Technical Analysis
Charting

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I. Introduction to Technical Analysis

"Technical Analysis, the prediction of price movements based on past price movements, has been shown to generate statistically significant profits despite its incompatibility with most economists' notions of efficient markets..." Federal Reserve Bank of NY, C.L. Ostler and P.H. Kevin Chang, 1995.

Technical Analysis has two very diverse origins. The first recorded use of technical analysis was done by the early 18th century rice traders of Japan. The technique that is perhaps best known is the Candlestick chart. The other origin, particularly for western technical analysis, is the work of Charles H Dow. In 1884, he produced the first publication of the stock market averages, which has evolved to the modern day Dow Jones Index and has led to similar indices around the world.

I.i. Dow Theory

The Dow Theory has six basic tenets:

- Everything is discounted in the price – All news, views, hopes and disappointments are factored into the price
- Markets have three trends
  - Primary trend (lasts over three months)
  - Secondary trend (3 weeks to 3 months)
  - Minor Trend (less than 3 weeks)
- Major trends have three phases
  - Accumulation Phase – investors buy into the market. Bad news is still coming out but the price is not falling any more.
  - Trending Phase – Trend followers, such as technical analysts, join the initial move
  - Distribution Phase – Wider range of investors begin to take profit on their positions and the trend comes to an end.
- The averages must confirm each other – Dow was referring to his Road and Rail averages. He noted that for a sustained change in trend of one average, it had to be confirmed by a change in the other average
Volume must confirm the trend – Volume is a secondary indicator but the volume should also expand in the direction of the trend and vice versa.

A trend is assumed to be in effect unless there are definite signals that it has reversed

From Dow’s Theory three basic assumptions can be made:

- Market price action discounts everything – all news, view, hopes, and disappointments are factored in the price
- Prices move in trends and trends tend to persist – Markets move up, down and sideways. These trends are interrupted by shorter trends. Technical Analysts believe these trends will continue until there are signs of them ending and a greater force reversing them.
- History repeats itself – All markets are driven by human psychology (f.ex. greed, hope, fear...). The psychologist Schiller said “Anyone taken as an individual is tolerably sensible and reasonable, but as a member of a crowd he at once becomes an idiot”. In order to use Technical Analysis one must believe that history repeats itself.

II. Support & Resistance

II.i. Introduction

One of the most important concepts in Technical Analysis is the concept of trend. Technical Analysts operate on the assumption that prices move in trends, the goal being to identify the trend as early as possible in order to trade in that direction. A trend can be defined as the direction of the market.

In fact, markets rarely move in straight lines but through a series of peaks and troughs that are referred to as resistance and support levels. It is the direction of these successive highs and lows that constitutes the market trend.

II.ii. Support and Resistance Levels

The basic idea behind this support-resistance theory is that the understanding of the future lies in the past. Price levels that were significant in the past will be of importance for the price action in the future.

Support or resistance levels are prices beyond which the market may have difficulty in moving, so they should be considered as significant levels in connection with buying and selling decisions. These may include:
- Previous highs or lows
- Big figures, which often become psychological resistance or support levels. The bigger the figure, the more significant the potential support or resistance.
- Price projections and retracements: these also give areas for support and resistance on a chart.

**Role Reversal**

When a support or resistance level breaks it often reverses roles, then support becomes resistance and resistance becomes support. For this reason, it is important to keep a note of old levels of support and resistance for the future.

**Trading Strategy**

Once a level has provided significant support or resistance, when the price once again trades to that level, a position should be taken on the assumption that the level will once more hold with a stop (and reverse) to the other side of the line. It is important to note that the longer the price has been support or resistance and the more times the level has been touched and held the more important the level.

**II.iii. Trend Lines**

Trend lines are harder to visualise than support & resistance lines. They are diagonal lines that define either an area of support or resistance in the market. It identifies the current trend of a market and a break of the trend line indicates either a reversal or a retracement in that trend.

**Definitions**

An Uptrend is a succession of higher highs and higher lows.

A Downtrend is a succession of lower highs and lower lows.

Unlike a support or resistance line, two points are needed to draw a trend line but a third point is needed to confirm it. The more touches and the longer the trend line has been in place the more important the line becomes.

In an uptrend a line is drawn connecting the lows to form a trend line. This is illustrating that the buyers in the market are pushing the market higher.

**Filters**

They help to confirm the validity of a potential trend line break. A basic trend change signal is created when either a support or resistance line has been penetrated. The use of time and/or price filters is a common method of trying to avoid false signals:
**Time Filters**

a) A session closes beyond a broken trend line is needed to confirm a break. This is usually a daily close, but may be an hourly, 2-hourly close, etc. for shorter time frame traders

b) For longer term trading, the Two-Day Rule states that the price must close beyond the trend line for two consecutive periods for the break to be considered valid.

**Price Filters**

A trend line must be broken by a predetermined value or percentage amount (set by the dealer) before the break is considered to be valid. Traders commonly use filters but it has to be remembered that they are a very personal thing.

**II.iv. Channels**

A channel is an extension of the trend line.

- In an uptrend, the channel line is drawn parallel to trend line above price action
- In a downtrend, the channel line is drawn parallel to trend line below price action
- The trend line and channel line should engulf the price action
- Channels are more useful to an analyst than a simple trend line because they identify a minimum price objective for the market should the price break out of the channel

Still the most important line in a channel pattern is the trend line. The channel line is purely a measuring line and should not be used as a trading signal. Once the channel line has been drawn on the chart, the width can be measured and projected from the break of the trend line. This is the Minimum Price Objective (MPO).
1. Trend line confirmed by third touch and parallel channel line engulfs price action. Recommendation would be to buy now around 122.60, expecting the trend line support to hold and the market to continue to trend higher; but to be sure a stop and reverse order should be set tight below the trend line at around 122.40.

2. Price breaks below the trend line, indicating potential trend reversal, so investor has to get out of long position. Stop and reverse has been triggered at 122.40, so investor is now running short position and carrying small loss.

3. Measure width of channel and project to MPO from the break out (currently 119.20).

4. The market moves towards the channel line, representing the MPO.

5. Target is then achieved and a profit of taken at 119.20 (3.20 points) is taken, equal to almost the full width of the channel. (Net result: 3.20 points profit.)

III. Pattern Recognition

III.i. Introduction

As already mentioned above, markets move in trends with peaks and troughs in their price movements. The next step is to use these price actions to give more clues as to how the market may move in the future. This is done by identifying recognisable patterns within the price movements, which can then be used to generate price objectives for potential future moves. It must always be remembered that for any pattern to be valid, a prior directional trend must be in place (either up or down).

Price patterns can be divided into two categories:
- Continuation Patterns
- Reversal Patterns
III.ii. Continuation Patterns

They show that a sideways movement on a chart may be just a pause in the prevailing (longer-term) trend, after which prices will continue to move in the same direction as before. The main advantage of identifying a pattern is that we can use it to define minimum price objectives at a fairly early stage to give us time to profit from the expected future move.

III.ii.a. Flags and Pennants

Those are generally short-term patterns, lasting for anything from a few minutes to a few days (max. 2 weeks). They are formed when a very sharp advance (or decline) stops to consolidate before continuing its move with a further sharp advance (or decline).

Both patterns have the same price implications despite their different shapes. The initial Move (x) should be projected vertically from the breakout point of the flag or pennant to give a MPO.

III.ii.b. Triangles

There are three types of triangles – symmetrical, ascending and descending ones.

There are a number of rules to follow when dealing with triangles:

1) The vertical height of the triangle (x), projected down from point A to the lower trend line is called the base. In a downtrend the point A would obviously be on the lower line, but the calculation of the base is the same.

2) The price should break out around 2/3 of the way through the pattern, but certainly between a half and three-quarters of the way along from the
base to the apex (H). A breakout before halfway means that the triangle has barely had time to take shape and should not be trusted. If the price is still within the triangle beyond the three-quarters point, then there is more likelihood that the price will simply continue to drift sideways and lose its shape. That would nullify the measuring properties of the pattern.

3) Regarding measuring implications, the Minimum Price Objective for a triangle is the vertical height of the base, x, projected vertically from the breakout point in the direction of the break.

4) Triangles are generally medium to long-term patterns, typically lasting for 1-3 months.

**III.i.b.1. Symmetrical Triangles**

- A symmetrical triangle is created when the sideways price movement narrows to form a triangle pattern.
- Guide Lines can be drawn (A,C,E and B,D,F) to converge in the future, with one of them sloping upward and one down.

**III.i.b.2. Ascending Triangles**
Ascending Triangles are, most often, bullish patterns. They have a horizontal upper line (ACE) and an up-sloping lower line (BDF). The up sloping line is created by dealers being prepared to pay a slightly higher price each time the price declines (that shows that buying pressure is increasing). The flat upper line is telling that the sellers at A, C, and E are prepared to wait for the price to rise before selling (that shows that selling pressure is not increasing). It therefore makes sense that the price breaks out on the upside. A return move to G is also quite common before the price moves off towards the minimum price objective.

**III.ii.b.3. Descending Triangles**

Those are the exact opposite of ascending triangles, and are therefore mostly bearish patterns. The measuring implications are the same as for the others, as are the duration and time limits for the breakout.

**III.iii. Reversal Patterns**

They tell us that a pause in a prevailing trend is actually the end of the trend and that prices will start to move in the opposite direction.
III.iii.a. Head and Shoulders

- A head & shoulders top is made up of left and right shoulders (A and E), and a head C.
- The Neckline is drawn through the two reaction lows (B,D) and the pattern can only be confirmed as a head & shoulders after a close below this neckline.
- Quite often the price will return to test the neckline (at G), but for the pattern to be valid it should not re-cross this line.
- The MPO is then the vertical distance (X) from the top of the head to the neckline, projected downwards from the point at which the neckline was broken.

This pattern can also be seen inverted at the end of a downtrend, in which case it is called an Inverse Head & Shoulders.

III.iii.b. Double Tops and Bottoms

- A double top has two peaks (A,C) at roughly the same level, with a reaction low (at B).
- As for the head & shoulders, the price objective, the MPO is the vertical distance (X) projected downwards from the breakout point.
- This pattern can also be seen inverted at market bottoms.
III.iii.c. Triple Tops and Bottoms

- A triple top has three peaks (A,C & E) at roughly the same level, with two reaction lows (B,D)
- Triple tops have the same price objective calculations and often have a return move at G.
- They can also be seen inverted as a triple bottom.

Technical Analysis is essentially a graphical analysis of crowd psychology. Methods have evolved over time and complex mathematical models may have been applied to the markets, however the basic principles remain the same.
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