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There was no shortage of market events to dwell upon for investors in the third quarter of 2022. Risk assets staged a furious rally through the middle of August only to experience an equally furious drawdown giving back all gains and then some. Economic data was mostly benign, inflation remained stubbornly high, bond yields soared, central banks reaffirmed they are in inflation killing mode, mortgage rates hit 7%, high-yield spreads remained wide, the dollar rocketed, commodities pulled back, the correlation between stocks and bonds pushed deep into positive territory and the war/energy crisis in Europe dragged on.

There have been growing concerns that years of zero/negative interest rates, and massive liquidity injections by central banks have not only stoked inflation but made the global financial system weaker, not stronger. These concerns received some supporting evidence in the third quarter. The Bank of Japan (BOJ) intervened to buy YEN, the first time since 1998, to defend against a strengthening dollar. The Bank of England (BOE) had to intervene and buy gilts in "whatever scale is necessary" as a pension crisis and pound crisis began to unfold and threaten UK financial stability. In the BOE's words, they sought to combat "unwarranted tightening of financing conditions and a reduction of the flow of credit to the real economy". Like much of the developed world, both Japan and England are battling rising inflation but slowing economies. These two episodes might be localized in nature, or they may portend similar challenges to come for the global financial community.

In addition to the obvious question of 'when will the bear market for risk assets end?', investors are struggling with a series of questions they have not had to consider for several decades. Will the Federal Reserve (the "Fed") be able to unwind all the fiscal liquidity (massive balance sheets, multiple rounds of Quantitative Easing (QE), zero rates/negative real rates) enacted over the past 12 years in just a few short months? Will they be able to quell inflationary levels not seen since the '70s and '80s without breaking some or all of the capital markets? Will they be forced to stop raising rates too soon due to market stresses and likely have inflation reassert itself with a vengeance as it did in the 1970s? Can the 60/40 stock/bond portfolio recover its former dominance after posting a horrific 3 quarters of returns or will advisors need to seek alternative constructs? Jerome Powell has mentioned economic pain; financial pundits have predictions across the spectrum, but this might be a time where it is prudent to hope for the best but plan for the worst.

The Fed raised the Fed Funds Target Rate by 75 basis point ("bps") at the July and September meetings and Fed Chair Jerome Powell signaled an end point of 4.60% in 2023 which indicates another 125 bps of tightening to come. Strategist and investors pour over every release of economic data seemingly hoping for some evidence of slowing thus opening a path to a less aggressive Fed. Unfortunately, the data has been frustratingly uncooperative and mostly positive to neutral. Inflation has likewise been uncooperative remaining quite high.

Figure 1 Alternative Category Performance

	Q3 2022	YTD 2022
Hedged Equity	-2.34%	-13.81%
Event Driven	-1.14%	-8.42%
Equity Market Neutral	0.98%	0.70%
Real Estate	-10.41%	-28.35%
Commodities	-4.11%	13.57%
Distressed/Restructuring	-2.85%	-6.41%
Volatility Arbitrage	0.59%	4.59%
Credit Arbitrage	-3.64%	-8.50%
Macro	2.20%	10.91%
Managed Futures	2.72%	3.73%

Source: Bloomberg, data as of 9/30/22.

Figure 2 Alternative Performance (Over/Under) vs S&P 500 Index

	Q3 2022
Hedged Equity	2.54%
Event Driven	3.74%
Equity Market Neutral	5.86%
Real Estate	-5.53%
Commodities	0.78%
Distressed/Restructuring	2.03%
Volatility Arbitrage	5.47%
Credit Arbitrage	1.25%
Macro	7.09%
Managed Futures	7.58%

Source: Bloomberg, data as of 9/30/22.

Figure 3 Correlations (2yr) & Returns

	S&P 500 Index	Q3 2022
Hedged Equity	0.81	-2.34%
Event Driven	0.78	-1.14%
Equity Market Neutral	0.35	0.98%
Real Estate	0.92	-10.41%
Commodities	0.38	-4.11%
Distressed /Restructuring	0.68	-2.85%
Volatility Arbitrage	0.02	0.59%
Credit Arbitrage	0.57	-3.64%
Macro	0.09	2.20%
Managed Futures	-0.14	2.72%
Lower Correlation Avg TR (<=0.60)		-0.21%
Higher Correlation Avg TR (>0.60)		-4.19%

Source: Bloomberg, data as of 9/30/22. Correlation of monthly returns over 24 months.

Figure 4 Real Assets

	Q3 2022	YTD 2022
Real Estate	-10.41%	-28.35%
Commodities	-4.11%	13.57%
Gold	-8.12%	-9.22%
Average	-7.55%	-8.00%

Source: Bloomberg, data as of 9/30/22.

References to specific companies or securities should not be construed as a recommendation to buy or sell any such security, nor should they be assumed profitable.

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. See last page for definitions of asset class indexes and other terms discussed herein.*

Alternative Investments ("alternatives") which have been asserting their value added to portfolios over the past several months, had a mixed quarter on an absolute basis, with positive returns in 4 of 10 categories. However, the average outperformance versus the S&P 500 Index was over 300 bps and 9 of 10 categories beat the S&P 500 Index returns for the quarter. Year-to-date, the average outperformance vs the S&P 500 Index is over 20%. Nine of 10 categories outperformed the Bloomberg U.S. Aggregate Bond Index for the quarter. Lower correlation/lower beta strategies on average, fared substantially better which is expected given the negative returns in stocks and a wide spectrum of bonds. Managed futures was the best performing category (+2.72%). Other notable gainers were macro (+2.20%), equity market neutral (+0.98%) and volatility arbitrage (+0.59%). Real estate (-10.41%) and credit arbitrage (-3.64%) were the worst performing categories (Figure 1 and Figure 2).

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 2-year correlations to U.S. equities (less than 0.60), on average, significantly outperformed those strategies that had a higher correlation with U.S. equities. The spread was 398 bps (Figure 3). As the dollar appreciated and nominal rates rose sharply, real asset returns suffered. Real estate was especially hard hit as mortgage rates soared and recession worries weighed heavily on the sector (Figure 4 and 5).

Unfortunately 2022 hasn't exactly been a banner year for cryptocurrencies either in terms of returns or regulatory news/scandals so the positive returns in the third quarter were a bit of a relief especially against the backdrop of poor returns in many traditional asset classes. The broader Bloomberg Galaxy Crypto Index was up low double digits, and the bellwether Bitcoin up low single digits (Figure 6). Ethereum was up significantly as it approached a merge with proof of stake blockchain Beacon Chain and the hopes for energy reduction in mining of 99%. Ripple rose over 50% as the legal battle with the Securities and Exchange Commission (SEC) moved closer to an end with both parties filing motions to have an immediate ruling. It would appear investors are expecting a favorable ruling, though why is unclear. Other news included the Nasdaq announcing they would intend to offer cryptocurrency custody services to institutional investors via Nasdaq Digital Assets.

Returns for major asset classes were mostly negative in the third quarter of 2022, exceptions being the U.S. Dollar which hit its highest level in 20 years and Bitcoin which was bouncing back from over a 50% loss in the previous quarter. The MSCI Emerging Markets Index led the move downward (-11.57%) followed by the Real Estate Index (-10.41%), the MSCI EAFE Index (-9.36%) and the S&P 500 Index (-4.88%). Despite many headlines about the end of the commodity cycle, commodities outperformed most equity markets and several bond markets in the quarter but was negative for the quarter (-4.11%). The U.S economic data continued to remain positive and inflation stubbornly high, this resulted in long-dated U.S. Treasuries selling off sharply (-10.75%). Investment grade bonds were also hard hit (-4.75%). The U.S. Dollar Index continued to strongly advance on expectations of a resolute Fed (+7.10%) (Figure 7). Nominal yields moved higher across the curve, yet real yields remained deeply negative (Figure 8) as inflation, as measured by the CPI, continued to move higher. September year-over-year CPI hit 8.3% above expectations.

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. **Please Note: Alternative investments may employ complex strategies, have unique investment, and risk characteristics that may not be suitable for all investors. Diversification does not guarantee a profit or protect against loss.**

Figure 5 Bankrate.com 30Y Mortgage Rates

Source: Bloomberg, data as of 9/30/22.

Figure 6 Cryptocurrency Returns

	Q3 2022	YTD 2022
Bloomberg Galaxy Crypto Index	16.15%	-62.86%
Bitcoin	3.70%	-58.08%
Ethereum	31.79%	-63.90%
XRP (Ripple)	52.37%	-41.73%
Litecoin	4.80%	-63.44%

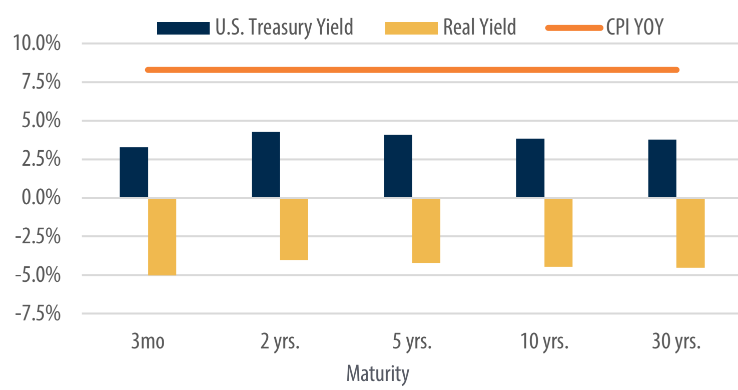
Source: Bloomberg, data as of 9/30/22.

Figure 7 Asset Class Returns

	Q3 2022	YTD 2022
U.S. Equities	-4.88%	-23.87%
International Developed	-9.36%	-27.09%
Emerging Markets	-11.57%	-27.16%
U.S .Treasury	-10.75%	-30.08%
Real Estate	-10.41%	-28.35%
Commodities	-4.11%	13.57%
High Yield Bonds	-0.87%	-15.54%
U.S. Aggregate Bonds	-4.75%	-14.61%
Bitcoin	3.70%	-58.08%
U.S. Dollar	7.10%	17.19%

Source: Bloomberg, data as of 9/30/22.

Figure 8 U.S. Treasury Yield Curve and CPI



Source: Bloomberg. U.S. Treasury Yields as of 9/30/22. CPI YoY as of 9/30/22.

Definitions

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

30-Yr Mortgage Rate: is a fixed interest rate home loan that will be paid off completely in 30 years if you make every payment as scheduled.

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

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

Central Bank: A central bank is a financial institution given privileged control over the production and distribution of money and credit for a nation or a group of nations.

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.

Consumer Price Index (CPI): A measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food, and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living.

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.

Cryptocurrency is a digital or virtual currency that is secured by cryptography, which makes it nearly impossible to counterfeit or double-**spend.**

Cryptocurrency Custody Services: third party solutions providers of storage and security services for cryptocurrencies.

Distressed/Restructuring: 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.

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.

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 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.

Inflation is the decline of purchasing power of a given currency over time.

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.

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.

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.

Nominal yield of a bond, depicted as a percentage, is calculated by dividing total interest paid annually by the face, or par, value of a bond**.**

Nasdaq is a global electronic marketplace for buying and selling securities on a computerized, speedy, and transparent system.

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.

Real Yield or Real Interest Rate has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower and the real yield to the lender or to an investor.

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.

Securities and Exchange Commission (SEC): is a U.S. government oversight agency responsible for regulating the securities markets and protecting investors.

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.

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.

Year-over-Year (YoY): is a calculation that helps compare groth over the previous 12 months and automatically negates the effect of seasonality.

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.