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TECHNICAL ANALYSIS

Technical Analysis



- What is Technical Analysis?
- Technical analysis or "charting" is the study of price and volume behavior in financial markets in order to anticipate their future performance. I have deliberately used the word "anticipate" rather than "forecast" or "predict":
- **The market can go up or down at any time -- it is only the probability (of each move) that varies.**
- **Technical Analysis - Not An Exact Science**

Technical Analysis should not be used to make predictions because we never know the outcome of a particular pattern or series of events with 100 per cent certainty. The best that we can hope to achieve is a probability of around 80 per cent for any particular outcome, which means that something unexpected will occur at least one in five times.

My approach is to assign probabilities to each possible outcome. Assigning actual percentages would imply a degree of precision which, is normally unachievable. Most of the time, however, we can tell that price is at least twice as likely to move in a certain direction, as it is to move in the other. That is sufficient edge for a good trader to out-perform the general market.

Foundations of Technical Analysis

Technical analysis is based on three basic beliefs:



Price discounts everything.

All fundamental, political and economic information available to the market is reflected in the price.

Price tends to move in trends.

Charles Dow developed the Dow Theory based on his empirical observation of trends more than a century ago.

History tends to repeat itself.

Basic human nature does not change and the market, reflecting the sum of all participants actions, behaves in identifiable patterns.

Does Technical Analysis Really Work?

Some academic studies claim that price movements in financial markets are entirely random, with no recognizable pattern. Other studies have shown that buy and sell orders are not randomly distributed -- they tend to cluster around key price levels in the market -- the basic tenet of support and resistance.

Technical analysis further enjoys the support of large numbers of short- and medium-term traders -- evidence of its practical application.



Support and Resistance: The foundation of all classical technical analysis is **support and resistance**: the behavior of buyers and sellers at key price levels. Trend theory is based on the performance of price at key support and resistance levels. Chart patterns similarly identify the behavior of buyers in relation to support and resistance.



▪ **Support**

- A support level is the price at which buyers are expected to enter the market in sufficient numbers to take **control** from sellers.
- The market has a memory. When price falls to a new Low and then rallies, buyers who missed out on the first trough will be inclined to buy if price returns to that level. Afraid of missing out for a second time, they may enter the market in sufficient numbers to take **control** from sellers. The result is a rally, reinforcing perceptions that price is unlikely to fall further and creating a support level.

▪ **Resistance**

- A resistance level is the price level at which sellers are expected to enter the market in sufficient numbers to take **control** from buyers.
- When price makes a new High and then retreats, sellers who missed the previous peak will be inclined to sell when price returns to that level. Afraid of missing out a second time, they may enter the market in numbers sufficient to overwhelm buyers. The resulting correction will reinforce market perceptions that price is unlikely to move higher and establish a resistance level.



Learning About Technical Analysis

It is important to build a sound understanding of the basic concepts before progressing to indicators and more complex chart patterns.



Indicators



- Ensure that you have a sound grasp of technical analysis before moving on to indicators.
- All that indicators do is summarize price and volume behavior in different ways to highlight important features. Bear in mind that whenever you summarize you sacrifice. All that an indicator does is to present a particular feature of the data in a more readable format -- while eliminating all other features.
- Indicators, in the right hands, are useful and important tools but they are not the holy grail. The big picture, presenting all the data, is always the price and volume chart.

Chart Basics



- Here are some of the basic concepts that you will need to know:
- **Bar Charts**
- Each bar represents price performance for a specific period. These periods may be as long as a month or as short as a minute, daily bars being the most popular.
- **OHLC** stands for the 4 elements displayed on a typical price bar:
 - opening price;
 - highest price;
 - lowest price; and
 - closing price.

Opening and Closing Prices



- **Opening price** is taken from the first trade of the day (or period). The public tend to place orders at the opening of the market, reacting to the previous day's close. **Closing price** is taken from the last trade of the day (or period). Institutional investors normally watch developments during the day and place orders towards the close. Opening price indicates the emotional direction of the market and the closing price represents (in most cases) a more reasoned and well-researched view.
- Open and close are only significant for periods with a definite break before the next opening, as with days or weeks. They should be ignored in analyzing intra-day charts or markets that are open 24 hours a day.

Range and Control

Range

The range is the difference between the highest and lowest prices traded during a day (or period).



Control

For every transaction there must be a buyer and a seller - so the actual number of buyers and sellers is always equal. If there are more *potential* buyers than sellers at the current price, buying pressure will force the price upwards until equilibrium is re-established. The opposite occurs if there are more sellers than buyers - prices will be forced downward. The side that outweighs the other is said to have *control*.

We can identify control from the position of the closing price in relation to:

- The previous closing price;
- The range; and
- The opening price.

Commitment



- If an excess of buyers forces price to rise, some buyers will be deterred by the higher prices and withdraw, and more sellers may be enticed into the market. The rate of withdrawal/entry in response to changing prices is referred to as the *commitment* (or eagerness) of the party in control.
- If buyers are strongly committed they will not be deterred by rising prices and will continue to bid the price up, with little profit-taking. Likewise, if sellers are committed they will not be deterred by lower prices and will continue to sell the stock down.
- The market provides a number of clues as to the commitment of buyers and sellers:
 - the position of closing price relative to the previous close;
 - the position of closing price relative to the range;
 - expanding or contracting ranges;
 - gaps between consecutive ranges; and
 - volume traded.

Long and Short Positions



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Because of the complexity of trading positions, especially when trading in futures and options, traders avoid the terms buy and sell, and refer to long and short positions.

Long

Going long means buying an asset, a call option or a futures contract with a view to **profiting from a rise in the price of the underlying asset.**

Short

Going short means selling an asset, buying a put option, selling a call option, or entering a futures contract with a view to **profiting from a decline in the price of the underlying asset.** Short-selling requires that you borrow stock for delivery, as you have sold an asset you do not own. The intention is to buy later, when the price has fallen, in order to repay the borrowed stock. Short positions are normally only of a few days duration and should only be attempted by experienced traders with the assistance of their broker.

If you are only trading the long side of the market, short signals should be interpreted as a signal to close any long position.

Entry = Open a long or short position.

Exit = Quit a long or short position.

Take profits = Reduce a long or short position.

What is important to remember is that long-term trends influence short-term trends.



In an up-trend, rallies tend to be stronger than corrections. In a down-trend, corrections are mostly stronger than rallies. Unusual conditions can be created by the interaction of cycles in different time frames. They may offset each other or they may overlap and act in the same direction, resulting in an extreme peak or trough.

Chart Analysis

Avoid becoming hypnotized by movements on daily or intra-day charts. Always analyze charts in at least 2 time frames:

Determine the strength and direction of longer term trends and gauge their effect on the cycle being traded.

Then analyze the cycle being traded.


Estimate the length of cycles by measuring the time taken between consecutive peaks (or troughs).



Moving Averages



Moving averages provide an objective measure of trend direction by smoothing price data. Normally calculated using closing prices, moving averages can also be used on median, typical, weighted closing, and high or low prices as well as other indicators.

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Time Frames



- Shorter length moving averages ("MAs") are more sensitive and identify new trends earlier, but also give more false alarms. Longer moving averages are more reliable but are less responsive, only picking up the big trends.
- Use a moving average that is half the length of the cycle that you are tracking. If the peak-to-peak cycle length is roughly 30 days, then a 15 day moving average is appropriate. If 20 days, then a 10 day moving average is appropriate. Some traders, however, will use 14 and 9 day MAs for the above cycles in the hope of generating signals slightly ahead of the market. Others favor the Fibonacci numbers of 5, 8, 13 and 21.
- 100 to 200 Day (20 to 40 Week) moving averages are popular for longer cycles;
- 20 to 65 Day (4 to 13 Week) moving averages are useful for intermediate cycles; and
- 5 to 20 Days for short cycles.

Simple Moving Average



- The simple moving average (or *SMA*) is the easiest to construct. A 5 day SMA takes the sum of the last 5 days prices and divides by 5. Easy but not always accurate: the indicator has a tendency to "bark twice". Consider this example:

▪ Day	1	2	3	4	5	6	7	8	9
▪ Price (\$)	16	17	17	10	17	18	17	17	17
▪ 5 Day SMA					15.4	15.8	15.8	15.8	17.2

- You can see that on day 9 there is a big step in the simple moving average, but price has been constant at \$17. This distortion is caused by the low price on day 4 - dropped from the SMA on day 9.

Exponential Moving Average



- To calculate an exponential moving average (*EMA*):
- Take today's price multiplied by an EMA%.
- Add this to yesterday's EMA multiplied by (1 - EMA%).
- If we recalculate the earlier table we see that the exponential moving average presents a far smoother trend:

■ Day	1	2	3	4	5	6	7	8	9
■ Price (\$)	16	17	17	10	17	18	17	17	17
■ EMA(1/3)		16.3	16.5	14.4	15.2	16.2	16.4	16.6	16.8

Exponential Moving Average Time Periods



- How to calculate an EMA% for a selected time period (the indicator panel performs this calculation automatically):
- **EMA% = $2/(n + 1)$ where n is the number of days**
- Example: The EMA% for 5 days is $2/(5 \text{ days} + 1) = 33.3\%$

Weighted Moving Average



- A Weighted moving average (WMA) attaches greater weight to the most recent data. The weighting is calculated from the sum of days.
- Example: For a 5-day weighted moving average the Sum of Days is $1+2+3+4+5 = 15$

- The weighting is shown below:

▪ Day	1	2	3	4	5
▪ Price (\$)	16	17	17	10	17
▪ Weighting	1/15	2/15	3/15	4/15	5/15
▪ Weighted value	1.07	2.27	3.40	2.67	5.67
▪ 5 Day WMA					15.07

- Weighted values are calculated by multiplying today's price by $5/15$, yesterday by $4/15$, and so on. The weighted moving average is the sum of the 5 weighted values.

Trading Traps



- Trading Traps: The Shakeout Tricks of the Trade: A market professional may want to accumulate a large position in a stock that is trending strongly...
- The Fakeout Tricks of the Trade: If a market professional sits with a large sell order and the stock is consolidating....
- Pump and Dump Tricks of the Trade: Also referred to as ramping, this is an old trick often perpetrated by sly old hands who prey on newcomers.
- Bull & Bear Traps One of the most reliable point & figure chart patterns, Bull Traps occur when an upward breakout retreats back below the new support level.

Trading Psychology



- Trading Psychology Your biggest enemy, when trading, is within yourself. Success will only come when you learn to control your emotions.
- Know Your Trading Style What personality style are you? And how does this suit becoming a trader?
- Searching for the Holy Grail Most traders are on the lookout for ways to improve their trading, but some dedicate their lives to searching for the holy grail.
- Trading With Emotions Before you can manage your emotions it helps to understand what causes them. Our brains and endocrine system are a veritable narcotics factory...
- Investors Logic Investors often use distorted logic when buying stocks: what goes up must come down? Stocks that rise steeply in price and make new highs are viewed as expensive ...
- Gamblers Logic If I toss a coin and heads turns up five times in a row. Which side is more likely to turn up the next time? Heads or tails?

Trading Basics



- Trading Basics The secret of successful trading: adjust your trading system to prevailing market conditions...
- Market Leaders Market leaders deliver superior returns compared to laggards, offering more consistent growth...
- Market Direction The market exerts a powerful influence on the performance of individual stocks. Study the big picture first before looking at any shares in isolation.
- Trend Direction The key to successful trend trading.
- Entry Signals Perfect timing: use momentum oscillators to signal entry points in the trend.
- Stop Loss Protection Stop-loss orders are a critical element in any trading system, to protect your capital and to lock in profits.
- Exit Signals Increase profits: use trend indicators to time your exit from trends. Adjust the Indicator Time Frame to suit the cycle being traded.
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Indicator Basics



- Using Indicators Most indicators highlight a particular aspect of price or volume behavior.
- Favorite Indicators Charting indicators that I find most useful.
- Indicator Signals Respect, whipsaws, divergence, and failure swings.
- Indicator Time Frames A key principle when using indicators: set the time frame to reflect the cycle being traded...
- Fibonacci Numbers Fibonacci numbers are named after Leonardo Fibonacci, a twelfth century Italian mathematician, who discovered the unique properties of a particular number sequence.
- Linear Regression Linear regression fits a straight line to the selected data using a method called the Sum Of Least Squares. The Sum Of Least Squares ...

Compare Stocks/Indices



- Price Comparison A potent stock selection tool, Price Comparison charts the performance of a stock against an index or a related stock.
- Price Ratio A powerful tool for stock selection, Price Ratio is often referred to as relative strength or comparative strength. It compares the performance of a stock relative to an index or a related stock.
- Price Differential Compare bond yields or interest rates that share the same price axis.

Moving Average Types



- Moving Averages The Moving Average is a powerful measure of trend direction, achieved by smoothing price data. Moving Averages can also be used on median, typical and weighted closing prices as well as other indicators.
- Selecting A Long-Term Moving Average When tracking the primary trend you are faced with a wide choice of moving averages.
- Moving Average High/Low A new variation on the moving average system is to calculate moving averages on the Highs or Lows, rather than on the Close.
- Price Envelope Sometimes referred to as Percentage Bands, price envelopes are plotted at a set percentage above and below a moving average.

Moving Average Systems



- Single Moving Average A simple moving average system, often combined with filters for greater effectiveness.
- Two Moving Averages Fast and slow moving averages provide a powerful measure of trend strength and direction.
- Three Moving Averages A more sophisticated system that uses a third moving average to identify ranging markets.
- Trading with Moving Averages Fast and slow moving averages can provide potent market signals.
- Multiple Moving Averages Daryl Guppy uses multiple moving averages to measure trends and identify likely reversals. The indicator compares multiple short-term and long-term exponential moving averages.
- Rainbow 3D Moving Averages Ivan Ballin's (Ingot54) variation of Daryl Guppy's Multiple Moving Averages.

Moving Average Oscillators



- Commodity Channel Index The Commodity Channel Index (CCI) highlights overbought and oversold markets and likely turning points.
- Detrended Price Oscillator This immensely powerful indicator isolates the short cycle and provides excellent trend signals.
- MACD MACD (Moving Average Convergence Divergence) is a powerful refinement of the two moving averages system, providing reliable signals of trend changes.
- MACD Histogram The MACD Histogram (Moving Average Convergence Divergence Histogram) provides far earlier and more responsive signals than the original MACD. Unfortunately it is also more volatile.

Trend Indicators



- Directional Movement A sophisticated indicator by Welles Wilder, Directional Movement is one of few indicators that signals whether a trend is suitable to trade.
- Parabolic SAR Developed by J. Welles Wilder, the Parabolic SAR indicator provides excellent entry and exit points in trending markets.

Momentum Indicators



- Coppock Indicator Edwin Coppock designed this oscillator with one sole purpose: to identify the commencement of bull markets.
- Momentum Momentum measures trend strength and identifies likely reversal points. A simple but effective measure of rate of change of prices.
- Negative Volume Norman Fosback uses Negative Volume Index (NVI) with Positive Volume Index (PVI) to identify bull markets.
- Positive Volume Introduced by Norman Fosback, Positive Volume Index identifies bull and bear markets by measuring activity on days when volume is higher.
- Rate Of Change (Price) A refinement of Momentum - Rate of Change is designed to fluctuate as a percentage around the zero line.
- Relative Strength Index (RSI) A very popular momentum oscillator developed by Welles Wilder, RSI (Relative Strength Index) compares upward and downward movements in closing price.
- Smoothed Rate of Change (SROC) Smoothed Rate of Change (SROC) was first introduced by Fred G Schutzman in Futures magazine, April 1991. The oscillator performs a similar function to the Momentum and Rate Of Change indicators.
- TRIX Indicator Designed for trading trends, TRIX uses a triple-smoothed moving average to eliminate cycles shorter than the indicator period.

Range Oscillators



- Elder Ray Index Developed by Dr Alexander Elder, the Elder-ray indicator measures buying and selling pressure in the market. The Elder-ray is often used as part of the Triple Screen trading system.
- Mass Index Donald Dorsey predicts trend reversals by comparing trading range over a 9 day period.
- Slow Stochastic The Slow Stochastic provides more reliable signals than the original indicator. It applies further smoothing to reduce volatility and improve accuracy.
- Stochastic Indicator Developed by George Lane to track market momentum, the stochastic oscillator comprises two lines: %K and %D.
- Vertical Horizontal Filter (VHF) Created by Adam White, Vertical Horizontal Filter (VHF) identifies trending and ranging markets.
- Williams %R Williams %R is similar to Stochastic %K - except that Williams %R is plotted using negative values.
- Williams Accumulate Distribute Larry Williams highlights accumulation and distribution by comparing daily trading ranges. Signals are taken on divergences.
- Williams Accumulation Distribution Williams Accumulation Distribution is traded on divergences. When price makes a new high and the indicator fails to exceed its previous high, distribution is taking place.

Money Flow Indicators



- Accumulation Distribution Measures the commitment of bulls and bears, giving advance warning of trend changes.
- Chaikin Money Flow Another popular indicator by Marc Chaikin based on the Accumulation Distribution line. The Chaikin Money Flow indicator often warns of breakouts and provides useful trend confirmation.
- Chaikin Oscillator Marc Chaikin's chaikin oscillator monitors the flow of money in and out of the market.
- Money Flow Index Money Flow Index measures trend strength and warns of likely reversal points.
- Twiggs Money Flow Twiggs Money Flow is Colin Twiggs' derivation of the popular Chaikin Money Flow indicator.

Volume Indicators



- Volume Volume highlights unusual trading activity and provide powerful confirmation of price signals.
- Rate of Change (Volume) The rate of change formula can also be applied to volume, where it highlights changes in volume activity.
- Volume Oscillator An easy to use oscillator that highlights changes in volume activity.

Price-Volume Indicators



- Force Index Developed by Dr Alexander Elder, the Force index combines price movements and volume to measure the strength of bulls and bears in the market.
- On Balance Volume Developed by Joseph Granville, OBV provides a powerful measure of accumulation and distribution by comparing volume to price movements.
- Price Volume Trend Measures the strength of trends and warns of reversals...

Range-Volume Indicators



- Ease of Movement Developed by Richard W Arms, this powerful indicator highlights the relationship between price and volume.
- Equivolume Charts The greatest advance in the last decade, equivolume exposes price and volume interaction.

Range Volatility Indicators



- Average True Range Welles Wilder developed Average True Range to measure commitment in a trending market.
- Chaikin Volatility Developed by Marc Chaikin, volatility is measured as the range between high and low prices.
- Volatility Ratio The Volatility Ratio identifies days with exceptionally wide trading ranges (the distance between High and Low) and is used to signal likely reversal days. Details ...
- Volatility Ratio - Schwager This ratio is similar to that used by Jack Schwager in Technical Analysis to identify wide-ranging days.

MA Volatility Indicators



- Bollinger Bands Invented by John Bollinger, the bands offer powerful support for signals from trend or momentum indicators. Bollinger Bands are calculated at a specified number of standard deviations above and below the moving average, causing them to widen when prices are volatile and contract when prices are stable.
- Volatility Volatility is a statistical measure called the coefficient of variation.