

**The Structure, Conduct And Performance
Of Publicly Traded Commodity Funds:
A Review**

By

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ABSTRACT

In this paper, a comprehensive review of more than a decade of research on the commodity funds is being provided. There is overwhelming evidence indicating that commodity funds are low return, high risk investments. Research also has shown that they are poor hedges against inflation. Results also indicate that commodity funds exhibit skewness thereby offering investors potential opportunity for large gains. Research also seems to suggest that they are not valuable additions to stock or bond portfolios of investors in terms of enlarging the efficient frontier. With respect to using past data to predict future performance, there is evidence that past risk measures of standard deviations can be used to predict future risk measures of standard deviations. Furthermore, funds with low standard deviations in the past produce superior performance in the future as shown by higher Sharpe measure of performance. There is also research support that shows that managers who have managed between 1 to 3 funds do well, and successful past track record of general partners contributes to their future success. Furthermore, higher than average fees lead to higher than average fund return !

The Structure, Conduct and Performance of Publicly Traded, Professionally Managed

Commodity Funds: A Review

Introduction

Publicly traded, professionally managed commodity funds are very popular among investors. They are important investment vehicles for both individual and institutional investors. At the end of 1992, there were well over 200 publicly traded commodity funds which together managed more than \$20 billion in assets. The amount of money invested in all managed commodity investments, including private funds, at the end of 1994, amounted to a staggering \$23 billion!

Given their importance, commodity funds have attracted the attention of researchers in finance for well over a decade. However, there has been no comprehensive review of literature on this important topic. This paper fills that gap. In this paper, a review of the nature, characteristics, structure, conduct and performance of publicly traded commodity funds is provided. This review addresses several important issues and covers the gamut of commodity fund performance with respect to return and risk, whether commodity funds can be used as hedges against inflation, and whether they help investors by providing diversification benefits or enlarging the efficient frontier of the investment opportunity set. In addition, reasons are given for their lack-luster performance and their popularity in spite of it. A brief review of current regulations governing the commodity funds and proposed regulations to stream-line their operations are also presented.

This paper is organized as follows: section I identifies the characteristics of commodity funds. The history of commodity funds, commodity funds trading strategies, commodity fund fee structure, data on commodity funds, and federal disclosure regulation governing the operation of commodity funds are presented in sections II through VI. Section VII details the record on commodity fund performance, including return and risk measures, the value of commodity funds to investors, the value of commodity funds as hedges against inflation, and the role of commodity funds in enhancing the efficient frontier of the investment opportunity set. Section VIII discusses the ability of past commodity fund performance

measures to predict future returns. Possible reasons for the poor performance of commodity funds, viz. high commissions and management fees, the theory of self-selection, and the pool operators' ability to manipulate the reported numbers appear in section IX. The reasons for the popularity of commodity funds in spite of their shortcomings are presented in section X. Some proposed regulatory changes appear in section XI. The paper concludes with a section on Summary and Conclusions (XII).

I. Characteristics of Commodity Funds

Publicly traded, professionally managed commodity funds provide investors with one of the few possible outlets for investing in the commodity futures markets. Commodity funds, much like bond and stock funds, are professionally managed funds that allow investors to invest in and participate in the gains or losses incurred by a diversified portfolio of securities. However, referring to these instruments as "commodity funds" may be somewhat misleading. The array of assets that are included in such funds is usually far more diverse than a collection of commodities or commodity futures. Besides investing in commodity futures, such funds also invest in "financial instruments, futures on financial instruments, foreign currencies and futures and forward contracts on foreign currencies" (Elton, Gruber and Rentzler, 1987). As a matter of fact, certain commodity funds invest entirely in interest rate futures or currency futures contracts. Furthermore, fund managers take both short and long positions in the futures markets.

All commodity funds are organized as limited partnerships. The general partner, or commodity pool operator, is often an established brokerage firm. Trading execution is arranged by the pool operator. In instances where the general partner is not associated with a brokerage firm, a trading management firm is commissioned to make trades. Whatever the situation, all trading decisions must be made by a registered commodity trading advisor. Many funds use more than one trading advisor, with each advisor being responsible for managing an established percentage of the fund's total worth. In funds with multiple trading advisors, the major decisions are usually made by a trading manager, who is assisted by as many as fifteen other traders. Instead of employing their own commodity trading advisors, certain funds will enlist the services of independent commodity advisory firms. Commodity trading advisors must be licensed through the Chicago-based National Futures Association, which requires applicants to pass a fairly easy examination

and prove that they have never committed a felony. However, this self-regulating commission does not attempt to evaluate the trading ability of the individual traders. Therefore, a commodities traders license is not always an indication of a successful trader (Epstein, 1992).

The minimum investment in a publicly traded commodity fund can be as low as \$2,000, although many funds require a much larger investment. Certain funds require a minimum investment as high as \$100,000. Many of the existing commodity funds are very small. The average commodity fund has only \$10 million in assets under management, and, in 1992, only six publicly traded commodity funds managed over \$50 million of worth of assets. Almost all commodity funds issue their shares on a closed-end basis. According to Arthur F. Bell, the manager of a Baltimore-based accounting firm for commodity traders, commodity funds opt to issue shares on a closed-end basis for marketing reasons. Bell comments that "firms prefer to bring out new funds the way Detroit turns out new cars. Sometimes, they may be touting a trendy approach like specializing in currencies, a new commodity trading advisor who happens to be hot, or a funds with a different gimmick." However, as innovations develop within the commodity funds market, open-ended commodity funds may become more readily available. In late 1994, BZW Funds launched the BZW Commodities Trust fund, the first publicly traded open-ended commodities fund (Investors Chronicle, 1994).

II. History of Commodity Funds

Investment in commodity funds has grown significantly since 1978. Before that year, there were only three publicly traded, professionally managed commodity funds. By 1985, that number had grown to 94, and, by the end of 1988, there were over 130 publicly traded commodity funds in existence (Elton, Gruber and Rentzler, 1990). By the end of 1992, there were over 200 publicly traded commodity funds with over \$2 billion worth of assets under management (Epstein, 1992). The amount of money invested in all managed commodity investments, including private funds was nearly \$11 billion in 1992 and increased to \$23 billion by the beginning of 1994 (Burns, 1994).

Professionally managed, publicly traded commodity funds evolved in the mid 1970s from private commodity pools. The first managed futures fund was a private pool started by financial planner Keith

Campbell in 1971. Because of the enormous gains witnessed in commodities markets between 1972 and 1974, Campbell's pool gained the attention of the investment community. Campbell soon introduced several other commodity pools. By the end of 1974, Campbell decided to offer a professionally managed commodity fund to the general public. Although many of the major underwriters were wary of Campbell's plan, he finally gained the support of Ralph Klopfenstein, the president of Heinold Commodities. In January of 1975, Heinold established the \$6.5 million Pro-Com Fund, the first publicly traded professionally managed commodities fund. However, the Heinold fund was not an instant success. Beginning with an 18% drop in value in early 1976, the fund's worth began to spiral downward until it had lost over 50% of its value in early 1978. However, in mid-1978, the commodities market began to reassert itself, and a reorganized Pro-Com fund was able to achieve appreciable results. As a result, the managed futures market began its maturation process. By the end of 1978, six new funds had gone public. The period between late 1978 and early 1982 was a period of new highs and frequent trading for most commodity futures contracts. As a result, it was also a period of enormous growth for publicly traded commodity funds.

Several factors contributed to the growth of commodity funds. First, the offering of new futures contracts, such as energy, interest rate, stock index, and currency futures, helped generate interest in the managed futures industry. A second important factor in the growth of commodity funds was regulation by the Commodity Futures Trading Commission (CFTC) and the National Futures Association (NFA). Although regulations are often disdained by the business world, government intervention was welcomed by most participants in the youthful managed futures industry. These regulations helped add credibility to the commodity fund industry and allowed investors and stock brokers to recognize commodity funds as viable investments. Fueled by technological advances and developments in computerized trading systems, commodity funds went through another period of growth between 1986 and 1988. Another major boost for the commodity fund market occurred in 1987 when the stock market crashed. In contrast, the value of publicly traded commodity funds increased over 34.5% during 1987. As a result, many investors became interested in commodity funds as a means of hedging decreases in the value of equity investments (Jobman, 1992).

However, commodity funds have recently been falling out of favor with many investors. Even though managed futures seemed to outpace the stock market in 1990, returns on publicly traded commodity funds were near zero in 1991 and 1992. Commodity funds began facing more difficulties in 1994. However, unlike 1987 and 1990, commodity fund returns were dismal throughout most of 1994. The average commodity fund declined over 1% during 1994 and some funds lost as much as 75% of their value. Investors began questioning the ability of commodity funds to insure their debt and equity investments. While the amount of money invested in commodity funds doubled between 1991 and 1993, the commodity fund industry grew by a meager 2% in 1994. Furthermore, commodity funds began losing their institutional sponsorship. Losses like these have created a great deal of confusion regarding the future of the commodity fund industry (Burns, 1994).

III. Commodity Fund Trading Strategies.

Commodity fund trading advisors generally make trading decisions based on technical analysis. According to David Stahl, a follower of commodity fund performance, "funds tend to follow trends" and "use mathematical formulas that signal a buy when a price begins to rise and short sale when it begins to fall" (Epstein, 1992). However, there are still a handful of advisors who use fundamental analysis when making trading decisions.

The shortcomings of technical trading systems became most apparent in 1991 and 1992. Throughout most of 1991 and 1992, equity and bond markets flourished, yet commodity funds only managed a 4.8% gain in 1991 and suffered a 1.8% loss in 1992. However, 1991 and 1992 should have been very lucrative years for commodity funds since technical trading is supposed to be most lucrative when markets are volatile. Throughout most of 1991 and 1992, there was considerable variability and upheaval in the futures markets. However, technical traders were not able to take advantage of the tumult in the futures markets. Paul Tudor Jones, a trading advisor who specialized in currency and Eurodollar futures, blamed the poor performance of commodity funds in 1991 and 1992 on trend trading and technical analysis. Jones criticizes computerized trading since he believes that computers fail to foresee such vital fundamental factors as interest rate cuts and exchange rate upheaval. Those fundamentalists, such as Paul Jones, George

Soros, and Thomas Shanks, who were able to incorporate these factors into their trading decisions during 1991 and 1992 were able to earn returns substantially above those of technical traders. A prime example occurred in September of 1992. Despite reoccurring rumors of the devaluation of the British pound, many trading advisors continued to follow technical trends and buy the pound. However, Thomas Shanks, president of Hawksbill Management, sold the pound short and purchased the German mark on fundamental principles. As a result, The Hawksbill funds were insulated from the disastrous September that plagued most other funds (Schneeweis and Greising, 1992).

IV. Commodity Fund Fee Structure

Commodity fund costs can be separated into three categories: general fees, commissions, and incentive fees. General fees can be classified as either management fees, offering expenses, or accounting costs. Management fees, which usually run between 1% to 6% of assets annually, are often the most substantial cost of investing in commodity funds. Most funds charge investors two types of management fees. First, management fees are charged by the individual trading advisors and are based on the amount of funds under the supervision of each advisor. Secondly, management fees are also charged by the fund operator according to the total assets under management and are used to cover basic operating expenses. Generally, funds charge investors a pro-rata portion of the initial offering expenses. These offering expenses commonly amount to 1% of the investment. Accounting costs, which cover all of the expenses related to preparing monthly reports, usually cost investors 1% of their investment annually.

Commissions can be divided into initial selling commissions and trading commissions. Selling commissions, which generally run between 1% to 3% of the initial investment, are charged to investors when they invest in the fund and when they extract their investment from the fund. However, there has been a trend among commodity fund operators to waive such costs on the front-end and to only charge such commissions when an investor extracts their funds within two years of their investment. General commissions are merely the charges that trading advisors must pay in order to have their orders filled. In the past, commissions on commodity transactions have averaged between \$40 to \$80 per trade. However, increased competition in the commodity industry, as in all financial industries, has caused transaction

commissions to be reduced by over 50%. Most commodity funds do not directly charge their clients per-trade transaction costs but, instead, charge them a yearly fee, regardless of the number of trades made by the fund. Research has shown annualized commissions to run as low as 2.5% and as high as 10% of assets under management. Even though commissions on commodity transactions are generally lower than those on stock transactions, commodity funds tend to trade very frequently and incur substantial annual trading costs.

The final type of commodity fund costs, incentive fees, are paid to both trading advisors and pool operators and vary according to the trading profits earned by the fund and/or the individual advisor. Most advisors and pool operators charge incentive fees between 15% and 25% of realized profits. When funds are advised by more than one trading advisor, the individual advisors are usually paid incentive fees based on their individual performance, not the overall performance of the fund. Therefore, investors may find themselves in the ironic situation of having to pay incentive fees to trading advisors even when the fund as a whole is performing poorly.

The exact structure of commodity fund fee structures varies considerably across different funds. According to a 1992 Wall Street Journal article, the total fees and commissions on commodity funds averaged between 17% and 19% of investor's equity, not including the profit-based incentive fees. In comparison, stock funds usually charge fees and commissions equal to 1.5% of investor's equity, and bond funds normally charge fees and commissions that are less than 1% of their equity. Among public funds, those funds that charge lower than average transaction fees will almost always require a larger initial investment.

Differences in transaction charges can have a substantial effect on the net income received by shareholders. In funds with below average transaction costs and fees, investors can break even if the fund generates annual trading profits as low as 6.8%. However, in the case of the costlier funds, which are more accessible to small investors, the trading advisors may have to generate trading profits in excess of 17% just to prevent investors from losing money. However, there has recently been a trend among all commodity funds toward lower fees. According to Mort Bratnz, fund follower for the Managed Accounts Report, several new funds have been charging fees and commissions as low as 11% of investor's equity. However,

these less expensive funds still generally require a higher than average investment (Angrist and Tanouye, 1992).

V. Data on Commodity funds

Investors have several means of tracking the performance of commodity funds. The Norwood Index, which is prepared by Stark Research Inc. , is a broad based index of the performance of publicly traded commodity funds. Data on the Norwood Index appears occasionally in the Wall Street Journal (Wall Street Journal, August 21, 1991). Data on individual commodity funds can be found in the Managed Accounts Report. This periodical publication has tracked the performance of individual commodity funds on a monthly basis since 1979 (Epstein, 1992). Besides listing returns on individual funds, the Managed Accounts Report also compiles index data for publicly traded funds, private commodity pools, and individual commodity trading accounts (Schneeweis, Savanayana, and McCarthy, 1991). The Managed Accounts Report also prepares two indexes of commodity trading advisor performance. The value of the first index is based on the performance of 25 selected commodity trading advisors, and the second index is based on the performance of six selected commodity trading advisors (Wall Street Journal, May 5, 1992).

VI. Federal Disclosure Regulation Governing the Operation of Commodity Funds

CFTC code 4.31a requires that any private commodity pool that is soliciting funds from clients in an attempt to go public must prepare a written disclosure document for prospective investors. In this disclosure document, both the commodity trading advisor and the commodity pool operator must provide return data for at least three years preceding the date of the disclosure document encompassing all pools managed by the pool operator and all accounts traded by the trading advisor. Also, CFTC requires commodity funds to report performance figures three months before the date of the disclosure document. Furthermore, the prospectus must also document all applicable fees and commissions that will be charged by the fund after the initial public offering. However, even though the prospectus must provide the new fee schedule, the trading advisors do not have to restate private returns in terms of the new public fee schedule, which is generally much higher than the previous private fee schedule (Edwards and Ma, 1988).

VII. The Record on the Performance of Commodity Funds

A. Return and Risk Performance and the Value of Commodity Funds to Investors

Historically, there has been a tremendous variation among the returns on individual commodity funds. According to Epstein (1992), only a few commodity funds were able to generate large returns, while most performed very poorly. Returns on commodity funds consist of increase in net asset value plus cash distribution to shareholders, less expenses. When analyzing the returns on commodity funds, it is important to differentiate between fund's trading profits from its actual return to investors. The substantial fees charged by commodity funds cause the actual net return to investors to usually be much different than the gross trading profits. All commodity funds provide shareholders with monthly reports tracking the performance of their investment. Epstein (1992) found that the average commodity fund, between 1979 and 1991, yielded 5.4% per year, nearly 3% less than risk-free yield on Treasury Bills and over 10% less than the 16% return on the S&P 500 during the same time period. During this time, over 200 different funds were in existence; however, only 75 were in operation for over five years. Of these 75 commodity funds, only 56 had positive average yearly returns. Certain funds were able to exist for over five years with annual losses approaching 20%. On the other end of the spectrum, only 15 of the 75 commodity funds analyzed by Barron's had average net annual returns greater than 12%. The most successful of these funds yielded average yearly returns of 24.22% (Epstein, 1992).

The nature of commodity futures markets ensures that few funds will ever be extremely successful. Since speculating on futures contracts is a zero-sum game, the average return on commodity futures contracts must be 0%, presuming the commodity trading advisors are equally likely to trade short or long contracts. Unlike the stock market, where beating the market by two percentage points will achieve an enviable return of 18%, beating the commodities market by 2% would yield a disastrous 2% return ! Therefore, it is obvious that commodity trading advisors must be exceptional in order to produce returns that rival those found in other financial markets.

The Value of Publicly Traded Commodity Funds to Investors was investigated by Elton, Gruber, and Rentzler (1987). In their path breaking article, "Professionally Managed, Publicly Traded Commodity Funds," the authors investigated whether or not commodity funds offer any real value to investors. The primary data set used in their paper was the monthly rates of return on all publicly traded commodity funds during a six year period from July 1979 to June of 1985. Monthly returns consisted of any cash distribution to shareholders as well as the increase in the net asset value of the shares. In the event that a fund dissolved midyear, the authors assumed that the proceeds received at liquidation were invested in the average commodity fund. At the beginning of each year, funds were reallocated among all existing commodity funds. The authors presented both monthly arithmetic mean returns and geometric mean returns for the commodity funds. For comparative purposes, geometric monthly returns and standard deviations for investments in common stocks, small-cap common stocks, long-term corporate bonds, long-term government bonds, T-Bills, and the Shearson Bond Index, a diversified portfolio of intermediate-term government and corporate bonds, were also presented. The average returns for the aforementioned investments were calculated for both a six year sample period that coincided with the sample period for the commodity fund measures and for a 25 year sample period.

To ascertain whether or not commodity funds are attractive individual investments, the authors compared the risk/return profile of commodity funds to the risk/return profile of the other investment vehicles. The overall yearly average geometric return on the commodity funds during the six year sample period was -0.07%. Furthermore, the yearly geometric mean returns were negative in two of the five years and were never greater than 12%. The probability of selecting a commodity fund with a positive return in any one year was 56%, and the chance of selecting a commodity funds with a return in excess of the risk free rate was 46%. As can be seen, the relative performance of these funds was fairly poor during the sample period.

In addition, the authors also found that commodity funds were far riskier than the other investment classes. With a standard deviation of monthly returns equal to 11.3%, commodity funds were twice as risky as stock funds and over three times as risky as the bond funds. Furthermore, the additional risk was not

accompanied by any additional return. Thus, the authors reached the conclusion that "both risk and return considerations... suggest that commodity funds are not a useful stand-alone investment."

Elton, Gruber, and Rentzler (1990), performed another study of commodity funds to see if their initial findings still held true. In this study, the authors analyzed the performance of commodity funds using a larger nine year sample period from 1980 to 1988. Unlike their previous study, the authors used the calendar year for each period instead of the July to June year. The authors presented two types of yearly performance measures. For their first return measure, they assumed that the dissolution value of dissolved funds was equally invested in all remaining funds, as was the case in their earlier study, for the remainder of that year. The second type of return calculations assumed that the dissolution value of dissolved funds was invested in T-Bills until the beginning of the next calendar year. In both cases, all money was reallocated at the beginning of the next year into existing funds. In the first case, the average yearly returns were 2.26%, and, in the second case, the average yearly returns were 2.36%. This is in comparison to yearly average returns of 14.88% for common stocks, 8.64% for T-Bills, and 11.4% for the Shearson Bond Index. In terms of risk, the average annual standard deviation of monthly returns for commodity funds was 10.4%. In comparison, the average standard deviation of monthly returns for common stocks, T-Bills, and the Shearson Bond Index were 4.91%, 0.24%, and 2.38% respectively. From the use of an extended time period, several points were clear. First, the risk and return measures for commodity funds were still worse than those from comparable investments. Second, even though the yearly returns on commodity funds improved over time with 3.64% in the last three years of the sample period compared to 1.56% for the first six years, their returns were still far less than the risk-free rate of 8.64% that could be earned on T-Bills. Furthermore, there was no pattern of individual funds improving over time. Market forces seemed to play the most important role in determining the performance of individual commodity funds.

During the nine year sample period, 40 commodity funds were forced to dissolve. The dissolution of a fund can usually be attributed to two reasons. First, the partnership agreement found in most funds includes a clause that automatically initiates dissolution if the net asset value per share drops below a certain level. A second reason for fund dissolution would be a decline of total funds under management below a required level due to the withdrawal of funds. Since the withdrawal of funds from commodity

funds have a very high correlation with fund performance, it is safe to assume that poor performance is the driving force behind fund dissolution in either case. Only three funds ever dissolved with a net asset value per share above the issuance price, and the average dissolved fund had an average annual loss of nearly 20%.

In addition, the authors also used skewness as a relative performance measure; this was done in response to the claim that commodity funds offer an opportunity for larger gains than alternative investments even though they have greater risk and lower returns. If in fact, the returns on commodity funds are positively skewed, there may be opportunities for very large returns, even if the average returns are very low. However, during the nine year sample period of this study, the authors found only two years when the returns on commodity funds were positively skewed. In comparison, the returns on common stock were found to be positively skewed in all nine years of the sample period.

Schneeweis, Savanayana and McCarthy (1991) analyzed the performance of publicly traded commodity funds along with private commodity pools and individual managed accounts. They used monthly compounded returns of the Commodity Funds Index. For comparative purposes, they used S&P 500, small capitalization stocks, long-term government bonds, and long-term corporate bonds from Ibbotson and Sinquefeld. Data for the average monthly returns, standard deviations, minimum/maximum returns, and skewness were presented for the four various managed commodity indices and the four comparative indices. The authors found that the average monthly returns for Individually Managed Commodity Trading Accounts CTA-Equal Weighted Index (2.14%), the CTA-Dollar Weighted Index (1.87%) and the Pools Index (1.57%) were greater than the average monthly returns for the S&P 500 (1.37%), the small cap stock index (1.45%), the government bond index (1.03%), and the corporate bond index (1.07%). The public commodity funds, which are the most popular managed commodity investment vehicles, yielded the lowest average monthly returns of all investments at 0.8%. The standard deviation of returns on all four of the commodity indices were much greater than the standard deviation of returns for the stock and bond indices. The respective standard deviation of returns for the CTA-Equal Weighted Index, the CTA-Dollar Weighted Index, the Pools Index, and the Funds Index were 8.00%, 7.36%, 6.70%, and 6.48%. The respective standard deviation of returns for the S&P 500, the small-cap index, the government bond index, and the corporate bond index were 4.85%, 5.75%, 4.25%, and 3.91%. Obviously, the risk

levels of managed commodities are far greater than the risk levels of debt and equity investments.

Therefore, "when compared strictly on a return/variance basis, CTA-Equal Weighted, CTA-Dollar Weighted, Pools, and Funds do not necessarily provide attractive investment vehicles as stand-alone investments relative to the comparison stock and bond indices."

Even though managed commodities were clearly found to be much riskier than alternative investments, many investors and fund managers still contend that managed commodity investments are valuable investments since they offer the possibility of large returns, despite higher levels of risk. Thus, the authors also calculated alternate performance measures for the eight indices. First, they examined the maximum/minimum monthly return ratio for the different asset classes. The authors found that the maximum/minimum ratios of all four commodity indices were greater than either of the stock indices. They also found that both CTA indices had greater maximum/minimum ratios than any other investment class. Next, the authors calculated the skewness of returns for all of the asset classes. The authors found that all four managed commodity indices exhibited positive skewness. They also found that the equity indices exhibited negative skewness. Furthermore, even though the debt indices demonstrated slightly positive skewness, they were much less positively skewed than any of the managed commodity indices. Thus the authors reached the conclusion that "when other performance criteria, besides return/variance are considered, CTA and Pool investments as well as Funds may be regarded as rational investments on a stand-alone basis."

B. Do Commodity Funds Provide Hedge Against Inflation ?

Bodie and Rosansky (1980) and Bodie (1983) had shown that long positions in commodity futures are negatively correlated with the Consumer Price Index, and, as a result, can effectively protect investors against changes in the overall price level. However, it is important to remember that publicly traded commodity funds do not invest exclusively in long commodity futures positions. Such funds invest in numerous other securities, including spot and futures positions in financial instruments and currencies. Furthermore, commodity funds assume both short and long positions in commodity futures. Therefore, there is no reason to believe that such funds protect investors from inflation or even intend to. The study by

Elton, Gruber, and Rentzler (1987) supports this notion; they discovered that the correlation coefficient of commodity funds with inflation has historically been close to zero, indicating the lack of a definable relationship between the two variables. Therefore, they refuted the claim that commodity funds serve as an effective hedge against inflation.

Elton, Gruber and Rentzler (1990) also tested the ability of commodity funds to hedge against changes in the price level. For commodity funds to hedge against inflation, the correlation between the funds and inflation must be positive. However, as in all of their earlier studies, the authors found commodity funds to have a negative correlation with inflation, meaning that commodity funds are inadequate hedges against changes in the price level.

C. Do Commodity Funds Enhance Portfolio Returns or Provide Diversification Benefits ?

Elton, Gruber and Rentzler (1987) examined whether or not commodity funds should ever be included in a portfolio of common stocks and/or bonds. To determine whether or not an investor should include commodity funds in their portfolios, the authors used the following formula:

$$(1) \{R_c - R_f\} / S_c > \rho_{cp} \{(R_p - R_f) / S_p\}$$

where R_c is the expected return on the commodity fund, R_f is the risk-free rate of interest, S_c is the standard deviation of returns for the commodity fund, R_p is the expected return on the debt/equity portfolio, S_p is the standard deviation of returns for the debt/equity portfolio, and ρ_{cp} is the correlation coefficient between the commodity fund and the debt/equity portfolio. As can be seen, the left-hand side (LHS) is nothing more than the Sharpe performance measure for commodity funds. The right-hand side (RHS) is the minimum return per unit of standard deviation that the commodity fund must earn to be included in the portfolio of stocks and /or bonds, viz. required Sharpe ratio. Thus, as long as the commodity fund's Sharpe ratio (LHS) is greater than its required Sharpe ratio (RHS), commodity funds will be a valuable addition to a well-diversified portfolio of common stocks and bonds. The authors calculated all of the other variables first and subsequently solved the equation for the break-even rate of return (R_b); this is the rate of return that the commodity fund must earn in order for its Sharpe ratio to be greater than the required Sharpe ratio.

The authors first attempted to calculate the correlation coefficient between commodity funds and a portfolio of debt securities and common stocks. The authors found that the correlation coefficient between commodity funds and both stocks and bonds was close to zero. The correlation coefficient between commodity funds and common stocks was negative in two of the six years and positive in four of the years. The authors arrived at an average correlation coefficient of -0.121 between commodity funds and stock funds and a correlation coefficient of -0.003 between commodity funds and bond funds. The authors used the historical figure of 11.3% as the standard deviation of returns for commodity funds; 8.5% was used for the risk-free rate of return. To arrive at the mean return and standard deviation of returns for the debt/equity portfolio, the authors calculated data for four different portfolio structures. In the first scenario, they used the historical rate of return and standard deviation of returns for a portfolio entirely composed of common stocks viz., S&P 500 over the six year sample period. In the second scenario, the authors also used a portfolio of 100% common stock, but they used the risk and return data observed during the 25 year sample period, instead of the six year sample period. In the third scenario, the authors used the returns and standard deviation of returns for a portfolio which comprised of two-thirds common stock viz. S&P 500 and one-third debt securities viz. Shearson Bond Index during the six year sample period. In the fourth scenario, the authors used the same weights as in the third scenario, but they used the risk and return measures that corresponded with the 25 year sample period. Therefore, the authors arrived at four different annual break-even rates of return for the commodity funds. These estimates ranged from 6.9% to 8%, with an average of 7.5%. To put this in perspective, an individual commodity fund only had a 42% chance of returning over 7.5% in a year. The chance of the mean rate of return on all commodity funds being over 7.5% was less than 6%. Furthermore, these returns are merely gross returns and must be restated in terms of the yield that would be realized by investors after paying all transaction costs and managerial fees. As we observed earlier, these costs and fees are substantial when compared to the costs and fees on debt and equity funds. Even though per-unit transaction costs on futures contracts and commodities are low, trading is very frequent. As a result, commissions can run as high as 10% of the total investment per year. Furthermore, the management fees, which are related to both fund performance and fund size, are much higher for commodity funds than for other funds. Furthermore, since performance fees are based on

monthly returns, these fees can be high even when the overall annual performance of the fund is poor. With estimated management fees of 8.5% per year and transaction fees of 10.7% per year, the average commodity fund would have had to yield over 28% per year for the investments to be valuable additions to stock and bond portfolios. Therefore, the authors concluded that the average commodity fund has no value as a stand-alone investment or as an addition to a well-diversified portfolio of stock and/or bonds.

Elton, Gruber and Rentzler (1990) again examined the claim that commodity funds allow investors to enlarge the efficient frontier of their stock and or bond portfolios. First, for a commodity fund to enlarge a portfolio's efficient frontier, the rate of return must be greater than the risk-free rate of return as long as the correlation between stocks and commodity funds is greater than zero; if the correlation coefficient is less than zero, the return on commodity funds could be less than the risk-free rate and still enlarge the efficient frontier. In earlier studies, the authors found that the correlation between stocks and commodity funds was slightly positive. However, the returns on commodity funds were well below the risk-free rate during the sample period.

Schneeweis, Savanayana and McCarthy (1991) examined whether or not CTAs, commodity funds, or commodity pools would expand an investor's efficient frontier and, thus, be a valuable addition to a portfolio of stocks and/or bonds. To determine whether or not any of the managed commodity investments should be added to a stock and bond portfolio, the authors decided to solve for the required break-even return and compare it to the actual observed returns on such instruments. The authors used two formulas to solve for the break-even rate of return. The first of the two formulas assumed a risk free rate and is composed as follows:

$$(2) \text{ Break-even } R_c = \{(R_p - R_f)/S_p * \rho_{cp} * S_c\} + R_f$$

where R_c is the required return on the commodity fund, R_p is the return on the stock/bond portfolio, R_f is the risk-free rate of return, S_p is the standard deviation of returns for the stock/bond portfolio, ρ_{cp} is the correlation coefficient between the particular commodity fund and the particular stock/bond portfolio, and S_c is the standard deviation of returns for the commodity fund. The second formula drops the assumption of a risk-free rate and is defined as :

$$(3) \text{ Break-even } R_c = (R_p / S_p) * \rho_{cp} * S_c,$$

where the variables are the same as in the previous equation. Since the authors had already compiled the risk and return data for use in previous sections, they only had to calculate the correlations between the eight different investment classes. The correlation coefficients between the commodity indices and the stock and bond indices were always similar and close to zero, ranging between -0.07 and 0.09. In addition, the correlations between the various commodity funds were very strong and were never less than 0.80. The authors used all of the available variables to solve for the differential break-even return (the actual return less than required rate of return) for both equations. The authors calculated the differential break-even return for each of the four commodity indices when added to each of the four alternate indices. A greater differential break-even return would indicate a better addition to an existing portfolio. When the risk free rate was ignored, the authors found that all managed commodity vehicles had large and positive differential returns. However, under the more realistic assumption of an existing risk-free rate, the results were slightly different. The authors found that CTAs and Funds offered the greatest marginal benefit to stock and bond portfolios. However, the Funds index had differential returns near zero, indicating that they offered little value as an addition to existing portfolios.

VIII. Can One Use the Past Performance of Commodity Funds to Predict Future Performance ?

The CFTC requires funds to present past performance data in the form of prospectuses; it seems that they feel that a relationship exists between the private and public performance of particular commodity funds. However, this belief is refuted by the theory of efficient markets. This highly regarded theory states that "current prices reflect all publicly-available information" and, therefore, "there is nothing one can know today that will be useful in predicting future prices" (Edwards and Ma, 1988). According to this definition, if markets are efficient, the only factor in determining price changes and returns would be the arrival of new information. Since new public information can not be predicted, no amount of past information in a prospectus can possibly allow investors to predict future performance. The predictive ability of past returns is even further discredited when one recounts that over 80% of trading advisors rely solely on technical

trading systems. However, if markets are not efficient, past returns may have some predictive ability. If certain traders have superior trading abilities and are able to profitably take advantage of market opportunities, past performance data may offer some predictive ability and allow investors to identify which traders are most likely to generate above average returns. This view, which is the antithesis of the efficient markets theory, is readily held by practitioners. Ironically, the same trading advisors and pool operators who hold this view include statements in their reports that acknowledge "the unreliability of past performance in predicting future performance."

It is still possible that commodity funds could be lucrative investments if one is able to select those funds with superior performance capabilities. This question once again has been addressed by Elton, Gruber and Rentzler (1987); the authors explored whether or not one could predict future performance of a commodity fund by analyzing the fund's past record. The authors found that the top one-third of all funds in each year, ranked by their Sharpe measure, usually outperformed the bottom one-third of funds in the next year. However, the authors also discovered that the bottom one-third of all funds in one year tended to outperform the middle one-thirds of all funds in the next year. Thus, there seemed to be little consistency in predicting future fund performance by researching past Sharpe ratios. When searching for consistency in risk levels, the authors found some correlation between past and future standard deviations for the same fund. Furthermore, the authors also discovered that funds with low standard deviations in one year tended to produce higher Sharpe ratios in the next year. In four of the five years, the one-third of all funds with the lowest standard deviation in one year produced the greatest returns in the next year. However, given the small sample size and period, as well as the ambiguity of the data, it is doubtful that one could consistently predict future returns by analyzing past standard deviations.

Many commodity fund investors and managers claimed that, even though past performance may not be able to predict fund performance in the very next year, past data may be used to predict long-term performance. Elton, Gruber and Rentzler (1990) tested whether or not prior returns could predict long-term performance. To conduct this study, the authors calculated the rank-order serial correlation between the average return in the first three years of a fund's existence and the next three years of the fund's existence. The correlation coefficient was statistically insignificant, indicating that past returns have no

better predictive ability in the long-run than they do in the short-run. The authors also conducted a separate study by dividing all of the funds into three groups according to performance in the past three years. Over the subsequent three years, the top performing group realized returns of 8.5%; the middle group realized returns of 2.76%, and the worst performing group realized returns of 7.7%. Since the worst performing group in the first three years of the study outperformed the average group and achieved returns nearly as great as the superior performing category, the predictive ability of past returns is further derailed.

The authors also tested the claim that there is other data, besides performance measures, in fund prospectuses that contains some predictive ability. The authors examined three particular variables that can be found in the fund prospectuses. These variables include "the offering size for a fund and both the amount of experience and past investment performance with publicly traded funds of the fund's general partner." Many commodity fund investors believe that fund size provides a key to future returns since larger funds can afford to hire more talented account managers and only funds that offer superior performance can raise large amounts of money. Generally, there are two possible means of measuring the size of a commodity fund: the minimum amount needed to start the fund and the maximum amount that will be raised. The authors used the average of these two figures as the measurement of a fund's size. The authors were not able to find any significant correlation between the size of a particular fund and its subsequent performance. Many commodity fund investors also believe that the prior experience of the fund's trading advisor can be used to forecast future returns. To test this claim, the authors divided funds into three categories based on the past experience of their trading advisor. The three categories were: 1) no prior experience, 2) prior experience as a manager in one to three funds, and 3) prior experience as manager in four or more funds. The authors examination of this claim yielded inconclusive results. Even though the funds managed by trading advisors with zero experience performed the worst and yielded negative returns in all years, the funds that were managed by traders who had managed four or more funds also had negative returns in almost all years. Only those account managers that managed between one and three funds yielded positive returns on a consistent basis.

Finally, many commodity fund investors claim that the past performance of a fund's general manager is indicative of future fund performance. Therefore, the authors divided the funds into two groups

based on whether or not the fund's general partner produced above or below average returns for the funds that they managed in the past. In this case, the authors did uncover some consistency. The funds managed by trading advisors that generated above average performance with funds in the past clearly did better than those funds that were managed by those general partners who advised funds that yielded below average returns in the past. However, the authors cautioned against any premature hope from this finding, since "the sample sizes were small," and "a small change in past return could have reversed the results."

Edwards and Ma (1988) evaluated the "usefulness of the information contained in the prospectuses that pools are required to issue before going public." They collected their data from 55 prospectuses from commodity funds that went public between August 1978 and December 1983. The authors only used return data for the three years prior to the initial public offering in order to maintain consistency. Only pre-public data for firms that had their initial public offerings before 1983 were used in this study. To arrive at post-public data, the authors calculated monthly returns for both 24 months and 33 months following the initial public offering. The pre-public and the post-public returns were calculated as the sum of gross realized profit, the gross unrealized profit, and interest, less all commissions and fees. Therefore, this study's pre-public data spanned the years 1976 through 1983 and the post-public data spanned the years 1979 through 1987. The selected 55 funds in this study included between 50% and 75% of all funds in existence in any particular year and managed at least 75% of all futures contracts under the management of public commodity funds in all but one year of the study.

First, the authors presented actual private performance measures as reported in prospectuses and analyzed whether or not such data contains any predictive ability. The authors found that the average pre-public geometric mean returns reported in the 55 prospectuses was 4% per month. This would translate into a lucrative average yearly return of over 48%. Only one of the prospectuses reported a negative average monthly return. Fifty-two of the 55 selected commodity funds reported average monthly returns greater than 1%, and 16 reported average monthly returns greater than 5%. On the contrary, the average geometric mean return for the 55 selected funds following the initial public offering was -0.1% per month, or -1.15% per annum. Over half of the funds reported negative average monthly returns after the initial public offering, and only eleven of the 55 commodity funds yielded average monthly returns greater than 1%. The Pearson

serial correlation coefficient between the private and public returns was -0.29 , indicating a heavily negative correlation between the two sets of returns. Thus, the authors observed a substantial difference between the pre-public and the post-public returns and found little predicative ability in pre-public returns.

Secondly, the authors presented the private performance measures adjusted for the change in fee schedules after the initial public offering. They conducted a complex regression analysis to determine whether or not any pre-public performance data could be used to forecast post-public returns. Besides using pre-public returns, the authors also regressed post-public returns to the pre-public standard deviation of monthly returns, the pre-public ratio of return to risk, and the size of incentive fees after the initial public offering. The authors also tested several broad market variables in the regression equations to examine what market factors may influence fund performance. These variables included the standard deviation of monthly price changes for the Composite Commodity Futures Market Index, the standard deviation of monthly price changes for the Financial Futures Index, the standard deviation of monthly price changes for the Currencies Futures Index, the price trend for the Composite Commodity Futures Index, the price trend of the Financial Futures Index, and the price trend of the Currencies Futures Index. Positive coefficients for such variables would indicate that they positively influence commodity fund returns, while negative regression coefficients would indicate the opposite. After regressing post-public returns to the pre-public performance measures, the authors reached the same results as they did in the simpler statistical analysis in the first section: data presented in fund prospectuses are not valuable means of forecasting future fund performance. However, the authors did uncover several interesting findings from their regression analysis. First, they found that those funds that charged higher than average incentive fees yielded higher than average returns. Thus, the authors acknowledged that it is possible that "pools with higher incentive fees may have managers whose superior performance more than compensates for the additional costs that investors incur." If this were true, however, it might indicate that certain traders do have superior abilities and can demand above average incentive fees as a result. Secondly, the authors found that all of the price trend variables had insignificant regression coefficients and, thus, can not be interpreted to have any effect on commodity fund returns. However, the regression coefficients for the standard deviation of monthly price changes for the Composite Commodity Futures market Index and the Currencies Futures Index

yielded positive readings. This would indicate that commodity funds perform best when commodity futures and currency futures markets are the most volatile. The authors also found that those funds that had the most volatile pre-public returns tended to also have the most volatile post-public returns.

In addition, the authors examined whether or not pre-public returns, adjusted for the new public fee schedule, contained any better predictive ability than the non-adjusted returns. Of the 55 prospectuses received by the authors, 45 contained enough information for them to accurately calculate pro-forma adjusted returns for the pre-public data. After calculating the pro-forma pre-public returns, the authors substituted them for the actual pre-public rates of return that were used in the previous regression analysis. However, the authors found that adjusting the pre-public rates of returns had little effect on the results. Pro-forma pre-public returns had no better predictive ability than the actual pre-public returns.

Thirdly, the authors analyzed the performance of those funds that dissolved following their public offering and attempted to uncover whether or not any information contained in fund prospectuses could indicate which funds would be the most likely to dissolve. During the sample period, ten of the 55 funds dissolved. All but one of these funds dissolved between 1985 and 1987. All of the funds which dissolved were performing poorly prior to their dissolution. Thus, the authors felt that there was reason to analyze the disclosure statements of those ten funds that dissolved to find if there was any information contained in their prospectuses that would help investors spot those funds that have a high probability of performing poorly. However, after comparing the pre-public returns of the ten funds that dissolved with the pre-public returns of the 45 other funds, the authors found no differences between the two subsets. This finding again conforms with previous findings in this and other studies that prospectuses contain little useful information.

Next, the authors analyzed the relative performance of funds after going public. The authors decided to look at relative return data since, even if a fund with superior pre-public performance performed poorly after the initial public offering, that particular fund may still have yielded post-public returns that were relatively higher than other funds during the same time period. To test the relative performance of funds, the authors decided to compare each commodity funds relationship to the average commodity fund before and after its public offering. However, regression analysis found that relative fund performance was just as unpredictable as absolute fund performance. There was no identifiable indication that those funds

which performed above average before the initial public offering would continue to perform above average following their public offering.

Finally, the researchers briefly examined the effect of pool size on performance predictability. Since large commodity funds are generally sponsored by large established brokerage firms, it is often assumed that such funds have greater financial resources and a better reputation with which to attract superior trading advisors. Furthermore, in order to protect their reputation, it is also assumed by many practitioners and investors that such large funds will take greater care when selecting trading advisors. If these claims are true, it would be logical to expect that the pre-public performance of such funds would be more highly correlated with their post-public performance than the other commodity funds. To test these claims, post-public returns for the larger commodity funds were regressed against both actual pre-public returns and pro-forma pre-public returns. In both cases, the authors found no significant relationship between the returns before and after the initial public offering for the individual funds. Therefore, the authors found that investors do not gain any advantage from investing in larger commodity funds.

Schneeweis, Savanayana and McCarthy (1991) also examined whether or not the performance of the managed commodity instruments were "consistent and predictable over longer time periods" and whether or not those asset classes that exhibited superior performance in one year continued to exhibit such performance in subsequent periods. In terms of Sharpe ratios, which are used as a composite measure of risk and return, investments in stocks, bonds, and CTAs, when equally weighted, ranked in the upper half of all eight investment classes during five of the nine years. Commodity trading accounts, when dollar weighted, ranked in the upper half of all investment classes in four of the nine years. Unfortunately, the other managed commodity investments did not fare as well as the CTAs. The Sharpe ratio for private commodity pools ranked in the upper half in only three years, and the Sharpe ratio for publicly managed funds ranked in the upper half during only one year. When ranked by skewness, the Pools index and CTA indexes were superior to the other investment classes. The Pools index and both CTA indexes recorded skewness measures in the upper half of all investments in six of the nine years. However, the skewness measure for the Commodities Funds Index ranked in the lower half of all investments classes in five of the nine years. The authors uncovered similar results when they analyzed the historical readings for the

minimum/maximum ratio measure. Both CTA indexes and the Pools index ranked in the upper half during five of the nine years, and the Funds index ranked in the lower half during five of the nine years. However, public commodity funds still exhibited higher skewness and maximum/minimum ratios than the other investment classes. Thus, the historical measurements seemed to reinforce the author's initial findings. Even though stocks and bonds tend to outperform commodity investments in terms of risk and return, "various commodity vehicles, such as CTA-Equal Weighted, CTA-Dollar Weighted, and Pools, provide benefits over those of traditional investment media, especially if alternative investment performance measures, such as skewness are measured." The authors also found that the risk and return performance of the Commodity Funds Index ranked below any of the stock, bond, or commodity investments in terms of risk and return. However, the skewness and maximum/minimum ratios for the Commodity Funds was somewhat better than those of the stock and bond investments, although less than the other commodity vehicles.

IX. Possible Reasons For the Poor Performance of Commodity Funds:

A. Do High Commission and Management Fees Affect the Returns?

Serious discrepancies exist between the returns reported in commodity fund prospectuses and the returns those funds earn after going public. Public funds charge higher commissions and management fees as compared to private funds. Elton, Gruber and Rentzler (1989) explored the higher commission and management fees as a contributor to their poor performance. They did so by calculating what the average monthly fund returns would have been with the public fee schedule as opposed to the private fee schedule. They found that the average monthly fund returns would only have decreased from 5.59% per month to 5.46% per month, a change of only 0.13%. Since the average monthly returns after the initial public offering were 0.23%, a change of 5.36%, the difference in fee schedules can not explain the vast majority of return discrepancies.

The substantial fees charged by commodity funds has always attracted a great deal of attention. A 1989 *Futures* magazine article entitled, "What an Analysis of 690 Funds Reveals" (Szala, 1989) details a study conducted by Tom Basso, the president of Trendstat Capital Management of St. Louis, to quantify the

effect of commodity fund fees and commissions on a fund's net income to its shareholders. Using information supplied by the NFA and the CFTC, Basso compiled data from 690 private commodity pools and public commodity funds. Basso ranked each of the 690 funds according to five characteristics: fund size, expenses to equity, trading profits to equity, income to equity, and commissions to equity. Within each category, Basso then separated all 690 funds into decile groups, with 69 funds in each decile. From his study, Basso made five important discoveries. First, funds with the highest income to equity and trading profits to equity also had the highest expenses to equity. Second, even though those funds with the highest commissions yielded the highest trading profits, they also tended to have the highest expenses and generally yielded negative returns to their clients. Third, Basso found that those funds with the lowest expenses produced better than average net returns to their investors, despite having lower than average trading profits. The largest funds had some of the lowest trading profits, but they also had some of the lowest fees and highest average returns. The smallest funds performed the worst and were more likely to dissolve than the larger funds. According to Basso, the average commodity fund had expenses equal to 17.5% of equity and commissions equal to 8.6% of equity.

B. Does the Self-Selection Theory Explain the Poor Performance of Commodity Funds?

The process by which trading advisors are selected to manage public funds is through self-selection, meaning that only those traders who successfully managed private funds will be selected to manage public funds. If successful pre-public performance arises primarily by chance, it is unlikely that those commodity fund advisors who are selected to manage public funds or whose funds are elected to go public will continue to produce abnormal returns. Hence, there will be the observed drop in fund performance after the initial public offering.

Elton, Gruber and Rentzler (1987) took a closer look at the self-selection theory. In 1987, there were over 2,000 such advisors. However, since there were only 94 publicly traded commodity funds in 1987, it is apparent that most commodity fund advisors were employed by private funds. As stated earlier, it is logical to assume that only those private advisors who were successful at managing private pools would be selected to manage a public fund. Since most commodity fund trading decisions are based on technical

strategies, those advisers who generated large returns for their private funds were likely to have been successful primarily due to pure chance and most likely did not have any truly superior ability in trading commodities. If returns on commodity funds are randomly distributed along a bell-shaped curve, it is possible that 94 out of the 2,000 total commodity trading advisers could have, by pure chance, generated monthly returns equal to those disclosed in the prospectuses and be selected to manage public commodity funds. Since such extraordinary pre-public returns were random, it is unlikely that the self-selected fund managers would have been successful in the long-term.

C. Does the Pool Operator's Ability to Manipulate the Numbers Explain the Poor Performance ?

Finally, as stated earlier, pool operators have some discretion in deciding which past return numbers are reported in the prospectuses. This privilege could significantly bias the information contained in the prospectuses. Finally, the authors explored how the pool operators' ability to manipulate the reported numbers in the prospectuses could possibly bias the disclosure documents. The authors found that if all pool operators had reported the minimum required returns for only three years and no longer, the average monthly returns would have been 4.14%, as opposed to 5.59%. For those funds that reported more than three years of data, the average monthly return of the additional not required period included in the prospectuses was 8.85%. Moreover, the average return in the selected starting month was 14.6%, an annualized return of over 400%.

X. Is There A Rational Explanation for the Popularity of Commodity Funds ?

A. Do Fund Prospectuses Provide Misleading Information to Investors ?

Despite the shortcomings of the commodity funds, they continue to be very popular among investors. Elton, Gruber, and Rentzler (1989) tested what they believed was a plausible explanation for such apparently irrational investor behavior. They analyzed the Fund Prospectus as a contributor to their popularity. In the case of almost all funds, the past returns reported in the prospectuses were substantially larger than subsequent returns. In most cases, the reported pre-public returns were so much larger that they could easily have been considered misleading to those making investment decisions. Furthermore, the only

information that investors have regarding these commodity funds before they make their investment decisions is found in these disclosure documents. Therefore, the authors theorized that "potential investors ... are systematically given misleading and biased information and have no ability to evaluate its inaccuracies." The authors tested whether or not the information presented in fund prospectuses regarding the past return performance of commodity fund operators and commodity fund trading advisors is indicative of the future profitability of the fund and if such information does mislead investors into making irrational investment decisions.

The authors began their study by explaining the current regulatory environment of the commodity fund market and the CFTC requirements regarding the reporting of past fund performance in fund prospectuses. First, "both the commodity pool operator and the commodity trading adviser must provide at least three years of performance history, if available, for all pools and accounts that they have operated during the previous three years". Secondly, "performance figures cannot end more than three months before the date of the disclosure document". Obviously, these rules are subject to manipulation since pool operators are free to include return data for any period of time longer than three years and less than three months before the printing of the prospectus.

The authors used prospectuses for 71 of the 94 publicly traded commodity funds that were in operation during the sample period 1979 through 1985. They found that the average monthly return reported in the 71 prospectuses was 5.59% per month, or 92% per year. Only one fund produced returns greater than 92% during its first and second year after going public. After the second year, no fund was able to yield returns greater than 92% per year. Furthermore, only two funds yielded returns greater than those presented in their individual prospectuses during their first two years after going public. After two years, no funds were able to generate returns greater than those reported in their particular prospectuses. During the first year after going public, all commodity funds averaged a monthly return of 0.23%, which is less than 4% of the average returns that were reported in the prospectuses. For the second, third, and fourth year after going public, the average respective monthly returns were 0.36%, 0.30%, and 0.54%. The average monthly returns after the initial public offering were never greater than 10% of those reported in the prospectuses. One seemingly obvious explanation for this occurrence is that returns on all commodity funds

were very large during the time period before the initial public offering and were very low during the period following the initial public offering due to changes in aggregate market conditions that affect all funds. For this to be true, the entire market of commodity funds would have had to realize a sustained bear market following a tremendous boom period. However, since the various funds went public over a six year time period, this is very doubtful. To test this claim, the authors compared the actual returns for commodity funds in each month to the returns reported for that month in fund prospectuses. They found that the average prospectus reported pre-public returns that were nearly 3 percentage points higher than the actual returns achieved by public commodity funds in that month during the same year. Thus, the authors attested that "the difference in public fund performance can not be explained by a different time period or different economic influences."

B. Does Favorable Media Coverage of the Commodity Funds Explain Their Popularity ?

Elton, Gruber, and Rentzler (1987) examined whether or not the continued investor interest in commodity funds could partially be due to biased favorable media coverage. First, the authors searched 34 business magazines during the sample period and located 28 articles discussing commodity funds. Of these articles, twelve presented general information on commodity funds, nine gave performance results, four discussed individual fund managers, and three discussed miscellaneous topics regarding the commodity fund market. The authors found that the twelve articles which presented general information on commodity funds were "highly favorable both in the selection of the numbers they reported and in their general comments on commodity funds." Of the nine articles that discussed performance results, five were highly favorable. Moreover, the four articles that were not highly favorable glorified at least one success story. The authors commented that such articles were definitely biased and misleading since "they almost always discuss the performance of the one to five funds that did well over some time period and they almost never discuss the funds that did badly, nor do they ever caution the reader that there is no evidence that past performance of a commodity fund is related to future performance." The authors also conducted a search for commodity fund articles in the Wall Street Journal and the New York Times. Of the eight articles they found, the majority gave the incorrect impression that commodity funds were great investments with an

excellent performance history. Thus, the authors reached the unfortunate conclusion that "newspaper and magazine articles support and reinforce the favorable impression of the prospectuses."

XI. Proposed Regulatory Changes For Improving the Reporting of Commodity Fund Performance Results

Elton, Gruber and Rentzler (1987) listed three changes in prospectus regulations that they believe could improve the reporting of returns in commodity fund prospectuses. First, commodity fund operators should be forced to restate past returns to what they would have been under the public fee schedule, as opposed to the private fee schedule. Second, pool operators should be forced to acknowledge that all returns shown beyond and/or before the required 36 months were included at the discretion of the fund operator only. Finally, commodity fund prospectuses should include the ratio of returns after going public to the returns before going public for similar funds. If investors are exposed to the fact that commodity funds after the initial public offering historically earn less than a tenth of what they did before going public, they might not be as misled by the data presented in such reports.

XII. Summary and Conclusions

In this paper, we have reviewed the structure, conduct and performance of publicly traded commodity funds. Commodity funds are professionally managed funds which invest in commodities and commodities futures, as well as financial securities, futures on financial securities, foreign currencies, and futures and forward contracts on foreign currencies. For the most part, commodity funds are closed-end funds. They are organized as limited partnerships with the general partners executing the trades. Trading decisions are made by a commodity trading advisor. Publicly traded funds evolved from private commodity pools. The advent of new futures contracts and the credence given to these fledgling funds by the regulatory bodies, viz. Commodities Futures Trading Commission (CFTC) and National Futures Association (NFA), have both contributed to the popularity of these funds. For the most part, commodity fund managers base their trading decisions on technical analysis.

The transactions costs of investing in commodity funds consist of general fees, commissions and incentive fees. The total fees and commissions on these funds average between 17% and 19% of the

investors' equity as opposed to 1.5% of investors' equity for common stock funds, and fees and commissions equal to 1% of the investors' equity for bond funds.

With regard to data on commodity funds, the Norwood Index, a broad-based index of publicly traded commodity funds, can be used to gauge the relative performance of a given fund. In addition, the Managed Accounts Report, and the NFA provide data on individual commodity funds.

As per CFTC regulations, commodity funds must provide return data for at least three years preceding and three months before going-public. Information on applicable fees and commissions after initial public offering need to be disclosed as well.

As for the performance of commodity funds, Epstein (1992) found that the average annual return of commodity funds during 1979-1991 period was 5.4%, nearly 3% less than the T-bill rate and nearly 10% less than the S&P 500 return during the same period. Elton, Gruber and Rentzler (1990) found that the average annual return on commodity funds during the period 1980 to 1988 to be between 2.26% and 2.36% depending on how money from those funds which dissolved mid-period was reallocated. Schneeweis, Savanayana, and McCarthy (1991) found that among various asset categories including private commodity pools and individual managed accounts, S&P 500 stock, small cap index, long-term government bond index and corporate bond index, commodity funds yielded the lowest monthly return of 0.8%.

With regard to the risk of commodity funds, the average annualized standardized deviation of monthly returns was 10.4%; this compares with a standard deviation of 4.91% for common stocks, 0.24% for T-bills, and 2.38% for Shearson bond index (Elton, Gruber and Rentzler, 1990). Schneeweis, Savanayana and McCarthy (1991) also found the commodity funds index to be very risky with a standard deviation of 6.48%; this is in comparison to standard deviations of 4.85%, 5.75%, 4.25% and 3.91% for S&P 500 stocks, the small cap index, the government bond index, and the corporate bond index respectively.

Although there is evidence that the long positions in commodity futures are negatively correlated with inflation, Elton, Gruber and Rentzler (1987, 1990) found that the correlation coefficient of commodity funds with inflation has been close to zero or negative; this shows that commodity funds have been inadequate hedges against the ravages of inflation.

Elton, Gruber and Rentzler (1987) used the required Sharpe measure for commodity funds and for common stocks/bonds to compute the break-even returns that commodity funds must earn for inclusion in stock/bond portfolios. To arrive at their conclusions, the authors used the correlation coefficient between commodity funds and stock/bond funds, as well as other well-known parameters. Under various assumptions with regard to the particular stock index used and time period, the authors arrived at a break-even return of 6.9% to 8% before commissions and other incentive fees. After the incorporation of transactions costs, such as commissions and incentive fees, the break-even return for the inclusion of commodity funds in stock/bond funds was as high as 28% per year. The author's conclusion was inevitable: commodity funds were not valuable additions to a portfolio of stocks or bonds. Schneeweis, Savanayana and McCarthy (1991) also reached the same conclusion: in their study, the commodity fund index offered little value as an addition to the stocks/bonds portfolio, or enlarging the efficient frontier.

On the issue of whether past performance of commodity funds can be used to predict their future performance, Elton, Gruber and Rentzler (1987) found no consistency in predicting future performance using past Sharpe performance measure. There is some evidence that past risk levels, as measured by standard deviations, can be used to predict/measure future risk level/s. Furthermore, funds with low standard deviations in a given year tended to produce higher Sharpe measure in the following year. Also, Elton, Gruber and Rentzler (1990) found that the correlation coefficient between the average returns of the first year and the last three years of the funds' existence to be statistically non-significant. There was no consistency of funds return between one period/year to another period/year.

In addition, fund size, as measured by the average of minimum amount needed to start the fund and the maximum amount that was raised, was found to have no predictive ability. Regarding the question of whether or not prior experience of the fund manager can be used in predicting future fund performance, the authors found that funds that are run by managers who have managed between 1 to 3 funds in the past yielded positive returns on a consistent basis. Furthermore, those funds managed by managers who have generated above average returns in the past did better than the funds managed by partners with below average past track-records (Elton, Gruber and Rentzler, 1987). Edwards and Ma (1988) also analyzed the importance of fund size in predicting future performance: they regressed the post-public returns for large

commodity funds on both the actual pre-public and proforma pre-public returns and found no significant relationship between the returns before and after the initial public offering. In other words, investors do not gain from investing in large funds.

The question of whether there is predictive ability in the information contained in the prospectuses issued before the initial public offering was addressed by Edwards and Ma (1988). They found no predictive ability in pre-public returns. In fact, they uncovered substantial differences between pre-public and post-public returns. Even the pre-public returns, when adjusted for the post-public fee structure, offered little predictive ability. With regard to the question of whether any other pre-public data can be used to predict post-public returns, evidence indicates that those funds charging higher than average incentive fees yielded higher than average returns. It seems that “pools with higher incentive fees may have managers whose superior performance more than compensates for their additional costs.”

In analyzing the possible reasons for the poor track record of commodity funds, investigators have suggested the following reasons : 1. High commission and fees which affect the returns, 2. The theory of self-selection, and 3. The pool operators' ability to manipulate reported numbers. Although the fees charged by the commodity funds were substantial, the fees were not able to account for the discrepancy between pre- and post-public returns. The self-selection theory is built on the premise that only successful private fund managers go on to manage public funds; if their earlier success was due to chance, then they may not be able to replicate their results on a consistent basis. Also, evidence was uncovered delineating that pool operators manipulate the numbers by reporting better than average results for longer than 3 year period, and less than 3 months before going public.

In spite of the poor performance of commodity funds, they continue to be popular among investors. One suggested reason is that misleading information is provided to investors through commodity fund prospectuses. Elton, Gruber and Rentzler (1987) found that commodity funds report much higher pre-public returns than those realized after the initial public offering. Research showed that the average monthly returns after the initial public offerings were never greater than 10% of those reported in the prospectuses! Thus, evidence was uncovered supporting the notion that investors are misled. In addition,

favorable media coverage was found to present tantalizing information on funds that did well and failed to discuss those that did poorly, effectively contributing to the popularity of commodity funds.

In spite of their low return and high risk of commodity funds, they continue to enjoy the acceptance of the investors. It is conceivable that investors choose to invest in these funds for prestigious investments as a result of favorable media coverage. Another reason for their popularity, which has not been pursued extensively in the literature, is the tax deductibility of losses on these funds, which leads to advantages for investors in high tax brackets. According to this scenario, by examining the profile of the average commodity fund investor, one would expect to find a number of high tax bracket investors who have gravitated towards commodity fund investments, written off their losses, and gained a tax deductibility advantage. This could very well be dubbed as the high-tax induced clientele effect of commodity funds.

On the issue of proposed regulatory changes on commodity funds operation, suggestions have been made to re-state the post-public returns using post-public fee schedules, acknowledgment by pool operators that the results beyond the 36 months are included solely at the discretion of the operators, and provide a ratio of returns after going public to returns before going public for the same funds.

In conclusion, a decade of research on commodity funds has shown that they are low return, high risk investments. They are also poor hedges against inflation. Results also indicate that commodity funds exhibit skewness, thereby offering investors the potential opportunity for large gains. Research also seems to suggest that they are not valuable additions to stock or bond portfolios in terms of enlarging the efficient frontier. However, there is scope for further refined research on this aspect of commodity funds.

In terms of using past data to predict future performance, there is evidence that past risk measures, principally standard deviations, can be used to predict future risk measures of commodity funds. This finding is consistent with similar findings with respect to common stocks. Furthermore, funds with low standard deviations in the past were found to produce superior performance in the future, in terms of higher Sharpe measure of performance. In this aspect also, there is need for more research.

There is also research showing that managers who have managed between 1 to 3 funds in the past do well in the future and that general partners with successful past track records tend to have a greater

chance of future success. Furthermore, higher than average fees lead to higher than average fund returns!

In other words, superior managers command a premium in the market. This is also another area which needs further investigation.

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