8. Optimised Trading with Stochastics

What is the Stochastic Oscillator?

The Stochastic Oscillator was first developed in 1957 by a group of futures traders, one of whom, George C. Lane, is widely credited with its creation. Lane contributed significantly to the acceptance and popularity of the stochastic oscillator as a technical indicator. The “Slow” Stochastic Oscillator came later and was publicized after 1978.

The Stochastic Oscillator compares where the price is trading relative to the range (high/low) over a given period. The basic premise is that in an uptrend, the price should be closing near the highs of the trading range, signalling upward momentum in the security. In downtrends, the price should be closing near the lows of the trading range, signalling downward momentum.

While many terms in technical analysis are imprecisely defined, and can be open to interpretation, this is not the case with the Stochastics, which are solidly defined and have rigid formulae for calculation.

As touched upon earlier, there are two different types of Stochastic Oscillators: Fast and Slow. The Fast Stochastic Oscillator consists of two lines:

- **%K (or Main Line)** = this is essentially the raw measure used to formulate the idea of momentum behind the oscillator the main Stochastics line and it displayed as a solid line.

- **%D (or Signal Line)** = this is simply a moving average of the %K, it is sometimes called the Signal Line, and is displayed as a dotted line.

However, the Fast Stochastics can be quite volatile, so traders will often use the Slow Stochastics, which is an extension of the relationship but is designed to reduce volatility. This involves replacing the Main line (%K) with %D and subsequently replacing Signal line (%D) with a moving average of %D.

<table>
<thead>
<tr>
<th>Parameters for Slow Stochastics *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of periods in the range</td>
</tr>
<tr>
<td>Number of periods for %D calculation</td>
</tr>
<tr>
<td>Number of periods for Slow Stochastic %D moving average</td>
</tr>
</tbody>
</table>

* These are the accepted parameters, but these can be adjusted to meet the needs of the user.
The formulae for the calculation of Fast and Slow Stochastics are as follows:

**Fast Stochastics: %K and %D**

\[
\%K = 100 \times \frac{(C - Ln)}{(Hn - Ln)}
\]

where
- \(C\) = the latest (or closing) price
- \(H\) = the highest closing price over the last \(n\) periods
- \(L\) = the lowest closing price over the last \(n\) periods

\[
\%D = 100 \times \frac{H3}{L3}
\]

where
- \(H3\) = the 3 day sum of \((C - Ln)\)
- \(L3\) = the 3 day sum of \((Hn - Ln)\)

**Slow Stochastics**

Extends this relationship a step further to help smooth it

replaces the \(\%K\) line with the \(\%D\) line and replaces the \(\%D\) line with a 3 day moving average of \(\%D\)

1. **How to read the Stochastics**

The table below shows the basic interpretation of the Stochastics:

<table>
<thead>
<tr>
<th>Stochastics level</th>
<th>Outlook</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 20</td>
<td>very bearish, but over-extended</td>
</tr>
<tr>
<td>30 - 50 and rising</td>
<td>unwinding a bearish configuration</td>
</tr>
<tr>
<td>50 - 70 and rising</td>
<td>increasingly bullish</td>
</tr>
<tr>
<td>80 - 100</td>
<td>very bullish, but over-extended</td>
</tr>
<tr>
<td>50 - 70 and falling</td>
<td>unwinding a bullish configuration</td>
</tr>
<tr>
<td>30 - 50 and falling</td>
<td>increasingly bearish</td>
</tr>
</tbody>
</table>

The Stochastics are plotted within a range of zero and 100, with 50 as the neutral level. The trigger levels are added to the chart at 20 and 80. When the Stochastic lines are above 80, the price is considered to be overbought, and when the price is below 20, it is considered to be oversold.
Divergences

As with other momentum indicators, divergences can often give an early warning signal of a change in the direction of the trend. Therefore, in an uptrend, look for bearish divergences where the price continues to make higher highs, while the Stochastic lines are either in decline or making lower highs. Alternatively, in a downtrend which has the price making lower lows, a bullish divergence shows the Stochastics advancing or beginning to make higher lows.

There were four crossover sell signals which could have almost come straight out of a text book. The Main line crossed below the Signal line, to warn traders that the upside potential of the price was beginning to decline. The sell signal to trade came on 17th September, 1st November, 22nd January and the 28th February when the Main line crossed back below 80. Traders were even treated to a bearish divergence during the January 2014 signal.

The buy signals in Figure 1 were not so clear cut, occasionally experiencing false buy signals (in October and December), but still ultimately still proved to be successful. However, in October, the conviction behind the trade was heightened on the second crossover buy signal a week later which subsequently was confirmed by the move back above the initial reaction high. The signal generated in December was eventually part of a bullish divergence which once more added to the conviction behind the signal.

The Stochastic oscillator will tend to work much better in a sideways trending market. During a six month period between September 2013 and March 2014, the FTSE 100 had largely traded in a sideways range and Figure 1 shows that anyone who used the Stochastics to generate trading signals in this time could have been very successful.

Trading crossovers

Being an oscillator indicator, we can use crossovers of the two lines to give us trading signals. When the fast stochastic Main Line crosses through the slow stochastic Signal Line in one of the two extended zones (either above 80 or below 20) then we are alerted for a potential trading signal.

Some traders will act on the appearance of a crossover. However, Stochastics can often remain over-extended for some time before a reversal is seen (see Figure 1). For this reason it is often prudent to wait for the Main Line to subsequently move either above 20 for a crossover buy signal or below 80 for a crossover sell signal. This will also help to increase conviction of the signal.

Figure 1: A series of trading signals using the Stochastics on the FTSE 100 Index
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