FEG INSIGHT

NOVEMBER 2020

THE INFLATION ENIGMA

Balancing Protection And Total Return

A primary goal of investors is maintaining the purchasing power of their portfolios. With inflation as the key threat to purchasing power, mitigating its impact on portfolios remains a key concern. Inflation has remained well-controlled for nearly 40 years, and since the Global Financial Crisis it has been below the target set by the Federal Reserve.

However, recent monetary stimulus/support measures undertaken by the Federal Reserve to combat the effects of COVID-19 have led to a renewed focus on inflation as a potential risk. Many asset classes traditionally viewed as "inflation hedges" (i.e. gold and commodity futures) have not provided a risk premium necessary to justify their inclusion in portfolios. While certain asset classes do offer attractive returns and a correlation to unexpected inflation, there is no "silver bullet" for mitigating inflation risk.

To better help investors understand the balance of protection and total return, we address a brief inflation primer and history, the current inflation landscape, and considerations for an inflation minded portfolio.

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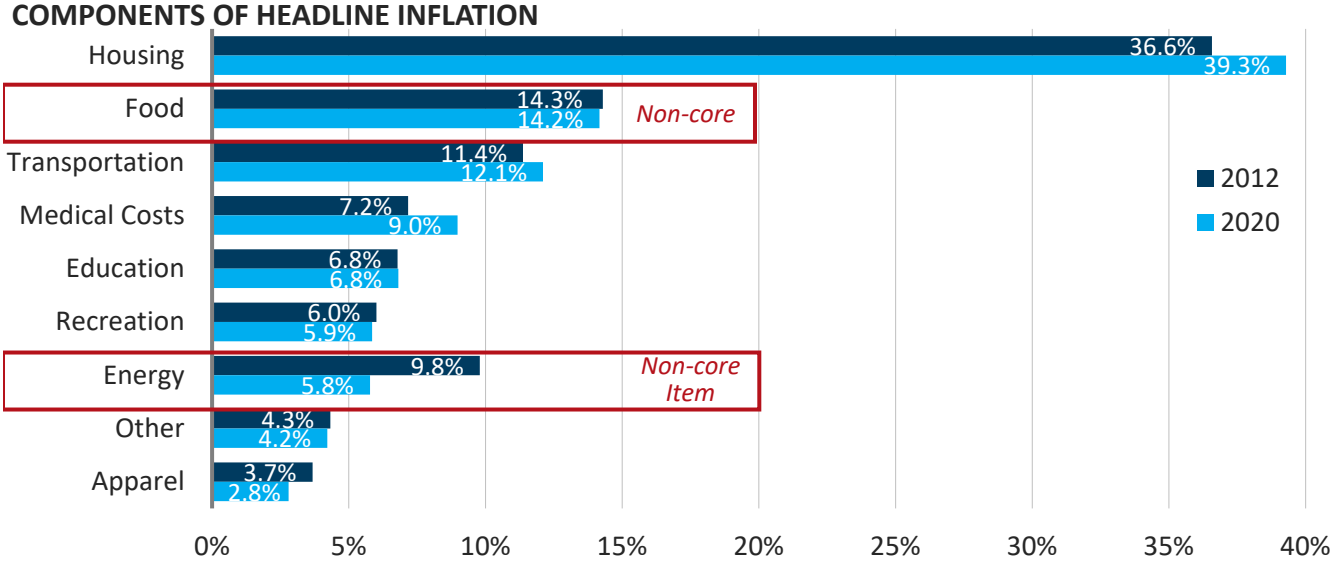
A SHORT HISTORY OF INFLATION

TWO METRICS FOR INFLATION

Inflation, the rate at which a price increases over time, has two primary reference metrics – Headline Inflation and Core Inflation.

1. **Headline inflation measures all goods and services and is reported through the monthly Core Price Index (CPI).**
   Historically, housing has been the largest component of headline inflation. Food and Energy typically make up the following two largest components. However, in recent years energy prices have faced a steady decline with the advent of shale oil activity in the U.S.
2. **Core Inflation measures the change in goods and services but excludes food and energy.**
   Since food and energy tend to have greater variability in pricing due to fluctuation in the commodities' supply and demand balances, core inflation is less volatile than headline inflation.

COMPONENTS OF HEADLINE INFLATION

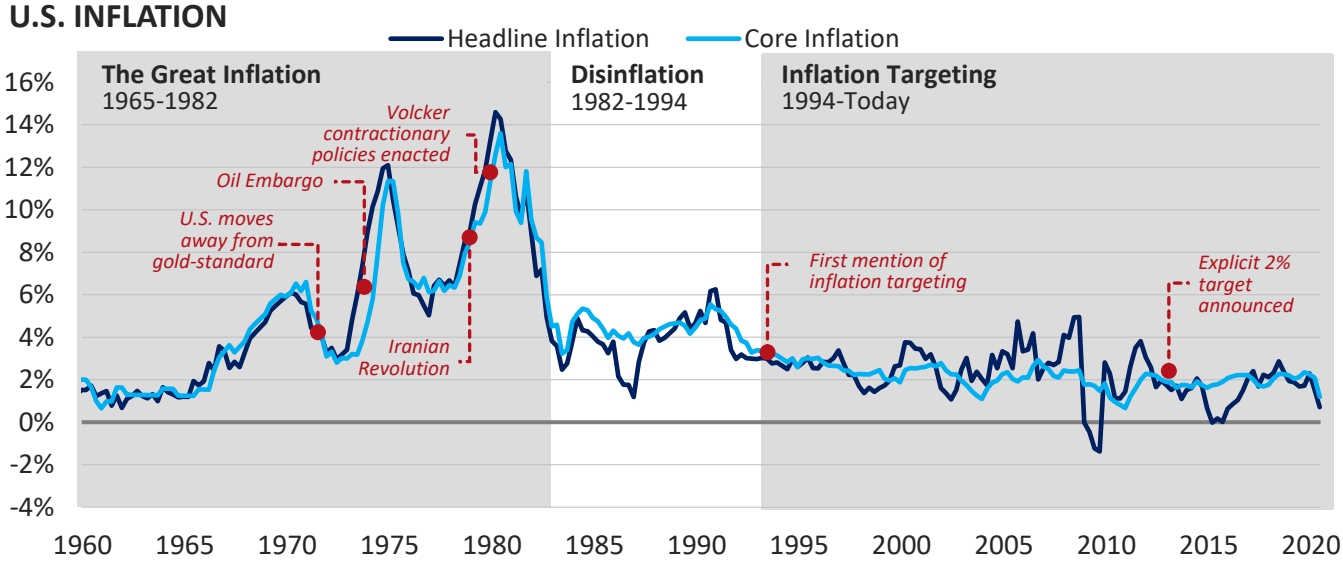


Data source: Federal Reserve Bank of St. Louis. Data as of May 31, 2020.

INFLATION IN THE U.S.

- Inflation in the U.S. is typically associated with events of the late-1960s and 1970s—long lines for gasoline and skyrocketing prices.
- The period of 1965-1982, characterized as The Great Inflation, was marked by a number of ill-fated fiscal and monetary policies that led to an expansive money supply, and high inflation. This was further exacerbated by an OPEC oil embargo on the U.S. in 1973, and an oil shortage in 1979 arising from the Iranian Revolution. The result was a "cost-push" inflation environment that created a peak annual inflation rate of over 14%.
- Paul Volcker stepped in as the Federal Reserve Chairman in 1979, enacting policies to directly combat inflation by decreasing the money supply and raising interest rates.
- Finally, in the mid-1990's the Federal Reserve officially started to discuss a target inflation rate, culminating with an announcement in 2012 that the target rate would be 2.0%. During this time the U.S. experienced modest inflation, with some variability during times of high GDP growth or recessions.

U.S. INFLATION



Data source: Federal Reserve Bank of St. Louis. Data as of June 30, 2020.

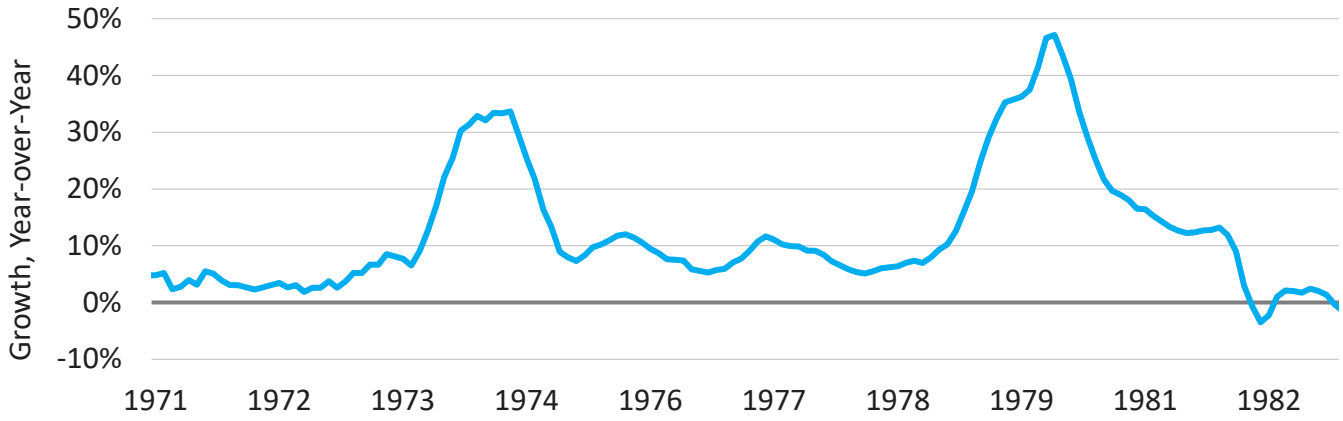
THE DRIVERS OF INFLATION

Two drivers of inflation are Cost Push, where supply driven costs increase, and Demand Pull, where demand driven cost increases.

Cost push is characterized by an increase in core production input costs that are ultimately passed on to the end consumer. This could typically be created by reductions in supply for core inputs. Crude oil supply shortages in the 1970's arising from the OPEC oil embargo and then again with the Iranian Revolution drove energy prices up 33.7% and 47.1%, at the respective height of each crisis.

ENERGY INFLATION

January 1971 - December 1982



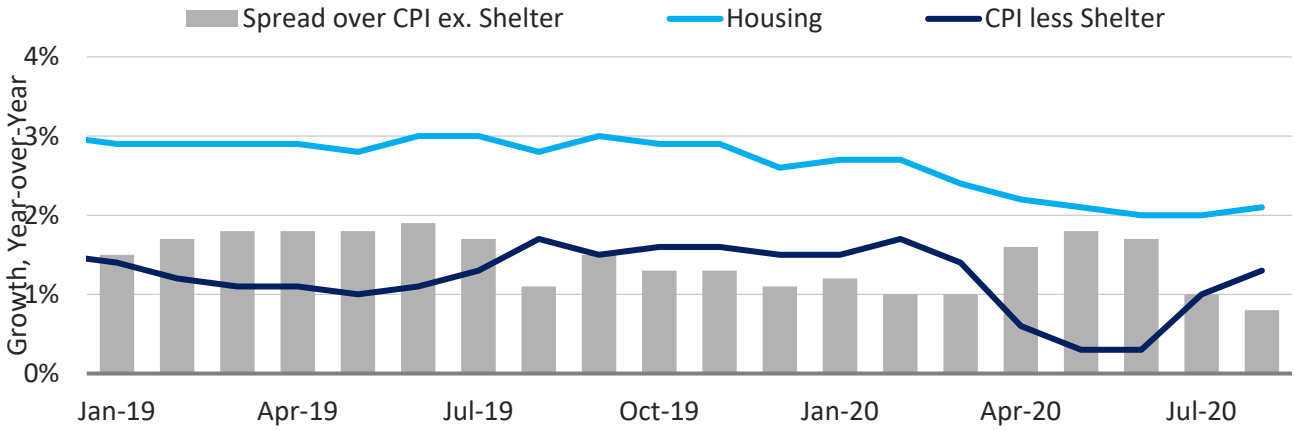
Data source: Bureau of Labor Statistics

Demand pull is created by an increase in demand for goods and services due to an increase in real wages or more readily available capital in the economy. The most notable period of demand-pull inflation could be seen in the 1960's run up to the Great Inflation, when social programs and deep tax cuts boosted consumer demand past a point the economy could maintain.

More recently, the ready availability of mortgage financing and demand for single family homes helped keep housing inflation near 2% while Core CPI, ex. Housing, following the onset of the COVID-19 crisis.

HOUSING INFLATION

January 2019 - August 2020



Data source: Bureau of Labor Statistics

THE GREAT INFLATION VERSUS THE GLOBAL FINANCIAL CRISIS

Many investors still debate why the unprecedented monetary response to the Global Financial Crisis (GFC) has not resulted in the high inflation levels seen in the in prior quarter century. Despite the monetary response, the U.S. has faced a number of deflationary forces over the past decade.

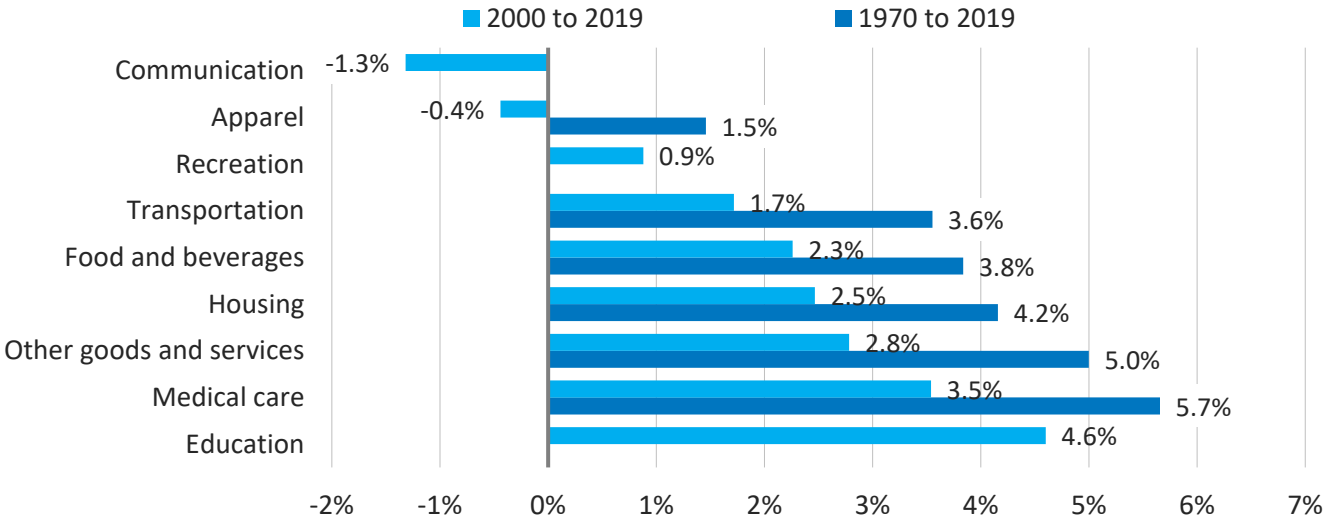
DISINFLATIONARY THEME	EXPLANATION
Technology	The pace of technology advancement and adoption has accelerated dramatically, creating efficiencies and lowering the overall cost of production and services.
Globalization	Even before the Global Financial Crisis, companies were reducing costs through complex, global supply chains that leveraged low cost labor.
Income Inequality	Since the Global Financial Crisis, top income brackets have seen marked wage growth and a disproportionate amount of increase in wealth compared to other Americans. These individuals tend to save more than lower income brackets.

Perhaps no commodities are so pervasive as energy commodities, which have an influence across all components of the economy. At the core of production and our daily lives, increases in energy costs can have a disproportionate impact on consumers. However, the past decade has seen the adoption of horizontal drilling methods, making the U.S. one of the top oil producing nations, and introducing a large, stable source of energy into the global market. This has not only lessened dependence on foreign oil, but has also created competition against foreign oil, lower prices and providing disinflationary pressures to all areas of the economy.

ALL INFLATION IS NOT EQUAL

- While inflation has been relatively subdued since the Global Financial Crisis, the U.S. has seen pockets of high inflation. Over the past twenty years, education and healthcare have exceeded core inflation, both increasing more than 3.5% per annum.
- The disinflationary impacts of global supply chains and technology improvements is keenly seen in the deflation of communication costs—the category as a whole has fallen 1.3% per annum, while phone hardware, including smart phones, has fallen at 8.0% per annum over the same period.
- This dispersion of inflation results and the dynamics of the disinflationary factors illustrates the difficulty of predicting where inflation will arise next, and even more difficult, how best to protect against it where it matters.

INFLATION OF CPI COMPONENTS



Data source: Federal Reserve Bank of St. Louis. Data as of December 31, 2019

INFLATION AS IT STANDS TODAY

IS INFLATION STILL A CONCERN TODAY?

While inflation is not perfectly understood, one generally accepted explanation of its drivers is the Quantitative Theory of Money, which posits that inflation arises when the growth in money supply and circulation outpaces the volume of goods and services consumed.

QUANTITATIVE THEORY OF MONEY

Theorizes that inflation arises when the money supply and the volume of goods & services consumed are not growing in line.

Money Supply x Velocity of Money	=	Price of Goods & Services x Quantity of Goods & Services

Following this theory, one would assume that we should have seen rampant inflation following the GFC and now again following the COVID-19 response from the Fed and central government.

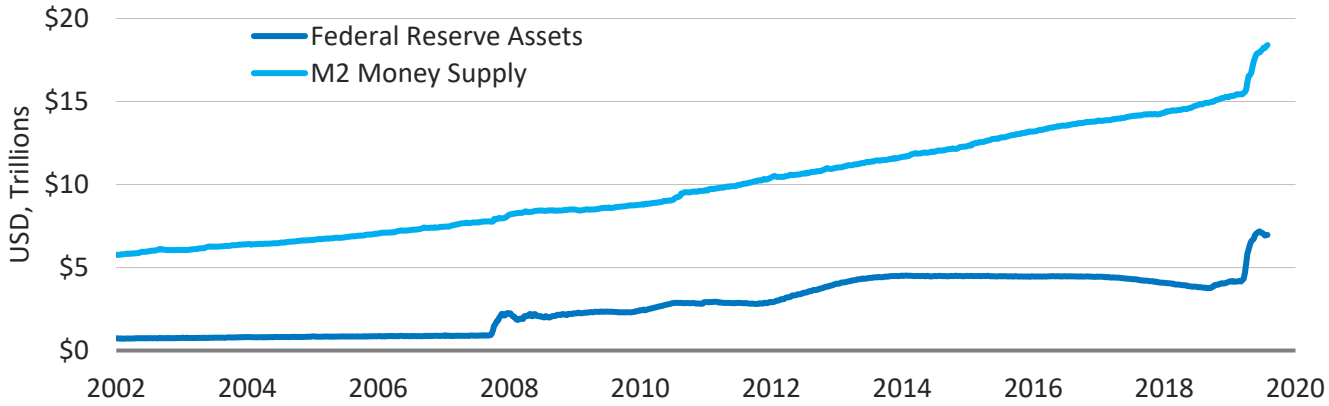
The Quantitative Easing response to the GFC did not have a marked impact on the money supply as lenders pulled back on the credit it made available, decreasing the velocity of money.

It is unlikely that inflation is gone for good – this muted increase in the overall money velocity may have been why we have not seen rampant inflation. However, given the Federal Reserve's specified inflation target, it is unclear how far it will let inflation increase.

Today, we do see a substantial uptick in the money supply, but there are still a number of disinflationary forces at work that may prevent proportional spending increases.

FEDERAL RESERVE BALANCE SHEET & MONEY SUPPLY

Following the Global Financial Crisis, quantitative easing stopped short of increasing the money supply– conversely, the COVID response has created a direct increase in the money supply, again raising questions about inflation.

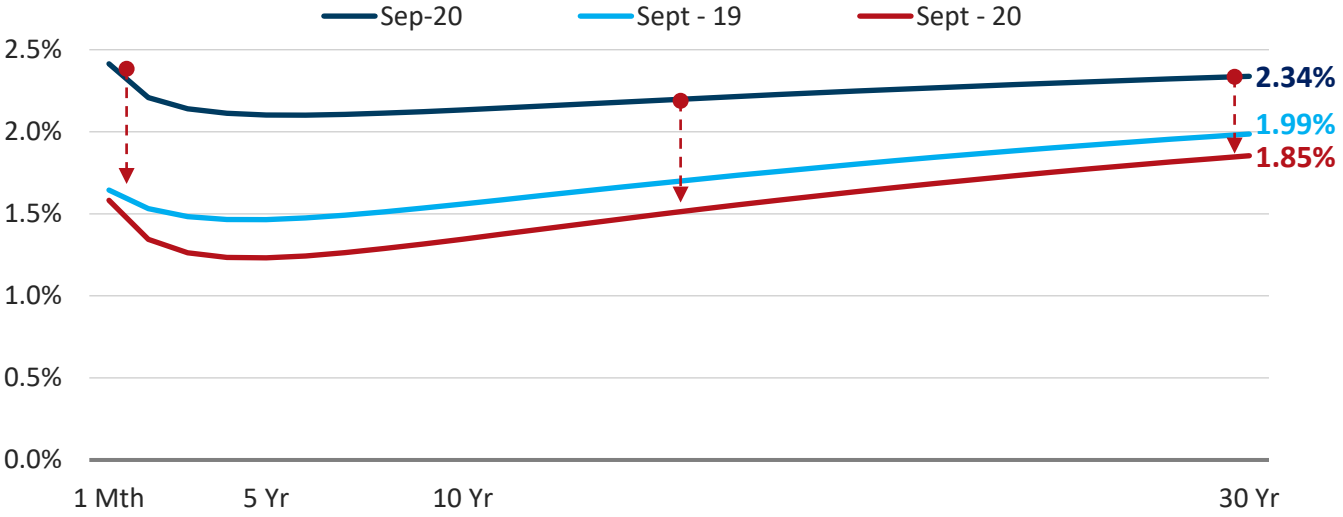


Data source: Bloomberg

CURRENT INFLATION EXPECTATIONS

These collective disinflationary pressures leave us with inflation expectations under 2.0%, a marked shift from 2018 year-end expectations that placed the entire inflation term structure above 2.0%.

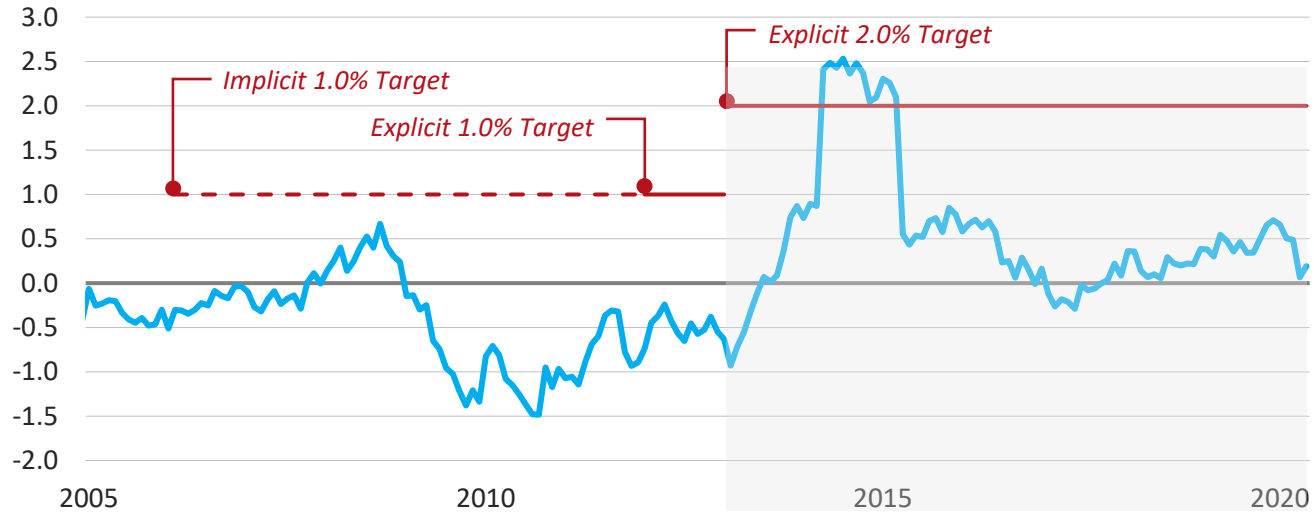
EXPECTED INFLATION TERM STRUCTURE



Data source: Federal Reserve Bank of Cleveland. Data as of September 30, 2020.

Further challenging the matter is the expected move by the Fed to announce a higher inflation target. While the Fed has targeted 2.0% inflation since 2012, news came on August 4th that the Fed may consider raising this to a 2-4% range. While not a perfect example of what the U.S. might expect following this announcement, Japan made a similar announcement in 2013, raising the explicit target to 2.0% from 1.0%. This was followed by a period of increased inflation, though Japan was not able to maintain 2.0% inflation.

JAPAN INFLATION & BOJ TARGETS



Data source: Federal Reserve Bank of Cleveland. Data as of June 30, 2020.

RECENT FED RHETORIC INDICATES HIGHER INFLATION BOUNDS

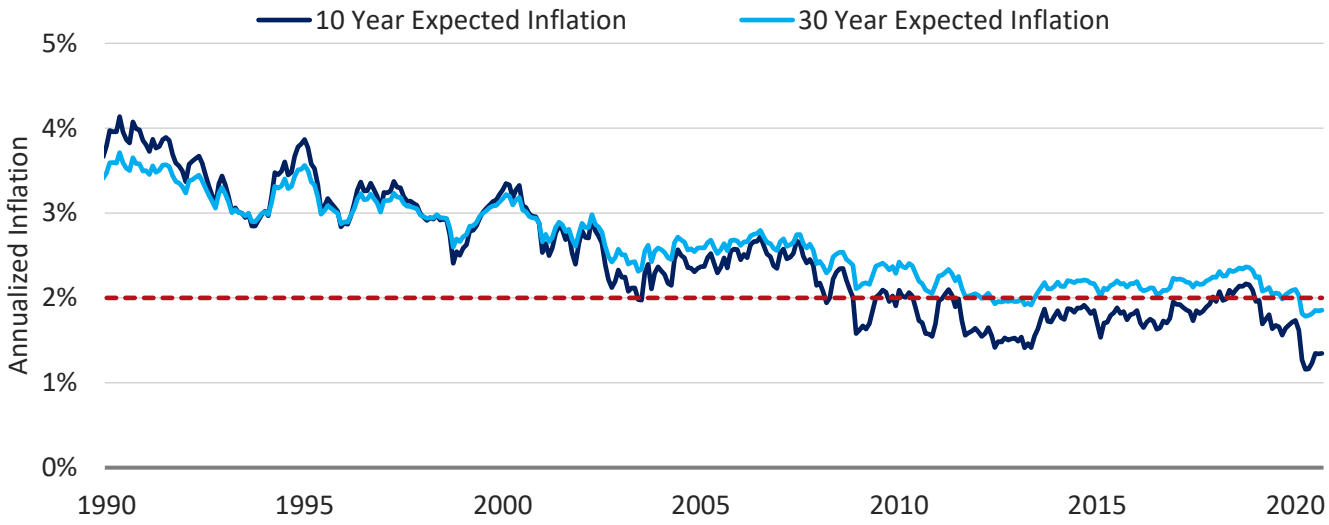
> "To prevent [long run inflation expectations below 2%] and the adverse dynamics that could ensue… we will seek to achieve inflation that averages 2% over time… Appropriate monetary policy will likely ***aim to achieve inflation moderately above 2% for some time***."
>
> —Jerome Powell, Chairman of the Federal Reserve, August 27, 2020

During this year's Federal Reserve annual symposium Chairman Jerome Powell made notable statements about the future of the institution's policies—communicating the intent to allow inflation to run above 2.0%.

However, as shown in the chart below, the Fed's preferred inflation gauge has fallen short of the institution's target since the Global Financial Crisis. This has driven long-term expectations below the target, which the Fed fears can further drive inflation lower.

One paper presented at the conference noted that this pandemic will likely shift corporate and investor mindsets, increasing risk aversion for decades to follow, creating further disinflationary pressures.

EXPECTED LONG TERM INFLATION



Data source: Federal Reserve Bank of Cleveland. Data as of September 2020.

AN INFLATION MINDED PORTFOLIO

EXPECTED VERSUS UNEXPECTED INFLATION

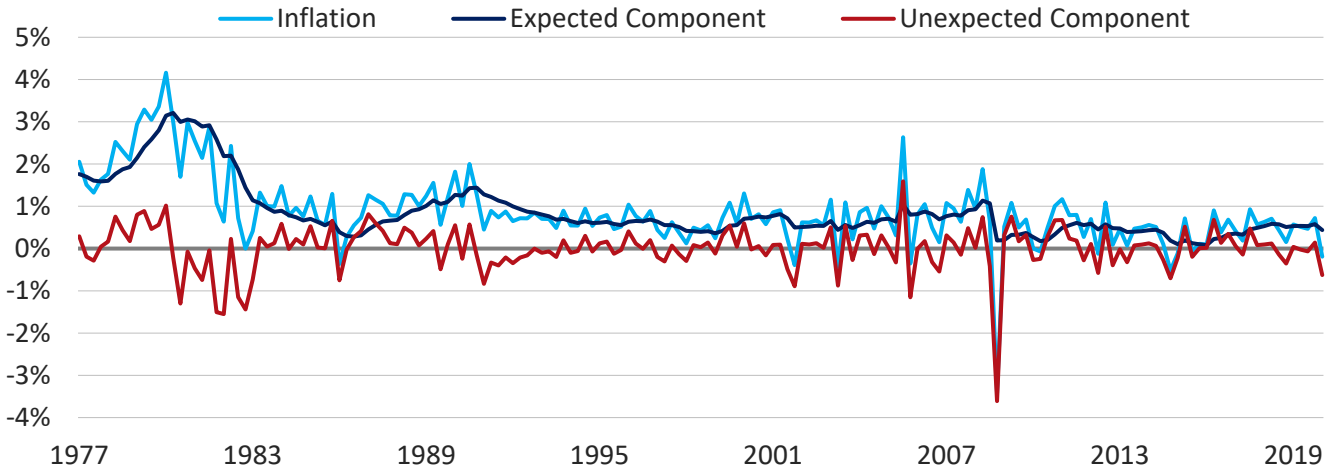
Expected and unexpected inflation differ. Expected inflation is the forecasted, long term rate typically derived from surveys, models, and financial asset pricing. Unexpected inflation is the difference between expected inflation and the inflation that materialized over the forecast period.

Expected inflation has been factored into asset prices already and is nearly impossible to hedge against. Further, the expectation of inflation may only serve to further exacerbate inflation by drawing forward demand to purchase at current prices.

> "When people begin anticipating inflation, it doesn't do you any good anymore, because any benefit of inflation comes from the fact that you do better than you thought you were going to do."
>
> Paul Volcker, Former Chairman of the Federal Reserve

We believe, unexpected inflation is where investors should focus their efforts when considering an inflation hedge, as this represents a far more volatile component of overall inflation. As seen in the chart below, expected inflation exhibits a smoothed time series that closely follows the long-term trend, while the unexpected component is over 5x more volatile.

INFLATION WITH EXPECTED & UNEXPECTED COMPONENTS



	Average	Standard Deviation	Standard Deviation of Changes
Inflation	0.9%	0.8%	0.8%
Expected Component	0.9%	0.7%	**0.1%**
Unexpected Component	0.0%	0.7%	**0.7%**

Data source: Federal Reserve Bank of St. Louis; FEG Analysis. Data as of June 30, 2020.

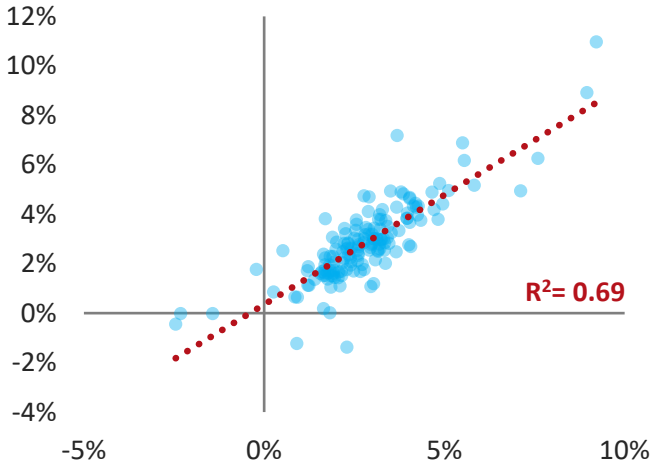
INFLATION PREDICTIONS ARE AVAILABLE, BUT NOT ACCURATE

Like other aspects of financial markets, inflation is not a simple metric to predict or time. Consensus forecasts are heavily influenced by historical inflation rates, with much of the weight given to the most recent trailing 12-month inflation rate. This results in a smoothed view of future inflation that is often inaccurate, suggesting that portfolios may benefit from hedge against unexpected inflation.

Inflation predictions are heavily influenced by recent experience, resulting in forward expectations similar to the trailing 12-month rate. In reality, these expectations are not terribly accurate, suggesting an inflation hedge should be considered for inclusion in a portfolio.

INFLATION FORECASTS & TRAILING INFLATION

March 1981 - March 2020



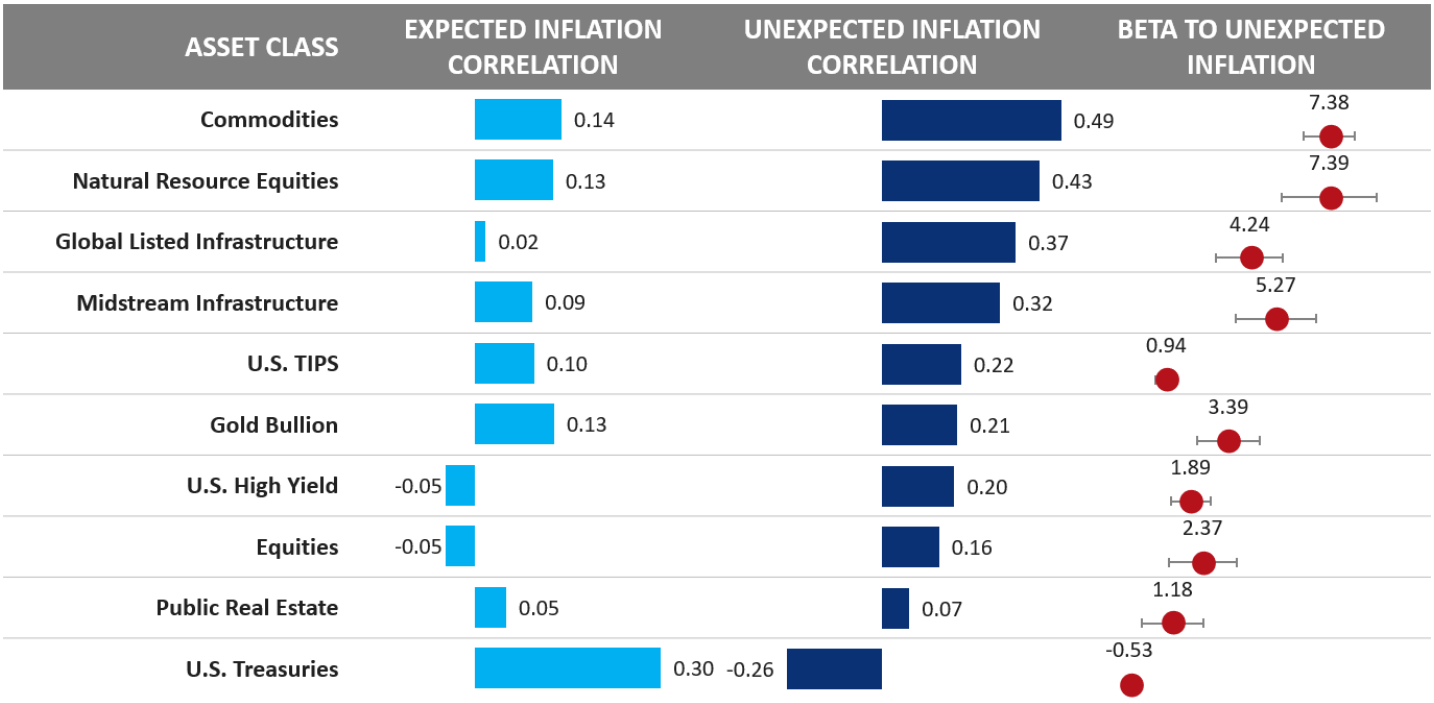
ACTUAL INFLATION & EXPECTED INFLATION

March 1981 - March 2019

Data source: Federal Reserve Bank of St. Louis.

DEVISING AN INFLATION MINDED PORTFOLIO

Creating a successful portfolio that is mindful of inflation risks is more than selecting assets with attractive inflation hedging qualities. As noted below, commodity futures may be the best asset class to hedge inflation risk, but as we note later, this becomes an expensive endeavor.



Notes: The following benchmarks were used to represent the respective asset class – Commodities, Bloomberg Commodities Total Return Index; Natural Resource Equities, S&P Natural Resource Total Return Index; Global Listed Infrastructure, D.J. Brookfield Composite Global Infrastructure Total Return Index; Midstream Infrastructure, Alerian MLP Total Return Index; U.S. TIPS, Barclays U.S. TIPS Index; U.S. High Yield, Barclays High Yield Corporates Index; Equities, S&P 500 Total Return Index; Public Real Estate, FTSE NAREIT All Equity REIT Index; U.S. Treasuries, Barclays U.S. Treasury 1-3 Year Index.
Data sources: Bloomberg L.P., FEG. Data since inception of index.

INFLATION CORRELATIONS COME WITH A TRADE OFF

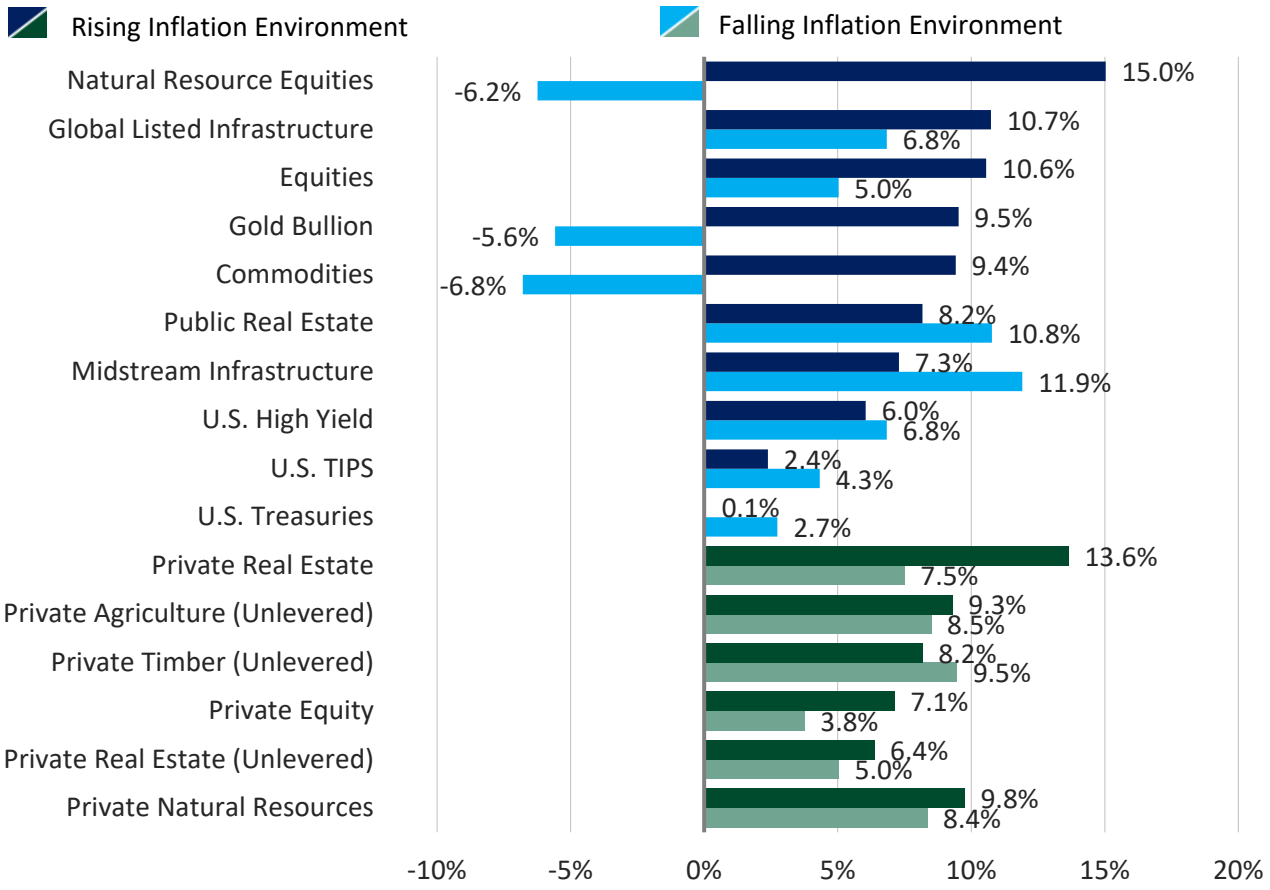
Despite strong protections from unexpected inflation, commodities prove to be an expensive hedge when considering the opportunity cost of alternative opportunities.

Commodities futures and natural resource equities have the betas to unexpected inflation, but that quality works both ways. In rising inflation environments, these asset classes tend to perform well, offering attractive real returns. However, they are also the only two asset classes that show negative real returns in falling inflation environments.

Infrastructure—both broad listed and midstream only—indices provide attractive inflation protection and real returns regardless of the inflation regime.

While private strategies are difficult to build tactical positions in and exhibit artificially smoothed returns, private real estate and natural resources appear to offer attractive hedging and total return qualities.

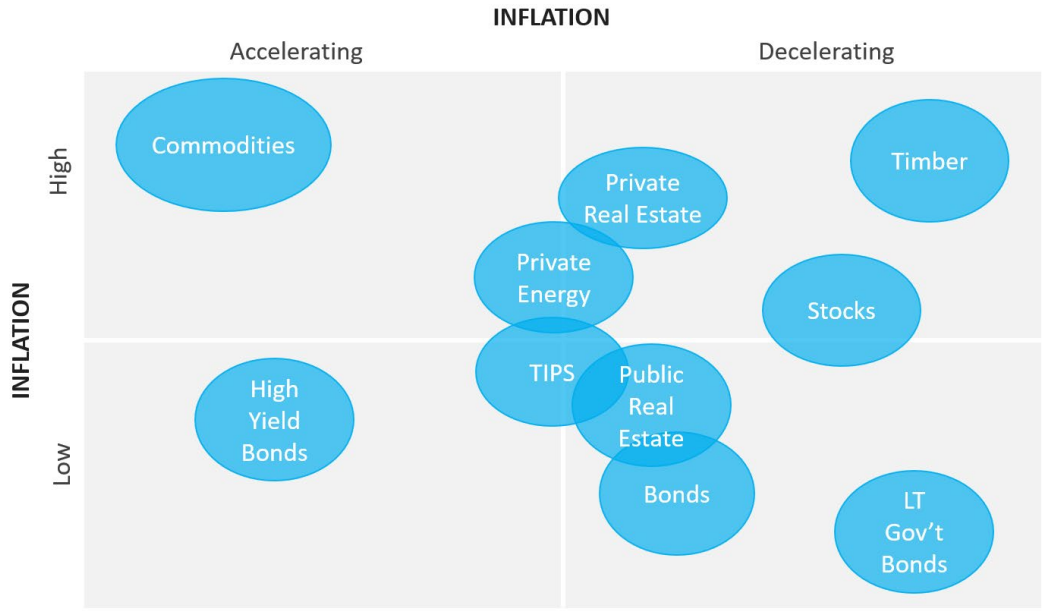
PUBLIC REAL RETURNS IN INFLATION ENVIRONMENTS



Data sources: Bloomberg, L.P., FEG.

THERE IS NO PERFECT HEDGE FOR INFLATION

Different inflation regimes require different hedges—making a strategic inflation hedging allocation subject to timing.



Data sources: Bloomberg L.P., FEG.

THE GOLD QUESTION

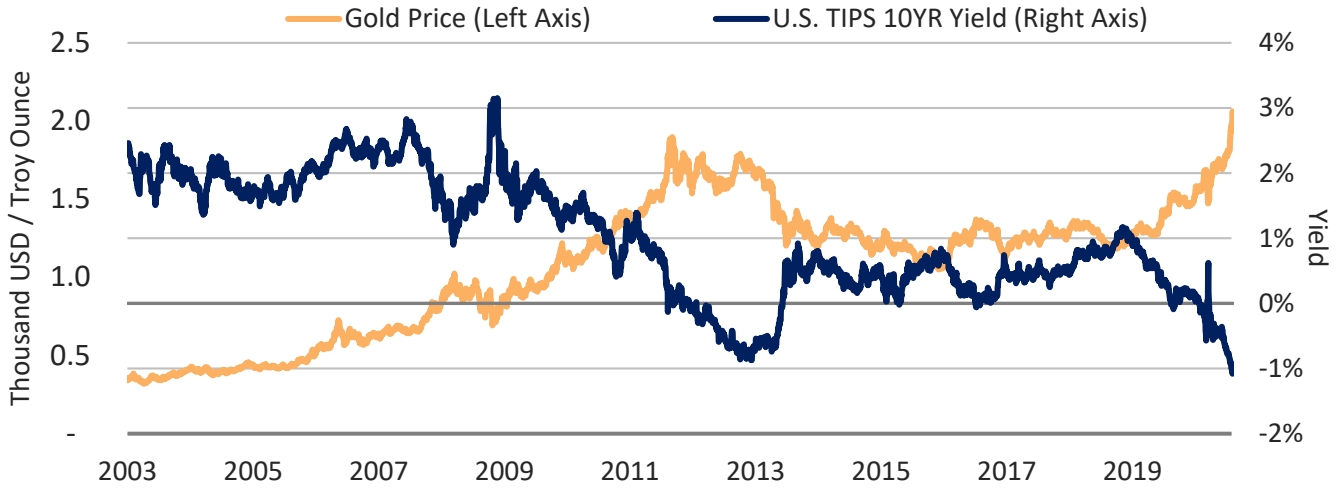
Perhaps more than any other asset, gold is most often cited as offering a "hedge against inflation." We have established it maintains a moderate correlation to unexpected inflation relative to other asset classes, but is not as effective at providing attractive real returns in both rising and falling inflation regimes.

Gold maintains a strong inverse correlation to real interest rates. While gold climbed through the COVID crisis, reaching all-time highs in August 2020 of over $2,000/troy ounce, real interest rates were driven negative to their lowest rate since the inception of TIPS.

Unlike stocks and bonds, gold does not have earnings or pay dividends. One may consider stocks of mining companies, but this will not replicate bullion exposure if that is the ultimate target.

However, it should be noted that gold tends to provide strong protection in economic catastrophes and collapses in fiat currencies despite its weak correlation to inflation.

GOLD & U.S. TIPS YIELD



Data sources: Federal Reserve Bank of St. Louis, FEG. Data as of July 31, 2020.

IN CONCLUSION

INFLATION IS LOW, BUT REMAINS A RISK FOR INVESTORS

- Over multiple market cycles of the past forty years, high, sustained inflation has not materialized in any meaningful way. Multiple factors have contributed to this trend (technology, global trade, etc.).
- The current environment is characterized by dramatic and unprecedented measures undertaken by the Federal Reserve to support the economy. These actions could lead to inflationary pressures in the future; however, this outcome remains uncertain and faces other disinflationary pressures.

HEDGING INFLATION IS IMPORTANT, BUT UNDERSTAND ITS COSTS

- Investors may seek inflation protection in portfolios but also recognize that some existing allocations offer a degree of protection. Examples include holdings in tangible assets like real estate, infrastructure, and natural resources. Exposure to inflation-linked bonds also serves this purpose.

- While an allocation to long-only commodities, gold bullion, or natural resource equities offers exposure to assets demonstrated to perform well with significant rises in inflation, the opportunity cost of total return in the interim can be costly.
- Correlation to inflation by itself does not justify inclusion of an asset class in a portfolio; any strategy should offer clear potential for total return.

ASSESS EXISTING PORTFOLIO TO DETERMINE EXPOSURE TO INFLATION HEDGES

- REIT indices are shifting to include more inflation defensive, infrastructure-like sectors, with technology centric property types (i.e. towers and data centers) now comprising the largest portion of the U.S. REIT universe.
- Asset classes like public and private infrastructure, whose underlying assets benefit from inflation linked contracts have historically provided attractive risk adjusted returns and inflation protection.
- We continue to recommend a broad range of both liquid and illiquid strategies in sectors and businesses that may benefit from rising inflation, as no one sector or strategy will work in all environments.

FUTURE INFLATION IS UNLIKELY TO LOOK LIKE IT HAS HISTORICALLY

- Businesses and sectors with strong and inelastic demand and pricing power should be well-positioned in an inflationary environment, such as healthcare and education.
- The current environment presents a multitude of challenges for investors, only one of which is the future path of inflation.
- Therefore, we believe investors should look beyond conventional views on inflation to a more expansive paradigm that may include strategies that may be more relevant to the current market.