Guppy and Multiple Moving Averages

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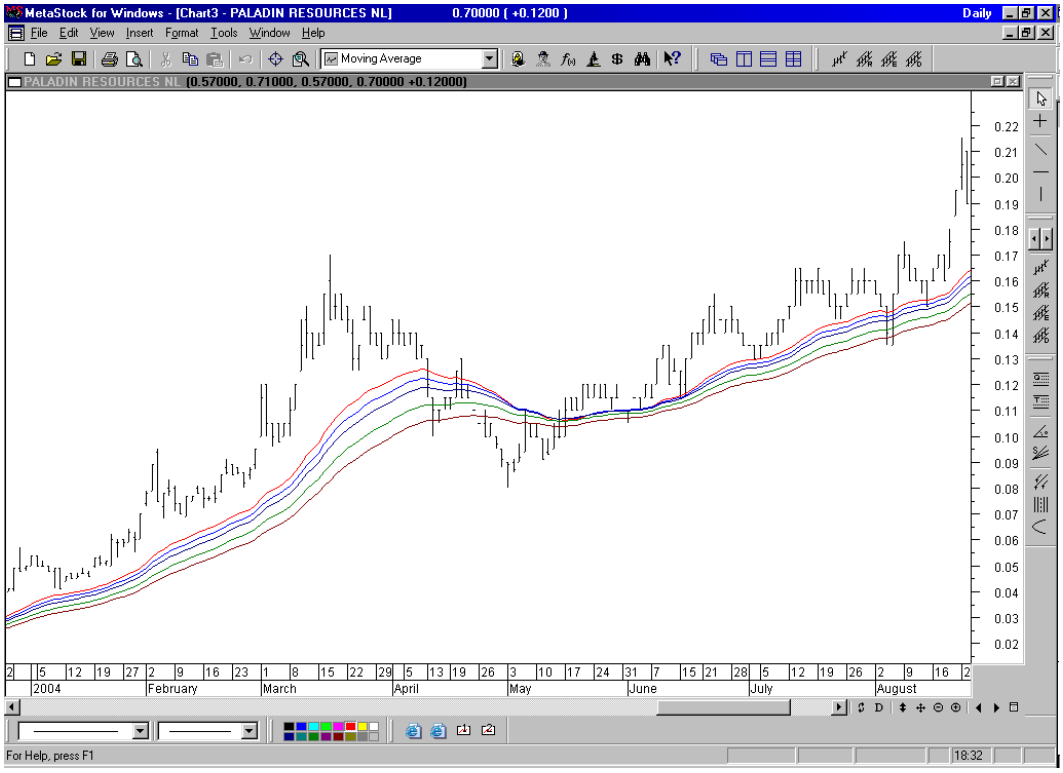
Multiple Moving Averages

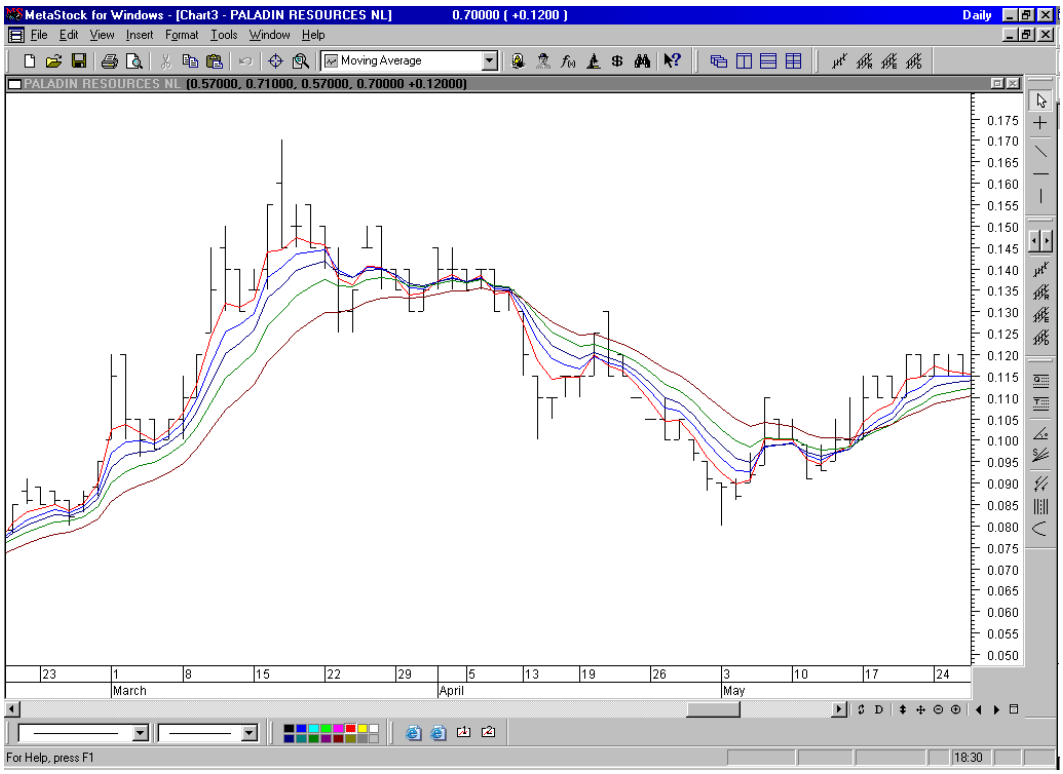
Extending on the theme of moving averages from one to two to many is a 'logical' progression and the approach of Multiple Moving Averages is quite a simple concept to visualise. Daryl Guppy devised it and it consists of ten moving averages in two groups that are geometrically spaced.

The first group is short term EMA3, EMA5, EMA7, EMA10 and EMA15, while the long term moving averages are EMA30, EMA35, EMA40, EMA50 and EMA60. To get a visual on how it looks, the two graphs below show the general pictures.



In the graph above, the five longer term moving averages follow in generally parallel lines as the stock price trends up, the prices then steepen then retraces and the moving average lines expand from each other and then converge and then expand as the new trend sets in place and the moving averages again form parallel lines.

Looking more closely in the right hand graph of the same stock with the shorter set of moving averages, it becomes obvious that when the exponential moving averages converge or diverge, then something is about to happen!



The reason that these moving averages form effectively parallel lines while a trend in happening is that the error from actual price to moving average is dependent on the feedback factor in the EMA.

In direct comparison the SMA based on the same time constants is demonstrated below:

The graphs above show the same rainbow of curves but all with SMA instead of EMA. It is because of the non-linear to step input response that the EMA has that causes the curves to converge on each other, where the SMA set of curves in these lower two graphs clearly crossover each other.

Guppy Multiple Moving Averages

Daryl Guppy[1] is an Australian that developed a 'rainbow' of multiple moving averages, called the Guppy Moving Averages (GMA) that when placed on a price chart, converge as the trend begins to take place, and again converge as the trend has turned down, and all the rest of the time they are divergent! How easy is that!

Based on EOD traffic, Daryl's EMA constants are, for the short-term: 3, 5, 8, 10, 12, 15, and for long-term 30, 35, 40, 45, 50, and 60. For the short-term constants, the common ratio is about 1.2 and the top four constants (8, 10, 12, 15) fit into this geometric sequence, but the bottom three (3, 5, 8) fit another ratio at about 1.67, so I have no doubt that this short-term rainbow is made from two geometric progressions.

It seems to me that the long-term constants are in fact based on an arithmetic progression with 55 missing out – probably because it got too cramped there, and that tells me that this sequence should have been a geometric progression in any case. Picking the lowest two (30, 35) the ratio is about 1.167 and this gives a sequence of 30, 35, 40.8, 47.6, 55.6, and 64.8.

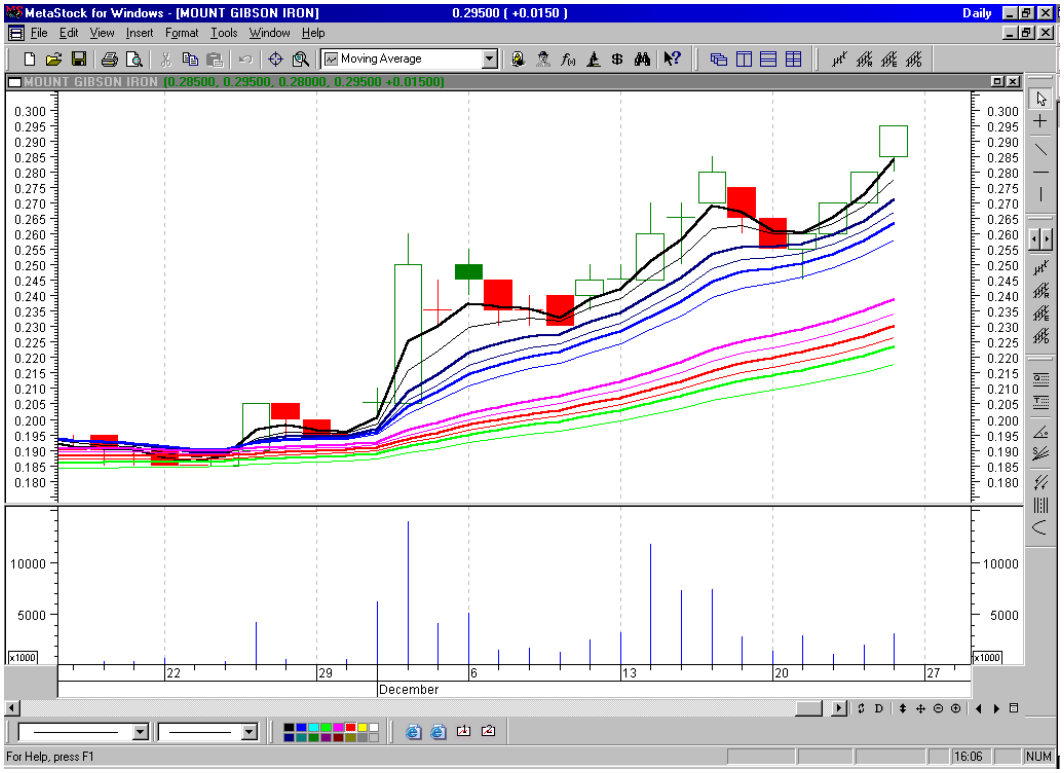
Now picking the highest two (50,60) the ratio is 1.20, and working back the constants are: 60, 50, 41.6, 34.7, 28.9, and going to the nearest common integer day, then I can struggle to see 30, 35, 40, 45 from the first sequence, and 35, 40, 50, 60 from the second sequence – using a bit of mathematic licence, and you have it! This to me looks like a merged set of two geometric progressions to get the long-term constants.

[1] http://www.guppytraders.com/gup37.shtml

So why am I hooked on geometric progressions, and why did they teach these things at school? Well it is like this, life relationships are actually geometrically related; everything is a ratio of other things, even additions to families are geometrically related – not arithmetically related on the larger scale.

I know that the teachers did not show me this when at school – and I had some bloody fantastic teachers. By far the best teachers were those that had industrial and business skill through experience, and were the envy of those that didn't.

Anyway! To see the picture there is nothing like a visual example



The two graphs above give examples of the Guppy Moving Averages (GMA), and these are exponential moving averages, not simple moving averages. Interesting, as SMA have a rounder response – because they don't overreact to the most recent values as EMAs do.

There are two families of these and the left hand side shows the long-term band away from the prices and converging on changes. The right hand side shows the short-term moving averages more closely following the (close) prices.

Going a little bit further, by setting up a geometric progression based on root 2 as per a photography lens, a typical sequence is 5, 7, 10, 14, 20, 28, 40, 56, 80, 113, 200 etc.

The one above is based on EMA and the one below, on the next page, is based on SMA.

Because the SMA has a linear transient response, the overall trace is somewhat more rounded than the EMA which has a tapered decay (exponential) response, hence the 'spray' of exponential moving averages as compared to the number of crossovers with the simple moving averages.

This is a very popular tool and Guppy's rainbows give a high impact visual, and if that is what you are looking for then this is it!

Not only is it interesting to watch the various moving averages diverge and converge, but going that one step further to calculate and display that divergence and convergence is the next logical evolutionary step.

While these rainbows of moving averages have a visual impact using EOD data, when it comes to trade data it is an entirely different story, as the increments are much smaller because of the short timeslots, and this gives rise to actually analyse the sequence of crossovers, as this picks the difference between a trade and an investment – but more later!

Comments and Corrections are welcome