

# SHOULD COMMODITY RISK PREMIA BE PART OF INVESTORS' STRATEGIC MIX?

## BASIC RESEARCH QUESTION

Does commodity futures portfolios add value to already diversified multi-asset portfolios?

## KEY PAPER(S)

Daskalaki, C., Skiadopoulos, G., 2011. Should investors include commodities in their portfolios after all? New evidence. *Journal of Banking & Finance* 35 (10), 2606-2626.

DeMiguel, V., Garlappi, L., Uppal, R., 2009. Optimal versus naive diversification: How inefficient is the 1/N portfolio strategy? *Review of Financial Studies* 22 (5), 1915-1953.

Blitz, D., and De Groot, W., 2014, Strategic allocation to commodity factor premiums, *Journal of Alternative Investments* 17, 103-115.

Daskalaki, Skiadopoulos and Topaloglou, 2015, Do commodities provide diversification benefits? *A stochastic dominance efficiency approach, working paper.*

## MOTIVATION/ PUZZLE

The value of including commodity investment in investors' portfolios is long debated. On one hand, there is extended literature focusing on the potential benefits of commodity investment. Equity-like returns and low or even negative correlation with other markets, which can translate into enhanced diversification, are among main motivations. On the other hand, Daskalaki and Skiadopoulos (2011) show that commodity investment does not add out-of-sample benefits to traditional portfolios.

Furthermore, the literature advocates the use of long-short portfolios as part of the strategic mix of investors, but, more often than not, long-only commodity portfolios have no role to play.

## THREE CORE ASPECTS OF ANY EMPIRICAL RESEARCH PROJECT

### THE IDEA

Commodity futures market is one of the major alternative investment platforms. It's accessible and cheap to trade. This can be verified by the significant increase in the size of commodity market from \$20bn in 2001 to \$410bn in 2011, with the majority through index funds. With this increase, analysing the actual realisable benefit of commodity investment to other types of portfolios becomes essential.

Given the strong performance of long-short commodity portfolios constructed using timing and optimisation methods, it is probable that they will be part of the strategic mix of investors. In this case, does the benefit of commodity investment still remain when added to already diversified portfolios? If yes, how much shall investors allocate to these alternative portfolios so as to max the out-of-sample performance of their optimally diversified portfolio?

The null hypothesis for this research is that long-short commodity portfolios with various weighting schemes do not add any value to a portfolio consisting of traditional assets including equities, fixed-income, and cash.

### THE DATA

Daily time-series data on the cross-section of 40 commodity futures near and distant contracts from 1979-2016 from Datastream International is used.

The following data is used to form our multi-asset portfolio:

1. Monthly S&P 500 total return index (Bloomberg)
2. Monthly Barclays US Aggregate Bond Index (Bloomberg)
3. Monthly 3-month T-bill rate (Bloomberg).

Futures contract come into existence and expire unceasingly. There is no single time-series of returns on any commodity, rather there are distinct and overlapping contracts with different dates that come and expire one after another. These contracts need to be used to carefully generate synthetic continuous time series similar to those readily accessible for stocks in the equities market. Generating these continuous series from rolling futures contracts requires some attention and is a major part of data preparation.

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## THE TOOLS

- We use Matlab throughout this study, which is available through UQ licenses.
- First, we implement long-short portfolio methods using optimisation and timing strategies and construct their return series.
- Second, we use those return series along with the other data mentioned in Section (F) to construct two optimal portfolios. One with and one without commodity investment. For portfolio weight estimation we use the "full scale" method of Adler and Kritzman (2007) which is a direct utility maximisation method.
- Third, we implement a range of performance measures and use statistical analysis to test the null hypothesis of no difference in performance measures between the two portfolios.
- The performance measures we use are: Sharpe ratio, opportunity cost, portfolio turnover, and Sharpe ratio net of transaction costs.
- We use Ledoit and Wolf (2008) to test for Sharpe ratio difference.

## TWO KEY QUESTIONS

### WHAT'S NEW

The novelty is in two aspects. First, we use optimisation-based and timing strategies, originally equity strategies, and adapt them to the characteristics of the futures market to construct long-short commodity portfolios.

Second, we are testing for the added benefit of commodity investment using these new long-short portfolios which are a more realistic representation of a strategic commodity investment, rather than using a long-only index investment which is currently done or long-short portfolios based on equal-weights.

### SO WHAT

Since the current consensus on commodity investment is on long-short rather than long-only portfolios, it is the answer to this question, and not the long-only investment, which is required to verify or reject the benefit of commodity investment. Also, although we have seen alternative weightings, optimisation-based and timing methods in particular, improve the performance of long-short portfolios, this improvement should be studied in the context of asset allocation with an already diversified portfolio of multiple asset classes before making claims on added benefit.

Our findings will therefore answer an important question in strategic asset allocation regarding the realisable benefits of commodity investment.

## ONE BOTTOM LINE

### THE CONTRIBUTION

First, we answer the important question of whether and to what extent a traditional investment portfolio can benefit out-of-sample from including long-short commodity portfolios that capture significant risk premia?

Second, we investigate how different weighting schemes influence the role of strategic commodity investment in multi-asset investment portfolios out-of-sample.

Third, we use a statistical framework that supports MV and non-MV investor preferences. In other words, we take into account the higher moments of asset returns distributions, which is consistent with the behavior of risk-averse investors.

### OTHER CONSIDERATIONS

Due to the important contributions, A\* journals are targeted.

No-result risk and risks are low, since findings are important either way.

Due to high interest in the strategic asset allocation area there is a moderate competitor risk and a low obsolescence risk present.