



BSAMC

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ALTERNATIVE INVESTING WITH MANAGED FUTURES



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A BRIEF INTRODUCTION TO ALTERNATIVE INVESTMENTS

During the 2010s it seemed that the stock market rally would never end, and that hedging was just an underperforming way of investing compared to classic investments in equity and bonds. In recent years however this view has shown itself to be obsolete. Even though stock and bond markets continue to deliver solid results on a long-time basis they are rather vulnerable to short-time fluctuations in a nervous market environment as has been shown at the beginning of the Covid-19 pandemic as well as during the recent months.

Due to exceptionally high inflation rates and the corresponding rise of key interest rates it can be expected that a recession is imminent. Companies financing efforts are getting more expensive and political and economic risk factors remain on an alarming level especially with regards to Taiwan and Ukraine. We can expect the market environment to remain rather nervous due to these macroeconomic risks. It is therefore likely, that the stock market capitalisation will remain at its current level or even diminish endangering equity investments to stagnation or even losses.

Due to this current situation, it is necessary to keep a portfolio diversified and spread money across many different types of assets. This way investors can reduce their exposure to market risk and keep their portfolios more stable as, in case of poor performance of a single asset category, savings are not going to take proportionally too many hits. Thus, it is prudent to invest in a variety of different industries when investing in the classical equity and bond markets. At the same time categories such as commodities, currencies, real estate, and alternative investments can also be helpful to minimize risks and achieve profits above average especially during times of rampage inflation.

An investment portfolio may not be adequately diversified if the underlying assets derive their returns from the same sources of risk. In early 2022, against the backdrop of the pandemic and the emerging Russia-Ukraine crisis, both equities and bonds, which traditionally have an inverse correlation with each other, were both negative for the first four months of the year. Investors should seek to diversify the sources of risk and the types of returns in their portfolios to the greatest extent possible.

Alternative investments offer experienced investors the opportunity to enhance returns and diversify their portfolios through access to a range of both concentrated and diversified exposures in uncorrelated assets. Increasing the number of uncorrelated exposures can both enhance returns and mitigate risk over the market cycle. These kinds of alternative investments have been especially popular in the wake of the great financial crisis of 2008/2009. Due to the following "bullish decade" they did however not yet prove their potential as it did not really pay off to invest into an alternative to the lucrative stock market. In the upcoming recession they might however show their value to mitigate risks. There exist several different forms of alternative investments, each with their own advantages and disadvantages. While some of them have performed poorly others have impressed investors with comparably impressive results:

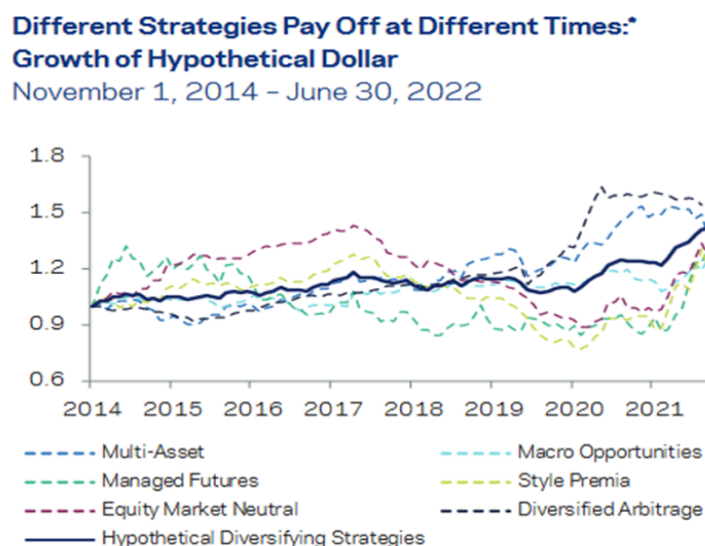
1. One of the highest alternative investment returns in the last decade were achieved by **diversified arbitrage strategies**. Arbitrage is defined by the purchase and sale of an asset in different markets to exploit differences in their prices. It results of market inefficiencies and it both exploits those inefficiencies and resolves them. Therefore, it is a rather low risk opportunity to gain profit for the trader. With technical improvements in the exchange systems, it has however become extremely difficult to profit of those pricing differences. Therefore, sophisticated computer programmes have been set up in order to act quickly as opportunities usually evaporate in a matter of seconds. Diversified arbitrage is combining several of those strategies and trading programmes to achieve multiple sources of return.
2. Another strategy, which has been overperforming compared to other alternative investments has been the **multi-Asset** class. Its main goal is to limit risks by diversifying investing into a broad range of different sectors. A multi-asset class investor might hold bonds, stocks, cash, and real property to

achieve the ratio between risk and returns that is expected by investors. It is therefore a very balanced strategy that is usually managed by active fund managers.

3. The **Equity Market Neutral** trading strategy is another approach to try and keep risks at a very low level. Those funds are created to stay profitable no matter of the current market environment. It is seen as a strategy for stock pickers creating long and short positions on very similar stocks and of the same value. If the market goes down, the short position`s return rises and the long position`s return falls. It is therefore necessary to pick an expectedly overperforming stock for the long position and an expectedly underperforming stock for the short position to achieve profit. It is only important whether the chosen stock overperforms or underperforms in comparison with another selected stock. The strategy thus seeks returns without exposing investors to the risk of the entire equity markets going down.

4. **Global Macro Strategies** focus on the total outlook of entire economies. If certain world regions are expected to go into a recession, equity markets, real estate markets and currencies of this region might be shorted among other asset classes. Investments are based on global economic projections and predictions profiting of global and macroeconomic trends. Often political views of countries and their macroeconomic principles are involved as well as basis of macroeconomic fundamentals. Funds are generally actively managed and provide a high risk/high reward opportunity.

The graph below shows several alternative investment strategies and their theoretical returns of 1 invested dollar between 2014 and 2022 are shown. These returns vary around 20% to 60% clearly underperforming in comparison to a classic MSCI World index. Diversified arbitrage strategies have performed the best comparably especially during the years 2019 – 2021, while style premia and macro-opportunity strategies have underperformed¹:



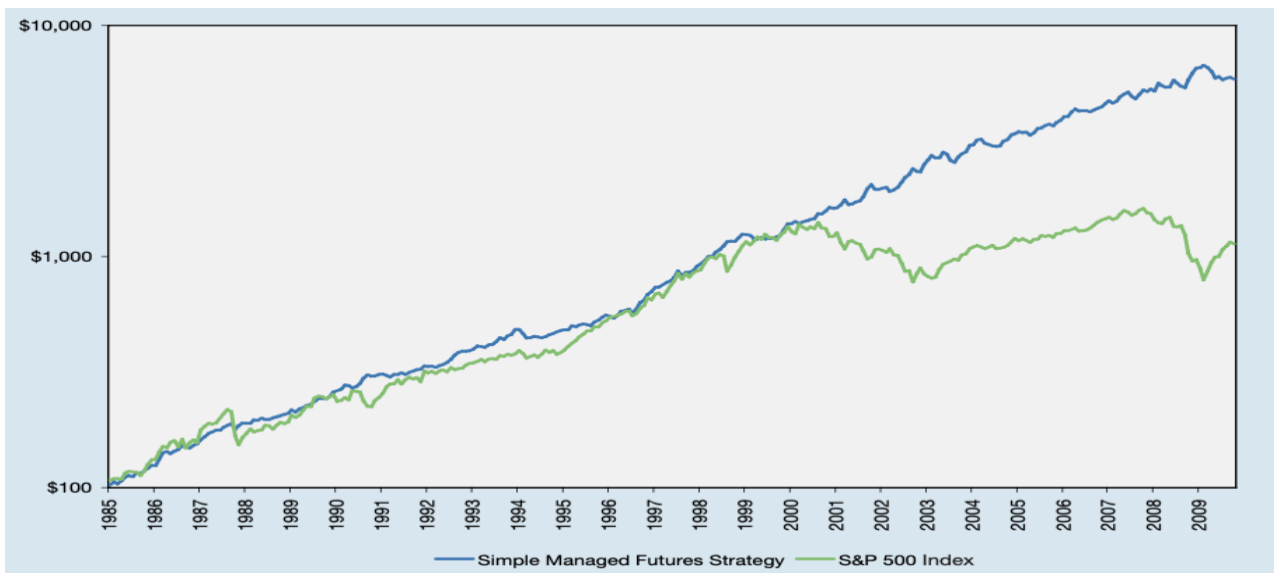
¹ Using common inception period, November 1, 2014. Source: AQR, Bloomberg.

MANAGED FUTURES AND TREND-FOLLOWING INVESTMENTS

Many individual and institutional investors search for alternative investment opportunities when there is a lacklustre outlook for U.S. equity markets. As investors seek to diversify into different asset classes, most notably hedge funds, many are turning to managed futures as a solution. This 40-year-old industry is made up of professional money managers who are known as commodity trading advisors, or CTAs.

The primary driver of most managed futures strategies is trend-following or momentum investing, that means buying assets that are rising and selling those that are declining. These methods are typically applied to liquid exchange-traded futures contracts on various commodities, equity indices, currencies and/or government bonds. But why are these strategies so helpful?

Principally, they reduce managed futures' investment risk through optimized capital allocation and portfolio diversification. In the graph below, the hypothetical growth of 100\$ invested in the Simple Managed Futures Strategy (gross of transaction costs) underlines a constantly rising return over time, averagely working in bad times too.²



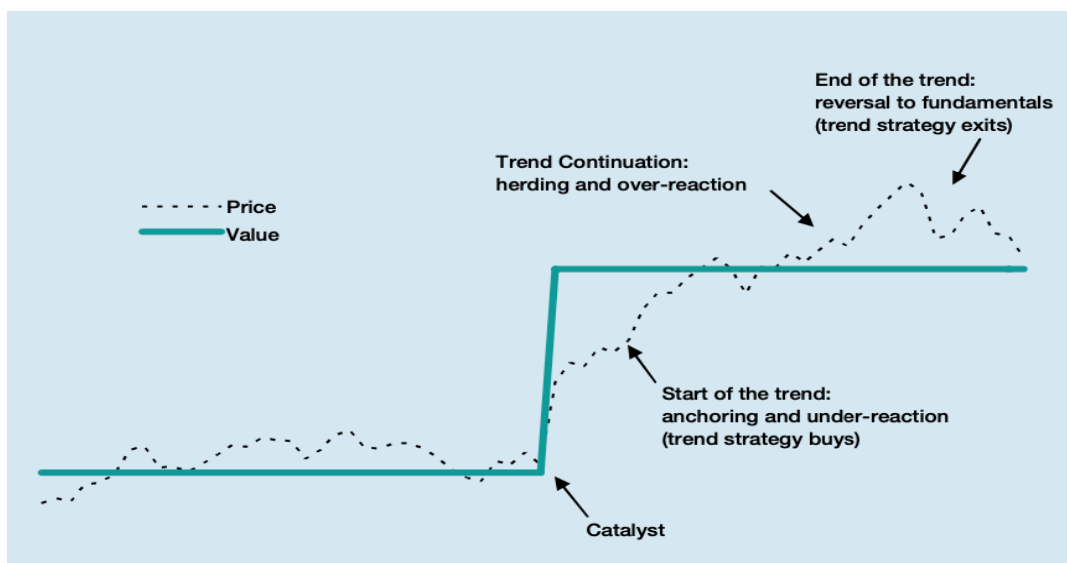
Traditionally, there exists a negative correlation between managed futures and asset classes like stocks and bonds. In other words, managed futures programs are largely inversely correlated with capital markets. But during periods of inflationary pressure, investing in managed futures programs that track the metals markets - like gold and silver - or foreign currency futures, can provide a substantial hedge against the damage such an environment can have on equities and bonds. Therefore, if stocks and bonds underperform due to rising inflation concerns, certain managed futures programs might outperform in these same market conditions.

Going back into the fourth quarter of 2008, equity and energy prices had been declining, government bond prices had been rising, and currencies with high interest rates had been depreciating. This led to managed futures funds being positioned short equities, short energies, long government bonds and gold, and short "carry" currencies. These hypothetical positions profited as the same trends continued throughout the quarter, while markets and other strategies suffered.

The all process works due to the presence of trends. The stylized lifecycle summed up below shows an initial under-reaction to a shift in fundamental value that can potentially allow a managed futures strategy to invest before the information is fully reflected in prices. The trend then overextends due to herding effects, and this finally results in a reversal.

² Source: AQR, Bloomberg

In this example, a catalyst – e.g., a positive earnings release, a supply shock, or a demand shift – causes the value of an equity, commodity, currency, or bond to change. (The change in value is immediate, as shown by the solid blue line.) The market price (shown by the dot-ted black line) moves up as a result of the catalyst, but it initially under-reacts and therefore continues to go up for a while.³



Research has linked this under-reaction to a number of behavioural tendencies and market frictions that lead to actions that slow down the process of price discovery. One of them is the “anchor-and-insufficient-adjustment”: the psychologists Tversky and Kahneman (1974), found that people anchor their views to historical data and adjust their views insufficiently to new information, causing prices to under-react to news.

There is even a disposition effect divulged the last decade by Shefrin, Statman and Frazzini. They came up with the idea people tend to sell winners too early and ride losers too long. The first action is the result of humans’ willing to realize gains as soon as possible. This selling creates downward price pressure, which slows down the upward price adjustment to the new fundamental level.

On the other hand, people hang on to losers for too long since realizing losses is painful. Instead, they try to “make back” what has been lost. In this case, the absence of potential sellers keeps prices from adjusting downward as fast as they should.

Sometimes, under-reaction to trends follow the intentions of non-profit-seeking market participants to fight them. Hence, the economist William L. Silber demonstrated in 1994 that central banks operate in the currency and fixed-income markets to reduce exchange-rate volatility and manage inflation expectations. This potentially slows down the price-adjustment to news together with, for instance, hedging activity in commodity markets.

Once a trend has started, a number of other phenomena exist which have the potential to extend it. A very common one is the “herding and feedback trading”, described in the 90s by De Long and Bikhchandani. Fundamentally, it indicates that when prices move up or down for a while, some traders may jump on the bandwagon, and this herding effect can feed on itself.

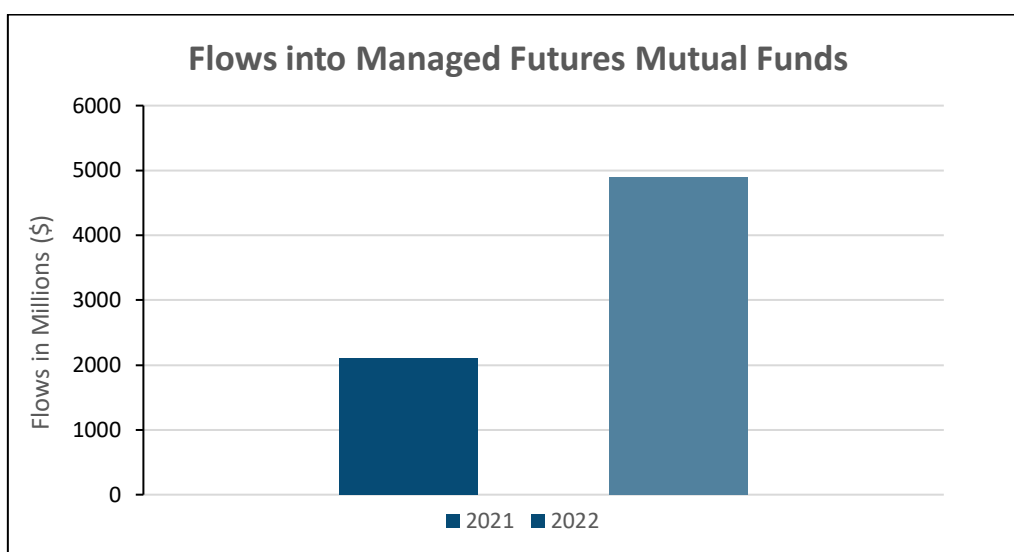
There is also a “confirmation bias and representativeness” behaviour which shows that people tend to look for information that confirms what they already believe and look at recent price moves as representative of

³ Source: AQR, for illustrative purpose

the future. This pushes investors to move capital into investments that have recently made money and, conversely, out of investments that have declined, causing trends to continue.

To conclude, the “risk management” effect argued by Garleanu and Pedersen in 2007 is the most classical one, consisting in selling in bear markets and buying in bull markets in line with the trend. For instance, stop-losses get triggered causing buying/selling in the same direction of the movement.

Regarding performance of this strategy in the current year (2022), managed futures hedge and mutual funds have been some of the biggest winners from this year’s market turmoil and are witnessing their best start to a calendar year on record, according to data from HFR. By July 19, 2022, Kenneth Tropin’s Connecticut-based Graham Capital has made 33.8 per cent in its Tactical Trend fund, while fund giant AQR’s Managed Futures Full Volatility strategy is up 53.3 per cent.



But some other quants and human traders have struggled to adapt to a change in market conditions, driven by a surge in inflation and rising interest rates. That has left some managers who had based their trades on strategies that worked well in previous years sharply in the red. For instance, Fort, which is part of a group of so-called “managed futures” quantitative hedge funds with more than \$330bn in assets, allocated money to strategies that performed best in previous years but struggled this year, which led to massive losses.

HISTORICAL EVIDENCE ON TREND-FOLLOWING AND MOMENTUM INVESTMENTS

Trend-following investing has existed for a very long time, and it is a common strategy in the managed-futures industry. In particular, it is remarkable the importance of the sub strategy of time-series momentum in which investors go long markets with recent positive returns and short those with recent negative returns. Literature shows that this method is well profitable since 1985 and it’s a key factor in the strong performance of managed futures funds from the late 1980s.

We are going to consider an analysis published on November 1, 2017 by Brian K. Hurst, Yao Hua Ooi and Lasse H. Pedersen; it has been adopted a time-series momentum strategy. This method is built on historical data from 1880 in 67 markets across 4 major asset classes: commodities, equity indices, bonds and currency pair.

The authors carried detailed research projected on a decade-by-decade strategy’s performance that considers the influence of various macroeconomic environments with the simulation of the “rolling” of one of the most liquid futures contracts.

Of course, reported results are gross and net of simulated transaction costs and fees.⁴

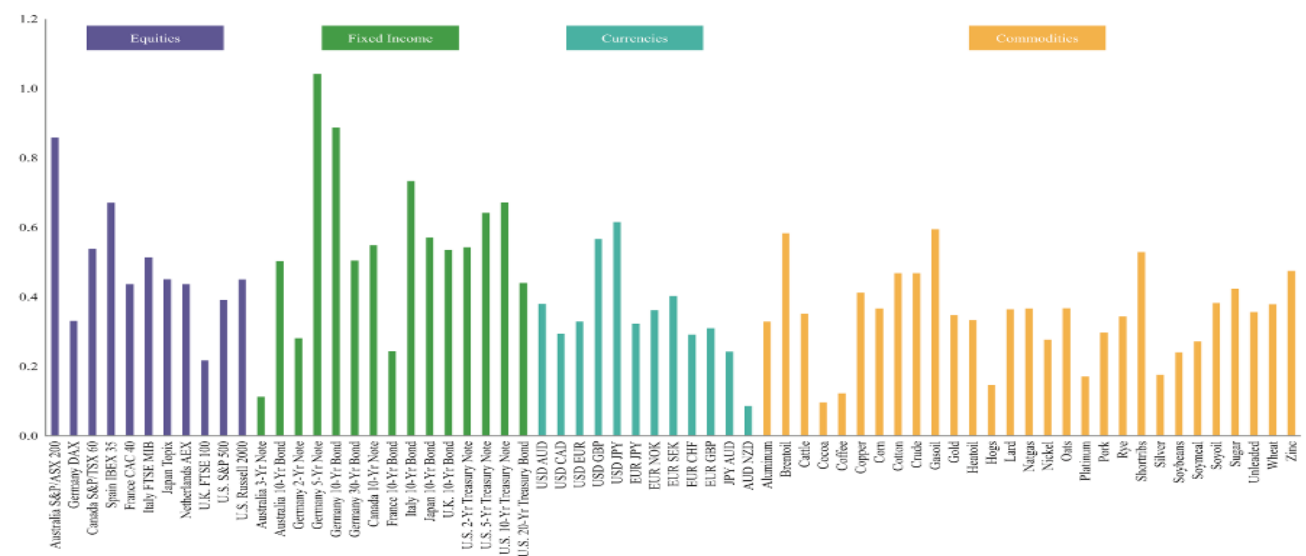
Performance of Time-Series Momentum, 1880–2016

Time Period	Gross of Fee, Gross of Cost Excess Returns	Gross of Fee, Net of Cost Excess Returns	Net of 2/20 Fee, Net of Cost Excess Returns	Realized Volatility	Sharpe Ratio, Net of Fees and Costs	Correlation to U.S. Equity Market	Correlation to U.S. 10-Year Bond Returns
Full Sample							
Jan 1880–Dec 2016	18.0%	11.0%	7.3%	9.7%	0.76	-0.01	-0.03
By Decade							
Jan 1880–Dec 1889	12.1%	5.2%	2.6%	9.5%	0.27	-0.11	-0.04
Jan 1890–Dec 1899	17.4%	10.0%	6.5%	8.9%	0.73	-0.02	-0.15
Jan 1900–Dec 1909	15.3%	6.0%	3.3%	9.5%	0.34	0.02	-0.35
Jan 1910–Dec 1919	12.5%	4.1%	1.6%	12.6%	0.13	0.12	-0.01
Jan 1920–Dec 1929	20.8%	13.3%	9.2%	8.5%	1.09	0.15	0.06
Jan 1930–Dec 1939	15.4%	9.8%	6.3%	8.6%	0.74	-0.11	0.20
Jan 1940–Dec 1949	23.8%	14.8%	10.4%	10.6%	0.99	0.33	0.31
Jan 1950–Dec 1959	26.7%	17.6%	13.1%	9.1%	1.45	0.23	-0.19
Jan 1960–Dec 1969	21.0%	9.5%	6.0%	10.9%	0.56	-0.09	-0.37
Jan 1970–Dec 1979	27.4%	20.5%	15.1%	8.9%	1.70	-0.24	-0.25
Jan 1980–Dec 1989	20.1%	13.3%	9.1%	9.4%	0.96	0.18	-0.16
Jan 1990–Dec 1999	16.8%	12.3%	8.3%	8.4%	0.98	0.01	0.21
Jan 2000–Dec 2009	11.6%	9.9%	6.3%	10.3%	0.61	-0.34	0.27
Jan 2010–Dec 2016	7.6%	6.2%	3.3%	8.1%	0.41	-0.15	0.28

Data show that correlation is the most affecting factor - low levels mean higher strategy performance - and that the output has been consistent over an extensive time horizon that includes the Great Depression and global financial crisis. It follows that randomness in markets 'price trends is not tangible, even if they partially follow investors biases such as anchoring and herding, as well as the trading activity of nonprofit-seeking participants, such as central banks and corporate hedging programs.

With regards to the consistency across markets, the graph below illustrates risk-adjusted returns measured by the Sharpe ratio. It is clear that the strategy delivered positive average returns in each of the 67 markets, with an average Sharpe Ratio of approximately 0.4.

Time-Series Momentum Performance by Individual Asset: Full Sample, 1880–2016

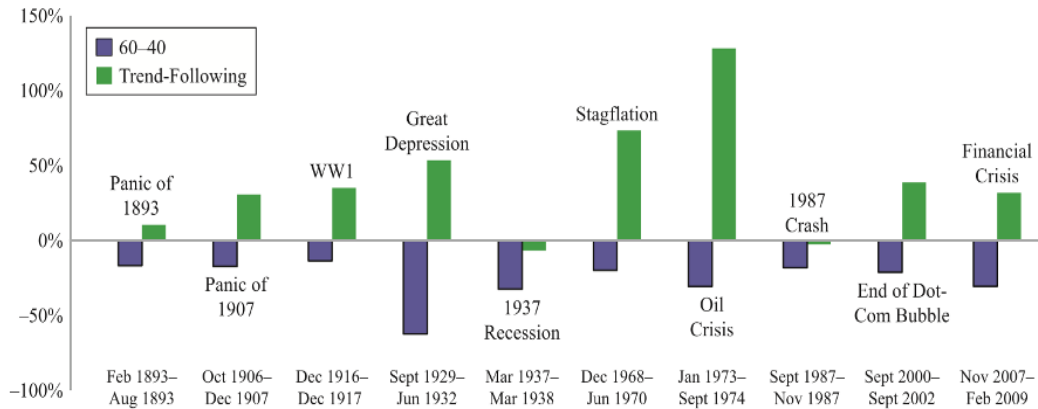


⁴ All the tables and graphs presented below are taken from the article “A Century of Evidence on Trend-Following Investing”, see bibliography

As another way to evaluate the diversifying properties of trend following during crisis periods, the performance considers peak-to-through drawdowns for the traditional 60/40 portfolio, which invests 60% in U.S. equities and 40% in U.S. bonds. The bar chart is focused on the output during the 10 largest drawdowns experienced by this 60/40 portfolio over the past 137 years.

What stands out are time-series momentum strategy's positive returns in 8 out of 10 of these stress periods.

Time-Series Momentum during the 10 Worst Drawdowns for 60/40

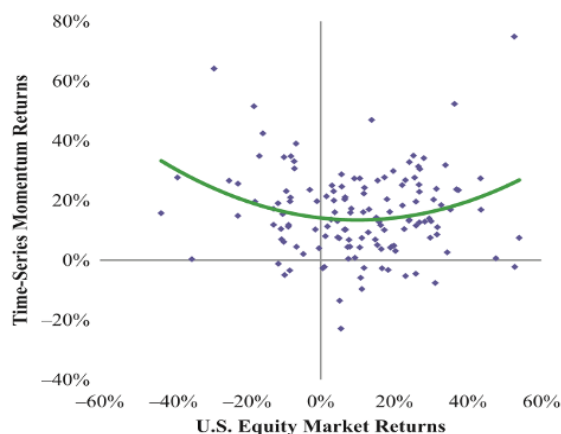


It is noticeably impressive that the strategy has performed best in large equity bull and (especially) bear markets as the “smile” shows below. But why does that happen?

The intuition is that period of downs in prices and stocks have historically occurred gradually over several months rather than abruptly over a few days, giving trend-followers an opportunity to short after the initial market decline and profit from it. In fact, the average peak-to-trough drawdowns between 1880 and 2016 was approximately 15 months.

On the other hand, the strategy may not perform well in bear markets that occur very rapidly, such as the 1987 stock market crash (evidence is in the graph above), because the strategy may not be able to take positions quickly enough to benefit from sharp market movements in those environments. Nevertheless, the tendency for the strategy to do well, on average, in major bear markets, while still achieving a positive return, generally makes it a potentially valuable diversifier for investor portfolios.

Time-Series Momentum “Smile,” 1880–2016



Lastly, it has been carried an examination about the impact of different economic environments on performance. The underlying table illustrates data lagged by one month for the effect of two classic macroeconomic themes: growth and inflation. Data is given by separating the months into recession and booms as defined by the NBER Business Cycle Dating Committee.

Moreover, the table addresses different issues in two panels: Panel A and Panel B. The former takes the perspective of an investor who stands at the end of each month, looking back at the performance of trend following in relation to the economic environment experienced during the same month. This perspective cannot be used to make timing decisions in the portfolio because the economic environment was not known ahead of time.

In contrast, Panel B takes the perspective of an investor who positions himself at the beginning of each month, looking for the performance of trend following in the coming month in relation to the economic environment experienced in the previous month.

In any event, Panel B shows the apparent difficulty of improving the strategy via timing decisions, while in Panel A the method appears to be relatively robust across various economic environments. Additionally, a slightly higher average excess return during booms between the panels denotes a difference that it's not statistically significant.

Time-Series Momentum across Economic Regimes: Binary Indicators

Panel A: Time-Series Momentum Returns by Contemporaneous Macro Indicators

Macro Indicator	Statistic	Group 1	Group 2	Difference
Recession vs. Boom	Excess return	10.4%	11.2%	0.8%
	(<i>t</i> -statistic)	(5.4)	(10.7)	(0.4)
	Volatility	11.6%	10.5%	
	Sharpe ratio	0.90	1.07	
Inflation: Low vs. High	% of occurrences	26%	74%	
	Excess return	10.5%	11.5%	1.0%
	(<i>t</i> -statistic)	(8.4)	(8.4)	(0.5)
	Volatility	10.5%	11.2%	
War vs. Peace	Sharpe ratio	1.01	1.03	
	% of occurrences	51%	49%	
	Excess return	13.5%	10.2%	-3.3%
	(<i>t</i> -statistic)	(6.7)	(9.9)	(-1.5)
Stock Market: Bull vs. Bear	Volatility	11.5%	10.6%	
	Sharpe ratio	1.17	0.97	
	% of occurrences	24%	76%	
	Excess return	10.2%	15.5%	5.3%
	(<i>t</i> -statistic)	(10.4)	(5.9)	(1.9)
	Volatility	10.6%	12.0%	
	Sharpe ratio	0.96	1.30	
	% of occurrences	85%	15%	

Panel B: Time-Series Momentum Returns by Lagged Macro Indicators

Macro Indicator	Statistic	Group 1	Group 2	Difference
Recession vs. Boom	Excess return	10.1%	11.4%	1.3%
	(<i>t</i> -statistic)	(5.1)	(11.0)	(0.6)
	Volatility	11.9%	10.4%	
	Sharpe ratio	0.84	1.09	
Inflation: Low vs. High	% of occurrences	26%	74%	
	Excess return	11.8%	10.2%	-1.7%
	(<i>t</i> -statistic)	(9.7)	(7.3)	(-0.9)
	Volatility	10.3%	11.4%	
War vs. Peace	Sharpe ratio	1.15	0.90	
	% of occurrences	51%	49%	
	Excess return	13.8%	10.1%	-3.7%
	(<i>t</i> -statistic)	(6.8)	(9.8)	(-1.6)
Stock Market: Bull vs. Bear	Volatility	11.6%	10.5%	
	Sharpe ratio	1.19	0.96	
	% of occurrences	24%	76%	
	Excess return	10.3%	14.8%	4.5%
	(<i>t</i> -statistic)	(10.6)	(5.6)	(1.6)
	Volatility	10.6%	12.1%	
	Sharpe ratio	0.98	1.22	
	% of occurrences	85%	15%	

It can be concluded that trend-following investing has performed well in each decade for more than a century, as far back as we can get reliable return data for several markets. In fact, it can be slowed such that it is relatively insensitive to costs, and it produced a long term highly statistically significant P&L.

This analysis provides meaningful out-of-sample evidence across markets and asset classes beyond data already present in literature, where it is raised the preponderance demonstrating that human beings find it difficult to avoid following trends. Even the way that investors and analysts were forecasting the death of trend following prior to the acceleration of performance in 2014 of the CTA industry, only to be followed by those same investors and analysts reinvesting having seen the error of their ways – illustrates the way that people trend follow on the performance of trend following itself. This anecdotal example, like many examples in history, demonstrate the perverse (but persistent) nature of investors' inherent need to follow trends.

Lastly, it has been proved that this method performed relatively similarly across a variety of economic environments and provided significant diversification benefits to a traditional allocation strategy. This consistent long-term evidence suggests that trends are pervasive features of global markets.

INVESTMENT STRATEGIES

It is possible for the investor to use future contracts as a strategy in various markets. They can have different weights in stocks and derivative investments. While observing different managed future funds, two different strategies stand out. First is the market-neutral strategy and the second is the trend-following strategy.

Market neutral strategy:

It aims to profit from both increasing and decreasing prices by taking matching short and long positions in different stocks. For example, a market neutral strategy may include 50% long and 50% short position in a specific industry such as energy. It does minimize the risk involved in a specific market however as Joseph G. Nicholas (Chairman of Hedge Fund Research Inc.) stated, "It does not mean risk-free. Market-neutral investing refers to a group of investment strategies that seek to neutralize certain market risks by taking off-setting long and short positions in instruments with actual or theoretical relationships." With a market neutral strategy and using managed futures as a financial tool, investors aim to gain profit from both increasing and decreasing prices.

Trend-following strategy:

Trend traders create strategies that are developed based on analysing the trends of an asset. A trend following strategy is based on the expectation that the direction of price will continue in its current form and the trend will not reverse. The common motto for trend following strategy is "Find a trend and follow it" The most important thing for this strategy is to analyse different indicators and factors to understand the position of an asset. If the asset tends to rise its value, the investor will take a long position and if it is going to drop its value the investor will take a short position. Especially in terms of managed futures it is a widely used strategy. Hence, a trend-following strategy used fund will be analysed in this report in order to see their performance.

Systematic trend funds mainly implement trend-following, price momentum strategies by trading long and short liquid global futures options, swaps, and foreign exchange contracts. Strategies invest across geographies and assets, including equities, fixed income, commodities, currencies and more.

INDUSTRY PERFORMANCE

This section emphasizes the performance of managed futures compared to the relative systematic trend. Specifically, it is important to see whether the return of managed future funds is correlated with the change in the systematic trend funds. To make a quantitative comparison, the PIMCO TRENDS Managed Future Strategy Fund (PGTIX) will be considered as an example to measure the performance of the managed future investments and to measure the systematic trend, Morningstar Systematic Trend Category will be used. By this way, the cumulative return on managed futures and changes in systematic trends in different times can be shown and compared.

PIMCO Trends Managed Future Strategy Fund (PGTIX):

PIMCO, an Allianz Company, is a successful investment management firm providing solutions for institutions and this strategy fund particularly contains managed future contracts. It seeks positive, risk-adjusted returns, consistent with the price trends (up or down) observed in global financial markets. The fund is the winner of "The Lipper Fund Awards" which recognized the 5-year performance period out of 19 funds under the Alternative Managed Future Funds Classification. The fund's investment strategy consists of taking long or

short positions based on the characteristics and trends of the relative contracts. The measurements below are calculated as of October 31st 2022:

Fund	Currencies	Equity	Rates	Commodities
Portfolio Composition (%Risk Allocation)	36.3%	18.4%	32.6%	12.7%

MSCI ACWI INDEX:

This index is designed by MSCI in order to represent performance of full opportunity set of large and mid-cap stocks across 23 developed and 24 emerging markets. It is built using MSCI's global investable market index (GIMI) methodology. It will be useful to measure the performance of PIMCO Trends Managed Future Strategy Fund and Morningstar Systematic Trend Category by using MSCI ACWI index as a benchmark.

MORNINGSTAR SYSTEMATIC TREND CATEGORY:

The data gathered from this particular category of Morningstar, will give an insight on the average systematic trend category measurements. There are currently 83 funds which follows trend-following strategies in this category and the average category values are taken from Morningstar database.

The table below is showing 5 measurements on the risk and return of the two compared financial tools. These values are coming from the regression analysis made with using daily returns of PGTIX and MORNINGSTAR SYSTEMATIC TREND CATEGORY with using MSCI ACWI Index as a benchmark. As said, this analysis will give an idea on the risk/return performance of the two compared financial tools:

	PGTIX	Category
Alpha	16.06	11.25
Beta	-0.19	-0.05
R ²	14.43	9.65
Sharpe Ratio	1.52	0.99
Standard Deviation	9.84	11.05

Alpha: It measures the difference between an investment's expected returns based on its beta and its actual returns. A positive alpha indicates the investment has performed better than its beta would predict. A negative alpha indicates an investment has underperformed, given the investment's beta.

Beta: It measures an investment's sensitivity to market movements. A beta greater than one indicates the investment is more volatile than the market. If beta is less than one, the investment is less risky than the market.

R-Squared: reflects the percentage of an investment's movements that are explained by movements in its benchmark index (MSCI ACWI Index). A higher R-squared indicates a more useful beta figure. A lower R-squared (less than 70%) is less relevant to the investment's performance.

Sharpe Ratio: It indicates the reward per unit of risk by using standard deviation and excess return. The higher the Sharpe ratio, the better the investment's historical risk-adjusted performance.

⁵ Calculation Benchmark: MSCI ACWI NR USD, Category: MorningStar, Systematic Trend

Standard Deviation: It measures the range of an investment's performance. The greater the standard deviation, the greater the investment's volatility.

As it can be seen, PIMCO Trend Managed Future Strategy Fund had a better performance than the category average while it has a Sharpe Ratio of 1.52, which is calculated with the equation below:

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p} = \frac{\text{Average Return of the Portfolio} - \text{Risk Free Rate}}{\text{Standard Deviation of the Portfolio return}}$$

A greater Sharpe ratio for PGTIX means to have a better risk-adjusted performance. Also, the alpha value indicates that PGTIX had performed better than the predictions. Overall, PIMCO Trends Managed Future Strategy Fund can be a promising example among different systematic trend-following funds.

Overall, as explained above, PGTIX is a good example of managed future performances. Hence, making a risk/return analysis gives an idea of how the investment returns vary compared to similar investments. In this analysis the average return of the fund and the standard deviation of the fund is used to understand the return and the risk. As said, with a higher Sharpe Ratio than the similar investment in the category shows that managed future funds can have better risk-adjusted performance than the similar Systematic Trend funds.

A QUANTITATIVE ANALYSIS

Popular culture and the media often portray futures trading as one of the riskiest and most speculative forms of investment. Several intrinsic characteristics of futures contracts make them substantially less risky, however, than investments in other instruments which have not been branded with many of the same negative characteristics.

Most casual observers and even many experienced practitioners attribute this volatility to the underlying instruments traded, but such a conclusion would be fallacious. Futures garnered their reputation as risky largely due to the volatility of individual commodity markets, which many observers closely associate with the futures markets. The volatility of the passive long-only commodity indices, such as the Goldman Sachs Commodity Index (GSCI), also explains in part the perception of high risk. The nearly 20 percent annualized volatility of the GSCI, combined with its maximum historical drawdown of more than 60 percent certainly justifies this perception.

However, it is important to make a number of critical distinctions here. First, there are fundamental and substantial differences between passive long-only indices like the GSCI and actively managed trading strategies. Those assessing risk must also carefully define it. Modern Portfolio Theory equates risk with variance (or volatility as measured by standard deviation), which measures the dispersion of outcomes from the mean. Using volatility to measure risk, however, penalizes those outcomes which are greater than the expected, or upside volatility. Outcomes which exceed expectations, or exceed a necessary or desired threshold, cannot truly be said to be risky in the sense that they do not imply loss or failure to meet an objective. In other words, volatility ignores the skewness and kurtosis of a manager's distribution of returns.

Managed futures may be more volatile than long/short equity or equity market neutral hedge funds, but not necessarily riskier. Measuring risk by volatility is dangerous to do in the alternatives space since the distributions are typically non-Gaussian.

Moreover, from a practical point of view, there is an obvious difference between upside volatility and downside volatility. For this purpose, we introduce the Omega function, first presented by Con Keating and William Shadwick, which overcomes the shortcomings of the mean-variance framework and allows investors

to refer to the risk-reward characteristics of portfolios with respect to a reference point or threshold other than the mean.

Omega fully incorporates the impact of all of the higher moments of the distribution of returns into an intuitive performance measure that allows practitioners to assess risk and return in the context of their own loss threshold without burdensome utility functions. Investors specify what they constitute as their own loss threshold or minimum acceptable return, which serves as the benchmark return. The Omega function makes a probability-weighted comparison of “profits” and “losses”, however defined, relative to this investor-determined threshold. The Omega function is defined as:

$$\Omega(r) = \frac{\int_{\theta}^b [1 - F(R)] dx}{\int_a^{\theta} F(R) dx}$$

where $F(R)$ is the cumulative distribution function for the returns, bounded by the endpoints a and b , with a threshold of θ . A larger ratio indicates that the asset provides more gains relative to losses for some threshold θ and so would be preferred by an investor. Generally, when the Omega score drops below one, the quality of the investment with respect to achieving the threshold is poor.

Omega is an extremely useful tool since it accounts for the non-normal distributions of returns which are commonplace in finance, particularly for alternative investments. Despite the apparent intuitiveness of the Sharpe ratio, the fact that it ignores skewness and kurtosis and penalizes upside volatility essentially renders it useless for investment performance analysis.

Moreover, the selection of a threshold makes this ratio very useful for many practical applications. For example, pensions usually need to target returns which are a function of their liabilities; in this sense, the threshold to use would be some return which at least covers the liabilities. Like the Sharpe Ratio this measure can be used in optimization problems returning the optimal capital allocation.

To understand better the meaning of the Omega function we are going to consider the previously seen returns of PGTIX and Morningstar Systematic Trend Category. Arbitrarily, we consider a threshold θ of 1%. Using monthly returns (2014-2022), we obtain the following results:

	PGTIX	Systematic Trend Category
Omega Ratio	0.42	2.76
Sharpe Ratio	1.52	0.99
Standard Deviation	9.84	11.05
Skewness	-0.46	1.58

We can appreciate a higher ratio for the Systemic Trend Category meaning a better performance of the industry compared to the PIMCO fund. This measure takes into account higher moments of the distribution of returns; thus, it is a better indicator than the Sharpe Ratio especially when considering asset classes like futures. Looking only at the Sharpe Ratio, we would have concluded a better performance of PGTIX, but this measure would have not considered a more complete definition of risk. The difference between the two measures is given by higher moments measures such as Skewness or Kurtosis. In fact, the Category has a positive Skewness meaning that a higher portion of the variance is given by upside volatility which, as said above, is not actually a risk factor. PGTIX has instead a negative skewness, this results in a lower Omega Ratio and helps us understand better the concept of risk.

The Sharpe Ratio, using as a measure of risk only the Standard Deviation, ignores the fact that the measure includes both upside and downside deviations from the mean. In this case, we would say that the Category is riskier than PGTIX (a standard deviation of 11.05 compared to 9.84). However, as we have seen, the higher standard deviation of the Category is given by upside deviations as described by Skewness.

What follows is a table comparing the ratios and measures seen above for several benchmarks related to managed futures or useful as comparison means⁶:

	Barclay BTOP50 Index	S&P 500 Total Return	MSCI World Daily Total Return	Barclays Capital Bond Global	GSCI TR	DJ UBS Commodity Index	HFRI Fund Weighted Index	HFRI Equity Hedge Index
Annualized Return	8.15%	11.74%	9.88%	8.52%	5.95%	4.63%	10.86%	12.62%
Annualized Standard Deviation	10.13%	15.31%	15.21%	6.17%	19.26%	14.78%	6.87%	9.06%
Worst Drawdown	-13.31%	-50.95%	-54.03%	-12.43%	-67.65%	-54.26%	-21.42%	-30.59%
Skewness	1.07	-0.66	-0.67	1.06	-0.22	-0.56	-0.68	-0.25
Sharpe Ratio (Rf=0%)	0.80	0.77	0.65	1.38	0.31	0.31	1.58	1.39
Omega Ratio (3% threshold)	1.53	1.59	1.46	2.07	1.21	1.15	2.28	2.18
Correlation to S&P500	-0.04	1.00	0.88	-0.18	0.18	0.31	0.74	0.73
Beta	-0.02	1.00	0.87	0.07	0.22	0.31	0.34	0.45
Alpha	0.72%	0.00%	-0.01%	0.62%	0.41%	0.20%	0.59%	0.65%

The Barclay BTOP50 Index is a good benchmark replicating the overall composition of the managed futures industry with regard to trading style and overall market exposure. Comparing this index with, for example, the HFRI Fund Weighted Index we see that the first has a higher standard deviation (and a lower annual return); as a consequence, the Sharpe Ratio is almost half of HFRI's. However, the worst drawdown displays a better performance for BTOP50; this is confirmed by the Skewness which is positive for the BTOP50 and negative for the HFRI Index. The result is shown in the Omega Ratio which, still being lower, exhibits a smaller difference between the two indexes.

In conclusion we have demonstrated that accounting for higher moments risk factors is essential in understanding the performance of a certain managed futures fund. The Omega Ratio is a great measure to achieve this objective and hence should always be computed beside the Sharpe Ratio.

⁶ Source: Bloomberg. All statistics calculated to maximize number of observations; as such, number of observations used for calculations varies. The regressor for the calculation of Beta and Alpha is the S&P 500 Index.

CONCLUSION

We have seen that in this historical period finding alternative investment strategies is of outmost importance; ramping inflation, uncertain interest rates and volatile equity markets highlight the urgency of diversifying into strategies with little to no correlation to “traditional” investments.

Managed futures have proven throughout history to be a well-performing and most of all well-diversifying investment strategy. We have analysed some of the historical evidence and some of the studies about the performance of managed futures also showing that the trend-following strategy has proven to be able to deliver consistent results. Academic research on this strategy is very extensive since trend-following and momentum investment seems to be one of the few persistent contradictions to the Efficient Markets Hypothesis. Naturally, scholars know that the Hypothesis is subject to many contradictions and that, being based on a number of assumption, is only a useful framework for many financial and economic models.

We have also analysed the performance of the industry compared to a specific case and we tried to point out differences in performances.

Finally, we have seen a more complete quantitative analysis of managed futures which is based on the use of the Omega Function: a useful tool taking into account higher moments risk factors and very flexible for the practical use in the industry. This analysis showed that managed futures must be studied in all their complexity.

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