

Expect the Unexpected: The Role of Commodities During Periods of Unexpected Inflation



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Understandably, in high inflation environments, investors often look for strategies to help protect their assets. Commonly owned assets like stocks and bonds may act as a buffer, but only when high inflation is expected. When inflation is higher than expected, on the other hand, history shows that commodities often outperform both equity and fixed income.

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Inflation mitigation

A key goal for many investors is maintaining the purchasing power of their assets. Put simply, this means that the return generated on their portfolio needs to exceed the rate of inflation in the economy. For most commonly owned assets, this doesn't pose a problem because a portion of their expected return is tied to being compensated for expected inflation. Thus, when inflation expectations match reality, most investors do just fine given their exposure to traditional assets, such as stocks and bonds.

The trouble starts when the inflation that materializes is drastically different from what was priced in or expected by market participants. This can result in a profound effect on returns because asset prices have historically been much more sensitive to inflation surprises than to inflation itself.

To help illuminate these scenarios, Figure 1 lays out in broad strokes which asset classes are expected to do well in various inflationary environments. The most common outcome is that inflation comes in close to market expectations. This is typically a sign of positive economic growth that is proceeding close to market expectations. Accordingly, traditional asset classes are expected to do well. In times of deflation, fixed cash flows become increasingly important as economic growth becomes more challenged. This tends to benefit fixed income holdings and cash, though bonds with a longer duration are expected to do particularly well when deflation is unexpected.

Let's address the remaining case of unexpected inflation. This environment tends to be harmful to traditional asset classes, as discount rates implicit in the valuation of equities and bonds are reset higher, leading to a decline in prices. Commodities, on the other hand, tend to reprice to the benefit of the investor, as recast inflation expectations are reflected in higher forward prices.

Most portfolios already carry allocations to more traditional assets, such as stocks and bonds, but may lack exposure to assets that do well during periods of unexpectedly high inflation. It's in this environment, however, that an investor's portfolio may be most vulnerable. Not only can higher-than-expected inflation erode a portfolio's purchasing power, but falling stock and bond prices may also erode its market value.

Investors looking to hedge this risk may be better served by increasing their exposure to asset classes that have a positive expected return when unexpected inflation hits. Historically, commodities have served this purpose well, outperforming other asset classes when inflation has been unexpectedly high.

Below, we discuss what inflation expectations are and how we've chosen to measure them. In addition, we present historical evidence to support our claim that commodities outperform other asset classes during periods of unexpectedly high inflation.

Figure 1: Asset classes expected to perform well in inflationary environments

	INFLATION	DEFLATION
Expected	Equities, bonds, inflation-linked securities, real assets	Cash
Unexpected	Commodities	Long bonds, cash

Sources: Bloomberg, Parametric, December 31, 2024.

Performance during unexpected inflationary periods over the last 25 years

Measuring expected inflation is challenging for many reasons. Surveys of households and establishment both tend to have spotty accuracy. Likewise, many economic models, including regime-switching or term-structure models, have also proven inaccurate. As the US Treasury Inflation-Protected Securities (TIPS) market has developed breadth and liquidity over the past two decades, market-based metrics have become available. Unfortunately, technical pressures within the TIPS market can drive these breakeven rates, so they can reflect factors other than changes to inflation expectations. For simplicity, we've chosen to use Citigroup's long-standing Inflation Surprise Index¹ as a means to detect inflation surprises in the economy. This index has a natural appeal in that it aggregates a number of different economic forecasts and official results, leading to a more durable assessment of when inflation has indeed missed expectations.

For our analysis, we constructed a diversified commodity basket, using end-of-day pricing for Bloomberg and S&P GSCI® total return subindexes, to represent a broad-based exposure to the commodity asset class.

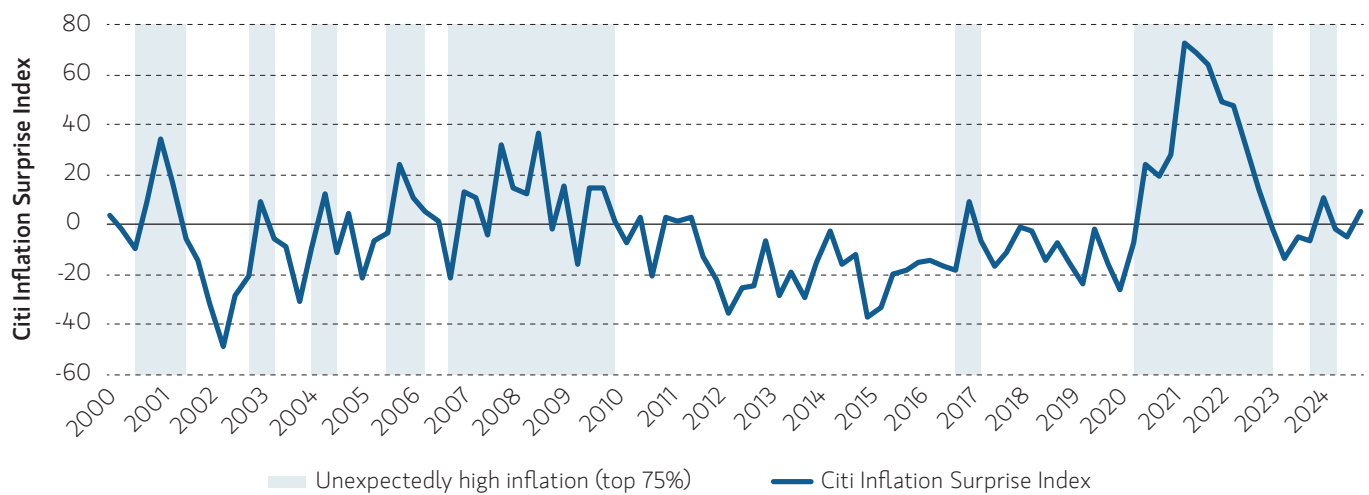
This diversified basket reflects the impact of price changes on a commodity futures portfolio along with an assumed T-bill return on collateral.² While we could have used a passive commodity index, such as the Bloomberg Commodity Index, we find in our analysis that most of these suffer from concentration issues that may distort the findings. That’s why constructing our own diversified basket should give us a better view into how the average commodity behaves during periods of unexpected inflation. See the Appendix for the list of commodities included in the diversified basket and their corresponding weights.³ We rebalanced the basket monthly.

Next, we classified each period as a positive or negative surprise by looking at the quarterly value of the Citi Inflation Surprise Index. A positive reading means that the releases have been higher than expected, while a negative reading means that releases have been lower than expected.

Using this methodology, we calculate 38 positive surprises and 62 negative surprises between January 2000 and December 2024.⁴ We defined each period as having unexpectedly high inflation if the positive surprise fell within the top 75% of quarterly observations,⁵ which was roughly one-quarter of the time. Figure 2 displays these historical inflation surprises along with the periods of unexpectedly high inflation.

Figure 3 presents the results of our historical analysis, which reviewed how various asset classes⁶ performed during times of unexpectedly high inflation. We find that a diversified basket of commodities performed the strongest during these periods, with an average quarterly return of 3.93%. This was more than double the next closest asset class, real estate investment trusts (REITs). In addition, when we account for the volatility of the asset class in those quarters, we find that commodities again were a top performer. Per unit of risk, commodities delivered a return of 0.37% above cash.

Figure 2: Citi Inflation Surprise Index and periods of unexpectedly high inflation, January 2000–December 2024



Sources: Parametric, Bloomberg, Citigroup, December 31, 2024. For illustrative purposes only. Not a recommendation to buy or sell any security. Past performance is not indicative of future results. All investments are subject to loss. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

Figure 3: Asset class index performance in quarters of unexpectedly high CPI-U inflation, January 2000–December 2024

	CPI-U	T-BILLS	US EQUITIES	INTERNATIONAL EQUITIES	US FIXED INCOME	TIPS	REITS	DIVERSIFIED COMMODITIES
Average Quarterly Return	1.08%	0.54%	1.08%	0.30%	0.06%	0.92%	1.48%	3.93%
Std Dev Quarterly Return			8.31%	9.64%	2.49%	3.13%	11.83%	9.09%
Sharpe Ratio			0.06	-0.03	-0.19	0.12	0.08	0.37

Sources: Parametric, Bloomberg, December 31, 2024. For illustrative purposes only. Past performance is not indicative of future results. All investments are subject to loss. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses. Please see note 6 for the list of asset class indexes.

We believe the reason for the leadership of commodities in this environment is twofold: First, higher-than-expected inflation is often associated with strong underlying growth in the economy, which drives demand for raw materials and puts upward pressure on commodity prices. Second, food and energy consumption are large components of the Consumer Price Index (CPI), so it follows that rising prices in those categories would be reflected in corresponding futures contracts.

REITs also held up well during these periods because higher interest rates—and with them, mortgage rates and rents—were passed on to investors, though they did exhibit the highest degree of volatility of any asset class considered. On average, US equities delivered a positive return but trailed well behind the rate of inflation. In contrast, rising rates proved discouraging for US fixed income returns, which experience a price decline when yields increase. Finally, TIPS performed effectively in line with CPI during these periods, which isn't altogether surprising given their tie to realized inflation.

Why a basket of commodities?

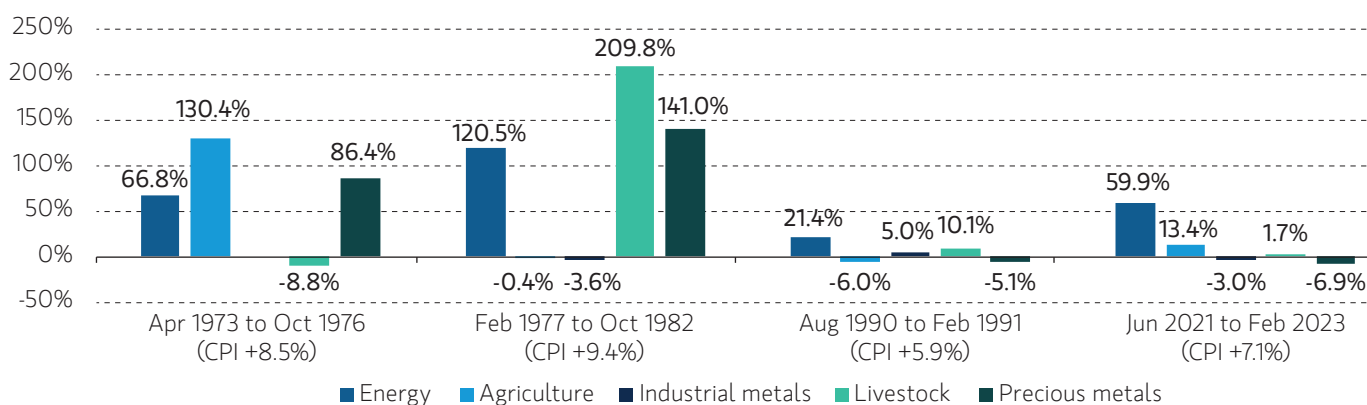
While it's clear that a diversified basket of commodities may do well during periods of unexpected inflation, there's a common belief that one commodity or commodity sector provides better inflation mitigation than a diversified basket. Historical evidence doesn't support this belief, however. Instead, we see varying patterns of inflation sensitivity, depending on which period we examine. Figure 4 details commodity sector performance during four notable outbreaks of high inflation.⁷

The lack of consistency in performance leadership is notable: Agriculture led in the first period, only to lag in the next two. Precious metals did quite well in the first and second periods, only to trail in the third and fourth. More recently, energy has emerged as a top-performing sector. These observations are consistent with our thesis that it's impossible to predict which individual commodity or sector will outperform. Inflation may result from rising energy prices, higher food costs or greater input prices for manufacturers. Factors such as technological innovation, weather patterns, labor strife and broader economic conditions—even the political climate—can all impact inflation sensitivity. For this reason, we recommend a broadly diversified basket of commodity futures when investors are looking for help to mitigate inflation.

Conclusion

Investors have historically included commodities in the asset allocation process to benefit from diversification and their sensitivity to inflation. For most asset classes, when inflation matches or comes in below expectations, investors either are unharmed (as inflation expectations are already priced into forecasted asset returns) or benefit from higher real returns. However, as we've shown, very few assets perform well during periods when inflation exceeds expectations. When looking for help protecting the purchasing power of their assets, investors may want to focus on the specific environments in which inflation exceeds expectations. Commodities, relative to either stocks or bonds, have historically shown the greatest potential for positive performance in these environments. We believe that including commodities in a portfolio not only offers potential opportunities for increased diversification, but can also help mitigate the worst inflationary outcomes.

Figure 4: Commodity sector performance in periods of high CPI inflation



Sources: Parametric, Bloomberg, December 31, 2024. For illustrative purposes only. Past performance is not indicative of future results. All investments are subject to loss. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses. Please see the Appendix for the list of indexes in the sectors of the diversified commodities basket.

Appendix: Diversified commodities basket

COMMODITY	SECTOR WEIGHT	COMMODITY WEIGHT
Bloomberg Natural Gas Total Return Index		5.00%
Bloomberg WTI Crude Oil Total Return Index		5.00%
Bloomberg Brent Crude Total Return Index	30%	5.00%
Bloomberg Unleaded Gasoline Total Return Index		5.00%
Bloomberg Gas Oil Total Return Index		5.00%
S&P GSCI Heating Oil Total Return Index		5.00%
Bloomberg Wheat Total Return Index	25%	2.27%
Bloomberg Kansas Wheat Total Return Index		2.27%
Bloomberg Corn Total Return Index		2.27%
Bloomberg Soybeans Total Return Index		2.27%
Bloomberg Soybean Oil Total Return Index		2.27%
Bloomberg Soybean Meal Total Return Index		2.27%
Bloomberg Sugar Total Return Index		2.27%
Bloomberg Cotton Total Return Index		2.27%
Bloomberg Coffee Total Return Index		2.27%
Bloomberg Cocoa Total Return Index		2.27%
Bloomberg Orange Juice Total Return Index		2.27%
Bloomberg Aluminum Total Return Index	25%	3.57%
S&P GSCI Copper (LME) Total Return Index		3.57%
Bloomberg Copper (NY) Total Return Index		3.57%
Bloomberg Zinc Total Return Index		3.57%
Bloomberg Nickel Total Return Index		3.57%
Bloomberg Lead Total Return Index		3.57%
Bloomberg Tin Total Return Index		3.57%
Bloomberg Gold Total Return Index	15%	3.75%
S&P GSCI Silver Total Return Index		3.75%
S&P GSCI Platinum Total Return Index		3.75%
Bloomberg Palladium Total Return Index		3.75%
Bloomberg Live Cattle Total Return Index	5%	1.67%
S&P GSCI Lean Hogs Total Return Index		1.67%
Bloomberg Feeder Cattle Total Return Index		1.67%

Sources: Parametric, Bloomberg, Citigroup, December 31, 2024. For illustrative purposes only. Not a recommendation to buy or sell any security. Client experiences will vary. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

Notes

1. The Citi Inflation Surprise Index is an accumulation of headline CPI, Producer Price Index and wage surprises relative to median expectations of professional forecasters.
2. Unlike other investments, commodity futures require only a portion of the total contract value to be posted as initial margin, while the remaining portion can be left unfunded. For this reason, commodity futures indexes are published as either excess return or total return. Excess return indexes reflect only the movement of the underlying commodity futures contracts themselves. Total return indexes assume there's cash supporting the commodity futures positions and assume a cash-based return (90-day T-bills) for the collateral, in addition to the return generated from the commodity futures contracts.
3. Ideally, our preference would be to simply assign equal weights to all commodities included in the diversified portfolio. Unfortunately, this is impractical because of varying levels of liquidity across commodities. To balance diversification with constructing a realistic paper portfolio, we chose to assign static sector weights that align with underlying liquidity conditions and to weight commodities within sectors equally.
4. Our analysis uses a time frame that represents data availability for all indexes presented in Figures 2 and 3.
5. Taking the top 75% of observations allows for a modest amount of uncertainty around our calculation. It also conservatively limits our sample to larger surprises, which is a better test of how various assets have performed when inflation really is unexpected.
6. We represent diversified commodities using the Diversified Commodities Basket, as previously described. CPI-U represents Consumer Price Index for All Urban Consumers, T-bills represent the ICE BofA US 3-Month Treasury Bill Index, US equities represent the MSCI USA Gross Total Return USD Index, international equities represent the MSCI ACWI ex USA Net Total Return USD Index, US fixed income represents the Bloomberg US Aggregate Index, TIPS represent the Bloomberg US Treasury Inflation-Linked Bond Index and REITs represent the FTSE NAREIT All Equity REITS Total Return Index.
7. The purpose of this information is to provide historical examples of commodity futures performance during periods of high inflation (greater than 5%). Commodity sector performance represents the respective S&P GSCI total return subindex, except for energy. S&P GSCI energy subindex data is available back to 1983. For periods before 1983, we use the US CPI Urban Consumers All Items Energy Commodities NSA published by the Bureau of Labor Statistics and the S&P GSCI energy subindex thereafter.

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