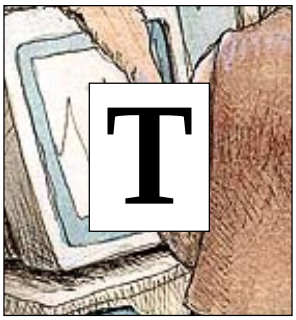
Using Multiple Moving Averages

Moving averages, familiar to every technical trader, are used by most technicians to identify important trends. Here's a unique twist on using multiple moving averages as an early warning of trend reversals.

by Daryl Guppy



Technical analysis is an adaptive process, pressing at the edges of possibility and developing new approaches from ideas glimpsed in passing. The multiple moving average (MMA) is an indicator developed from one such encounter. It uses core information generated from multiple time frames to capture and understand a concept of market dynamics rather than specific value readings.

As part of her search for high-probability swing trading points, technical trader Linda Bradford Raschke did some work with momentum-based oscillators to identify negative feedback setups. This was one of several steppingstones toward developing some solutions applicable to swing trading, fast-moving commodity markets, and discussed in her work *Street Smarts*. Although her focus was on the relationship between range and momentum as a way of identifying the start of positive feedback loops, an observation about contraction points tripped off a series of associated thoughts for me.

The key relationship Raschke was looking for was the crossover of the momentum line plots. She saw this convergence as indicative of volatility — of a change in price action — and as a filter of market noise. The key relationship I wanted to explore further was the concept of multiple crossover points as a way to filter market noise. In my equity market segment, moving averages offered opportunities beyond those supplied by momentum oscillator values.

In its most basic form, a moving average signals a trend change when the fast moving average crosses above or below a slower moving average. In any moving average, no matter how calculated, the crossover point delivers two messages. The first is about a change in direction for price; most people concentrate on this and on ways of fine-tuning the signal. The second message shows us a moment of agreement about value from two different time frames. For one reason or another, we tend to ignore the second message.

MULTIPLE MOVING AVERAGES

In working with the concept, I chose an exponential moving average (EMA) to get a broad feel for the type of signal generated. As a rule, I prefer to use an EMA, and in this instance this preference was critical. The EMA throws forward the weighting of recent price action, a factor that delivered unexpected results when working with longer-term averages.

I selected a stock where there was proven strong breakout activity. In these first tests, I did not want to leave room for doubt, so I ensured that any backtest would be performed on known data. If this did not move, then I needed to limit the time expended on this approach and move on.

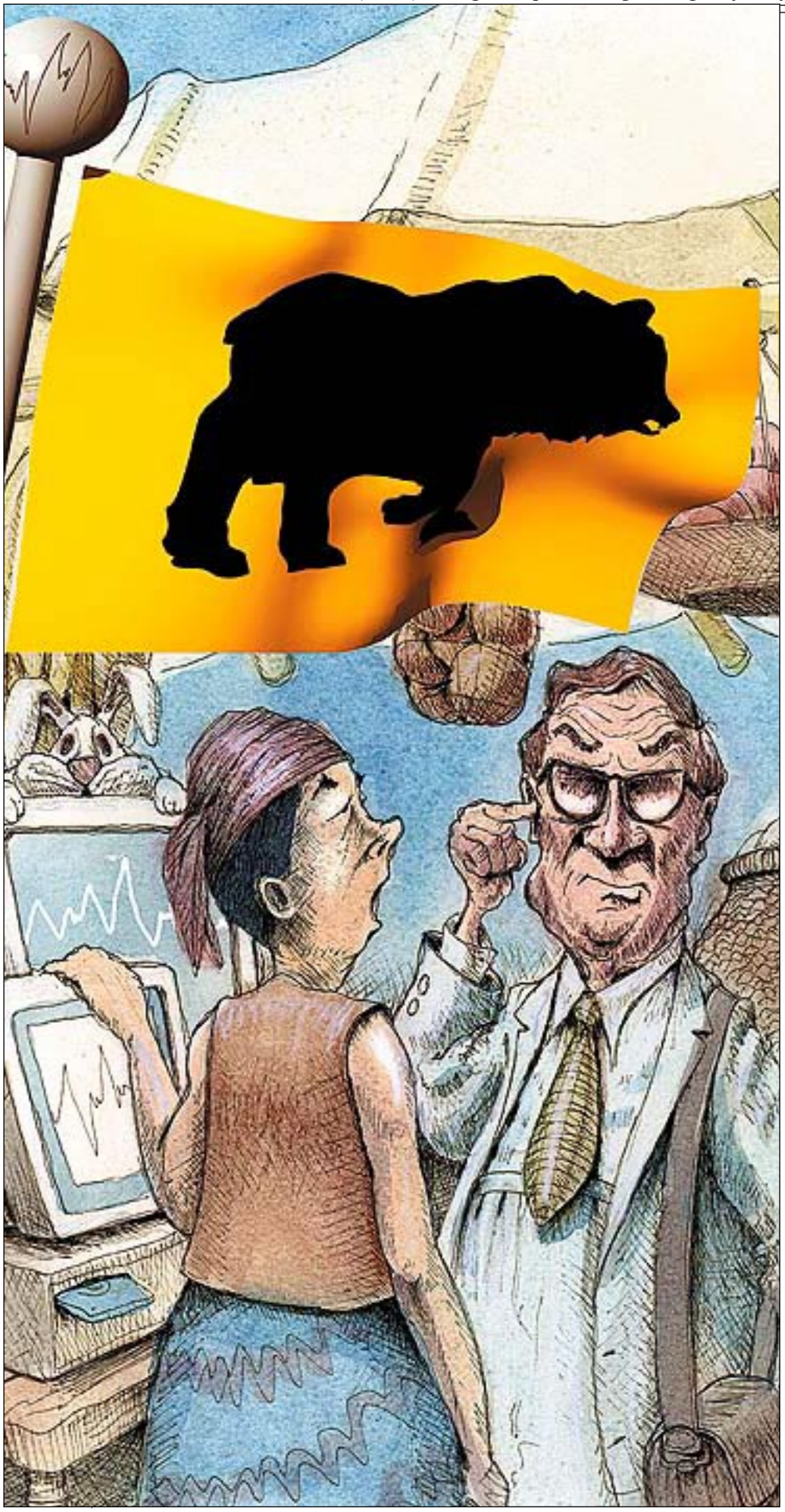
Figure 1 shows Cisco Systems as a daily bar chart. With two strong trend reversals, we have definite market moves to work with. The trend moves sharply upward at point 1 and reverses at point 2. If the indicator were to be useful, it needed to provide signals about these dominant turning points. A very useful indicator would help filter out the false collapse in November, keeping the trader safely in the trend.

As a starting point, I selected a group of moving averages based on approximately half-weekly periods, starting with a three-day EMA and moving to a five-day EMA. The next midweek point was eight days, and so on. So this first group of averages consisted of three-, five-, eight-, 10-, 12- and 15-day EMAs. The result can be seen in Figure 2 when applied to a daily price chart of Cisco Systems.

Intuitively, we expect to see a forward sloping lag as each moving average signals a crossover at a point further away from the actual point of trend change. Instead, we see significant convergence of all plotted moving averages immediately prior to and during changes in the trend. These are most obvious at the points marked on Figure 2 (as 1, A, B and C).

METASTOCK (EQUIS INTERNATIONAL)

FIGURE 1: CISCO SYSTEMS BAR CHART. You would want a technical method to adequately warn the trader of reversals such as points 1 and 2.



BOB SCHUCHMAN

As each compression point forms, it generates an entry signal for long-side trading.

More important, this significant convergence is compressed in time, despite the groupings being made up of lagging indicators that we would expect to give lagging signals. There is little sloping lag as we would ordinarily expect. This observation was useful, but not particularly startling. Points A, B and C look the same as point 1, so it is difficult to label point 1 as an entry signal and the others as continuation signals.

At first glance, Figure 2 looks similar to the rainbow charts discussed by Mel Widner in the July 1997 STOCKS & COMMODITIES. In that article, Widner found the rainbow range width based on oscillator values useful trigger signals based on recursive smoothing. Although superficially similar, the MMA process gives the trader a different type of information about market conditions.

While I was exploring these daily relationships, I was also doing some additional work on my investment portfolio (rather than my trading portfolio). I was interested to see if the relationship would hold in a longer-term investing context. The software I was using made it easier to measure weeks in days than it would be to shift to a weekly view. Using the same principles, I plotted another group of six moving averages. I doubled the last of the short-term averages, moving to six trading weeks, expressed as 30 days. Then I added a week at a time, including 35-, 40-, 45- and 50-day EMAs. Finally, I added a 60-day EMA as a longer-term balance.

The results in Figure 3 are almost counterintuitive. With an EMA out to 60 days, we would expect significant lag and the crossovers to be stretched out as the trend changed direction. Instead, we see a fractal repetition of the tight time frame. As expected, most of the whipsaws are taken out, but significant turning points from the long-term group of averages converge in the same way as the shorter-term group. This is compressed in time, so the trend rever-

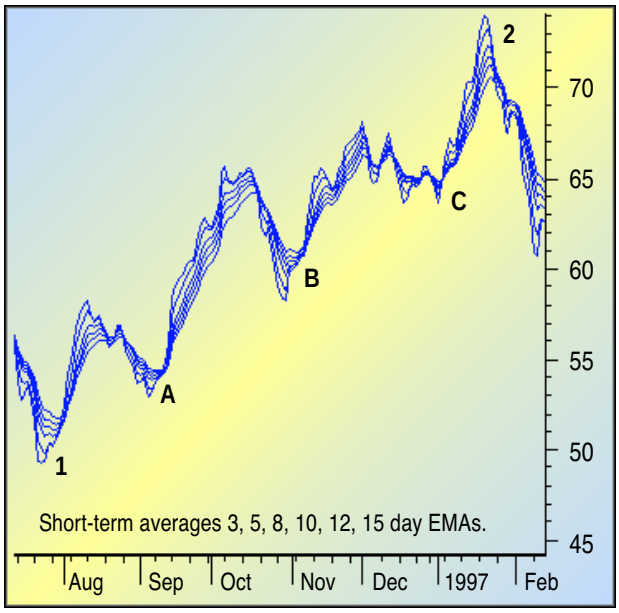


FIGURE 2: CISCO SYSTEMS. The short-term group of averages shows contraction points such as points 1, A, B, C and 2.

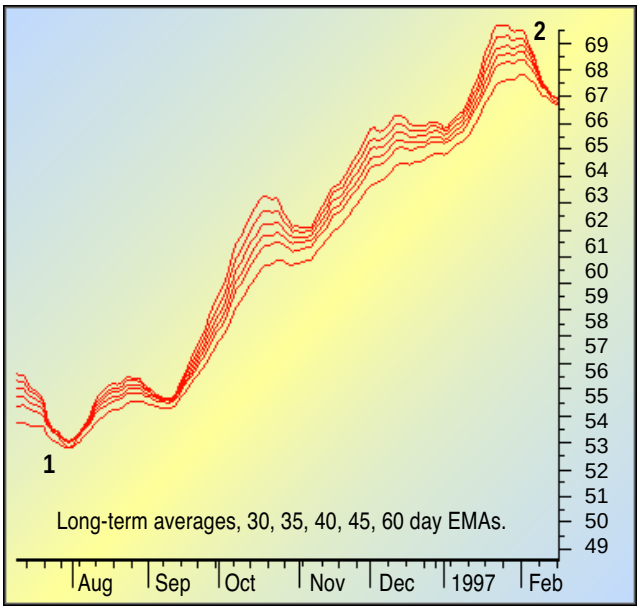


FIGURE 3: CISCO SYSTEMS. The longer-term group of moving averages shows fewer contraction points.

sal signal — the point of maximum convergence, but not necessarily a crossover — encompasses a small window of opportunity.

This approach looked as if it would have some application to an investment horizon with major trend pauses and direction changes signaled by the convergence. The slower signals eliminated the whipsaws of daily excess, but this was only to be expected.

Trolling through my database of stocks trying to build up an idea of the applicability and relevance of the correlations I was seeing on the screen revealed a much more useful correlation. By happenstance, one of my investment stocks was also offering good trading opportunities, so in evaluating these moving averages, I came across the same stock in both a daily and a weekly context. I knew the date of the trend turns.

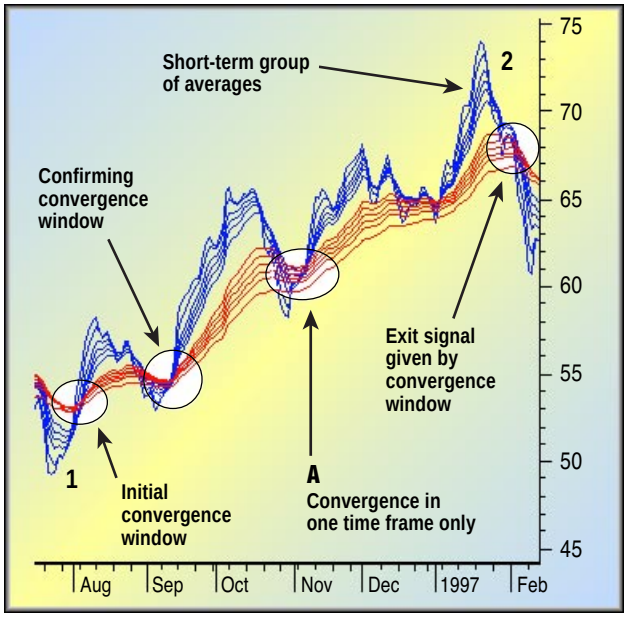
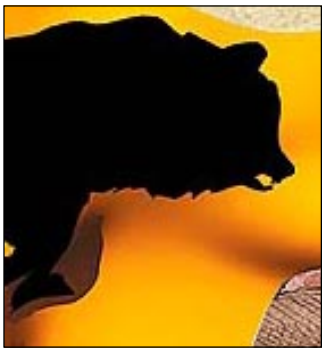


FIGURE 4: CISCO SYSTEMS. Here are multiple moving averages convergence signals at major trend turning points.

In both time frames — defined by the short-term group of averages and defined by the long-term group of averages — the moving averages sometimes converged in the same tight window. Figure 4 shows the result of combining these two plots. The implication is clear. At major turning points, both groups of averages converge and cross almost simultaneously. This multiple moving average indicator does not lag weeks behind the action but generates a consistently tradable signal. We see a fractal repetition across different time frames.

On the combined plot in Figure 4, point 1 is common to the previous plots. Point 2, the collapse of the trend, is derived only from a combination of both plots. In both cases, the time window is best defined as an area rather than a point. We look for convergence across two time frames. Convergence in one time frame, as shown with area A, is not enough. This is temporary weakness, as short-term trading bubbles collapse toward a broader agreement on value.

Although Cisco Systems gives the impression that a crossover in one direction is followed by a crossover in the opposite direction, this is not so. The convergence and crossover do not signal the direction of the price move. True to the roots of its development from swing trading techniques, the MMA signals high-probability situations in relation to future price action. Like a deer frozen in the headlights, we know the MMA is going to move, but we look for other clues for the direction of movement. Traders use other indicators to confirm direction.



MARKET FORCES

Observing the impact of these MMAs and understanding why it happens are two disparate things. The MMA indicator gives us a visual relationship that defines a concept of market dynamics. It does not give a price value, or a plot point. The actual value of the multiple crossovers — if, in fact, they take place at all — is less important than the inferred message delivered about market conditions. That message is dependent upon an understanding of the market dynamics and depends on an acknowledgment of the second significance of a moving average crossover†.

The first message from a moving average crossover is to signal a trend change — sometimes major, sometimes minor. The second signal — the one we tend to ignore — is that the crossover represents an agreement on value. This is the most important signal when using the MMA. When two groups of moving averages cross, they signal an agreement on value over two time frames.

The validity and application of the MMA message depends upon a better understanding of market forces, so a brief reacquaintance with the subject is useful.

AN MMA METASTOCK TEMPLATE

MetaStock users should select a datafile with a history stretching back several years. The display format is daily. After deleting the base security, the first of the moving averages is plotted. When plotting the second and all subsequent moving averages, choose the "Overlay without scale" option.

The short-term group are plotted on a daily basis as three-, five-, eight-, 10-, 12- and 15-day EMAs.

Although it is a personal choice, it is useful to keep the first short-term group of moving averages the same color.

The second group of moving averages is plotted, using a different color. Although these are weekly averages, they are expressed in days, as the base data is a daily plot. The long-term group is 30-, 35-, 40-, 45-, 50- and 60-day EMAs.

The screen is saved as a template, using the "Save as template" command from the File menu.

Users can plot the intervening averages — 18-, 20-, 23-, 25- and 28-day EMAs — as well. The disadvantage of this is that the constriction and crossover points are obscured by unnecessary detail. By using two groups of averages, separated by a missing group, the chart picture is cleaner and allows for clearer interpretation of MMA signals.

—D.G.

There are two different market pricing models. In everyday life, we are used to the fixed-price model. When we refer to bargain hunting, we usually mean finding the store with the best prices for the goods we seek. But in every case the price of the goods is marked. There is no room for negotiation, whether we go to Kmart or Wal-Mart.

A bargain hunter searches for the best location with the best price. Some investors try to use this approach to finding buying opportunities in the stock market, but the financial market rarely works this way.

The other model of market pricing is experienced by travelers to faraway places who find themselves bewildered when they discover that in those places, shopping really means haggling. The market stalls and beachfront tourist art markets in Bali are a confusing babble of bargains. For those unused to it, the bargaining form of shopping can be unpleasant because there is no fixed price.

The multiple moving average uses core information generated from multiple time frames to capture and understand a concept of market dynamics.

The financial markets are built on the Bali model. There are no fixed prices, and buyers and sellers constantly haggle about the trading price of every security. We label those buyers and sellers as *bulls* and *bears* to describe how optimism attempts to triumph over pessimism. The market has morning prices and afternoon prices, special prices and tourist prices.

The one thing it does *not* have is a fixed price.

This is important because that fact alerts us that the market is a constant state of disequilibrium. It is a dynamic system. Like a ball balanced on a flagpole, the slightest breeze will topple it; the tendency is to move away from the resting point toward another balance point. Chaos theory accounts for this behavior in several ways but recognizes that dynamic systems are structured around stable and unstable equilibrium points. In contrast, a stable equilibrium occurs when the ball is at the bottom of a gully; it takes a fair amount of pressure to push it up the sides. The tendency is always to fall back toward the resting point.

The stock market shows the characteristics of an unstable equilibrium of a dynamic system; it has to. If it did not, there would be long-term agreement on pricing and, effectively, no stock market. Without disagreement about prices and value, traders are reduced to the equivalent of shopping at Kmart or Wal-Mart, tracking down the best fixed-price offerings.

This pricing instability means that just when prices pause and are apparently stable — when there is a high level of agreement about prices — prices are most likely to change. Nature abhors a vacuum, and the financial markets abhor fixed prices.

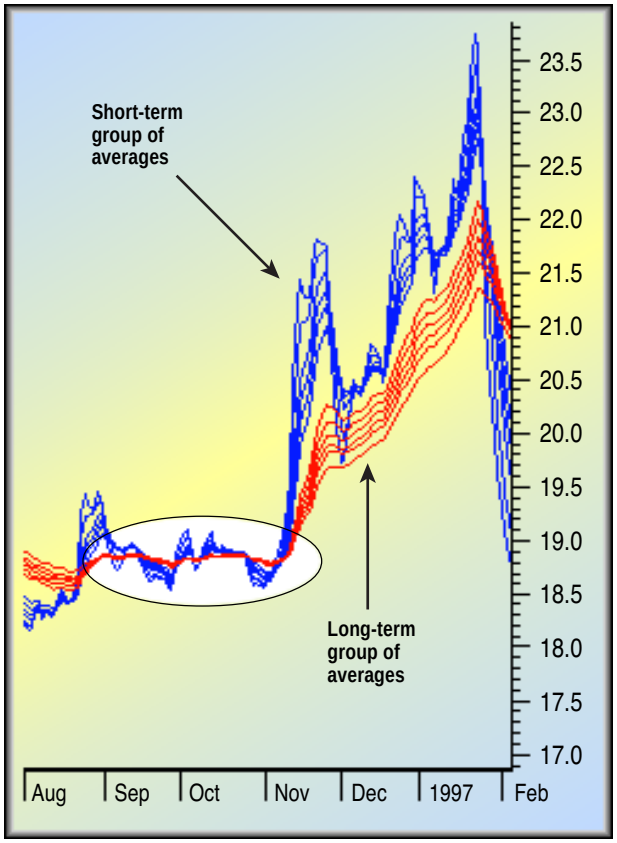


FIGURE 5: DETROIT DIESEL. Extended convergence window across the time frame groups precedes a trend change.

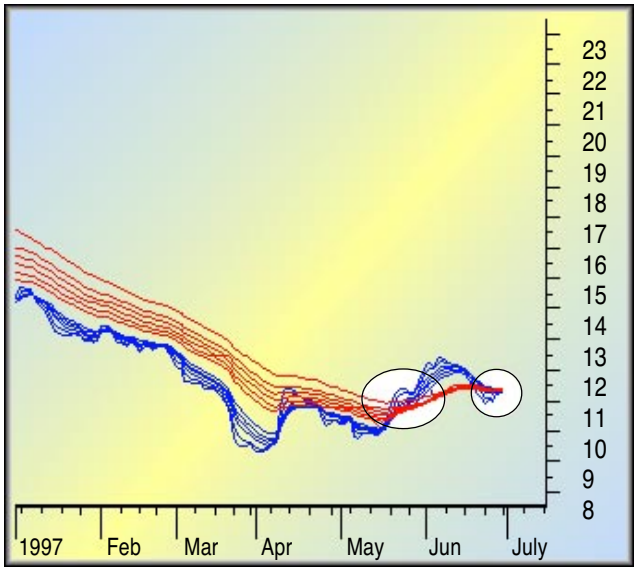


FIGURE 6: DONNA KARAN. Here, a convergence window appears as a downtrend reverses.

CONVERGENCE STABILITY

The MMA provides a way of recognizing this oft-fleeting moment of stability when it occurs across multiple time frames. The crossover of two moving averages provides a data point, but no insight into valuation in radically different time frames. By using a long-term group and a short-term group, the MMA gives us a way to visualize the dynamic of the market, and the time frame of change from stability to instability. In the book *Edge of Chaos*, this is put in human terms; we tip from rational pricing to exhilarated irrational pricing typical of speculative bubbles.

In the same way that two fixed-price stores, such as Kmart and Wal-Mart, broadly agree on the pricing of the same item, most of the time the market broadly agrees with the stock valuation. This agreement is encompassed in daily ranging activity, and some indicators specifically track this activity for clues about trend stability. This ranging activity keeps the market alive. These provide a number of trading opportunities but usually within existing trends. The monumental trading opportunities only available from jumping on the trend early are often missed. This general stability provides limited trading opportunities.

But every now and then, the market comes into near-perfect agreement about value across both long- and short-term time frames. This agreement is built on internal agreement in each of the time groups, and on an agreement between each of the groups in the same time frame. By inference, this indicates a dramatically increased probability of significant price changes as the market reacts to this unusual level of stable agreement in valuation. Agreement in one time frame increases probability, and although suitable for swing trading techniques, provides too many whipsaws for nonleveraged markets. Simultaneous agreement across two time frame groups establishes high levels of probability and a greater probability of significant and lasting trend reversals.

Agreement across two major time frame groups is usually a signal for a violent disagreement, and this disagreement is what we trade. Points of temporary stability and agreement imply a greater probability of imminent instability. Imminent is a relative term, and such time frame agreement sometimes persists for several weeks. However, when action *does* follow, it tends to be significant, rewarding those with patience on the right side of the move.

Figure 5, Detroit Diesel, shows the advantages of taking an early position when the two groups converge. However, as traders we look for price moves where the action develops more quickly. Although the MMA identifies high-probability events, it does not deliver a cast-iron guarantee. Under most circumstances, other indicators will have alerted the trader to a developing situation. The MMA is used to confirm it.

The MMA indicator is used to find this point of agreement and, when found, generates trading signals. Traders follow-

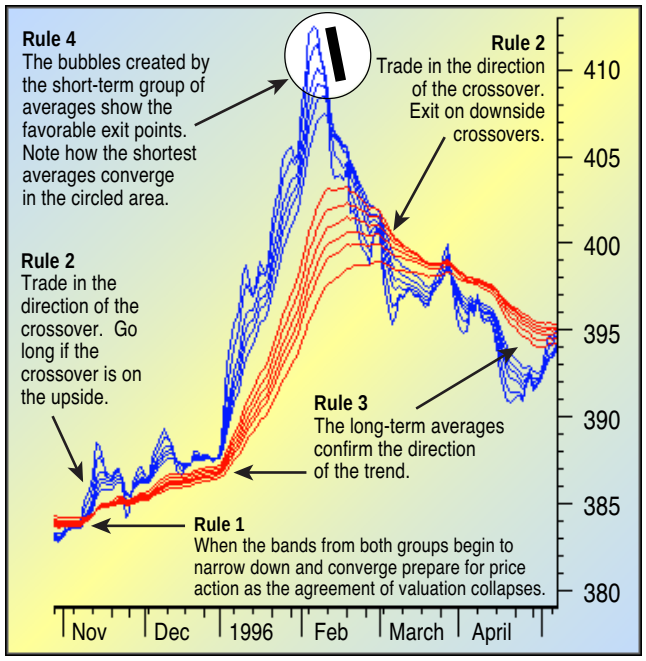


FIGURE 7: COMEX GOLD CONTINUOUS CONTRACT. Here are the rules applied to the gold market.

ing Donna Karan were alert for a trend reversal signal by looking to the convergence and crossover signals generated in June and July. Nearly a year after listing, there is a fundamental revaluation taking place across two major time frames, as shown in Figure 6. The first entry is signaled toward the end of May at $10.50, with a second opportunity in July around $11.00. Although not an explosive breakout, the 59% or 66% rise — take your pick — to $17.50 over the next four months provided a good trade.

The chart of COMEX, continuous contract for gold, brings these observations together and shows how the major market changes are signaled when both groups of averages converge and cross over. We look at the rules first, then apply them to the COMEX chart in Figure 7.

TRADING RULES

The MMA indicator develops four main trading rules, but remember, it is not a stand-alone indicator. It is most useful as a confirming entry signal, although it can assist with timing exits. The direction of the move should be confirmed with the results of other indicators and price plots. The trading rules for the MMA are:

1. When the bands from both groups begin to narrow down and converge, prepare for price action as the agreement on valuation collapses.
2. Trade in the direction of the crossover. Go long if the crossover is on the upside and short or exit long positions with downside crossovers.
3. The long-term averages confirm the trend direction.
4. The bubbles created by the short-term group of averages show the favorable exit points. Judging the top is difficult, so look for the leading two or three averages to converge or come together. Confirm this early signal with other indicator readings.

Each of these rules is applied to the exciting 1996 runup in gold tracked by the COMEX continuous contract for gold (Figure 7). Implementing these rules gives us a way to assess the quality of trading opportunities in this market sector.

At the peak of the MMA separation in February, market commentators, both fundamental and technical, were warning not to sell gold short, either on contract or by selling gold stocks early. The MMA indicator was suggesting a much more bearish interpretation of events and provided exit opportunities for those who had taken early positions in November when the multiple time frame crossover developed.

While others, gold producers and gold explorers, were busy in February buying gold, as the short-term averages group peaked, traders using MMA indicator information sold gold positions into the bubble. Even a delayed application of rule 2 — *Go short or exit* — to the exit signals took the trader out around the $400 level, while others were still debating if the fall was a new trend, a retracement or the beginning of the next leg of the gold bull market.

MARKET DYNAMICS

Synergy is one of those terms that everybody uses but few people understand. In earlier days, the phrase “the sum is greater than its parts” was used to describe a synergistic situation. The MMA indicator synergistically reveals additional information about the dynamics of the market system that cannot be obtained from any individual moving average. The key is the fractal repetition of conditions across multiple time frames to pinpoint fleeting moments of pricing stability.

The inferential conclusions are based on a market drifting toward pricing instability based on tradable disagreement about valuation. As a consequence, no single calculated indicator result — no single value, such as above 80 or below 20 —reveals this dynamic. This makes it difficult to search for this condition by purely mathematical means. A rough assessment of the developing synergistic relationship within the defined window of opportunity is the most effective method of evaluating the condition. By necessity, this means that stocks are initially selected on the basis of other factors, and then they are filtered by MMA analysis. Those that pass the MMA test are ready for action and they get a tick because, on balance, the probability of a price explosion is greater. Stocks failing the MMA test are summarily discarded.

The MMA, unlike Raschke’s work with momentum oscillators and Mel Widner’s use of multiple recursively smoothed averages, uses two time frames represented by grouped multiple moving averages. Like Widner, we look primarily for a visual relationship, and like Raschke, we look for the key turning point from stability to instability in a dynamic system. Like much of chaos theory, we assume that stability

is an abnormal condition that develops momentarily out of overwhelming instability. In market terms, fixed prices have difficulty surviving for more than a few days simultaneously across multiple time frames and time frame groups. The MMA generates trading signals based on the inference of instability. It is not an initiating indicator, but it confirms the potential for change and helps to define the time frame in which the change will take place.

Daryl Guppy is a full-time private position trader. He is the author of several books, including Share Trading: An Approach to Buying and Selling *(with editorial assistance from Alexander Elder) and* Trading Tactics: An Introduction to Finding, Exploiting and Managing Profitable Share Trading Opportunities *and* Trading Asian Shares: Buying and Selling Asian Shares for Profit. *He is a regular contributor to the Sydney Futures Exchange magazine,* Your Trading Edge.

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†See Traders' Glossary for definition

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