Alternatives Update

3rd Quarter 2019

Farewell quantitative tightening, we hardly knew thee. It seems that the financial experiment by the Federal Reserve of raising rates and reducing its balance sheet is over. With negative interest rates being so ubiquitous globally (see Figure 1), perhaps it was just too radical an idea. The Federal Reserve's balance sheet increased during the third quarter and ended at over $3.8 trillion, well above the projected ending point of $3.5 trillion (see Figure 2). It's back to joining the European Central Bank, the Bank of Japan and their liquidity pumping monetary policies, often dubbed "QE Infinity." For capital market purists, such a move might be characterized as a step closer to a centrally planned economy versus a free-flowing capitalist one.

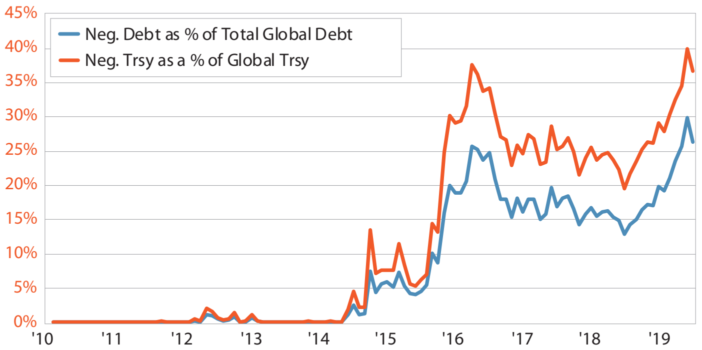
Given the repeated stance by the Federal Reserve that it is "data dependent," proactive rate cutting and an aggressive balance sheet pivot is a bit incongruous. Such actions give the impression that perhaps the Federal Reserve is overly focused on the senescence of the equity bull market, or worse, that their brief dalliance with trying to normalize financial conditions revealed fragility they were not expecting. Has all the easy money since the Great Financial Crisis created a snowflake global economy? Economic data in the U.S. seems to indicate the domestic economy is still moving along nicely. Perhaps the mountain of debt accumulated by consumers, corporations and the federal government is looming a bit larger for the Federal Reserve as it hashes out its next policy moves.

The ongoing trade war between the U.S. and China continues to weigh on economic growth projections globally and run roughshod over the commodities market. U.S. agricultural products are front and center in the dispute, as they are a key export of the U.S. to China. Oil and Industrial metals are collateral damage of the trade war, as they are highly sensitive to global growth sentiment, and gold soars or falls as a risk off/flight to quality proxy. It remains open to debate as to who has the most leverage in the dispute, or more importantly, who has the most staying power. It also remains open to debate as to whether there is any real hope that the issue of intellectual property theft will be dealt with in anything other than a cursory, face saving manner. Regardless of party affiliation, one has to give the current administration some props for even addressing the issue, as it has been all but ignored in the past by both Republicans and Democrats.

Asset returns were mixed in the third quarter. U.S. Treasuries and Real Estate were exceptionally strong followed by the U.S. Dollar and Gold, while Bitcoin and Emerging Markets lagged substantially. U.S. stocks managed to post a small gain, though not without some volatility and drama (see Figure 3). The New York Federal Reserve's recession model continued to move higher in the third quarter, hitting a high of 37.93% in August before ending the third quarter at 34.80% (see Figure 4). The last time the index reached that level was in 2008 as the index was moving down from a previous peak. The last time it reached this level from a substantially lower base, was in late 2007, just as the economy was beginning to deteriorate.

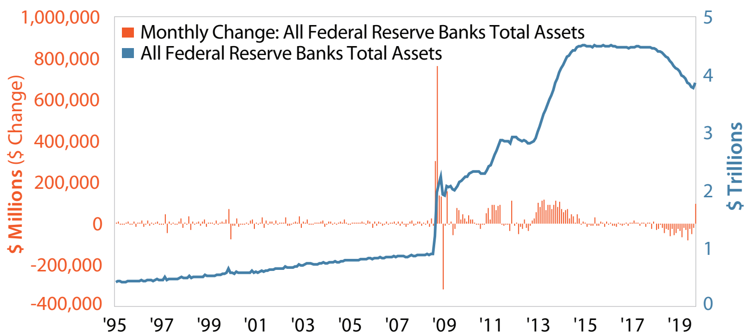
The cryptocurrency sector was slammed hard in the third quarter (see Figure 5). Bitcoin, the flagship cryptocurrency, fell 32.52%, while the wider universe of cryptocurrencies, as measured by the Bloomberg Galaxy Crypto Index, fell 40.39%. Ethereum fell 42.20%, Litecoin fell 53.58% and Ripple fell 39.20%. Part of the fall may be related to the cool reception and strong governmental pushback to Facebook's proposed LIBRA cryptocurrency. Such volatility, while enticing to the local speculator, does little to help ease regulators misgivings or dispel the sector's outlaw reputation. Bakkt, the startup cryptocurrency trading platform affiliate of the Intercontinental Exchange (ICE), launched the first "physical settle" bitcoin futures contract. The Bakkt futures contract is settled in bitcoin, not cash, which distinguishes it from the Chicago Mercantile Exchange (CME) bitcoin futures contract. Initial volume could best be characterized as slight. There is hope that the "physical" settlement mechanism will have appeal to a wider range of investors and help grow the underlying market.

Figure 1: **% of Negative Yielding Global Debt**



Source: Bloomberg. Data from 4/30/10 - 9/30/19.

Figure 2: **Federal Reserve Balance Sheet**



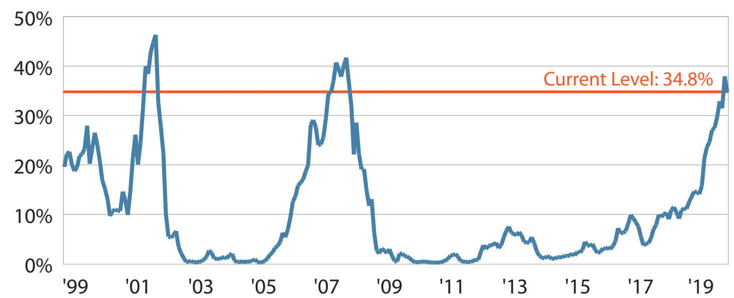
Source: Bloomberg. Data from 3/31/95 - 9/30/19.

Figure 3: **Asset Class Returns**

	3Q19	2Q19
U.S. Equities	1.70%	4.30%
International Developed	-1.07%	3.68%
Emerging Markets	-4.25%	0.61%
U.S. Treasury	8.14%	6.12%
Real Estate	7.30%	1.82%
Commodities	-1.84%	-1.19%
High Yield Bonds	1.24%	2.55%
U.S Aggregate Bonds	2.27%	3.08%
Bitcoin	-32.52%	199.91%
U.S. Dollar	3.38%	-1.19%

Source: Bloomberg, 9/30/19.

Figure 4: **Federal Reserve Bank of New York Probability of Recession in U.S. 12 Months Ahead**



Source: Bloomberg. Data from 12/31/98 - 9/30/20. Orange line is current level, shown for comparison.

Figure 5: **Cryptocurrency Returns**

	3Q19	2Q19	YTD 2019
BB Galaxy Crypto Index	-40.39%	110.15%	35.23%
Bitcoin	-32.52%	199.91%	124.29%
Ethereum	-42.20%	118.11%	36.18%
Ripple	-39.20%	36.30%	-26.72%
Litecoin	-53.58%	95.92%	87.97%

Source: Bloomberg, 9/30/19.

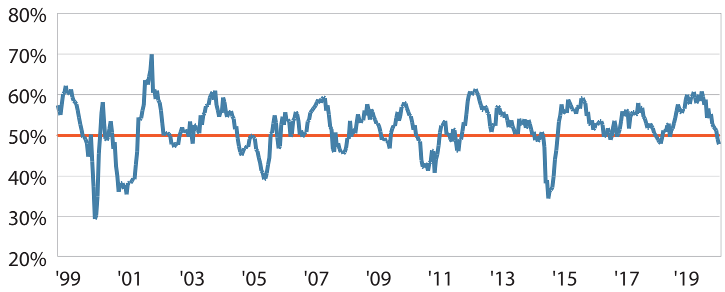
Economic news continues to indicate that global growth is waning, while domestic economic news was generally positive. One notable exception was ISM Manufacturing which dipped below 50 in August and September (see Figure 6). Levels below 50 indicated a contraction. As expected by market participants, the Federal Open Market Committee (FOMC) cut the target Fed Funds rate 25 basis points (bps) at both the July and September meetings. Unemployment, as measured by the U-3 seasonally adjusted rate, ended the quarter at 3.5%, the lowest reading since 1969 (see Figure 7). Consumer sentiment, as measured by the University of Michigan Consumer Sentiment Index, ended the quarter at 93.2, down from the end of the 2nd quarter but rebounding from 89.8 in August. Another sentiment indicator, the Conference Board Consumer Confidence Index, moved marginally higher to 125.1 (see Figure 8). Both measures are at levels that would be considered optimistic and positive. The year-over-year consumer price index (CPI) didn't show much movement during the third quarter, ending at 1.7%, well below last September's reading of 2.3% (see Figure 9). CPI running at or below 2% for all of 2019 has been one justification by the FOMC for an accommodative policy.

The S&P 500 Index (SPX) was up 1.70% for the third quarter of 2019 and the MSCI EAFE Index fell 1.07% as concerns over the trade war with China were balanced against central banks emphasizing continued accommodative policies. Long-term 20+ year U.S. Treasuries gained 8.14% as investors saw two rate cuts in the U.S. and slowing economic activity around the globe. Alternative Investment ("alternatives") returns were mixed with five of the ten categories achieving positive returns (see Figure 10). Real estate was the best performing category (+7.30%) followed by managed futures (+3.62%) and credit arbitrage (+1.94%). Commodities was the worst performing category (-1.84%) along with hedged equity (-1.10%).

Traditionally, managed futures and macro strategies are viewed as having lower correlations to equities because they are generally diversified across a variety of markets and often employ shorting as part of their approach. Strategies that had lower two-year correlations to U.S. equities (less than .60), on average, outperformed those strategies that had a higher correlation with U.S. equities (see Figure 11). Real assets were positive in two of three categories for the third quarter. Real estate was the highest returning category (+7.30%), gold advanced as well (+4.46%). Commodities were in negative territory (-1.84%), primarily as a result of unrest related to the trade dispute with China. As of 9/30/19, all three real asset categories had positive returns (see Figure 12).

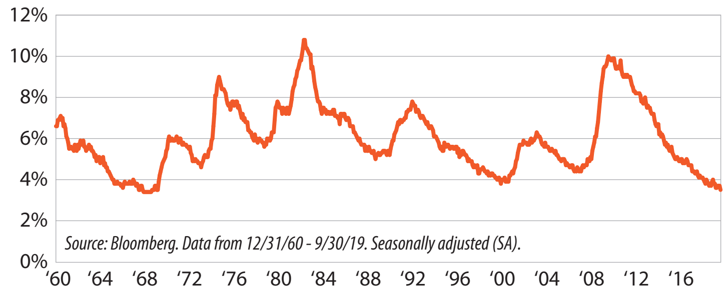
Managed futures, commodities, and macro strategies have historically shown low correlation and beta to stocks and bonds over the course of a market cycle, thus they may serve as potentially strong

Figure 6: **ISM Manufacturing**



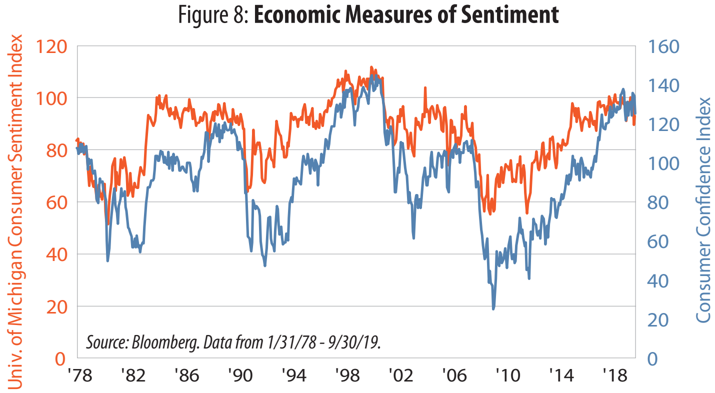
Source: Bloomberg. Data from 12/31/60 - 9/30/19. Seasonally adjusted (SA).
Numbers above 50% indicate an expansion, below 50% indicates a contraction.

Figure 7: **U.S. Unemployment (U-3)**



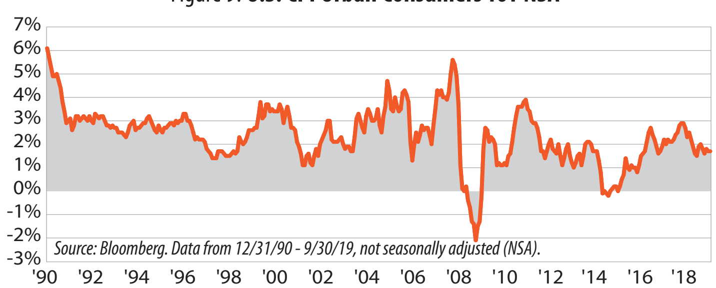
Source: Bloomberg. Data from 12/31/60 - 9/30/19. Seasonally adjusted (SA).

Figure 8: **Economic Measures of Sentiment**



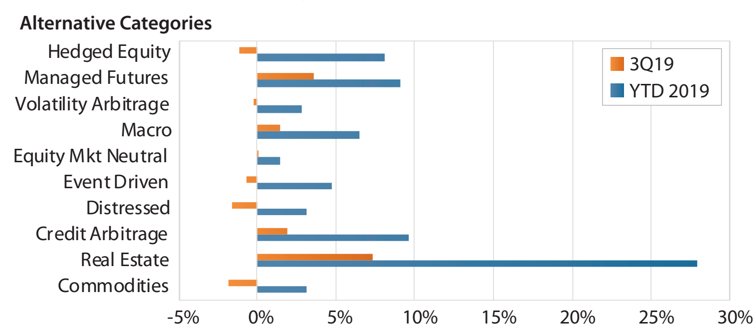
Source: Bloomberg. Data from 1/31/78 - 9/30/19.

Figure 9: **U.S. CPI Urban Consumers YoY NSA**



Source: Bloomberg. Data from 12/31/90 - 9/30/19, not seasonally adjusted (NSA).

Figure 10: **Performance**



Source: Bloomberg, 9/30/19.

Figure 11: **Correlations (2-Year) & Returns**

	S&P 500	Q319
Hedged Equity	0.95	-1.10%
Event Driven	0.88	-0.69%
Volatility Arbitrage	0.85	-0.18%
Credit Arbitrage	0.76	1.94%
Distressed	0.71	-1.58%
Commodities	0.72	-1.84%
Real Estate	0.58	7.30%
Macro	0.48	1.50%
Equity Market Neutral	0.45	0.07%
Managed Futures	0.31	3.62%
Lower Correlation Avg TR (≤.60)		**3.12%**
Higher Correlation Avg TR (>.60)		**-0.57%**

Source: Bloomberg, 9/30/19. Monthly returns over 24 months.

Figure 12: **Real Assets**

	Q3 2019	Q2 2019	Q1 2019	YTD 2019
Real Estate	7.30%	1.82%	17.08%	27.91%
Commodities	-1.84%	-1.19%	6.32%	3.13%
Gold	4.46%	9.07%	0.77%	14.81%
Average	***3.31%***	***3.23%***	***8.06%***	***15.28%***

Source: Bloomberg, 9/30/19.

portfolio diversifiers. Strategies such as credit arbitrage, event driven, hedged equity, et al., which have historically had higher correlations with equities and bonds, may provide attractive risk/return profiles through lower volatility. These characteristics may allow investors to broaden their investment choices and create more efficient portfolios.

While yields in both the corporate and treasury bond sectors fell significantly during the third quarter on an absolute basis, Baa/BBB rated corporate bonds outperformed 10-year U.S. Treasuries. Baa/BBB over 10-year U.S. Treasuries yields tightened 9 bps during the third quarter (see Figure 13). Spreads are now in the 47th percentile of historical rankings (see Figure 14). The spread between below investment grade corporate bonds (B/CA rated) and BBB rated corporate bonds (investment grade) widened almost 26 bps during the quarter. Both ratings categories saw yields fall but it was the 43 bps drop in BBB rated yields that drove the spread widening as B/CA did not fall as much (see Figure 15).

With the Federal Reserve cutting rates at both meetings in the quarter, restarting balance sheet growth and sentiment for economic growth over the next year coming down fast, all parts of the yield curve rallied. U.S. Treasury 10-year yields fell 34 bps to 1.67%. The long-end of the U.S. Treasury curve (30 yr. maturity) fell 42 bps to a yield of 2.11%. The yield spread between 30-yr. to 10-yr. U.S. Treasuries narrowed 8 bps to a spread of just under 45 bps. The yield spread between 30-yr. Treasuries and T-bills (3mo maturity) briefly went negative during late August before ending the third quarter at 30 bps, a tightening of 14 bps. As of quarter-end, the U.S. Treasury curve was inverted out to 10 years, and has shifted down sharply across all maturities from the beginning of the year (see Figure 16). Much of the yield curve has a negative real yield (nominal yield lower than year-over-year CPI) and for those maturities of the yield curve that do have a positive real yield, the premium is extermely small (see Figure 17).

Returns for "Risk Off" assets (+2.50% average return) substantially outperformed the returns for "Risk On" assets (-0.93% average return) with U.S. Treasuries posting the largest gain in the third quarter and the Australian Dollar (which is closely tied to the Chinese economy and commodities) the most negative return (see Figure 18). Focusing on non-currencies, Gold and long-dated (20 yr. +) U.S. Treasuries outperformed equities and high yield bonds by an average of over 484bps, a continuation of the relative strong performance posted in the second quarter of 2019. Alternatives have historically provided significant diversification benefits when paired with a portfolio of traditional assets, in addition to both competitive absolute returns and attractive risk-adjusted returns.

Figure 13: **BAA Corp Credit Spread over 10-Yr U.S. Treasury (%)**

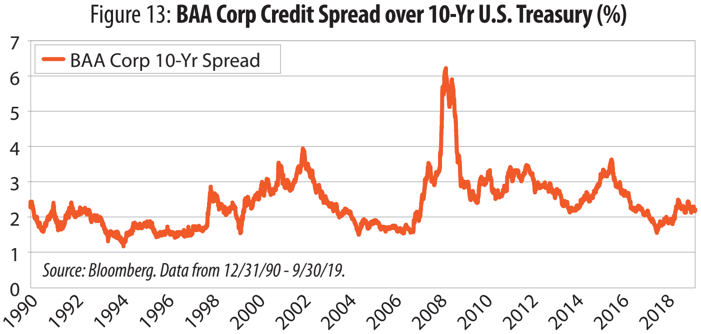
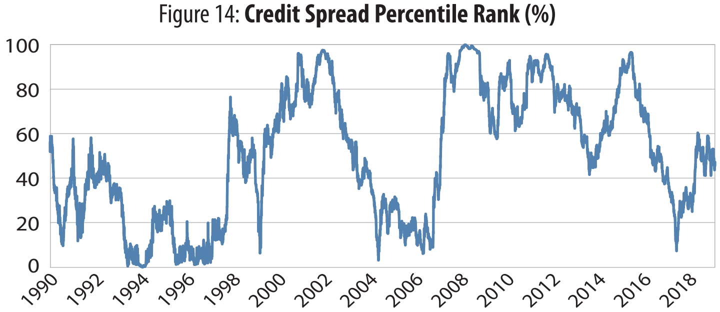
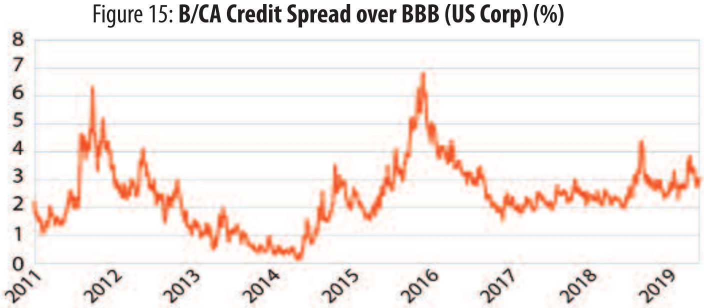


Figure 14: **Credit Spread Percentile Rank (%)**



Source: Bloomberg. Data from 12/31/90 - 9/30/19.

Figure 15: **B/CA Credit Spread over BBB (US Corp) (%)**



Source: Bloomberg. Data from 12/31/10 - 9/30/19.

Figure 16: **U.S. Treasury Yield Curve**

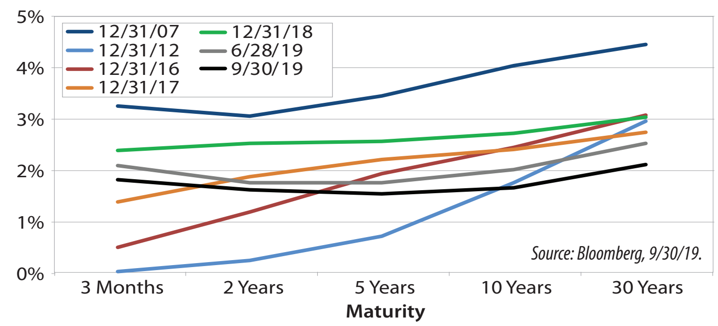
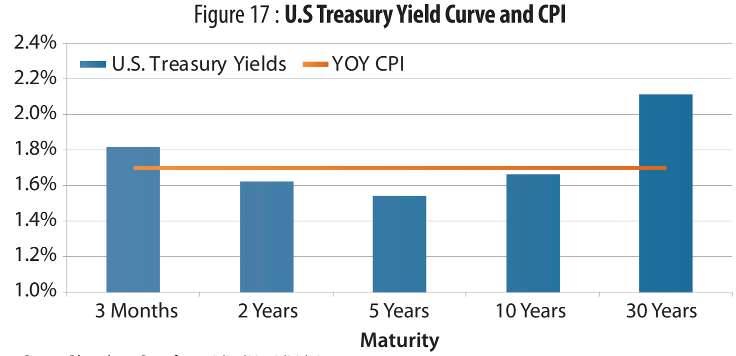
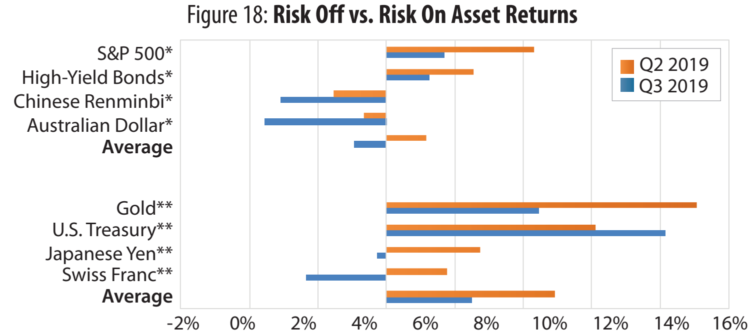


Figure 17 : **U.S Treasury Yield Curve and CPI**



Source: Bloomberg. Data from 12/31/02 - 9/30/19.

Figure 18: **Risk Off vs. Risk On Asset Returns**



Source: Bloomberg, 9/30/19. * 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.

Definitions

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

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.

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.

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.

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

Bitcoin: A digital currency using encryption techniques created for use in peer-to-peer online transactions Introduced in 2008 by a person or group using the name Satoshi Nakamoto.

Bloomberg Barclays US Corp B-Ca Capped Index: The Bloomberg Barclays index measures the performance of the taxable B1 – Ca rated range of the fixed-rate U.S. dollar-denominated corporate bond market. The index is market capitalization weighted and caps individual issuers at 3% of the total market value.

Bloomberg Galaxy Crypto Index (BGCI): The BGCI is designed to measure the performance of the largest cryptocurrencies traded in USD.

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.

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.

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.

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.

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

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.

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.

Ethereum: Ethereum is a platform that offers programming code of any decentralized application. It has been linked to payment style transactions. Ether is the cryptocurrency issued through open-source code executed on thousands of nodes.

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.

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

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.

High-Yield Bonds: The Bloomberg Barclays US High Yield Very Liquid Index (VLI) is a component of the US Corporate 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 Corporate 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.

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.

Litecoin: A peer-to-peer cryptocurrency and open source software project similar to Bitcoin, Litecoin uses blockchain technology to process transactions. Litecoin, referred to as an alt-coin can process blocks faster than Bitcoin, uses a different mining algorithm and has larger supply.

Long/Short: "Long" and "short" are investment terms used to describe ownership of securities. To buy securities is to "go long." The opposite of going long is "selling short." Short selling is an advanced trading strategy that involves selling a borrowed security. Short sellers make a profit if the price of the security goes down and they are able to buy the security at a lower amount than the price at which they sold the security short.

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.

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.

International Developed: 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.

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.

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.

Ripple: Known as XRP, Ripple is a cryptocurrency that can be used on open source distributed ledger created by the company Ripple. It is built upon the principles of blockchain as an on-demand option for faster cross border payments.

U.S. Equities: The S&P 500 Index. An unmanaged index of 500 stocks (currently 505) used to measure large-cap U.S. stock market performance.

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.

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

U.S. Dollar: The U.S. Dollar Index (USDX) indicates the general international value of the U.S. dollar. The USDX does this by averaging the exchange rates between the USD and major world currencies. The ICE US computes this by using the rates supplied by some 500 banks.

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.

Volatility Arbitrage: 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.

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