



## A Classic Indicator in a New Suit

### Digital Stochastic

Is the indicator rising or is it already beginning to fall? Has it intersected with its trigger? Or is that only a minor indentation that we can see in the chart here? Those who work with indicators will know about this problem. Regardless of how good the signals of an indicator are, just interpreting it usually causes problems. This article is designed to analyse and improve the pattern of the slow stochastic. By providing a new description of the indicator and reducing the false signals I would like in this article to make the slow stochastic fit for the 21st century.

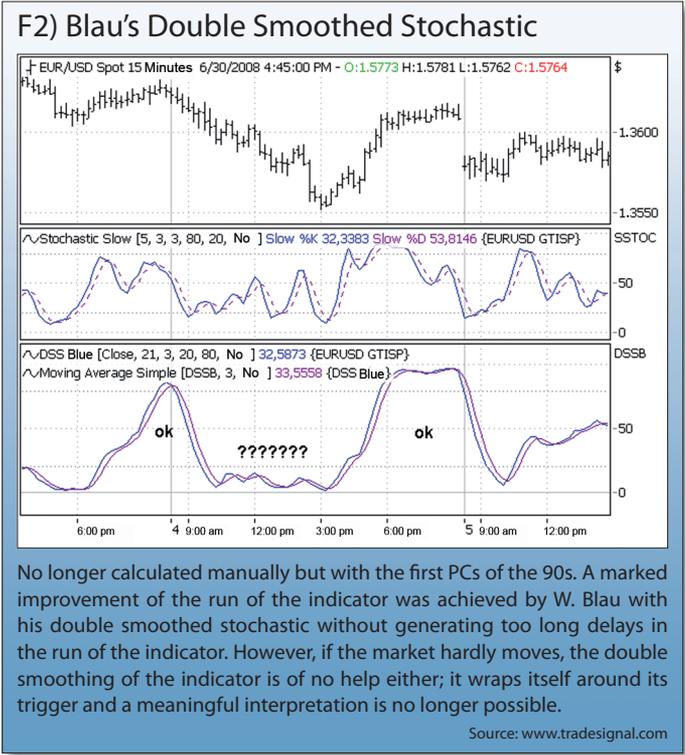
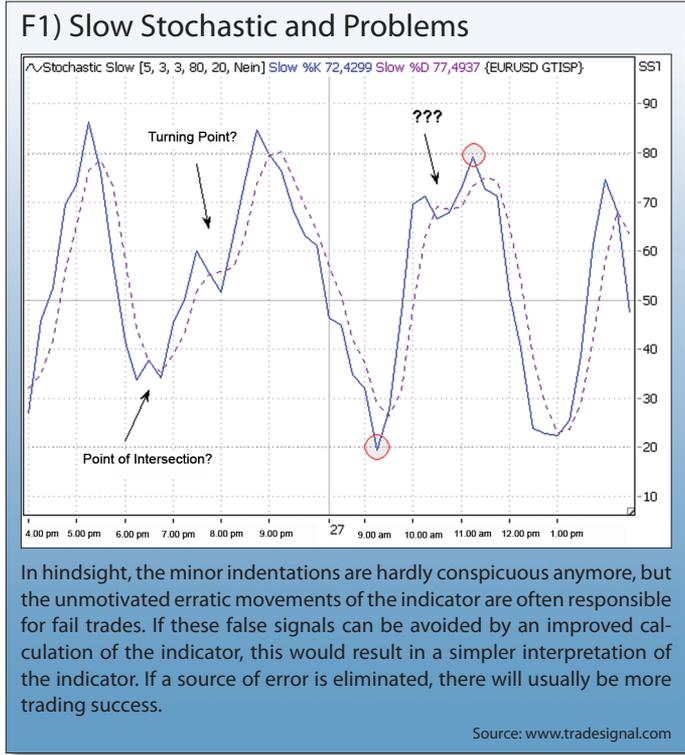
#### The Problem

Consider first this classic of the world of indicators that you can see in Figure 1. The slow stochastic is an indicator that shows you where you are within a price range. If the market is at the upper end of the high-low price range of the past few days, then the indicator shows a value close to 100. If the market is near the lowest prices of the past few days, then the indicator shows a value near 0. This movement between 0 and 100 assigns the indicator to the oscillators. Generally speaking, oscillators distinguish themselves by their quick response to price movements.

This means that in volatile and trend-less markets the slow stochastic is exactly the right tool for the fast trader. The original slow stochastic was developed by George Lane as early as the fifties. In those

days indicators were still calculated manually or by means of an abacus forcing the developer to implement the idea behind the oscillator as simply as possible. This means that the stochastic is calculated just by means of one division and a simple mean value out of 3 values.

While the original slow stochastic continues to be applied very frequently, many authors have racked their brains in the last 50 years trying to figure out how this indicator, which is basically very good, could be described in such a way that while reacting just as fast to price changes, it doesn't have too many minor and confusing indentations which may be responsible for fail trades. The goal of such an operation always is to smooth the course of the indicator as much as possible without delaying or diluting the meaningfulness of the indicator.



#### Initial Improvements

A first step in this direction was taken by W. Blau when he published his double smoothed stochastic in the journal "Technical Analysis of Stocks and Commodities" in January 1991. Blau's essential innovation was that he took advantage of the computing power available in the 90s and instead of making calculating the indicator as simple as possible, smoothed this indicator twice by means of an exponential moving average. Whereas George Lane could not even dream of an exponential smoothing of the indicator, this procedure nowadays is almost obsolete again. You can see in Figure 2 what effect this smoothing has on the course of the indicator.

In practise it is considerably easier to work with such a smooth course of the indicator. If the indicator is above its trigger, then I look

for long entry signals, and if the indicator is below its trigger, then I have short in mind. Even if ultimately the chart pattern decides the entry into a position, a steadily moving indicator obviously makes trading a whole lot easier. However, if the indicator rises for one day and then falls again on the following day, then this is the best premise for a trading style described by professionals as "Back and forth – and you're headed south". And all that only because of an unclear course of the indicator.

#### Digital Indicators

Whenever you study the development of trading systems in particular, you will be struck in an extremely unpleasant way by the seemingly unmotivated indentations and changes in direction of each indicator.

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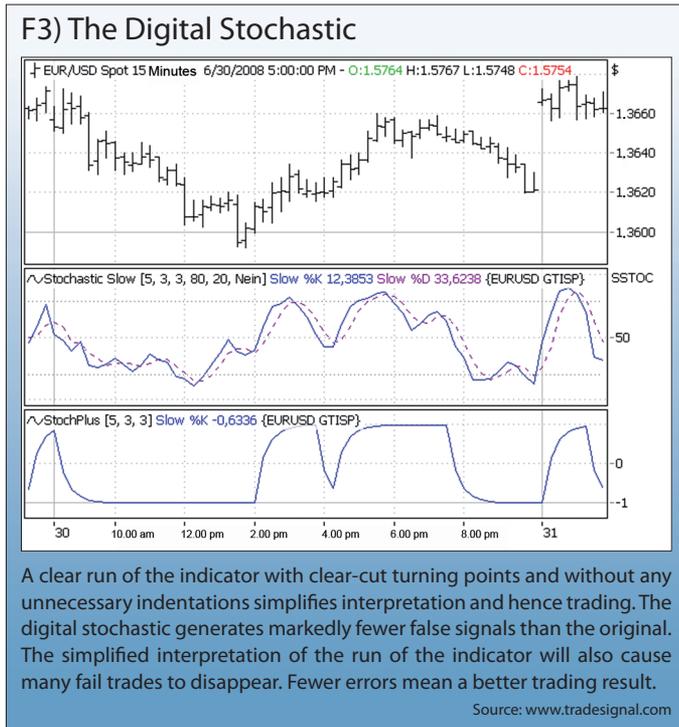
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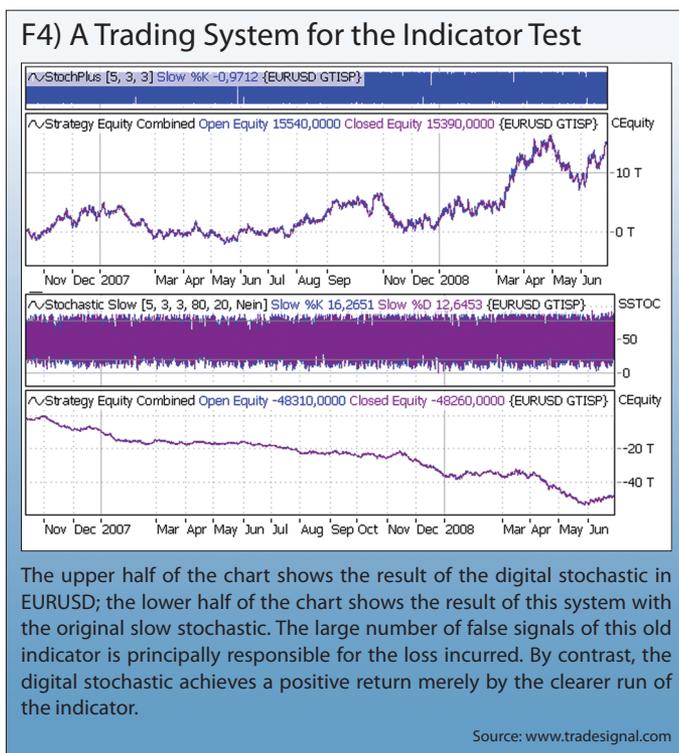
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An experienced trader can recognise many false signals of the indicator on the basis of his solid background; a stupid trading system usually falls into any trap offered by the unclear indicator course. This is what motivated me to improve even further this and other indicators with



the help of a relatively simple procedure. The goal of this development is to be able to use this indicator in a trading system with as few additional conditions as possible. Discretionary traders will likewise be happy about this clear course, which is not nerve-racking and makes concentrating on the essential elements of trading possible.

In Figure 3 you can see the result of this change in the course of the indicator. The chart shows George Lane's original slow stochastic from the 50s and the new digital stochastic. Judge for yourself: Using the original stochastic you would presumably have turned your short position several times on the 30th or even built up a long position. By 12.00 noon there were in this example chart seven intersections of the indicator with its trigger line. The digital stochastic doesn't show this behaviour. It unambiguously remains at "short" until 2.00 pm, and only afterwards does it indicate the beginning upward movement. Of course, even this indicator doesn't know the future, and so it happens that there is a false signal at 4 pm. The indicator turns downwards, but the market continues to rise.

#### How Is It Done?

The digital stochastic is a child of the original indicator. We owe a debt of gratitude to George Lane for his idea to design an indicator which describes the position of the current price within the high-low range of the historical price movement. My contribution to this indicator is the changed pattern which improves the quality of the signal without generating too long delays in giving signals. The trick used to generate this "digital" behaviour of the indicator shown in Figure 3 is quite simple. It can be used with most oscillators like RSI or CCI.

First of all, the original is looked at. The indicator always moves between 0 and 100. The precise position of the indicator or its course relative to the trigger line are of no interest to me, I would just like to know whether the indicator is quoted below or above the value 50. This is tantamount to the question of whether the market is just trading above or below the middle of the high-low range of the past few days. If the market trades in the upper half of its high-low range, then the digital stochastic is given the value 1; if the original stochastic is below 50, then the value -1 is given. This leads to a sequence of 1/-1 values - the digital core of the new indicator. These values are subsequently smoothed by means of a short exponential moving average. This way minor false signals are eliminated and the indicator is given its typical form.

TRADERS' readers can contact the author to receive the digital stochastic for the TradeStation and TradeSignal programs free of charge.

#### Test of the Indicator

A nice indicator course does not necessarily mean better trading results. For this reason I would now like to design a simple indicator test in order to show that the digital stochastic indeed produces better results than the original indicator.

The test system invariably trades the indicator according to the simplest interpretation possible. The system buys whenever the digital stochastic rises and goes into a short position whenever the indicator falls. The system with the classic stochastic trades analogously, i.e. the system buys when the stochastic is above the trigger line and

shorts when the indicator is below its trigger line. This is obviously no trading system for practical use but it was meant to quickly describe the advantages and disadvantages of the respective indicator. Since the stochastic is an indicator of sideways phases, I decided to carry out the tests using 15-minute charts.

The result in Figure 4 speaks for itself. The chart shows the result of this test system when, in accordance with the indicator interpretation described above, 100,000 EURUSD are traded on the 15-minute chart. During the test period the digital stochastic produced 3,900 signals, 35% of which led to winning trades. The original stochastic generated more than 10,000 signals with the hit rate also being at approx. 35%.

If you test the indicator with other price time sequences, you will obtain similar results. The original indicator usually generates more than three times as many signals as the digital version. In both versions, the hit rate of the signals is about the same, irrespective of the tested market. The goal of reducing the frequent signals of the stochastic indicator seems to have been reached.

### Conclusion

There are those who think that the veterans of the world of indicators are the only real thing, but there are others who demonise them as being obsolete. The strength of these indicators that were developed decades ago is, above all, their basic idea. The restrictions the developers faced in the absence of computers turned out to be an advantage. Those who still have to calculate their indicators manually

give a great deal of thought to whether it's worth the effort or whether the chart could not be interpreted more simply. This meant that only the best ideas of that era survived.

The digital stochastic represents an attempt to maintain the original idea of the author but to adapt the calculation to the possibilities and requirements existing today. An indicator that is easy to interpret enormously simplifies its use in trading systems and everyday trading. Only if you don't have to worry about whether the indicator is actually rising or falling is your mind free to cope with the true challenges of the market.

## Philipp Kahler



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