

## Trend following and the MCM system – an interview with Paul Mulvaney

### What worldview does the system execute?

The system is motivated by a very broad interpretation of the universe. The underlying belief is that economic systems adjust to changes in fundamentals *gradually and over long periods of time*, and that the consequent trends are evident everywhere in human history and commerce. Political, economic and social regime changes trigger price adjustments in markets that don't happen instantaneously. For example, the growth and decline of the Roman Empire took place, not in a day, but over hundreds of years.

A major problem, of course, is that markets don't move from one state to another in a straight line: there are periods of countertrend shock and volatility. We spend most of our time trying to find ways to deal with those unsettling but inevitable events. That being said, it is really not difficult to put together a simple trend-following system that can generate positive returns over a realistic holding period – and there are many, many commercial systems that have been generating strong, albeit volatile, returns for a long time. So there are definitely firm grounds for believing in Santa Claus.

Unfortunately, despite all the evidence, many find it hard to accept the inherent return in trend-following. Directional trading is a much harder sell than a hedge fund style such as market neutral equity, where investors take the view that the trader is basically preying on short-term price imbalances created by institutional order flow. Pure trend-followers pay offers and hit bids, and that puts some people off because of a deep-seated reluctance to cross spreads. So I find myself pursuing the strategy because of its superior absolute profitability and because it is intellectually challenging, rather than because it is the most convenient product commercially.

### When and why did you decide you wanted to become a systematic trader?

It was a gradual migration. In the early days I tried trading on a fundamental basis. But I soon concluded that amassing a comprehensive set of economic data would be difficult or impossible, not to mention that I wasn't qualified to interpret it [PM majored in computer science and mathematics, not economics]. Then I remember one of my bosses saying that it is vital to focus on what *is* happening rather than on what *should* happen. Technical trading, especially trend following, is about what *is* happening. It is a very pragmatic strategy. Never lose sight of the famous saying of J.M. Keynes: "Markets can remain irrational longer than you can remain solvent".

As I experimented with technical trading techniques, I leaned more and more towards the belief that the ultimate expression of technical trading is systematic trading. There are also obvious practical advantages in that a computer can realistically analyse more data and hence more markets than a human being. So in 1995 I started developing the system MCM uses today. The

system is an algorithmic interpretation of technical analysis. Computerisation imposes discipline and objectivity, which are surely the two most important factors in trading

### **What are the optimal market conditions for the strategy?**

Because we trade a broadly diversified portfolio, the strategy is not cyclical and could be performing well at any point in time. For example, if there's nothing happening in the financials, oil and soybeans might still be trending.

In the context of an individual commodity, we tend to make money when there are major dislocations, for example, the Euro moving from 0.90-1.15, so long as it doesn't happen in a single day! Ideally we want smooth trending conditions with the market trading at a typical level of volatility. Hyper volatility is not good, and neither are 'dead-in-the-water', sideways markets.

Some people characterise trend following as being long a dynamic straddle, because as a market starts to trade up we build long positions and as it starts to trend down we build short positions. To make big money, we want the move to continue for an extensive duration. At MCM we pursue a very long-horizon strategy which is designed to avoid trading on random noise while the real trend develops.

### **Is there a way of measuring the potential returns from trend following?**

In any single market we could implement a simple technique like a moving average crossover and compare the system to that, but I'd still question whether it was a valid measure and there would still be all the complexity of portfolio design to consider. I don't think it is possible to define the perfect system. It's a bit like trying to define the perfect game of golf or tennis. You can only really compare one person's game against another's.

### **What are the key decisions facing a system designer?**

In my view, time frame, position sizing and diversification mechanism.

My research says unequivocally that trend-followers should go long term. We have to hold positions beyond a certain horizon to beat transaction costs. Long-term trading is a way to avoid short-term randomness in the market; the level of trend versus short-term volatility is quite low, so long-term trading means not trading on noise. Also, the volatility of volatility is much lower at the long end than the short, so a long-term portfolio ought to be much more stable. In practice most trading is intra-day, followed by intra working week, and so on. Our round trip rate is quite low compared with other people, which suggests we are indeed relatively long term and chasing opportunities not many other people are chasing.

Position sizing is influenced by market volatility estimates and the amount of trading capital on hand. Both of these fluctuate, so we have to decide if, how and when to rebalance. To give an example, if we make a 10% profit on the portfolio, do we increase all position sizes by 10%? There are as many answers to this sort of conundrum as there are CTAs.

As far as diversification is concerned, a foolproof approach is to select only instruments that are uncorrelated and trade those on an equally-weighted basis. Unfortunately there aren't as many genuinely uncorrelated instruments, as I would prefer. The approach we use is to apply portfolio theory to calculate theoretical weights for a larger number of imperfectly correlated instruments.

Because we are trading longer term, we tend to estimate long-term mean correlations. When there is a regime change we change the weightings.

### **How do you take profits, and what is your stop-loss mechanism?**

There is no profit taking per se. We only exit on stop-losses, because profit taking would interfere with the unlimited upside potential we have, in theory, on every position.

Our stop-loss policy is an actuarial model that analyses the probability and consequences of hitting stops placed at various prices relative to the current market level. This allows us to estimate the expected loss associated with each possible exit point and hence to construct an optimal liquidation schedule.

### **How did the system cope with the war against Iraq?**

We did very well during the pressure trade phase, which lasted for months before the eventual outbreak of hostilities. Over the twelve months March 2002 to February 2003 we posted a net return of 44.88%.

March 2003 itself was painful for us [-12.83%], mainly because of the collapse in oil and gas, where our long positions had up until then been making huge money. For example, gas rallied an amazing 60% in February but in March it promptly gave back those gains. I don't know how much this was related to the war but it was our biggest loser on the month. Nevertheless [as of writing in May 2003] the gas position is still showing a healthy profit since instigation. Our system is very sensitive to overall net profit on a position but is prepared to risk excess unrealised profits. That's how we stay in trends for the long term, but it means the ride can be bumpy at times.

At the onset of the first Gulf War crude oil futures dropped \$10 in a day; this time the sell-off wasn't quite as spectacular but still eroded a big portion of our gains. Before the shooting started we had already exited our long positions in gold, because it came off hard in February. In the financials we were hurt initially during mid March but we recovered strongly by the beginning of April.

With the war event behind us now it is reassuring that the system has confronted a very risky scenario and is still showing a very respectable YTD return [Q1 2003: +7.34%]. Few months in history will be like March 2003. And even taking into account the drawdown we have generated a compounded annual net return of 17.17% over 40 months of trading.

### **Are you ever tempted to override the system?**

No. The system is based on finding reliable statistical patterns in historical price data and in principle always makes the percentage play. If I overrode the system I would essentially have to wave goodbye to that incredibly valuable body of statistical research.

The historical database can only ever represent a subset of all the possible variations on price action. For example, there haven't been many episodes like the war and hence the system lost money during the denouement – a sequence of events it had not seen before. So drawdowns are statistically inevitable because we can't allow for every eventuality. Recognising that drawdowns are inevitable helps me to remain detached and also means that I have expended considerable

effort designing circuit-breaker mechanisms to exit losing positions when things get hairy. My system is very, very general – but that is its strength.

The Gulf War outcome illustrates a potential trap in system design: it is possible to come up with parameter settings that capture big events in the data and trade unique situations well. But such a system might have little inherent stability and fall apart in similar, but non-identical, future conditions. Actually, volatility in an earnings stream can be a good sign, because it shows that the system is not curve fit. While it will sometimes be temporarily humiliated by the price action, an un-curve-fit system only makes general statements about the past and therefore has an improved probability that it will survive the future.

### **What effect do emotional factors have in hedge fund investing?**

The challenge for an active fund manager is to manage the conflict between trading the optimal strategy and meeting investor expectations. The optimal directional trading strategy does things that are psychologically difficult and that don't necessarily appeal to investors.

Research shows that investors often tend to withdraw after drawdowns and therefore don't always participate when the equity curve recovers. So managers are obviously under pressure to prevent those drawdowns occurring. I've always resisted pressure to deleverage my program because I believe volatility is inevitable in directional trading and trying to avoid the inevitable can become absurd. Our returns have also exhibited significant negative correlation to equities since Q1 2000. Why dampen that effect? The strategy may appear to be volatile on a standalone basis, but it offers superb diversification to the portfolio manager. And in any case, the perception of high volatility tends to result from a misapplication of basic statistical methods. Is standard deviation the appropriate measure? Categorically, not.

### **What are the characteristics of a good trader?**

Extreme attention to detail is critical, but objectivity, and the ability to remain objective under stress, is the most important character trait. There is enough science involved in trading for a lot of what we do to be programmable and subject to rigorous mathematical analysis. But both making and losing money make people unstable and there are very few absolutes in economics – almost everything involves a trade-off of some sort. I would surmise that more people have the ability to crunch the numbers than to remain objective about when to get in and out. That involves letting go of the ego, because if you're concerned about being wrong or what other people think of you, you cannot maintain discipline.

Our system, for example, is profitable 54-55% of days but on only 25% of trades. Now, clearly an investor can be profitable on a small minority of trades and win overall, but research suggests that many have emotional difficulty coming to terms with that sort of win-loss distribution.