

# Commodities in a Low Inflation Environment

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Economies around the globe are experiencing exceptionally low inflation, and the market expects inflation to stay low for some time. A significant driver of this disinflationary environment has been the severe decline in the price of oil. This regime calls into question the role of commodities in portfolios. Inflation is indeed currently low, but inflation can be volatile and can change very quickly. Inflation shocks often begin from a starting point of low inflation. Commodities are held to protect against *unexpected* inflation, and commodities have been able to do this over the medium to long term. While the market expects inflation to stay low, the market's ability to forecast inflation has been poor. For these reasons we believe it is still necessary to hold exposure to commodities in portfolios as part of an integrated inflation hedging allocation.

## The nature of inflation

Inflation occurs when the price level of goods and services rises in an economy, and the consumer price index (CPI) is typically used as a proxy for the level of prices. The CPI is constructed as a basket of goods and services that consumers purchase, weighted in a way which represents household spending. When the price of this basket rises, it means more money is needed to purchase the same quantity of goods and services (money is losing its value).

Inflation ebbs and flows, and sudden shocks do occur – often from a starting point of low inflation. Exhibit A below provides three such inflation shocks.

**EXHIBIT A**

Inflation Shock	Beginning annualized rate of inflation	Ending annualized rate of inflation
Feb 1950 to Feb 1951	-1.3%	9.4%
Aug 1972 to Aug 1974	2.9%	10.9%
Dec 1986 to Dec 1987	1.1%	4.4%

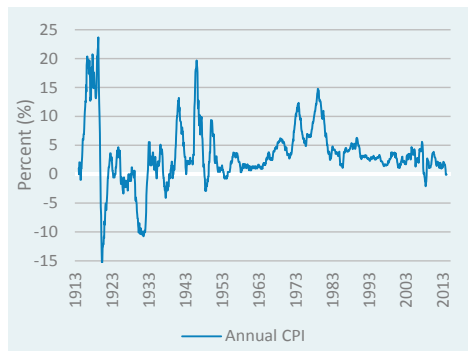
*Large inflation shocks from a low inflation starting point, examining all 1-2 year periods since 1950. "Low inflation" is defined as a 3% or lower beginning inflation rate. "Inflation shock" is defined as an inflation increase over a 1-2 year period.*

Source: FRED

Geopolitical turmoil (droughts, war, labor strikes, etc.) impacts the prices of goods and services around the globe. Because US inflation is calculated using prices of goods and services purchased from around the world, geopolitical turmoil in other nations can flow through to CPI in the United States.

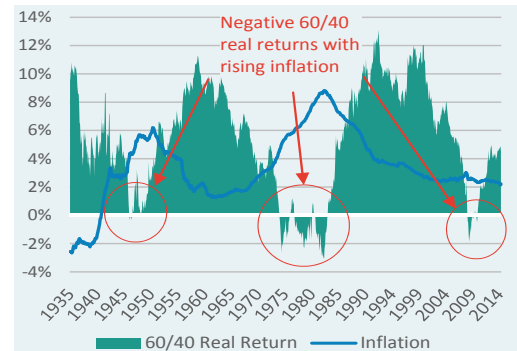
An unexpected inflation shock is damaging to the capital markets. It is the unexpected component of inflation that is damaging rather than the expected component, because expected inflation is assumed to be already baked into asset prices. Unexpected inflation causes fixed income payments to be paid back in dollars that are worth less to investors, dampened consumer demand as goods are less affordable, and difficulties in determining the net present value of assets due to the uncertainty of real future cash flows. Equities in the short run do face headwinds as input costs rise and profits are squeezed (though some businesses with a high proportion of fixed costs may actually realize a net benefit). Not everyone loses during an inflation shock, since rising input costs may benefit input-producers. Unexpected inflation comes hand-in-hand with the risk of unexpectedly tighter monetary policy, which can cause uncertainty for many asset classes.

**EXHIBIT B - HISTORICAL INFLATION**



Source: FRED

**EXHIBIT C - INFLATION VS 60/40 (10-YEAR ROLLING)**



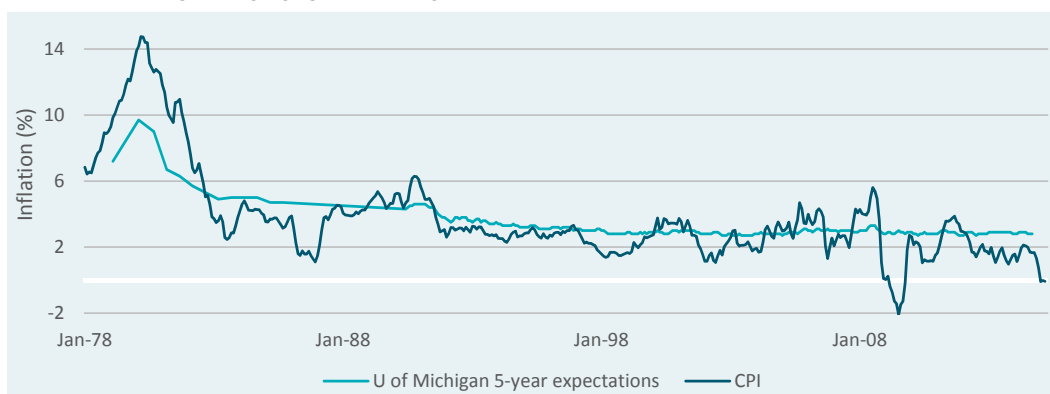
Source: Standard & Poor's, Barclays

**Current inflation expectations**

Inflation is low relative to history, in the US and across the globe. Consumers expect inflation to stay low in the US, according to the University of Michigan Inflation Expectation Survey.

However, the track record of inflation forecasters has been poor. Exhibit D below displays the 5-year inflation expectations throughout history. If inflation expectations were an accurate indicator of future inflation, the blue line at any point in time would be a good predictor of the average level of CPI (orange line) over the following 5 years. Furthermore, the blue line would increase prior to an upward movement in CPI, and decrease prior to a downward movement in CPI. This however is not the case. Instead, inflation expectations seem to be a naïve linear extrapolation of the recent inflation rate (the market expects that inflation will simply stay around recently experienced levels). This suggests that inflation expectations are less useful, because investors will feel an inflation shock before inflation expectations are adjusted upwards. Since 1990, the correlation between 5-year inflation expectations, and the actual annualized inflation that occurs over the next 5 years, has been low at 0.21.

**EXHIBIT D - EXPECTED VS ACTUAL INFLATION**



Source: University of Michigan

## The nature of commodities

While traditional assets are subject to traditional valuation metrics such as free cash flow, earnings and dividends, commodity prices are determined by the supply of, and demand for, each commodity. Depending on the commodity in focus, dynamics of supply and demand can relate to economic developments such as population growth, demographic changes, and industrial production; and can also relate to exogenous factors such as weather, crop yield, and disease. The interplay between market speculators (those who invest for profit) and market hedgers (those who invest for risk management) also impacts prices in these markets.

It is rare that investors gain commodities exposure by physically buying and holding onto a commodity, due to the inconvenience and difficulty of storage and transportation (most investors are not prepared to manage a thousand heads of live cattle, or store multiple tons of industrial metals). Instead, futures contracts are used to create synthetic exposure to each commodity. Gains/losses from holding futures contracts are more complicated than simply making money through changes in commodity price. Holding futures contracts is associated with three types of return: changes in the current price of the commodity (known as “spot price”), the change in value of a futures contract as the contract approaches maturity (known as “roll yield”), and the interest income an investor realizes from collateral that they must post when entering a futures contract (known as “collateral yield”). These unique sources of commodity returns result in a return profile that is often uncorrelated to other asset classes.

## Commodities as an inflation hedge & diversifier

It is important to note that commodities can protect against inflation, whether expected or unexpected, and act as a diversifier of portfolio returns. As mentioned, the consumer price index (CPI) is used as a proxy for inflation, and is calculated based on the products and services that consumers generally purchase. Because commodities are used as inputs for the production of products, it makes sense that commodities have been an excellent long-term inflation hedge.

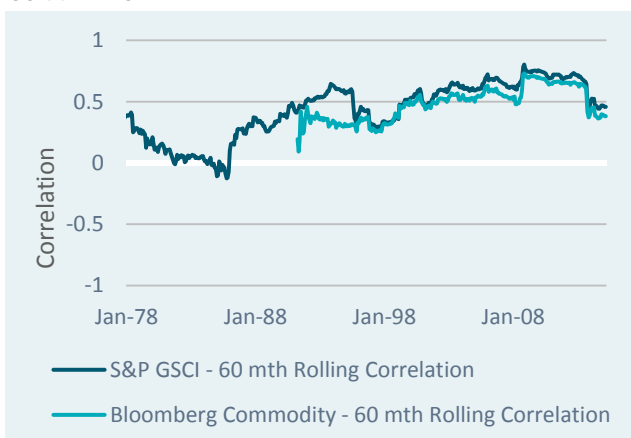
Relative to other real asset classes, commodities have exhibited strong correlation to inflation over the medium to long term (Exhibit E below), and have provided high positive returns during many periods of unexpected increasing inflation over the past 40 years (Exhibit F below). However, the relationship is dynamic and complex.

When we make a statement about the correlation of commodities to inflation, we are actually making a statement about how the commodities index (a somewhat arbitrarily weighted basket of individual commodities) moves relative to the movement of inflation.

Commodity indices are composed of a variety of real asset categories: energy, industrial metals, precious metals, agriculture and livestock. Each of these categories possess a different correlation to inflation – some highly correlated with inflation and some negatively correlated with inflation. A price increase in any of these assets eventually results in increased inflation – the magnitude depending on the asset’s assigned weight in the commodity index. We say that a commodity price increase *eventually* results in increased inflation because price changes of different commodities take different amounts of time to actually flow through to inflation (CPI). The time it takes for an individual commodity price increase to flow through to inflation will depend on factors such as: the location of the commodity in the production process (upstream or downstream), the willingness of product sellers to pass cost increases on to their customers in the form of higher prices (the “stickiness” of prices),

and the hedging activities of the produce sellers (if product sellers hedge the price of commodities, producers will not realize the higher commodity prices until the hedges roll off). Therefore, despite our inherent desire as investors to fundamentally understand the *who, what, when, where* and *why* of unexpected inflation, the answer is that it is different each time and often too complex to make blanket assumptions. We do know that commodities have protected against expected and unexpected inflation *on average* and over *medium to longer* time periods.

**EXHIBIT E - COMMODITY INDEX CORRELATION**



Source: S&P Dow Jones, Bloomberg

**EXHIBIT F - PERFORMANCE DURING INFLATION INCREASES**

Period of rising inflation	Annualized inflation	Annualized GSCI returns
12/1/1975 to 12/1/1980	9.2%	14.9%
5/1/1986 to 5/1/1991	4.5%	24.9%
7/1/2003 to 7/1/2008	3.7%	21.3%

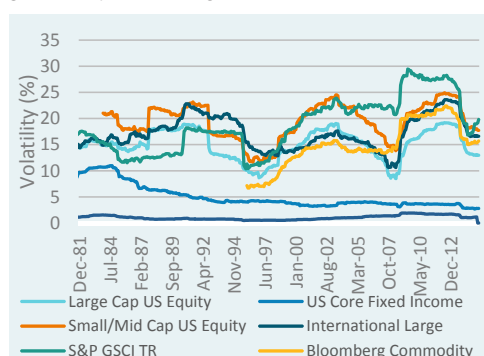
Largest inflation increases, examining all 5-year periods since inception of S&P GSCI Index. Top three periods shown above are identified using the largest difference between end-of-period inflation and beginning-of-period inflation.

Source: FRED, Bloomberg

Commodity prices typically increase during disasters. Extreme shocks to the commodities markets, such as drought, disease, geopolitical events, or other disruption, result in less supply and therefore increased commodities prices. While traditional asset classes might suffer during such shocks, higher commodities returns act as a diversifier for the overall portfolio. However, as can be seen in the recent movement in oil, a supply shock on the upside can be detrimental to the price of commodities - especially those commodities with inelastic demand such as oil.

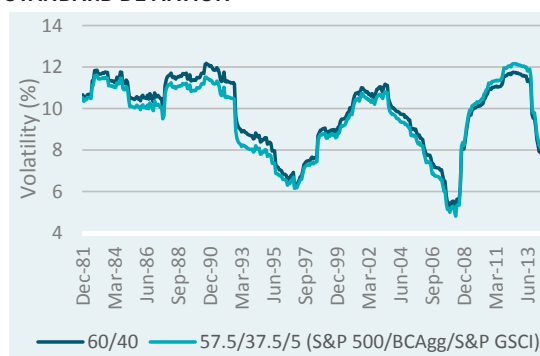
Commodities tend to exhibit equity-like volatility. Although commodities have exhibited equity-like volatility *on average*, volatility reaches considerably high levels on occasion. Tumultuous price movements often follow the disasters listed above, which destabilize supply or demand or create risk of destabilization. Because commodities are often characterized by low or negative correlation to traditional asset classes, commodities can be volatile while at the same time reducing overall portfolio volatility. As shown in Exhibit G below, adding a 5% commodities exposure to a 60/40 portfolio has reduced portfolio risk over most periods.

**EXHIBIT G - 5-YEAR ROLLING STANDARD DEVIATION**



Source: MPI

**EXHIBIT H - 5-YEAR ROLLING STANDARD DEVIATION**



Source: MPI, S&P Dow Jones

## Conclusion

Economies around the globe are experiencing exceptionally low inflation, and the market expects inflation to stay depressed for some time. A significant driver of this disinflationary environment has been the severe decline in the price of oil. This regime calls into question the role of commodities in portfolios. Inflation is indeed currently low, but inflation can be volatile and can change very quickly. Inflation shocks often begin from a starting point of low inflation. Commodities are held to protect against unexpected inflation, and commodities have been able to do this over the medium to long term. While the market expects inflation to stay low, the market's ability to forecast inflation has been poor.

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## Additional Note

Commodities exposure is typically achieved through futures contracts. Changes in the spot price of a commodity generally flow through to the price of futures contracts, which means commodities exposure through futures contracts should result in similar long-term inflation sensitivity as would be achieved through the holding of physical commodities. Of course, the commodity fund strategy and commodity weights employed in the strategy will affect the potential inflation-hedging qualities of a fund.

## Notes & Disclosures

**Past performance is no guarantee of future results.** This report is provided for informational purposes only and nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment strategy. The information in this report reflects prevailing market conditions and our judgment as of this date, which are subject to change. This information is obtained from sources deemed reliable, but there is no representation or warranty as to its accuracy, completeness or reliability.

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