



Technical Analysis

November 2007

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Technical Analysis

- Technicians (sometimes called chartists) are only interested in the price movements in the market.
- Despite all the fancy and exotic tools it employs, technical analysis really just studies supply and demand in a market in an attempt to determine what direction, or trend, will continue in the future.
- In other words, technical analysis attempts to understand the emotions in the market by studying the market itself, as opposed to its components.



Assumptions

- The market discounts everything
 - Technical analysts believe that the company's fundamentals, along with broader economic factors and market psychology, are all priced into the stock, removing the need to actually consider these factors separately. This only leaves the analysis of price movement, which technical theory views as a product of the supply and demand for a particular stock in the market.
- Price moves in trends
 - This means that after a trend has been established, the future price movement is more likely to be in the same direction as the trend than to be against it.
- History tends to repeat itself
 - The repetitive nature of price movements is attributed to market psychology; in other words, market participants tend to provide a consistent reaction to similar market stimuli over time. Technical analysis uses chart patterns to analyze market movements and understand trends



Chart

- A graphical representation of a series of prices over a set time frame
- Time Scale
 - Daily
 - Weekly
 - ...
- Price Scale
 - Linear
 - Logarithmic

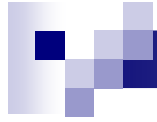
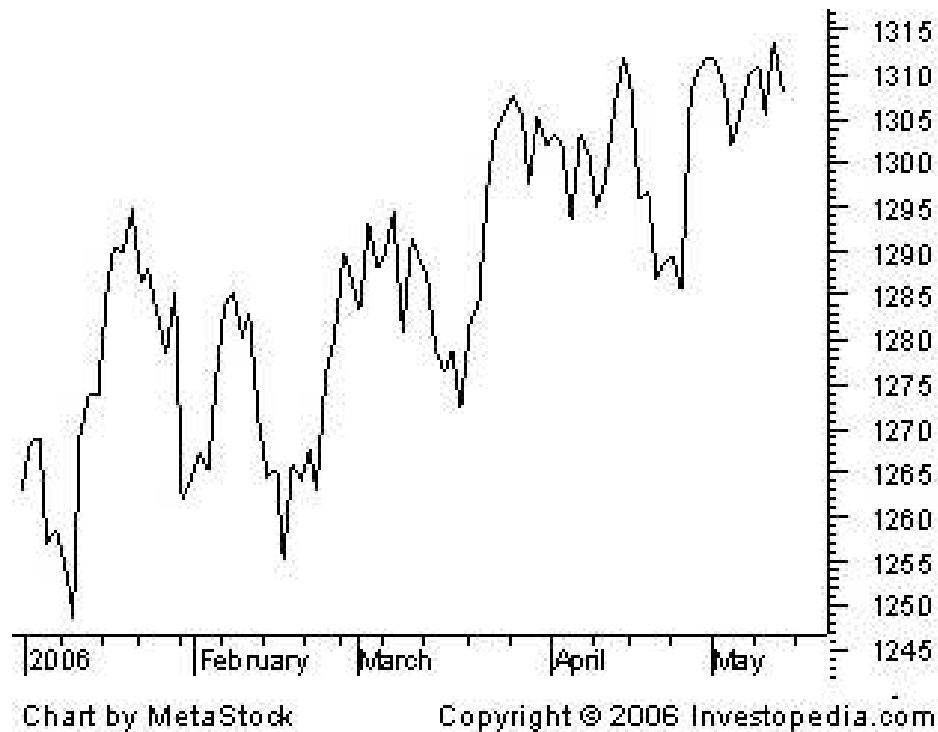


Chart Types

- Linear
- Bar
- Candle
- Point & Figure

Linear Chart

- Closing price



Bar Chart



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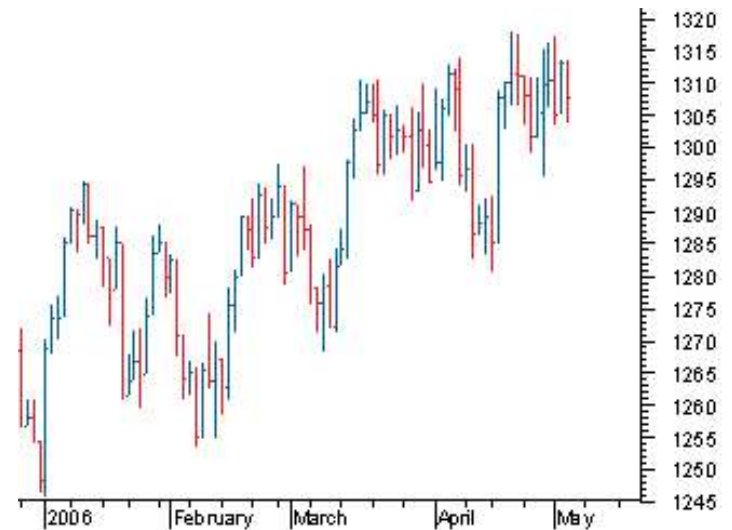
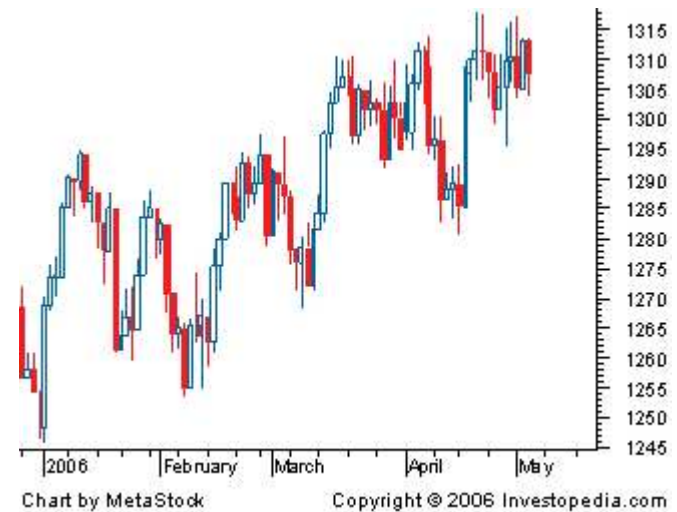
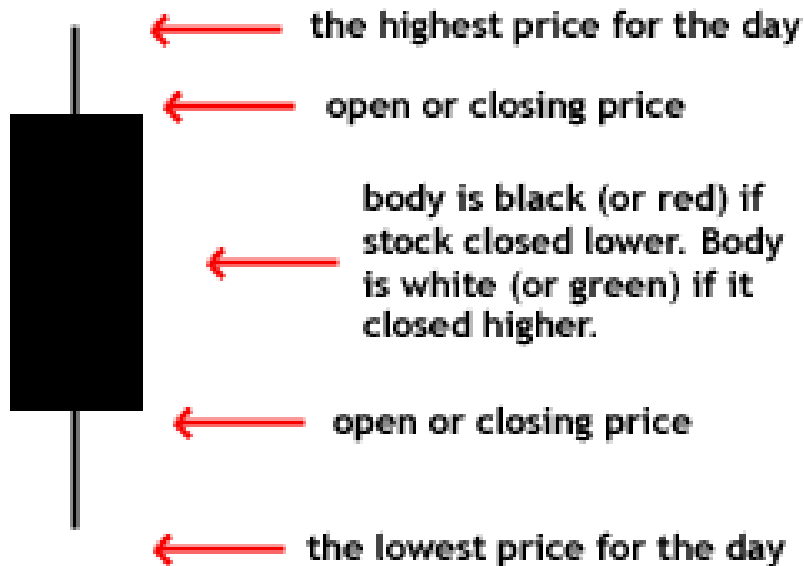


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Candlestick Chart



Point & Figure Chart

- Xs represent upward price trends
- Os represent downward price trends.
- Each box on the chart represents the price scale, which adjusts depending on the price of the stock: the higher the stock's price the more each box represents. On most charts where the price is between \$20 and \$100, a box represents \$1, or 1 point for the stock.

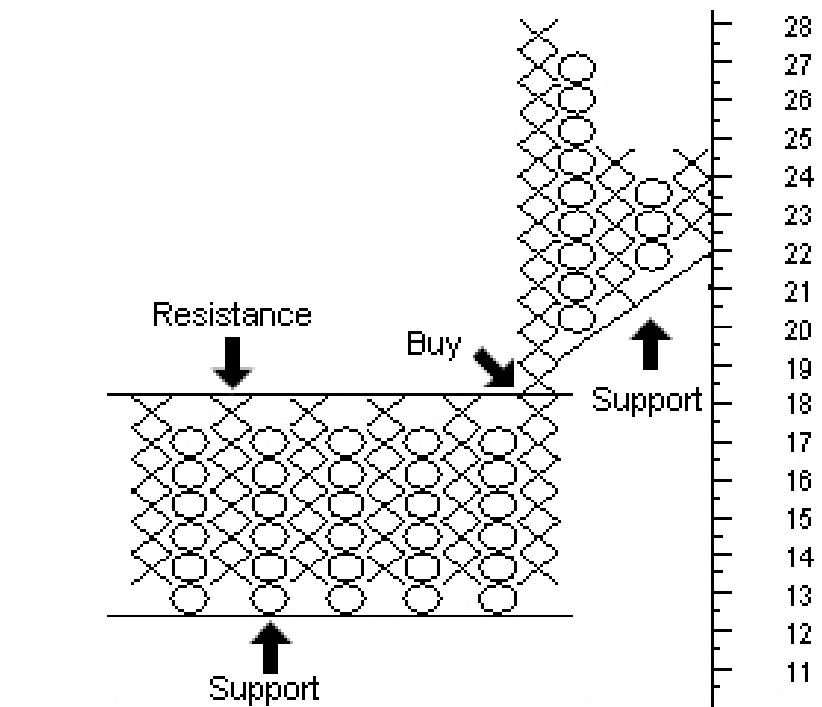
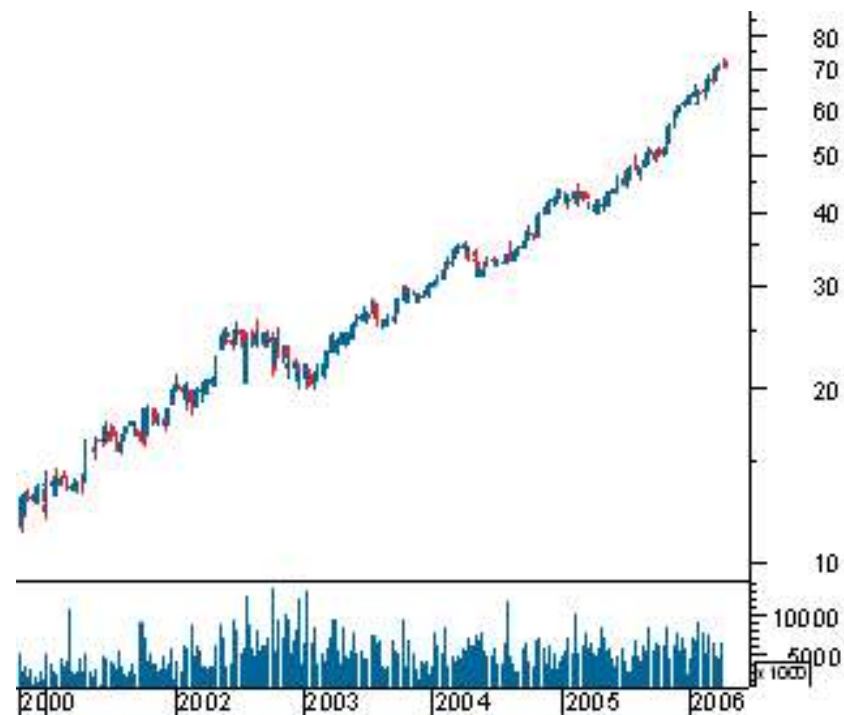


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Trend

- The general direction in which a security or market is headed



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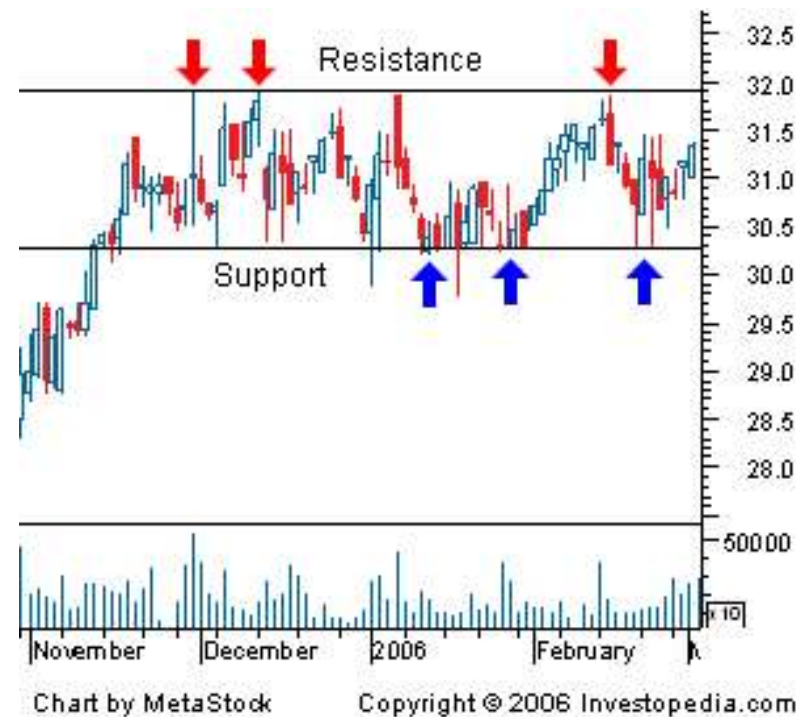


Trends

- Uptrend
 - a series of higher highs and higher lows
- Downtrend
 - A series of lower lows and lower highs
- Sideways
 - lack of a well-defined trend in either direction
- Trend Lengths
 - Long term, Intermediate & Short term
- Channel

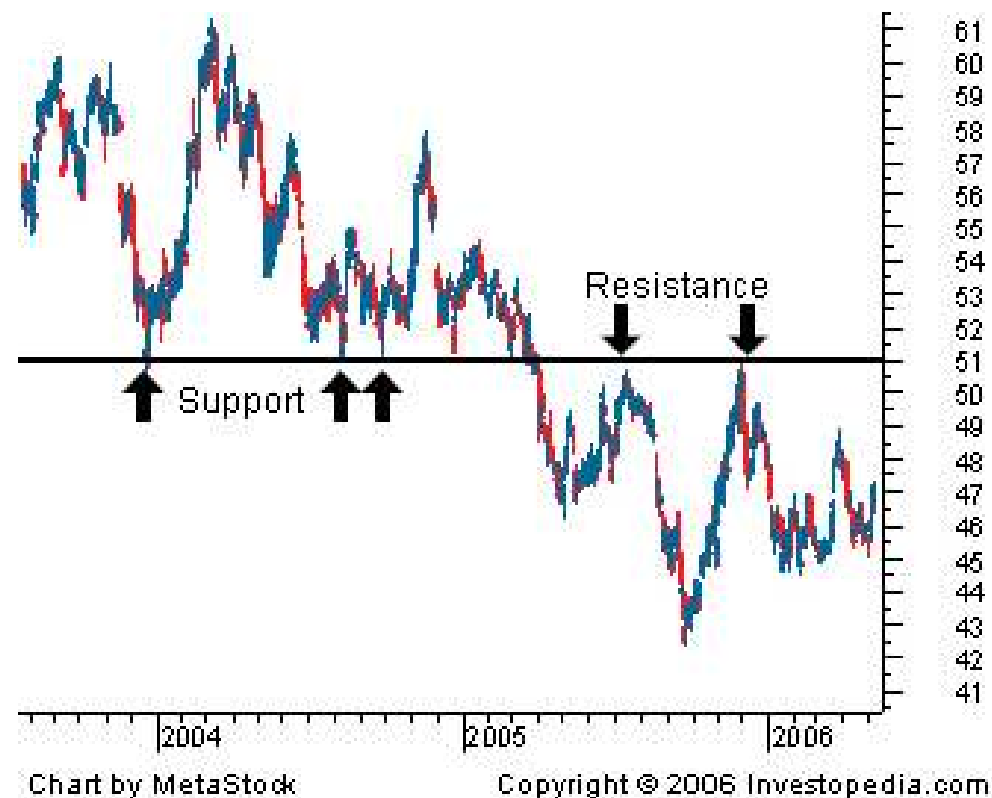
Support, Resistance

- Forces: Supply & Demand
- Rounded numbers



Support, Resistance – Role Reversal

- Once broken, takes opposite role



Volume

- Number of shares traded
- The higher the volume, the more active the security
- It is used to confirm trends and chart patterns.
- Any price movement up or down with relatively high volume is seen as a stronger, more relevant move than a similar move with weak volume.
- If you are looking at a large price movement, you should also examine the volume to see whether it tells the same story
- Price is preceded by volume. If volume is starting to decrease in an uptrend, it is usually a sign that the upward run is about to end.

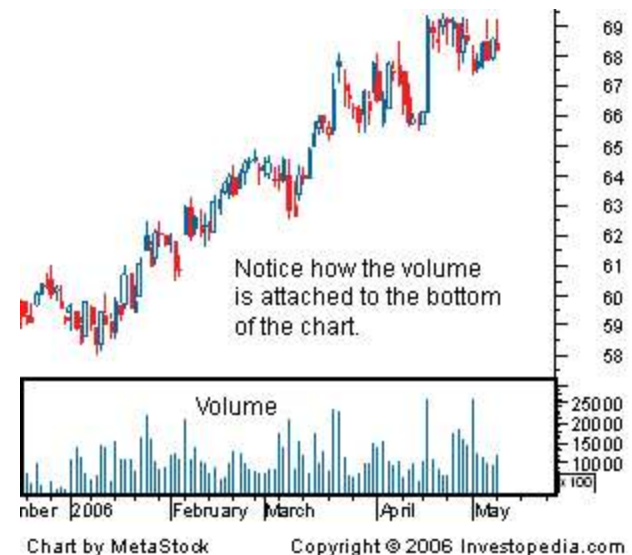




Chart Patterns

- Distinct formation on a stock chart that creates a trading signal, or a sign of future price movements.
- Chartists use these patterns to identify current trends and trend reversals and to trigger buy and sell signals.

Head and Shoulders

- Signals the security is likely to move against the previous trend.
- Two versions of the head-and-shoulders pattern.
 - The head-and-shoulders top is a signal that a security's price is set to fall, once the pattern is complete, and is usually formed at the peak of an upward trend.
 - The second version, the head-and-shoulders bottom (also known as inverse head and shoulders), signals that a security's price is set to rise and usually forms during a downward trend.

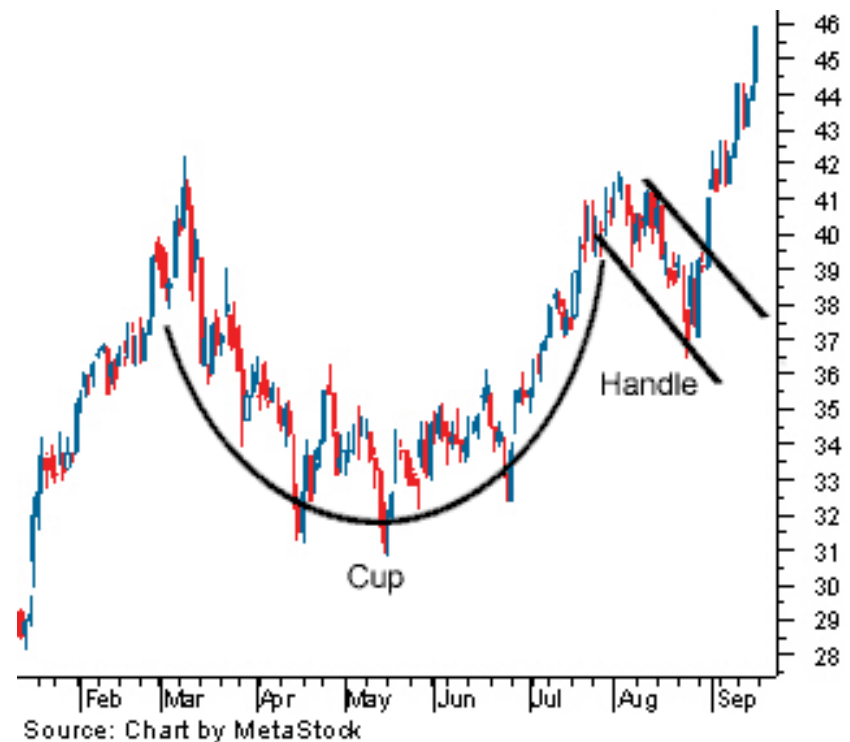


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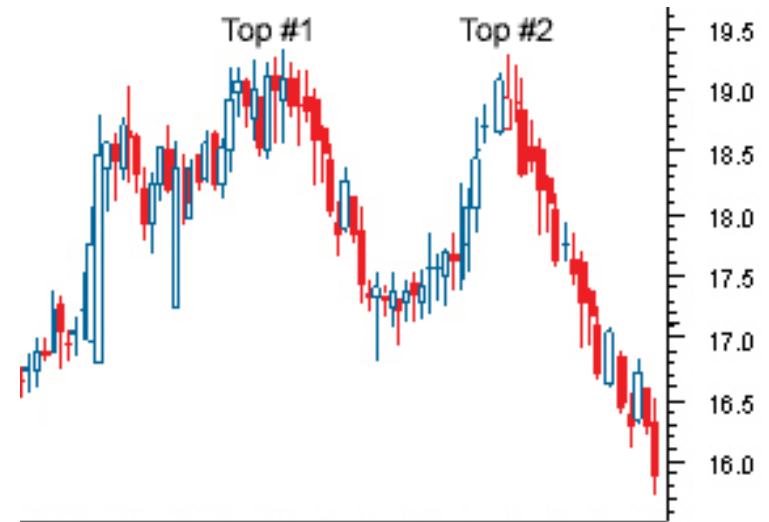
Cup and handle

- Bullish continuation pattern where the upward trend has paused, and traded down, but will continue in an upward direction upon the completion of the pattern.
- This pattern can range from several months to a year, but its general form remains the same.



Double Top

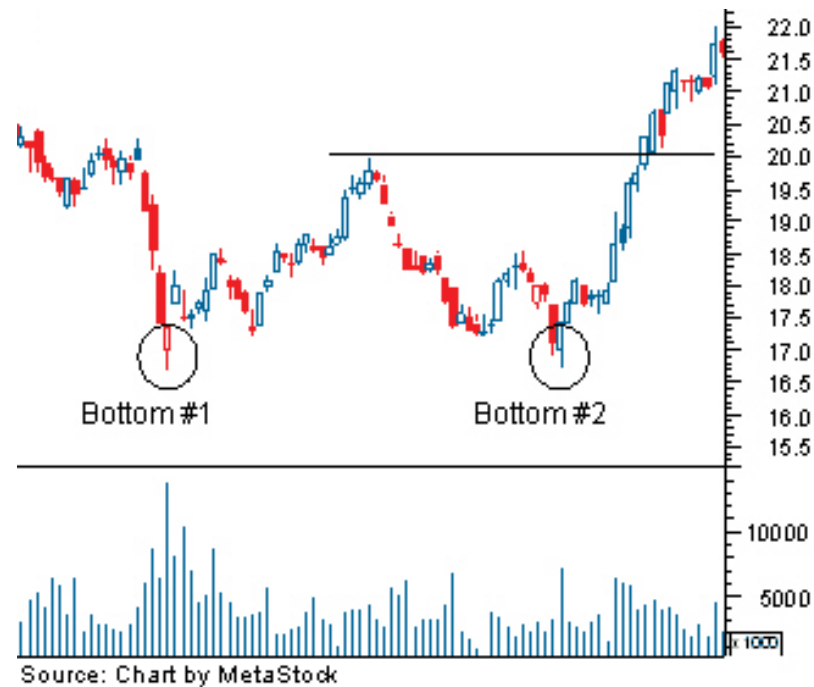
- Is found at the peaks of an upward trend and is a clear signal that the preceding upward trend is weakening and that buyers are losing interest.
- The first stage of this pattern is the creation of a new high during the upward trend, which, after peaking, faces resistance and sells off to a level of support. The next stage of this pattern will see the price start to move back towards the level of resistance found in the previous run-up, which again sells off back to the support level.
- The pattern is completed when the security falls below (or breaks down) the support level that had backstopped each move the security made, thus marking the beginnings of a downward trend.



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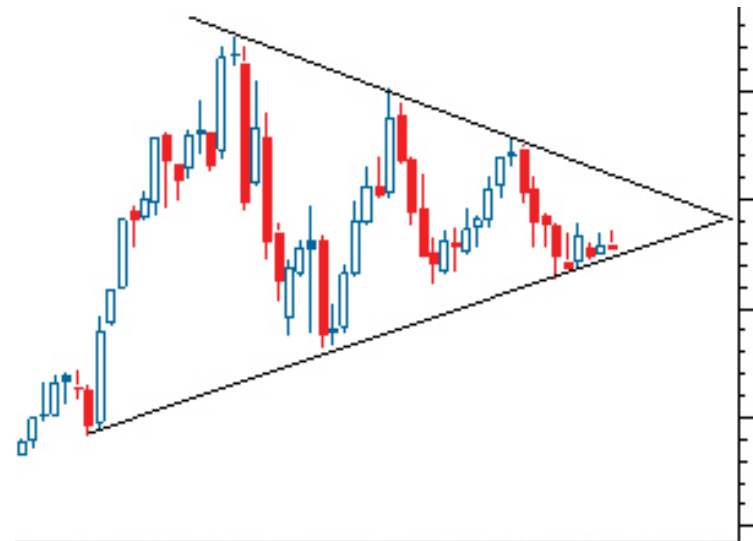
Double Bottom

- Reversal to Double Top
- Wait till resistance level is really broken



Symmetrical Triangle

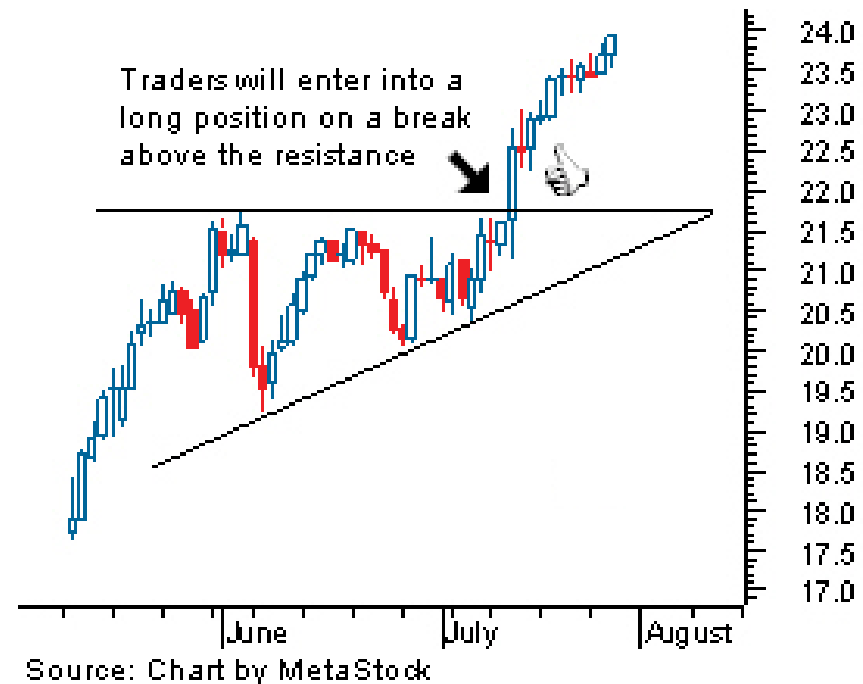
- Signals a period of consolidation in a trend followed by a resumption of the prior trend. It is formed by the convergence of a descending resistance line and an ascending support line.
- The two trendlines in the formation of this triangle should have a similar slope converging at a point known as the apex.
- The price of the security will bounce between these trendlines, towards the apex, and typically breakout in the direction of the prior trend.



Source: Chart by MetaStock

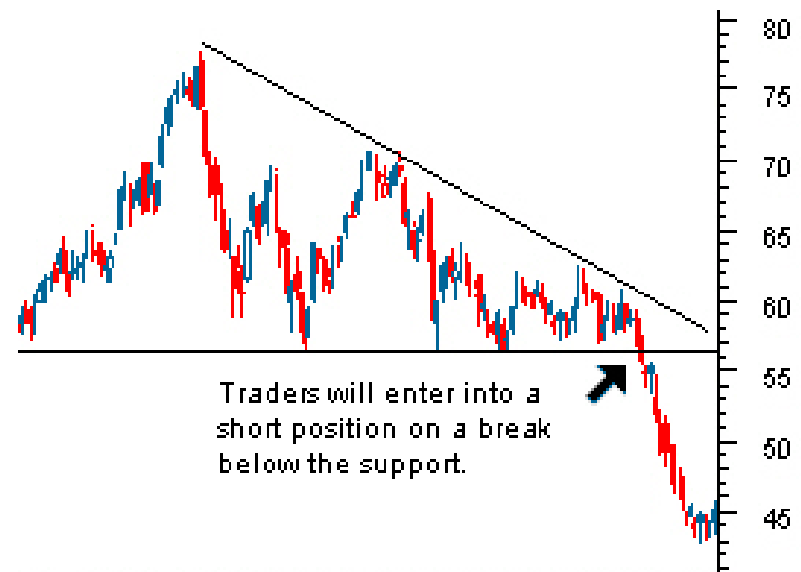
Ascending Triangle

- Bullish pattern, which gives an indication that the price of the security is headed higher upon completion.
- The pattern is formed by two trendlines: a flat trendline being a point of resistance and an ascending trendline acting as a price support.



Descending Triangle

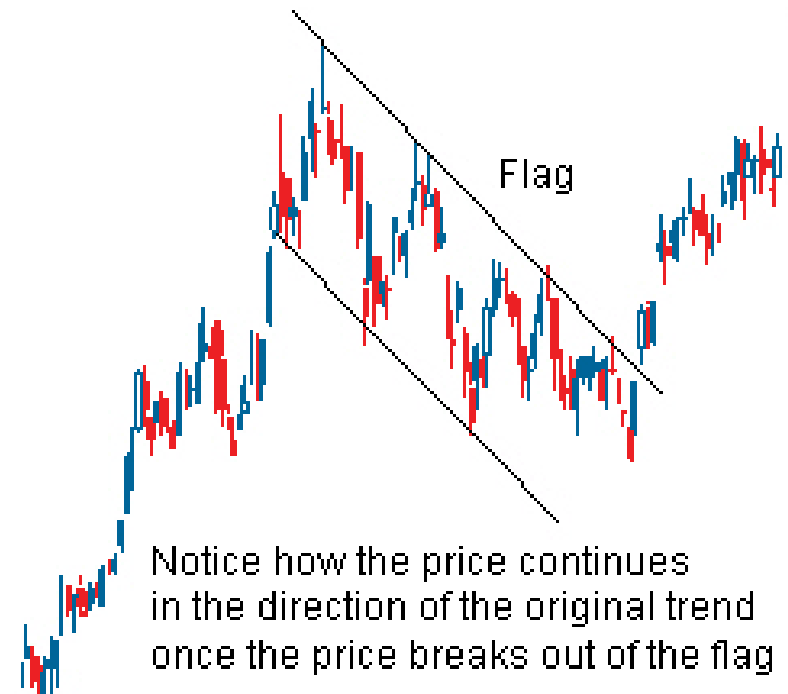
- Bearish signal to chartists, suggesting that the price will trend downward upon completion of the pattern.
- The descending triangle is constructed with a flat support line and a downward-sloping resistance line.



Source: Chart by MetaStock

Flag

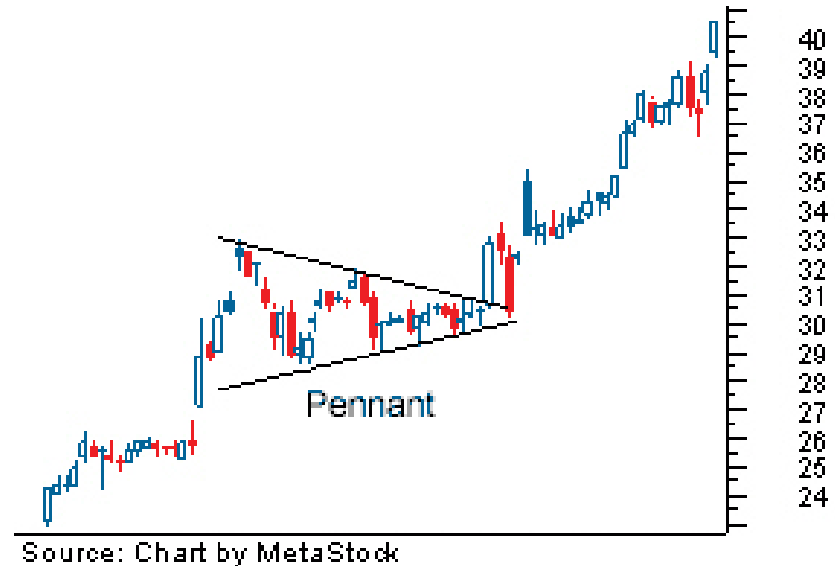
- The slope of the flag should move in the opposite direction of the initial sharp price movement; so if the initial movement were up, the flag should be downward sloping.
- The buy or sell signal is formed once the price breaks through the support or resistance level, with the trend continuing in the prior direction.
- This breakthrough should be on heavier volume to improve the signal of the chart pattern.



Source: Chart by MetaStock

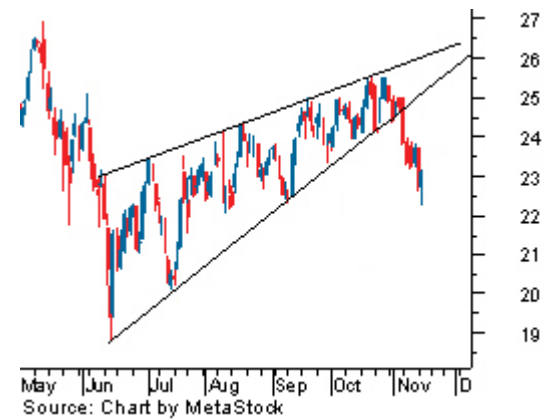
Pennant

- looks like a symmetrical triangle, where the support and resistance trendlines converge towards each other.
- Very similar to Flag



Wedge

- Falling & Rising Wedge
- Similar to triangles, but long-term (3-6 months)



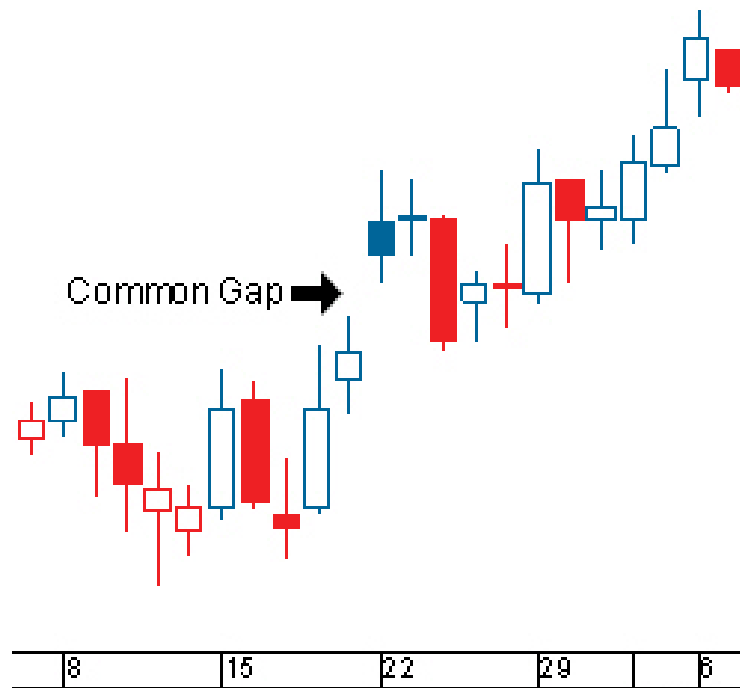


Gaps

- Empty space between one trading period and the previous trading period. They usually form because of an important and material event that affects the security, such as an earnings surprise or a merge agreement.
- There are four main types of gaps:
 - Common,
 - Breakaway,
 - Runaway
 - Exhaustion.
- Each are the same in structure, differing only in their location in the trend and subsequent meaning for chartists.

Common Gap

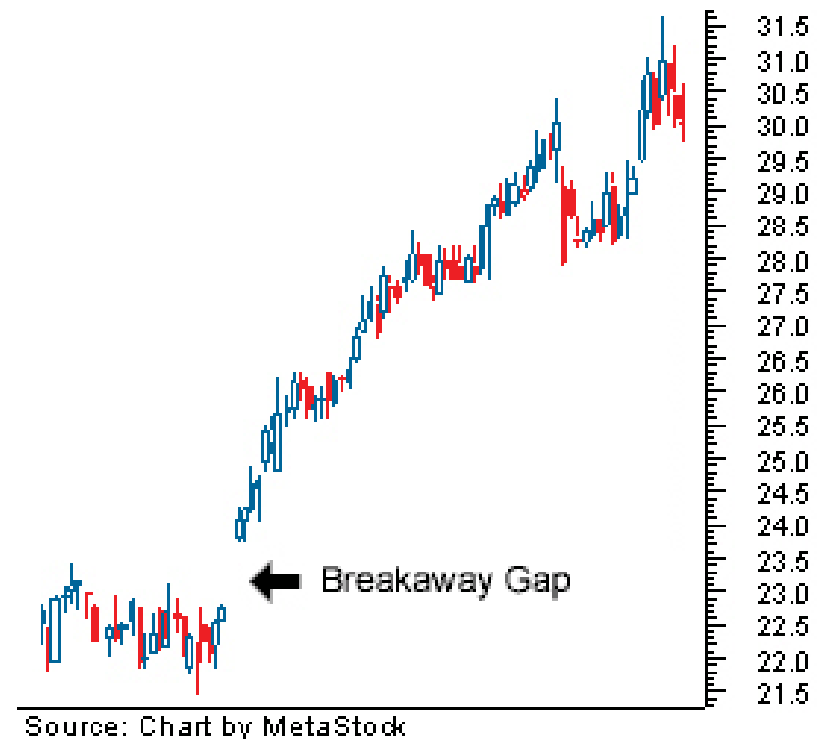
- occurs often in the price movements of a security.
- These types of gaps often occur when a security is trading in a range and will often be small in terms of the gap's price movement.
- They can be a result of commonly occurring events, such as low-volume trading days or after an announcement of a stock split.
- These gaps often fill quickly, moving back to the pre-gap price range.



Source: Chart by MetaStock

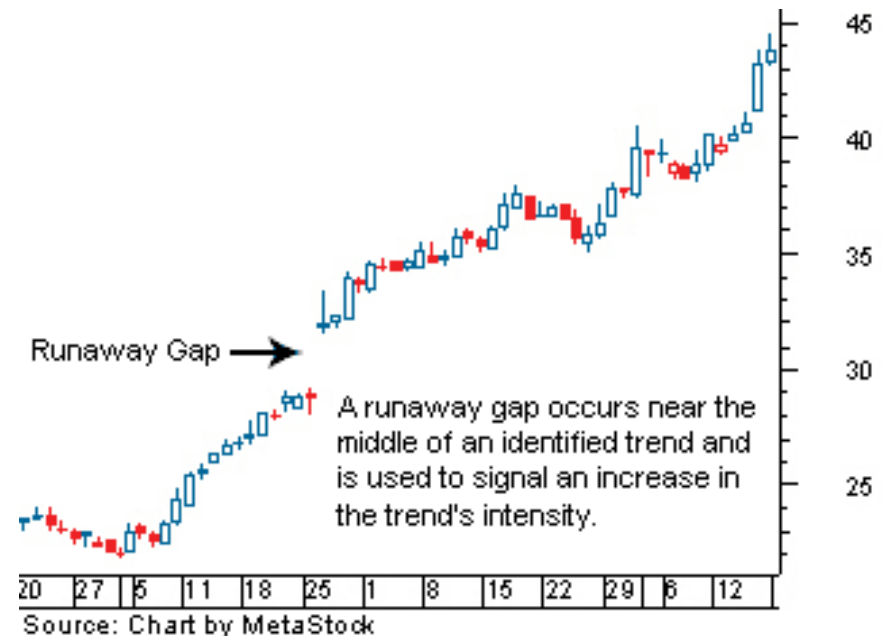
Breakaway Gap

- Occurs at the beginning of a market move - usually after the security has traded in a consolidation pattern
- It is referred to as a breakaway gap as the gap moves the security out of a non-trending pattern into a trending pattern.
- The strength of this gap (and the accuracy of its signal) can be confirmed by looking at that volume during the gap.
- The greater the volume out of the gap, the more likely the security will continue in the direction of the gap, also reducing the chances of it being filled.



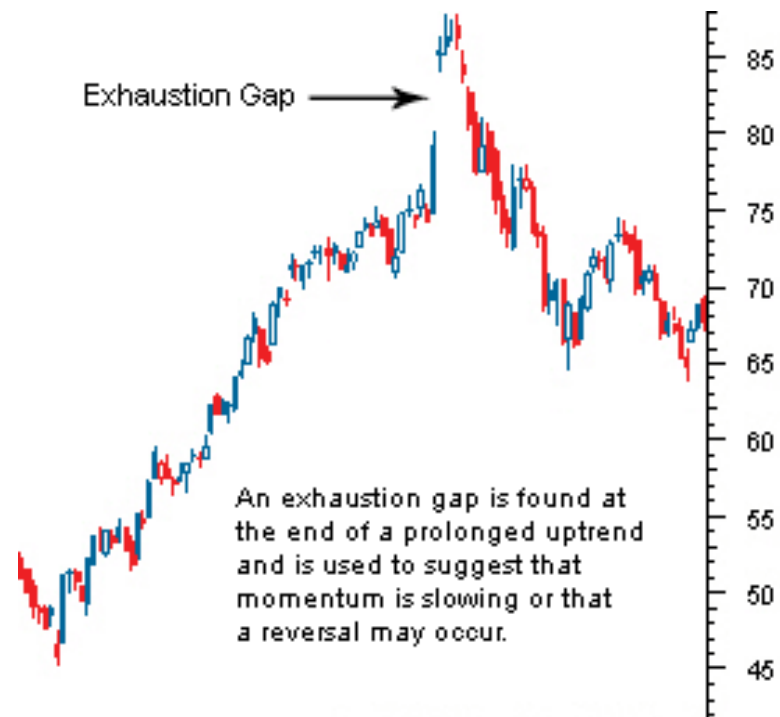
Runaway gap

- Is found around the middle of a trend, usually after the price has already made a strong move.
- It is a healthy sign that the current trend will continue as it indicates continued, and even increasing, interest in the security



Exhaustion gap

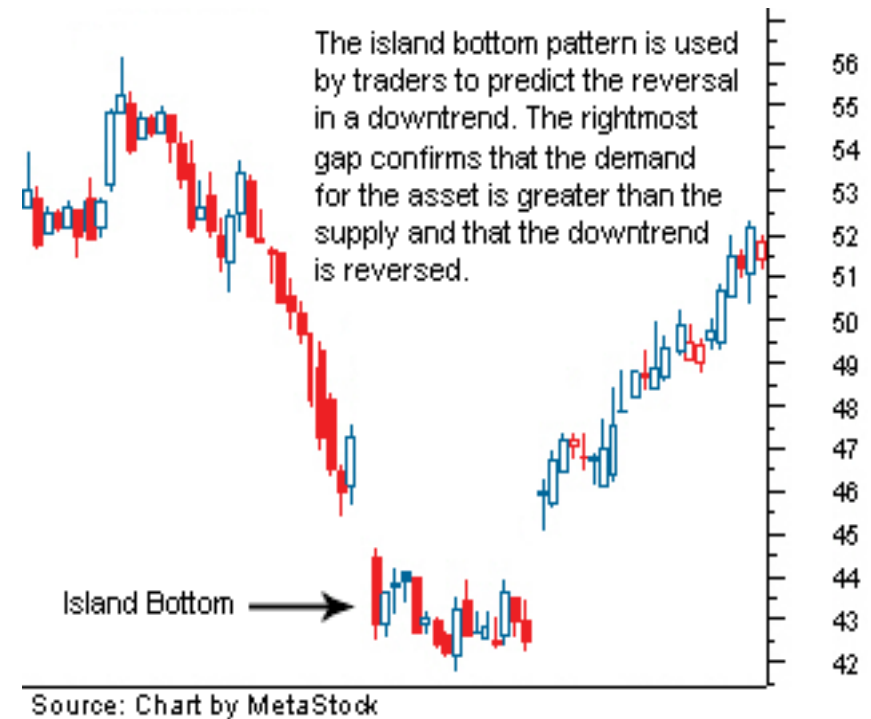
- Forms at the end of a trend and is a negative sign that the trend is about to reverse.
- This usually occurs at the last thrusts of a trend (typically marked with panic or hype), but can also be the point when weaker market participants start to move in or out of the security.
- The exhaustion gap usually coincides with an irrational market philosophy, such as the security being touted as "a can't-miss opportunity" or conversely as something to "avoid at all costs".
- The gap should be marked with a large amount of volume.



Source: Chart by MetaStock

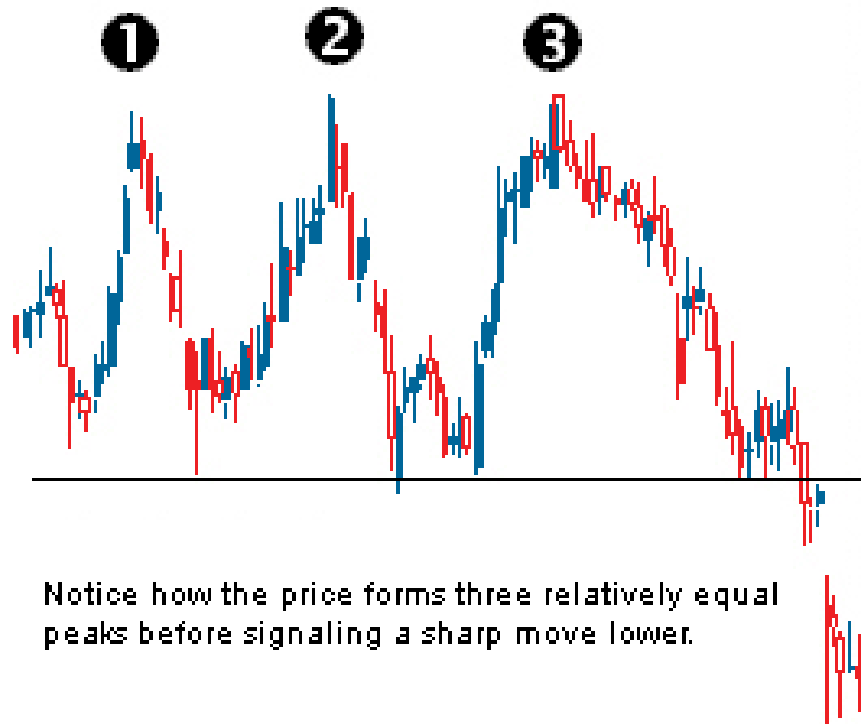
Island Reversal

- Formed by a gap followed by flat trading and then confirmed by another gap in the opposite direction.
- This pattern is a strong signal of a top or bottom in a trend, indicating a coming shift in the trend.



Triple Top

- This chart pattern represents the market's attempt to move a security in a certain direction.
- After three failed attempts, the buyers (in the case of a top) or sellers (in the case of a bottom) give up, and the opposing group in the market takes a hold of the security, sending it downward (sellers) or upward (buyers)
- Bearish pattern
- Difficult to spot in the early stages as it will initially look like a double-top pattern

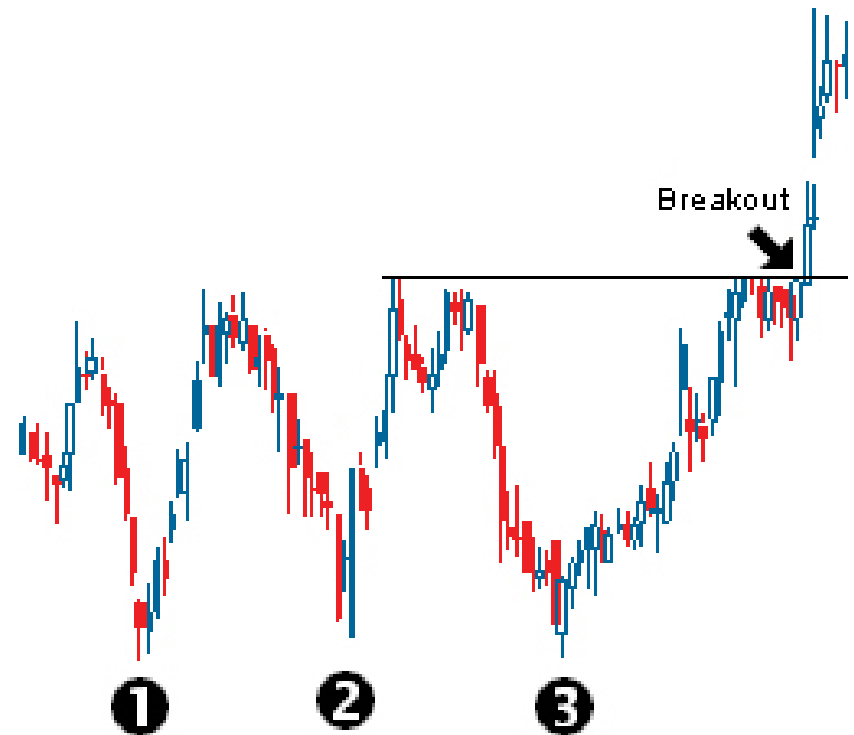


Notice how the price forms three relatively equal peaks before signaling a sharp move lower.

Source: Chart by MetaStock

Triple Bottom

- Reversal to Triple Top
- The price objective will also initially be calculated as the distance of the chart pattern added to the price breakout.
- So if the chart pattern is formed between \$50 and \$30 at a price breakout of \$50 the price objective is \$70 (\$50+\$20)



Source: Chart by MetaStock

Rounding Bottom

- looks similar to a cup and handle, but without the handle.
- long-term reversal pattern that signals a shift from a downtrend to an uptrend.
- This pattern is traditionally thought to last anywhere from several months to several years.
- Due to the long-term look of these patterns and their components, the signal and construct of these patterns are more difficult to identify than other reversal patterns.





Moving Averages

- Among the most popular technical indicators, moving averages are used to gauge the direction of the current trend.
- Every type of moving average (commonly written MA) is a mathematical result that is calculated by averaging a number of past data points.
- Once determined, the resulting average is then plotted onto a chart in order to allow traders to look at smoothed data rather than focusing on the day-to-day price fluctuations that are inherent in all financial markets.
- Types:
 - Simple
 - Exponential

Simple Moving Average

7 11 6 15 6 10 15 9 7 11 12 14 11

$15 + 6 + 10 + 15 + 9 + 7 + 11 + 12 + 14 + 11 = 110$

$110 / 10 = 11$

7 11 6 15 6 10 15 9 7 11 12 14 11 5

~~$15 + 6 + 10 + 15 + 9 + 7 + 11 + 12 + 14 + 11 + 11 = 100$~~

$100 / 10 = 10$

Problems:

Short-term averages respond quickly to changes in the price of the underlying, while long-term averages are slow to react.



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Exponentially Weighted Moving Average

- The exponential moving average is a type of moving average that gives more weight to recent prices in an attempt to make it more responsive to new information.

$$\text{EMA} = (P * \alpha) + (\text{Previous EMA} * (1 - \alpha))$$

P = Current Price

$$\alpha = \text{Smoothing Factor} = \frac{2}{1 + N}$$

N = Number of Time Periods

Difference between SMA & EMA



Using MA – Confirm Trends

- Lagging Indicator
- Many traders will only consider holding a long position in an asset when the price is trading above a moving average.
- This simple rule can help ensure that the trend works in the traders' favor.



Using MA - Momentum

- Place three moving averages onto a chart and then pay close attention to how they stack up in relation to one another



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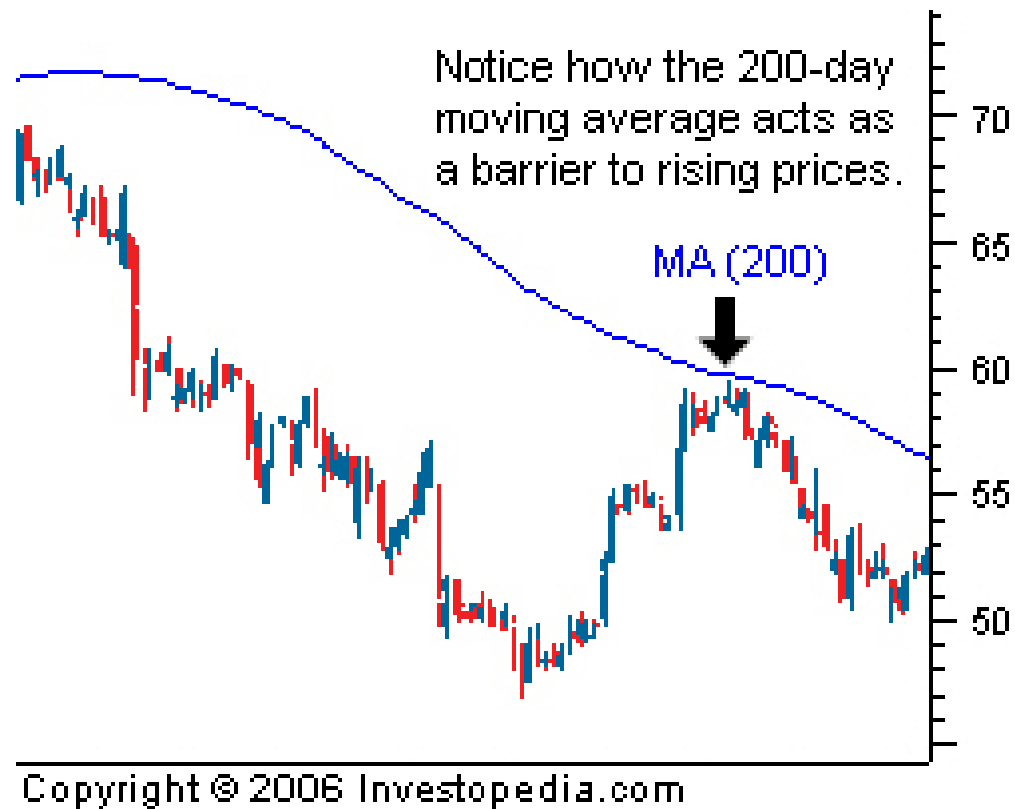
Using MA - Support

- falling price of an asset will often stop and reverse direction at the same level as an important average



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Using MA - Resistance



Using MA – Stop loss

- The ability of moving averages to identify strategic places to set stop-loss orders allows traders to cut off losing positions before they can grow any larger.



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Indicators & Oscillators

- Indicators are calculations based on the price and the volume of a security that measure such things as money flow, trends, volatility and momentum.
- Indicators are used as a secondary measure to the actual price movements and add additional information to the analysis of securities.
- Indicators are used in two main ways: to confirm price movement and the quality of chart patterns, and to form buy and sell signals.
- Indicators which are bound within a range are called oscillators - these are the most common type of indicators.
- Oscillator indicators have a range, for example between zero and 100, and signal periods where the security is overbought (near 100) or oversold (near zero).
- Non-bounded indicators still form buy and sell signals along with displaying strength or weakness, but they vary in the way they do this.



Momentum

- A leading indicator
- Rate of change
- $\text{Momentum} = \frac{\text{price}}{\text{price}(n \text{ periods ago})} \times 100$
- Cross-overs, divergences



Moving Average Convergence Divergence - MACD

- Created by Gerald Appel in the 1960s
- The MACD is calculated by subtracting the 26-day exponential moving average (EMA) from the 12-day EMA.
- A nine-day EMA of the MACD, called the "signal line", is then plotted on top of the MACD, functioning as a trigger for buy and sell signals.



Moving Average Convergence Divergence - MACD

- The idea behind this momentum indicator is to measure short-term momentum compared to longer term momentum to help signal the current direction of momentum.
- When the MACD is positive, it signals that the shorter term moving average is above the longer term moving average and suggests upward momentum.
- The opposite holds true when the MACD is negative - this signals that the shorter term is below the longer and suggest downward momentum.
- When the MACD line crosses over the centerline, it signals a crossing in the moving averages.

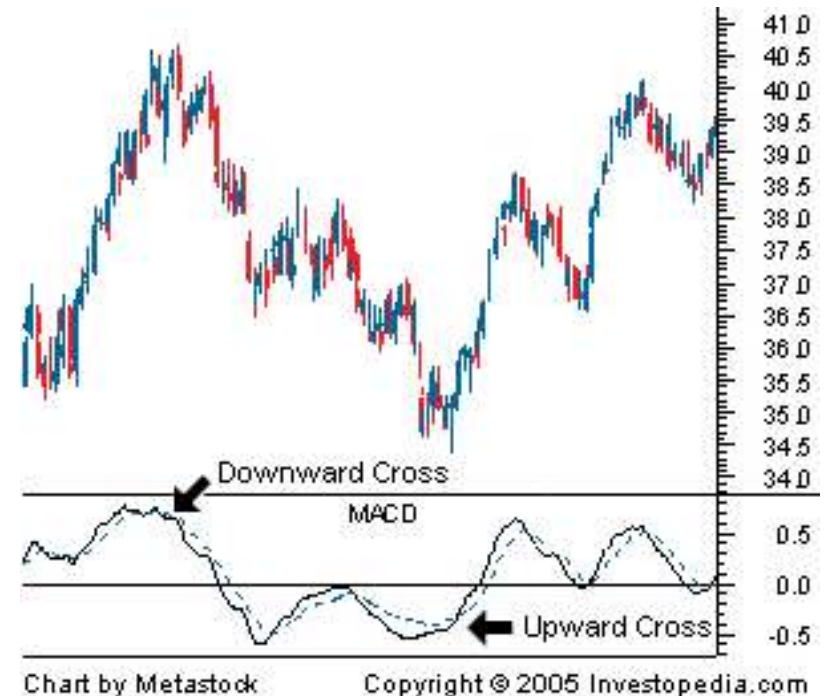
MACD

Daily Chart - Nasdaq 100 ETF (QQQQ)



Trading with MACD

- 1. Crossovers - when the MACD falls below the signal line, it is a bearish signal, which indicates that it may be time to sell. Conversely, when the MACD rises above the signal line, the indicator gives a bullish signal, which suggests that the price of the asset is likely to experience upward momentum. Many traders wait for a confirmed cross above the signal line before entering into a position to avoid getting "faked out" or entering into a position too early, as shown by the first arrow.
- 2. Divergence - When the security price diverges from the MACD. It signals the end of the current trend.
- 3. Dramatic rise - When the MACD rises dramatically - that is, the shorter moving average pulls away from the longer-term moving average - it is a signal that the security is overbought and will soon return to normal levels.
- Traders also watch for a move above or below the zero line because this signals the position of the short-term average relative to the long-term average. When the MACD is above zero, the short-term average is above the long-term average, which signals upward momentum. The opposite is true when the MACD is below zero. As you can see from the chart above, the zero line often acts as an area of support and resistance for the indicator.



MACD - DJI



Bigcharts.com

Relative Strength Index RSI

- A technical momentum indicator that compares the magnitude of recent gains to recent losses in an attempt to determine overbought and oversold conditions of an asset.
- **RSI = 100 - [100/(1 + RS)]**
 - $RS = (\text{Avg. of } n\text{-day up closes}) / (\text{Avg. of } n\text{-day down closes})$
 - $n = \text{days}$ (most analysts use 9 - 15 day RSI)
- The RSI ranges from 0 to 100.
- A stock is considered overbought around the 70 level - a reason to consider selling. This number is not written in stone, in a bull market 80 is a better level because stocks often trade at higher valuations
- Likewise, if the RSI approaches 30, a stock is considered oversold - a cause consider buying it. Again, make the adjustment to 20 in a bear market.

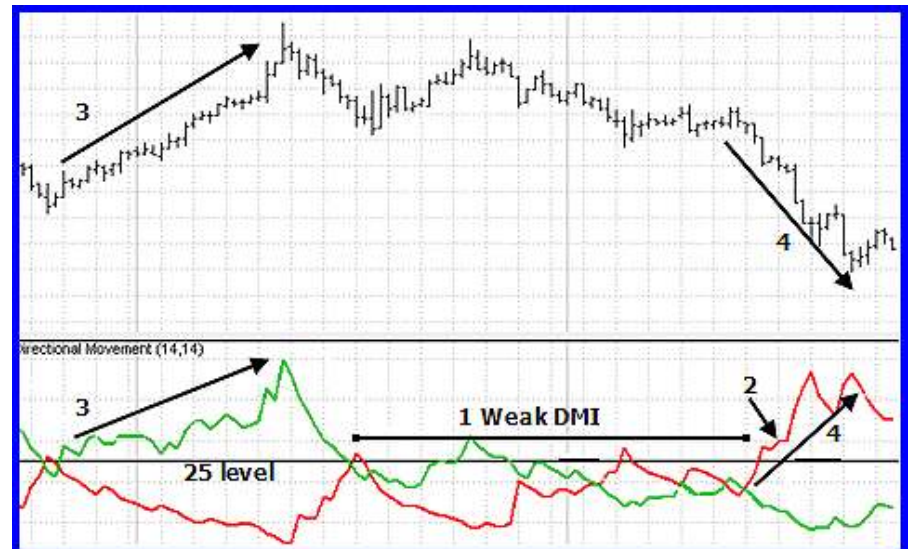


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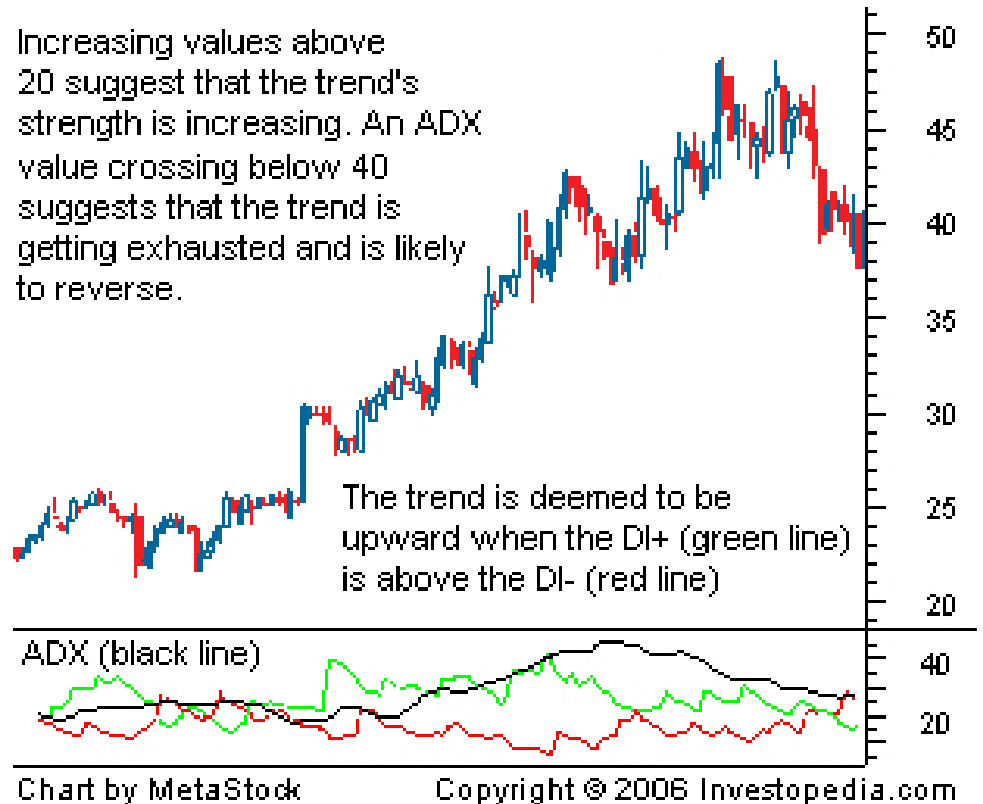
Directional Movement Index DMI

- Created in 1978 by J. Welles Wilder
- DMI tells you when to be long or short
- DMI is a moving average of range expansion over a given period (default 14).
- The positive directional movement indicator (+DMI) measures how strongly price moves upward;
- The negative directional movement indicator (-DMI) measures how strongly price moves downward.
- The two lines reflect the respective strength of the bulls versus the bears. Each DMI is represented by a separate line
- Top DMI – dominant one



Average Directional Index (ADX)

- ADX – gauge the strength
- Below 20 – weak
- Above 40 - strong





Thanks