

## System addicts: a look at systematic trading

Systematic trading

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There has been a quiet revolution going on in the systematic managed futures business in recent years. The biggest players have gone beyond trend-following and embraced a multitude of different strategies and trading styles. Hedge Funds Review reports on the diversified approach to systematic trading.

Over the past decade hedge funds have come to embody the pursuit of ideas and innovation in the investment sector. Hedge fund managers found ways to free themselves from the historical constraints that tied investment returns to market performance.

The concept of absolute returns has changed the rules of the investment business and made hedge funds an important component of almost every sophisticated investment portfolio.

But, until recently, the advances in one corner of the hedge fund world have gone largely unnoticed by even the most sophisticated investors. The systematic managed futures business has undergone a quiet revolution since the early 2000s, although the wider investment world is only just beginning to catch on.

Managed futures funds rely on computer programs running statistical models to identify trading opportunities. The most popular managed futures strategy is trend-following. This strategy has traditionally been seen as a risky and volatile approach which occasionally delivers outsized returns but can just as easily crash and burn.

But a generation of commodity trading advisors (CTAs) has been working feverishly to redefine the risk/return profile of managed futures and broaden its appeal to investors. The objective of these managers is to be consistent alpha generators, capable of producing attractive risk-adjusted

returns year on year while keeping risk and volatility under tight control or as one manager put it, “to go from traders to asset managers”.

Patrick Welton, CEO of Welton Investment, has been at the leading edge of this change. He established Welton Investment Corporation in 1989 to run a trend-following managed futures program. The business was successful but Welton came to realise a program based solely on trend-following strategies had its limitations.

“Long-term trend followers can have one fantastic year and then go a couple of years without providing much of a return,” he says. He started to think about ways to improve the consistency and profitability of Welton’s program over different time periods.

Realising the problem was not confined to long-term trend followers – “the returns from high-frequency trading have waxed and waned over the years,” Welton notes – he concluded a multi-strategy approach to trading futures had the best chance of producing consistent returns over a sustained period of time. Based on these findings, Welton developed the Global Directional Portfolio (GDP) program in 2003.

The architecture of the program reflects Welton’s belief in the benefits of diversification, not only across markets and asset classes but also across strategies and time frames. The program consists of multiple strategies that vary in inputs, style and directionality.

Around 40%–60% of Welton’s portfolio is allocated to momentum and directional strategies, while the remainder is split across various mean reversion and fundamental models. The strategies are traded across multiple markets and time frames. Unlike traditional trend-following programs, Welton’s is able to capture both directional moves and relative value opportunities.

At around the same time Welton launched its program, partners at Millburn Corporation were reviewing their approach to trading futures. With roots back to the 1970s, Millburn is one of the oldest continuously operating CTAs in the US.

At the beginning Millburn used a systematic medium-term, trend-following approach. The strategy evolved over time before being substantially overhauled in the early 2000s. Millburn’s research team realised the noise levels in the market and the volatility around trends had grown over the years. They responded by adding some slower trend-following models and more markets to the existing mix. That was followed by the development of non-trend following strategies that use fundamental and high-frequency information.

Millburn’s multi-markets strategy allocates around 60% of its capital to trend-following systems. Holding periods for this strategy are around six months on average. The remaining 40% is spread across a number of short-term and non-trend following strategies based on quantitative and fundamental inputs.

The non-trend models used by Millburn include relative value, event-driven, pattern recognition and intra-day strategies using high-frequency data. These systems might hold positions for a few hours or a few months, with the average holding period coming in at around two weeks.

“Our philosophy is to always maintain a core position in the direction of the long-term trend in the market,” says Barry Goodman, executive vice president and director of trading at Millburn. The additional strategies serve to “complement the trend-following model” and “take the edge off this core strategy during sub-optimal periods,” he explains. The end aim is to produce smoother and less volatile performance across the fund, he says.

One manager who has seen clear benefits from moving to a diversified, multi-strategy approach is Salem Abraham, president of Abraham Trading Company (ATC). He launched ATC in 1990 and found immediate success using a long-term, trend-following strategy.

But returns tapered off in the mid-1990s as the environment for trend-following became more challenging. Abraham made modifications to the strategy which boosted returns, but he remained concerned about the relatively high volatility to the strategy.

In 2005 he decided to overhaul his approach with the addition of mean reversion, momentum and short-term trading strategies. The addition of these models transformed the risk/return profile of the program. Volatility over the past three years stands at just 11.38% compared to over 30% historically, while returns have remained in the region of 20% annualised.

### **No swinging**

“People tend to think the managed futures pendulum swings back and forth but that is not the game we want to play. Our aim is to deliver a steady pay-off to investors. Having different strategies in the program gives us a better chance of doing that,” says Abraham.

The move to a diversified, multi-strategy approach has been replicated across the managed futures industry. In Europe, companies like Man Group, Winton Capital and BlueCrest have raised billions of dollars for their diversified trading programs.

“Around two thirds of CTAs can be described as diversified trend-followers,” says Ranjan Bhaduri, head of research at Alpha-Metrix, a Chicago-based managed account platform which tracks around 2,000 CTAs. “The other one third of the industry is very diverse, covering everything from short-term momentum, mean reversion and pattern recognition programs through to discretionary traders,” he adds.

The volatile and highly corrective markets in 2009 provided the first major test for the diversified approach. CTAs generated solid positive returns for much of the 2000s, culminating in an almost perfect year for trend-followers in 2008. That year the average CTA generated returns of around 14% according to the BarclayHedge CTA Index, with many CTAs recording gains of 20% or more.

The main indexes which track managed futures show either flat returns or single-digit losses in 2009. The performance of some of the large diversified managed futures programs spans a broad range. Man AHL Diversified Futures was down 10.8% at the end of November 2009 and was reported to be down further in December. Welton’s GDP lost 7.62% to the end of October 2009. Both programs generated positive returns of over 20% in 2008.

Others have fared better. Millburn's Multi-Markets Program and ATC's diversified program were both flat to the end of November.

This relative underperformance raises obvious questions about the extent to which diversification has improved the return profile of CTAs with a trend-following component.

The majority of CTAs are still bound together in being divergence players rather than mean reversion traders, notes Troy Buckner, managing principal of NuWave Investment Management. "The better CTAs have learned to diversify more effectively in style but they still make their money from broad trends that diverge from mean price levels," he says.

In 2009 CTAs that share a divergence philosophy spent most of the year adjusting to the reversal of 2008's mammoth trends. "Taken as a whole, it simply has not been an ideal environment for even the high-quality, super-diversified CTAs," says Buckner.

NuWave's Combined Futures Program incorporates short-, medium- and long-term strategies based on pattern recognition models. The short-term strategies were profitable in 2009 while the others were not, resulting in a down year for the program as a whole, says Buckner.

That story is repeated across the sector. Most diversified CTAs made gains on their short-term strategies and fundamental models, while momentum and medium- to long-term trend-following strategies were down across the board.

At Millburn, Goodman says the performance of the company's managed futures programs in 2009 has been "consistent with what we would expect given the market environment and corrections in the first quarter". He emphasises the core philosophy at Millburn is of a long-term trend-follower and the company's intention is to always maintain a meaningful exposure to that strategy.

"There are reasons why markets trend and we believe we are very good at identifying those scenarios. A lot of the work we have done recently is around managing downside volatility and the size of our drawdowns without sacrificing return. The inclusion of short-term models and fundamental strategies has helped the program this year," says Goodman.

Millburn's Multi-Markets Program returned over 30% in 2008 by capturing large directional trends, he adds.

ATC's diversified program is broadly flat for 2009, making it one of the better performers in the sector. Abraham is frustrated with the performance of the program but he is unlikely to change his approach.

"This has been the worst year since we moved to the diversified model. It is frustrating but I would be more concerned if this happened three years in a row. We are always looking for ways to improve the program but I still believe our core approach is a good one over the long term," says Abraham.

At AlphaMetrix, Bhaduri has a positive view on the performance of CTAs. He emphasises 2009 was one of the most challenging environments imaginable for systematic traders. “The biggest enemy of a systematic trader is government intervention. It causes sudden changes in market direction which the models cannot predict.”

The sheer scale of government stimulus in 2009 made it extremely difficult for CTAs to adjust to the market. “While CTAs have not done extremely well, the best ones did protect most of their gains from 2008. That is proof of the improvements that have been made with regard to risk management and diversification,” he says.

Others remain unconvinced of the extent to which diversification has helped the performance of CTAs. A diversified approach can lead to improved performance although it is difficult for a CTA to pull it off, says Arvin Soh, fund manager of the GAM Trading Strategy, a fund of funds which invests in global macro strategies and CTAs.

“Diversification will improve the risk/return profile of any program but only if it is implemented correctly. Not everyone gets it right,” says Soh. He thinks only a handful of long- to medium-term trend followers have managed to diversify their programs with successful short-term trading strategies. “It is a different discipline. It can be difficult for a long-term trend follower to get the knack for trading shorter time frames,” says Soh.

Even if they are able to find the right models, the benefits are often incremental, he notes. “Short-term strategies tend to have limited capacity, so adding one to a multi-billion dollar CTA is unlikely to transform its risk/return profile,” says Soh.

GAM splits CTAs into two groups: medium- and long-term trend followers and short-term traders. “The medium- and long-term CTAs generally have a less-attractive return to volatility ratio than short-term traders, so we tend to have more exposure to the latter,” says Soh.

Diversified programs continue to retain the core characteristics of medium- to long-term trend followers. So far the main benefit of diversification has been to curb the volatility of medium- to long-term momentum and trend-following strategies.

The returns of trend followers tend to be widely dispersed around the mean. For this reason most sophisticated investors hold a basket of trend followers or gain exposure to the strategy through a fund of funds. Diversified CTAs are a simpler and more cost-effective way to achieve the same lower-risk exposure.

Diversified CTAs continue to search for ways to improve the performance of their programs. “As new markets, countries or regions become liquid, it creates more opportunities to diversify,” says Welton. He points to emerging market currencies, derivatives and even electricity as markets that could potentially become viable options for CTAs in the future.

Welton is also on the lookout for new strategies to add to its program. “One of the next major research projects we have is focused on becoming a synthetic market maker,” says Welton.

The commitment to research within the sector means new ideas and strategies are always emerging. The addition of fundamental models was a major departure for CTAs, which have traditionally focused on building models based on technical data. Other fresh ideas are popping up all the time. For instance, companies like Systematic Alpha have created market-neutral managed futures programs, while NuWave has applied the philosophy behind its futures program to trading US equities.

The systematic trading landscape is evolving in some surprising ways, adds Soh. “Discretionary and systematic macro managers and CTAs are moving towards one another. CTAs that used to be price-based are now incorporating fundamental data into their models. Traditional macro managers who used to be totally fundamentals-based are analysing technicals. It started happening a few years ago, but now we see it more and more,” he says. n

### **Short-term traders buck the trend**

The universe of short-term systematic traders is diverse. It includes everything from momentum players and trend followers to mean reversion and pattern recognition strategies, among others. These strategies are relatively uncorrelated to each other and have a tendency to outperform when long-term trend followers find the going most difficult.

Even short-term traders found 2009 a challenge. The AlternativeEdge Short-Term Traders Index was down 3.35% to December 2009, while the broader Newedge CTA Index was down only 2.66% to December.

Some of the CTAs that outperformed their peers in 2009 did so using unusual strategies. The Systematic Alpha Futures Fund is one of only a few CTAs to have profited in 2009. The program was up around 6% at the end of November, having posted positive returns in 10 of the previous 11 months.

Systematic Alpha’s Futures Fund is purely focused on mean reversion, although the program is diversified across markets, trading models and time frames. Holding periods vary between four and 11 hours, with the average position held for around six hours.

One of the unique features of the program is that it is designed to be market neutral at the portfolio level. “It might be beta neutral overall or neutral in terms of sector exposures. In that sense it is the opposite of what trend followers are doing,” says Alexei Chekhlov, head of research at Systematic Alpha. The net result is a program which is significantly uncorrelated to traditional trend-following CTAs.

Chekhlov says Systematic Alpha has been able to keep a lid on volatility without having to add non-mean reversion models. “We have been able to significantly reduce the fat tail distributions of individual markets by looking at them in high frequency and creating portfolio-level neutralities. This means the fund does not surprise investors with abnormally large positive or negative months,” he says.

NuWave's Long/Short Portfolio is another program that profited in 2009. The long/short strategy is an extension of the same pattern recognition theories that underpin NuWave's flagship Combined Futures Portfolio, although the application is very different. The Long/Short Portfolio trades large-cap US cash equities, not futures. It is very short term in its trading and the overall exposure of the portfolio is market neutral rather than directional.

"US equities present a highly correlated universe that lends itself to market neutrality, whereas our futures exposure is designed to be in markets that are as different and non-correlated as possible. Positions in the long/short portfolio last for hours to several days. On the futures side, positions could be held anywhere from a few weeks to several months," says Buckner.

The Long/Short Portfolio returned around 14% to the end of November 2009, having posted a 19% gain in 2008.