The MACD line is the 12-day exponential moving average (EMA) less the 26-day EMA. Typically closing prices are used. Exponential moving averages are similar to simple moving averages, except that more weight is given to the latest data. As a result, this type of moving average reacts faster to recent price changes than a simple moving average. For more information on exponential moving averages, see the Spreadsheet Corner article from the Third Quarter 2010 issue of CI, available at www.computerizedinvesting.com.

The signal line is a nine-day EMA of the MACD line and is plotted along with the MACD line on a chart. It is the interaction between these two lines—crossovers and divergences—that traders look for.

Lastly, the MACD histogram measures the difference between the MACD line and the signal line. It is positive when the MACD line is above the signal line and negative when the signal line is above the MACD line.

The 12-, 26- and nine-day settings are the typical settings used for the MACD. However, you can adjust the lengths to fit your trading style. Furthermore, you can use the MACD with daily, weekly or monthly charts.

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Interpreting MACD

As implied by its name, the MACD is concerned with the convergence and divergence of the two exponential moving averages. Convergences occur when the two lines move toward each other, while divergences take place when the two moving averages move away from each other. The MACD line oscillates above and below the "zero" line or centerline. The MACD is above the centerline whenever the 12-day EMA is above the 26-day EMA. Crossovers above or below the centerline take place when the 12- and 26-day EMAs cross. A rising MACD line means the 12-day EMA is diverging fur-
ther from the 26-day EMA, which indicates rising upside momentum. The MACD falls as the 12-day EMA diverges further below the 26-day EMA. This indicates that downside momentum is increasing.

Figure 1, which is a chart of Terra Nitrogen Co. (TNH) from StockCharts.com, shows the interaction between the moving averages and their impact in the MACD.

The yellow shaded area depicts when the MACD line is negative, or when the 12-day EMA is below the 26-day EMA. The MACD line became negative in September 2011, as indicated by the black “cross” arrow in the lower pane. As the 12-day EMA fell further below the 26-day EMA, the MACD line fell deeper into negative territory. In October 2011, the 12-day EMA rose above the 26-day EMA, which resulted in the crossover of the MACD line into positive territory (the orange shaded area).

To Be Continued

In this installment of Technically Speaking, we began a discussion of the moving average convergence-divergence indicator. It takes a simple trend-following indicator—the moving average—and turns it into a momentum oscillator.

In the 2012 Third Quarter issue of Computerized Investing, we will expand on this discussion to cover how traders might use the MACD.

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