



A GUIDE TO TECHNICAL INDICATORS AND OTHER USEFUL STUDIES

Moving Averages

Moving averages smooth the price data to form a trend following indicator. They do not predict price direction, but rather define the current direction with a lag. Moving averages lag because they are based on past prices. Despite this lag, moving averages help smooth price action and filter out the noise. They also form the building blocks for many other technical indicators and overlays, such as Bollinger Bands and MACD.

The two most popular types of moving averages are the Simple Moving Average (SMA) and the Exponential Moving Average (EMA). These moving averages can be used to identify the direction of the trend or define potential support and resistance levels. Also, moving averages crossovers are extensively used by traders to identify potential signals, entry and exit points.



A simple moving average is formed by computing the average price of an asset over a specific number of periods. Most moving averages are based on closing prices. A 9-day simple moving average is the five-day sum of closing prices divided by 9. As its name implies, a moving average is an average that moves. It takes closing prices of set lookback period into calculation without counting the last, currently ongoing candle. Once the candle is closed, closing price from the last candle is added to the calculation while data from the first candle in the sequence is removed. This causes the average to move along the time scale. Above is an example of 9-day moving average applied over the price of GBP/JPY currency pair.

Lengths and Timeframes

The length of the moving average depends on the analytical objectives. Short moving averages (5-20 periods) are best suited for short-term trends and trading. Chartists interested in medium-term trends would consider using longer moving averages that might extend 20-60 periods. Long-term investors will prefer moving averages with 100 or more periods for better and smoother trend identification. Some moving average lengths are more popular than others. The 200-day moving average is perhaps the most popular. Because of its length, this is clearly a long-term moving average and is considered by many to be the most accurate.

Next, the 50-day moving average is quite popular for the medium-term trend. Many chartists use the 50-day and 200-day moving averages together.

Trend Identification

The direction of the moving average conveys important information about prices. A rising moving average shows that prices are generally increasing. A falling moving average indicates that prices, on average, are falling. A rising long-term moving average reflects a long-term uptrend. A falling long-term moving average reflects a long-term downtrend.



Moving Average Crossovers (signal generation)

Two moving averages can be used together to generate crossover signals.

- A bullish crossover occurs when the shorter moving average crosses above the longer moving average. A bearish crossover occurs when the shorter moving average crosses below the longer moving average. This is known as a dead cross.
- Moving average crossovers produce relatively late signals. After all, the system employs two lagging indicators. The longer the moving average periods, the greater the lag



in the signals. These signals work great when a good trend takes hold. However, a moving average crossover system will produce lots of false signals and therefore cannot be considered a reliable tool on shorter-term periods. However, a reliability of the crossover increases with higher time frames. For example a 50/100 or 50/200 period crossovers should be considered potentially stronger signals than 5/20 ones.

The picture above shows the crossover of 20 (blue) and 50 (red) period moving averages. Note that breakout of resistance at 1297 further strengthened the trend. As such, we highly recommend avoiding putting maximum reliance on single crossover and using tools like support and resistance for additional confirmation.

Bollinger Bands

Developed by John Bollinger, Bollinger Bands are volatility bands placed above and below a moving average. The bands automatically widen when volatility increases and narrow when volatility decreases. This dynamic nature of Bollinger Bands also means they can be used on different assets with the standard settings. For signals, Bollinger Bands can be used to identify overbought and oversold conditions or to determine the strength of the trend.

There are three components to the Bollinger Band indicator:

1. Moving Average: By default, a 20-period simple moving

average is used.

2. Upper Band: The upper band is usually 2 standard deviations (calculated from 20-periods of closing data) above the moving average.
3. Lower Band: The lower band is usually 2 standard deviations below the moving average.

In order to keep things simple we will not go into details behind the calculation of Bollinger Bands and concentrate on the practical side of things.



Playing the Bands

Playing the bands is based on the premise that the vast majority of all closing prices should be between the Bollinger Bands. That stated, then an asset's price going outside the

Bollinger Bands, which occurs very rarely, should not last and should «revert back to the mean», which generally means the 20-period simple moving average.

- **Possible Buy Signal**

In the example shown in the chart below, a trader might buy cover when the price has fallen below the lower Bollinger Band.

- **Possible Sell Signal**

The potential sell or buy to cover exit is suggested when the stock, future, or currency price pierces outside the upper Bollinger Band.

Given the fact that statistically prices stay within the bands 70% of all time, the accuracy of signals generated using this approach should be quite high. However, much in the same way as with the majority of other technical indicators it is highly advised to use additional tools for confirmation, like support and resistance or overbought/oversold indicators like RSI.



Bollinger Band Breakouts

The opposite of «Playing the Bands» and predicting the reversion to the moving average is using Bollinger Band breakouts. Breakouts occur after a period of consolidation, when price closes outside of the Bollinger Bands. Other indicators such as support and resistance lines might prove beneficial when a trader decides whether to buy or sell in the direction of the breakout.



Bollinger Band Breakout through Resistance Potential Buy Signal

A trader might buy when price breaks above the upper Bollinger Band after a period of price consolidation. Other confirming indicators might likely be used by the trader, such looking for resistance to be broken.

Bollinger Band Breakout through Support Potential Sell Signal

Similarly, a trader might sell when price breaks below the lower Bollinger Band. A trader might use other confirming indicators as well, such as a support line being broken; this is shown in the example above of price breaking below the support and lower Bollinger Band

Bollinger Band as Trend Following Tool

The chart below of the USD/CHF shows that during a strong uptrend, prices tend to stay in the upper half of the Bollinger Band, where the 20-period moving average (Bollinger Band centerline) acts as support for the price trend.



The reverse would be true during a downtrend, where prices would be in the lower half of the Bollinger Band and the 20-period moving average would act as downward resistance.

Relative Strength Index (RSI)

The Relative Strength Index (RSI) is one of the more popular technical analysis tools; it is an oscillator that measures current price strength in relation to previous prices. The RSI can be a versatile tool, it might be used to:

- Generate potential buy and sell signals
- Show overbought and oversold conditions
- Confirm price movement

Warn of potential price reversals through divergences
RSI Potential Buy Signal

A trader might buy when the RSI reaches 30 (oversold line)

RSI Potential Sell Signal

A trader might sell when the RSI reaches 70 (overbought line)

For greater accuracy of signals trader might sell when price has first crossed and then reversed back below the 70 (overbought line) and buy when the same condition has occurred on lower 30 (oversold) line.

The chart above shows signals generated by RSI on GBP/JPY chart. Note how prices reversed in the short-term once RSI values approached 70 (upper line) and 30(lower line).



Still, using other tools like S/R for confirmation is highly recommended.

Change of RSI signal frequency with different periods

Varying the time period of the Relative Strength Index might increase or decrease the number of buy and sell signals. In the chart below of Signal, the calculation period of RSI has been reduced to 5. Note the frequency of false signals generated with lower period RSI.

Which of the periods to choose is up to the trader, but we recommend using longer-term periods for higher accuracy of signals.



Stochastic Oscillator

Developed by George C. Lane in the late 1950s, the Stochastic Oscillator is a momentum indicator that shows the location of the close relative to the high-low range over a set number of periods.

As a rule, the momentum changes direction before price." As such, bullish and bearish divergences in the Stochastic Oscillator can be used to foreshadow reversals. This was the first, and most important, signal that Lane identified. Lane also used this oscillator to identify bull and bear set-ups to anticipate a future reversal. Because the Stochastic Oscillator is range bound, is also useful for identifying overbought and oversold levels.

Calculation :

- $\%K = \frac{\text{Current Close} - \text{Lowest Low}}{\text{Highest High} - \text{Lowest Low}} \times 100$

- %D = 3-day SMA of %K
- Lowest Low = lowest low for the look-back period
- Highest High = highest high for the look-back period
- %K is multiplied by 100 to move the decimal point two places



As a range-bound oscillator, the Stochastic Oscillator makes it easy to identify overbought and oversold levels. The oscillator ranges from 0 to 100. No matter how fast a security advances or declines, the Stochastic Oscillator will always fluctuate within this range. Traditional settings use 80 as the overbought threshold and 20 as the oversold threshold. The price is considered overbought when trading above 80 level and oversold when below 20. However, the price occasionally ignores readings of the oscillator and continues to be oversold for

longer term period. Stochastic Slow, a smoother version of the indicator may be applied to reduce the choppiness of the line and generate highly accurate signals. Below we will describe several ways how to read signals from Stochastic Oscillator.

- A trader may consider opening **buy position** when the %K line (red) moves below and then reverses back above 20 level
- A trader may consider opening **sell position** when the %K line (red) moves above and then reverses back below 80 level



Stochastic Oscillator Divergences

Divergences form when a new high or low in price is not confirmed by the Stochastic Oscillator. A bullish divergence forms when price records a lower low, but the Stochastic Oscillator forms a higher low. This shows less downside momentum that could foreshadow a bullish reversal. A bearish divergence forms when price records a higher high, but the Stochastic Oscillator forms a lower high. This shows less upside momentum that could foreshadow a bearish reversal. Once a divergence takes hold, chartists should look for a confirmation to signal an actual reversal.

A bearish divergence can be confirmed with a support break on the price chart or a Stochastic Oscillator break below 50, which is the centerline. A bullish divergence can be confirmed with a resistance break on the price chart or a Stochastic Oscillator break above 50. On the picture of EUR/JPY chart below is hard not to notice the obvious price/oscillator divergence. Within the highlighted area, price



was consistently building lower lows, while Stochastic Oscillator was building higher lows. No reversal has yet occurred but the momentum is slowly building up to the upside. We note however that such interpretation should better be applied for longer time frames and is not suitable for short-term positions derived from 1H or 15m charts.

Fibonacci

Fibonacci tools utilize special ratios that naturally occur in nature to help predict points of support or resistance. Fibonacci numbers are 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, etc. The sequence occurs by adding the previous two numbers (i.e. $1+1=2$, $2+3=5$) The main ratio used is .618, this is found by dividing one Fibonacci number into the next in sequence Fibonacci number ($55/89=0.618$). The logic most often used by Fibonacci based traders is that since Fibonacci numbers occur in nature and the stock, futures, and currency markets are creations of nature - humans. Therefore, the Fibonacci sequence should apply to the financial markets. There are many Fibonacci tools used by traders, they include:

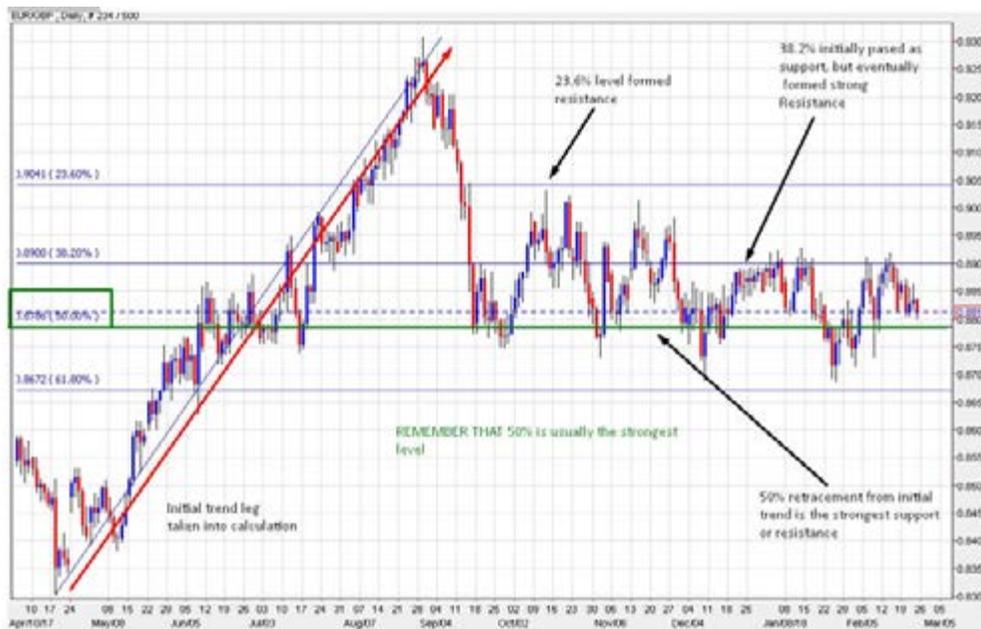


- Fibonacci Retracements
- Fibonacci Fans

Fibonacci Retracements

Arguably the most heavily used Fibonacci tool is the Fibonacci Retracement. To calculate the Fibonacci Retracement levels, a significant low to a significant high should be found. From there, prices should retrace the initial difference (low to high or high to low) by a ratio of the Fibonacci sequence, generally the **23.6%, 38.2%, 50%, 61.8%, or the 76.4% retracement. The 50% retracement level has been statistically proved to be the concentration of strong, resilient support/resistance area and could be successfully used for identifying strong exit or entry points.**

Note that a trend line was drawn from a significant low (beginning of trend) to a significant high (end of trend); the trading software calculated the retracement levels.



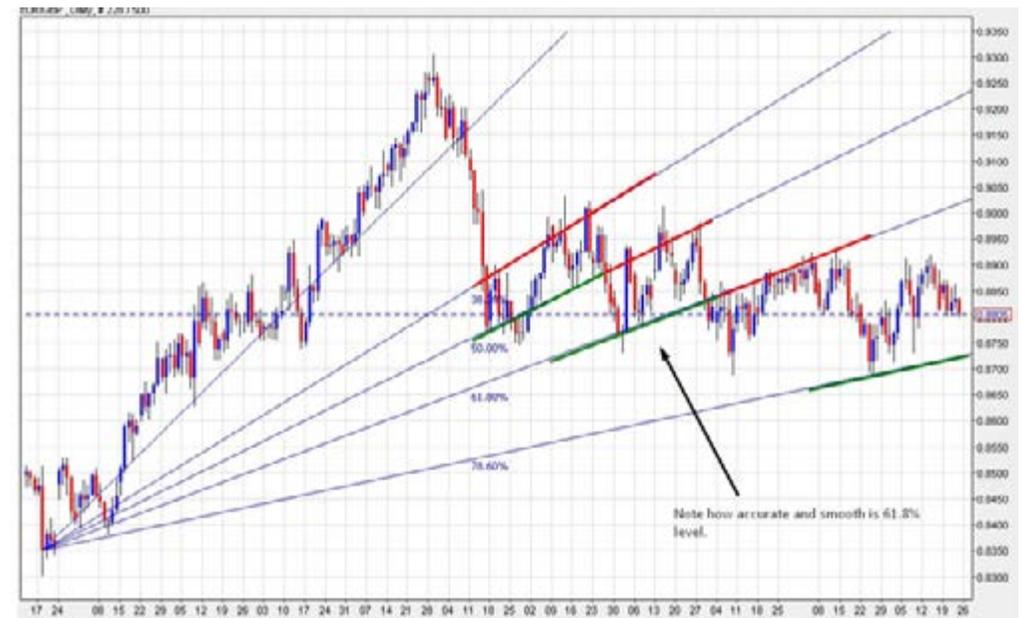
Fibonacci Fans

Fibonacci Fans use Fibonacci ratios based on time and price to construct support and resistance trendlines.

If prices move below a Fibonacci Fan trendline, then price is usually expected to fall further until the next Fibonacci Fan trendline level; therefore, Fibonacci Fan trendlines are expected to serve as support for uptrending markets.

Likewise, in a downtrend, if price rises to a Fibonacci Fan trendline, then that trendline is expected to act as resistance; if that price is pierced, then the next Fibonacci Fan trendline higher is expected to act as resistance.

Use of Fibonacci Fans is shown below on the chart of EUR/GBP. Note that price found supporting trendlines on each of the Fibonacci levels.



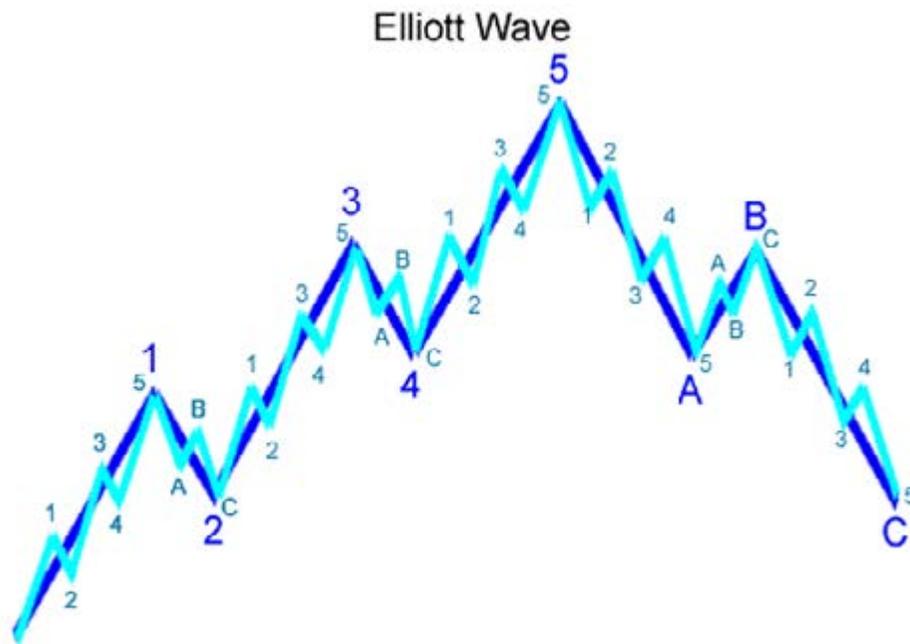
Traders can use Fibonacci tools for identifying potential reversals and strong entry/exit points.

Elliott Wave Theory

Ralph Nelson Elliott developed the Elliott Wave Theory in the late 1920s. Elliott believed that stock markets, thought to behave in a somewhat chaotic manner, in fact traded in repetitive cycles. The Theory states that prices move in waves. These waves occur in a repeating pattern of 8 waves divided into 2 separate clusters.

1. Move up,
 2. Partial retracement down,
 3. Another move up,
 4. Retracement,
 5. Last move up.
- A full retracement,
 - B partial retracement upward,
 - C a full move downward.

This repeats on a macro and micro time frame. A visual illustration of the basic pattern of the Elliott Wave is given below.



There are two things however, that make many traders stay away from trying to understand how to trade Elliott Waves:

- The Elliott Wave Theory itself is difficult to grasp at first.
- The application of the Elliott Wave theory in real time trading gets difficult because the charts look messy. Where do you begin the wave count? Is this the 1st wave, the 2nd, the third. Is this the 5th wave?

The fact is that application of Elliott Wave Principle may be way more trickier than understanding it at a first grasp. The real thing is that Elliott Wave can be separated into patterns. Pattern 1 which has 5 (1,2,3,4,5) waves and pattern 2 consisting of 3 waves(A,B,C) respectively.

The Basic 5 Elliott Wave Pattern

The picture below shows the structure of first 5-wave pattern. waves 1, 3 and 5 are impulse waves waves 2 and 4 are corrective waves.

Remember this: impulse (or motive) waves go with the main trend and corrective waves go against the trend.

This is the most basic impulse-advance 5-wave Elliott wave sequence.



Elliott Wave-Basic 3 Wave Correction

Now, what happens above after the 5 wave sequence above? Well, price goes into what is called a corrective wave sequence...that maybe difficult to grasp initially but let us try to put things simple here: after the 5-wave sequence, expect price to start developing a pattern to change the trend direction.

So having finalized the uptrend sequence with the completion of 5th wave, the market should be expected to start 2nd 3-wave downtrend pattern

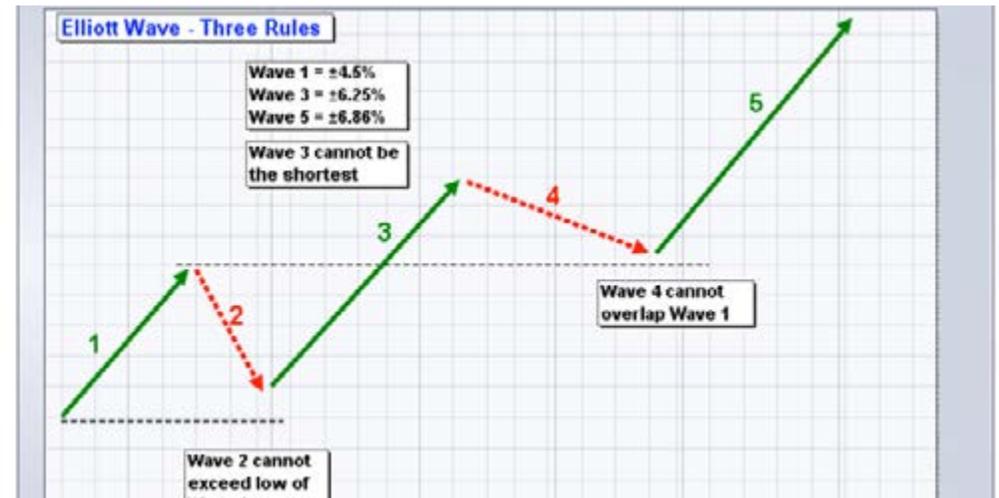
Now, these 3 additional waves are not numbered 6, 7 and 8. They are marked in letters, A, B & C waves as shown on the chart below:



The 3 Golden Rules Of Elliott Wave Theory

Mr. Elliott had 3 specific rules about the Elliott Theory which work regardless of time frames.

1. **Wave 2 shall not retrace more than 100 % of wave 1**
2. **Wave 3 shall never be the shortest of the 3 impulse waves**
3. **Wave 4 can never overlap wave 1.**



Further Explanation on these three rules:

Rule 1: wave 2 cannot go below the low of wave 1. If a break occurs below this low, you need to start counting waves from the scratch

Rule 2: wave 3 should be the longest of the 3 impulse waves but it cannot be the shortest which means that either 1 or 5 can be longer but both cannot be longer than wave 3. Also the high of wave 3 must be higher than that of wave 1 and it is not high, you have to start your re-count. Impulse waves are meant to build new highs with each subsequent wave.

Rule 3: wave 4 cannot overlap wave 1, which simply means that the LOW OF WAVE 4 cannot go BELOW THE HIGH OF WAVE 1. If that happens, you need a re-count.

Steps To Trading Elliott Waves

• Step 1: Identify Trend Start/End

Trend identification is the first step towards successful application of Elliott Wave Theory. For this you need to know if the new trend has actually started. Properly identifying the start of new or real end of previous trend is necessary step before giving Elliott Wave a go with your real money. Therefore, you need to have a clear understanding of traits that define start of new trend. These include:

1. Uptrend is characterized by higher highs and higher lows.
2. Downtrend is characterized by lower highs and lower lows

• Step 2: Start Count Wave 1

Successful identification of wave 2 is necessary of creating a set up for trading with Elliott wave. To do this you need to wait for the first wave phase to complete. Once you see the foundation for wave 2 formation are being laid, proceed to step 3. Remember, that wave 2 shall never retrace more than 100% of wave 1.

• Step 3: Start Count Wave 2 and Prepare to trade

Step 3 is to Start your wave 2 Count and prepare to take your first trade based on Elliott Wave Theory! Now you see that wave 1 is finished and looks like wave 2 is forming. Use Fibonacci Retracement tool and let the trading software calculate 50% and 61.8% retracement of the wave 1. Once you see something new on the microscale emerging on one of the following



retracement level - you may consider taking a buy position.

• Step 4: Start Wave Count 3 And Watch Your Profits Increase!

Step 4 is when wave 3 starts.

You do nothing here except ride out wave 3 and watch your trading profits Increase! By now, you know that wave 3 is supposed to be the longest of the 5 waves. If your prediction is right, wave 3 where you make the most money (profits):

• Step 5: Start wave count 4 and Prepare to Trade

Step 5 is to start your wave count 4 so that you can take a trade just as wave 4 is ending so that you can ride out wave 5. Assuming all is going out as predicted, this is where you will enter your 2nd trade based on the Elliott wave theory.

Similar to step 3, use:

- Fibonacci retracement levels, 38.2%, 50% or 61.8% to identify potential turning points
- use reversal candlestick for trade entry confirmation
- you can also use or combine trendline trading strategy to enter here as well if price comes and hits the trendline

Caution!

Once wave 4 is complete, prudent action would be closing all your trading positions. As based on all above-mentioned wave 5 is place where market starts to get exhausted. Beyond 5th wave, A, B, C pattern can get really confusing so we would not recommend attempting to trade 2nd (correction part) of 8 wave pattern. Generally, better avoid trading A,B or C waves. This is where you're likely to face losses.

