HAS TREND-FOLLOWING CHANGED?

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Few questions in the realm of alternative investments have been asked as often or for so many years as "Has trend-following changed?" This was once again a topic of a panel at the recent Managed Fund Association's *Network 2001* conference. Much of this article is drawn from that panel and the feedback given. The question is posed, of course, for more than academic reasons. Investors and their representatives are legitimately concerned, particularly after periods of difficult performance, to explain to themselves if the performance characteristics from trend-following remain true to their expectations of the style. Dissatisfaction inspires the curiosity to ask the question. Patience and dispassionate analysis is required to understand the answer. This dichotomy of expectation and reality leads to other questions that shall be addressed later, but first, we shall address: "Has trend-following changed?" Unfortunately, the question is too general to be readily answerable.

There are, however, more specific related questions to answer. We can derive them from those aspects of trend-following that are of direct interest to investors. We have translated the general question into five approachable topics of interest:

- have general trend-following methods changed?
- have the sources of return for trend-following changed?
- have the magnitude or pattern of returns from trend-following changed?
- have the characteristics of trends changed?
- what are the implications for trend-following return characteristics?

To approach these topics, we must first clarify what is meant by trend-following. For this review, the operational definition of the investment style is the directional trading of primarily the most liquid global futures markets through the buying of price strength and the selling of price weakness. Collectively such positions will have average holding periods from two weeks to one year. With this definition, the spectrum of intermediate to very long-term trend-following is encompassed. Operationally, this definition pragmatically encompasses the majority of the managed futures assets under management, and therefore, the interest of the majority of managed futures investors. There certainly are other investment styles within managed futures including other generally shorter-term directional trading strategies. Given their meaningfully different correlation to the trend-following universe, they are not included in the deliberation of these questions.

Have General Trend-Following Methods Changed?

No, there is no evidence as such. To address this question more objectively we constructed 120 trend-following models based on five core technical and statistical methods with 24 parameter sets each. Some are reversal-based, others not. Some are breakout-based on price with others on volatility and band style breakouts. Average holding periods extend across the range of our style definition from two weeks to one year. When these were run on a diverse group of futures markets, the general performance characteristics in periods covering the late 1980's, early 1990's, and late 1990's were essentially identical. Astonishingly, studying this data brings into the harshest of light the limitations of reality versus perceived diversification benefit of employing such a large number of models. *The lowest correlation coefficient among the 120 models was 0.81*. This points to the conclusion that has so often been rediscovered: nearly all the differences of consequence among trend-following methods are market selection (both inclusion and exclusion from the portfolio) and the degree of leverage employed and not in the general entry and exit timing methods themselves.

Have the Sources of Return for Trend-Following Changed?

No, there is no evidence or logical way to support this. Starting from first principles, we know the source of return to trend-following techniques results from sustained market price movements. Examination of recent and past data demonstrates empirically similar sustained price movements. Statistical examination of the distribution of prices also is similar over large enough data samples in that the kurtosis or "fat tails" is also similarly present.

From a fundamental perspective, we could summarize the majority of return opportunities falling into several categories: macro-economic changes such as interest rates, asset values, inflation rates, and relative currency valuations taking place over months to years; physical supply and demand imbalances such as for commodities including seasonal stress factors taking place over weeks to months; and short-term market phenomenon such as liquidity contractions generally lasting from weeks to months. The common thread woven throughout these is the sustained change of price resulting from future unknowable events. Human reaction to such events, and the stream of information describing them, takes time and runs its course unpredictably. The resulting magnitude and rate of change of price is not reliably foreseeable. Despite faster flow of information, one could argue there has been no significant change in the collective human response to what is known.

In all of these cases, there is little help from direct examination of trends within the data available. Given the scale and timing of trends, and the very short history of data available at approximately 10 to 30 years, mining the data results in very small, effective sample sizes looks at multi-year events. Lastly, there has been some discussion of the recent reduced diversity of available markets. While the number of liquid futures markets has been reduced somewhat in recent years, that reduction should be contrasted to the strong expansion of available markets, as a variety of non-U.S. markets became available early in the last decade. A way to approach this objectively is to utilize cluster and factor analysis, which can be used to classify markets into statistically significant different groups. Depending on the threshold chosen, one can classify approximately 15 groups of distinct markets in the late 1980s and early 1990s. Using market data from the mid- to late-1990s, one classifies approximately 15 groups as well. The diversification opportunities appear relatively stable.

Have the Magnitude or Pattern of Returns from Trend-Following Changed?

No, there is no evidence supporting this during the past 10 years. Because performance dissatisfaction tends to drive interest in this question, the common perception, by the time it is asked, is usually that performance is degrading and has changed. First, let us consider the magnitude of returns by comparing the Barclay Systematic Trader Index as a proxy for trend-following performance. Table One compares the index performance from the first half to the last half of the preceding decade. Performance and related summary statistics for the years 1991 to 1995 and 1996 to 2000 demonstrate essentially identical performance.

Table One: Trend Following Performance, Barclays Systematic Traders Index

Statistic	1991 to 1995	1996 to 2000
Total Compounded ROR	41.27%	44.05%
Average Annualized ROR	8.02%	8.12%
Annualized Standard Deviation	13.06%	10.29%
Sharpe Ratio (4% RFR)	0.31	0.40
Positive Months	30	33
Negative Months	30	27
Minimum ROR	-7.59%	-6.68%
Maximum ROR	14.50%	7.52%
Maximum Drawdown	-14.12%	-7.12%
Average Monthly ROR	0.65%	0.65%

Next, if we examine the series of monthly returns and review the data year by year, we find no perceptible change of the pattern of 1 to 2 significantly profitable months per year with the remaining months generally unremarkable. Lastly, we should look at the correlation to equity markets given this relationship's importance in market demand for trend-following product. It, too, has been stable with near 0.0 correlation in both periods. There has been a tendency to even lower correlations during the last few years resulting from the strong performance timing of trend-following in the liquidity contractions during the fourth quarters of 1998 and 2000.

One caveat to the response to this question is related to the time horizon over which it is asked. If this same question were posed over a very long time frame, the answer might be yes, there is evidence. Performance in the past 10 to 15 years is lower than the results from the late 1970s through the mid 1980s. There are, of course, many other factors to consider in such an extended comparison. These include survivor bias in the data, the overall leverage and volatility levels used in prior decades compared to current accepted ranges, the size and maturity of the managers, and the effect of fee structures on their incentives in product design, among others.

As one examines the larger components to the index data in Table One, it is worthwhile to note that in comparison to the last decade many of the leaders in the prior five years are laggards in the subsequent five years, and many of the worst performers then are among the leaders now. This is often a result of narrow margins such as short-term periods (12 to 24 months) of above- average or below-average performance. The data lead us to rediscover some of the tendency to mean reversion in manager selection within a defined style.

Have the Characteristics of Trends Changed?

Yes, maybe. But is it significant? In recent years, the overall magnitudes of trends have been smaller. This reduces the theoretical edge of a trend-following model significantly. Given the lag by definition of entry and exit in trend-following, a modestly smaller trend, for example 20% smaller, can easily result in a 40% reduction in profit capture. This is especially disheartening given that the vastly lower net return is accompanied by identical risks to the initial equity and to the open trade equity give back from peak valuation. This nonlinear efficiency is analogous to any industry with fixed and variable operating costs. Margins can expand significantly if the magnitude of a trend matches well the time frame of the operating model. Figures 1 through 3 demonstrate this effect. Each figure depicts the same theoretical market price data and employs the same entry and exit logic. The only difference is the magnitude of the upward price trend taking place from month one to month two.

Figure One

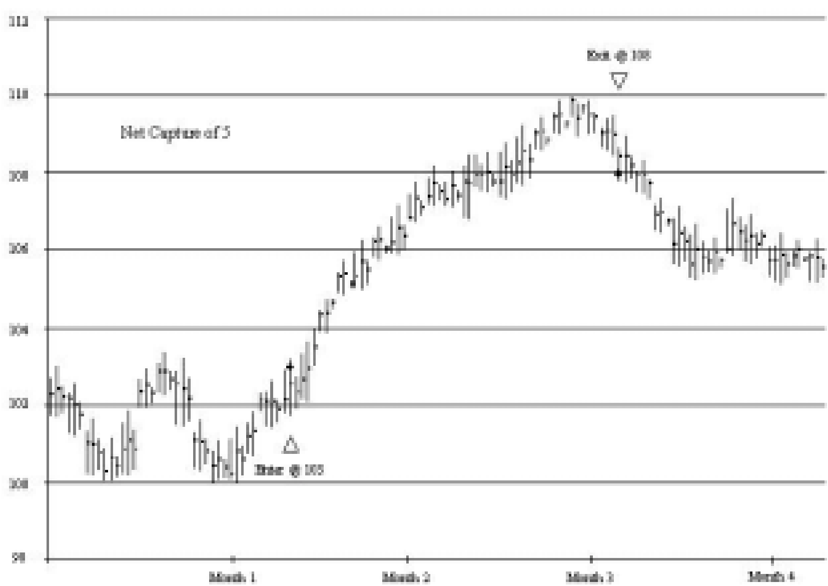
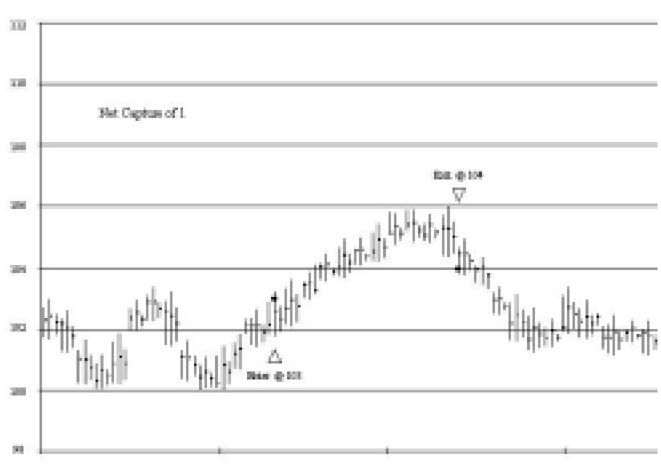


Figure Two

Figure Three



Note that in Figure 1, the model captures five full points out of a trend that measures ten points from low to high (50% efficient). Let us compare this with a net profit capture of three points in Figure 2 out of a trend magnitude of eight points (37.5%) and to Figure 3 with a profit capture of one point out of six total for the trend (16.7%). Viewed another way, note that the trend from Figure 1 to Figure 3 is only *40% smaller in magnitude* yet the same trend- following model's *profit capture declines 80%,* from five points to one point.

Another observation receiving attention in recent years is the worsening of counter-trend asymmetry. Counter-trend asymmetry is the long observed behavior of markets to retrace their primary trend direction faster than the rate of movement during the trend. This is simply the manifestation that position liquidation occurs more rapidly than accumulation. The old stock market adage that markets fall twice as fast as they rise is an example of this behavior. By some measures, the speed of these retracements has increased on average during the last few years, sometimes reaching four to five times the rate of price movement with the trend. The hypothesis that this is a result from increased speed of information flow or even a market behavior that is here to stay is uncertain. The number of observed events over the past few years is relatively small, and they are by no means independent of each other.

The last area of observed change is within the market representations themselves. It is not enough to consider the magnitude and rate of change of price trends but also their prevalence. Some market sectors have been consistently difficult for trend-following over the past few years, some even for a decade or more, including many non-energy commodities, sub sectors of currencies, and more recently equity indices globally. The degree to which a manager is exposed to these sectors, relative to others, drastically effects performance even if the characteristics of other market trends seem reasonably close to normal.

What Are the Implications for Trend-Following Return Characteristics?

Many. While conditions described above persist (trends of smaller magnitude, faster counter-trend price movements, difficult market groups) risk-adjusted returns for trend-following will be lower than they would otherwise. Overall, returns need not fall given the ease of leverage adjustments to maintain returns, but measures like Sharpe ratio, return to semi variant standard deviation, and return to drawdown will be lower. The focal point of these previous observations begins, however, with the clause "while conditions…" This is enough to serve as a warning and reminder that those conditions can and have changed with heart-stopping rapidity in the past, such as in December 2000.

The stability of so many aspects of trend-following – the general methods, the sources of return, the magnitude and the pattern of those returns – should provide the foundation for stable investor manager relationships. Realistic expectations are neither difficult to define nor to understand. Committed capital should be placed and maintained for all the right reasons. Like index investing, there are generic qualities to trend-following returns. Also, as in index investing, time-tested experience to *not* chase recent performance, to *not* buy highs and sell lows, to allocate broadly, and to rebalance on schedule devoid of emotion are successful attributes to capturing trend-following returns.

More to the Point: Will Trend-Followers Change?

The future of return size and characteristics is to some practical degree inseparable from the effect of those conditions on the managers themselves. The persistence over long periods of time of more stable market prices with smaller magnitude trends have favored managers that had diversified exposure to varying time frames of entry and exit. The asymmetric speed and magnitude of counter-trend price movements have provided new opportunities for statistical and pattern-based counter-trend trading models. The increasing global production of physical commodities, combined with freer trade and inventory control information systems, have dampened sustained trends for many years most commodities favoring financially weighted managers, but at the same time, teaching all managers to focus on market selection and screening in portfolio composition. Events and experience stimulate evolution. Positive reinforcement induces behavioral changes. Both are at work in the manager community. In the next few years, all of the top and mid-tier advisors will adapt to do well in these conditions without sacrificing response to classic long-term trends.

And finally, perhaps, after years of neglect, the powerful investor advantages that can be achieved through proper structuring will be harnessed. Structural components such as cost-free leverage, viewing performance based on cash efficiency, and recognizing the importance of incremental performance to incremented risk as a measure of risk-adjusted return are all return characteristics in which trend-following is highly advantageous. In relatively easy to create structures, such characteristics allow investment structures to be created that strip the components of return and volatility and then reassign them. Such reassignments would generally exchange more stability of returns to investors (Sharpe ratios of 5.0 or more) for more potential reward for the manager. Such structuring techniques have far more profound implications than attention directed to any of the minor component aspects of trend-following.

The question of "Will Trend-Followers Change?" has neither been asked nor answered yet. But as investor assets are generally exposed to managers, and not to pure theoretical style allocations, the answer is likely to be yes. Yes, because of the successful maturation of mixed investment styles adopted by some already, in progress at others (such as our own firm), and inevitably to pressure others to move to diverse trend-following variations. These managers' programs will be responsive to the kinds of conditions seen over the past decades and designed for conditions yet unseen that lie ahead, moving directional trading across time frames, moving trades to both sides of the trend direction, and ultimately moving past the question of "Has Trend-Following Changed?"