

Is Now the Time to Add Commodities?

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Article Highlights

- Commodity futures offer considerable benefit to stock investors regardless of their equity strategy.
- The benefit of adding commodity futures is enhanced dramatically by relying on Federal Reserve policy rate shifts.
- The data shows a significant reduction in portfolio risk when the allocation to commodity futures was 10% or more.

With the recent increase in equity volatility, commodity investments have garnered significant attention from investors. Previous research has found substantial benefits associated with commodity investments, but there remains considerable uncertainty regarding the consistency and general applicability of those benefits for equity investors.

We provide evidence that helps to resolve some of the uncertainty with regard to commodity investments. Specifically, based on a sample period of 36 years, we show substantial benefits to commodity investments regardless of the equity style an investor pursues. To obtain a significant benefit, however, requires a commodity allocation of greater than 5%. Interestingly, adding a commodity exposure enhances an equity portfolio's return only during periods when the Federal Reserve is increasing interest rates, which is consistent with the belief that a major attraction of commodities is that they serve as an inflation hedge. Furthermore, an allocation to commodities in a tactical asset allocation using monetary conditions consistently outperforms both a strategic commodities allocation and an all-equity portfolio.



Interest in Commodities Up

Commodity futures have increasingly garnered interest as a viable component of individual investors' portfolios. Much of the interest is attributable to research espousing the benefits of adding commodity exposure to equity portfolios. For example, three of this study's authors—Gerald Jensen, Robert Johnson and Jeffrey Mercer (2000, 2002)—as well as Gary Gorton and Geert Rouwenhorst (2006) show that commodity futures returns are comparable to equity returns over long periods of time, and confirm that the contracts offer considerable diversification benefits due to their low (or even negative) correlation with equities. The low correlation appears to be driven by the unique performance of the contracts during inflationary periods. Since increasing commodity prices are typically one element of heightened inflation and higher interest rates, both of which tend to negatively affect equities, long positions in commodity futures are found to provide an inflation hedge for equity portfolios.

Recent developments in the securities markets further support the viability of commodity futures exposure for individual investors. Widespread interest in commodity price movements has spurred the development of investment vehicles that offer individual investors a low-cost, simplified approach for gaining direct exposure to commodity futures, and hence commodity prices. Historically, obtaining exposure to commodity futures required an investor to open their own futures trading account or to invest through a commodity trading advisor (CTA) or a commodity pool operator (CPO).

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The costs and complexities involved discouraged most individual investors from pursuing these alternatives.

In recent years, however, the introduction of commodity-based exchange-traded funds (ETFs) and mutual funds have made access to commodity futures practical for most individual investors. One example is the iShares S&P GSCI Commodity-Indexed Trust (GSG), which trades as an ETF based on an index of commodity futures. Its performance (before expenses) is designed to correspond with the returns of the S&P Goldman Sachs Commodity Index (GSCI), which is comprised of 24 different commodity futures contracts. Similarly, mutual funds have been introduced in recent years that provide a low-cost, convenient vehicle to achieve exposure to commodity futures. For example, Oppenheimer offers the Commodity Strategy Total Return Fund (QRAAX), which tracks the performance of the GSCI, and Pimco's Commodity Real Return Strategy Fund (PCRAAX) tracks the Dow Jones AIG Commodity Index.

Much of the previous research evidence indicates that sizable investment benefits are possible with an investment in commodity futures and, furthermore, that low-cost, widely available investment vehicles exist for investors to gain exposure to commodity futures. This combination of characteristics suggests that commodity futures represent an ideal addition to most equity portfolios. Recent evidence, however, suggests that the benefits ascribed to commodity futures may have been exaggerated.

Given the evidence of earlier studies and the interest in commodities investing, we reexamined the benefits of adding commodity futures exposure to equity portfolios by extending the literature along four dimensions. First, we evaluated the consistency of the contribution across alternative equity styles by examining equity portfolios oriented along value, growth, small-cap, large-cap, and momentum styles. To date, researchers in this area have generally used only broad equity indexes in their work. It is well known that the assets managed according to style

guidelines are substantial. Therefore, by considering alternative equity strategies we provide a broader view of the potential benefits that can be achieved by incorporating commodity futures into equity portfolios managed along alternative style guidelines.

Second, we supplemented the analysis by considering alternative weights for the commodity allocation. Little evidence exists as to the importance of weighting across equity style dimensions. Thus, our research provides equity investors a means to gauge the benefits of commodity futures for their investment style, and assesses the influence of the weight allocated to commodities.

Third, we examined the contribution of commodity futures over time to determine the consistency of any benefits the contracts provide. To provide evidence regarding the consistency of the benefits futures have provided, we plotted monthly returns over the entire sample period.

Fourth, we explored the benefits of applying both strategic and tactical approaches in establishing an allocation to commodity futures. Recent evidence suggests that the Federal Reserve's monetary policy stance, as gauged by changes in its policy stance (i.e., an increased or decreased target for the federal funds rate), provides useful information that can be effectively used to improve the allocation decision. Given the differences in the covariance structure of returns across alternative equity styles (price movements are not perfectly correlated), it is reasonable to question whether tactical allocation strategies are effective across alternative equity styles.

Our findings indicate that commodity futures offer considerable benefits to equity investors regardless of the targeted equity strategy. Surprisingly, significant and comparable benefits accrue for investors choosing to follow investment strategies that are both relatively conservative and aggressive. Furthermore, the benefits of adding commodity futures to an equity strategy are enhanced dramatically by using a tactical strategy that relies on policy rate shifts by the Federal Reserve.

Specifically, adding a modest exposure to commodity futures when the Fed is raising policy rates (i.e., a restrictive policy stance) significantly increases portfolio returns and significantly decreases portfolio risk. In contrast, when the Fed is decreasing policy rates (i.e., an expansive policy stance), supplementing a portfolio with a modest exposure to commodity futures results in a significant risk reduction; however, portfolio returns fall significantly. A temporal evaluation of the investment benefits of commodity futures indicates that, after controlling for changes in the Fed's policy rates, the benefits have remained fairly consistent over time.

How the Study Was Conducted

Like numerous prior studies, we used the S&P Goldman Sachs Commodity Index to evaluate the investment benefits of commodity futures. We considered three alternative futures allocations, including a limited allocation (5%), a modest allocation (10%), and a prominent allocation (15%). Robert Greer (2007) contended that investors generally maintain a very conservative allocation of 5% to commodity futures, with allocations of 10% to 15% being more appropriate for the average risk tolerance of investors. The allocations presented in this article allow an examination of his contention.

We began our analysis by considering the benefits of a simple strategic allocation to commodity futures of 5%, 10%, or 15% (i.e., constant mix portfolios over the entire sample period). We then extended the research by evaluating the risk and return of commodities over expansive and restrictive Federal Reserve monetary environments. Given the Fed's focus on maintaining price stability, it is reasonable to expect that Fed tightening corresponds with periods of heightened inflationary concern. During inflationary periods and periods of high nominal interest rates, equities tend to languish, while commodity futures prosper. To investigate the investment implications of this view, we examined a tactical strategy that supplants a portion

Table 1. Average Monthly Returns and Differences in Returns (December 1970–August 2007)

	Equity Style Portfolios				
	Value	Growth	Small	Large	Momentum
Portfolio with 0% Commodity Exposure					
Average Monthly Return (%)	1.39	0.93	1.22	0.99	1.46
Standard Deviation of Monthly Returns (%)	4.74	4.99	6.19	4.32	5.34
Portfolio with 5% Commodity Exposure					
Average Monthly Return (%)	1.37	0.93	1.22	0.99	1.45
Return Difference (%)	(0.02)	0.01	(0.01)	0.01	(0.02)
Standard Deviation of Monthly Returns (%)	4.51	4.74	5.89	4.10	5.10
Standard Deviation Difference (%)	(0.23)	(0.26)	(0.30)	(0.22)	(0.25)
Portfolio with 10% Commodity Exposure					
Average Monthly Return (%)	1.36	0.94	1.21	1.00	1.43
Return Difference (%)	(0.03)	0.02	(0.01)	0.01	(0.04)
Standard Deviation of Monthly Returns (%)	4.29	4.50	5.60	3.90	4.87
Standard Deviation Difference (%)	(0.45)	(0.50)	(0.58)	(0.42)	(0.48)
Portfolio with 15% Commodity Exposure					
Average Monthly Return (%)	1.34	0.95	1.20	1.00	1.41
Return Difference (%)	(0.05)	0.02	(0.02)	0.02	(0.06)
Standard Deviation of Monthly Returns (%)	4.10	4.28	5.34	3.73	4.66
Standard Deviation Difference (%)	(0.64)	(0.72)	(0.85)	(0.60)	(0.69)

of the equity portfolio with commodity futures during periods of Fed tightening, while no futures position is taken during periods of Fed easing.

Results

Table 1 reports monthly portfolio returns for the five alternative equity style portfolios. Returns are reported for each portfolio without commodity futures (i.e., a benchmark return) and with commodity exposures of 5%, 10%, and 15%. We calculated the incremental return associated with replacing a portion of the equity portfolio with commodity futures as the portfolio return minus the all-equity return, and refer to it as the return difference.

Absent commodities, a momentum strategy generates the highest return and a growth stocks strategy generates the lowest return. When we add commodities, the return difference is small in most cases. As expected, the largest changes occurred with a 15% allocation to commodity futures.

The results in Table 1 indicate that the investment benefits of commodity futures are attributable to their diver-

sification benefits, not their ability to enhance portfolio returns. The findings suggest that a futures allocation allows investors to achieve a considerable level of risk reduction. Return increased slightly for growth and large-cap portfolios, whereas value, small-cap, and momentum portfolios had slight reductions in return. Interestingly, however, the table shows that the allocation has to be somewhat prominent (greater than 5%) to achieve a statistically significant reduction in portfolio risk. This finding is consistent with Greer's contention that the appropriate allocation to commodity futures should be as high as 10% to 15%.

The findings also show that benefits accrue regardless of the equity style employed. Specifically, adding commodity futures reduced portfolio risk significantly for all five styles, while returns were not significantly impacted for any of the five styles. Thus, whether investors follow a relatively conservative strategy targeting large-cap stocks or a more aggressive strategy targeting small-cap stocks, a significant net benefit is achieved by adding an exposure to commodity futures.

Tactical Allocations

Given the evidence from Jensen, Johnson and Mercer (2000, 2002) that the return and risk of commodity futures appear to be related to the Federal Reserve's manipulation of policy rates, we extended the investigation by examining a tactical allocation scheme linked to changes in policy rates.

Following prior studies, we used reversals in directional changes in Federal Reserve policy rates to identify shifts in monetary policy. Specifically, months following rate increases fall in periods classified as restrictive monetary environments, and months following rate decreases fall in periods classified as expansive monetary environments.

Table 2 reports monthly return differences for each of the five equity style portfolios, in both expansive policy periods and restrictive policy periods. The return difference is calculated as the portfolio return with x% commodity exposure less the all-equity benchmark portfolio return. Without a commodity investment, the returns for each of the five equity portfolios are higher during expansive monetary environments than during restrictive monetary environments.

Adding commodity futures when monetary policy is expansive (interest rates are being cut) results in a "reduction" in returns for each of the five investment strategies. The impact is especially detrimental for value, small-cap, and momentum investors. In particular, adding a 15% exposure to commodity futures results in a reduction of approximately 20 basis points (0.20%) per month in the returns to the value, small-cap, and momentum portfolios. Likewise, the growth and large-cap portfolios experience return reductions

of close to 12 basis points (0.12%) per month. In addition to being statistically significant, these losses in returns are clearly economically significant.

In stark contrast to these results, the addition of commodity futures in restrictive policy periods (rates are being raised) increases returns, with significant increases for the growth, small-cap, and large-cap equity style portfolios. With a 15% commodity exposure, the return enhancement for these three portfolios is approximately 20 basis points per month, which is highly significant (both economically and statistically).

The results in Table 2 clearly demonstrate an association between the return attributes of commodity futures and Federal Reserve policy rates. A commodity exposure significantly enhances growth, small-cap, and large-cap returns when the Fed is increasing rates, which is likely when the Federal Reserve has concerns regarding future inflation. The same exposure significantly reduces the returns for all five equity portfolios when the Fed is lowering rates. This observation is consistent with the view that the performance of commodity futures is aligned with inflationary concerns, and indicates that commodity futures can be effective in hedging the adverse influence that inflationary pressures exert on certain equity styles.

We also evaluated differences in risk reduction across monetary periods. The evidence showed that adding a moderate or greater commodity exposure produced a similar and significant reduction in risk across both expansive and restrictive periods.

Overall, the results indicate that commodity futures provide diversification benefits for investors during both expansive and restrictive monetary policy periods. Interestingly, during periods of expansive policy, investors sacrifice portfolio return to attain the diversification benefits of commodity futures, while during periods of restrictive policy, the diversification benefits are achieved at the same time returns are being significantly enhanced. During periods of expansive policy, most investors would likely deem the sacri-

Table 2. Differences in Average Monthly Returns: Portfolio Return Less 100% Equity Portfolio

Equity Portfolio Style	100% Stocks Return (%)	Return Difference (%)		
		5% Commodity Allocation	10% Commodity Allocation	15% Commodity Allocation
Value: Expansive	1.80	(0.06)	(0.13)	(0.19)
Value: Restrictive	0.88	0.05	0.09	0.13
Growth: Expansive	1.31	(0.04)	(0.08)	(0.12)
Growth: Restrictive	0.45	0.07	0.13	0.20
Small: Expansive	1.90	(0.07)	(0.14)	(0.20)
Small: Restrictive	0.38	0.07	0.14	0.21
Large: Expansive	1.33	(0.04)	(0.08)	(0.12)
Large: Restrictive	0.56	0.06	0.12	0.18
Momentum: Expansive	1.84	(0.07)	(0.13)	(0.20)
Momentum: Restrictive	0.99	0.04	0.08	0.12

ficed returns to be too large relative to the diversification benefits. In contrast, during periods of restrictive policy, all investors should view the diversification benefits of commodity futures as desirable, since the benefits are not accompanied by a loss of return.

Tactical Allocation Versus Strategic Allocation

We further examined a small-cap portfolio with a 15% commodity exposure to determine the investment benefits of an incremental exposure to commodity futures. Specifically, we looked at wealth accumulation for three investment strategies: (1) 100% in the small-cap portfolio; (2) a strategic allocation of 85% in the small-cap portfolio and 15% in commodities; and (3) a tactical allocation of 85% in the small-cap portfolio and 15% in commodities during restrictive policy periods, and 100% in the small-cap portfolio during expansive policy periods. Both the strategic allocation approach and the tactical allocation approach dominated the all-equity portfolio. Furthermore, tactically allocating the commodities exposure dramatically outperforms strategic (i.e., constant) allocation. Remarkably, the return enhancement is consistent

throughout the entire sample period.

Conclusions

Proponents have long argued that commodity futures offer substantial portfolio diversification benefits. These benefits, along with the development of readily available investment vehicles, have generated considerable recent interest in commodity futures as a viable investment alternative.

Our findings showed strong support for the contention that commodity futures offer equity investors considerable benefits as a diversification tool. Surprisingly, the benefit of supplementing a portfolio with a commodity exposure was relatively invariant to the equity investors' investment style. Investors choosing a relatively conservative approach of targeting large-cap stocks achieved very comparable benefits to more aggressive investors who followed momentum and small-cap strategies. For each of the five most common investment styles, portfolio risk was reduced significantly when 10% or more of the portfolio was allocated to commodity futures. Interestingly, a 5% allocation to commodity futures was not sufficient to produce a significant reduction in risk for any of the five investment strategies.

We evaluated the benefits of a tactical allocation to commodity futures relative to a strategic allocation approach. Our findings indicated that the benefits of commodity futures could be greatly

enhanced by utilizing a tactical allocation approach that was guided by shifts in Federal Reserve policy rates. Specifically, a tactical approach that established a commodity exposure only during peri-

ods when the Fed was increasing rates (during a restrictive monetary policy) produced a significant increase in portfolio returns, while reducing portfolio risk significantly. ▲

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Bonds

(Continued from page 19)

U.S. Aggregate Bond Index. For investors considering substituting TIPS for standard Treasuries, TIPS represent 6.0% of all Treasuries and 11.0% of the Treasuries included in the Barclays index (as reported by the Securities and Financial Markets Association and Barclays Capital Live).

While there is no "one-size-fits-all" solution for preserving purchasing power that is appropriate for all portfolios, in a 2009 Vanguard study Donald G. Bennyhoff found that TIPS can be a useful option in a real-return strategy. The study concluded that TIPS may be most appropriate for "policy" portfolios—such as pension plans—with well-known liability streams that are highly correlated with the CPI-U. However, if

the cost of the liability in the future is higher than forecast, Bennyhoff found that the real return of TIPS may not be sufficient to compensate for the shortfall.

Determining an appropriate allocation to TIPS depends largely on the portfolio objective of the individual. For example, for an investor with an aggressive strategy designed to optimize total return over a long time horizon, an allocation to TIPS may be less important. However, for an investor with a more defensive strategy who is concerned about inflation eroding purchasing power, TIPS can be useful. Thereafter, determining the size of the allocation to TIPS will depend upon the level of risk that the investor wants to mitigate.

Conclusion

In summary, historically, no asset class has provided a "pure" hedge against inflation. However, for investors looking to protect themselves from the risk of unexpectedly high inflation, TIPS are a viable option and can play a role within a diversified and balanced portfolio. Although TIPS represent only a modest portion of the bond market, they do generally provide a relatively low-risk hedge against unexpected inflation. This hedge, however, is not a guarantee. There can be circumstances when TIPS do not provide positive returns, even during periods of unexpected inflation. Nevertheless, in most instances of an inflation surprise, TIPS can provide an important benefit. ▲

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