Investing Without Market Risk

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In 1983, John Lintner presented his famous results on the role of managed commodity financial futures in portfolios of bonds and stocks. In it, he concluded that portfolios of stocks and bonds would exhibit considerable improvement of their risk/return properties at all levels when combined with managed futures. An essential ingredient of that result is the lack of correlation between stocks, bonds and managed futures.

So what if we built an investment portfolio that exhibited returns comparable to equity markets, yet was largely uncorrelated to those markets? The portfolio would consist of managed futures products provided by Commodity Trading Advisors (CTA), and their selection would be made according to rules of *style*, as defined below. From an intuitive point of view, we would search for skill in those managed products and then optimize their participation into the target portfolio to minimize risk. The result is a raw investment product that can be further developed into a structured product in order to, for example, provide principal protection guarantees.

The motivation for our study is largely based on the need of the contemporary investment industry to find investment alternatives that offer insulation from economic factors. With an aging population of baby boomers, quickly approaching retirement, and the supersonic behavior of stocks over the recent months, a need has been created to diversify among profitable investments that do not share the traditional dependence on economic factors as do usual investment vehicles. Our conclusions point in exactly that direction.

Managed Futures

Futures markets have been around, at least, since the 16^{th} century when rice futures were traded in Japan. Their modern version through exchanges dates back to the last century, largely though grain contracts. Its climax was reached in 1848 when the Chicago Board of Trade was founded. Prior to those times, farmers had to haul their harvest to Chicago every year, just to be forced to accept whatever price the buyer was willing to offer before spoiled merchandise had to be dumped into the lake. Futures contracts emerged as a healing prescription for wild price fluctuations and in a precise sense became the building block of the insurance industry for financial products. Underlyings were extended to include gold, oil, metals, sugar, and, with the collapse in 1972 of the Bretton Woods agreements of 1945, currency exchange rates.

The situation evolved further around 1950 with the creation of commodity funds and Commodity Trading Advisers (CTA) who were in charge of their management. Each used specific trading styles, commodities, and more or less quantitative approaches that incorporated the latest economic and mathematical technology available at the time. The industry of CTAs was born in 1975 when the Commodities Futures Trading Commission (CFTC) was created to regulate the operations of the 225 CTAs which existed at the time. During these risky times (the Arab oil embargo, the Mid-east war, the Watergate scandal, in addition to periods of droughts and freezes), the CTAs industry, like a good insurance-based industry, flourished. We refer the interested reader to B. Chandler's `*Managed Futures – An*

Investor's Guide,' published by John Wiley & Sons (1994) for an interesting, detailed discussion of the managed futures industry.

The current situation with managed futures funds is that they continue to share all the original flavor of achieving wealth by extracting value from insurance-based futures products, with additional characteristics that set them apart from other investment vehicles – their credit qualities, ranked equal to sovereign debt by the Bank of International Settlements, and their liquidity, which enables the investor to get in and out of a position immediately.

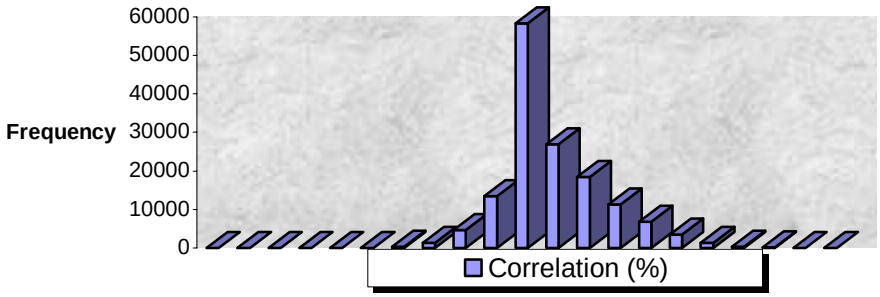
An Uncorrelated Universe

Correlation is most easily described as a measure of dependence. Two financial products are highly correlated when their respective behavior exhibits a linear relationship. From a portfolio theory viewpoint, portfolios of correlated instruments simply add their returns and risk. Portfolios of uncorrelated instruments add their returns, but their risks are collectively reduced. This is the basis the Markowitz theory [see H. Markowitz, *`Portfolio Selection,'* Journal of Finance 7 (March 1952), pp. 77-91; and *`Portfolio Selection: Efficient Diversification of Investment,'* Wiley (1959)] which awarded him the Nobel Prize for economics. As a consequence of that theory, one wants to search for profitable uncorrelated investment products that maintain the returns but, at the same time, reduce the risk overall. This is the rationale for global diversified investments. The practical complications come because of the scarcity of truly uncorrelated profitable products, even on a global markets scale.

The first striking consequence of futures trading is the uncorrelated nature of CTAs. Trading in a variety of underlyings (currencies, metals, equity, agricultural, etc.); using short as well as long positions; and getting in and out of positions constantly through active trading, their performance is not only uncorrelated to traditional markets, but uncorrelated among themselves, too.

In *Graph 1*, we analyzed the correlation among several hundred CTAs by looking at all possible pairs (more than 100,00 in total). The most frequent correlation was in the 10 per cent range, with correlations over 50 per cent or below –50 per cent almost negligible.

Graph 1 - Correlation Stats



In this graph, taken over more than 500 CTAs, we can see the frequency of the pairwise correlation among them. The horizontal axis represents the level of correlation,

from – 100 per cent to 100 per cent, with 10 per cent the most frequent, accounting for almost half of all the possible pairs.

Uncorrelated populations give rise to rich diversification strategies that allow for significant risk reductions. The question remains as to whether returns persist and what are the return levels per unit of risk.

Skill

Different CTAs act in different ways. Often, even each of them offers different investment strategies based on different principles. For starters, short as well as long strategies are common. Moreover, many show precise trading criteria – often based on trend following techniques, mechanical, fundamental, or even short-termed decisions – harnessing market choppiness through a contrarian strategy. Furthermore, underlyings range from financials to metals and bonds and equities to agricultural products.

Identifying these is not an easy task. Classifying them according to styles is no easier. In our study, we performed factor analysis techniques to create an effective index for each skill group. On the basis of this index, we were then able to formulate the most basic questions:

1. Which skills produce returns?
2. What is their risk?
3. What diversification advantages are there?
4. Can one create a product equal or better than traditional markets, which is uncorrelated to the economy?

Index Statistics

In this section, we will study the performance of the indices constructed according to the previous section. For the sake of clarity, we will restrict ourselves to only a handful of trading styles:

- TF – trend following,
- CTF – short-term traders,
- GC – general discretionary funds,
- Agr – agricultural, and
- Mech – mechanical.

For comparison purposes, we also use the S&P500 index. The numbers quoted in *Table 1* are the monthly returns and standard deviations of the returns of each particular index and their corresponding Sharpe's Ratio (which ignores the risk-free rate of return).

Table 1 Monthly Returns And Standard Deviations Of Returns

INDEX	Average Monthly Return	STD (Risk)	Sharpe's Ratio
S&P 500	**1.27%**	**3.33%**	**0.38**
TF	1.55%	5.01%	0.31
CTF	0.61%	14.16%	0.04
GD	1.72%	4.17%	0.41
Agr	0.93%	3.12%	0.3
Mech	3.64%	17.01%	0.21

This provides an answer to our first two questions. Returns and risks are commensurate with markets. However, no juice has been extracted so far from the most striking property of managed futures: their lack of correlation. Once the index concept has been introduced, we can attack the problem in a similar fashion.

In *Table 2*, we display the correlation effect for certain investment strategies by analyzing the diversification effects in the improvement of the risk-reward profiles for a handful of style portfolios. We show three combinations:

- 50 per cent discretionary funds and 50 per cent agricultural funds;
- 50 per cent trend following funds with 50 per cent general discretionary funds; and
- a portfolio consisting mostly of trend following funds with just a tinge of short term trading funds.

Table 2 Correlation Effect For Investment Strategies

Skill Portfolio	Average Monthly Return	STD (Risk)	Sharpe's Ratio
50%GD-50%Ag	1.33%	2.87%	0.46
50%TF-50%GD	1.64%	3.67%	0.45
90%TF-10%CTF	1.61%	3.92%	0.41

What is relevant to look at in *Table 2* is the ***changes*** to the Sharpe's Ratios that we obtain with respect to the pure indices listed before. For example, a pure TF portfolio will have a ratio of 0.31, whereas one with only an additional 10 per cent in CTF will improve to 0.41. This behavior is typical of portfolios that combine profitable investments with low correlations. What is worth noting in this strategy is that these are not theoretical conclusions: these products are available in the markets today.

The conclusion is the lack of correlation survives the indices. This allows us to tackle the fourth, and most relevant question: can one build a sound investment product that outperforms traditional markets and is uncorrelated to the economy?

The Answer

The previous sections provide a risk background of return, risk, and correlation upon which we can attempt to build a convenient investment policy. We can achieve this through an adaptation of the well-known Markowitz theory to the financial objects we just constructed. At this point, we omit the details, which are well-known to portfolio theory experts [we refer the reader to R. Merton `*Continuous Time Finance*,' Blackwell Publ. (1990)] and simply display what kind of investment products can be obtained with the observations made in this article.

First, we can obtain an investment policy with an optimal combination of styles. This can be achieved through the many optimization methodologies –, for instance, through a mean-variance argument – available today. We refer to this as an investment policy.

Second, we select the optimal combination of CTAs compatible with the investment policy.

The result is a raw financial product that would possess optimal investment qualities without showing a correlation to traditional markets.

This financial product can be further mixed through standard financial products to produce structured products with, for instance, guaranteed principal (zero per cent – AAA) or guaranteed annualized return of two per cent of principal (two per cent – AAA). We also allow for principal guarantee with a AA credit rating (zero per cent – AA).

Chart 1 displays the comparative behavior of one such product versus the evolution of the S&P. The result is what we set out to achieve: investment alternatives which offer insulation from economic factors and satisfy the need to diversify among profitable investments.

Chart 1