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Diversification Through Commodities: Long-Only Versus Managed Futures

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Long considered a pariah in the investment world, favorable attention to commodities as a viable alternative investment has increased over the last several years. The increased attention is due to the impressive performance of commodity investments during the recent bear equity market. This performance dramatized the lack of correlation of returns between the equity and commodity sectors. Despite a widespread perception of return volatility, considerable academic and media space has been devoted to examining how commodities might be incorporated in a portfolio. Notwithstanding this increased acceptance, there is still a general lack of understanding of the rationale for exposure to this market as well as how this exposure should be employed. There are three ways that are commonly used to gain exposure to commodities. In this paper, we will examine these and then attempt to come to a conclusion as to the most effective.

DESPITE A WIDESPREAD PERCEPTION OF RETURN VOLATILITY, CONSIDERABLE ACADEMIC AND MEDIA SPACE HAS BEEN DEVOTED TO EXAMINING HOW COMMODITIES MIGHT BE INCORPORATED IN A PORTFOLIO

Investment in Natural Resource Companies

One of the traditional methods of gaining commodity exposure has been to invest directly into commodity-based companies. The rationale is that buying stock of a gold-producing company gives the investor exposure to gold as a commodity. On the surface, this rationale would seem to make sense. The producer would earn higher profits with the increase in price of gold, therefore lifting the stock price.

There are a several problems with this. Despite the impact on profits of an increased price of gold, the profitability of a company is not the sole determinant of stock price. As we know, the price of a stock is affected by much more than the underlying profitability of the company. All stocks are impacted by the whims of the aggregate market. Secondly, success in commodity investment depends upon diversification into many commodity markets. Acquiring a portfolio of stocks that reflects the proper diversification into the many commodity markets would be an expensive and cumbersome task. Lastly, and more esoteric, most resource companies are active in minimizing or hedging (we will take a more in-depth look at hedging later) their exposure to price fluctuations of the commodity on which their business is based. Companies are motivated to smooth profits quarter to quarter. Investors generally penalize the stock price of a company that has great volatility in earnings, even if the total result over a long period of time is quite strong. Chung of the University of Massachusetts noted in 2000 that managers at these companies are active in reducing their exposure to price swings. Consequently, these stocks tend to behave more like the rest of the equity market, thereby increasing correlation with the overall market. As a result, the investor would not gain the uncorrelated investment he expected. This hypothesis was further examined by Cerrahoglu and Mukherjee in 2003, and the results were consistent with Chung.

Long-Only

The second and most obvious way to obtain exposure to commodities is through direct ownership, hence the term "Long-Only." For most investors, the hurdles to individually buying a basket of commodities are far too high. At a minimum, an investor would need to own 15 to 20 commodities to achieve the needed diversification. A superior alternative is to buy an investment that is based on one of the major commodity indexes. For a number of years, there have been indexes whose performance is tied to the price changes of a diversified basket of commodities. These include the Dow Jones-AIG, CRB and the Goldman Sachs Commodity Index (GSCI). Through various mechanisms, these indexes choose a basket of commodities, effectively buying each. The performance of the index is based on the changes in price of the commodities in the index. The indexes attempt to select and weight the chosen commodities based on an approximation of the

individual commodity's importance in the world economy. For the purposes of our discussion, we will take a closer look at the GSCI. Each year, the commodities to be included in the GSCI are selected. The goal is to select a basket comprised of the "principal physical commodities that are the subject of active, liquid futures markets." These commodities come from the agricultural, metals and energy sectors. Each commodity is of significance to the world economy. Consequently, there is a high probability that if the U.S. economy experiences a period of inflationary pressures that can damage stock and bond markets, the index will appreciate in price.

The GSCI has been investable since 1992. The return during that time period has been a rather uninspiring 2.23% annually through August 2003. The index has been back-tested to 1972. When we include the inflationary period of the 1970s, we find that the commodity index performed much better, outperforming the S&P 500 Composite Index. Despite the unimpressive performance of the index over the last decade, the non-correlation argument holds up and incorporating a commodity index in a balanced portfolio improves the risk return profile.

The GSCI index, as mentioned earlier, is investable. A more convenient method might be to invest in a fund designed to track the GSCI or one of the other indexes. Two of the more well known fund companies involved are PIMCO and Oppenheimer. Oppenheimer has the longer track record, opening in 1997. The minimum for Oppenheimer is $1,000 and for PIMCO, $2,500.

Managed Futures

The third alternative in achieving an exposure to commodities is through managed futures. A logical question at this point would be "Why are we examining futures? I thought we were looking at commodities." The answer to this is simple but critical, so let's deal with it now. One of the basic philosophies of most major participants in the nanaged futures industry (known as Commodity Trading Advisors or CTAs) is that to achieve the full benefits of an investment in the commodity markets the investor must trade a broad spectrum of different commodities. Much like equity trading, the more markets traded the lower the volatility. Unlike stocks, however, the storage of physical commodities is problematic. Buy a diversified portfolio of stocks and simply leave them with your investment advisor or brokerage firm. The cost is minimal. A diversified portfolio of commodities is a different story. Trading barrels of crude oil requires a warehouse for storage. One contract is 1,000 barrels of oil. One contract of cotton is 50,000 lbs. Clearly, the infrastructure required to trade and store a diversified basket of physical commodities is a virtually insurmountable hurdle.

Futures solve this problem. To understand how, we must take a look at how futures work. Futures are simply a contractual agreement between two parties to buy or sell a commodity at a date in the future at a price agreed upon today. In reality, the purchase of a house is a futures contract. The buyer and seller agree on a price today, then set a closing date out in the future, usually 30-60 days. No matter what happens to the price of real estate between the dates the agreement is struck and closing date, the price stands. The futures involved in the managed futures industry are standardized. This means that the contracts have predefined quantity, quality and expiration dates, and are traded on fair and regulated exchanges. For example, one contract of corn is 5,000 bushels of a specific grade and quality of corn, and has contracts that expire quarterly. Corn trades on the Chicago Board of Trade.

FUTURES ARE SIMPLY A CONTRACTUAL AGREEMENT BETWEEN TWO PARTIES TO BUY OR SELL A COMMODITY AT A DATE IN THE FUTURE AT A PRICE AGREED UPON TODAY

Futures eliminate the need for storage facilities since the CTA never has to actually take possession of the physical commodity. In November, the CTA may buy ten contracts of corn with a contract expiration date of March. As long as the advisor sells that contract prior to March 15th, he never has to take possession. Consequently, the use of futures is critical to the advisor but has little to do with the actual concept of trading the underlying commodity. Managed futures participates in the price changes of commodities. Futures are simply a mechanism which allow accomplishment of this concept efficiently. Going forward, commodities and futures will be used interchangeably.

How and why, then, are profits made in trading futures. Let's discuss why first. The primary economic function of the futures market is to allow producers and users of commodities to reduce their risk arising from their exposure to price changes of the commodity. We will continue with the corn example. A farmer plants his corn crop in April and May. This corn will not be harvested until the fall. The farmer knows – and somewhat controls the cost to produce this crop – but has little control over the price he will receive in the fall. Most farmers as well as producers of other commodities are not in the business of speculating on price, but rather, on efficient production of the product. Most prefer to avoid the large swings in price from year to year that may result in a highly profitable year one year and a losing year the next. Public companies are particularly sensitive to profit volatility. Consistent profits are usually rewarded a higher stock price.

The futures market can be used to reduce this risk. The corn farmer in our example above can estimate his crop production, go to the futures market and sell an equivalent amount in the futures market several months forward. Once his crop is ready, he buys back his futures contract and sells his crop to the local grain elevator. The price of the future will approximately reflect the price of the physical or cash price. (There are reasons why the expiring futures price will reflect the cash price, but an understanding of this is not needed for this paper.) If the price of corn has increased, the farmer will lose money on the futures contract since he has to buy it back at a higher price, but he will make an equivalent amount more on the actual crop he sells to the grain elevator. Conversely, if prices drop between planting and harvesting, he profits from the futures con-

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tract since he buys it back at a lower price. This offsets the lower price he gets for the crop. As you can see, he has locked his price on the corn when he sells the contract back in the spring. This is known as hedging and is used by oil producers and refiners, metal mining companies, farmers of other crops and livestock, and many other entities.

In short, the farmer is looking to transfer the risk of the price of corn decreasing. Are there entities in the market that want to hedge the risk of the price of corn rising? There are many; examples are livestock and food producers. The logical expectation is that the two opposite entities, producers (natural longs) and consumers (natural shorts) would offset the risk to each other. How likely is this to happen in the real world? Actually, it doesn't happen very often. Suppose that weather-related problems in the mid-west cause an unexpected increase in the price of corn. Farmers and grain elevator operators who produce and own corn are likely to try lock in the new higher prices. Will the livestock producers increase their purchases to offset this new supply? Probably not. They have no new increase in demand. This increased supply must be met by investors, often in the form of trading advisors. These advisors accept the price risk through what is termed the "risk transfer service."

Proof that this risk transfer service exists is difficult. SEI performed a research study in 1994 to establish this fact. They postulated that if the risk was transferred from the producers and consumers to investors, then price volatility should be removed from the commercial process. To clarify, if the producer of a commodity that is a raw material can transfer price risk, then the final products derived from that commodity should be less volatile in price than the original commodity. One of the more obvious commercial processes is the "oil process," e.g., conversion of crude oil to unleaded gasoline. This is particularly appropriate since futures contracts exist on both products, facilitating analysis. The researchers postulated that if oil producers were hedging to reduce their risk, then the final products produced from oil, such as unleaded gasoline, would exhibit less price volatility than crude oil. Their research period extended from 1984-1993 and found this hypothesis to be true. The standard deviation of the price of crude oil was 36.92%, and 11.92% for unleaded. This was strong evidence that risk was indeed being transferred from this commercial process. SEI provides other examples in its paper from 1994, but we can conclude from this that there is evidence to back up the hypothesis.

Up to now, I haven't differentiated managed futures from the Long-Only strategy examined earlier. There is a critical difference. In managed futures, CTAs actively manage positions and can go short, benefiting when prices on commodities decline as well as when prices increase. Remember that in the Long-Only strategy, the investor always effectively owns the commodity and only benefits from price increases. The "risk transfer premium" is theoretically available for price decreases as well as increases. How does the CTA capture this premium?

PROFESSIONAL TRADING ADVISORS USE SOPHISTICATED MODELS TO BACK-TEST THE RISK MANAGEMENT STRATEGIES THAT ARE CRITICAL TO THE SUCCESS OF THE OVERALL TRADING SYSTEM

The most common and consistently successful methodology is known as trend-following. A significant percentage of worldwide commodities regularly experience sustained changes in price, or "trends." These trends can be up or down in price. Trend followers develop extensively researched and tested technical models to profit from a portion of that trend. The models are reactive in nature. They do not predict bottoms or tops, rather they calculate when the beginning of a trend has progressed far enough that the odds are that this will be a sustained trend. In actuality, profiting from trends is relatively simple. Minimizing losses when trends do not develop is where an advisor truly earns his money.

Advisors use a number of techniques to minimize the damage during periods of non-trending markets. One of the most common and effective is trading multiple systems or legging into trades. When the models indicate that a trend is beginning, a signal is generated to take a position. At this point, only a small percentage of the potential ultimate position is taken. If the trend continues to develop, a second position is taken, but only after the first is profitable. This continues until the entire position is transacted. If the trend fails to develop, then this is often recognized before all positions are taken, resulting in smaller losses. There are other techniques, but they are beyond the scope of this paper.

Risk Management Systems

Quite often, managed futures is associated with high-risk, non-professional futures speculation. A distinguishing feature between systematic, trend-following trading and less structured futures trading are the risk control mechanisms employed. Professional trading advisors use sophisticated models to back-test the risk management strategies that are critical to the success of the overall trading system. A major obstacle to acceptance by sophisticated investors and advisors when examining futures trading is the discomfort with a lack of full disclosure by trading advisors as to how their systems work. For obvious reasons, the investor would like a full explanation as to how the "black box" works. A trading advisor encounters some difficulty in adequately explaining risk control for several reasons. The most obvious is the proprietary nature of the model. Most trading advisors have spent years developing their model and struggle with adequately explaining it without giving away their life's work. Therefore, risk controls are explained in generic terms, sometimes compromising the unique nature of a given trading advisor's system. Nevertheless, the following explanation of the basic features of the risk management approach used by Strategic Capital Corporation should be helpful in understanding how risk is managed in our futures portfolios.

Loss Limits

As a trend-following trader, our models trigger an initial trade after a trend has begun.

Since we are a reactive trader, we miss the tops and bottoms. Our models predict trends that actually materialize slightly less than 50% of the time, so by design, we don't enter in a full position with the first indication of a trend. With the first trade, we may only take 25% of the position that will eventually be taken if the trend continues. When that first position is taken, a stop loss is immediately calculated that will result in a small loss, which is limited to less than 1% of equity. If the trend continues to develop, we will take additional positions incrementally. By definition, the earlier positions must be profitable before the subsequent positions are taken. Each additional position has a calculated "stop loss" that will result in the same loss as the first position. Usually, a false trend is confirmed before all positions are taken, thereby limiting losses in a trend that does not develop. These losses will usually amount to less than 1% of equity from initial positions.

Risk-Based Trading

The markets (futures contracts) an advisor trades have radically different risk profiles. For example, the expected daily change in value of a U.S. long bond contract is 1.67 times the expected daily change in value of a corn contract. Consequently, we would trade an equivalent additional amount of corn relative to the long bonds. This is dynamic, however, so these amounts are adjusted from trade to trade. The importance of this technique is that the trading advisor is taking an equivalent amount of risk in each contract, thereby minimizing sector concentration risks.

Non-Correlated Commodities

Building portfolios with commodities that have low price movement correlations is an important extension of risk-based trading and a very important diversification technique. When a trend-following advisor chooses a market to trade, the first consideration is that the particular market regularly has significant price trends. This, obviously, is necessary for a trend follower to make a profit, and, presumably, a significant return could be made over a long period of time by trading only that market. The obvious disadvantage is that all of the profit would be made during the brief periods when the market trends, and the rest of the time small losses would be taken.

For example, the Eurocurrency endured a series of losses from July 2001 through April 2002. From May 2002 to July 2002, significant profits were made, far in excess of the losses in the earlier period. Most investors prefer not to endure such a lengthy period of losses, no matter the eventual outcome. Adding the British pound to the portfolio helps little because of its high correlation to the Euro. Consequently, the trading advisor seeks "trending" commodities that are uncorrelated to decrease the chance that all markets in which he is involved experience losses at the same time. This may include selecting markets that do not trend as well but exhibit very low correlation. In our discussion of risk-based trading, we discussed sizing the trade in each market to make sure equal risk is being taken in each market. By combining the two techniques, we ensure that we trade enough of a market that has low volatility to benefit from its low correlation to more volatile markets.

Evaluating the Alternatives

Of the three options we have discussed, the Long-Only and Managed Futures strategies warrant comparison. We can quantitatively examine the two strategies. Representative hypothetical portfolios are established and performance is measured. The portfolio choices include domestic equities, foreign equities, real estate and a commodities allocation. For the analysis, our time period is January 1992 (when the GSCI index began) through August 2003. For domestic equities we used the S&P 500 composite index. For foreign equities, we used the Morgan Stanley World Index. The National Association of Real Estate Investment Trusts Index was chosen for the real estate portion. For commodities we chose the GSCI mentioned earlier versus the CISDM/MAR trend followers index, an index of CTAs that employ trend-following techniques to make trading decisions. Each strategy was examined alone and in various combinations. The combinations include a strategy consisting of 60% domestic equities, 25% foreign and 15% real estate. The second combination includes a commodities component. This portfolio has 50% domestic, 20% foreign, 10% real estate and 20% commodities. This combination is then compared with commodity allocation being the GSCI or the CISDM/MAR trend-following index. The results are summarized in Table 1 and Figure 1 (next page).

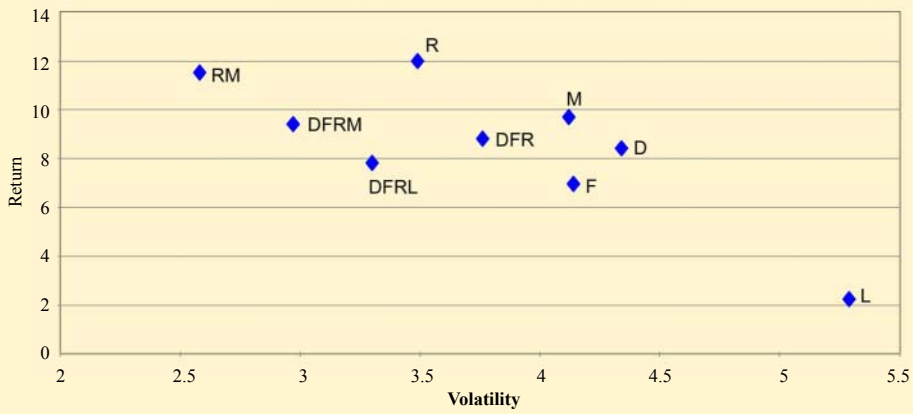
The Long-Only strategy did significantly improve the risk/return ratio for a portfolio but actually lowered the long-term return. Including managed futures, however, lowered the volatility by a greater amount, while increasing the return. In fact, the portfolios that included managed futures. in combination with other sectors, were the least volatile of all portfolios. The success of the managed futures portfolios illustrates a very important advantage over the Long-Only strategy. As we mentioned before, the Long-Only indexes performed well in the 70s and 80s when inflation was high. During the 90s, when inflation was well in check, the Long-Only indexes lagged. Managed futures, with its ability to profit when markets are appreciating or depreciating, provides more consistent returns.

Given such clear evidence of the superiority of managed futures, why does any controversy

Table 1.
Portfolio (January 1992 through August 2003)

Portfolios	Return	Volatility
Domestic (D)	8.42%	4.34%
Foreign (F)	6.97%	4.14%
Real Estate (R)	12.00%	3.49%
Long Only Commodities (L)	2.23%	5.29%
Managed Futures (M)	9.71%	4.12%
Domestic/Foreign/Real Estate (DFR)	8.82%	3.76%
Domestic/Foreign/Real Estate/Long-Only (DFRL)	7.81%	3.30%
Domestic/Foreign/Real Estate/Managed Futures (DFRM)	9.71%	2.97%
Real Estate/Managed Futures 50/50 (RM)	11.52%	2.58%

Figure 1.
Portfolio (January 1992 through August 2003)



D	Domestic Stocks	R	Real Estate	L	Long-Only (GSCI)
F	Foreign Stocks	M	Managed Futures		

exist? There are several common investment philosophies that seem to explain this.

Indexation

Financial consultants, particularly in institutional portfolios, focus on indexing portfolios. An equity manager, for example, is compared to his appropriate index. A large cap manager would be compared to the S&P 500 composite index. If the manager cannot outperform the index, then he is often relieved of his duties. Since the index itself can be replicated with lower expense, investors find it not worth the expense to employ a manager. The GSCI is a similar index. The performance of the managers employed can be compared to the index to determine their effectiveness. The GSCI and the S&P 500 are passive indexes, meaning that there are no active decisions being made regarding positions. The returns are inherent in the market and require no trading skill. There is no true passive index for managed futures. By definition, managed futures employ trading skill. The MLM Index has been touted as a passive index, but in actuality it employs active decision-making and is not a true passive index.

Fees

Investors tend to resist the fees charged by the managed futures industry. This is particularly prevalent in the institutional investor base. Index-based commodity funds tend have lower expenses and fees due to the lack of active management. CTAs are required to publish their returns net of fees, however.

Acceptance

Managed futures have not been totally accepted by the investment community. This is due to a number of reasons. The futures industry in general suffers from a perception of high risk. This perception includes managed futures, despite the sophisticated risk management tools used by CTAs.

Trading advisors tend to be smaller than equity and bond managers. The largest advisor has less than $10 billion under management while the top ten mutual fund companies all manage in excess of $100 billion. Consequently, the managed futures industry lacks the marketing muscle and sponsorship of major funds. The impressive returns of managed futures during turbulent and tranquil economic times make it the choice over the more limited Long-Only strategy. With a modest amount of leg work, a financial advisor can find a CTA with whom he is comfortable. There are numerous sources available for research, including International Traders Research in La Jolla, CA, and Managed Accounts Reports, LLC in New York. Another source is the fund-of-funds route. A number of companies aggregate CTA programs. For the most part, due diligence is performed prior to selection for the fund-of-funds program. A negative to this is that these vehicles generally require a rather large initial investment. Despite these obstacles, many advisors have found it worth the effort. ■

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