



Introduction to Financial Indicators



TRANSACTION EDHEC
INVESTMENT CLUB

Summary

- I. INTRODUCTION
- II. ACCUMULATION/DISTRIBUTION
- III. HISTORIC VOLATILITY
- IV. AVERAGE TRUE RANGE
- V. BOLLINGER BANDS
- VI. ICHIMOKO CLOUD
- VII. MACD
- VIII. MOVING AVERAGE
- IX. EXPONENTIAL MOVING AVERAGE
- X. RELATIVE STRENGTH INDEX
- XI. STOCHASTIC RSI
- XII. CHAIKIN OSCILLATOR
- XIII. CHAIKIN MONEY FLOW
- XIV. NET VOLUME
- XV. ON BALANCE VOLUME
- XVI. PRICE VOLUME TREND
- XVII. TICK VOLUME

I. INTRODUCTION

The Transaction EDHEC Investment Club is proud to provide you with this introduction to financial indicators. We truly wish you the best for the competition and hope this form will help you succeed.

The following indicators are the most commonly used on the Capital.com platform, which you are going to be using to trade. Please note that to use financial indicators at best, it is well to vary the indicators that you use. The more matching indicators there are, the better your results will be.

We now wish you a good reading.

II. ACCUMULATION/DISTRIBUTION

The Accumulation/Distribution indicator was developed by Larry Williams, the famous futures trader. It measures the force between supply and demand by detecting whether investors are generally in Accumulation (buyer) or Distribution (seller).

The accumulation/distribution indicator gives us a representation of supply and demand on the stock market. The direction of its curve informs us about the stock market pressure, it allows us to know if it is the buying pressure or the selling pressure that dominates the market.

If the A/D curve is rising, it means that we are under buying pressure - If the A/D curve is falling, it means that selling pressure controls the market. As with most market indicators that try to measure the strength of price movements, the divergence between the price and our indicator is an important signal.

For example, if the price is falling while the A/D indicator is rising, this indicates a future price increase. That is, a bullish reversal.

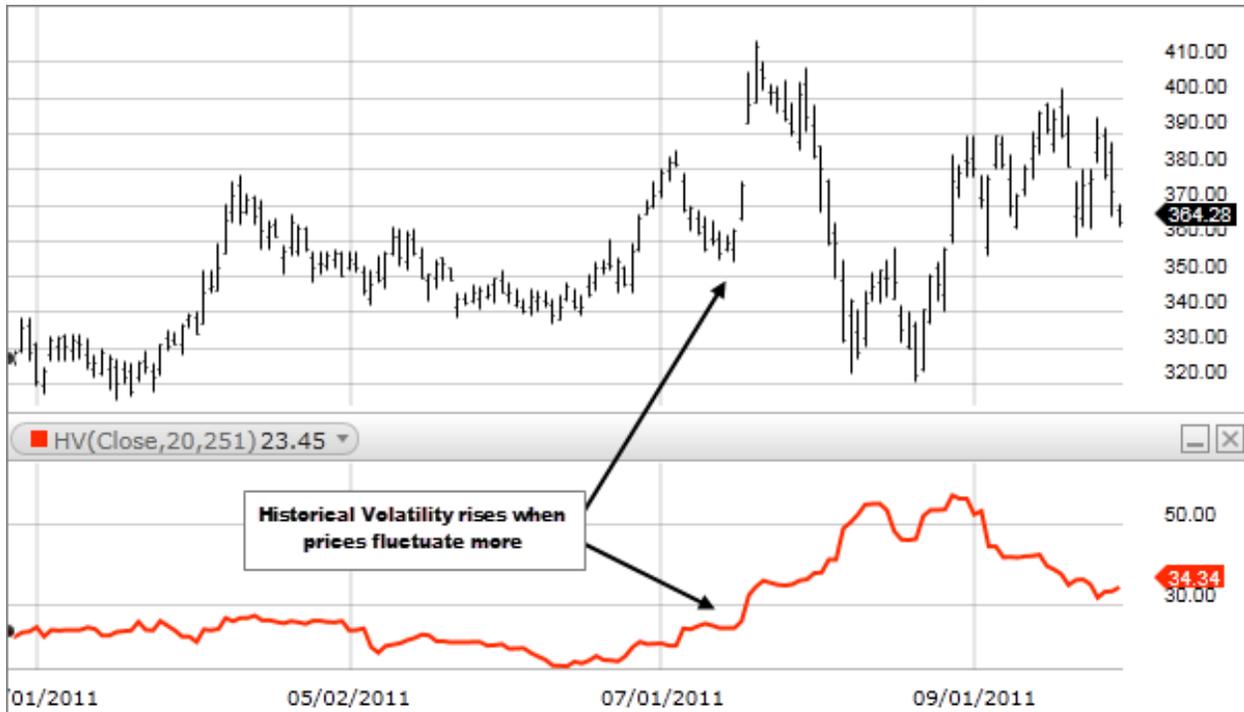
Conversely, if the price rises while the A/D indicator is falling, this indicates a future price decline, in other words, a bearish turnaround can be expected.



III. HISTORIC VOLATILITY

Historical volatility is a measure of the amount of price that deviates from its average over a specific period of time that can be defined. The more the price fluctuates, the higher the value of the indicator. Note that it does not measure the direction of price changes, only how volatile the price has become.

There are several reasons to be concerned about volatility, but it is primarily a measure of risk. As volatility increases, so does risk and uncertainty, and vice versa. Traders can use the indicator to mark instruments with high volatility that could indicate a change in trend. It is often used in combination with other signals.



IV. AVERAGE TRUE RANGE

The Average True Range (ATR) measures the volatility or the degree of change in the price of a security, by calculating the average between the highs and the lows of a stock exchange price. Since the calculation is based on absolute prices rather than percentage changes, it implies that an asset with a higher price tends to have a higher ATR than an asset with a lower price. The Average True Range is similar to historical volatility with the only difference that ATR uses an arithmetic and not an exponential Moving Average, making it less reactive than historical volatility.

The ATR is computed by taking the average over a given period of the True Range:

$$\text{ATR} = \text{Mean}(\text{True Range}, \text{Period})$$

where True Range = True High - True Low, with True High the largest value between the closing price of the previous day and the highest price of the day, and True Low the smallest value between the closing price of the day before and the lowest price of the day.

A great Average True Range indicates high volatility, and a low Average True Range indicates low volatility. This indicator does not allow to detect the course orientation but to know if the amplitude of the movements is important. The ATR doesn't lead to comparisons of the volatilities of values between them, because a security with a high price will have, with equal variance, a higher ATR than a value with a lower price.

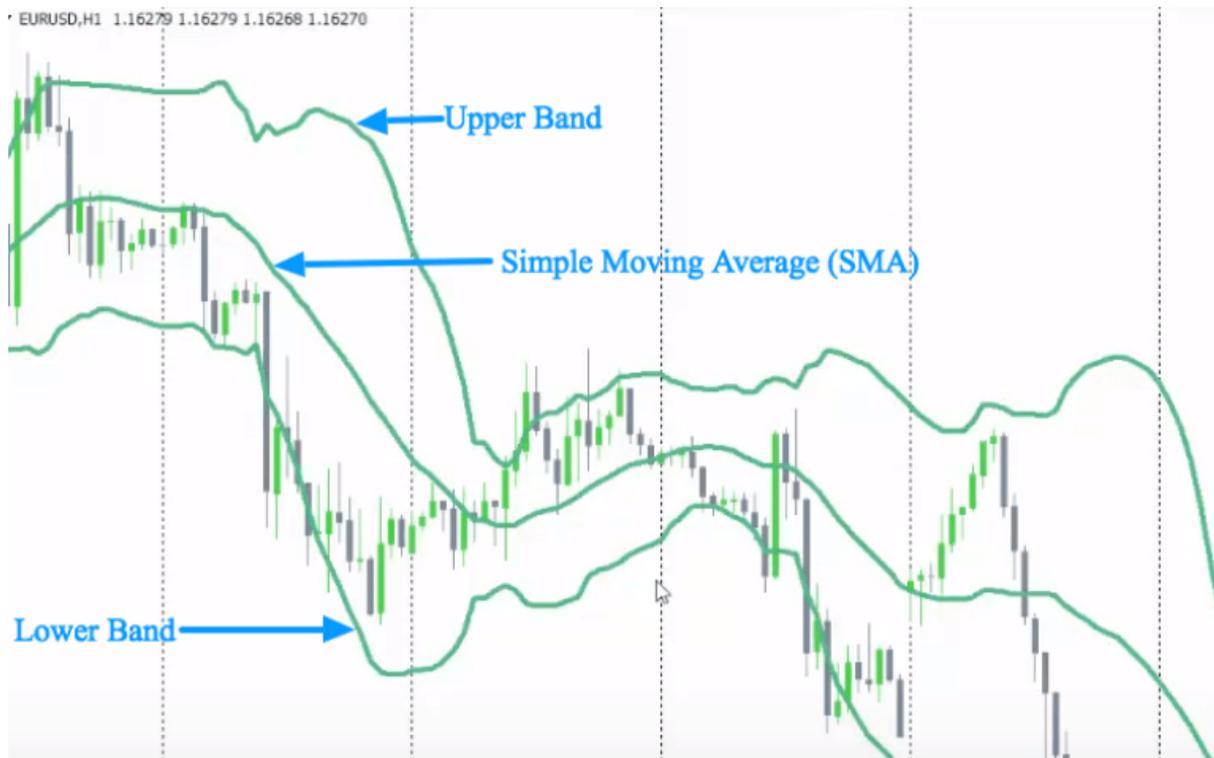
As with Bollinger bands, ATR indicates low volatility during market range periods. When a sharp increase in ATR follows, it is to be expected that markets will move rapidly, such as when Bollinger bands are separated.

V. BOLLINGER BANDS

Bollinger Bands are versatile, and we can use them in numerous situations. Developed by John Bollinger who assumes that the course follows a so-called Normal law. With this model, there is therefore a 95% probability that the price does not deviate more than 2 standard deviations from its moving average.

Bollinger bands consist of a moving average (often taken over 20 periods) and two other curves that are two standard deviations above and below the moving average.

The strength of the trend will be indicated by the difference between the extreme curves: 4 standard deviations. A reversal of the trend can be anticipated by a slight crossing of the upper or lower band.

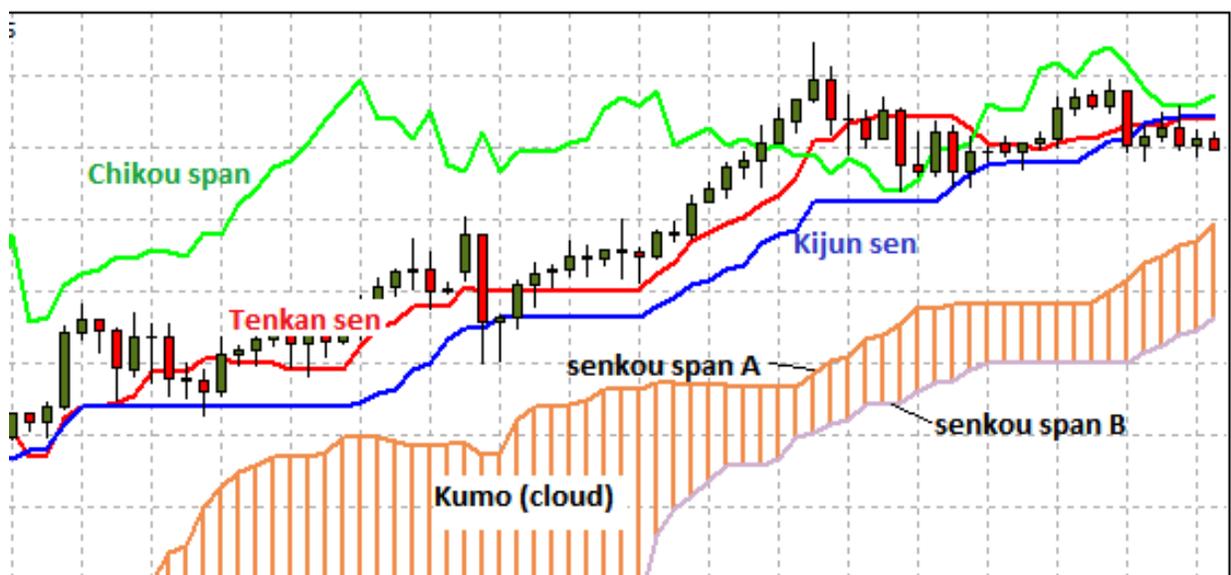


VI. ICHIMOKO CLOUD

Ichimoku is a complete and complex technical indicator that allows thanks to its moving averages and its dynamic cloud to detect signals of sales and purchases, it also allows to obtain levels of support and resistance by setting objectives.

The indicator consists of 5 lines that distinguish three categories of information, namely the trend of an asset, supports and resistances, as well as trading signals.

The 5 lines that make up Ichimoku can be divided into 3 groups: The Chikou Span, the Tenkan-Sen and the Kijun-Sen, the Senkou Span A and the Senkou Span B which form the Ichimoku cloud also called the KUMO.



The Chikou Span

This indicator is called the Delay Line and is based on the closing price delayed by n periods. In fact, the Chikou Span is a lagged price chart, it is based on the last closing price which is delayed by 26 periods.

For example, when Chikou Span crosses upwards, it is a buy signal; conversely, when Chikou Span crosses downwards, it is a sell signal.

The Tenkan-Sen

This indicator is a signal curve, also known as a "turnaround line", which is calculated by averaging the highest and lowest values for the last nine periods.

It is mainly used to measure the strength of the short-term trend and is interpreted in the same way as a short-term moving average.

The Kijun-Sen

The Kijun Sen, also known as the baseline, is a moving average of the highest and lowest over the last 26 trading days. The Kijun Sen indicator has the same function as the Tenkan Sen, with the difference that the periods considered are 26.

One of the most common uses is the crossing of these two curves, indeed some scalpers interpret Ichimoku only through this crossing to detect signals of purchases or sales.

However, the use of this crossing is not very relevant in itself, because the resulting signal proves to be much too late and perilous to enter in position.

The Kumo

The Kumo means "cloud" and it is a graphical representation of the indicator that makes a projection into the future.

It consists of two straight lines called Senkou Span A (SSA) and Senkou Span B (SSB), respectively, and forms a surface between Senkou Span A and Senkou Span B, regardless of whether A is greater than B or B is greater than A. The cloud can be viewed as a graphical representation of the divergence of price movements over the 9, 26 and 52 period durations.

The Senkou Span A and the Senkou Span B

In general, markets are bullish when the Senkou Span A curve is above the Senkou Span B line and vice versa for bear markets.

The difference between Senkou Span A and Senkou Span B is called the ichimoku cloud.

Scalpers often watch for changes in Kumo when the Senkou Span A and B lines swap locations, as this is a sign of a trend reversal.

Generally speaking, when prices are above the cloud, the latter acts as a support and this indicates that we are in an uptrend.

Conversely, when prices are below the cloud then it is called resistance, and this indicates that we are in a downtrend. Based on this information the trader will look for opportunities to position himself to buy.

Also, the angle of the Kumo cloud as well as its thickness confirms the strength of the trend, in fact the greater the angle and/or the greater the thickness of the cloud, the greater the strength of the trend, for example a cloud is more likely to be crossed than a thick cloud.

VII. MACD

Moving Average Convergence Divergence (MACD) represents the spread of moving averages. More precisely, it is calculated by the difference between an exponential long-term moving average and an exponential short-term moving average.

It can be represented by a curve that is a simple oscillator of exponential moving averages: it is called fast MACD line. A second curve, called a signal line, that represents an exponential moving average of period 9 is added on the graph.

This stock market indicator is frequently used by analysts as it gives trend signals courses and this, in a very reactive manner. Therefore, the MACD analysis is adapted to short-term investments.

But that's also the danger, because the earlier an indicator reports, the more likely it is to be wrong. Thus, it is good to correlate MACD signals with other indicators, such as RSI, to have a more fundamental type of analysis.



This indicator is used to anticipate market's evolution. For example, financial analysts recommend buying when the fast MACD line cuts up the signal line, because crosses identify upward or downward movements (point 1). On the contrary, the downward crossing of the signal line by the fast MACD line is a sales signal (point 2).

This vision can also be found in the histogram of MACD, which materializes the amplitude of the gap between the two curves but also the crosses. Thus, when the histogram is blue, the MACD is above its signal, which means a purchase. And when it's red, it's the other way around.

VIII. MOVING AVERAGE

The moving average is an indicator reflecting the average valuation of a security, over a period given. For example, a 20-day moving average gives the average price over the last 20 days, a 50-week moving average gives the weekly average course over the last 50 weeks ...

In other words:

$$\text{Moving average} = \frac{\sum_{i=1}^n C_i}{n}$$

where C_i is the closing price of the period i and n the number of periods used to calculate the moving average.

The choice of the reference period is paramount to the extent that it determines its ability to react to price fluctuations.

But how long should it choose? There is has a good answer, it depends on the volatility of the stock and the investment horizon you want. One thing is for sure: if you want to invest over a week, it is useless to use a moving average of 100 days. Nevertheless, in practice, it is common to encounter averages of 10 and 20 weeks for an average medium/long term and 5/10 and 20 days for short term.



The pink curve is the moving average course calculated over 20 days. In blue, the moving average calculated over 50 days is plotted. This curve is flatter but we can deduce that the price is overall increasing since the MM(50) is generally bullish.

Nevertheless, let's study the crossing of these two curves: we know when the MM(20) cuts the MM(50) by passing over the MM(50), then the value starts a cycle bullish. This is well reflected at point A and point B, where price increases after the resistance.

It's necessary in this case to also draw the MM(150) (in green) which integrates many more courses. In fact, we observe that from February to April, it is flat, which means that there is no upward trend. From May to mid-October, it is growing but at the end of October it is still changing to start a sharper rise. This net change is a sign of a change in the trend over the past period. Here, it is clear that acceleration is bullish which ensures a net positioning at purchase.

IX. EXPONENTIAL MOVING AVERAGE

The moving average can be criticised for giving equal weight to each price. Therefore, in order to reduce the somewhat delayed effect of the moving average and give more importance to the latest data, the exponential moving average can be used.

It is considered as a better indicator because it gives a stronger weight to the most recent prices. Its calculation is:

$$EMA(n) = C + (EMA(n) \text{ of the day before}) \times (K - 1)$$

Where C is the closing price, $K = \frac{2}{n+1}$ and n the number of days used to calculate the moving average.

X. RELATIVE STRENGTH INDEX

The Relative Strength Index (RSI) was developed by JW Wilder in 1978. This momentum oscillator measures the magnitude of recent price changes on a scale from 0 to 100 and evaluates overbought or oversold conditions in the price of a stock.

The RSI is mostly computed with 14-day averages, but 9- or 20-day periods can also be used.

The RSI formula is the following:

$$RSI = \frac{G}{(G + L)} * 100$$

where G is the average gain and L the average loss

If the value of the RSI is above 70, it means that the stock is becoming overvalued and that a trend reversal is likely to take place – Selling is thus advised. In the same way, if its value is below 30, the stock is becoming undervalued and the trend is likely to reverse – In that case, it is advised to buy.



XI. STOCHASTIC RSI

The Stochastic RSI, or StochRSI, is computed on the basis of the RSI and applies the Stochastics formula to it. The result is an oscillator that varies from 0 to 100 and that is more sensible than the RSI. This is a major

added value as the latter can only fluctuate between 30 and 70 during long time periods, thus not giving any buy or sell signal.

The StochRSI is usually computed over 14 days. This oscillator is composed of two curves: %K is the Stochastic and %D is the signal curve.

The %K formula is the following:

$$\%K = \frac{(RSI - L)}{(H - L)}$$

where RSI is the RSI of the n^{th} period, H the highest value of the RSI over the n periods and L the lowest value of the RSI over the n periods.

%D is basically the moving average of %K over n periods.

There are two interpretations of the StochRSI.

The first one is the same as the one of the RSI, but with values of 80 and 20 instead of 70 and 30.

The second one uses the %D curve: when %K crosses up %D or %K crosses up the 50%, there is a buy signal and when %K crosses up to fuck %D or when %K crosses down the 50%, there is a sell signal



XII. CHAIKIN OSCILLATOR

The Chaikin Oscillator was developed by Marc Chaikin. This indicator compares the volume with the price levels of a stock and evaluates the accumulation/distribution momentum. The Chaikin Oscillator displays values around zero and helps identify trend reversals from momentum.

The Chaikin Oscillator formula is the following:

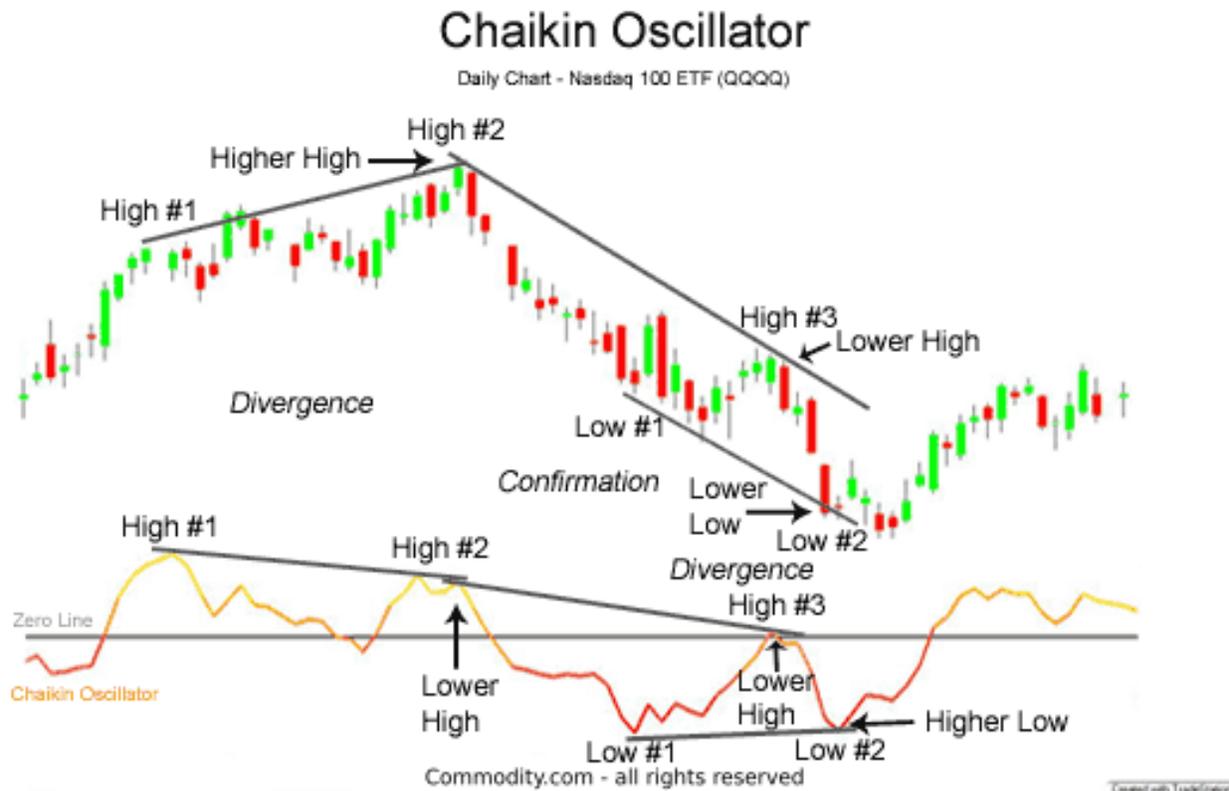
$$\text{Chaikin Oscillator} = \text{EMA}(A/D, \text{Period } 1) - \text{EMA}(A/D, \text{Period } 2)$$

where $EMA(x,n)$ is the Exponential Moving Average of x over a period of n days and A/D the Accumulation/Distribution indicator. The values for Period 1 and Period 2 are often 3 and 10 days respectively.

There are two trading methods with the Chaikin Oscillator, the Zero Line Crosses one and the Divergence one.

The crossing strategy consists in checking when the curve crosses the x-axis. Indeed, when the Chaikin Oscillator value is higher than zero, the stock price is likely to increase, and when its value is lower than zero, the stock price is likely to decrease. Thus, when the curve crosses the x-axis from bottom to top, there is a buy signal, and when it crosses it from top to bottom, there is a sell signal.

The divergence strategy consists in comparing the evolution of the Chaikin Oscillator value with the one of the stock price. Indeed, if their evolutions have a negative relationship, an imminent return to trend is expected. Hence, if the stock price decreases while the Chaikin Oscillator value increases, there is a buy signal, and if the stock price increases while the Chaikin Oscillator value decreases, there is a sell signal.



XIII. CHAIKIN MONEY FLOW

The Chaikin Money Flow was also developed by Marc Chaikin. This indicator compares the closing price to the highest or lowest range of the given period. Then, it compares the result obtained with the total volume of the period. Like the Chaikin Oscillator, it displays values around zero and helps identify trend reversals from momentum.

The Chaikin Money Flow formula is the following:

$$\text{Chaikin Money Flow} = \frac{\sum \frac{(C - L) - (H - C)}{(H - L)} \times V}{TVP}$$

where V is the volume, TVP the total volume over the period (21 days periods are the most commonly used), C the closure value of the stock, H the highest value of the stock over the period and L the lowest value of the stock over the period.

The Chaikin Money Flow can be interpreted the same way as the Chaikin Oscillator.

However, remember that these two indicators have different formulas, which entails that even though the way they must be interpreted is the same, the interpretations that will result will thus not always be the same.

XIV. NET VOLUME

Net volume is a technical indicator calculated by subtracting a stock's uptick volume (= volume of shares traded while a stock price is on the rise) by its downtick volume (= number of shares traded at a lower price than the last transaction price) over a specified period of time.

This indicator helps investors see if the market is rather bullish or bearish. Therefore, net volume is used to assess the market sentiment. Typically, when a resistance breaks, traders look at net volume to assess if there is enough momentum to push the price higher.



XV. ON BALANCE VOLUME

The On Balance Volume (OBV) helps investors identify trend reversals.

If price and OBV change together, the trend is said to be stable or healthy.

When the price is close to a resistance/support: if the OBV increases when the price is close to the resistance, it is likely that the price goes higher. Conversely, if the OBV decreases when the price is near the support, it is likely that the price keeps going down.



XVI. PRICE VOLUME TREND

The Volume Price Trend (VPT) indicator helps investors determine a security's price direction and strength of price change. It is very close to the On Balance Volume, but while the OBV adds up all the volumes of the day when the prices are closed at the highest and subtracts all the volumes of the day when the prices are at the lowest, the VPT adds only a part of the daily volume. The total volume added to the VPT is a combination of prices at the highest or lowest level of the previous day.

By using a "signal line" (a moving average of the indicator), a trader can determine when to buy a stock (when the VPT line crosses above its signal line) or when to sell it (when the VPT line passes below its signal line).

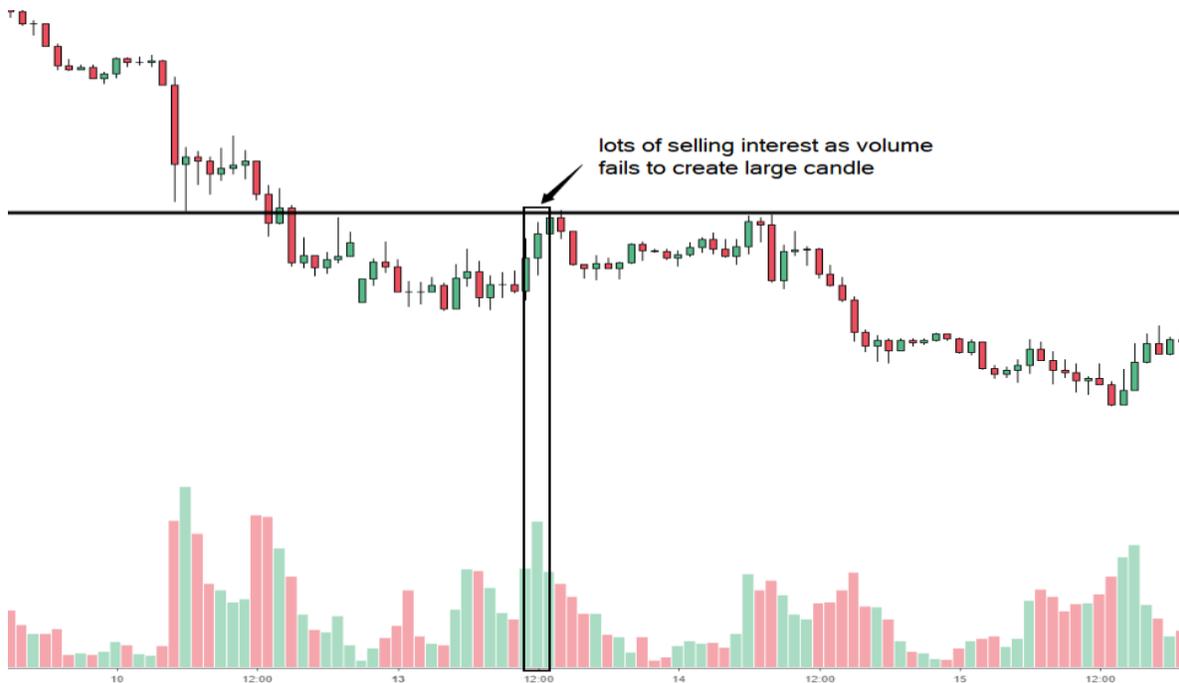
Investors can also use the VPT to spot technical divergence: when the indicator makes a higher high or a lower low, but the security's price makes a lower high or a higher low, investors should put a stop-loss order above the most recent swing high or below the most recent swing low to minimize risk.



XVII. TICK VOLUME

The tick volume indicator has a meaning only for day or short-term traders. It measures every trade whether it is up or down and the volume that goes along these trades for a given time period.

Traders often focus on pivot points to look for changes or continuation in trends. In order to trade effectively, traders will want to obtain an edge that will assist them in determining whether a pivot has the strength to hold the current trend.



XVIII. VOLUME OSCILLATOR

The Volume Oscillator indicator calculates the difference between a fast and a slow volume moving average.

Usually, the fast volume moving average is over a period of 28 days and the slow over a period of 14 days. Short-term traders may want to use 5/20.

Like every volume indicator, it helps assess the strength or weakness of a price trend.

A positive value suggests enough market support exists to continue driving price activity in the direction of the current trend.

A negative value suggests a lack of support, indicating that prices may become stagnant or reverse.

Changes in volume are being measured, and volume expands during a sell-off. What any trader should keep in mind is that an increasing price, together with declining volume, is always, without exception, bearish.

