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TRADING SCARCITY

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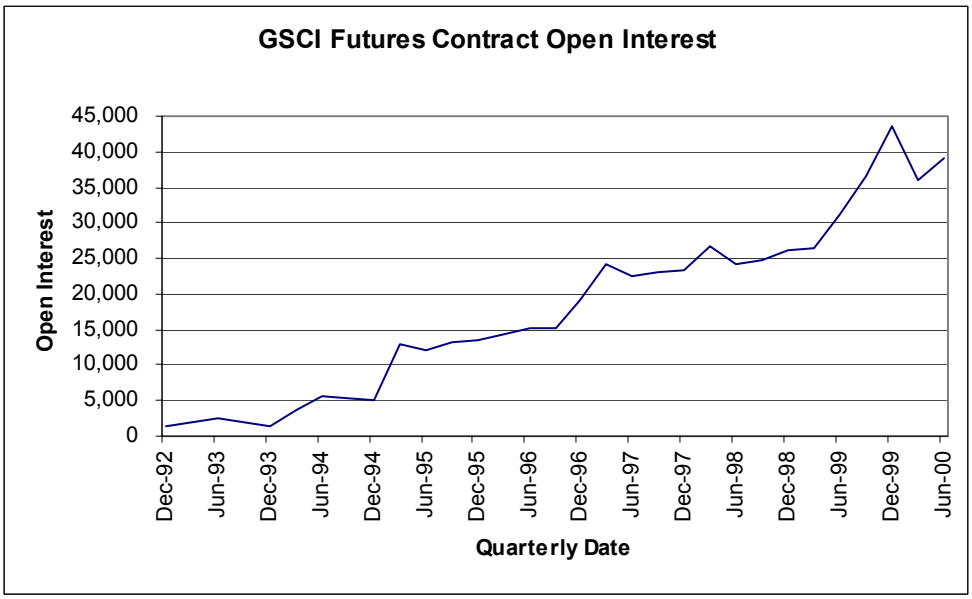
Commodity futures investments are attracting significant capital from investors. For example in May of this year, the Financial Times reported that a large Dutch pension fund would be investing between $1.4bn to $2.3bn in the commodity markets this year.

Also, increased investor involvement can be detected through the accelerated increase in open interest in the Goldman Sachs Commodity Index (GSCI) futures contract in the last year and a half. Figure 1 illustrates the rise in GSCI open interest over the contract's history.

Figure 1

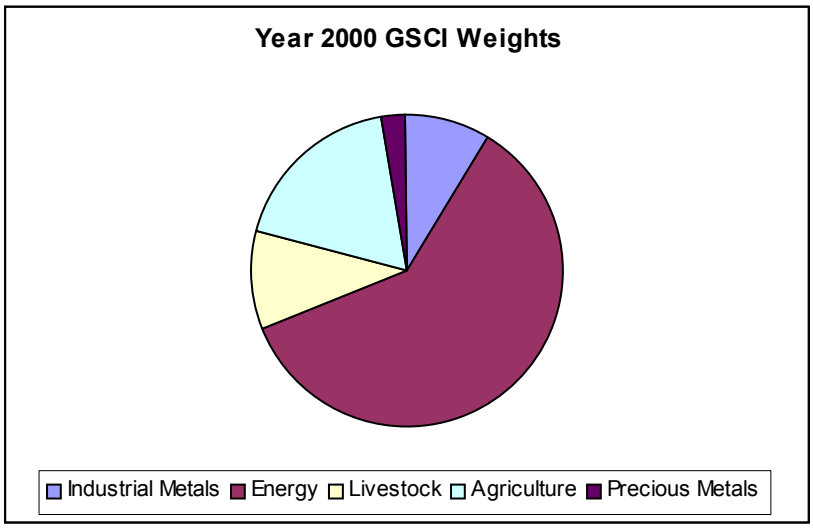


Does this mean that the argument on the advisability of investments in the commodity futures markets has been settled?

This article will argue that long-only investments in the commodity futures markets, specifically those represented by the GSCI, are only advisable under a well-defined circumstance. One needs to use a reliable indicator of scarcity before investing in commodities in order to be assured of earning positive returns. This indicator also assists a commodity investor in avoiding huge losses that can result from investing in commodities during times of surplus. We will describe this indicator as well as note empirical and theoretical evidence for its use.

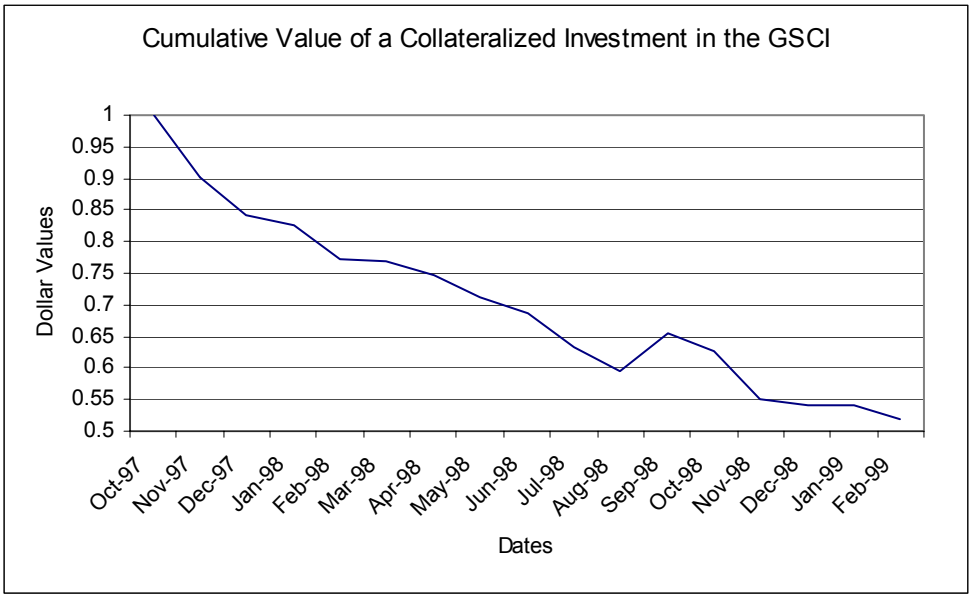
But first for those unfamiliar with the GSCI, we will give a brief description of this commodity index. This index is a world-production-weighted commodity index, incorporating twenty-four commodity futures contracts that span five commodity sectors. The GSCI was designed to be a benchmark for commodity investors comparable to the S&P-500 equity index. Figure 2 illustrates this year's weighting scheme for the GSCI.

Figure 2



After the experience of 1998, GSCI traders and investors would likely be very motivated to figure out a timing strategy for investment in this index. As Figure 3 illustrates, from late 1997 until early 1999, this commodity index loss 50% of its value.

Figure 3



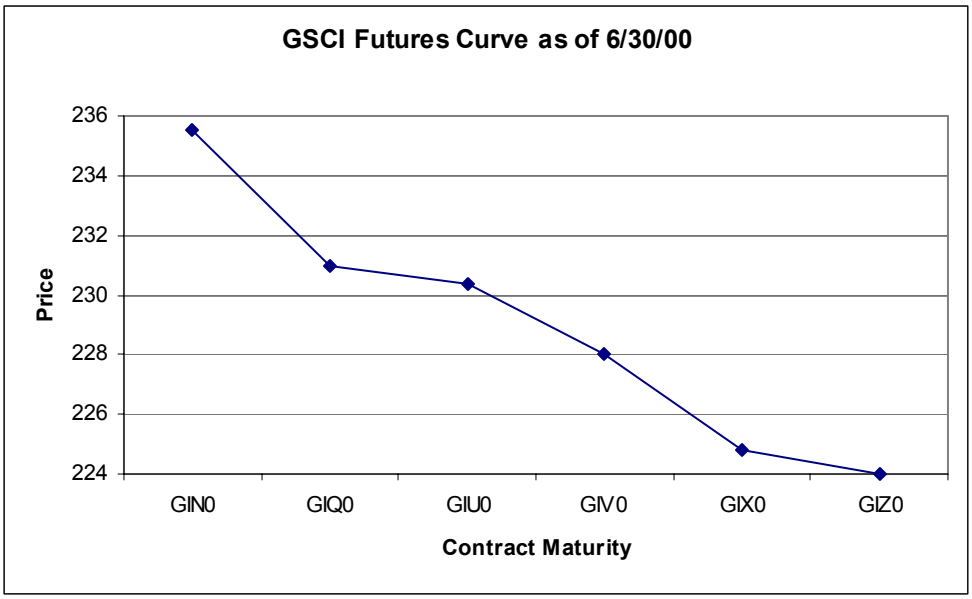
This graph excludes the impact of commissions.

It may come as a surprise that there is a simple and reliable indicator for determining when to invest in commodities. In using this indicator, one may not earn the maximum possible from this asset class, but one will at least avoid disastrous drawdowns.

Without further ado, the indicator is as follows. One needs to examine the "term structure" of the GSCI futures curve. This is easy to do since GSCI futures contracts trade on the Chicago Mercantile Exchange (CME). By *term structure*, we mean one should examine the relative price differences of GSCI contracts across delivery months. When a near-month contract is trading at a premium to more distant contracts, we say that a commodity futures curve is in "backwardation." Conversely, when a near-month contract is trading at a discount to more distant contracts, we say that the curve is in "contango."

Figure 4 illustrates the GSCI futures curve as of the end of June. The graph shows the relative prices of six GSCI futures contracts of varying maturity. Note that at this time we can say that the GSCI is in backwardation.

Figure 4



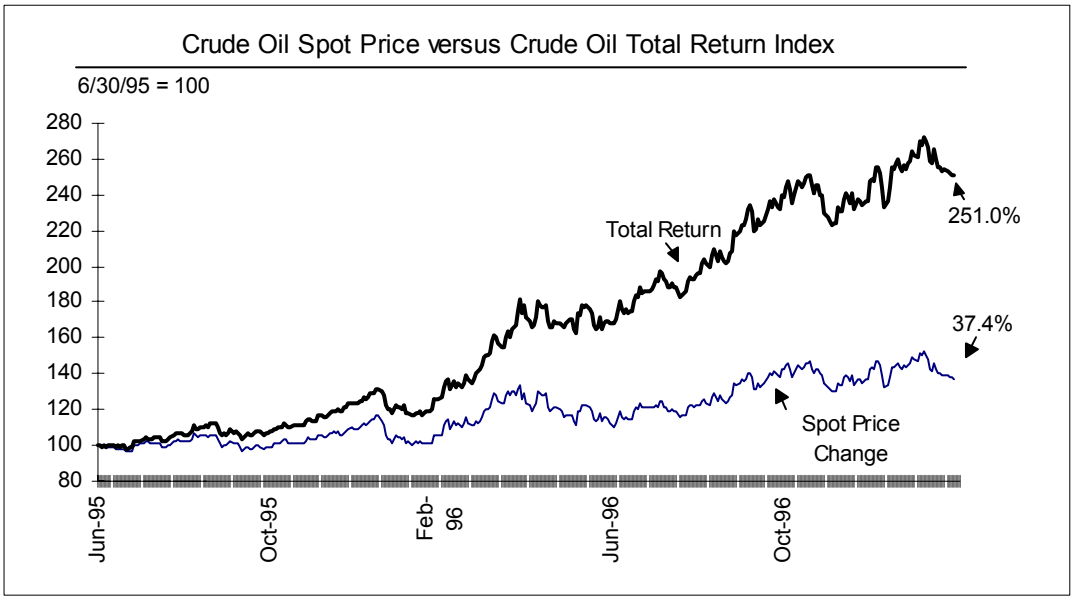
The specific indicator one examines when deciding whether to passively invest in commodities is whether the GSCI futures curve is in *backwardation*. In a normal market (i.e. a market in *contango*), the maximum price difference between the front and back contracts tends to be determined by carrying charges, which include storage costs, insurance, and interest. Backwardation occurs when supplies of commodities are inadequate; therefore, market participants are willing to pay a premium to buy the immediately deliverable commodity. This is precisely the time an investor should be involved commodities: when scarcity is indicated.

When a commodity futures contract is in backwardation, an investor has two potential sources of returns. Since backwardation indicates scarcity, one is on the correct side of a potential price spike in the commodity by being long at that time.

The other source is a bit more difficult to describe. In a backwardated futures market, a futures contract converges (or rolls up) to the spot price. There is a "roll yield" that one captures. The spot price can stay constant, but one will still earn returns from buying discounted futures contracts, which continuously roll up to the constant spot price. In a contango market, the reverse occurs: an investor continuously locks in losses from the futures contracts converging to a lower spot price.

This latter source of return can be a major return contributor. In 1997, Goldman Sachs illustrated how the returns from investing in crude oil futures contracts from June, 1995 to late 1996 were dominated by "roll yield." This Goldman chart is reproduced in Figure 5.

Figure 5



Data Source: Goldman Sachs, "Commodity Watch," February 6,1997

This graph excludes the impact of commissions.

The above chart shows that the spot price of crude oil increased by 37.4% over the period while a collateralized investment in crude oil futures contracts yielded a much more substantial 251%. This difference in returns is largely due to "roll yield."

The GSCI was launched in 1992. Although data for this index exists before 1992, we will only examine its performance since that date. In case the index's construction was optimized, our results will only be valid if we use out-of-sample data. That is, we will only use data after the index went live.

Our belief is that one should be passively invested in GSCI futures contracts only when the contract is in backwardation. Does the historical data support this belief?

We carried out an empirical study of this question as follows. If at the end of the month, the front-month GSCI futures contract was trading at a premium to its immediately deferred contract, one would invest in the GSCI during the following month. If the front-month contract was trading at a discount, one would withdraw from investing in the GSCI during the following month. From 1992 to mid-1996, the CME listed GSCI contracts every other month, while from mid-1996 onward, the CME listed these contracts monthly. So during the first four years of the study, the front-month contract was compared to a contract whose maturity was two months later. During the latter four years of the study, the front-month contract was compared to a contract whose maturity was one month later.

Also, in this study, we assumed that the investor would not lever his or her investment in commodities. That is, for each $1 invested, $1 notional worth of GSCI futures contracts would be purchased. In addition, this investment would be fully collateralized: for each $1 invested in the GSCI, the investor would set aside a full $1 in riskless T-bills.

The data definitely shows that one's investment performance would have been dramatically improved by using the logical rule of only investing when the GSCI is in backwardation. Figure 6 shows that one's returns over T-bills more than doubles when using this simple rule.

Figure 6

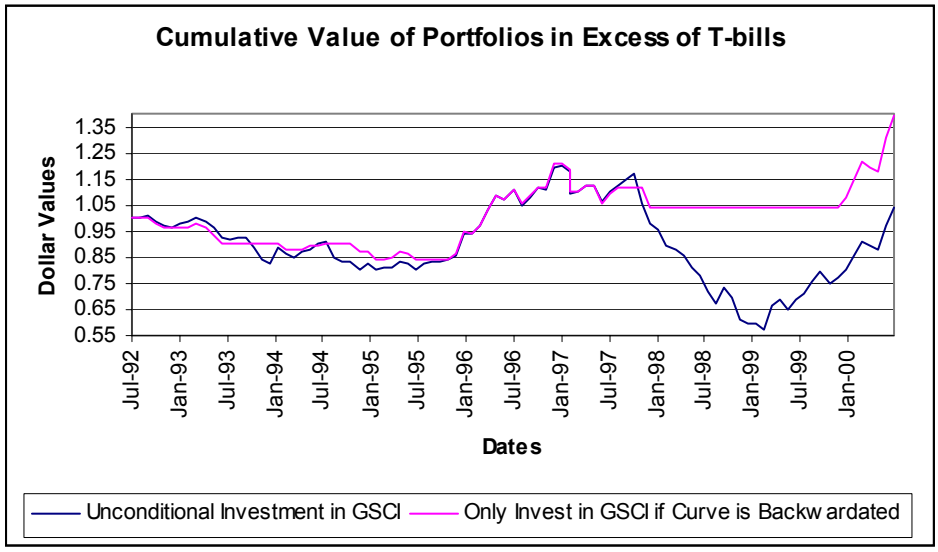
Average Monthly Returns
Excluding Interest Income from One's Collateral
(August 1992 to June 2000)

Strategy	Returns Excl Commissions	Returns Incl Commissions*
Buy-and-Hold Investment in the GSCI:	**+0.15%**	**+.02%**
Only Invest in GSCI if Curve is Backwardated:	**+0.39%**	**+.33%**
Only Invest in GSCI if Curve is in Contango:	**-0.24%**	**-.31%**

*** Assuming substantial commissions of $75 per round-turn**

These results are even more dramatically illustrated in Figure 7. One avoids the dramatic destruction of equity during the 1998 period by sitting out of the commodity markets when the GSCI was in contango; ie, when surplus was indicated.

Figure 7



This graph excludes the impact of commissions. The relative difference between the two strategies is even more apparent when one includes the impact of commissions. This is because one is a less active trader of GSCI contracts in the "backwardation strategy." In this time period, the GSCI was backwardated 42% of the time.

Now, this indicator is not a perfect timing indicator. One returns to the commodity markets in late 1999 many months after the commodity markets bottomed. But at least one avoids the interim loss of capital which occurred before this bottom was confirmed.

We conclude by noting that investors may justify a continuous passive investment in commodities because of evidence that this asset class can act as a hedge against certain macro risks in one's stock portfolio. But if one is interested in commodities for stand-alone, total-return purposes, we advise investing in this asset class only when one has evidence of commodity scarcity.