Brainy's Articles on
Technical Analysis
Moving Average (MA) explained

Article No:
TA-4205
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29 Sept 2009

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Introduction

Amongst all of the technical indicators in common use, the Moving Average (MA) indicator must be about the most common. It is very useful, and can be combined with other indicators.

In this article in Brainy's series on Technical Analysis (number TA-4205) we take a look at the Moving Average (MA) and how it is calculated.

Overview

The Moving Average (MA) will be familiar to people who dabble in statistics, where it is also known as a rolling average, or running average. In Technical Analysis, it is called the Moving Average.

It is calculated for a set of numbers, and is basically the average of the *last "few" values*. Now, the last "few" values could be anything from the last one or two values, up to the last 500 or 1000 values or more. In Technical Analysis, when it is calculated for share prices, it is calculated as at a certain date. And it is calculated for every date within a date range resulting in not just one number for the MA, but a series of numbers. This will become easier to understand in the text below.

MA — Moving Average

How do we calculate a Moving Average (MA)?

In Figure 1 at right we have a price chart of the CBA bank. This chart is a Weekly chart from 10 August until 29 September 2009. Each (black) dot on the chart represents the Close price for each week (these are the upper dots on the chart, not the lower ones). The last black dot (for the week commencing 28 September — see the time axis across the bottom) has a price of $52.17 as indicated in the tag on the price axis to the right (this was the price at about 2pm on the day when this snap shot was taken, and it is not the real closing price at the end of the week which has not yet arrived). Normally we will look at a line chart or candle chart of prices, but this "point" chart helps us to better understand the MA concept.
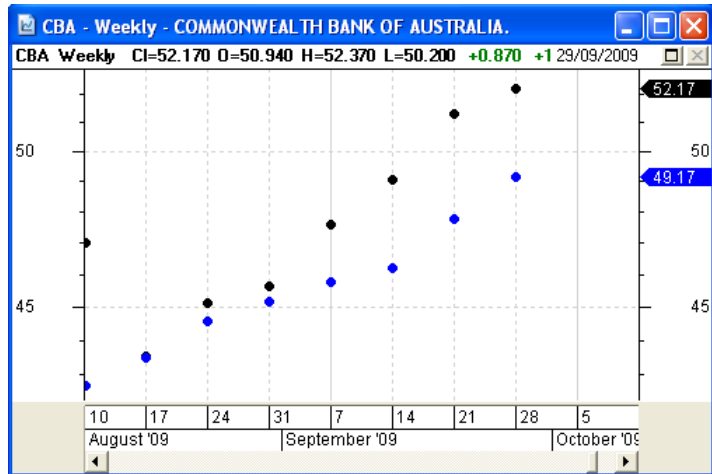

Figure 1: The 5-week simple Moving Average (MA)

The series of (blue) dots on the chart in the figure is actually the 5-period Moving Average (MA). We could also call this the 5-bar MA, or the 5-week MA. We would normally look at a continuous line for the MA, but drawing it like this as dots will help to better explain the concept. The *very last dot* is the Moving Average of the *last five Close prices* on the chart ($49.17 — see the tag on the right-hand price axis). To calculate this value, all you need to do is take the last 5 values of the Close price, and calculate the average — that is, add them up and divide by 5. Fortunately, computers can easily do this calculation for us and quickly display the chart.

	$52.17
	$51.30
	$49.09
	$47.60
	$45.68
Sum =	$245.84
Average =	$49.17

Figure 2: The 5-period MA calculation.

The actual calculation of the 5-period MA in this example is shown in the table in Figure 2 at right. The last five Close prices have been obtained, and listed. The total (or Sum) of these is shown as $245.84. Now we divide this value by the number of entries (ie. divide by 5), to get the average value of $49.17. This explains the last MA dot on the chart in Figure 1 above. The same

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calculation process needs to be repeated to obtain the values for the other MA dots on the chart.

When we look at a MA line on a chart, as opposed to the dots shown above, it is simply a "join-the-dot" exercise where all of the MA dots are joined with short straight-line segments.

Figure 3 at right illustrates this. The share price is shown as a Line Chart (which joins together all the Close prices for each week). Compare this chart with the one above.

Simple, Exponential, Weighted?

The calculation of the MA was simple many years ago before computers were invented. But today it is easily possible

Figure 3: Weekly chart of CBA bank with 5-week Simple MA.

to display several variations of the MA line. The calculation described above is actually the Simple Moving Average (SMA). However, many people nowadays prefer to use the Exponential MA (EMA).
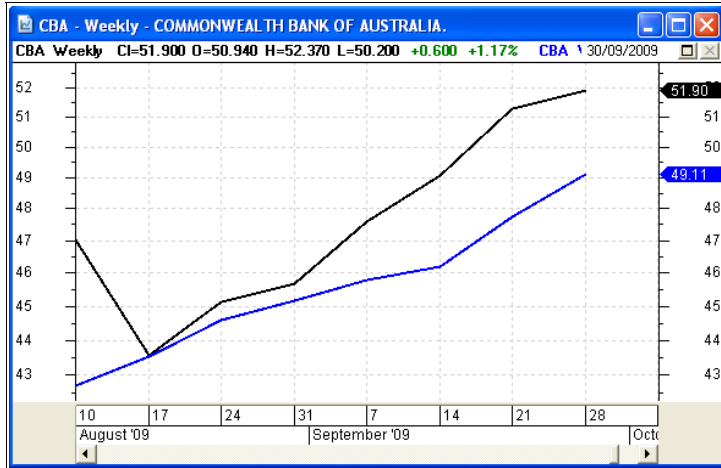
The chart in Figure 4 at right is the same as in Figure 3 above, except that the dashed (red) line is the 5-week EMA. Basically the difference between it and the SMA is that it is more responsive to recent price changes. Specifically in this case, the price fall on 17 August causes the EMA for the next 3 weeks to be lower than the SMA. And the EMA for 14 to 28 August is higher than the SMA as it is closer to the "recent" price action.
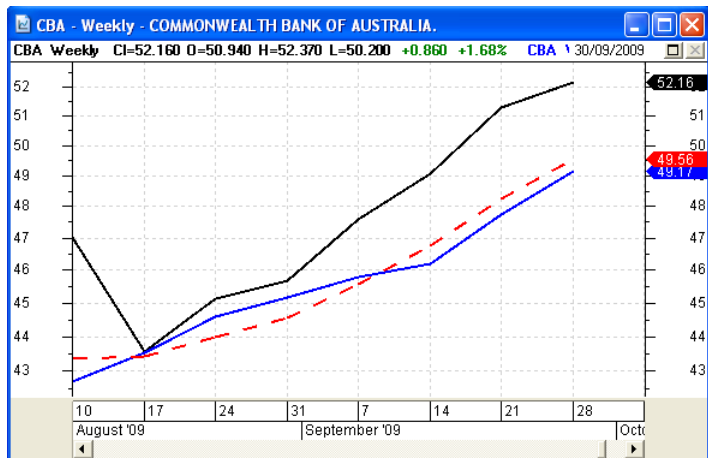
The Weighted MA is slightly different again. And as if that is not enough, your charting software might give you additional types of MA to choose from.

Figure 4: Exponential Moving Average (EMA).

Summary

In this article in Brainy's series on Technical Analysis (article number TA-4205) we have taken an introductory and basic look at the Moving Average (MA) indicator.

For more information on Share Trading, or
Technical Analysis, or BullCharts software,
look for more of Brainy's articles, or the other resources, in
* **Brainy's Share Market Toolbox**: www.robertbrain.com

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