Leave The Trend At Home

Profit-Taking And Resets

Part 2: Short-Term Trading

Trends can be useful for longer-term trades but what about short-term trades? Do they work just as well? Here's a look at a trading system that can be applied successfully to shorter-term trends.

by Perry J. Kaufman

Last month in part 1 we looked at profit-taking and resets for long-term (macro) trend systems. The overwhelming result was that profit-taking reduced returns by exiting too soon. We looked at ways to reset the trade, hopefully at a better price, but the strongest markets don't retrace; therefore, they don't give you a chance to reenter. You tend to miss the best trends.

Offsetting that was less market exposure. In some cases, the returns per day were much better with profit-taking, but the total returns far less. While I know of some successful firms that take profits using a macrotrend system, I don't do that. The loss of returns seems to far outweigh the savings in risk. There are other ways to offset risk.

SHORT-TERM TRADING IS DIFFERENT

While macrotrend trading tries to get on the right side of economic policy, driven mostly by interest rates, short-term trading capitalizes on price noise, temporary reactions to news, earnings announcements, brief supply interruptions—essentially anything that will move prices for a day or two, but is not structural and does not cause a lasting change.

The most popular techniques that are used to exploit these price moves are:

- *Arbitrage*, for example, buying Wal-Mart (WMT) and selling Amazon (AMZN) when AMZN announces good

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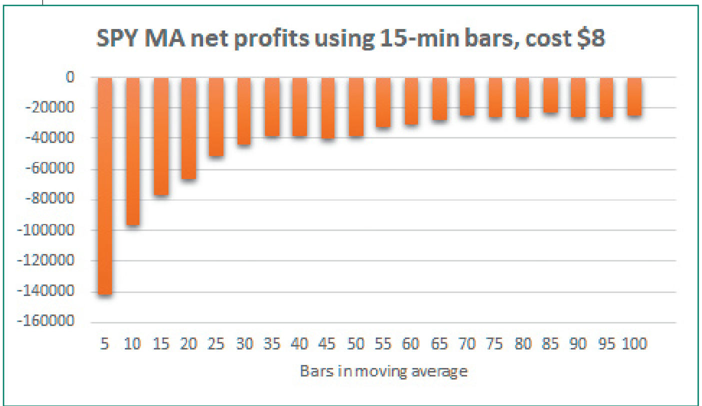

FIGURE 1: NET PROFITS BASED ON A MOVING AVERAGE APPLIED TO 15-MINUTE SPY DATA FROM 2010 TO MID-AUGUST 2017. Here you see the profits from applying a moving average using a cost of $8 per trade.

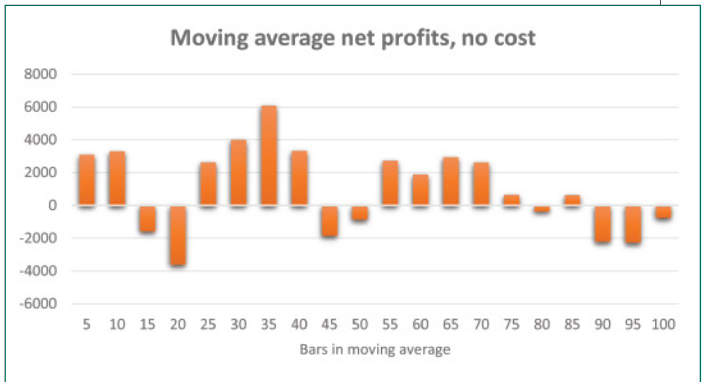

FIGURE 2: NET PROFITS BASED ON A MOVING AVERAGE AT NO COST. As you can see, the results are not consistent.

earnings a day or two ahead of WMT. The profit comes when Wal-Mart also has good earnings and catches up to Amazon. It is common for two companies in the same retail space to have similar performance in the same quarter.

- *Outright mean reversion*—buying or selling a stock that has made a big move down or up, expecting it to "revert to the mean," or give back a good deal of the move as traders become more rational.
- *Price patterns*, such as stochastic divergence, three-day cycles, or high-volume reversals. These are specific rules that identify high-probability situations, often resulting in short-term profits.

Why trends don't work for short-term trading

Trends lag. A 20-day moving average has a lag of 10 days. A 10-bar average, applied to 15-minute bars, has a lag of 75 minutes. That's too long for a short-term trade. If you need 75 minutes for an entry signal and 75 minutes to get out, you've lost 2 ½ hours of a 6 ½-hour trading day. That's 38%. Those results are shown in Figure 1 (cost $8 per trade) and Figure 2 (no cost) for SPY using 15-minute data from 2010 to August 2017.

Note that the test range of 5 to 100 bars of 15-minute data is equivalent to one hour and 15 minutes up to four days, which covers what we normally think of as a short-term trade. To give the trend more of a chance, you could try using a breakout instead of a moving average, because a breakout tends to react faster to price changes normally associated with short-term trading. In Figure 3 we see that the breakout pattern is slightly different, with more profits in the shorter trends, but about the same maximum and minimum net. That means, after costs, we'll see the same net losses everywhere.

If we increase the calculation periods, we can get the equivalent to a daily moving average. In Figure 4 we can see a more orderly pattern where the longer calculation periods are profitable, while the shorter ones are not.

Summing up the usefulness of the trend

As a short-term trading system, the trend doesn't work for SPY, nor for most markets, but that doesn't mean it's not useful. If we use a short-term breakout as filter, we don't incur costs directly. We could also use the longer-term trend as a filter, a more reliable choice, but it may keep us out of trades for a long time if we're biased to the long side. Let's leave the trend for

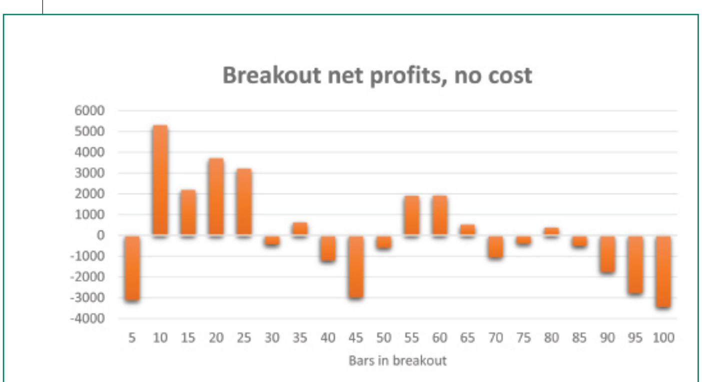

FIGURE 3: SPY, 15-MINUTE DATA, NET PROFITS APPLYING A BREAKOUT STRATEGY. Results are better in the short term but similar overall.

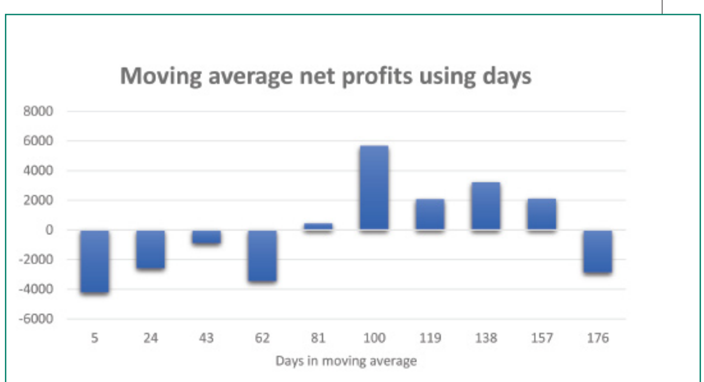

FIGURE 4: SPY, 15-MINUTE DATA, NET PROFITS BASED ON LONGER CALCULATION PERIODS. There is a more orderly pattern where the longer calculation periods are profitable, while the shorter ones are not.

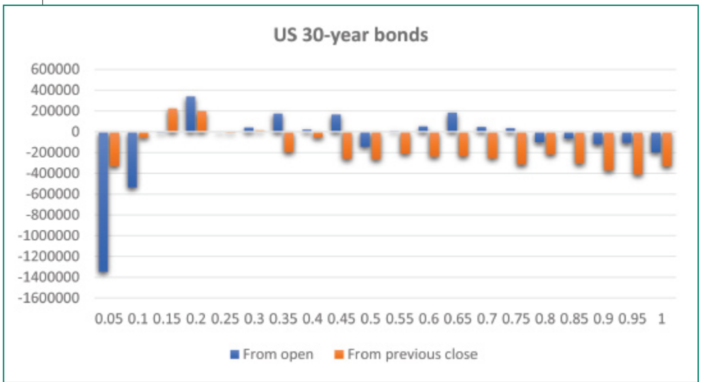

FIGURE 5: INTRADAY BREAKOUT STRATEGY APPLIED TO US BOND FUTURES FROM 2010. The close and open yielded similar, poor results. Bonds have small moves, so the cost is a serious obstacle to profits.

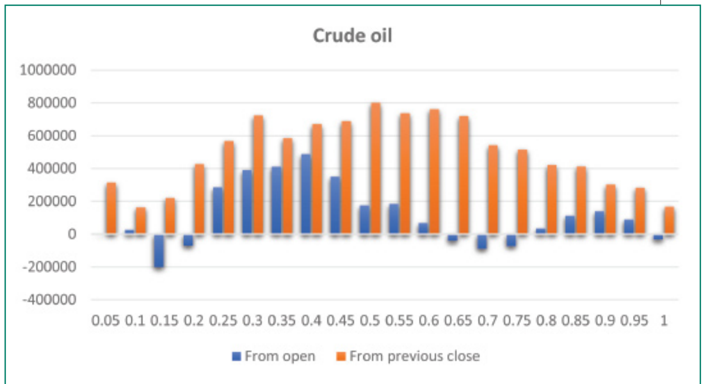

FIGURE 6: INTRADAY BREAKOUT STRATEGY APPLIED TO CRUDE OIL FUTURES FROM 2010. Crude oil was far better with the previous close, and more volatility offset any cost issues.

another time and see if we have a successful strategy without it, and how profit-taking helps or hurts short-term trading.

INTRADAY BREAKOUT STRATEGY

We'll use one of the basic intraday strategies, the opening range breakout (ORB), but we'll measure the breakout from both the previous close and current open. We'll get more trades using the previous close because a gap opening is likely to trigger a signal in the direction of the gap. It also might prove to be less reliable. One advantage of using the open as the basis for the breakout is that it has no memory of the past and will be uncorrelated to other systems. The disadvantage is that it reduces the part of the daily range that would be our profit.

The rules for this strategy will be to buy when the upper threshold is penetrated, sell when the lower one is penetrated, and exit at the close of the day. We can buy and sell on the same day, reversing our position as many times as it occurs. We set the thresholds based on the 20-day average true range (not the 15-minute bars):

Upper threshold = Previous close or today's open + factor × ATR(20)

Lower threshold = Previous close or today's open - factor × ATR(20)

We tested three representative futures markets, all beginning in 2010, and all with slightly different bar sizes, US 30-year bonds (US, 25-minute bars), the emini S&P (ES, 30-minute bars), and crude oil (CL, 20-minute bars), and all with $8 per contract per side cost. Results are shown in Figures 5 through 7. All favor using the previous close, implying there is a trending component to price moves.

In the case of bonds, which was the most trending of the futures markets tested, both the close and the open yielded similar, poor results. Bonds have small moves, so the cost is a serious obstacle to profits. Crude oil was far better with the previous close, and more volatility offset any cost issues. The S&P favored larger breakouts due to its intrinsic noise, even though the data began in 2010, a period that was unusually trending for equities.

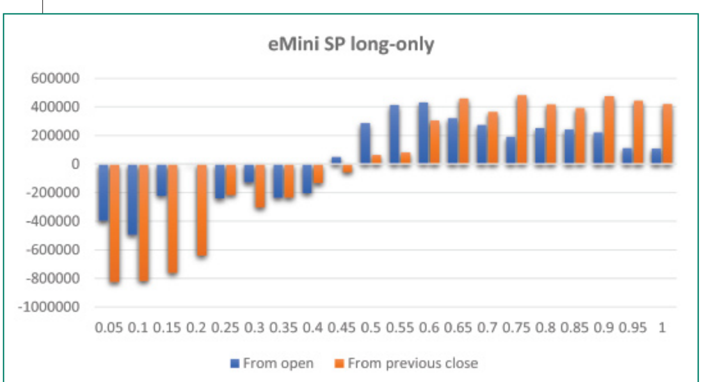

FIGURE 7: INTRADAY BREAKOUT STRATEGY APPLIED TO S&P FUTURES FROM 2010. The S&P favored larger breakouts due to its intrinsic noise, even though the data began in 2010, a period that was unusually trending for equities.

BREAKOUT RESULTS

Having defined the intraday trading system, we need to go back to the original question, "Should we use profit-taking?" Intuitively, we know that short-term price moves have a large degree of noise. That explains why trends don't work well and why we expect that taking profits will capture returns that could be lost due to fast reversals. Let's see if that's true. First, we'll define the entry rules using the open as the basis for the breakout threshold. Even though the previous close was more profitable, using the open has less correlation and makes a more attractive candidate for diversification. We'll pick a breakout threshold from the center of the successful areas in Figures 5, 6, and 7. Note that the markets with less noise have smaller breakouts, and for the S&P we only take long positions.

	All Trades	Long Trades	Short Trades
US 0.2 — US 30-year bonds (breakout 0.2)			
Total Net Profit	$391,859	$443,723	($51,864)
Profit Factor	1.07	1.09	0.95
Total Number of Trades	1,562	1,277	285
Percent Profitable	48.6%	49.5%	44.6%
Avg. Trade Net Profit	$251	$347	($182)
Max. Shares/Contracts Held	38	38	38
CL 0.4 — Crude oil (breakout 0.4)			
Total Net Profit	$328,668	$338,370	($9,702)
Profit Factor	1.08	1.08	0.61
Total Number of Trades	897	893	4
Percent Profitable	50.4%	50.4%	50.0%
Avg. Trade Net Profit	$366	$379	($2,426)
Max. Shares/Contracts Held	37	37	18
ES 0.8 — emini SP (breakout 0.8)			
Total Net Profit	$118,942	$118,942	$0
Profit Factor	1.13	1.13	n/a
Total Number of Trades	252	252	0
Percent Profitable	54.8%	54.8%	0.0%
Avg. Trade Net Profit	$472	$472	$0
Max. Shares/Contracts Held	64	64	0

FIGURE 8: TEST RESULTS USING ONLY THE BREAKOUT THRESHOLD, EXITING AT THE END OF DAY. Bonds and crude can go long and short, even on the same day, but the S&P can only go long.

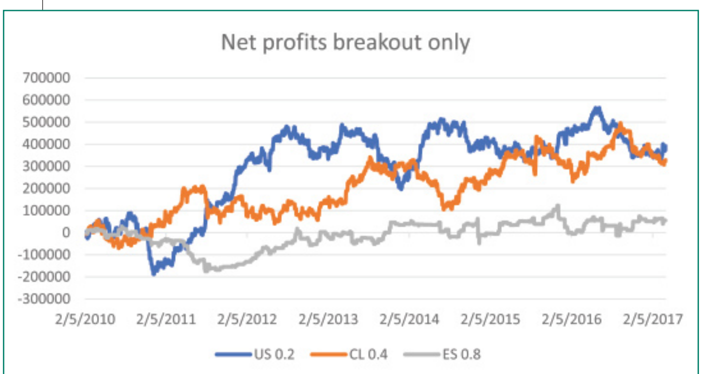

FIGURE 9: CUMULATIVE NET PROFITS USING THE BREAKOUT ONLY, DATA BEGINNING 2010. Overall results are profitable but not impressive. Only crude oil shows an upward trend in net profits, and that with some performance volatility.

- Bonds, breakout entry at the open ±0.2
- Crude oil, breakout entry at the open ±0.4
- S&P, breakout entry at the open +0.8 (long-only breakouts)

The table in Figure 8 and the chart in Figure 9 show the TradeStation results using the selected breakout thresholds, exiting at the end of the day. Bonds are profitable only on the long side, even though there were periods of rising rates. Crude oil also

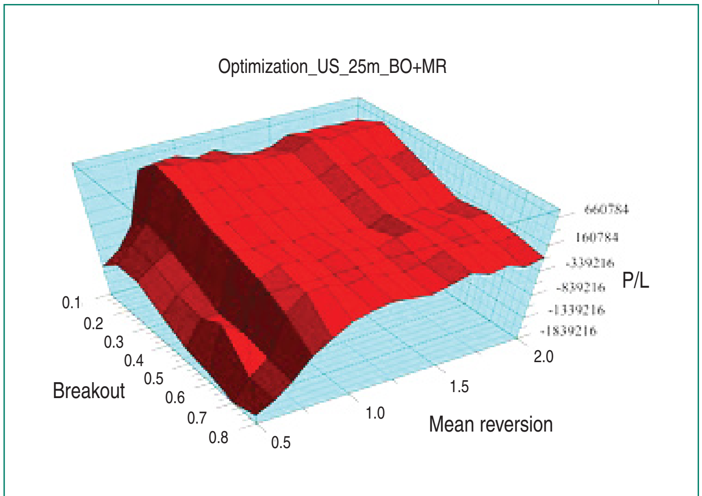

FIGURE 10: BONDS (25-MINUTE BARS), TEST OF BREAKOUT AND MEAN-REVERSION THRESHOLDS

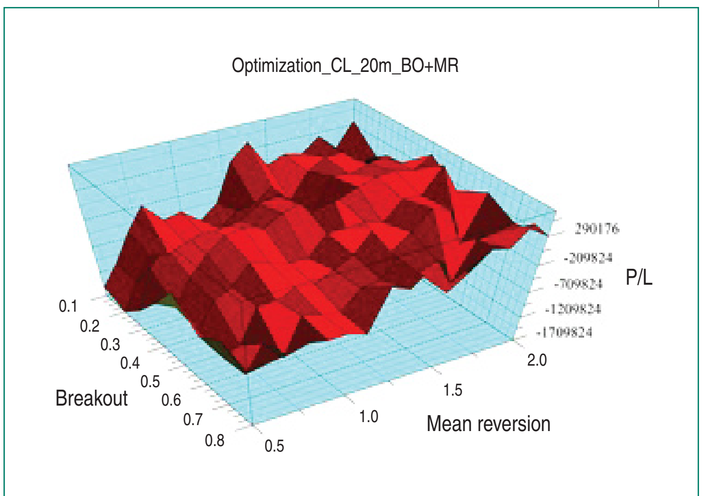

FIGURE 11: CRUDE OIL (20-MINUTE BARS), TEST OF BREAKOUT AND MEAN-REVERSION THRESHOLDS. It may not be so smooth but it has a clear pattern clustering at 0.4 breakout and 1.8 profit level and reversal (toward the center right).

profited only on the long side, although there were very large swings in both directions and prices are now low.

Overall, results are profitable but not impressive, as seen in Figure 9. Only crude oil shows an upward trend in the net profits, and that with some performance volatility.

Large intraday moves up are not sustained and there is more to be made by shorting when that initial move runs out of steam.

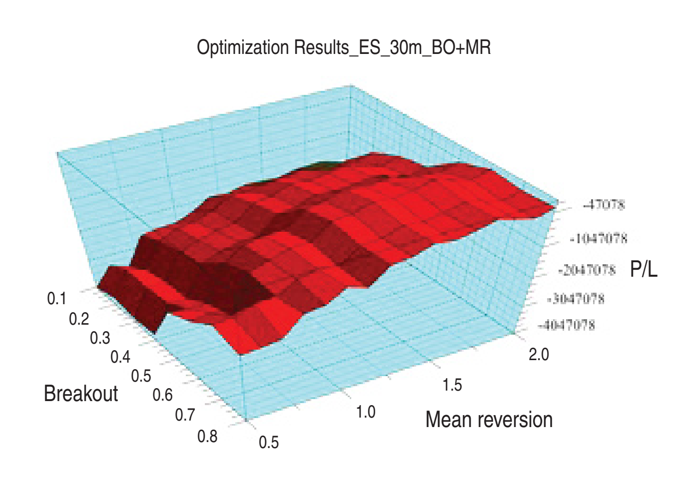

FIGURE 12: EMINI S&P (30-MINUTE BARS), TEST OF BREAKOUT AND MEAN-REVERSION THRESHOLDS

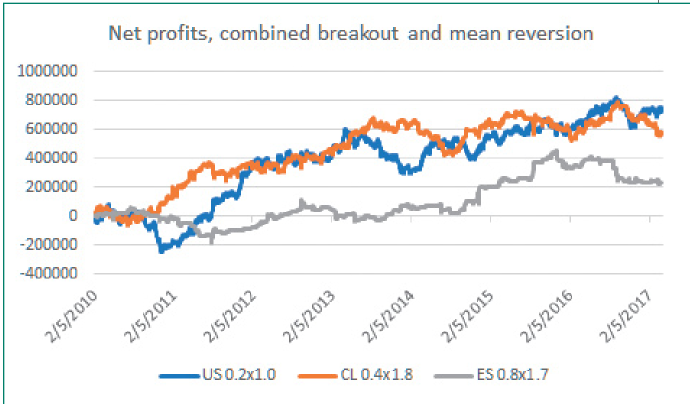

FIGURE 14: CUMULATIVE NET PROFITS OF COMBINED BREAKOUT AND MEAN-REVERSION STRATEGY. Net profits (even with $8 per contract) are at least doubled, as are the number of trades. The biggest difference is the profits in the short sales. In all three markets, the short sales were surprisingly good, in terms of reliability and profit factor. The S&P was the most outstanding, with a 1.46 profit factor.

Using profit-taking two ways

We now come to profit-taking. But exiting on profits must also mean there is little expectation of further gains for the day. If so, why not go short at that level? We then can buy on an upward breakout, reverse at the upper profit level, and reverse again to long at the lower profit level. Sounds like fun! Even better if it's profitable.

To find the profit-taking level, we programmed these reversal rules into TradeStation, then tested for the breakout threshold and the profit level. Naturally, the best breakout threshold remained the same as the original test, but the profit levels varied. Figures 10, 11, and 12 show the results as a three-dimensional surface plot with the left axis as the breakout, the right axis as the profit-reversal threshold, and the vertical axis as the resulting net profit.

	All Trades	Long Trades	Short Trades
US 0.2 x 0.8 — US 30-year bonds (BO 0.2 x MR 0.8)			
Total Net Profit	$783,180	$475,879	$307,301
Profit Factor	1.08	1.07	1.1
Total Number of Trades	3,793	2,375	1,418
Percent Profitable	53.5%	53.5%	53.5%
Avg. Trade Net Profit	$206	$200	$217
Max. Shares/Contracts Held	38	38	38
CL 0.4 x 1.8 — Crude oil (BO 0.4 x MR 1.8)			
Total Net Profit	$581,106	$474,516	$106,590
Profit Factor	1.12	1.11	1.19
Total Number of Trades	1,169	982	187
Percent Profitable	52.1%	51.6%	54.6%
Avg. Trade Net Profit	$497	$483	$570
Max. Shares/Contracts Held	37	37	37
ES 0.6 x 1.7 — emini SP BO 0.8 x MR 1.7)			
Total Net Profit	$291,079	$101,664	$189,415
Profit Factor	1.09	1.04	1.46
Total Number of Trades	867	707	160
Percent Profitable	50.1%	49.9%	50.6%
Avg. Trade Net Profit	$336	$144	$1,184
Max. Shares/Contracts Held	64	64	62

FIGURE 13: STATISTICS FOR THE COMBINED BREAKOUT AND MEAN-REVERSION REVERSAL STRATEGY

The bond and S&P charts are smooth, which is what we would like to see, while crude is messy. Even then, crude does have a clear pattern clustering at 0.4 breakout and 1.8 profit level and reversal (toward the center right). Results of the combined strategy are shown in the table in Figure 13.

Comparing the original results of just the breakout (Figure 8) with the combined strategy (Figure 13), we see that net profits (even with $8 per contract) are at least doubled, as are the number of trades (Figure 14). The biggest difference is the profits in the short sales. In all three markets, the short sales were surprisingly good in terms of reliability and profit factor. The S&P was the most outstanding, with a 1.46 profit factor.

The S&P is the easiest to understand because of the high degree of price noise. These results say that large intraday moves up are not sustained and there is more to be made by shorting when that initial move runs out of steam. Bonds are more difficult to understand because they are not normally volatile. But around the Fed announcements and employment statistics, they show added volatility. Those must be the days in which both breakout and mean-reversion profits occur.

The rest is up to you

What you've seen here is a fast look at how profit-taking can be used, and should be used, for intraday trading. That means it's best for daytrading and short-term trading, the price window where noise dominates trend. While each market used different parameters and different bar sizes, they were consistent with regard to the amount of noise we attribute to those markets. The more noise, the larger the initial breakout and the larger the reversal threshold.

You'll want to test this yourself with your preference for data bars—5 to 30 minutes for daytrading—and you might use the previous close rather than the open. For that purpose, the TradeStation code that was used to produce the results can be found at the STOCKS & COMMODITIES website (Traders.com) in the *S&C Article Code* section. Note that there are other features in the program. For example, you can restrict trades to those days following an inside day or compression.

I hope you'll have fun with this and be profitable. And about resets, they don't apply here.

Perry Kaufman is a trader and financial engineer. He is the author of many books on trading and market analysis, including Trading Systems And Methods, 5th ed. *(with the first edition published in 1978 as a seminal book in the field of technical analysis), and* A Guide To Creating A Successful Algorithmic Trading System *(2016). For questions or comments, please go to www.kaufmansignals.com.*

FURTHER READING

Kaufman, Perry J. [2018]. "Profit-Taking And Resets, Part 1: Trend-Following," *Technical Analysis of* STOCKS & COMMODITIES, Volume 36: January.

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