Contents

Indicators

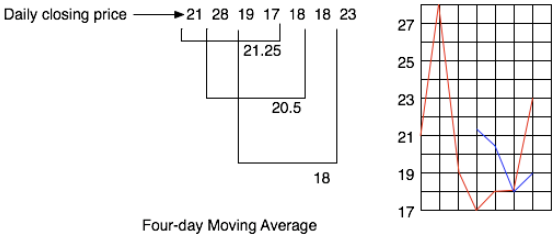
What are they?

Statistics used to measure current conditions as well as to forecast financial or economic trends. Indicators are used extensively in technical analysis to predict changes in stock trends or price patterns.

Common technical analysis indicators are the moving average convergence-divergence (MACD) indicator and the relative strength index (RSI).

Simple Moving Average

Example:



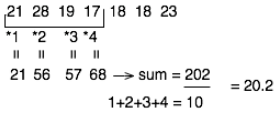
Four-day Moving Average

Criticisms of the simple moving average

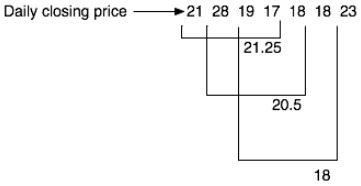
at each day, only covers the last n days.
equal weight for each day's price. I.e. recent prices weighted the same as n day-old prices.

Linearly Weighted Moving Average

Example:



Recall the simple moving average:



Criticism - this still does not address the problem of using just the last n days.

Now - an introduction to spreadsheets...

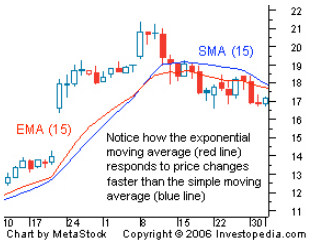
Spreadsheets and how to use one for the moving average calculations

An introduction to the use of a spreadsheet.

Exponentially Smoothed Moving Average (exp. mov. avg -or- EMV)

This addresses the problems with the previous two moving averages. This assigns a greater weight to the most recent prices, and it includes all the data in the data list.

This type of moving average reacts faster to recent price changes than a simple moving average. The 12- and 26-day EMAs are the most popular short-term averages, and they are used to create indicators like the moving average convergence divergence (MACD) and the percentage price oscillator (PPO). In general, the 50- and 200-day EMAs are used as signals of long-term trends.



The formula:

$$EMA_{today} = \alpha \times price + (1 - \alpha) \times EMA_{yesterday}$$

-or-

$$EMA = \frac{p_1 + (1-\alpha)p_2 + (1-\alpha)^2 p_3 + (1-\alpha)^3 p_4 + \cdots}{1 + (1-\alpha) + (1-\alpha)^2 + (1-\alpha)^3 + \cdots}$$

where α is often taken as .1 (or 10%) and p_1 to p_n are the prices.

Using multiple moving averages to generate signals.

Note: The text discusses the 4-9-18-day moving average system (or triple crossover method).

We will skip this discussion in our course!

For example, take the 50 and 200 moving day averages.

Moving Average Envelopes and Bollinger Bands

Example: Take a 21 day moving average (shorter term traders use this).

In-class examples will be provided.

Bollinger Bands

These have a strong following.

These are similar to moving average envelopes, except a standard deviation is taken instead of a fixed percentage..

Examples shown in class using Stockcharts.