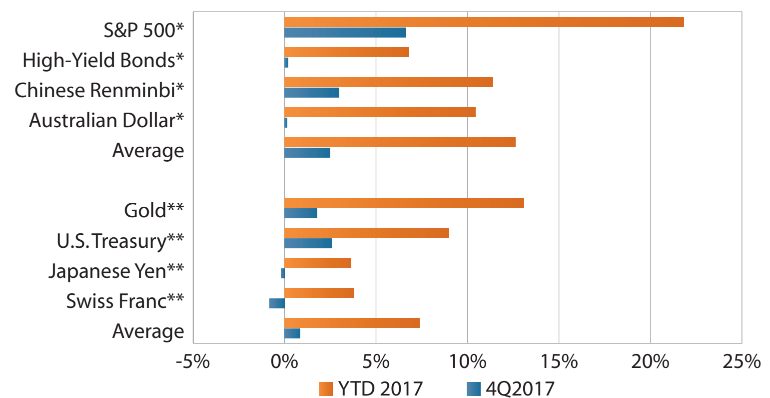
Source: Bloomberg, 12/29/17.

Figure 14: **U.S. Treasury Yield Curve**



Source: Bloomberg, 12/29/17.

Figure 15: **Risk Off vs. Risk On Asset Returns**



Source: Bloomberg, 12/29/17.
** Considered to be "Risk On" asset class. ** Considered to be "Risk Off" asset class.*

All charts shown herein are for illustrative purposes only and not indicative of any investment. The performance illustrations exclude the effects of taxes and brokerage commissions or other expenses incurred when investing. Past performance is not indicative of future results and there can be no assurance past trends will continue in the future. An investor cannot invest directly in an index.

Alternative investments may employ complex strategies, have unique investment and risk characteristics that may not be suitable for all investors.

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Definitions

Correlation: A statistical measure that quantifies the extent to which two or more data series fluctuate together. Values run from -1.0 to +1.0.

Aggregate Bonds: The Bloomberg Barclays US Aggregate Bond Index is a broad-based benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market.

Hedged Equity: Hedge Fund Research HFRI Equity Hedge (Total) Index. Investment Managers who maintain positions both long (positions that are owned) and short (positions that are owed) in primarily equity and equity derivative securities. Hedged Equity managers would typically maintain at least 50%, and may in some cases be substantially entirely invested in equities, both long and short.

Managed Futures: BarclayHedge US Managed Futures Industry Top 50 (BTop 50) Index. The Index seeks to replicate the overall composition of the managed futures industry with regard to trading style and overall market exposure.

Volatility: Hedge Fund Research HFRI Relative Value Volatility Index. Volatility strategies trade volatility as an asset class, employing arbitrage, directional, market neutral or a mix of types of strategies, and include exposures which can be long, short, neutral or variable to the direction of implied volatility, and can include both listed and unlisted instruments. Directional volatility strategies maintain exposure to the direction of implied volatility of a particular asset or, more generally, to the trend of implied volatility in broader asset classes. Arbitrage strategies employ an investment process designed to isolate opportunities between the price of multiple options or instruments. Volatility arbitrage positions typically maintain characteristic sensitivities to levels of implied and realized volatility, levels of interest rates and the valuation of the issuer's equity, among other more general market and idiosyncratic sensitivities.

Short Bias: Hedge Fund Research HFRI Equity Hedge Short Bias Index. Short-Biased strategies employ analytical techniques in which the investment thesis is predicated on assessment of the valuation characteristics on the underlying companies with the goal of identifying overvalued companies.

Macro: Hedge Fund Research HFRI Macro (Total) Index. Investment Managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed-income, hard currency and commodity markets.

Equity Market Neutral: Hedge Fund Research HFRI Equity Hedge Equity Market Neutral Index. Equity Market Neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Event Driven: Hedge Fund Research HFRI Event-Driven (Total) Index. Investment Managers who maintain positions in companies currently or prospectively involved in corporate transactions of a wide variety including but not limited to mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments.

Distressed: Hedge Fund Research HFRI Event-Driven Distressed/Restructuring Total Index. Distressed/Restructuring strategies employ an investment process focused on corporate fixed-income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

Credit Arbitrage: Hedge Fund Research HFRI Event-Driven Credit Arbitrage Index. Credit Arbitrage strategies employ an investment process designed to isolate attractive opportunities in corporate fixed-income securities; these include both senior and subordinated claims as well as bank debt and other outstanding obligations, structuring positions with little of no broad credit market exposure. These may also contain a limited exposure to government, sovereign, equity, convertible or other obligations but the focus of the strategy is primarily on fixed corporate obligations and other securities are held as component of positions within these structures.

Real Estate: The Dow Jones US Real Estate Index is designed to track the performance of real estate investment trusts (REITs) & other companies that invest directly or indirectly in real estate through development, management or ownership, including property agencies.

Commodities: The Bloomberg Commodity Index is made up of exchange-traded futures on physical commodities and represents 20 commodities, which are weighted to account for economic significance and market liquidity.

Credit Spread: The difference in yield between two fixed-income instruments with differing credit profiles.

VIX: Chicago Board Options Exchange SPX Volatility Index. The Chicago Board Options Exchange Volatility Index reflects a market estimate of future volatility, based on the weighted average of the implied volatilities for a wide range of strike prices.

BAA Corp: Moody's Bond Indices Corporate BAA. Moody's Long-Term Corporate Bond Yield Averages are derived from pricing data on a regularly replenished population of corporate bonds in the U.S. market, each with current outstandings over $100 million. The bonds have maturities as close as possible to 30 years; they are dropped from the list if their remaining life falls below 20 years, if they are susceptible to redemption, or if their ratings change. All yields are yield-to- maturity calculated on a semi-annual basis.

10-Yr Treasury: Yield of U.S. Treasury securities maturing in approximately 10 years.

U.S. 30-Yr Treasury Yield: Yield of U.S. Treasury securities maturing in approximately 30 years.

S&P 500: An unmanaged index of 500 stocks used to measure large-cap U.S. stock market performance.

High-Yield Bonds: The Bloomberg Barclays US High Yield Very Liquid Index (VLI) is a component of the US Corp High Yield Index that is designed to track a more liquid component of the USD-denominated, high yield, fixed-rate corporate bond market. The US High Yield VLI uses the same eligibility criteria as the US Corp High Yield Index, but includes only the three largest bonds from each issuer that have a min amount outstanding of USD500mn and less than five years from issue date.

Chinese Renminbi: The S&P Chinese Renminbi Index is designed as a tradable index that replicates the performance of the Chinese Renminbi versus the U.S. Dollar.

Australian Dollar: The return from selling the short currency (USD) to buy the long currency (AUD) and earning interest. The return is calculated by adding the spot return to the interest earned from the long currency position. It is designed to measure the performance of the Australian dollar vs. the U.S. dollar.

Gold: The return of the gold spot price as quoted as U.S. dollars per Troy Ounce.

U.S. Treasury: The ICE U.S. Treasury 20+ Years Bond Index is part of a series of indices intended to assess U.S. Treasury issued debt. Only U.S. dollar denominated, fixed-rate securities with minimum term to maturity greater than twenty years are included.

Japanese Yen: The return from selling the short currency (USD) to buy the long currency (JPY) and earning interest. The return is calculated by adding the spot return to the interest earned from the long currency position. It is designed to measure the performance of the Japanese yen vs. the U.S. dollar.

Swiss Franc: The return from selling the short currency (USD) to buy the long currency (CHF) and earning interest. The return is calculated by adding the spot return to the interest earned from the long currency position. It is designed to measure the performance of the Swiss franc vs. the U.S. dollar.

MSCI EAFE: The MSCI EAFE Index is designed to represent the performance of large and mid-cap securities across 21 developed markets, including countries in Europe, Australasia and the Far East, excluding the U.S. and Canada. The index is a free-float weighted equity index.

MSCI Emerging Markets: The MSCI Emerging Markets Index captures large and mid cap representation across Emerging Markets (EM) countries. The index covers 85% of the free float-adjusted market capitalization in each country.

Beta: A measure of price variability relative to the market.

Central Bank Balance Sheet: The U.S. Federal Reserve Balance Sheet as a percentage of U.S. GDP is calculated as the month-end value of the Fed Reserve Balance divided by a four quarter average of interpolated U.S. nominal GDP. The Bank of Japan (BOJ) balance sheet as a percentage of GDP is reported as the month-end value of BOJ Total Assets divided by a four quarter average of interpolated Japan nominal GDP. The Bank of England (BOE) balance sheet as a percentage of GDP is reported as the month-end value of BOE Reserve Balances divided by a four quarter average of interpolated UK nominal GDP. The European Central Bank (ECB) Balance Sheet as a percentage of GDP is reported as the month-end value of ECB Total Assets divided by a four quarter average of interpolated Euro Area nominal GDP.

Federal Reserve Balance Sheet: The notional amount of assets held by the federal reserve (primarily US Treasuries and mortgage backed securities).