

Here's a new oscillator that helps to solve the problem of risk management in rule-based trading systems by helping you anticipate consolidation periods when an indicator may better serve as a sign you should stay flat rather than initiate another trade.

Trading with risk control

BY DAVID SEPIASHVILI

Risk management is a stumbling block of many rule-based trading strategies. Even if you select excellent stocks for trading, to preserve both your initial trading capital and accumulated profit, some risk control tools are necessary. Here, we'll discuss one of those risk control tools, the directional divergence indicator (DDI).

The DDI is designed to monitor potential risk and return in a simple and effective way. It makes the price performance easier to interpret, as it reflects not only the change of the price in relation to its starting point within the given semi-cycle, separated out by any trading rule, but also indicates a convergence/divergence between the generated reversal signal

and actual price change directions. The DDI provides a new way of identifying promising trading opportunities, and timely determining entry and exit points. It also can be helpful in testing and comparison of different securities and trading rules.

The distinctive feature of the DDI's approach consists of preliminary segmentation of the stock market time series into local semi-cycles by any trading rule, with further improvement of its accuracy by semi-cycle oriented error detection and correction methods. Such a two-step procedure drastically reduces risk and makes trading decisions more reliable.

The determination of turning points and segmentation of raw data can be achieved by such popular trading rules as moving average crossovers, moving average convergence-divergence, stochastics, the relative strength index, rate-of-change analysis, etc. The initial goal is to segment the

market time series data into up and down semi-cycles using a conventional, well-mastered technique. The second step of the approach can be a major challenge.

DDI CALCULATION

The DDI is based on the cumulative price change (CPC) indicator, which estimates the strength of price changes within the extracted semi-cycles. The CPC is calculated as a sum of differences between the current and previous prices over the given semi-cycle. Unlike a conventional rate-of-change indicator that is calculated over a window of data with a moving starting point and a preset constant estimating period, the CPC has a fixed starting point and, there-

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fore, a variable estimating period. The starting point and estimating period are determined by reversal signals that are generated by a given trading rule.

For example, if the current semi-cycle was determined to have started 10 days ago, the CPC will be calculated based on the price of that day. It will continue to be based on that price as time goes by, until the reversal signal determines a new semi-cycle has begun.

The CPC can be expressed in absolute or in percentage format. Percentage CPC displays the difference between current price and the price in the starting point of the given semi-cycle as a percentage of the starting price. The main advantage of the percentage CPC is it permits the analysis to compare the strength of changes in different securities, regardless of their absolute price levels.

The DDI, in turn, reflects not only the change of the price in relation to its starting point within the given semi-cycle, extracted by a given trading rule, but also the convergence/divergence between directions of the reversal signal and the actual price movement. The DDI compares the reversal signal and the CPC to determine when it is appropriate to enter the trade.

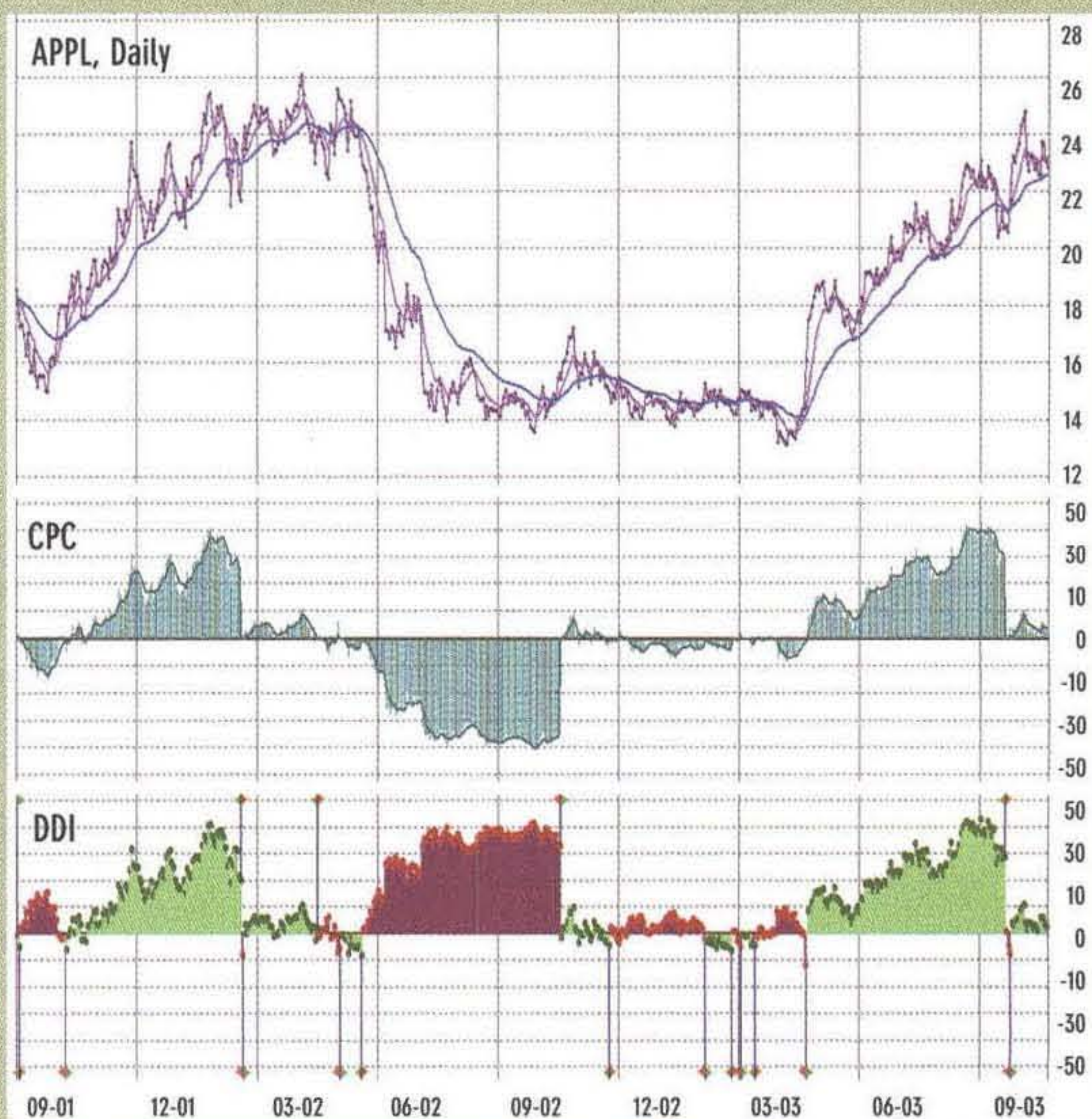
The DDI measures whether the price and indicator movements match or don't match, sorts them and depicts the results in a standard oscillator format. If the directions of the price change and the reversal signal converge — that is, they move together — the percentage differences between the current prices and the prices at the starting points of the semi-cycles are plotted above a zero line as positive values. If the price direction diverges from the direction of the reversal signal, the percentage differences are plotted below a zero line as negative values.

READING THE DDI

The interpretation of the DDI is

AN APPLE A DAY

The CPC and DDI indicators are used here to determine the effectiveness of the 10- and 40-period EMA crossover on AAPL. The DDI helps make a decision if the given reversal is the beginning of a developing trend or just a trap, a false start. It also estimates the performance of developing trends in the process.



Source: Allicorn

straightforward. Positive values denote that the price change direction matches the reversal signal direction; this can be considered promising for the continuation of the current trend. Negative values denote a divergence between price and the indicator; this can be taken as a warning sign that there is enhanced risk in a current position. The DDI helps a trader decide whether a particular reversal, generated by a trading rule, should be qualified as a start of potential trend, or whether it should be recognized as a signal of unprofitable transition, or congestion phase.

This interpretation is based on frequent observations in a stock market

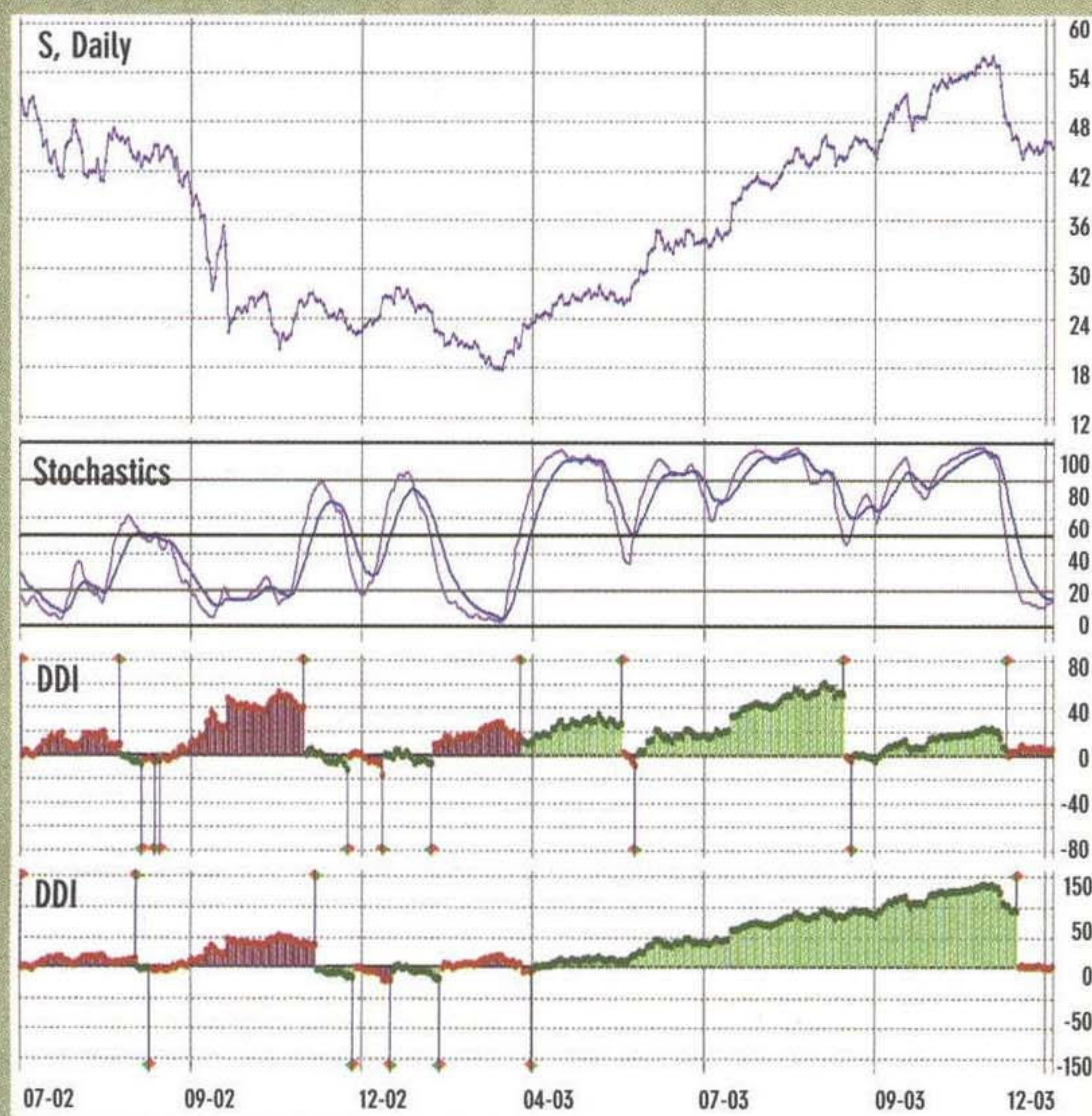
time series. The readings of divergences after two points from when a reversal signal was generated are valid in more than 70% of the cases. If you apply more rigid rules, the reliability of the criteria will increase to above 80%.

For a trader it is important not only as an identification of promising trading opportunities and timing entry and exit points, but as a control of the current values of potential profit and losses. The DDI can help if we interpret its positive values as profit, and its negative values as losses. In this sense, the DDI could be described as a profit/loss control indicator.

By way of illustration, "An apple a day" (above) shows the DDI applied

COMPARISON SHOPPING

Here, the DDI is used to evaluate the performance of fast and slow stochastic oscillators, revealing merits and disadvantages in both of them.



Source: Alticom

to the stock price of Apple Computer (AAPL). A 10-day and 40-day period EMA crossover is applied to the price chart itself. The CPC is charted next, measuring the extent of the price change in the current semi-cycle as defined by the EMA crossover. Next is the DDI, which is measuring the divergence or convergence of the CPC and the indicator. Reversal signals are marked on the DDI with green and red flags, the upward movement of the price is colored in green, and the downward movement in red.

Winning and losing trades, and conditional percentage profit and losses, are easily identifiable. The chart gives examples of typical divergence zones, namely, a transition phase between up and down semi-cycles

(lasting for three months from the end of February 2002 to the end of May 2002) and a six-month congestion period of the price movement (November 2002 through April 2003). They are indicated by conditional losses, which are part and parcel of such "dead" zones.

"Comparison shopping" (above) shows how the DDI lets you compare the performance of two different trading support systems on Sears, Roebuck & Co. (S). This example compares trading based on a 20-day fast stochastic with trading of a stochastic slowed by a 10-period EMA.

The early recognition of promising trading opportunities can be achieved with some concessions. If you increase the sensitivity of the system by using a

fast stochastic, you can catch early reversal signals, but the number of reversal signals, including false signals, will increase. If you decrease the sensitivity of the system by using a slow stochastic, the number of false signals will decrease, but they will lag and you miss critical entry points. As in any decision-making procedure you face a trade off between sensitivity and reliability; it is up to you to choose appropriate parameters of a trading support system.

The secret to consistent and successful trading is consideration of risk. Reducing losses is more important than trying to achieve maximum profit. Proper risk control combined with an efficient trading rule improves overall trading performance. A DDI-based trading strategy helps the trader reduce losses and enhance profits by skipping non-efficient "dead" zones and focusing only on the most important trends.

The DDI, based on the two-step filtering technique and the CPC indicator, is a smart error detection and correction tool. The main principle of the DDI is concerned with identifying the convergence/divergence between directions of the reversal signal and the actual price change. The convergence/divergence serve as an error detection and correction mechanism that makes efficient control of price performance over time possible. Its quantitative evaluation of trend activity provides a firm basis for comparative analysis of various securities to each other or against any index, reducing risk and making trading decisions more reliable. **FM**

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