

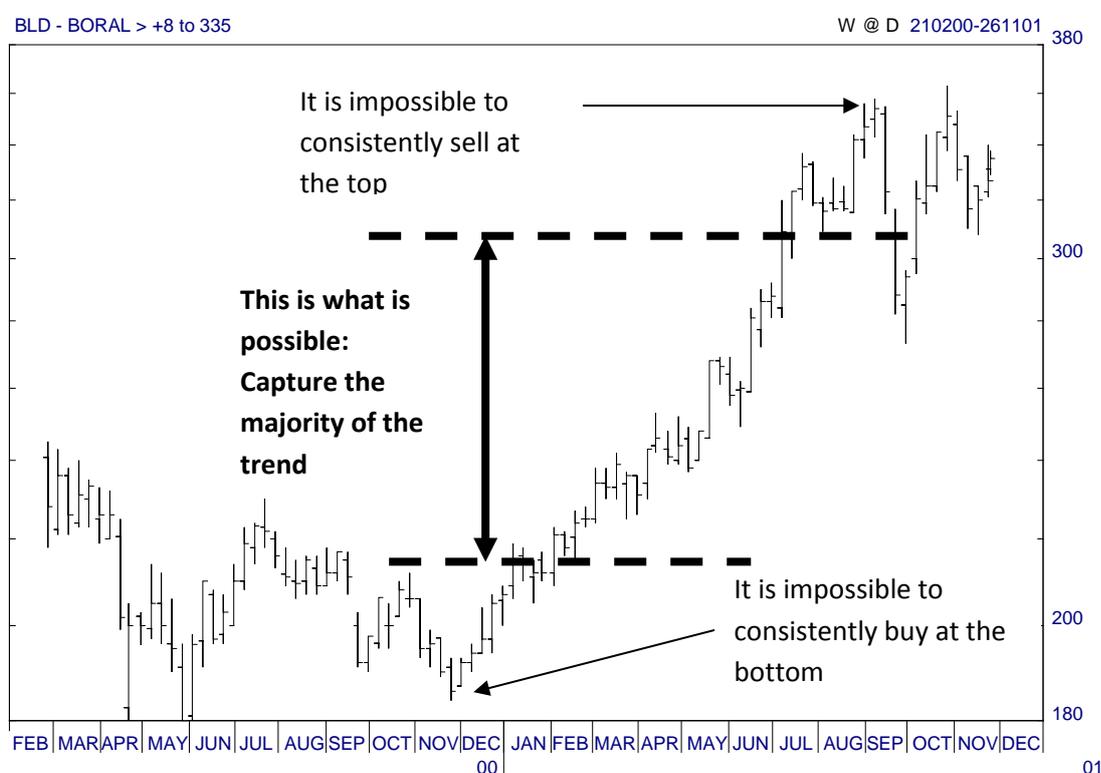
Analysis Methods: Technical Analysis

This article was written some years ago, but is very relevant to today. The charts used to illustrate the text are now somewhat dated, but still relevant for the present purpose of teaching a technique.

Most people come to technical analysis with totally the wrong idea. They make a similar mistake to that involving fundamental analysis. They assume it is about prediction: That it is possible to predict what the prices of stocks will rise or fall to and when. However, as I pointed out in the introduction:

- It is not possible to consistently predict the future
- It is not necessary to predict the future in order to invest successfully

This proposition is best explained with a chart:



Almost everybody who first looks at a chart of stock price thinks that what we should try to do is to buy at the low of the trend and sell at the top. They then spend some time, often years, searching for the guru who can teach them how to predict the low of the trend and the high of the trend. They never find this secret, which is known among technical analysts as the “search for the Holy Grail”.

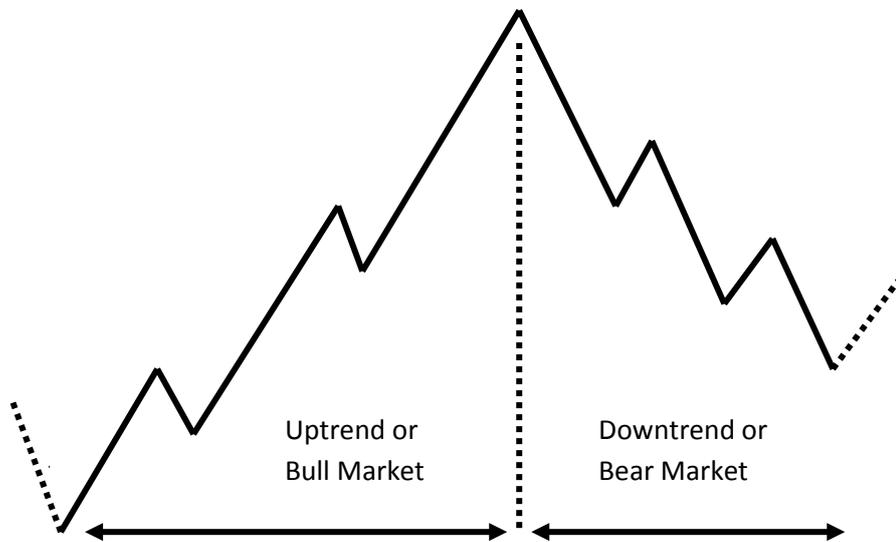
What typically happens is that most of these people become disillusioned with technical analysis and they give up. However, what successful technical analysis-based investors learn is that they were trying to do the impossible, but by thinking differently about it, there is a way forward.

That way of looking at the problem is that it is not necessary to be able to buy right at the bottom and sell right at the top to make very good investment returns. All that is necessary is to be able to fairly consistently buy once a trend is established and sell once it is over. This is something most people can learn to do fairly easily.

As I quoted Warren Buffett pointing out in the introduction, there is a great deal of intricate detail you can learn about technical analysis, if you have the time and inclination. However, only some of it is what you have to know. Today, I am going to show you the few big ideas that are essential to investment success.

What is a Trend?

If we are setting out to capture the major part of a trend, the very first thing that we must have firmly in our mind is what a trend is. The definition of a trend derives from the work of the man who is known as the “father of technical analysis”, Charles Dow. Over 100 years ago, Dow identified that markets move in broad upward and downward movements, often for years at a time. This conceptual diagram captures the idea:



It was obvious that an uptrend is interrupted from time to time by corrections and that a downtrend is interrupted by periodic rallies.

The general idea is that in an uptrend, each upward movement carries higher than the last one and none of the corrections completely reverses the last upward movement.

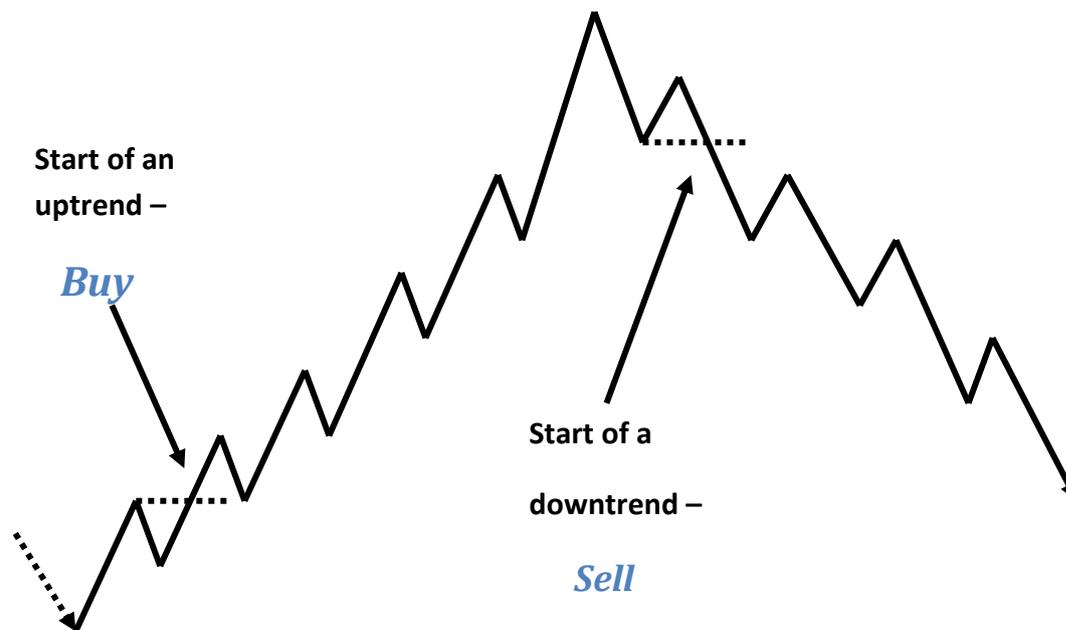
Likewise, in a downtrend, each downward movement carries lower than the last one and none of the rallies completely reverses the last downward movement.

This can be expressed formally as definitions:

An uptrend is in place when successive advances make higher peaks and the ensuing corrections make higher troughs.

A downtrend is in place when successive declines make lower troughs and the ensuing rallies make lower peaks.

This can be represented diagrammatically as follows:



What this diagram shows is very useful for the investor. It shows the minimum conditions that are needed to identify the presence of an uptrend – which is when we should start looking to buy. Likewise, it shows the minimum conditions that are needed to identify the presence of a downtrend – which is when we should start looking to sell.

Taking the start of an uptrend first: We need to have a trough (T) that acts as a reference point. This trough will be followed by a peak (P). Then, we need the next trough to form at a higher level than the original reference trough. This makes it a higher trough (HT). Finally, we need the price to rise above the level of the previous peak (the dashed line on the chart). Once this peak is exceeded, the price must, wherever the up move finishes, make a higher peak (HP). So, once we have a move above the peak (P), the up move must establish an uptrend – a higher trough and a higher peak. This movement above the peak (P) is the time we should start looking to buy.

The start of a downtrend is similar: we need to have a peak (P), which could occur at any time in an uptrend. This peak will be followed by a trough (T), which will have been a higher trough in the uptrend. Then the uptrend will fail to get above the last peak. This makes it potentially a lower peak (LP). Finally, we need the price to fall below the level of the previous trough (the dashed line on the chart). Once the price falls below this trough, the price must, wherever the down move finishes, make a lower trough (LT). So, once we have a move below the trough (T), the down move must establish a downtrend – a lower peak and a lower trough. The movement below the trough (T) is the time we should start looking to sell.

You should be able to see how this diagram relates back to the chart I showed you earlier. We are not trying to buy at the extreme low point of the trend. At the time there was no way to know that it was the extreme low. Instead, we buy once the trend has clearly turned up.

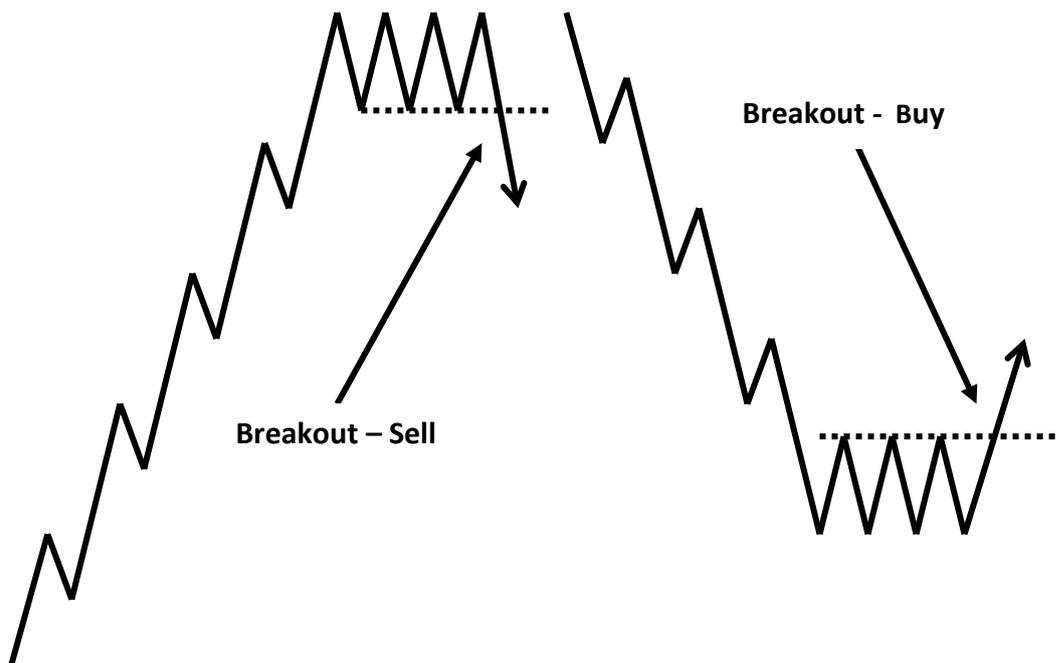
Likewise, we are not trying to sell at the extreme high point of the trend. At the time, there was no way to know that it was the extreme high. Instead, we sell once the trend has clearly turned down.

We could use this alone as a way to trade stocks. Except that there is a catch. However, the catch is not really difficult. It is just a development of our idea of trend.

There are two variations on the basic trend model that I have just shown you:

Trend Ending Variation No 1

Let me take you back to the definition of an uptrend – a series of higher peaks and higher troughs. Note that there are TWO conditions for an uptrend, both of which need to be present: higher peaks and higher troughs. This means logically that if one of the conditions ceases to be true, then the



Buy and Sell Signals – Summary

So, we started out to explain what a trend was and developed the logic through to the point where we have three buy signals and three sell signals. These six signals are very powerful. They are the type of simple big ideas we should be looking for as a basis for our investment strategy. Here they are in summary:

We Buy if

- A downtrend develops a higher trough and then moves above the previous peak.
- A downtrend moves above a previous peak.
- A downtrend is followed by a trading range and price breaks out upward from the trading range.

We Sell if

- An uptrend develops a lower peak and then moves below the previous trough.
- An uptrend moves below a previous trough.
- An uptrend develops into a trading range and price breaks out downward from the trading range.

Charting the Two Models

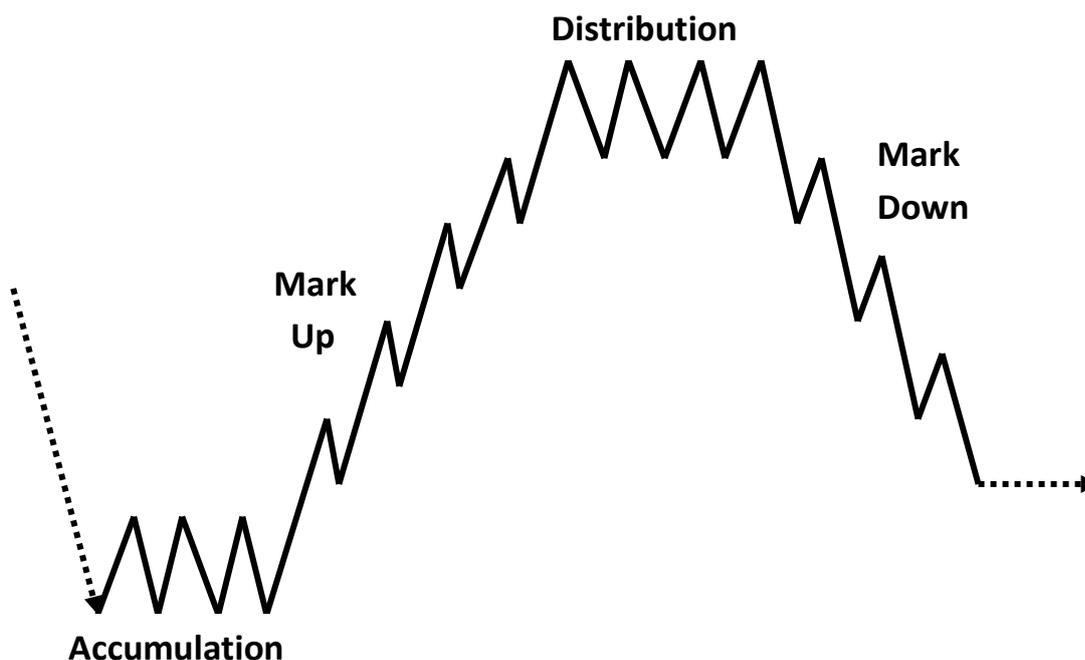
Earlier we looked at the two basic investment methods – the value approach and the growth approach. These two methods can be applied using technical analysis, by understanding that many charts will fall into two conceptual models that correspond to the chart patterns formed by stocks that fall under each of the methods.

The Value Model

First, I want to introduce one of the most valuable concepts that I have learned from technical analysis. This is the way that the prices of many shares follow a distinct cycle. The cycle flows from undervaluation when a share is out of favour with the market, through to overvaluation, when speculation, and patently unreal expectations, drive it to an extreme over valuation.

Despite the efforts of an army of cycle enthusiasts looking for regular cycles, this cycle is only a broad description of the development of prices. Both the length of the cycle and its amplitude seem to be different for every stock and on each occasion that a stock moves through it, though the basic shape will be highly influenced by cycles in the overall market index. It is also important to appreciate that the cycle will fail to develop properly at times and there will be false signals. Companies run into unexpected problems and windfall opportunities. It is only a model of what tends to happen most of the time.

The diagram summarises the cycle:



Accumulation

The cycle starts with the stock well out of favour with the market. It has suffered a significant decline in price. Shareholders who were speculating in the share at higher prices are locked in and are hanging on in the hope that one day they will get their money back. Although it may seem offensive to private investors, they comprise most of this group and are collectively known as the “public” or “mums and dads” or “Mr. and Mrs. String-Bag” imply “the punters”.

Experienced private investors and large fund managers will tend to take a different view. This group are collectively called the “professionals”. They identify that the out-of-favour stock is now undervalued and they buy patiently. They will then hold for the time when the market recognises its mistake. Their buying is mainly from the public, as members of that group are forced to liquidate their positions because they need cash, or because they have abandoned hope of recovery. Thus in this phase, the professionals “accumulate” stock from the public at bargain prices.

Mark Up

At some point, the price begins to rise and typically breaks upward out of a broad trading range that may take up to several years to form. This initial upward move is due to most of the public having sold out, or to professionals becoming more eager. Other professionals scrambling aboard fuel it, because they fear missing out on the rise that has started. The public typically refuse to believe that anything has changed and those who are left sell into this first rally, or on the first decline after the initial rally. The mark up phase continues to gather strength and is boosted as increased earnings and new developments are announced. Brokers begin to recommend the stock and profiles on the company appear in the print media. Wild estimates begin to be made of future earnings to justify the ever-

increasing prices. This sustains the final leg of the mark-up phase, which represents the public flooding into the market in a speculative surge.

Distribution

The public continue to buy in the belief that prices will continue to rise. This view is supported by news announcements and bullish promotion in the media, or from brokers. It is reinforced as new earnings peaks are established. The professionals now sell to the public a stock that is wildly overvalued. The price often swings widely. Eventually most of the public have bought and the professionals have disposed of their overvalued stock. Thus, in this phase, the professionals “distribute” stock to the public at inflated prices.

Mark Down

Demand dries up as the public wait for the promised earnings growth. Any selling takes prices lower and suddenly price falls below the previous support level. Most of the public now have paper losses and they abandon hopes of profits. Instead, they hold in the hope of getting out even. However, before many of them have a chance to do that, earnings decreases are announced and the price falls further. Finally, the public begins to sell indiscriminately, because they need the funds, or can no longer stand the pain, and get out at any price. Professionals now begin to see the undervaluation and the accumulation process begins again.

Now that we know the cycle, how can we take advantage of it? How can we invest with the professionals, rather than with the public? We should seek to buy stocks at the end of the accumulation phase or in the first part of the mark-up phase. We should look to be out of the market no later than the first part of the mark-down phase.

The best single time to buy is when a stock first breaks out of the accumulation phase. It has shown sufficient strength to overcome resistance. That resistance should now provide support for the first decline in the uptrend, when we can add to the initial position.

Patience in waiting for the right opportunities, and discipline in staying out of overvalued stocks, will bring the best rewards. The real benefit of using the value approach lies in its dual objective:

- Identification of stocks that are selling below their fair value, because their price is likely to rise as the market comes to appreciate this situation. This is also a defensive method, because these stocks should have little downside risk compared to stocks that are already over-valued. This approach works well in any market, but is especially important when market risk is high.
- Staying away from the stocks that are already over-valued. We want to avoid these shares, because they are more likely to go down than go up. Most importantly, they are the most vulnerable stocks at the end of bull markets when market risk is high. If it achieves no more than to keep us out of the grossly overvalued “flavour of the month” speculative shares, the value approach will have served its purpose. Since the primary objective of investing is preservation of capital, this goes to the heart of what we are about as investors.

Caution

These breaks above accumulation zones can be very rewarding investments. They are often the type of chart that is associated with undervalued stocks. However, they are not without risk of failure. What we are looking for here are the big moves. One or two out of ten will provide big profits and more than make up for the ones that fail. It must be emphasised that this strategy is highly dependent on an ability to quickly close out the investments that fail and stay with the ones that trend strongly.

Before you start looking at some charts, I want to show you the growth approach and then teach you two technical analysis tools that will help us to find both types of stock.

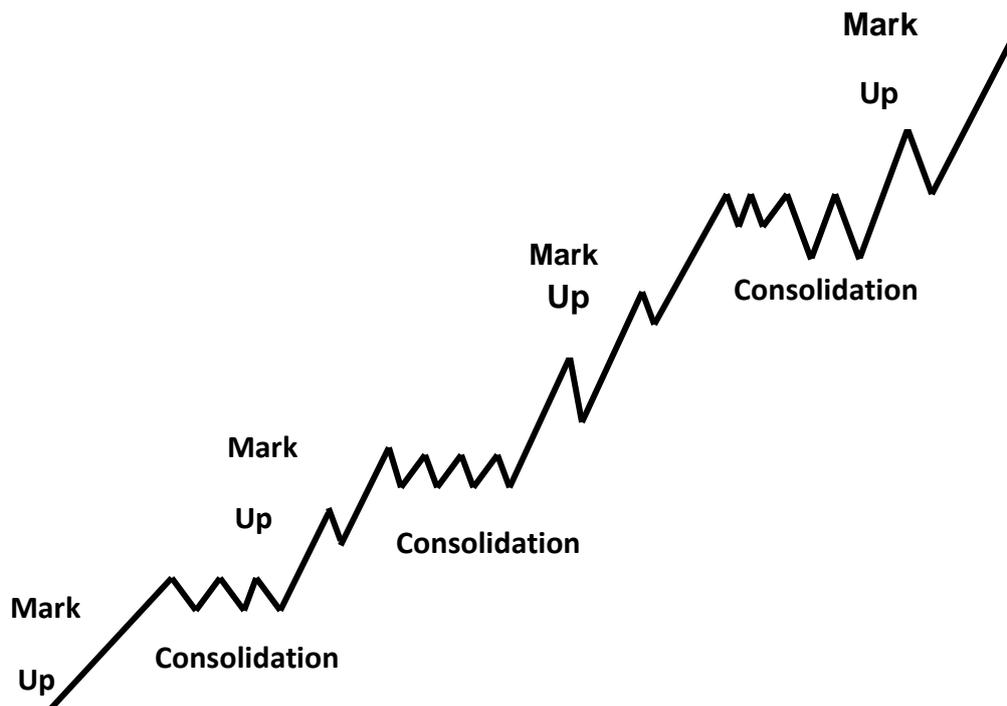
The Growth Model

The price cycle for stocks that was outlined above is very useful in identifying the value situations, where a company is in a cyclical business, or has fallen on hard times, and become undervalued. However, there is another important group of stocks. These are the ones which seem to keep growing for prolonged periods and do not suffer large mark down phases. Instead, they keep rising, but with

sideways trading ranges in the trend that mark periods when the market has got ahead of itself in expectations and trends water while earnings performance catches up with the price. Sometimes, these companies may even become undervalued toward the end of these sideways phases and will also qualify as value situations.

Of course, no share will continue to go up forever. Sooner or later, earnings will disappoint, or rampant speculation will develop in the shares, and distribution and mark down periods will follow. However, great rewards can be gained, sometimes a decade or more, in such growth stocks.

The diagram summarises how the ideal growth stock chart will look:



The consolidation areas may form a variety of shapes, such as rectangles or triangles. The mark up phases may also vary in speed. Particularly in the early and late stages of the trend, they will be quite volatile and steep. At other times they will be more leisurely and orderly affairs.

The greatest return will be secured by holding throughout the trend. However, active investors may find the opportunity cost of staying with the stock during the sideways consolidation phases to be unacceptable. This is especially so, because these consolidations can sometimes last a year or more. These investors may quit the stock once it is clearly no longer trending and buy back when it again breaks to new high prices.

Next, I want to teach you two technical analysis tools that will help us to recognise them.

Tool No 1: The Moving Average

While it is quite possible to recognise the charts of stocks that conform to the value or growth models from the price bars alone, two technical analysis tools can help the process. The first of these is the moving average.

The best way to understand a moving average is using an example:

Day	Close	5-Day Total	5-Day MA
1	100		
2	102		
3	104		
4	103		
5	102	511	102.2
6	105	516	103.2
7	107	521	104.2
8	110	527	105.4
9	108	532	106.4
10	107	537	107.4

To calculate a moving average, we first select a time window for the average. In the example, we have chosen it is 5 days, but a moving average may be calculated for any time window.

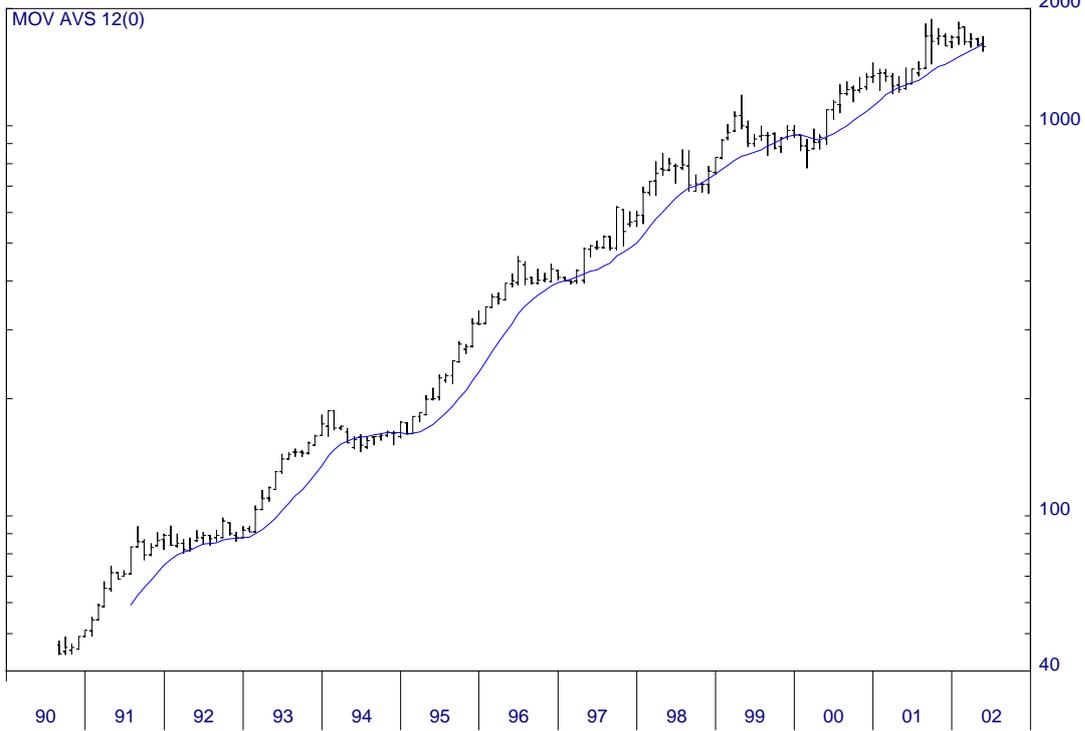
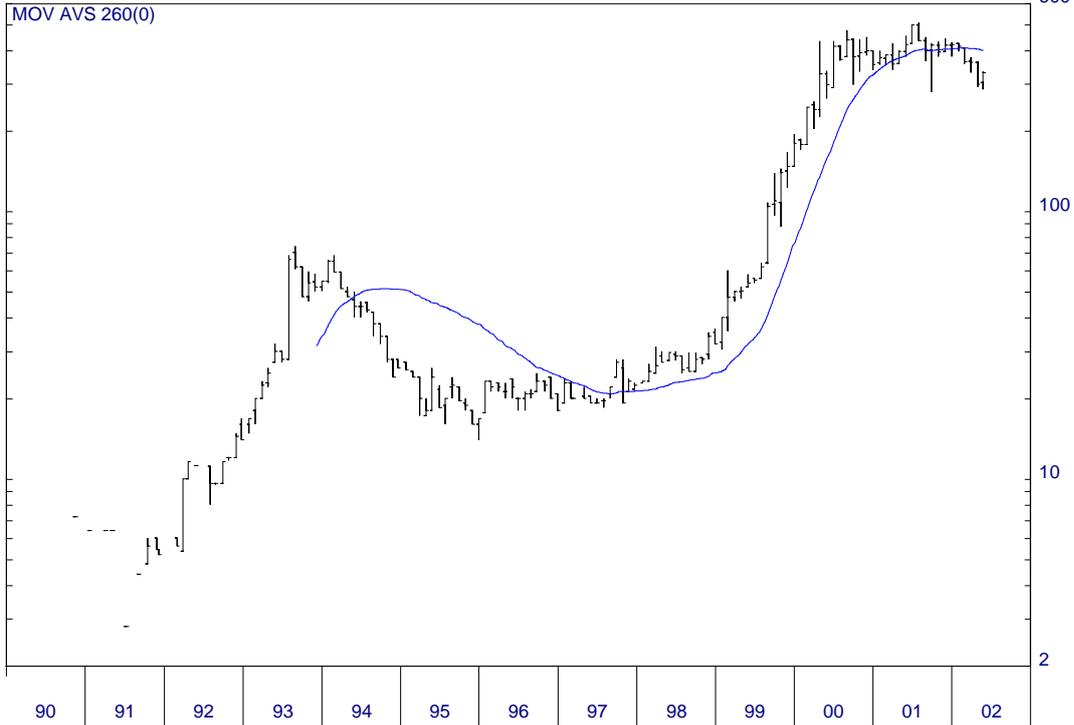
For a five-day moving average, we sum the closing prices for each of the first five days. This is then divided by five, to give the average closing price for the five days. We then move forward one day, so that the oldest day in the five-day total drops out and a new day comes in. A new average is calculated.

We continue in this way, dropping out one day and adding in a new one as time passes. Thus, the moving average is simply the average closing price for an advancing window of days, five in this example.

It is usual to plot a moving average on a bar chart as a line (see chart next page). It will be seen that the moving average is simply a smoothing device that summarises a lot of, often volatile, price data into a single line. If a clear trend is present in the price data, the moving average will help to make it clearer.

The essential idea is that if the moving average is rising, then the trend is up. If the moving average is falling, then the trend is down. If the moving average is flat, then we are looking at a non-trending market.

For identifying the two basic models, I like to use a 260-day moving average. Here are two examples, with a value stock at the top and a growth stock at the bottom:



Notice how, in the top stock, the moving average traces out a basically cyclical pattern. In the bottom stock, the moving average rises almost continuously, with a tendency to flatten out as the stock goes through accumulation phases.

In both cases I am using a monthly bar chart as the base.

Important Note

Moving averages have many uses. Some people use them, not just as a tool of analysis as I do, but as a trading system based on acting when the price crosses above or below the moving average line, or with more than one moving average line, as they cross each other. I do not use moving averages this way. I only use them for one purpose – to help me identify the direction of the larger trends.

I make actual trading decisions from the price bars themselves.

Tool No 2: The Moving Average Convergence Divergence (MACD)

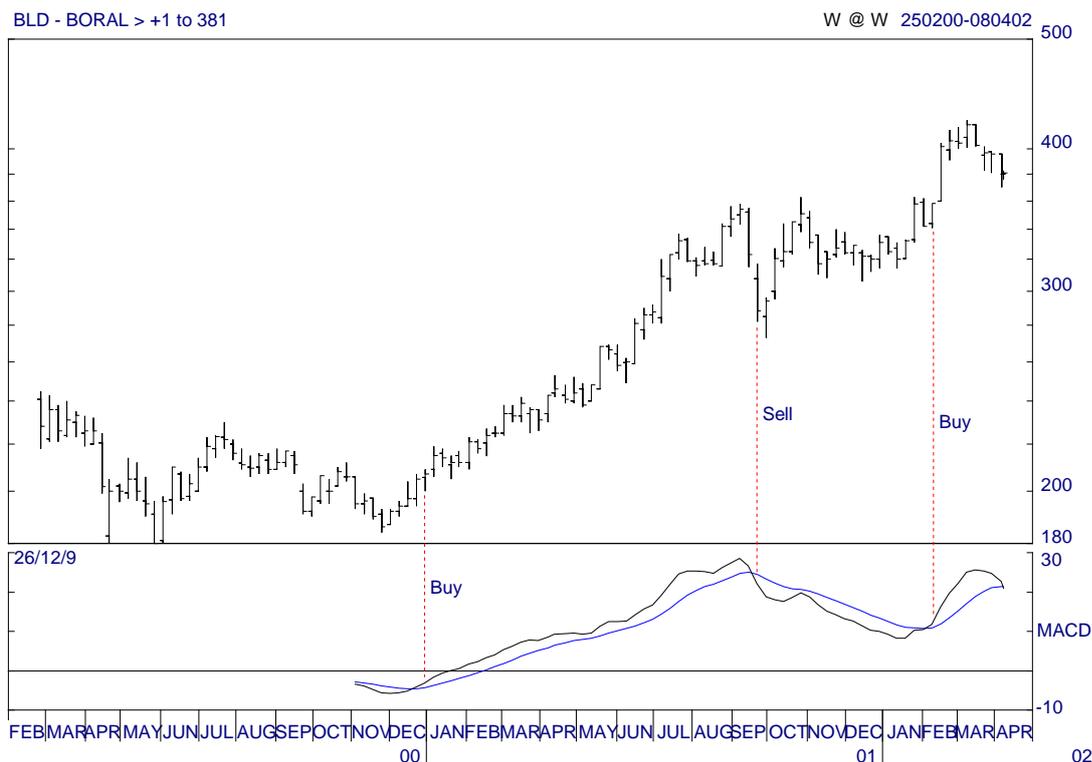
The second tool that I find useful in identifying value or growth model stocks is the MACD. I like to use it because it tends to give early warning signals, whereas the simple moving average discussed above tends to be a bit slow to turn.

The MACD is a sophisticated indicator based on exponential moving averages.

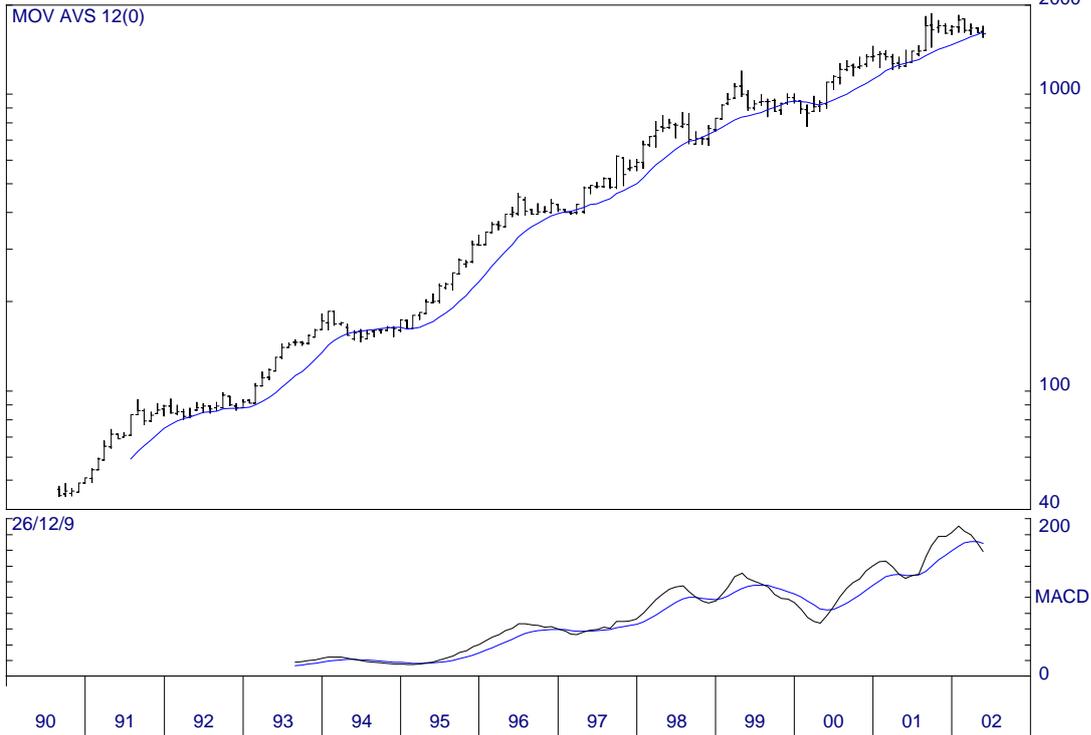
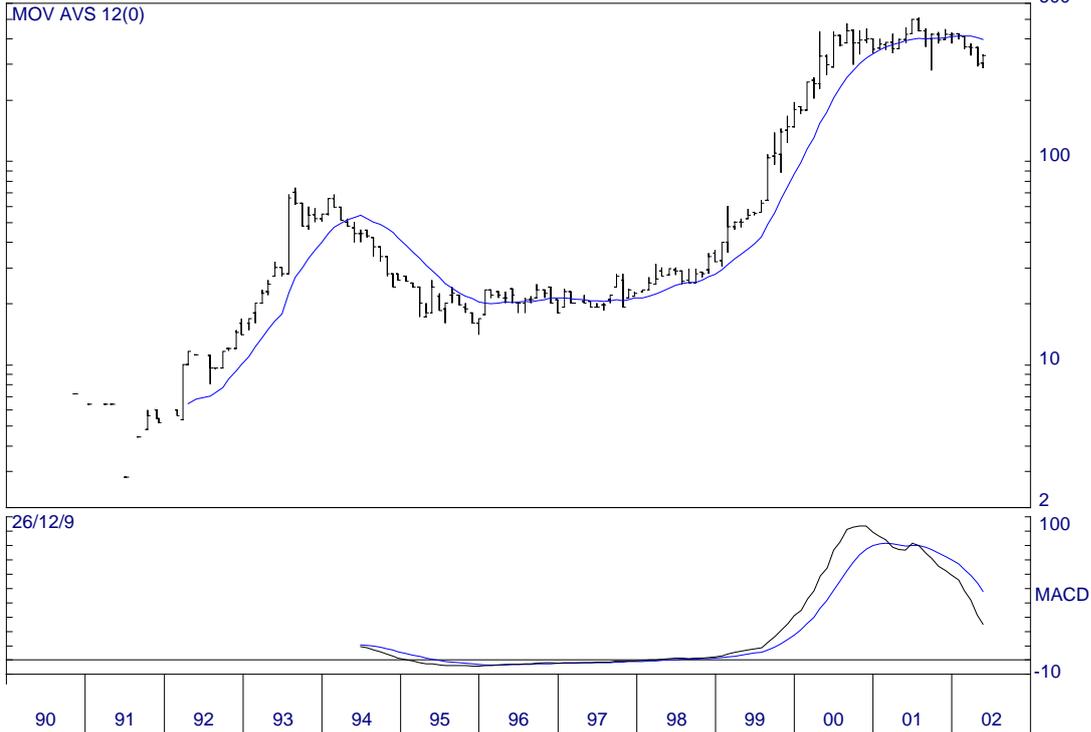
All we need at this point is to explain that the MACD indicator is usually plotted in a sub-chart and consists of two lines:

- A more volatile one, which is the MACD line.
- A smoother line, which is the Signal line.

During uptrends, the MACD line will tend to be above the Signal line and the indicator is then in “buy” mode. During downtrends and consolidations after an uptrend, the MACD line will tend to be below the Signal line and is then in “sell” mode. The chart below shows a weekly MACD indicator and the points at which it swung from buy to sell mode and back again.



Now let us put it on the two monthly bar charts I showed you with the 260-day moving average. The MACD is now being calculated on the monthly closing prices:

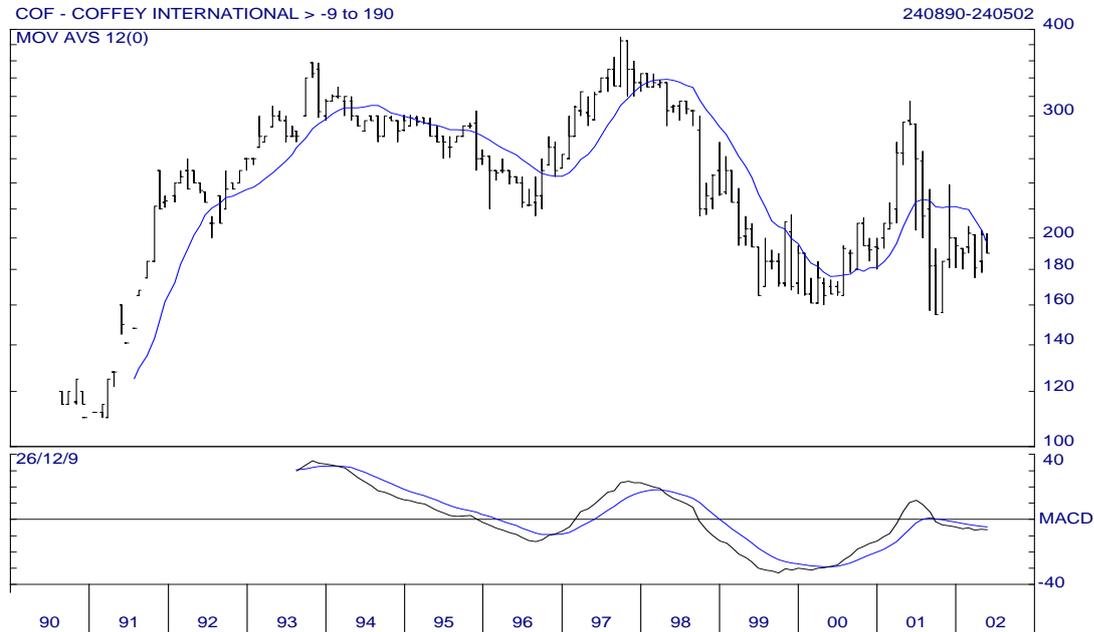


Notice how the MACD pattern is different for the two charts. The top one has a distinctly cyclical shape, while the bottom one is tending to continue to rise.

However, this is not the key point with the MACD, because the moving average tends to do that job better. What the MACD does is actually slightly different for each of the charts:

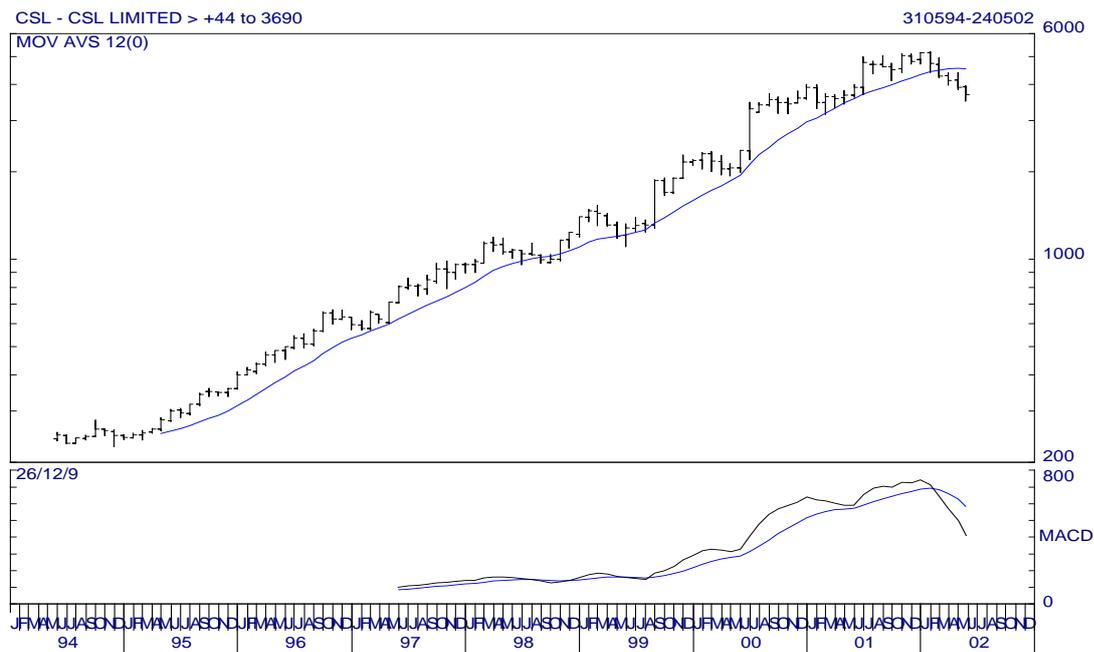
On the value chart, at the top, the MACD has helped us to stay in the strong mark-up phase and has given us early warning of a possible ending of that magnificent trend by swinging into sell mode, yet the price has not yet broken down out of what looks like a big distribution area.

The same early warning can also occur during formation of an accumulation area. There are two examples on the following chart:



On the growth chart, at the bottom the MACD has helped us to by highlighting the uptrending sections of the chart and confirming breakouts from consolidation areas. For trading each of the uptrending sections, rather than staying aboard the stock for the whole time, a weekly MACD will give more precise signals, though at the risk of giving more false signals.

With growth stocks, some of the best ones give very few sell signals, with the MACD only retreating to, or for only a short time crossing, the signal line. An example of this pattern is shown in the following chart:



Important Note

Like the simple form of moving average that we examined earlier, some people use MACD as a trading system based on when the fast MACD line crosses the Signal line. As with the simple form of the moving average, I do not use MACD as a trading system, but as an analysis tool only. Its primary use for me is to tell me to look out for buying and selling opportunities on the bar chart itself.

Appendix: Moving Average Convergence-Divergence

There is a strong tendency for investors and traders to act too late at both the start and finish of trends. It may be because the stocks concerned do not come to their attention until the trend is well under way. To overcome this, they need a method of spotting these stocks earlier.

It may also be because the technical tools that they are using to identify trends give their signals too late. This is a common problem with moving averages, which tend to give signals well after the trend has begun or ended.

Finally, it may also be because they lack the discipline to act decisively. This is often due to a lack of a clear concept of when a trend has started or finished. Lacking a clear definition, making a decision becomes very difficult.

Gerald Appel, an analyst and money manager in New York, invented an indicator that goes a long way to resolving some of these difficulties. It has the unwieldy name of Moving Average Convergence Divergence, but most people refer to it by the acronym MACD, pronounced “macdee”.

The MACD is a relatively sophisticated indicator that is adaptable to almost any time frame from day trading to long term investing. It is used to trade trends, falling into the general category of trend-following indicators.

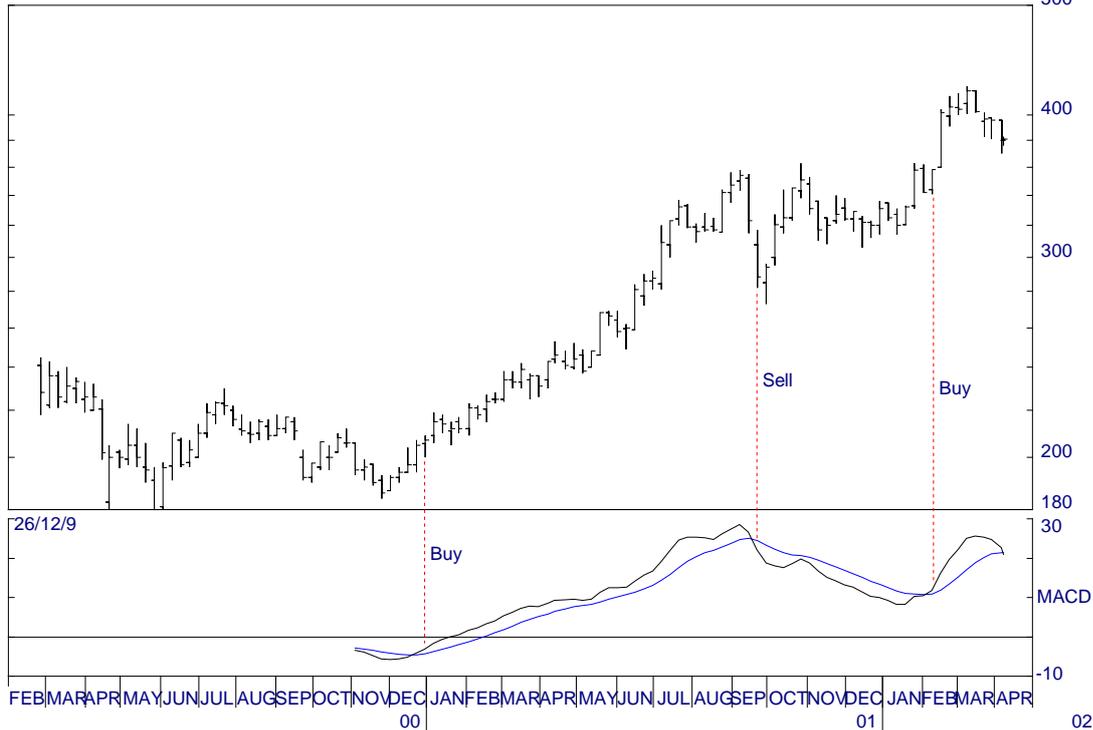
Constructing the MACD

The MACD can be calculated for any period – hourly, daily, weekly or monthly. Only closing prices for the period are used in the calculations. The steps in its construction are:

- Calculate a 12 period exponential moving average.
- Calculate a 26 period exponential moving average.
- Subtract the 26 period exponential moving average from the 12 period exponential moving average. This is the **MACD** or “fast” line.
- Calculate a 9 period exponential moving average of the MACD line. This is the **Signal** or “slow” line.
- Plot the two lines in a sub-chart, below the price chart.

Because the MACD is the difference between two moving averages, it will yield values that do not relate to the price scale of the chart, unlike a straight moving average, which yields values that are always within the price scale of the price chart. Also, unlike a straight moving average, the MACD signals do not relate to when the price chart interacts with the MACD lines. The MACD is therefore displayed in a sub-chart with a separate vertical axis scale.

The MACD is always plotted as two lines. The two lines will tend to oscillate above and below a zero line, though not in a regular cyclical pattern. The zero line has little relevance. The signals are given when the MACD line crosses the Signal line.



The weekly chart of Boral (BOR) shows the MACD line in black and the Signal line in blue. Different charting software will use varying colours for the lines, or render one as a solid line and one as a dotted line. However, once we understand the way the lines are calculated, it is always easy to pick which line is which on a chart. The MACD line is the “faster” of the two, which means that it reacts more rapidly to changes in price and will therefore be more volatile. The Signal line, because it is an exponential moving average of the MACD line, will always be “slower”, in that it reacts more slowly to changes in price and will be less volatile.

MACD Signals

The MACD indicator gives its signals when the MACD line crosses the Signal line:

- When the MACD line crosses **up** through the Signal line, we **buy** because an uptrend is likely to be starting.
- When the MACD line crosses **down** through the Signal line, we **sell** because a downtrend is likely to be starting.

These signals are marked on the Boral chart. The first buy signal resulted in a strong trend and was very profitable. The sell signal took us out while the price fell and then went sideways for some time. The second buy signal looks as though it will only yield a small profit, because it appears as though we will get another sell signal in the next week.

The Boral chart highlights important characteristics of the MACD indicator:

- Like all trend following indicators, it gives best results in strong trends. If the trend is short, like the 2002 period on the Boral chart, only small profits, and perhaps even small losses, will result. The same will happen in very slowly rising trends.
- Where the price moves very rapidly in one direction, the signals will tend to be late. This is obvious in 2001 on the Boral chart, where the price fell sharply. However, the first buy signal on the Boral chart gave a quite early signal, because the price was moving up reasonably slowly.

- Where the price meanders sideways, or only trends for short periods forming irregular widely swinging trading ranges, the MACD line will tend to weave back and forth across the Signal line. In this respect, the MACD is like all trend following indicators, giving poor results in non-trending markets.

Non-trending markets are dealt with by using other technical analysis techniques to identify when a trend is present or there is a high likelihood of a trend developing. However, there is no method that will guarantee that every trade or investment will be profitable. Rather, the nature of the trading or investment task is to position us in situations that have a strong likelihood of leading to good trends. Then, we weed out those that do not work out and stay with the good trends.

Using MACD

Short-term traders can use the MACD by constructing it on very short-term data such as hourly or daily periods. Medium term and position traders can use the MACD by constructing it on weekly data. Active investors can use the MACD on monthly data.

An added dimension is for short and medium term traders to use monthly or weekly MACD to establish the direction and strength of the large trends. They can then use daily or hourly MACD to execute trades in the direction of the longer-term trend, positioning them in only the uptrending sections of the bigger trend.

My favourite use of MACD is for active investment, by constructing it on monthly data. This has two really powerful aspects:

- It keeps us in the big trends for a long time, rather than being frightened out on a minor setback. Most investors are easily scared out of positions where they have big paper profits and the price starts to fall. Having sold out, they find it difficult to buy back in again – often at a higher price. A better strategy is to use monthly MACD to stay in the trend.
- It keeps us out of downtrends. An active investor should never buy a stock where the MACD is in sell mode and should consider taking some profits when the MACD gives a sell signal after a strong trend has developed.

MACD Early Warnings

Finally, the MACD is a powerful early warning system on monthly charts when the stock develops a cyclical pattern.

After a long uptrend, a significant sideways or distribution pattern on the chart will throw the MACD into sell mode. This warns us to take some profits and look out for a reversal pattern.

After a long downtrend, a significant sideways or accumulation pattern on the chart will throw the MACD into buy mode. This alerts us to look to take an early position and be ready to get set once a new uptrend develops.

The monthly chart of Brambles Industries (BIL) illustrates the possibilities for this strategy. In 1994 and early-1995, the MACD wove back and forth across the Signal line as BIL traded sideways. However, from mid-1995 into early-1996, the MACD line began to move upwards and away from the Signal line. Anywhere between the dotted red lines, we could have built a position at prices below \$4.

The sell signals began to come in late 1999 and early 2001. Anywhere between dotted red lines, we could have taken profits above \$9. Even more important, we should not have considered for even a moment buying into BIL anytime in 2001 or 2002 to date.