



Origins of commodity futures and the birth of financial futures

The Japanese rice futures of the mid-18th century were the first futures to be traded on a formal futures exchange. 100 years later formal commodity futures exchanges began trading in the US and UK (agricultural contracts on the US Chicago Board of Trade (1848) and metals on the London Metals Exchange (1877) respectively).

The fixed exchange rate system of the Bretton Woods agreement collapsed in the early 1970's and currencies and interest rates floated freely for the first time since WWII. The concepts underlying commodity futures were then applied to manage the risks of the newly volatile currency and interest rate markets, and from there were applied to (mostly equity) index futures.

It is for this reason that all futures are frequently generically referred to as "commodities" and futures portfolio managers are frequently referred to as "CTAs" (Commodity Trading Advisors).

Commodity pricing: current supply and demand vs Present Value of cash flows

"Agricultural commodity prices are determined by the weather, energy prices by politics and metal prices by economics" (Sandra Gordon, MitonOptimal Commodities 2014).

Financial assets are typically priced by *discounting receivable and payable future cash flows* to their present value.

In contrast, commodity prices are determined by *current supply and demand*. Many commodities cannot be stored for long - think of agricultural commodities - so they have to be delivered and consumed before they degrade. Other commodities can be stored, but frequently the consumers cannot wait to consume them. Oil or gas can be stored for long periods, but there is not unlimited storage capacity (think of the oil prices going negative in Q1 2020 when there was no storage available). Also, consumers cannot postpone their commodity requirements indefinitely e.g. one can skip breakfast, but even the strongest-willed individuals have to eat by day two or three. Similarly, commuters cannot postpone filling their fuel tanks indefinitely.

Commodities become investable

With the expansion of the financial sector and the broad acceptance of futures ("derivatives") in investment portfolios, commodity investment was suddenly not so far off the beaten track in the 1990s. In addition, administration systems had developed the capacity to capture, value, and calculate risk and return on commodity derivative portfolio holdings.

Simultaneously the investment industry had consistently 'dematerialised' to the extent that most portfolios now simply consist of electronic records, not physical holdings of 'scrip.' Unfortunately, this has left the investment industry less well-equipped for physical settlement of any sort.

So, while many commodity futures contracts are *cash settled* on expiry, some commodity futures contracts do require *physical settlement* on expiry i.e. delivery of the underlying commodity.

This logistical complication associated with the delivery of commodities is one of the main reasons for many regulators' angst about permitting commodities to be held in investment portfolios and is why investment portfolios now often prefer to hold ETFs or ETNs which do not have expiry dates (that said, "delivery" of a wheat futures contract, for example, usually entails the transfer of silo receipts, not the delivery of a truck load of wheat to the fund managers parking lot!).

Why include commodities in an investment portfolio?

There are three main reasons to include commodities in an investment portfolio, namely diversification (non-correlation with traditional asset classes), inflation hedge (topical in 2021), and absolute returns.

1. Diversification

Harry Markowitz introduced Modern Portfolio Theory in a 1952 paper on portfolio diversification. This has formed the basis for most portfolio construction to this day (Markowitz in fact states that diversification was in vogue long before his work and quotes Shakespeare on the topic in the Merchant of Venice).

This work on correlation forms the basis for the first reason to include commodities in an investment portfolio, namely the non-correlation of commodities with traditional financial assets. There are two main reasons for this non-correlation:

- a) as described above, commodity prices are based on current supply and demand vs the present value of future cash flows method of valuing financial assets, and
- b) commodities and financial assets respond differently to the same drivers e.g. conflict in the Middle east may damage oil production infrastructure and interrupt the supply of crude oil, resulting in a rising oil price but a falling share price of the company that is unable to continue oil production.

The inclusion of non-correlated assets like commodities can reduce total portfolio volatility without the loss of total return. Refer to the correlation table below.

INDEX	BLOOMBERG COMMODITY	JSE TOP40	JSE RESI20	ALL BOND	JSE PROPERTY
BLOOMBERG COMMODITY	1.000	0.323	0.456	(0.371)	(0.211)
JSE TOP40	0.323	1.000	0.827	0.109	0.368
JSE RESI20	0.456	0.827	1.000	0.005	0.194
ALL BOND	(0.371)	0.109	0.005	1.000	0.577
JSE PROPERTY	(0.211)	0.368	0.194	0.577	1.000

2. Inflation hedge

Inflation consists of goods and services and, well, commodities are the 'goods.' This makes them very useful at reducing the basis risk in a portfolio between the usual inflation-linked benchmarks of "inflation + x%."

Note the negative correlation with the bond index in the table above. Bonds traditionally suffer in a rising inflation market, and commodities provide a substantial hedge against a poorly performing bond portfolio in such times.

3. Absolute Returns

Given the cross-sectional volatility in the commodity asset class, it is possible to extract substantial absolute returns from an investment in commodities. However it is important to note the differences between the price behaviour of equity and commodity indices.

Commodity investment management

Given the portfolio construction benefits of commodity investment and also the fact that both CISC and Reg 28 specifically permit commodity investment, how should this be effected?

Despite bull and bear markets, *equity indices have a Darwinian upward drift* over time as the weaker performers are down-weighted then removed from their index and the better performers are conversely upweighted.

Unlike equities, *bonds and commodities are not growth assets*. Commodity indices have no natural upward drift, and this affects commodity index composition differently to equity indices e.g. just because crude oil fell by 90% in Q1 2020 does not mean that crude oil is removed from the commodity index. It remains the most-traded commodity globally and retains its significant weighting in global commodity indices.

Passive buying-and-holding a basket of commodities approach is therefore not as efficient as it might be with equities.

Given that commodities respond significantly to long term supply and demand cycles and short-term supply and demand shocks from a variety of influences e.g. weather, politics, economics, or currency changes, it is more appropriate to *actively manage commodity exposure* in a portfolio, either via investment into a smart beta commodity ETF or the active selection and risk management of a portfolio of individual commodities.

Portfolio construction

Despite the attraction of commodity investment, it is worth bearing in mind that this should be regarded as a specialist area.

Commodity investment is deliberately separately regulated as an alternative asset class. The logistical, regulatory, and fundamental differences from investing in the traditional asset classes strongly suggest that, should investors include a strategic allocation to commodities in their portfolio construction, they should contract the tactical management of this allocation to a commodity specialist.



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