

I Can't Help It!

Falling In Love, With Trends

Regardless of what type of trader you are, trends are always a great find. When you find them, you want to hold on to them forever, but they can run away from you very quickly and easily. Don't get too attached to them. Find strong ones, take advantage of them, and then let them go.



Trend is the most essential concept in technical analysis and forms the backbone for many important technical analysis methods. Many popular technical indicators are referred to as trend-followers since they are designed to detect the strength of a trend. The moving average convergence/divergence (MACD) intends to signal bullish or bearish trends by using a crossover method. The relative strength index (RSI), another technical indicator, is designed to detect a trend in oversold or overbought conditions. Then there are major trend reversal patterns, which aim to determine when a reversal might take place by using a series of price patterns.

THE IMPORTANCE OF TRENDS

When you think of a *trend*, the first thought that may come to mind is the direction of stock prices. It's difficult to find a precise definition for trend, and one of the reasons for the vagueness of the definitions could be that trend requirements differ from person to person. For example, to a daytrader, a trend may mean something different than to an investor. That's because the daytrader goes after small profits that can only be captured in intraday trends.

Without a precise definition, it is almost impossible for us to know how and to what extent a trend can help us. In their

1948 book *Technical Analysis Of Stock Trends*, Robert Edwards and John Magee developed a good framework for stock trend analysis. As a measure for primary trends, they suggested using a 20% price advance or decline. Given that we can only make or lose money when price moves up or down, why not use the magnitude of price advances or declines as a measurement of trend? That could make it precise and meaningful. In this approach, based on your needs, you could choose your own trend measures, which could be values such as 20% or 10%.

For this article, I define *stock trend* as a string of stock prices isolated by a single precise trend measure (or "trend setting"). There are two types of trends: uptrends and downtrends. Say you choose 20% as your trend measure. An uptrend is recognized when prices move upward 20% or more; a downtrend is recognized when prices move downward by 20% or more.

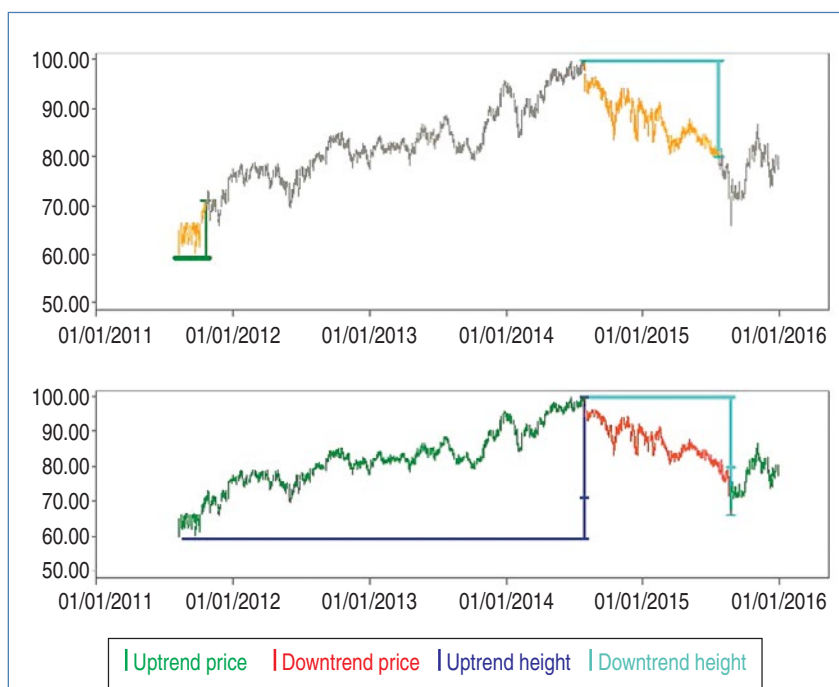


FIGURE 1: MEASURING TRENDS. Here you see two different methods for measuring trends. In the top chart you see where the up and down trends exceeded their 20% trend measure. In the bottom chart you see the traditional high–low method. Using the 20% trend measure exposes the strength of the uptrend.

by Kevin Luo

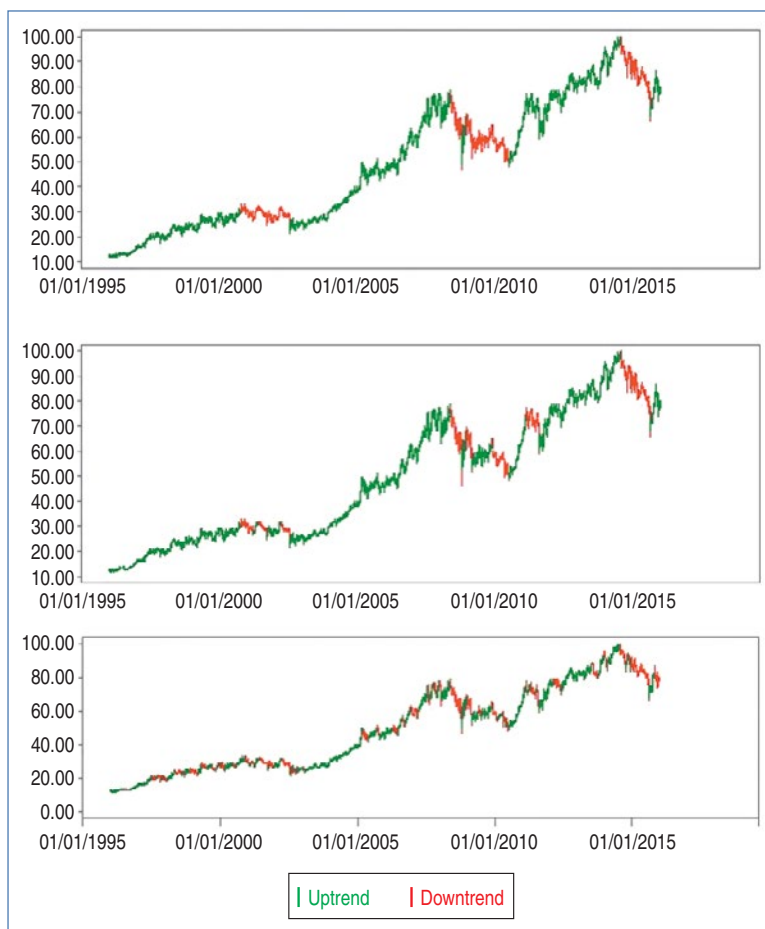


FIGURE 2: USING DIFFERENT TREND SETTINGS. Here, the three different charts represent the same dataset, but the top is based on a 30% trend setting, the middle on a 20% setting, and the bottom on a 10% trend setting. The height of the trend is greatest in the 30% trend setting.

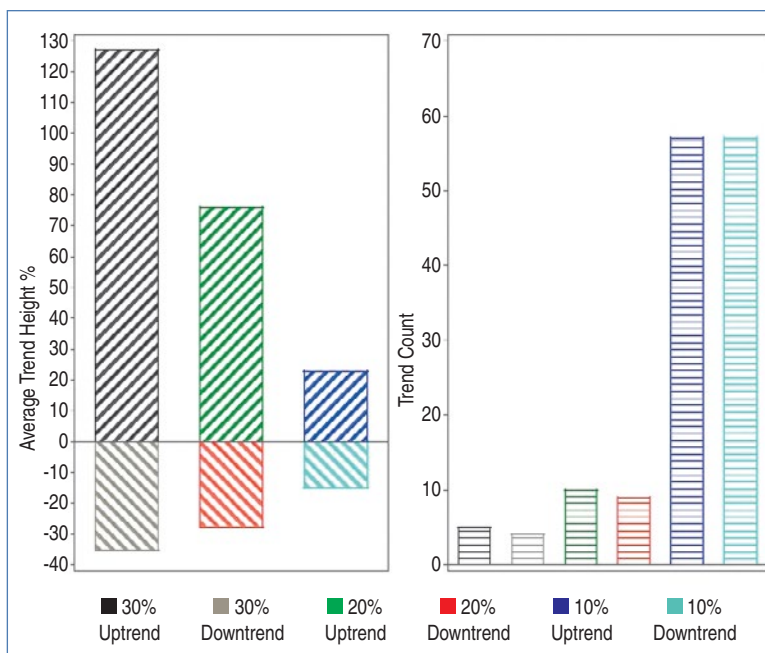


FIGURE 3: TREND HEIGHT. On the left is the average trend height percent and on the right is the trend count. For the 30% trend set, an uptrend typically extends its trend measure by 96.95%; for the 20% and 10% trend set, the extension is 56.14% and 12.85% on average, respectively. The trend count chart shows how many stock trends were isolated from the XOM dataset under different trend settings.

Since a trend is about the magnitude of price advance or decline, trend height is an important factor for trend analysis.

TESTING TRENDS

I backtested this trend measure to see if it could be useful. I employed an automated software system to isolate stock trends from a historical dataset for Exxon Mobil Corp. (XOM). I calculated trend statistics, generated output summaries, and plotted graphs for review. The dataset consists of the historical daily prices for 20 years ending on December 31, 2015.

Before going further, I'll give you a clear view of how stock trends are formed with the 20% trend setting. In Figure 1 you see some isolated stock trends in XOM. After bottoming on August 9, 2011, price started to move up and beyond the 20% trend measure on October 21, 2011. The array of prices (in orange color) above the horizontal green line is the price string on which the uptrend was formed. The vertical green line is the 20% trend measure for the specific trend. From July 29, 2014 to July 23, 2015 (the prices under the horizontal cyan line), XOM fell below the 20% downtrend measure (vertical cyan line) and reversed its prevailing trend. With this information, I now know the top and bottom of the trend. I am also able to isolate it from the dataset.

The bottom chart in Figure 1 is a trend chart based on traditional method of measuring trends, which is based on the high–low price. The uptrends are displayed in green and downtrends in red. The vertical distance between the trough and peak of a trend is called *trend height*, an important statistic for trend analysis. On the chart, the vertical blue lines that connect peak and trough levels represent the uptrend and downtrend height, respectively.

In Figure 2 are three trend charts representing the XOM dataset. The charts were generated based on 30%, 20%, and 10% trend settings from the top to bottom, respectively. Since a trend is about the magnitude of price advance or decline, trend height is an important factor for trend analysis. In Figure 3 you see the averages of trend height for all three sets of isolated trends. The *average trend height* chart on the left shows that the average uptrend height is 126.95%, 76.14%, and 22.85% for the three isolated uptrend sets respectively—30%, 20%, and 10%. The average downtrend height is 35.18%, 27.59%, and 15.11% for each of the downtrend sets, respectively.

I should point out that due to mathematical convention, the uptrend height can be infinite because of positive numbers, but the height of a downtrend is limited to

100%. For example, we have seen Apple Inc. (AAPL) stock climbing thousands of percentage points but never seen a stock falling over 100%. This is because of the rules of mathematical calculations. Because of this it doesn't make much sense to compare uptrends and downtrends.

From what I have observed, it appears as though the typical uptrend runs much higher than its trend measure before reversing. For the 30% trend set, an uptrend typically extends its trend measure by 96.95%, which is the price range after the trend is confirmed. For the 20% and 10% trend set, the extension is 56.14% and 12.85% on average, respectively.

The *trend count* refers to the total number of isolated trends in a dataset. It provides additional statistics for the trend profile. The trend count chart, on the right in Figure 3, shows how many stock trends were isolated from the XOM dataset under different trend settings.

The trend magnitude represents huge trading opportunities, which you should take advantage of. In a separate study, I successfully backtested stock trends to improve performance of popular strategies such as MACD, RSI, and candlestick reversal patterns. In the study, I formulated a sample strategy to demonstrate how to capitalize on the opportunities.

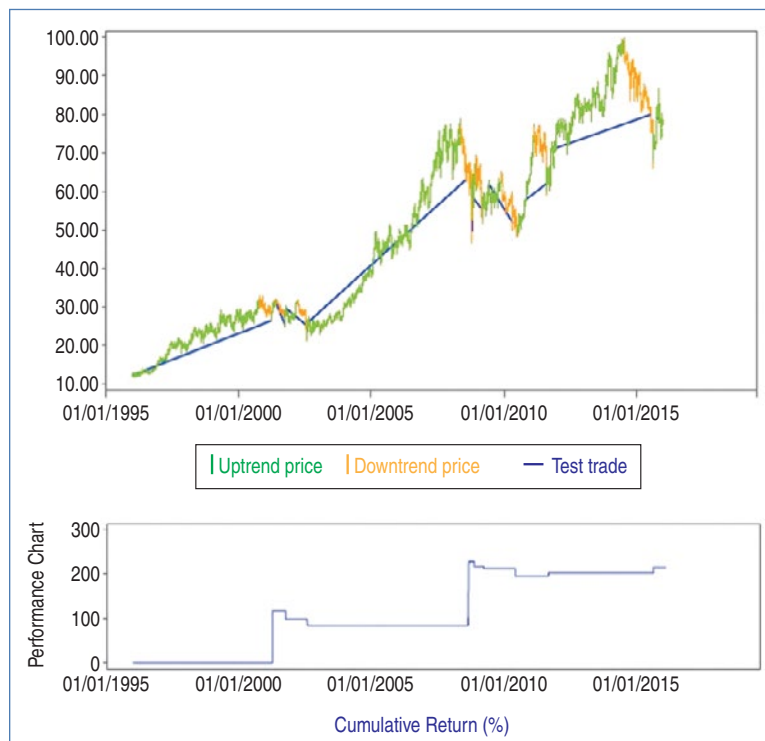


FIGURE 4: BACKTEST RESULTS. Test trades are displayed on the top chart and the cumulative returns on the bottom. There were 10 trades in total. The performance chart displays a cumulative return line that makes changes at the end of a trade, in percentage terms. The ending cumulative test return is 213.70%, or 21.37% on per-trade return basis.

TEST RESULTS

The strategy is extremely simple—you buy at the downtrend reversal and sell at the following uptrend reversal. There is no target or stop-level involved. I performed a backtest for the 20% trend set. In the test, the software buys at all downtrend reversals and sells at the corresponding uptrend reversal points. After running the test, the software summarizes the test

trades and generates graphs showing the test outputs. In Figure 4 you see the test trades on the top chart and the cumulative return performance chart at the bottom. There were 10 trades in total. The blue line connects the buy and sell price of a test trade. The performance chart displays a cumulative return line that makes changes at the end of a trade, in percentage terms. The ending cumulative test return is 213.70%, or 21.37% on per-trade return basis for the XOM trend set.

GO AFTER THE TRENDIEST

You can formulate more effective trading strategies using this approach. The key is to find stocks that match up well with this technique. Throw in a few other methods such as candlestick reversal patterns or other indicators to optimize this trend technique even further. But remember, trends have a limited lifetime. Even if you find one that you match up well with, don't get attached to them.

Kevin Luo is an independent technical analysis researcher who focuses on automated price trend-related analysis and generation of trading strategies. He and his project partners

developed an automated trend analysis and backtesting system for high- and low-frequency trading. He may be reached via email at kxluopub@gmail.com.

FURTHER READING

Edwards, Robert D., and John Magee [2012]. *Technical Analysis Of Stock Trends*, 10th ed., W.H.C. Bassetti, ed., CRC Press. (First published in 1948.)

Luo, Kevin [2015]. "The RSI & Price Trends," *Technical Analysis of STOCKS & COMMODITIES*, Volume 33: June.

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Charts were created using custom charting software in R by Kevin Luo.

