Technical Indicators for Forex Beginners

Trend Following and Oscillators

About ActionForex.com

ActionForex.com was set up back in 2004 with the aim to provide insightful analysis to forex traders, serving the trading community over a decade. We started providing only a daily and a mid-day report, now known as Action Insights. Gradually, we added a lot more in-house contents to the site. Techinical Outlook section was expanded to cover more pairs. Central Bank Views, China Watch and Special Topics are added to cover fundmental developments that affect the markets. In addition to that, Top Movers, Heat Map, Pivot Point Charts and Pivot Meters, Action Bias and Volatility Charts, are tools used by traders from all over the world.

"Empowering the individual traders" was, is, and will always be our motto going forward.

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I: Introduction

Technical indicators are statistics of past market data base on different mathematical calculations. Traders use technical indicators extensively in technical analysis to predict the continuance and the reversals in currency trends.

There are two major types of technical indicators: ***trend following indicators*** and ***oscillators***.

- ***Trend following indicators*** reflect the direction and the strength of the current trend. Traders may enter a position when the trend following indicators showing the current trend is having solid strength. The most common trend following indicators are: moving averages and bollinger bands.
- ***Oscillators*** are indicators banded between two extreme values that reflect short-term overbought or oversold conditions. In general, as the value of the oscillator approaches the upper extreme, the currency is said to be in an overbought condition, and as it approaches the lower extreme, the currency is consider to be oversold. Traders may exit a long-trade when the oscillators showing the current price is in an overbought condition, or they can exit a short-trade when the oscillators approach the lower extreme. The most common oscillators are: Relative Strength Index (RSI), Moving Average Convergence Divergence (MACD) and Stochastic.

Nowadays, most charting packages include the above common technical indicators. Traders can find a charting package and add their favorite indicators to their charts. Traders tend to use a mix of trend following indicators and oscillators. They usually pick one from each category as the main reference. Most of the forex charting packages offer real-time streaming pricing. At the same time, all the calculations of the indicators are done automatically and instantaneously.

The following sections will introduce the common indicators mentioned above. Readers can choose their preferred indicators or a combination of them after knowing how they work.

II: Moving Averages

What is moving average?

Moving average is the average rate of a currency pair over a set period. For example, if you conduct a 20-day moving average (20 day MA), you simply add the close price of the past 20 days and divide it by 20. This is called a simple moving average (SMA).

The most common parameters for moving averages are 5, 10, 20, 50 and 100. The smaller the time frame, the more responseive and sensitive is the indicator to the market movement. The longer the time frame, the smoother is the moving average.

Moving averages show the direction of the trend. As shown in the above chart, the shorter the time frame, the more sensitive is the SMA to the direction of the trend. In an up-trend, the shorter time frame averages should be above the longer ones, where the current price should be above the shortest SMA.

SMA, EMA and WMA

There are few varieties of the moving averages. The most common ones are: Simple Moving Average (SMA), Exponential Moving Average (EMA) and Linearly Weighted Moving Average (WMA). EMA and WMA are under the moving average family that they put more weight on recent data in calculations. They react faster than SMA to the current price movement. As shown on the chart below, 10 WMA is more sensitive to the current price movement than the 10 SMA.

Applications of Moving Average

1. Direction of the trend

Moving averages can show the direction of the current trend. Generally, an up-trend is confirmed when a short-term moving average crosses above a long-term one, and the short-term moving average remains above the long-term moving average. Conversely, a downtrend is confirmed when a short-term moving average crosses below a long-term one, and it remains below the long-term moving average.

Traders can recognize the direction of the trend with reference to the direction of the trend line and their order of arrangement.

2. Support and resistance

The moving averages can act as support and resistance lines. In an up-trend, the SMAs below the rising price can act as support levels. If there is a retracement, the price is likely to bounce off the moving averages. It is the same for a down trend. SMAs above the falling price can act as resistance levels.

As shown in the chart below, EUR/USD has experienced a strong downtrend since April 2005. The price retraced a couple of times to the 10 day SMA, however failed to break through and followed with subsequent drops.

The longer the time frames of moving averages are regard as stronger support or resistance than shorter time frames ones. When the price hits the longer time frame moving average, it means a stronger retracement. Traders can combine the candlestick patterns when decide to trade with the moving averages. For instance, a selling decision in a downtrend can be confirmed by price retracement to a 20 day SMA level and a bearish engulfing pattern.

3. Crossovers Signals

Whenever a shorter-term moving average crosses over a longer-term one, it indicates that there is a momentum shift. Traders can use this opportunity to enter a trade in the direction of the crossover.

Since the shorter-term moving averages react more quickly to the market price, a crossover indicates a change of sentiment in the market. In the chart below, the 10-day SMA cut above the 20-day SMA in April 2006, it was a bullish crossover. It indicated an upward momentum. Later in June 2006, the 10-day SMA cut below the 20-day SMA, it indicated the up-trend had lost its momentum and the downtrend was in control. Traders can use the crossovers as entry and exit signals of trades.

The shorter term moving averages generate more crossovers as they react more quickly to the market. However, they also generate more false signals. Traders are recommended to trade the moving averages along with other technical analysis tools, like candlestick patterns or other technical indicators.

Limitations of Moving Averages

Moving averages are best to apply in a strong trending market, otherwise, there can be too frequent crossovers that includes many false signals.

In the chart below, USD/CHF was going an up-trend and there were many retracements to the support line. There were numerous crossovers between the 10-day SMA and 20-day SMA. In this case, the crossovers were inexact signals and they do not take into account the price in relation to the support level. Trading based on SMA crossovers requires caution and better to wait for other signals or candlestick patterns to confirm the trade once a crossover signal occurs.

III: Bollinger Bands

Bollinger bands were created by John Bollinger in the early 1980s. The bands have similar theory and application with the Moving Average Envelopes. It has a set of three curves, the typical parameters are:

- Middle Bollinger Band = 20-period simple moving average
- Upper Bollinger Band = Middle Bollinger Band + 2 * 20-period standard deviation
- Lower Bollinger Band = Middle Bollinger Band - 2 * 20-period standard deviation

The theory behind Bollinger Bands is that, in a normal distribution data set, 68% of data should fall within one standard deviation and that roughly 95% should fall within two standard deviations. So 95% of the price should fall within the 2-width standard deviation, which is within the upper and lower band.

Bollinger bands are often used to forecast reversals in rangebound markets. When the price is close to the upper band, the market is more likely to be in overbought condition, and is likely to reverse. The same holds for the lower band condition.

In the chart below, you can see that prices are likely to reverse at the upper and lower bands. Since 95% of the prices should fall within the band, the price should move back within the envelope if it rises above the top band or falls below the bottom one.

Since standard deviation is also a measure of volatility, traders can see the market condition by observing the Bollinger bandwidth. The bands widen, meaning moves further away from the middle band, when the market is more volatile. The bands contract, meaning moves closer to the middle band, when the market is less volatile.

The Bollinger bands are best to use in ranging markets, but are of limited value in trending markets. As shown on the above chart, when the market is in strong trend, the price can move along the upper or lower band, resulting in many false signals. Traders are better to combine Bollinger bands with other indicators or candlestick patterns to determine a trade.

IV: Moving Average Envelopes

The moving average envelope is a variant application to the moving average. It is a trading band composed of two moving averages, which attempts to determine the range of market should be trading in. Traders can choose their period of MA, then form the upper line of the envelope by shifting the MA upwards and the lower line of the envelope by shifting the MA downwards.

The reasoning behind the envelope is that moving averages define the general trend of the market and are the best-fit line to the recent movement of the price. Most of the data should appear close to the moving average lines. The envelopes define a range away from the moving average that the price should return to the center in a short term if the price strays too far away from the moving average. Therefore, the envelopes are best to identify potential reversals when the price hits the envelope boundaries.

On a daily chart, it is common to use 21-day Simple Moving Average and form the envelopes with 2% or 3% above and below the 21 day SMA. For longer term trading, traders can choose longer time frame like 50-day SMA and larger percentage variation like 5%.

In the above chart, you can see prices stay within the 3% band most of the time. When the price hits the boundary of the envelopes, it is a sign of reversal. Somehow the price returned to the centerline and move on again. However, traders are reminded that not every signal is valid. When the trend is strong enough, it can raise (or fall) along the envelope boundary resulting many false signals.

V: Moving Average Convergence Divergence (MACD)

Moving Average Convergence Divergence (MACD) shows the difference of two moving averages - EMA12 and EMA26, and a 9-day EMA of the difference is plotted against it to trigger buy or sell signal.

There are three parameters in MACD:

1. MACD line - the difference between the 12 and 26 period EMA
2. Signal line - the 9 day EMA of the MACD line
3. Histogram - a visual representation of the difference between the MACD line and the signal line

MACD is best use in range-bound market to detect the momentum change and overbought/oversold conditions within a price range.

Applications of MACD:

1. Detect overbought/oversold levels

When the MACD line is far above from the centerline, the market is considered to be in overbought condition; while the MACD line is far below the centerline, the market is deemed to be in oversold condition.

2. Crossovers

When the MACD line crosses above the signal line, a buying signal is generated; while the MACD line crosses below the signal line, a selling signal is generated.

3. Divergences

If the price is moving higher, but the MACD line is moving lower, it signals the weakening of the up-trend or reversal. If the price is moving lower, but the MACD line is moving higher, it signals the weakening of the downtrend or reversal.

VI: Relative Strength Index (RSI)

Relative Strength Index (RSI) measures the strength of all upward movement against the strength of all downward movement in a specified time frame.

For mathematical formula of RSI is as follow:

- RSI = 100 - [100/(1+RS)]
- RS = average of n day's up closes / average of n day's down closes

The most common parameter for RSI is period 14, although users can pick their favorite period of time if they wish. It is one of the most popular oscillators that works well in range-bound market.

RSI can range from 0-100. In the formula, if RS = 1, which means the average n day's up closes equals to the average of n day's down closes, RSI = 50. In that case, the market is having an equal strength of upward and downward force.

- If RSI > 50, which means the upward force is stronger than the downward force.
- If RSI < 50, which means the downward force is stronger than the upward force.

Applications of RSI:

1. Detect overbought and oversold condition

If RSI > 70, the market is considered to be overbought, a selling signal is issued; if RSI < 30, the market is considered to be oversold, a buying signal is issued.

2. Spot Divergence

If the price near support/resistance level and the RSI begin to diverge and are heading different direction, it may signal a weakening of trend.

The occurrence of divergence can deemed to be the weakening of the current trend or a reversal is about to happen.

In the chart below, the price is making lower lows, however, the RSI does not make any lower lows, it lows are going higher and higher. That marks the weakening of the current downtrend.

VII: Momentum

Momentum measures the rate of change of the currency pair.

Momentum = V - Vn

Where
V = latest closing price
Vn = closing price n periods ago

If there is no change of closing price, momentum equals to 0, which is the central line of the indicator. When there is a rise of price, momentum is greater than 0. If the closing price is smaller than the closing price n periods ago, momentum is a negative value. The most common period for n is 14, traders can adjust the value according to their preference.

Applications of momentum

1. Detect overbought/oversold conditions

When momentum reaches upper boundary level, the pair is considered to be overbought. If momentum reaches lower boundary level, the pair is consider to be in oversold condition. Since momentum has no fix range, there is no standard value for the upper and lower boundary. Traders may consider different boundary values for different currencies after a while of observation.

2. Spot divergence

If momentum is at near its boundary and it heads different direction with the price, a divergence is occurred. Divergence may signal a weakening of the current trend or a reversal may happen.

3. Crossing the central line

The cross over of the central line is deemed as a change of direction of the general trend. When momentum crosses below the central line, a sell signal is issued, whereas a cross above the central line, a buy signal is generated.

VIII: Stochastics

Stochastic is an oscillator that determines where the most recent closing price is relative to its price range over a given time period. It is one of the most popular oscillators that traders use in range-bound market.

The indicator involves two lines:

1. %K
2. %D which is a D-period moving average of %K

Where

1. %K = 100 [(C - L*n*) / (H*n* - L*n*)]
2. C = latest close, L*n* = lowest close over last *n* periods, H*n* = highest high over last *n* periods

The most commonly used time period is 14, and the most common value for K and D are 5 and 3 respectively.

As you can see in the formula, %K measures where the closing price is in relation to the price range over n period of time. If the lowest close over last periods is 0, highest high over last n periods is 100, and the closing price is 75, then %K = 75%, which means the price is close quite close to the highest high.

Applications of Stochastics:

1. Detect overbought/oversold levels

When Stochastic is over 80, the pair is considered to be overbought. If Stochastic is below 20, the pair is considered to be oversold. It works best in range-bound market. If the currency pair is in strong trend, the overbought/oversold levels offer limited value.

2. Crossovers

If the %K line crosses above the %D line, especially below the lower extreme of 20, a buy signal is generated. If the %K line crosses below the %D line, especially above the higher extreme of 80, a sell signal is generated.

In the above charts, six selling signals were generated in the range-bound period of EUR/USD. Notice that Stochastic may stay above 80 when the up-trend went strong at later stage.

XII: Conclusions

Some most commonly used technical indicators are discussed in this ebook. While they are very useful tools, traders most usually won't rely on just any one of them in their strategies. Instead, indicators are usually part of a larger framework that contains things like chart patterns, Fibonacci analysis, and of course, the use of other technical indicators.

Through patience and studies, every trader will be able to find the indicators that suit there system well. And that will become an integral part of their everyday trading lives..

When you're ready, let's move on to other ebooks of the series for building your skill as a successful trader.

Trading is a journey, not a destination.