

TECHNICAL ANALYSIS OF STOCKS & COMMODITIES™

TAMING THE EFFECTS OF WHIPSAW

Improve trading performance with a whipsaw filter 8

THE DELTA-DELTA CRUDE STRATEGY

Taking advantage of contango and backwardation 18

FIXED STOP-LOSS AND PERCENTAGE STOP-LOSS IN COMPARISON

Fixed vs. variable 26

INTERVIEW

Ari Wald, CFA, CMT 32

SMALL-CAP VALUE ETFs: A SMART BET FOR 2024?

What to consider if interest rates fall 38



MARCH 2024

\$6.99

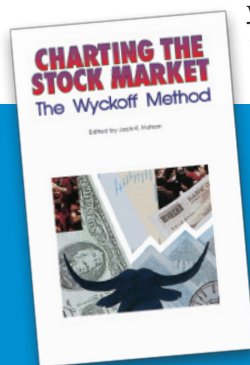


TAKE CONTROL OF YOUR TRADING WITH THE PROFESSIONAL TRADERS' STARTER KIT™



THE FOREMOST COLLECTION FOR TRADERS
This massive collection packages the best tools for trading and investing in *any* market!

1. **Technical Analysis of Stocks & Commodities**, the Traders' Magazine™. The premier magazine for technical analysis. You'll get **five years** — 65 issues — including our annual Bonus Issues with our Readers' Choice Awards.
2. **S&C Digital Edition**. Recent complete issues available in their entirety as PDFs for you to either download or read directly in your browser. No more waiting for the mail to deliver your magazine! You will still receive the printed magazine unless you opt for a digital-only subscription.
3. **Complete Digital Archive**. The complete archives as PDFs — more than 17,000 pages — from *Technical Analysis of Stocks & Commodities* from 1982 through the present. The articles can be read in your browser or download to your computer (or any device with Internet access and the ability to read a PDF)!
4. **Traders.com Advantage**, premium website content delivering real-world technical analysis to you! You'll get **five years** of charts, indicators, and "how-to" advice for specific markets, currencies, stocks, and commodities; near-term opportunities; price movement; new techniques. Posted in real-time with an archive of thousands of articles.
5. **Working Money**, the Investors' Magazine online. You'll get **five years** of market observations; explanations of charts, markets, and market sectors; money management; and interviews with money people that will help you trade and invest wisely.
6. **Article Code**. Download or copy & paste code presented in past issues of *Stocks & Commodities* — no need to type it out manually.
7. **Optimized Trading**. The optimized indicator values can be used as starting points when trying to decide what values to input into your charting software. Search for a certain symbol or company or build your own portfolio.



ALSO RECEIVE A FREE⁺ BOOK WITH YOUR PTSK ORDER!
Charting The Stock Market: The Wyckoff Method, edited by Jack K. Hutson, is yours free⁺ with your order for the Professional Traders' Starter Kit.

⁺Shipping and handling charges apply for foreign orders.



TECHNICAL ANALYSIS OF **STOCKS & COMMODITIES**

www.Traders.com

*Based on the 5-year subscription rate of \$299.99. Shipping extra for foreign addresses.





Traders take many paths to reach their destination.
Can your platform get you there?

NINJATRADER ECOSYSTEM

Search apps and services to personalize the
NinjaTrader platform to meet your requirements.
Indicators, automated strategies, free tools & more.

Explore now at ninjatraderecosystem.com

Futures, foreign currency and options trading contains substantial risk and is not for every investor. Only risk capital should be used for trading and only those with sufficient risk capital should consider trading.

EDITORIAL

editor@traders.com

Editor in Chief Jack K. Hutson

Production Manager Karen E. Wasserman

Graphic Designer Wayne Shaw

Webmaster Han J. Kim

Contributing Editors John Ehlers,
Anthony W. Warren, PhD.

Contributing Writers Thomas Bulkowski, Martin
Pring, Barbara Star, Markos Katsanos, Leslie N.
Masonson

OFFICE OF THE PUBLISHER

Publisher Jack K. Hutson

Industrial Engineer Jason K. Hutson

Project Engineer Sean M. Moore

ADVERTISING SALES

4757 California Ave. S.W.

Seattle, WA 98116-4499

206 660-8577 Fax 206 938-1307

advert@traders.com

National Sales Manager Edward W. Schramm
ESchramm@traders.com

CIRCULATION

Subscription & Order Service 1 800 832-4642

1 206 938-0570 Fax 1 206 938-1307

circ@traders.com

Subscription Manager Sean M. Moore

WEBSITE

http://www.traders.com

Staff members may be emailed using first initial
plus last name plus @traders.com

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Technical Analysis, Inc. for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$1.00 per copy, plus 50¢ per page is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923. Online: <http://www.copyright.com>. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is: 0738-3355/2023 \$1.00 + 0.50.

Subscriptions: USA: one year (13 issues) \$89.99; Magazines shipped outside the US require additional postage as follows: Canada, US\$15 per year; Europe, US\$25.50 per year; all other countries US\$39 per year. Single copies of most past issues from the current year are available prepaid at \$8 per copy. Prior years are available in book format (without ads) or digitally from www.traders.com. USA funds only. Washington state residents add sales tax for their locale. VISA, MasterCard, AmEx, and Discover accepted. Subscription orders: 1 800 832-4642 or 1 206 938-0570.

Technical Analysis of Stocks & Commodities™, The Traders' Magazine™, is prepared from information believed to be reliable but not guaranteed by us without further verification, and does not purport to be complete. Opinions expressed are subject to revision without notification. We are not offering to buy or sell securities or commodities discussed. Technical Analysis Inc., one or more of its officers, and authors may have a position in the securities discussed herein.

The names of products and services presented in this magazine are used only in an editorial fashion, and to the benefit of the trademark owner, with no intention of infringing on trademark rights.

CONTENTS

MARCH 2024, VOLUME 42 NUMBER 3

6 The Savvy Technician

by Stella Osoba, CMT, Esq.

Recognizing and applying technical chart patterns to trading.

FEATURE ARTICLE

8 Taming The Effects Of Whipsaw

by Richard Poster, PhD

By filtering market whipsaw, the trading performance of a trend-following strategy could be greatly improved. Here's how.

17 Futures For You

by Carley Garner

Here's how the futures market really works.

18 The Delta-Delta Crude Strategy

by Perry J. Kaufman

Here is an interesting trading strategy you can consider for crude oil that is based on term structure patterns.

23 Algo Q&A

by Kevin J. Davey

Got a question about system or algo trading?

24 Explore Your Options

by Jay Kaepfel

Got a question about options?

26 Fixed Stop-Loss And Percentage Stop-Loss In Comparison

by Andrea Unger

Don't underestimate the importance of using stops in your trading. But which is better to use—a fixed or variable stop-loss? Here's a test to suggest which may work best.

INTERVIEW

32 A Conversation With Ari Wald, CFA, CMT

by Leslie N. Masonson, MBA

Ari H. Wald is managing director and head of technical analysis with Oppenheimer & Co. Inc., providing market-, sector-, and stock-level research to the firm's advisors and institutional clients. Previously, he served as equity research analyst



at Brown Brothers Harriman. He also served as head of technical analysis at Wolfe Research. During his Wall Street career, his focus on portfolio strategy, economic cycles, market psychology, and quantifiable tools led him to merge aspects of fundamental analysis with an impartial technical approach. Leslie Masonson interviewed Ari Wald to discuss his extensive Wall Street career, his technical and fundamental analysis approaches, and the mentors who provided the basis for his success today.

38 Small-Cap Value ETFs: A Smart Bet For 2024?

by Leslie N. Masonson, MBA

Small-cap value stocks and ETFs may be the sleeper category that comes alive after underperforming their small-cap growth counterparts during the 2009 through early 2022 timeframe. Small-cap value performance overtook the S&P 500 index in December 2023 and the trend is expected to continue in 2024 and beyond. Discover which ETFs have the winning attributes to lead the category to higher returns.

54 Market Rap

by Emilio Tomasini

“Unserious” thoughts on serious topics in finance.

DEPARTMENTS

46 Traders' Tips

51 Advertisers' Index

51 Editorial Resource Index

52 Futures Liquidity

53 Classified Advertising

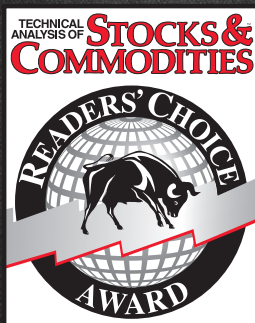
53 Traders' Resource



This article is the basis for Traders' Tips this month.

■ Cover: Rudall30/Shutterstock

Can you imagine winning the
Stocks & Commodities Readers' Choice
Award for 30 consecutive years?



*Best Standalone
Analytical Software
in it's price category
1993-2023*



We can.

Get your free trial at MetaStock.com/TASC

This is neither a solicitation to buy or sell any type of financial instruments, nor intended as investment recommendations. All investment trading involves multiple substantial risks of monetary loss. Don't trade with money you can't afford to lose. Trading is not suitable for everyone. Past performance, whether indicated by actual or hypothetical results or testimonials are no guarantee of future performance or success. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS OR TESTIMONIALS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. Furthermore, all internal and external computer and software systems are not fail-safe. Have contingency plans in place for such occasions. MetaStock assumes no responsibility for errors, inaccuracies, or omissions in these materials, nor shall it be liable for any special, indirect, incidental, or consequential damages, including without limitation losses, lost revenue, or lost profits, that may result from reliance upon the information presented.

CHARTING THE MARKETS

Stella Osoba, CMT, Esq., is an attorney, trader, and financial writer in New York, NY, and is also the Senior Editor, Trading and Investing, for Investopedia.com. Her work in financial litigation involving regulatory bodies and large multinational corporations led to an interest in the financial markets, then technical analysis and the psychological aspects of market behavior. She earned a CMT charter in 2013 and was a director-at-large on the board of the CMT Association for four years. This column will focus on recognizing and applying technical chart patterns to trading with flexibility and astuteness for better decision-making in trading. She can be reached at stellaosoba@gmail.com.



Stella Osoba

OVERCOMING THE DUNNING-KRUGER EFFECT IN TRADING

*“Ignorance more frequently begets confidence than does knowledge.”
—Charles Darwin*

Most cognitive biases are problematic because they occur as unconscious shortcuts to allow us to navigate our complex world. The bias known as the Dunning-Kruger effect is particularly problematic for many traders, including both those with experience and those who are new to the game. It does not come from a lack of intelligence or an abundance thereof. It is simply a bias that causes those affected to overestimate their competence in a particular field. In this case it is the overestimation of our abilities to forecast the future direction of prices and to beat the market.

WHY WE ARE SO OFTEN WRONG

In raging late-stage bull markets, how often do we hear people boast of their uncanny ability to get into a trade at the exact low and get out at the high? How many success stories filled the internet during the crypto craze—when Bitcoin shot up to over \$60,000 in 2021—that had people boasting about how they made millions trading crypto. 24-year-olds had courses on YouTube promising to teach you the secrets of their success so that you too could make a killing

in the market. Analysts predicted the rise of \$100,000 Bitcoin. More people piled into cryptocurrencies in 2022, not knowing that the market had peaked by the fourth quarter of 2021. Courses were still being sold, people were still predicting lofty valuations, new cryptocurrencies and initial coin offerings were still being floated.

The hype, the noise, the euphoria swept up even the most experienced trader in this new asset class. How could one sit on the sidelines when frothy stories filled the news and so-

It is the overestimation of our abilities to forecast the future direction of prices and to beat the market.

cial media sites about newly minted crypto millionaires? It was all but impossible. The lure of riches caused many to get in at the high, thinking others who knew no more than they did were right.

Apart from the downright fraud perpetuated by those who saw a get-rich-quick opportunity by lying about their abilities, there were those whose early success had made them believe in their own mastery. This is where the Dunning-Kruger effect kicked in. It was not about fraud, nor about intelligence. It was the belief that

some held unique and singular abilities to successfully trade crypto, a belief based on nothing more than the luck of early success. Those who had made a killing in the market tended to believe that their success was due to their abilities. The Dunning-Kruger effect was in full force. The telltale sign of this was the supreme confidence with which they talked about their successes. It was pure bluster and often arrogance.

People want to believe that those who display confidence must know what they are talking about. But it is often those with the most confidence who overestimate their abilities in a particular field. With limited knowledge, they might believe that what they know is all they need to know, failing to understand that there are unknown unknowns that live completely outside their field of comprehension.

Figure 1 is a weekly chart of Bitcoin showing its parabolic rise in 2020 and 2021 when it increased to \$60,000. The euphoria of the rise shrouded the significance of the sideways move from February–May 2021. That led to a price decline to the 50-day moving average. When price promptly bounced off the moving average and began rising once again, the gurus predicted the rise would exceed \$100,000. How many would have got swept up in the euphoria and bought at what proved to be the high? How many would have bought

when price exceeded the previous high to over \$65,000? From these lofty highs, \$100,000 would have seemed feasible.

HOW TO BE WRONG LESS OFTEN

The more we study and understand the markets, the less confident will be our forecasts. We will come to the realization that the one thing we cannot do is predict the future with any level of accuracy. We can make successful trades, but we can also make unsuccessful trades. We must develop tools to help us navigate our way. Technical analysis, the tool that is often used for and by traders, remains a lagging indicator. Because it uses historical data, we can never be sure that what we think *might* happen *will* happen. Bitcoin could have recovered from the second reaction of the double top to form a triple top, or it could have negated confirmation (see Figure 1) and formed a new high using the level of the two prior highs as support. There was no way those who believed in the superiority of their analysis could have known ahead of time what Bitcoin would do.

So how can we be wrong less often? There is no easy way to be wrong less often. Trading is inherently risky. Even the most skilled and experienced traders have streaks of losing trades. Those who project the most confidence in talking about a skill like trading are likely to be displaying the Dunning–Kruger effect, and simply understanding that is a useful start. Those who truly know what they are doing and are able to manage trading successfully, making a livelihood out of it, often will not brag about what they are doing. In fact, the financial market is marked by secrecy. Those who succeed with any consistency are often the ones we hear from the least.

It is with this knowledge that should

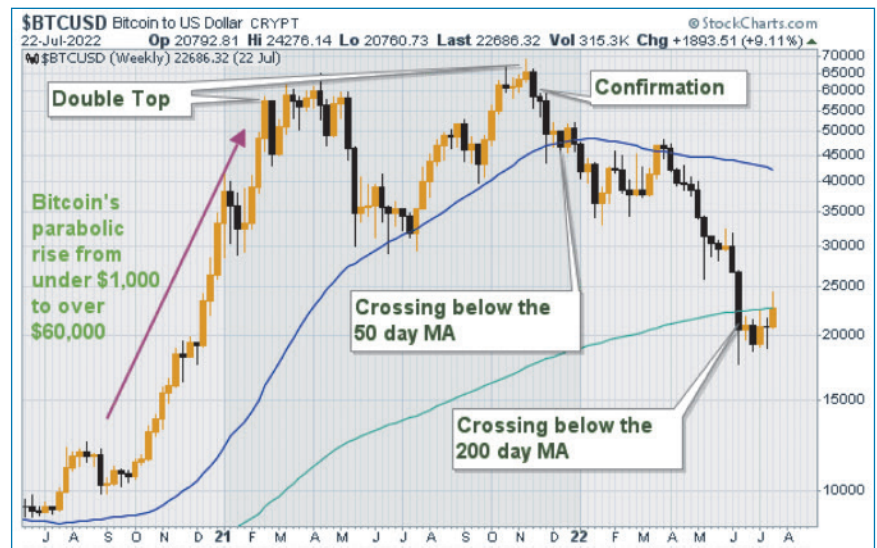


FIGURE 1: BITCOIN, 2022–2021. This weekly chart of Bitcoin shows its parabolic rise in 2020 and 2021 when it increased to \$60,000. The sideways move from February–May 2021 turned out to be significant, though many investors didn't realize it.

come the understanding that the best approach to trading is to develop a deep level of humility, especially after a string of wins. Winning can seem easy and effortless when it happens, but that should not deceive us. Trading is hard, which is why so few succeed at it. We should remind ourselves,

With limited knowledge, they might believe that what they know is all they need to know.

always, that there is always more to learn. We should aim to be lifelong students of the financial markets. We will never know it all, and there will be good times and bad times along the way. And when we forget to pay attention and forget to be humble and then the markets slaps us with losses, it will be in our interest to take our lesson, be grateful for it, and remember to proceed with caution.

A TASK FOR 2024

If you have not already done so and have been trading for more than a

year, now is the time to study your trades from 2023. This is one of the best things you can do to improve your trading skill. Studying your positions and the results will reveal what we often speculate about. How successful were our trades? What did winning look like? What did losing trades look like? Did we enter our positions correctly, did we exit too early? Why? Did our winning trades turn into losing trades? Were our position sizes right for our account sizes? Did we build our positions correctly? Did we trade too conservatively or too aggressively? What are the lessons that our trades can teach us about what we can do to improve moving forward? Where did we excel, where do we need to improve? This exercise is one that reveals the difficulties we face and can help negate the Dunning–Kruger effect. As we seek to improve and learn lessons from our mistakes and victories, we will know that we are not without fault. We can improve, we can be better, we can strive to excel.

So read David Dunning and Justin Kruger's paper when you get a

Continued on page 44



Improve Trading Performance With A Whipsaw Filter

Taming The Effects Of Whipsaw

By filtering market whipsaw, the trading performance of a trend-following strategy could be greatly improved. Here's how.



Trend-following strategies are most profitable when they identify trending movement as early as possible. But, because trends sometimes abruptly end and then reverse due to market

whipsaw, these strategies become less profitable. The overall price change in the whipsaw region may be relatively small, but price variations within the region can be large. As a result, trend-following strategies create false entry signals. To address this problem, we will show how to characterize whipsaw data and design a whipsaw filter to reduce false entry signals.

Market whipsaw is usually described as a single strong movement in one direction followed by an equally strong reversal. This is often seen during a breakout from a low volatility period. However, during volatile market conditions and especially for smaller timeframes, whipsaw patterns may occur containing multiple up and down price swings. As a result, trend-following strategies can be fooled and produce a string of losing trades. A whipsaw filter is needed to reduce false entry signals from multiple whipsaw price swings.

WHAT'S AHEAD

In the following sections, we'll examine the characteristics of whipsaw and trend price data. With the help of a zigzag indicator, we identify properties of zigzag patterns useful for modeling whipsaw behavior and designing a whipsaw filter.

Trading performance is measured using a rudimentary trading strategy along with a whipsaw filter. Using a MetaTrader expert advisor in a trade simulator, we can measure the trading performance for several currency pairs in the forex market and evaluate the effectiveness of the whipsaw filter.

EXAMPLE WHIPSAW PATTERN

First, let's look at a typical whipsaw pattern containing multiple price swings.

Figure 1 shows a price chart for one-hour EURUSD forex data. An upward trend of magnitude 90 pips and six-hour duration is followed by a whipsaw region of 40-hour duration. The total variation in the whipsaw region is approximately 45 pips. A zigzag pattern, with a threshold of 15 pips, is overlaid on the price data. The threshold parameter controls the zigzag movement and determines when to create a new zigzag segment in the opposite direction. For an uptrend zigzag segment, when the closing price drops below the highest close minus the threshold, the upward segment is ended and a new downward

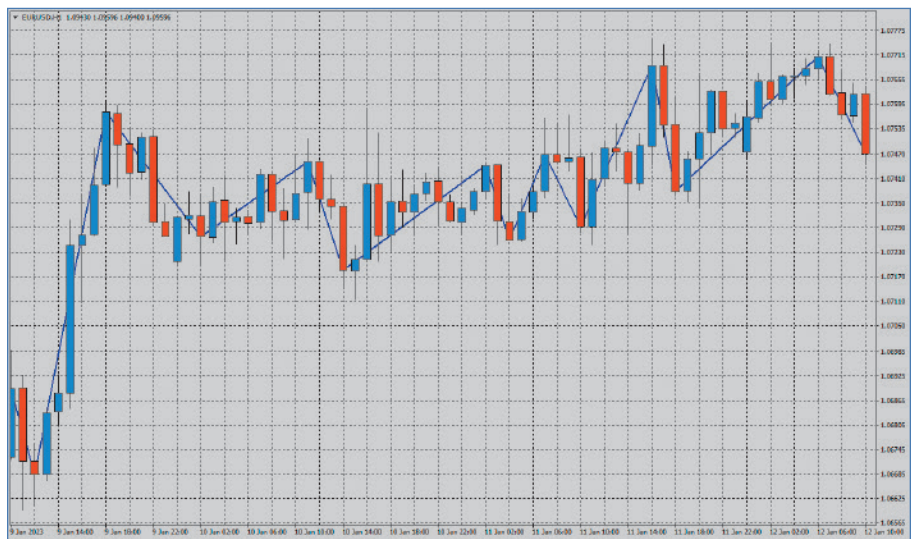


FIGURE 1: EURUSD H1 WHIPSAW EXAMPLE. A short uptrend is followed by a longer whipsaw region. A zigzag pattern is overlaid on the data.

by Richard Poster, PhD

segment is formed.

RATE OF DIRECTIONAL CHANGE (RODC) INDICATOR

A whipsaw pattern has alternating up and down zigzag segments within a specific window size. The number of zigzag segments in a window is equivalent to a rate of directional change (RODC).

$$\text{RODC} = 100 * \frac{\# \text{ Segments}}{\text{Window size (bars)}} \quad 0 \leq \text{RODC} < 100 \quad \text{Eq. 1}$$

The RODC indicator uses equation 1 and measures the number of directional changes per 100 bars.

Figure 2 shows the indicator in regions of trending and whipsaw. Larger values of the RODC match whipsaw regions while smaller values match trending regions.

Code for the RODC indicator in the MetaQuotes language for MetaTrader is displayed in the sidebar, “Rate Of Directional Change (RODC) Smoothed Indicator, In MetaQuotes.”

You can find more detailed studies of the properties of zigzag price data in two of my previous articles in this magazine, which are listed at the end in the “Further reading” section.

IMPLEMENTING A WHIPSAW FILTER

The whipsaw filter is based on the RODC indicator. It uses two inputs from the RODC indicator:

- Zigzag threshold (pips)
- Zigzag window (bars)

The whipsaw filter utilizes two properties of the zigzag price data:

- Number of up and down segments in the window (RODC).



FIGURE 2: RODC INDICATOR. The RODC decreases during trending conditions and increases during whipsaw conditions.

- Total return from first bar to last bar in the window (pips).

$$\text{Return size} = (\text{CLOSE}_{\text{LAST}} - \text{OPEN}_{\text{FIRST}}) \quad \text{Eq. 2}$$

In a specific window, a small return size and large RODC value characterize whipsaw price movement. An effective filter will use a lower limit for the return size and an upper limit for the RODC to remove whipsaw data.

MODELING AND ANALYZING WHIPSAW AND TREND DATA

An analysis of price data is necessary in order to assess the feasibility of using a zigzag pattern to identify and filter whipsaw price movement. The analysis uses closing price data from the one-hour EURUSD chart.

First, we define some terms used in the analysis.

Terms:

- Zigzag threshold—For an upward segment, the amount (pips) of downward change from the highest point of the segment before a new downward segment is declared. Vice versa for a downtrend segment.
- Return size—The price change (pips) of a bar, zigzag segment, or whipsaw group.
- Segment—A leg of a zigzag pattern. Represents an upward or downward price swing. It is described by the return size (pips) and duration (bars).
- Trend—A single segment of a zigzag pattern. It is described by the total return size and duration of the segment. Average return size and duration depend on the zigzag threshold.
- Whipsaw group (WSG)—Contains two or more zigzag segments. It is measured by the total return size of the group (pips), duration (bars) of the group, and the maximum segment size (pips) within the group.

We will show how to characterize whipsaw data and design a whipsaw filter to reduce false entry signals.

IBKR Clients Have Access to the Lowest Margin Rates

US Margin Loan Rates Comparison - USD 25K

☐ E-Trade 13.70%

☐ Fidelity 13.08%

☒ Interactive Brokers 6.83%¹

☐ Schwab 13.08%

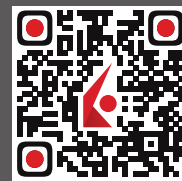
☐ Vanguard 13.25%

See website for full comparison and lower rates

The best informed investors choose Interactive Brokers



ibkr.com/iwantmore



Trading on margin is only for sophisticated investors with
high risk tolerance. You may lose more than your initial investment.

Member - NYSE, FINRA, SIPC – [1] Margin Loan rate as of 9/12/2023. IB calculates the interest charged on margin loans using the applicable rates for each interest rate tier listed on its website. Rates shown apply to IBKR Pro clients only. Rates subject to change. Restrictions apply. For additional information on margin loan rates, see ibkr.com/interest.

10-IB23-1655CH1650

Next, we define the criteria used in the model for designating a collection of closing price data as a whipsaw group or as a trend segment. The model uses four input parameters.

Model input parameters:

1. WSG segment threshold—Maximum return size allowed for any segment within the WSG.
2. WSG return threshold—Maximum return size allowed for the WSG.
3. Zigzag threshold—Defines the minimum amount of change required to reverse direction in the zigzag pattern.
4. Zigzag window—Number of bars being examined.

Criteria for identifying a whipsaw group:

- A WSG has two or more segments.
- The WSG return size is small and has an absolute value less than the WSG return threshold.
- All WSG segments have an absolute value less than the WSG segment threshold.

Criteria for identifying a trend:

- The total return size has an absolute value greater than the WSG segment threshold. A trend is always defined as one zigzag segment.

Modeling and analysis is focused on answering the following key questions:

1. What is the average number of zigzag segments (RODC) in whipsaw groups?
2. What is the average duration (bars) of whipsaw groups and trend segments?
3. How often do bars from whipsaw groups and trend segments occur?
4. What is the optimal zigzag threshold size?
5. What are the optimal input values to the model for separating trend and whipsaw data?

1. Average number of zigzag segments (RODC)

Figure 3 shows the average number of zigzag segments per 100 bars (RODC) for whipsaw group data, for all data and for trend data as a function of zigzag threshold. The

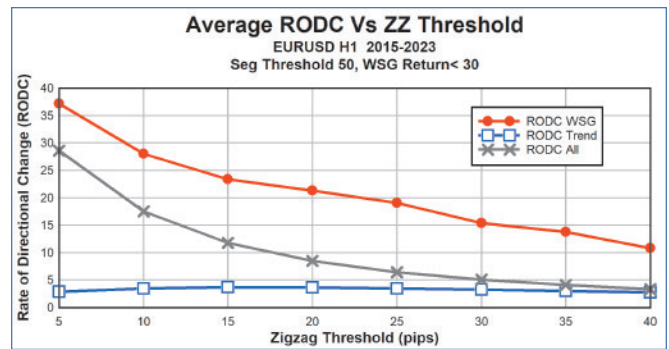


FIGURE 3: RATE OF DIRECTIONAL CHANGE (RODC). Trend and whipsaw data have a large RODC separation.

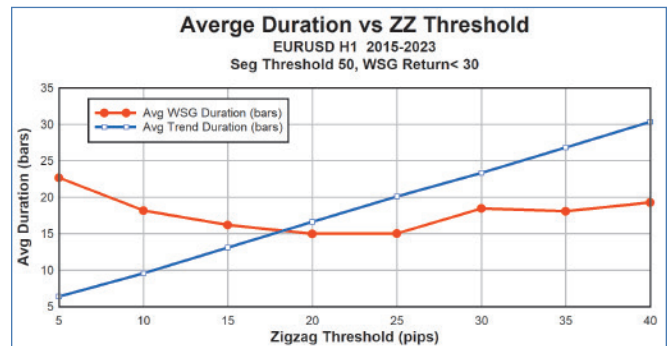


FIGURE 4: AVERAGE DURATION OF TRENDS AND WHIPSAW GROUPS. Whipsaw groups have an average duration of 15 to 23 bars.

RODC calculations for the three data types are:

$$\text{RODC WSG} = 100 * \Sigma [\text{WSG segments}] / \Sigma [\text{WSG duration (bars)}]$$

$$\text{RODC trend} = 100 * \text{Total trend segments} / \text{Total bars}$$

$$\text{RODC all} = 100 * \text{Total segments} / \text{Total bars}$$

A WSG segment threshold (maximum) of 50 pips and a WSG return threshold (maximum) of 30 pips are used in the model. Trend segment size must exceed 50 pips. Larger zigzag thresholds result in fewer segments in the whipsaw group.

The average WSG RODC is always larger than the average RODC for all data. For a zigzag threshold of 10 pips, the average WSG RODC is 27.8 and the average trend RODC is 3.6. For a zigzag threshold of 20 pips, the average WSG RODC is 21.4 and the average trend RODC is 3.9. The RODC provides a clear separation between whipsaw and trend data.

2. Average WSG duration

Figure 4 shows the average duration (bars) for whipsaw groups and trend segments as a function of zigzag threshold. The average trend duration increases linearly with increasing zigzag threshold. The average WSG duration sets the minimum size of the window of the whipsaw filter.

The rate of directional change (RODC) helps separate trend and whipsaw data.

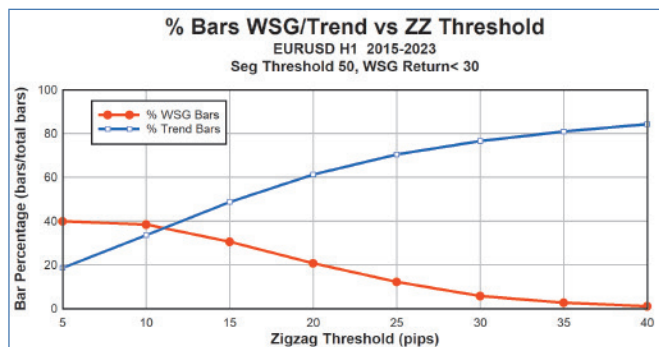


FIGURE 5: CONTRIBUTION OF TREND AND WHIPSAW BARS. As the zigzag threshold increases, the number of bars from trend segments increases and the number of bars from WSGs decreases.

At a zigzag threshold of 20 pips, the average WSG duration is 15.3 bars. From Figure 3, the corresponding RODC is 21.4. Multiplying these two values and dividing by 100 gives an average of 3.3 segments per WSG.

3. Rate of occurrence of trends and whipsaw groups

Figure 5 shows the rate of occurrence of bars belonging to trend segments and whipsaw groups as a function of the zigzag threshold. At a zigzag threshold of 20 pips, the bars from WSGs make up 20.8% of the total bars while trend bars make up 62.5% of the total bars.

4. Optimal zigzag threshold size

From inspection of price charts, large zigzag thresholds (> 50 pips) will be insensitive to whipsaw, while small thresholds (< 5 pips) will be insensitive to long trends. For a WSG segment threshold of 50 pips, Figures 3 and 5 suggest that a zigzag threshold of 10–20 pips is best, since both whipsaw and trend data are visible. While ranging data produces large RODC values for small thresholds, this data can be easily removed by volatility filters and careful selection of the zigzag threshold.

5. Optimal input values for model and filter

Figure 6 shows the general RODC distribution for zigzag thresholds of 10 and 20 pips. Smaller zigzag thresholds have a larger average RODC and have a wider distribution spread than larger thresholds. This suggests that smaller zigzag thresholds are preferable for the filter.

From the discussion of Figure 3, average WSG RODC values of 21.4 and 27.8 are found for zigzag thresholds of 20 and 10 pips. These values fall on the tails of their respective RODC distributions in Figure 6. Since smaller average RODC values occur for trending regions (< 5) and larger average values occur for whipsaw regions (> 20), the whipsaw filter will use an upper limit of the RODC to reduce the effects of whipsaw.

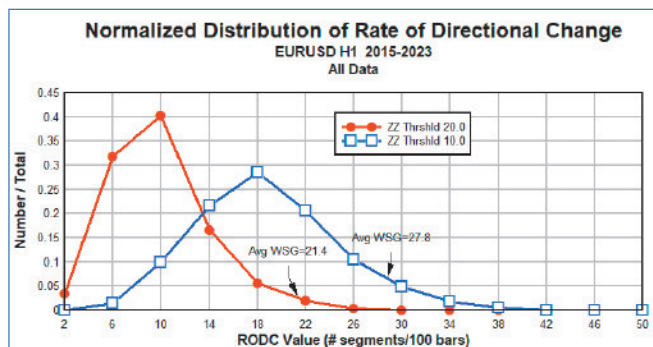


FIGURE 6: DISTRIBUTION OF RODC. The RODC distribution has a significant spread and increases with decreasing threshold. Average WSG RODCs are shown for zigzag thresholds of 10 and 20 pips.

The inputs to the whipsaw model are a good starting point for testing a whipsaw filter in an expert advisor.

TRADING PERFORMANCE WITH THE WHIPSAW FILTER

We use a simple, trend-following strategy to estimate profit performance. This strategy, on its own, would not support a profitable trading system but is useful to demonstrate the performance of the whipsaw filter.

The strategy for long trades requires a fast moving average to be above a slow moving average by a specified threshold amount (pips). Similarly, the strategy for short trades requires a fast moving average to be below a slow moving average by the same threshold amount. The fast moving average period is 1–4 bars. Other rules for entry or exit signals are:

- Only one trade can be open at a time.
- Bollinger Band separation is within lower and upper bounds.
- Take-profit, stop-loss, and trailing-stops are used to exit trades.
- The maximum lifetime (bars) of an open trade is fixed.
- New buy signals cause open short positions to be closed and vice versa.

After a trade signal is generated, zigzag pattern properties are used to filter the data. The zigzag pattern has a specific

The whipsaw filter is based on the rate of directional change (RODC) indicator.



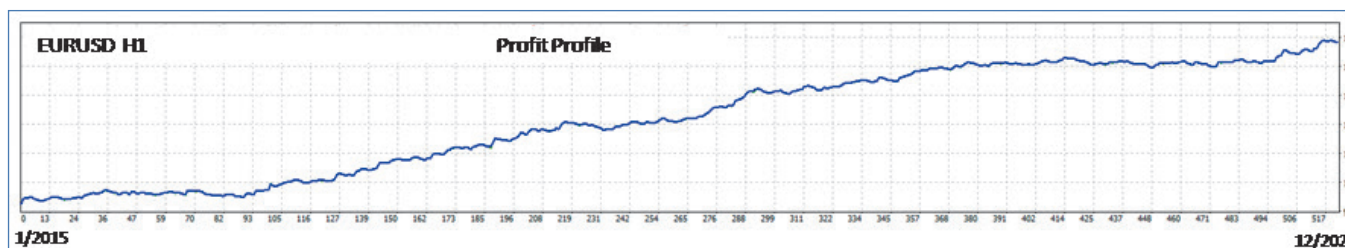


FIGURE 7: PROFIT PROFILE FOR EURUSD. Backtesting of the expert advisor shows a steady gain over an eight-year period.

window size and threshold. The filter logic is:

- Place an upper limit on the allowed number of up and down zigzag segments (RODC).
- Place a lower limit on the total return size for the zigzag window (equation 2).

Five currency pairs have been evaluated over a period of 2015–2022 with one-hour charts. As an example, Figure 7 shows the profit profile for the EURUSD pair using the described trading strategy with a whipsaw filter. With a lot size of 0.10, a profit of \$4,845 is realized for 521 trades.

For the EURUSD pair, the optimal zigzag threshold is 10 pips. The corresponding RODC threshold is 16.

Test results for five currency pairs, with and without use of the whipsaw filter, are shown in Figure 8. Performance results are measured by the profit factor (profit/loss) and payoff (average profit per trade). In every case, the whipsaw filter improves the profitability of the trend-following strategy.

CONCLUSIONS

- The rate of directional change increases during market whipsaw and decreases during market trending.
- The RODC helps separate trend and whipsaw data.
- Bars from multi-segment whipsaw groups occur often.
- Using a zigzag pattern and the RODC indicator, the whipsaw filter improves the performance of a rudimentary trend-following strategy.

Richard Poster, PhD, has been designing and implementing FX trading models for more than a decade along with private forex trading. He has a PhD in physics and has used the many techniques and methodologies from his experience in elementary particle physics research and later developing electronic warfare systems. He is interested in applying neural networks, fuzzy logic, fractal analysis, and quantum mechanics to forex trading models. He may be reached at raposterbnl@gmail.com.

Currency Pair	# Trades	Profit (0.1 Lot)	Profit Factor	Payoff
EURUSD—No Filter	1938	\$6800	1.24	3.51
EURUSD—WS Filter	521	\$4845	1.73	9.30
GBPUSD—No Filter	541	\$1584	1.25	2.93
GBPUSD—WS Filter	468	\$2743	1.54	5.28
USDCAD—No Filter	372	\$1296	1.44	3.24
USDCAD—WS Filter	317	\$1329	1.62	4.20
USDCHF—No Filter	401	\$5466	2.00	13.63
USDCHF—WS Filter	329	\$5127	2.27	15.59
USDJPY—No Filter	1098	\$5652	1.32	5.15
USDJPY—WS Filter	807	\$5852	1.51	7.23

FIGURE 8: PROFIT PERFORMANCE SUMMARY. In every case, the whipsaw filter improves the profitability of the trend-following strategy.

The RODC decreases during trending conditions and increases during whipsaw conditions.

The code provided with this article is available in the S&C Article Code section of Traders.com.

*See our **Traders' Tips** coding section beginning on page 46 for additional code related to this topic, prepared for popular technical analysis programs and trading platforms. The code in that magazine section can also be found in the Traders' Tips section of Traders.com.*

FURTHER READING

Poster, Richard [2020]. "Using Scaling Laws For The Development Of FX Trading Models," *Technical Analysis of STOCKS & COMMODITIES*, Volume 38: February.

____ [2020]. "Using Scaling Laws For FX Trading Models: A Two-Dimensional Extension," *Technical Analysis of STOCKS & COMMODITIES*, Volume 38: July.

Find similar articles online at [Traders.com](https://www.traders.com)

RATE OF DIRECTIONAL CHANGE (RODC) SMOOTHED INDICATOR, IN METAQUOTES

```
//+-----+
//      RODCSmoothdInd.mq4 |
//      Copyright 2023-2024, Richard Poster |
//+-----+
// chart 100.*(Number of segments/window Length)
// Rate of Directional Change (RODC)
#property copyright "2023, R. Poster"
#property link      "http://www.mql4.com"
#property strict
#property description "RODC based on zigzag"
//
#property indicator_separate_window
#property indicator_buffers 1
#property indicator_color1 clrBlue

//---- indicator parameters
input int   BkData   = 30; // Window
input double Lamda   = 15.; // Zigzag Threshold
input int   PerSmth  = 3; // Smooth Period

//---- indicator buffers
double ExtZigzagBuffer[], SmthBuffer[];
//--- globals
double   _point;
int      _digits;
string   _symbol;
double   MULT;
double   LamUp, LamDn;

//+-----+
//| Custom indicator initialization function |
//+-----+
int OnInit()
{
    _symbol=Symbol(); // set symbol
    _point = MarketInfo(_symbol,MODE_POINT);
    _digits= int(MarketInfo(_symbol,MODE_DIGITS));
    MULT=1.0;
    if(_digits==5 || _digits==3)
        MULT=10.0;
    LamUp = Lamda;
    LamDn = Lamda;
    IndicatorBuffers(2);
    IndicatorSetDouble(INDICATOR_MINIMUM,0.);
    IndicatorSetDouble(INDICATOR_LEVELVALUE,1,10.);
    IndicatorSetDouble(INDICATOR_LEVELVALUE,2,20.);
    IndicatorSetDouble(INDICATOR_LEVELVALUE,3,30.);
//---- drawing settings
    SetIndexStyle(0,DRAW_SECTION,EMPTY,2);
//---- indicator buffers
    SetIndexBuffer(1,ExtZigzagBuffer);
    SetIndexBuffer(0,SmthBuffer);
    SetIndexEmptyValue(0,0.0);
//---- indicator short name
    IndicatorShortName("Segment Rate: (Per=
"+IntegerToString(BkData)+
    " Smth= "+IntegerToString(PerSmth)+ " Thrsh= "+
    DoubleToString(Lamda,1)+") ");
    ArraySetAsSeries(ExtZigzagBuffer,false);
    ArraySetAsSeries(SmthBuffer,false);
//---- initialization done

    return(INIT_SUCCEEDED);
}
//+-----+
//|                                     |
//+-----+
int OnCalculate(const int rates_total,
               const int prev_calculated,
               const datetime &time[],
               const double &open[],
               const double &high[],
               const double &low[],
               const double &close[],
               const long& tick_volume[],
               const long& volume[],
               const int& spread[])
{
    int i,jj,limit;
    int AryUD[150];
    int NumUp,NumDn,NumUD,Strt,jext;
    bool modeUp;
    double xext,xcls;
    int segstr;
    int nUp,nDn,nUD;
//----
    ArraySetAsSeries(close,false);

//---- first calculations
    if(prev_calculated==0)
    {
        limit=BkData+PerSmth+1;
        for(i=0;i<limit;i++)
        {
            ExtZigzagBuffer[i] = 100./BkData; // set first values of
            buffer
        }
    }
    else
        limit=prev_calculated-1;

//---- main loop
    for(i=limit;i<rates_total;i++)
    {
        // ---- init
        nUp=1; // assume starting in mode up
        nDn=0;
        nUD = 1;
        modeUp = true; // starting value
        ArrayInitialize(AryUD,0);
        // default for first segment
        segstr = i-BkData+1;
        Strt = i;
        //
        AryUD[0] = segstr; // start of first (up mode) segment
        xext = close[segstr-1]; // first time
        jext = segstr-1;
        // ----- store bar arrays -----
        for(jj=segstr;jj<=Strt;jj++)
        {
            xcls = close[jj];
            if(!modeUp) // mode down
            {

```

RATE OF DIRECTIONAL CHANGE (RODC) SMOOTHED INDICATOR, IN METAQUOTES

```

if(xext > xcls) // still mode down
{
    xext = xcls;
    jext = jj;
}
else
if((xcls-xext)/(MULT*_point) >= LamDn) // reverse to
mode up
{
    modeUp=true;
    nUp +=1;          // increment up mode counter for
new mode
    nUD +=1;          // increment mode counter
    AryUD[nUD-1] = jext;
    xext = xcls;
    jext = jj;
    // starting bar of mode
}
} //---- end if !modeUp -----
else
if(modeUp)
{
    if(xext < xcls) // still mode up
    {
        xext = xcls;
        jext = jj;
    }
    else
    if((xcls-xext)/(MULT*_point) <= -LamUp) // reverse to
mode down
    {
        modeUp=false;
        nDn +=1;          // increment down mode counter
for new mode
        nUD += 1;          // increment mode counter
    }
    AryUD[nUD-1] = jext;    // starting bar of mode
    xext = xcls;
    jext = jj;
} //----- if modeUp -----
} // ----- jj loop -----
//-----
NumUp = nUp; //
NumDn = nDn;
NumUD = nUD;
// // set buffer
if(NumUD==0) // trend length > window size
ExtZigzagBuffer[i] = 100./BkData;
else
ExtZigzagBuffer[i] = 100.*NumUD/BkData;
//-----
//---- Smooth buffer
SmthBuffer[i] = 0.;
for(jj=0;jj<PerSmth;jj++)
{
    SmthBuffer[i] += ExtZigzagBuffer[i-jj];
}
SmthBuffer[i] = SmthBuffer[i]/PerSmth;
} // ----- end of i loop -----
//--- done
return(rates_total);
}
//+-----+

```

This code listing is also available as a downloadable .mq4 file from the S&C Article Code section of Traders.com.

INTERVIEW

Continued from page 37

As 2023 draws to a close here, what is your view on the market heading into 2024?

Following the Q3'23 mid-cycle correction, we believe the next leg of the bull cycle that started in October 2022 is underway (see Figure 2), and the S&P 500 should reach a new cycle high over the coming months. The quality of the next leg higher should provide clues regarding the sustainability of strength in 2024. For instance, thinking in terms of

the percentage of NYSE stocks above their 200-day average, we'll be watching for a reading above 60% to argue against a market top, and for a reading above 70% to confirm a broad-based breakaway.

Thank you for providing our readers with your valuable market insights.

Leslie N. Masonson is president of Cash Management Resources, a financial consulting firm focusing on ETF strategies. He is an active ETF

The ideal sell signal is when distribution develops through a topping process.

and Nasdaq futures trader, and the author of Buy—Don't Hold: Investing With ETFs Using Relative Strength To Increase Returns With Less Risk; and All About Market Timing, as well as Day Trading On The Edge. He can be reached at lesmasonson@yahoo.com or 845 323-7276.

Find similar articles online at [Traders.com](https://www.Traders.com)

INSIDE THE FUTURES WORLD

Want to find out how the futures markets really work? Carley Garner is the senior strategist for DeCarley Trading, a division of Zaner, where she also works as a broker. She has written five books on futures and options trading, with the latest being Trading Commodity Options...With Creativity (July 2020), as well as A Trader's First Book On Commodities (third edition, October 2017) and Higher Probability Commodity Trading (July 2016). Garner also authors widely distributed e-newsletters; for a free subscription, visit www.DeCarleyTrading.com. To submit a question, email her at info@carleygarnertrading.com or via www.DeCarleyTrading.com. Selected questions will appear in a future issue of S&C.



Carley Garner

A WILD RIDE

It has been a wild three years for commodities; will we get a fourth?

I believe the answer to this is “no.” Historically, market, political, and weather volatility are generally transitory (yes, I used that word). Using the commodity bull markets of 2008 and 2011 as our guide, we can expect a wave of disinflation to take hold in the commodity markets at some point sooner rather than later. This opinion is not popular; many analysts believe a second wave of inflation will take hold in 2024 in the same way it persisted from 1979 through 1981, but market behavior over the last 20 years hasn’t suggested that. In fact, plenty has changed since then that should prevent a repeat.

The most significant factor working against persistent inflation is technology. Farmers use science and technology to improve efficiency and increase production, even as weather cycles have worked against them. Similarly, U.S. oil producers are achieving record output with fewer rigs in operation than many thought possible just a few years ago. As I was writing this piece, U.S. rig counts were at a two-year low, but production was at an all-time high! Likewise, a consequential drag on commodity inflation is the fact that the U.S. is now the top oil-producing country in the world. Although OPEC has taken back the reigns recently, its

price control tactics are less effective with the leading global producer outside the cartel.

Few talk about the tendency of market participants to exhaust themselves; three years of chaotic commodity markets have likely left a financial and psychological toll on speculators of all sizes. With interest rates starting in 2024 on a high note, investors and traders might simply opt for a risk-free return of 4% to 5% as opposed to seeking outsized

As technology advances and high interest rates offer an attractive alternative for investment dollars, commodity busts will be an “early and often” phenomenon.

gains in other ventures. This mindset would likely have a suffocating effect on market volatility. Simply put, there are now alternatives to riskier assets. Before the Fed’s interest rate hike campaign, investors felt obligated to participate in the stock and commodity markets to achieve a *return on capital*.

In many cases, this money was employed without regard to the return of capital. We doubt speculators

will be as aggressive in chasing commodity markets higher with elevated interest rates. Simply put, we have to admit that at least some of the commodity market gains forged in markets like crude oil, natural gas, grains, and softs were the direct result of global stimulus dollars looking for a home. From 2020 through 2022, zero interest rates and limits on deposit insurance were good incentives for money to make its way into asset classes and circumstances that it should. Think cryptocurrencies, meme stocks, and yes...even commodities. Those days are behind us. Going forward, fundamentals will probably matter.

Those speculating on the long side of commodities were spoiled in 2021 and 2022; 2024 commodity rallies will likely be of the short-and-sweet variety. Thus, instead of \$2.00 to \$3.00 lifts in corn, we might see 50 cents to a dollar 50. Rallies in oil might span \$20.00 to \$30.00 per barrel, not \$30.00 to \$50.00. Some might consider this a contrarian view; after all, there are whispers of a commodity super cycle. But we will believe it when we see it. We heard the same mantra in 2008 and again in 2011, but those super cycles never manifested themselves. As technology advances and high interest rates offer an attractive

Continued on page 22



Taking Advantage Of Contango And Backwardation

The Delta-Delta Crude Strategy

Here is an interesting trading strategy you can consider for crude oil that is based on term structure patterns.

by Perry J. Kaufman



Oil companies are professional traders. I worked with them for more than 20 years developing strategies. One strategy that is conceptually interesting and offers diversification from trend following is what we called the “delta-delta” strategy. I will explain it, then show a simplified version that you can trade.

TERM STRUCTURE

First, you need to understand the term structure of the crude oil futures market.

Crude oil has monthly deliveries, all actively traded. Figure 1 shows the prices as of August 7, 2023, posted on the CME (Chicago Mercantile Exchange) website. Volume is concentrated in the nearest delivery, September. You need to look at the “prior settle” column. Note that prices decline as the delivery months are further out.

This pattern is called the *term structure*. When the

prices nearest delivery are highest and the other contracts decline in a uniform manner, the pattern is called “backwardation.” When the nearest delivery is low and the following contracts rise, it is “contango.” Traders will recognize that this is similar to the interest rate yield curve.

WHY DO CONTANGO AND BACKWARDATION OCCUR?

Backwardation occurs when crude prices are high and commercial buyers wait for the last minute to purchase. Buying months in advance means putting out the cost of the purchase and possibly even storing oil, both of which can be expensive. When oil is cheap, buyers are willing to lock in a price further out, even with the extra costs. The fundamentals of oil pricing do not change quickly, so a backwardation can last for months.

TAKING ADVANTAGE OF THE TERM STRUCTURE

Looking again at the chart of crude prices, the difference between the opening price of the first and second deliveries is $82.82 - 82.27 = 55$ cents. The difference between the second and third deliveries is $82.27 - 81.75 = 52$ cents.

The next two differences are 65 cents and 13 cents. Light volume in the deferred contracts can cause a distortion in prices but if you try to sell the Jan 2024 contract and buy the Dec 2023 and Feb 2024 (a “butterfly”), you will find that there is no one to take the other side.

We call the price differences between contracts the “deltas.” We see the series of deltas as 55, 52, 65, and 13 (with 65 an anomaly). To see the full picture, we need the cash price. But cash prices are not posted minute by minute, so we will assume a price of 83.10, 28 cents higher than the nearest delivery.

When the deltas are all increasing towards the cash price, and the difference between the cash and the first delivery (delta_0) is bigger than the delta between the second and third month out (delta_2), we can assume that as the contracts mature, the delta_2 will increase to the current value of delta_0. That means buyers will remain reluctant to stock up on oil and continue to wait for the last minute to buy. We can buy the second delivery and sell the third delivery. Be sure to size the positions according to volatility so that you get equal risk in both contracts.

Contango

The same will be true for contango, where the nearby prices are lower than the deferred prices. We can sell delta_2 and expect it to be more negative as delivery nears. That means selling the second delivery and buying the third delivery.

SIMPLIFYING THE TRADING RULES

We start by loading the crude oil contracts into TradeStation, shown in Figure 2.

MONTH	OPTIONS	CHART	LAST	CHANGE	PRIOR SETTLE	OPEN	HIGH	LOW	VOLUME	UPDATED
SEP 2023 CLU3	OPT	Oil	82.15	-0.67 (-0.81%)	82.82	82.82	83.30	81.77	106,595	08:37:12 CT 07 Aug 2023
OCT 2023 CLV3	OPT	Oil	81.66	-0.61 (-0.74%)	82.27	82.27	82.73	81.30	30,143	08:36:59 CT 07 Aug 2023
NOV 2023 CLX3	OPT	Oil	81.19	-0.56 (-0.69%)	81.75	81.78	82.20	80.83	14,705	08:36:51 CT 07 Aug 2023
DEC 2023 CLZ3	OPT	Oil	80.70	-0.51 (-0.63%)	81.21	81.13	81.63	80.32	24,097	08:37:00 CT 07 Aug 2023
JAN 2024 CLF4	OPT	Oil	80.33	-0.35 (-0.43%)	80.68	81.00	81.10	79.82	5,330	08:35:45 CT 07 Aug 2023
FEB 2024 CLG4	OPT	Oil	79.69	-0.46 (-0.57%)	80.15	80.06	80.45	79.34	2,484	08:36:54 CT 07 Aug 2023

FIGURE 1: SAMPLE OF CRUDE OIL PRICE QUOTES. Here you can see a snapshot of prices for six different contract months. Note that prices decline as the delivery months get further out. The price quotes are from the Chicago Mercantile Exchange.

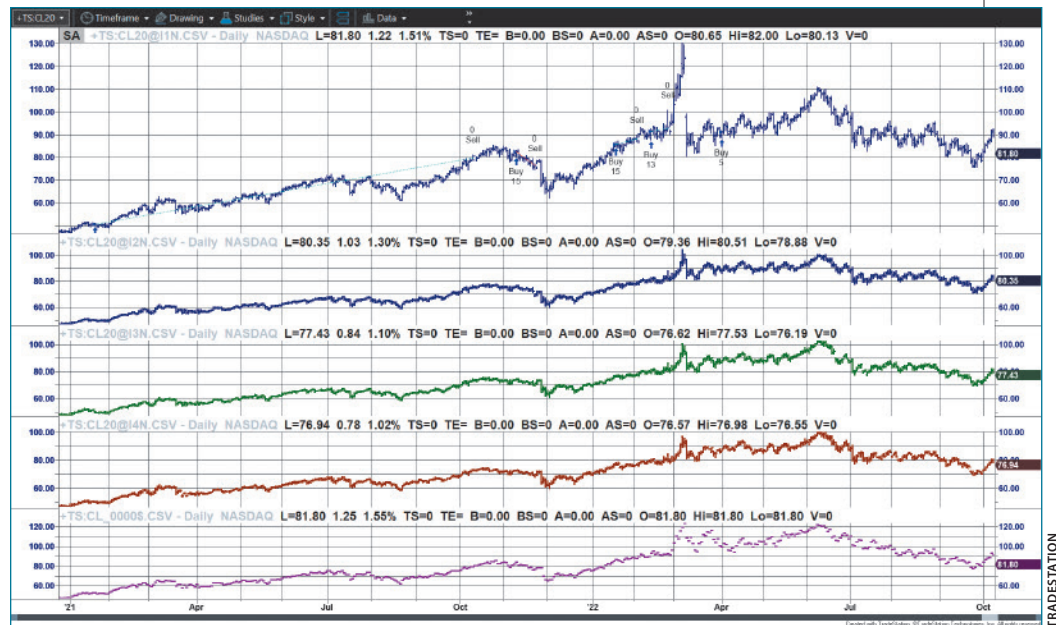
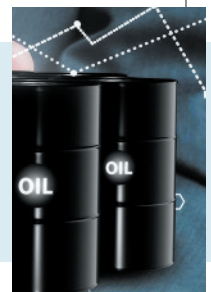


FIGURE 2: CRUDE OIL CONTRACT PRICES. In the top pane is the nearest delivery month. In the second, third, and fourth panels you see the next deliveries. Cash prices are shown in the bottom panel.

We are going to use the nearest rolling contract, the second nearest, third nearest, and so on, instead of individual contracts. This will simplify trading although it may not take full advantage of the increasing (or decreas-

The fundamentals of oil pricing do not change quickly, so a backwardation can last for months.



CODE FOR DELTA-DELTA STRATEGY, IN EASLANGUAGE

```
// PJK Delta-Delta: Crude or Eurodollar term structure
// Copyright 2023, 2024, PJ Kaufman. All rights reserved.

{ delta1 = 0: spot - 1, 1:1 - 2, 2:2 - 3, etc
  delta2 = same as above
    data1 = nearest
    data2 = 2nd month
    data3 = 3rd month
    data4 = 4th month
    data5 = Cash
}
// Entry/exit values in cents
input: exitoption(1), longentry(0.10), longexit(0.05), short-
entry(-0.10), shortexit(-0.05),
    investment(50000), printdetail(false);
vars: d0(0), d1(0), d2(0), d3(0), signal(0), psignal(0),
edate(" "), edate2(0),
    xdate(" "), adate(" "), eprice2(0), eprice3(0), xprice2(0),
xprice3(0), ATR(0),
    buyPL(0), sellPL(0), netPL(0), cum2PL(0), cum3PL(0),
cumNet(0), conv(1000),
    size2(0), size3(0), NAV(100), dailyreturn(0), dailyPL(0),
cumdailyPL(0);

once begin
    print(file("c:\tradedstation\Delta-Delta_Trades.csv"),
EDate,Pos,BuySize,Price2,SellSize,Price3,"
    "XDate,Price2,Price3,BuyPL,SellPL,NetPL,CumBuy,
CumSell,CumNet");
    end;

// calculate deltas
d0 = close of data5 - close;
d1 = close of data1 - close of data2;
d2 = close of data2 - close of data3;
d3 = close of data3 - close of data4;

// Exit options:
// 1 Hold as long as cash satisfies
// 2 Exit when curve flattens
if signal > 0 and ((exitoption = 1 and d0 < longexit) or
    (exitoption = 2 and d1 < d2)) then begin
    sell all contracts this bar on close;
    edate = ELdatetosting(edate2);
    xdate = ELdatetosting(date);
    xprice2 = close of data2;
    xprice3 = close of data3;
    buyPL = size2*(xprice2 - eprice2);
    sellPL = -size3*(xprice3 - eprice3);
    netPL = buyPL + sellPL;
    cum2PL = cum2PL + buyPL;
    cum3PL = cum3PL + sellPL;
    cumNet = cum2PL + cum3PL;
    print(file("c:\tradedstation\Delta-Delta_Trades.
csv"),edate,"", signal:3:0,"", size2:5:3,"",
    eprice2:5:3,"", size3:5:3,"", eprice3:5:3,"", xdate,"",
xprice2:5:3,"",
    xprice3:5:3,"", buyPL:6:2,"", sellPL:6:2,"", net-
PL:6:2,"",
    cum2PL:6:2,"", cum3PL:6:2,"", cumNet:6:2);
    signal = 0;

end;
if signal < 0 and ((exitoption = 1 and d0 > shortexit) or
    (exitoption = 2 and d1 > d2)) then begin
    buy to cover all contracts this bar on close;
    edate = ELdatetosting(edate2);
    xdate = ELdatetosting(date);
    xprice2 = close of data2;
    xprice3 = close of data3;
    buyPL = size3*(xprice3 - eprice3);
    sellPL = -size2*(xprice2 - eprice2);
    netPL = buyPL + sellPL;
    cum2PL = cum2PL + sellPL;
    cum3PL = cum3PL + buyPL;
    cumNet = cum2PL + cum3PL;
    print(file("c:\tradedstation\Delta-Delta_Trades.
csv"),edate,"", signal:3:0,"", size2:5:3,"",
    eprice2:5:3,"", size3:5:3,"", eprice3:5:3,"", xdate,"",
xprice2:5:3,"",
    xprice3:5:3,"", buyPL:6:2,"", sellPL:6:2,"", net-
PL:6:2,"",
    cum2PL:6:2,"", cum3PL:6:2,"", cumNet:6:2);
    signal = 0;
end;

// entry long data2, short data3
if marketposition = 0 and d0 >= longentry and d2 > 0 and
d1 > d2
    and close > 0 and close of data5 > 0 then begin
    ATR = avgtruerange(20) of data2;
    size2 = 0;
    if ATR <> 0 then size2 = (investment/2)/(ATR*conv);
    ATR = avgtruerange(20) of data3;
    size3 = 0;
    if ATR <> 0 then size3 = (investment/2)/(ATR*conv);
    if size2 > 0 and size3 > 0 then begin
        eprice2 = close of data2;
        eprice3 = close of data3;
        edate2 = date;
        signal = 1;
        buy size2 contracts this bar on close;
        end;
    end
    else if marketposition = 0 and d0 <= shortentry and d2
< 0 and d1 < d2 then begin
        ATR = avgtruerange(20) of data2;
        size2 = 0;
        if ATR <> 0 then size2 = (investment/2)/(ATR*conv);
        ATR = avgtruerange(20) of data3;
        size3 = 0;
        if ATR <> 0 then size3 = (investment/2)/(ATR*conv);
        if size2 > 0 and size3 > 0 then begin
            eprice2 = close of data2;
            eprice3 = close of data3;
            edate2 = date;
            signal = -1;
            sell size3 contracts this bar on close;
            end;
        end;
    end;

if lastbaronchart then
    if marketposition > 0 then sell all contracts this bar on
```


CODE FOR DELTA-DELTA STRATEGY, IN EASLANGUAGE (CONT'D.)

```

close
    else if marketposition < 0 then buy to cover all
    contracts this bar on close;

    if psignal > 0 then begin
        dailyPL = (size2*close of data2 - size3*close of
data3);
        cumdailyPL = cumdailyPL + dailyPL;
        end
    else if psignal < 0 then begin
        dailyPL = (-size2*close of data2 + size3*close
of data3);
        cumdailyPL = cumdailyPL + dailyPL;
        end;

psignal = signal;

If printdetail then begin
    adate = ELdatetostring(date);

    If Currentbar = 1 then begin
        print(file("c:\tradedstation\Delta-Delta_Detail.csv"),
            "Date,Cash,Close0,Close1,Close2,Close3,Close
4,C0-C1,C1-C2,C2-C3,C3-C4,",
            "Signal,Size2,Size3,Eprice2,Eprice3,dailyPL,Tot
alPL");
        end;
        print(file("c:\tradedstation\Delta-Delta_Detail.
csv"),adate,"",close of data5:8:4,"",
            close:8:4,"",close of data1:8:4,"",close of
data2:8:4,"",
            close of data3:8:4,"",close of data4:8:4,"",
d0:8:4,"",d1:8:4,"",
            d2:8:4,"",d3:8:4,"",signal:6:0,"",size2:6:2,"",
size3:6:2,"",
            eprice2:6:2,"",eprice3:6:2,"",dailyPL:8:2,"",
cumdailyPL:8:2);
        end;
    
```

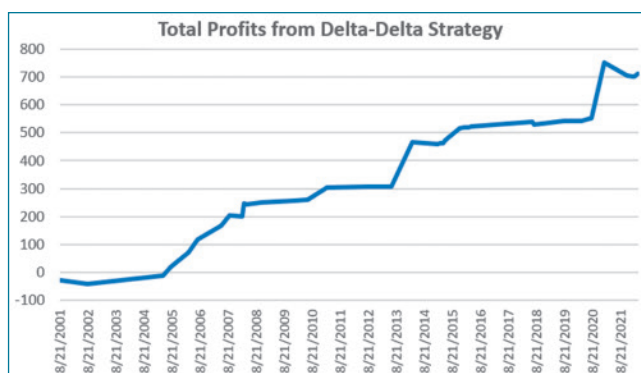


FIGURE 3: TOTAL PROFITS, DELTA-DELTA STRATEGY. How does the strategy perform? This backtest shows results beginning in 2000.

ing) spread as the contracts mature. We can then write a TradeStation program with the following rules:

- **Buy** the second delivery and sell the third delivery when the difference between cash and the first delivery (delta_0) is greater than 1 cent and delta_2 > 0 and delta_1 > delta_2. This shows that the spread is increasing. Once entered, we only care that delta_0 remains positive.
- **Sell** the second delivery and buy the third delivery when the difference between cash and the first delivery is less than -1 cent and the opposite conditions occur.
- **Exit** the long or short position when delta_0 goes to zero.

Notice that we don't care about the term structure of the deferred contacts once we have a position. Prices can flop around due to liquidity or get distorted by a

large transaction. It is only important that the cash price remains higher than the first delivery to hold the long position.

DOES IT WORK?

Figure 3 shows a chart of total trade profits beginning in 2000. Figure 4 shows the most recent trades printed by the strategy program. The investment was \$50,000, allocated equally (\$25,000) to each contract and volatility adjusted using volatility parity: the investment divided by the dollar value of the 20-day average true range. Because of the spread, you should get reduced margin.

VARIATIONS

When writing this program, I made some decisions that you might not want. I used the second and third delivery. You might want to use the first and second to get more of an increase in the spread. I took the trades whenever the nearest spread was greater than 1 or less than -1. You might want to be more selective and use a larger threshold.

Once in a trade, letting the second and third delivery roll into the first and second delivery should increase returns. But that was too complicated for this program. The program is shown in the sidebar, "Code For Delta-

We call the price differences between contracts the "deltas."



Delta Strategy, In EasyLanguage.”

The term structure of crude oil resembles the structure of the yield curve, which is in backwardation (“inverted”). You might try applying this idea to those markets.

Perry J. Kaufman is a trader and financial engineer. He is the author of many books on trading and market analysis, including the sixth edition (2020) of Trading Systems and Methods (with the first edition published in 1978 as a seminal book in the field of technical analysis), as well as Kaufman Constructs Trading Systems (2020), and Learn To Trade (2022). For questions or comments, please go to www.kaufmansignals.com.

The code given in this article is available in the **S&C Article Code** section of our website, Traders.com.

FURTHER READING

Kaufman, Perry J. [2022]. *Learn To Trade*, Amazon.

—— [2020]. *Trading Systems and Methods*, 6th Edi-

tion, Wiley.

—— [2020]. *Kaufman Constructs Trading Systems* (print and ebook editions), Amazon.

‡TradeStation

‡See Editorial Resource Index

Find similar articles online at Traders.com

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	EDate	Pos	BuySize	Price2	SellSize	Price3	XDate	Price2	Price3	BuyPL	SellPL	NetPL	CumBuy	CumSell	CumNet
26	1/19/2016	-1	13.2	35.69	17.325	36.05	1/21/2016	35.96	36.3	4.33	-3.56	0.77	-302.18	820.79	518.61
27	2/19/2016	-1	11.66	38.52	13.096	38.98	2/22/2016	39.92	40.35	17.94	-16.32	1.62	-318.5	838.73	520.23
28	3/18/2016	-1	16.932	44.16	19.048	44.79	3/21/2016	44.51	45.1	5.9	-5.93	-0.02	-324.43	844.64	520.21
29	4/19/2016	-1	16.745	44.99	18.727	45.52	4/22/2016	46.24	46.85	24.91	-20.93	3.98	-345.36	869.54	524.18
30	6/25/2018	1	17.007	65.47	19.238	63.36	6/29/2018	69.49	66.09	68.37	-52.52	15.85	-276.99	817.02	540.03
31	7/16/2018	1	13.885	64.71	16.606	62.61	7/27/2018	67.04	65.19	32.35	-42.84	-10.49	-244.64	774.18	529.54
32	8/19/2019	1	14.832	53.11	18.342	52.88	9/26/2019	53.56	52.53	6.67	6.42	13.09	-237.97	780.6	542.63
33	3/30/2020	-1	7.78	33.58	8.597	34.14	3/31/2020	33.58	34.15	0.09	0	0.09	-237.97	780.68	542.72
34	8/7/2020	-1	24.814	43.63	27.397	43.78	9/2/2020	44.04	44.51	20	-10.17	9.83	-248.14	800.68	552.55
35	1/21/2021	1	27.263	50.4	20.877	50.13	10/11/2021	75.92	73.88	695.75	-495.82	199.92	447.61	304.86	752.47
36	11/9/2021	1	14.81	76.55	17.277	74.47	11/22/2021	70.22	71.73	-93.75	47.34	-46.41	353.86	352.2	706.06
37	1/19/2022	1	14.586	77.57	18.077	76.79	2/2/2022	78.63	77.9	15.46	-20.07	-4.6	369.32	332.13	701.45
38	2/11/2022	1	12.844	81.92	14.934	81.17	2/24/2022	81.68	80.92	-3.08	3.73	0.65	366.24	335.87	702.1
39	4/1/2022	1	4.995	88.91	5.485	88.19	10/27/2022	81.84	79.61	-35.31	47.06	11.75	330.92	382.93	713.85

FIGURE 4: RECENT TRADES FROM DELTA-DELTA STRATEGY. The investment in the test was \$50,000, allocated equally (\$25,000) to each contract and volatility adjusted using volatility parity (the investment divided by the dollar value of the 20-day average true range).

It is only important that the cash price remains higher than the first delivery to hold the long position.



Futures For You

GARNER

Continued from page 17

alternative for investment dollars, commodity busts will be an “early and often” phenomenon.

While energy, grains, and meats have experienced runaway gains followed by stunning busts in recent years, gold and silver have been trapped in a trading range since 2020. COVID shutdowns triggered a gold rally above \$2,000 per ounce, but prices retreated to about \$1,700,

establishing the bottom of a trading channel that has spanned four years. The 2022 Russian invasion of Ukraine resulted in a similar cycle from euphoria to misery. Gold futures have had three more unsuccessful stabs at breaking \$2,100 but have managed to make higher lows in the meantime. Perhaps the precious metals will take the baton and create a runaway rally while the rest of the commodity sectors take a breather. If so, our charts suggest \$2,500; maybe even \$2,600 isn’t out of the question.

The most significant factor working against persistent inflation is technology.

If silver is your precious metal of choice, that should enable silver to see somewhere between \$33.00 and \$37.00.

Find similar articles online at Traders.com

ALGORITHMIC TRADING

Have a question about system or algo trading? Kevin J. Davey has over 30 years of system trading experience. Davey is a full-time trader, and also teaches and consults via his Strategy Factory online workshop (<https://kjtradingsystems.com>). He is the author of five bestselling trading books, including Building Winning Algorithmic Trading Systems and his latest book, Algo Trading Cheat Codes. Send your questions or topic suggestions to Kevin Davey at kdavey@kjtradingsystems.com. Selected questions will appear in a future issue of S&C.



Kevin J. Davey

TRADING BOTS

I just bought a trading bot. How do I go about tuning it?

Thanks for the question. Truthfully, answering it may upset quite a few trading bot vendors, but I'll proceed anyway.

Bot vendors make their product sound amazing. They will show great performance curves, provide dozens of testimonials and explain all the bot settings you can set (tune) on your own. It all sounds great, until you purchase it and get to the actual operation. At that point, things get a little dicey. Here are a few reasons why.

BLACK BOX

The bot almost certainly comes as locked code. That means you can't see what it does or how it does it. It could use random numbers for signals—you just do not know. Nothing destroys confidence like a bot that generates signals for unknown reasons, especially during a losing streak. You will always be scared of what the bot might do someday. Of course, the bot vendor will say "don't worry, our bot is fantastic, just look at the performance curves." That brings up another point—past performance.

PAST PERFORMANCE

Many bot vendors will show you hypothetical equity curves. This is especially true with forex bots, where they might show "verified" third-party performance. There are

a few vendor tricks with this. First, many of the third-party verification sites can be gamed. Some vendors have even been known to create fake brokerages to show their stellar "real" performance. In those cases, yes, the performance is verified but the broker is bogus. Other vendors will create multiple versions of their bots and only publicly show the performance of the best bots. Finally, some vendors will instruct you to tune your bot, which can lead to even more problems.

But if you do decide on buying a trading bot, be very careful. There are a lot more bad bots out there than good bots.

BOT TUNING

If you accept the black box aspect of bots, and realize most performance numbers are not legitimate, you'll probably look to tune your bot to get the best real-time trading performance. This sounds like a reasonable idea; after all, cars need tune-ups for maximum performance. But remember—trading bots are not cars! In fact, trying to tune a bot is just about the worst thing you can do. Why? Optimization (tuning) of a bot usually leads to bots that work great on historical data, but are usually too overfit to work on real-time data. Historically tuning a bot means

tuning it to all the random noise that is in any trading market. Since that noise is random and will never be exactly repeated, the model inevitably falls apart in real time.

All that said, there may be profitable bots out there for sale to the general public. And many of those may be black boxes. If you decide to go the bot buying route, I'd recommend the following steps:

1. Only believe performance numbers you create, preferably in real time. Realize historical performance may be real or may be fake, but even in the best case, remember "past performance is not indicative of future results."
2. If the bot does not come pre-configured with profitable settings, it is best to avoid it. If you know how to properly test the bot, you could tune it yourself. But be extremely careful, as 90% of traders test strategies and bots incorrectly.
3. Remember the adage "if it is too good to be true, it probably is." Be skeptical of everything, and you'll save money as a result.

I realize I have not painted bots in a good light in this article. And that does not mean all bots are suspect. But if you do decide on buying a trading bot, be very careful. There are a lot more bad bots out there than good bots.

Find similar articles online at [Traders.com](https://www.Traders.com)

Explore Your Options

GOT A QUESTION ABOUT OPTIONS?

Jay Kaeppel has over three decades of experience in the options markets. He was a head trader for a CTA firm, an options trading software developer, and was a portfolio manager for an investment management firm. He is presently Senior Research Analyst for Sentimentrader.com. He is the author of several books, including *The Four Biggest Mistakes In Option Trading*; *The Option Trader's Guide To Probability, Volatility, And Timing*; and *Seasonal Stock Market Trends*. Send your questions or topic suggestions to Jay Kaeppel at jay@sentimentrader.com. Selected questions will appear in a future issue of S&C.



Jay Kaeppel

THE ZEBRA STRATEGY

I can't afford to trade a lot of higher-priced stocks. Someone mentioned the zebra strategy as an alternative. Can you tell me what that is and if it is worth pursuing?

Certainly. The zebra strategy is a simple options strategy that allows a trader to emulate a long position in shares of a stock but at a fraction of the cost of buying the underlying shares. Of course, as with all option strategies, there are tradeoffs to consider. Let's illustrate with an example.

AN OPPORTUNITY IN AAPL

The actual timing mechanism to decide when to enter the trade is up to the individual trader. The purpose of this discussion is not entry timing but rather the relative advantages and disadvantages of using the zebra strategy versus simply buying shares of stock. For our example, we will look at Apple (ticker AAPL).

Figure 1 shows that AAPL shares are above their 200-day moving average but have pulled back significantly, and the 6-day RSI is at a low reading.

Let's assume a trader expects AAPL shares to bounce sometime in the next three months. The most straightforward approach to playing this outlook would be to buy 100 shares of AAPL stock (in this case, at \$181.91). The particulars and risk curves for this position appear in

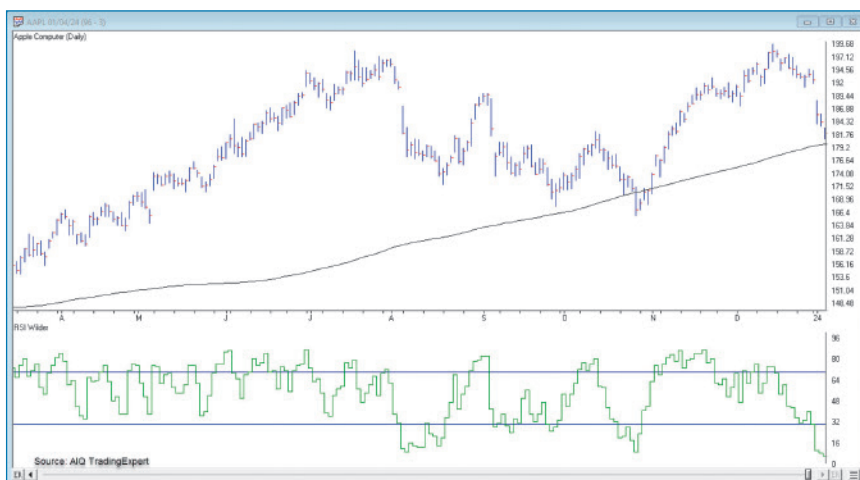


FIGURE 1: AAPL. Here, AAPL stock shares are above their 200-day moving average but have pulled back significantly. The 6-day RSI is at a low reading. If the trader is expecting AAPL shares to bounce, say, in the next three months, the trader might consider either buying shares long or using an options strategy such as the zebra options strategy.

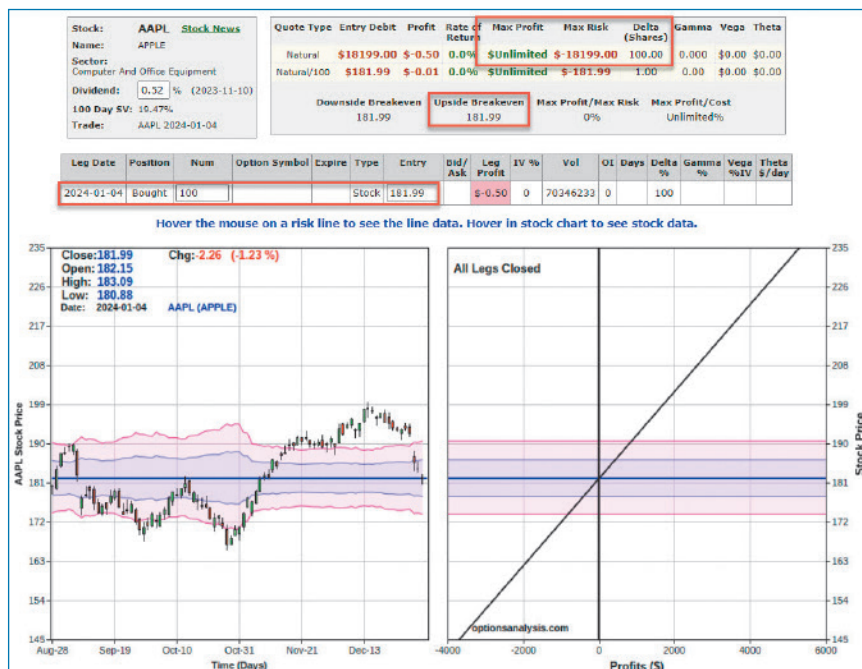


FIGURE 2: LONG POSITION. In this example, 100 shares of AAPL are bought. Note that the "risk curve" for the long position is a straight line; for each \$1 price change in share price, the position will gain or lose \$100.

Explore Your Options

Figure 2. Note that the “delta” for long 100 shares of stock is 100 and that the “risk curve” is a straight line because, for each \$1 price change for AAPL shares, the position will gain or lose \$100.

THE ZEBRA STRATEGY AS AN ALTERNATIVE

The zebra strategy is best thought of as a “stock replacement” strategy, that is, it is intended to emulate a position of holding shares of stock—but ideally at a much lower cost.

In a nutshell, a zebra buyer will buy two call options with a delta of roughly 75 and sell one option with a delta of approximately 50. This gets the overall position delta close to 100—i.e., the equivalent of holding 100 shares of stock.

Looking at an options table and identifying the appropriate strikes based on the option’s respective deltas is simple. One question to consider, however, is “which expiration month to trade?” The answer is that there is no hard and fast rule, only tradeoffs.

As we will see shortly, time decay can become a negative issue for a zebra trade, so anything under 45 days to expiration requires the stock to move in the anticipated direction post haste. Likewise, it is generally best to have more time for the underlying stock to move. On the other end of the spectrum, longer-term options typically have less volume and

The zebra strategy is a simple options strategy that allows a trader to emulate a long position in shares of a stock but at a fraction of the cost of buying the underlying shares.

Stock:	AAPL	Stock News	Quote Type Entry Debit Profit Rate of Return Max Profit Max Risk Delta Gamma Vega Theta									
Name:	APPLE		Natural \$2836.00 \$-76.00 -2.7% \$Unlimited \$-2836.00 99.29 0.784 \$22.67 \$-4.95									
Sector:	Computer And Office Equipment											
Dividend:	0.52 % (2023-11-10)		Downside Breakeven		Upside Breakeven		Max Profit/Max Risk		Max Profit/Cost			
100 Day SV:	19.47%		184.18		184.18		0%		Unlimited%			
Trade:	AAPL 24Apr19 170-185 Call Zebra											

Leg Date	Position	Num	Option Symbol	Expire	Type	Entry	Rid/Ask	Leg Profit	IV %	Vol	OI	Days	Delta %	Gamma %	Vega %	Theta \$/day
2024-01-04	Sold	1	AAPL240419C185	2024 Apr 19	185 Call	8.20	8.10 8.30	\$-10.00	21.42	1711	4958	106	-51.25	-1.85	-39.0	5.1
2024-01-04	Bought	2	AAPL240419C170	2024 Apr 19	170 Call	18.28	17.95 18.60	\$-66.00	26.44	185	2175	106	75.27	1.32	30.9	-5.0

FIGURE 3: TRADE PARTICULARS, ZEBRA OPTIONS STRATEGY. In a zebra trade, two calls are bought and one call is sold short on the same underlying stock. The trade has essentially the same upside potential as buying 100 shares of stock but costs much less to enter.

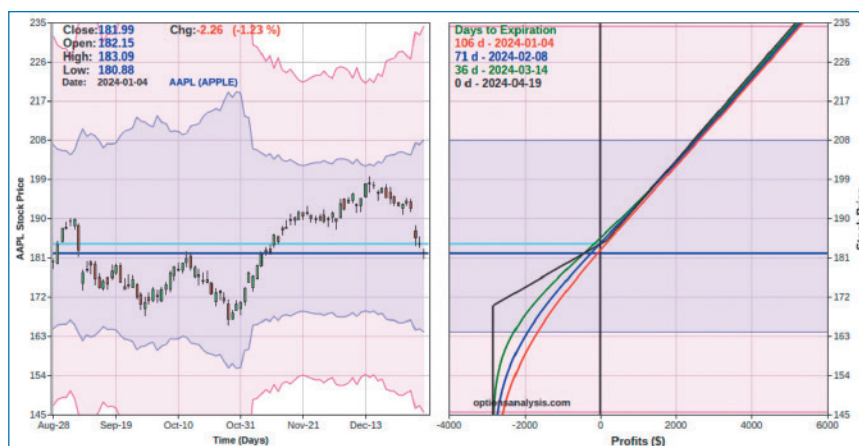


FIGURE 4: RISK CURVES, ZEBRA OPTIONS STRATEGY. The risk curves show the expected P/L for the option position based on the price of the underlying shares as of four different dates leading up to option expiration. Here, if AAPL shares decline in price, the risk curves for the zebra trade become increasingly more negative as time passes. The example trade has a maximum risk of -\$2,836 below \$170 a share.

liquidity and often trade with wider bid/ask spreads. So again, while there is no “correct” answer, three months or so seems about right for a zebra strategy trade. This allows the underlying stock some time to make a move before time decay becomes an issue and can still offer decent option opportunities in heavily option-traded issues.

AN EXAMPLE USING AAPL OPTIONS

Our example zebra strategy trade involves:

- Buying 2 Apr19 2024 AAPL 170 calls @ \$18.28
- Selling 1 Apr19 2024 AAPL 185 call @ \$8.20

The particulars for this trade appear in Figure 3 and the risk curves in

Figure 4.

A few key things to note:

- The zebra has essentially the same upside potential as long 100 shares (delta of 99.29 for the zebra and 100 for long 100 shares)
- However, the zebra costs only \$2,836 to enter versus \$18,199 to buy 100 shares of AAPL stock
- The zebra trade (if held until expiration) has an upside breakeven price of \$184.18
- On the downside, the zebra trade has a maximum risk of -\$2,836 below \$170 a share, whereas the long 100 shares position will continue to lose -\$100 for each point AAPL might decline below \$170

Continued on page 31



Fixed Vs. Variable

Fixed Stop-Loss And Percentage Stop-Loss In Comparison

Don't underestimate the importance of using stops in your trading. But which is better to use—a fixed or variable stop-loss? Here's a test to suggest which may work best.

by Andrea Unger

FIXED VS. VARIABLE STOP-LOSSES

As an example, let's take the e-mini S&P 500 futures and look at the values from 2008 to today. It is apparent that the value of a contract has changed drastically over time. In the past, a contract was worth less than 1,000 points, and today it has exceeded 4,000 points.

So a futures move of 2% that occurred today is at least four times the monetary value of the same move that occurred 15 years ago. If we assume that a single point of the futures under consideration is worth \$50, we obtain the following:

- In 2023, 2% (about 80 points) would be worth \$4,000
- In 2008, the same 2% move (about 20 points) would have been worth \$1,000

It seems logical, therefore, to believe that a percentage stop-loss would be the best choice. Indeed, it would adjust better to the economic changes in the instrument

One of the most important parameters of an automatic trading system, if not the most important, is undoubtedly the stop-loss. This is because it allows us to limit the maximum loss of a trade to a given value.

This value can be expressed in two different ways: as a fixed amount (for example, by setting it at \$1,000) or as a variable amount (for example, by expressing it as a percentage of recent prices on the market).

Here, I will show how to apply both types and compare them using a real trading strategy to thoroughly analyze the difference in results.

over the years and respond immediately to impulsive market movements.

Problem solved? As always, when answering questions, we test different scenarios to compare them.

TESTING FIXED VS. VARIABLE STOP-LOSSES ON A TRADING STRATEGY

For testing, let's take a strategy that we have used live for some time and that was developed for the futures in question with a 5-minute timeframe and using data from 2008 to the present.

It is a multiday strategy initially developed with a fixed monetary stop-loss of \$1,100, but we want to set a percentage stop-loss to see if the system would benefit.

In EasyLanguage, a fixed stop-loss is expressed by this condition:

```
setstoploss(1100);
```

Meanwhile, a variable (percentage-based) stop-loss could be expressed in EasyLanguage by the following condition:

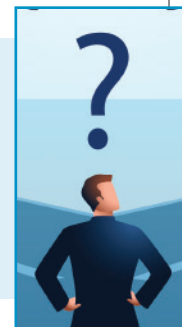
```
input: myStopPerc(0);
var: StopPerc(0);
StopPerc = (closeS(1)*myStopPerc/100)*bigpointvalue;
setstoploss(StopPerc)
```

We have created the variable **StopPerc**, which will be assigned the monetary value of the stop-loss according to the formula shown above. This value is calculated as a percentage (**myStopPerc/100**) of the closing price of the last session (**closeS(1)**) multiplied by the one-point value of the instrument (**bigpointvalue**, which we know is equal to \$50 on the emini S&P 500).

The **myStopPerc** input helps to optimize the stop-loss value, as we will see in a moment. First, however, we should ask ourselves in what range this optimization is worthwhile.

With **myStopPerc** = 1.5 and considering a futures price of 3,000 points, thus referring to more recent times, we would obtain a stop-loss value of \$2,250 (given

One of the most important parameters of an automatic trading system, if not the most important, is undoubtedly the stop-loss.



by $3,000 * 1.5\% * \$50$). We then decide to run **myStopPerc** input optimization in the range of 0.5 to 2.5 at step 0.25, and get the results shown in Figure 1.

Highlighted in blue, we find the best compromise to maintain the system's high net profit and average trade while keeping the max drawdown not too high.

This solution is made possible by the value **myStopPerc** = 2.0, whose closest values (1.75 and 2.25) still give good results, giving stability to this choice.

Now let's look at the results of the original strategy with a fixed stop-loss of \$1,100 (see Figure 2).

ANALYSIS OF THE RESULTS

Before we compare the results numerically, we should consider some crucial aspects.

MultiCharts64 - Optimization Report - @ES - 5 Minute - TradeStation

	Net Profit	Avg Trade	Total Trades	Max Intraday Drawdown	MyStopperc (SL percentuale)
1	182.175,00	431,69	422	-30.075,00	2,50
2	171.175,00	396,24	432	-24.887,50	2,00
3	169.387,50	396,69	427	-26.750,00	2,25
4	167.650,00	379,30	442	-28.850,00	1,75
5	152.975,00	337,69	453	-35.662,50	1,50
6	150.850,00	326,52	462	-35.737,50	1,25
7	149.737,50	287,40	521	-20.712,50	0,75
8	142.787,50	250,07	571	-15.200,00	0,50
9	131.237,50	266,74	492	-32.812,50	1,00

FIGURE 1: OPTIMIZATION REPORT, PERCENTAGE-BASED STOP-LOSS. An optimization is run to test a range of values for a percentage-based stop-loss. Here, a range of 0.5 to 2.5 is tested in steps of 0.25. The stop-loss value highlighted in blue—a 2% stop-loss—gave the best compromise between profit and maximum drawdown.

MultiCharts64 - Optimization Report - @ES - 5 Minute - TradeStation

	Net Profit	Avg Trade	Total Trades	Max Intraday Drawdown
1	187.087,50	384,16	487	-18.375,00

FIGURE 2: FIXED-SIZE STOP-LOSS. Next, the same strategy is backtested using a fixed stop-loss amount of \$1,100 instead of using a percentage-based stop-loss. How do they compare? You can compare this result to the percentage-based stop-loss results in Figure 1.

TRADE BRILLIANTLY



thinkorswim desktop
Candlestick Chart
with Ribbon Study

Schwab.com/Trading

Investing involves risks, including loss of principal.

*Schwab does not recommend the use of technical analysis as a sole means of investment research.

© 2024 Charles Schwab & Co., Inc. All rights reserved. Member SIPC. (0324-31FY) ADP123106-00

thinkorswim[®] is now at Schwab.

Our award-winning thinkorswim trading platforms are loaded with powerful features that let you dive deeper into the market.

- Pull from 400+ technical studies* on thinkorswim desktop, including basic support, resistance, profile, and candlestick pattern charts. Plus, support your more advanced strategies with sophisticated charts, like Monkey Bars and Renko charts and up to 20 drawings with eight Fibonacci tools.
- Uncover new opportunities with up-to-the-minute market news and insights.
- Tailor the platforms to your trading style with an array of customization options – from interfaces to charts to orders.

**Built by the trading-obsessed, so
you can trade brilliantly.**



We parameterized the percentage stop-loss, optimized its value, and then selected the best result.

Crucial aspects that should be considered are as follows:

1. We have intentionally used an instrument that has changed dramatically over time and whose equivalent value has quadrupled.
2. We parameterized the percentage stop-loss, optimized its value, and then selected the best result.
3. The data in the previous section was calculated over the entire historical range from 2008 to the present. However, the original strategy was developed more than four years ago, so we could not use the data from the latter period to optimize the monetary value of the stop-loss.
4. Only in the last four years, the instrument has grown significantly.

Without the need to run any tests, all these elements would have convinced anyone to vote for the percentage stop-loss. However, a comparison of results, which is shown in Figure 3, seems to tell us just the opposite. Using a fixed stop-loss resulted in a 9% increase in net profit and a 26% reduction in max drawdown.

In Figure 4, you can see the equity curves from the two

tests side by side. On the left (Figure 4a) is the system with the fixed stop-loss applied, and on the right (Figure 4b) is the same system with the percentage stop-loss applied. We can see that the strategy with the fixed stop-loss has grown much more evenly in the last period, and this is really peculiar because we are comparing results of a live strategy from 2019 with those of a newly optimized strategy.

From my viewpoint, in all of the automated trading tests I have done, I have consistently seen better results using *fixed* stop-losses.

I have always wondered why this is. I think it's because traders, especially institutional traders, reason more readily in absolute values than in percentages, and their habit of reasoning in this way is thus mirrored by the market.

CONCLUSIONS

In conclusion, based on the results obtained in tests done on thousands of strategies and instruments belonging to various asset classes, I believe it is better to use fixed stop-losses rather than percentage stop-losses.

Of course, this is not a rule written in stone, and much

	NetProfit	Average trade	Num trade	Max DD
Stoploss 1.1 K\$	\$ 187.088	\$ 384	487	-\$18.375
Stoploss 2 %	\$ 171.175	\$ 396	432	-\$24.888
Delta	9%	-3%		-26%

FIGURE 3: METRICS, FIXED VS. VARIABLE STOP-LOSS. When a fixed stop-loss amount versus the optimized percentage-based stop-loss amount from Figure 1 is tested on the same trading strategy, the fixed stop-loss gave better results. The fixed stop-loss resulted in a 9% increase in net profit and a 26% reduction in maximum drawdown.

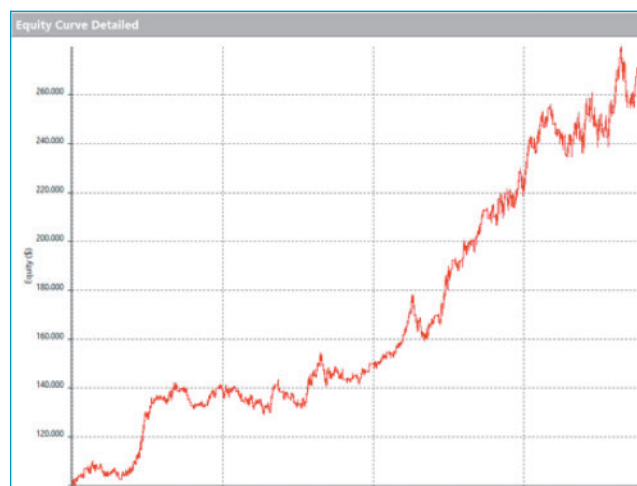


FIGURE 4: EQUITY CURVES, FIXED VS. VARIABLE STOP-LOSS. Here you see equity curves from both backtests. On the left is the strategy using the fixed stop-loss and on the right is the same strategy using the percentage stop-loss. The strategy with the fixed stop-loss grew more evenly than the strategy with the variable stop-loss.

depends on the type of strategy. There may indeed be some exceptional cases where a percentage stop-loss provides better results, but the fixed stop-loss generally seems to work best.

We leave it up to the reader to test both versions so that they can see which is best for their own systems.

Andrea Unger is a full-time professional trader, president of The Unger Academy, and author of The Unger Method. He is a four-time World Trading Champion (2008, 2009, 2010, and 2012), an honorary member of SIAT (Italian Society of Technical Analysis, a branch of IFTA), and speaks throughout Europe, America, Australia, and Asia. He may be reached at Andrea@UngerAcademy.com. The Unger Academy provides services to traders, including individuals, to help them improve their approach to trading (more information can be found at <https://autc.pro/tasc11>).

In all of the automated trading tests I have done, I have consistently seen better results using fixed stop-losses.



FURTHER READING

Unger, Andrea [2021]. *The Successful Trader's Guide To Money Management: Proven Strategies, Applications, And Management Techniques*, Wiley Trading.

— [2021]. *The Unger Method: The Winning Strategy Of The 4-Time World Trading Champion*, The Boss Books.

‡TradeStation, ‡MultiCharts

‡See Editorial Resource Index

Find similar articles online at [Traders.com](https://www.Traders.com)

KAEPPEL

Continued from page 25

Note in Figure 4 that if AAPL shares decline in price, the risk curves become increasingly more negative as time passes. This is one of the potential negative tradeoffs associated with the zebra strategy: If the stock price declines, you can experience a larger dollar loss than you might if you hold long shares.

Now, let's compare the two positions directly.

COMPARING THE ZEBRA STRATEGY TO A LONG SHARES POSITION

Figure 5 displays the risk curves for the two positions. The long 100 shares risk "curve" is the single straight black line. The colored lines highlight the danger of time decay on the zebra strategy position.

The good news is that if AAPL shares rise, the zebra strategy will deliver essentially the same dollar profit as the long 100 shares position at a fraction of the cost (\$2,839 versus



FIGURE 5: RISK CURVES, ZEBRA STRATEGY VS. LONG SHARES. Here, the risk curves for the two positions (the option position and the long stock position) are overlaid for easy comparison. The single, black straight line is the risk "curve" for the long stock position. The colored lines are the risk curves for the zebra trade. They illustrate the risk of time decay on the zebra strategy position.

\$18,199, or 15.6% as much). Likewise, if AAPL shares plummeted, the zebra strategy cannot lose more than \$2,836, unlike the long shares position, which can potentially lose much more.

The tradeoff remains the potential for the zebra strategy position to experience time decay and to end up with a larger loss (or smaller dollar profit) than the long shares position.

The tradeoff remains the potential for the zebra strategy position to experience time decay.

‡www.optionsanalysis.com

‡See Editorial Resource Index

Find similar articles online at [Traders.com](https://www.Traders.com)

A Conversation With Ari Wald, CFA, CMT

Ari H. Wald is managing director and head of technical analysis with Oppenheimer & Co. Inc., providing market-, sector-, and stock-level research to the firm's advisors and institutional clients. Previously, he served as equity research analyst at Brown Brothers Harriman, where he co-developed their Equity View report focusing on pivotal market inflections across equities, fixed income, currencies, and commodities. He also served as head of technical analysis at Wolfe Research. During his Wall Street career, his focus on portfolio strategy, economic cycles, market psychology, and quantifiable tools led him to merge aspects of fundamental analysis with an impartial technical approach.

He is a regular presence on CNBC, Bloomberg, Fox Business, and BNN television. His insights, valued for their simplicity and clarity, have also been featured in Barron's, The Wall Street Journal, and Reuters.

Wald obtained the Chartered Financial Analyst (CFA) designation in 2008, the Chartered Market Technician (CMT) designation in 2011, and has active involvement with the CMT Association. He holds FINRA regulatory licenses including Series 7, 24, 63, 86, and 87. He received the "Best Equity Research" accolade at the Technical Analyst Awards six times since 2014 and was recognized as "Top Analyst of the Year" in 2016.

STOCKS & COMMODITIES contributing writer and ETF columnist Leslie N. Masonson interviewed Ari Wald via email in early December 2023 to discuss his extensive Wall Street career, his technical and fundamental analysis approaches, and the mentors who provided the basis for his success today.

After graduating from Rutgers University with a B.S. in statistics and mathematics, your first full-time job was with Brown Brothers Harriman (BBH), where you learned a great deal from the mentoring you received from Charles Blood, the chief economist there. What wisdoms did he impart to you on the markets, technical analysis, and preparing client reports?

Charlie was a disciplined student of market history and he appreciated the technical craft and its systematic framework. From him I learned about

attention to detail, the right way to create a chart and model a data set, and how important both the accuracy and the aesthetic of a report was when sending it to an institutional client. He was known for having these large coffee-table sized chart books called the *Guides To The Financial Markets*. The books included in-depth market breadth and sentiment data going back to the 1940s, which he bestowed on me when he retired. It's truly invaluable when one has data that not many investors have.

Two other individuals working at BBH while you were there were



My responsibilities include generating investment ideas, providing tactical entry/exit signals, and acting as a disciplined risk-management tool for a comprehensive investment approach.

Andrew Burkly (portfolio strategist) and Sam Burns (head of thematic strategy). What did you learn from them?

My number-one mentor in the industry has been Andy Burkly, BBH's portfolio strategist. He took me under his wing and was the driving force in terms of my career progression. What he might have been best at, and what I learned from him most, was his ability to take technical concepts and explain them in a simple way that a fundamentalist would understand. Sam Burns, BBH's head of thematic

strategy, also taught me a critical piece to my research style including basic ways to quantify the indicators I had been using for years—this became the backbone to what I'm producing to this day.

After BBH, you worked at Wolfe Research, where you were a vice president and head of technical analysis for eight months. What knowledge did you gain from working at this firm?

Wolfe Research is a deep-value fundamental research shop. We stressed mosaic investing, specifically, combining technical and fundamental disciplines to help increase the probability of success. I also learned the importance of creating demand for yourself. While researching opportunities to launch my product, I contacted the managing partner about bringing technical analysis to his firm. He was interested and it started our dialog.

In March 2014, you joined Oppenheimer & Co. Inc. and have been there since. Currently you are head of technical analysis, managing director, and senior analyst. What are your responsibilities there?

My responsibilities include generating investment ideas, providing tactical entry/exit signals, and acting as a disciplined risk-management tool for a comprehensive investment approach. "Inflection Points" is our flagship report designed to gauge the intermediate-term risk/reward outlook for stocks, sectors, and industries on both an absolute and relative basis.

How have you expanded your knowledge of technical analysis over your career beyond the initial mentoring you received?

My process has completely flipped since coming into the industry. At

BBH, we took a contrarian viewpoint, and I loved the idea of using divergence to identify turning points. Later, rather than focusing on finding the lowest cost possible, I found it was more important to help clients increase their probability of success. I realized there was an inverse relationship with this too: one has to pay a cost to increase their probability that the idea was going to work.

Fast-forward to today, and we've shaped our methodology around the momentum factor. The thought process is that investors react slowly to new information, which is called conservatism bias, and this creates steadily developed trends rather than an efficiently priced market.

You've earned both the CFA charter and CMT designation. Why did you pursue the CFA if your main function at Oppenheimer is technical analysis?

I became a CFA charterholder in 2008 and earned the CMT designation in 2011. At the time I earned the CFA charter, my focus was on broader macro strategy including both economics and technical analysis. The CFA exam is the preeminent designation for those getting started in the financial services industry. Going through the CMT curriculum became critical once I was offered the firm's technical analysis product. This is when many of the concepts started to come together for me.

Your objective at Oppenheimer is to provide the firm's clients with high-probability trade ideas. This is accomplished by your top-down and bottom-up approach to investing. Can you briefly explain the key points of how you combine those two disciplines to develop client stock

In terms of top-down, the idea is based on the view that market direction and sector and industry selection make up perhaps half of a stock's performance.

recommendations?

Yes, that is correct—there are two ways we come to our investment conclusions, from the top-down and from the bottom-up, and we combine these ideas and have the most conviction when what we expect to happen overlaps with what is actually happening.

Thinking in terms of top-down, the idea is based on the view that market direction and sector and industry selection make up perhaps half of a stock's performance. Regardless of how good the fundamentals are, if the market is dropping sharply, any particular stock is likely dropping sharply too. Conversely, I'm an advocate for the idea that a rising tide lifts all boats.

In terms of the bottom-up, we're momentum investors who overlay technical analysis onto our process. Generally, we're long stocks showing positive relative strength and short stocks with negative relative strength. The rules to momentum investing is to let our winners run and cut our losers quickly, making sure we have big winners to offset smaller losses.

I understand that you first heard about factor investing, and in particular, momentum investing, when you heard a presentation from Andrew Lo. What role does price momentum play in your analysis?

It wasn't the first time I had heard about factor investing, but under-



We generally have found the relationship between large- and small-cap stocks to be one of the most important market relationships.

standing how price momentum was supported by academic research I thought gave the subject gravitas. It has also become the focal point to our methodology. We know the history, we show when it works, when it doesn't work, and how to quantify it in the market. No style of investing will always work, whether that's growth, value, or momentum, but through various market cycles, momentum has shown to be an alpha-generating factor, and we're disciplined to it.

How do you define momentum, what timeframes do you analyze, and how do you rank stocks based on this data?

We have a broad universe of stocks, about equal to the Russell 3000, and we rank all those stocks based on their momentum. Similar to the academic definition of the factor, our scores are based on prior 6-, 9-, and 12-month returns, we risk-adjust the returns with a 3-year standard deviation to help identify steadier accelerations, and we remove the most recent month of data to consider the mean-reverting tendency of price momentum over very short-term periods. However, we don't blindly buy high momentum and short low momentum, which is the unemotional academic way of investing. Rather, we use these scores as a starting screen, and the visual aspect of technical analysis allows us to identify emerging momentum that is just starting to break higher.

Do you prefer recommending a stock for purchase that is just breaking out of a consolidation pattern or testing its base rather than one of best-performing stocks that is already 25% above its 200-day moving average (such as a few of the so-called "Magnificent 7")

stocks)?

From the perspective that we're producing sell-side research and our goal is to generate new investment ideas, we aim to highlight tactical stock charts that are breaking through resistance or testing support. But we don't believe a stock that has already performed well is a negative indication. Often, the stocks that are deviated above their 200-day average are stocks that have good fundamentals behind them and are being sponsored by strong market players.

Do you recommend any ETFs to clients or mostly stocks?

We recommend both ETFs and stocks in our research reports. ETFs are a great way to obtain direct exposure to our top-down recommendations. For instance, our Global ETF Tracker provides a current and concise overview of over 150 actively traded ETFs covering both domestic and global stocks, bonds, and commodities.

How do you evaluate ETFs for purchase, since they contain many stocks?

We'll run a similar ranking of our ETF universe based on the momentum factor. In addition, for our bottom-up stock scores, we aggregate the scores at the sector and industry level, looking specifically at the weights of each group in quintile 1 minus quintile 5. This provides a look at where the factor is located

from the top-down, and in our reports we'll highlight the ETFs that best track these ideas.

Do you incorporate any cycle work in your market outlook reports or market analysis?

Cycle work is a critical input to our market call. Our first goal is to understand the stage of what has been a four-year equity cycle. Historically, there's been major market lows about every 4 years consisting of about a 3-year bull market and a 1-year bear market, though the cycles have been condensed in recent years. 2022 was a great example because we showed bear cycles in a secular bull typically last about 9 months. At the time, the S&P was down top-to-bottom for 9 months in October, going into strong seasonals, and divergences were emerging. We thought it was textbook bottom and we were bullish off the October 2022 reversal day.

You believe that the most important arbiter in the markets is the equity's current price, irrespective of its earnings, Fed policy initiatives, economic conditions, and all the other noise, correct?

Our goal is to separate actionable signals from noise, and macro measurements beyond an equity's price are fair game if our analysis indicates it can provide forward-looking guidance.

Fed policy has perhaps been one of the key drivers of the equity cycle through history. However, its efficacy is based on the practitioner's use of the signal. For instance, we think it is poor technique to make blanket statements like "easy monetary policy is good for stocks" or "tight policy is bad." In terms of current conditions, we've instead noted similarities to the 1987–1989 bull cycle when internal breadth didn't expand meaningfully until the last Fed hike in year-2, and

the first cut then occurred closer to the cycle's top. Once again, we expect the market to advance until the Fed cuts its policy rate—this could still be 6 to 12 months away, and perhaps speaks to how these macro developments are discounted by the market before they occur.

At what point do you decide to sell a position, and is that a rules-based decision?

There's the ideal sell signal, and there's the protective sell signal. The ideal sell signal is when distribution develops through a topping process. This is when new price highs are undermined by both a loss of momentum and relative strength. Our indicators form a bearish divergence, which is to say they start making lower highs while price is still trending higher. However, such textbook signals don't always develop.

Otherwise, we follow the "Paul Tudor Jones rule" which is that if a security's price falls below its 200-day average, some action to cut the position is warranted. It's far from a holy grail, but it helps investors to not get completely stuck in losing positions.

You use the slope of the 200-day moving average to assess the market's trend. What conditions must occur before you call a market reversal?

Correct, we'd like to see the slope of a 200-day average change before calling a reversal at the stock level. For the market, we have more tools at our disposal and try to make those calls at an earlier stage. For instance, we'll be watching that our primary indicators measuring internal breadth and sentiment are at levels consistent with a reversal, and then watching for a key-reversal day. This is when losses (or gains) at the open are reversed sharply into the close. This

is an indication of fatigue and is often the first clue that a change in trend is developing.

Relative strength analysis is a major component of your work. How do you use it?

We like to analyze how a stock is performing versus both the market and its peer group, and we use relative ratios to accomplish that. These ratios are calculating by taking the price of one and dividing it by the other, and we'll run traditional trend analysis on them. If a stock is trending high and its relative ratio starts trending lower, it indicates that market strength is masking weakness in the underlying equity. This typically precedes a reversal in price.

How do you use sector and industry analysis in your work?

The assumption is that there are top-down sector and industry trends that influence the performance of the underlying stocks in those areas. In addition, the broader those trends are from a bottom-up perspective, the more convincing and compelling the signal it provides. Conversely, it doesn't provide much information when one largely capitalized stock is driving the performance of the group. Taken together, our best stock-level ideas are going to be from our best sector and industry ideas.

What do you mean by the term "sector culprit"?

We've done extensive work on this idea and have shown that when internal breadth narrows into a market top, it's typically concentrated in a sector that breaks down ahead of the market. Specifically, we've found that forward market returns turn below-average when one sector is already down

For our bottom-up stock scores, we aggregate the scores at the sector and industry level, looking specifically at the weights of each group in quintile 1 minus quintile 5.

20% on a year-over-year basis—this is our sector culprit.

What are your favorite indicators, and do you use the default settings?

Relative strength is our favorite indicator at the stock level. For the market, our favorite indicators include measurements of internal breadth. For instance, we utilize the percentage of NYSE stocks above their 200-day average for three, typically sequential, signals: 1) low readings below 20% indicate buying opportunities (bulls capitulating), 2) high readings above 70% confirm a broad-based advance (bears capitulating), and 3) new S&P highs undermined by a sub-60% reading signify a topping process (participation narrowing).

Which moving averages do you prefer?

We prefer a 200-day simple average, but we stress that no moving average is better than another. Instead, it's more important to understand the tradeoffs of how each is calculated and staying disciplined to the one that fits your investment style. Both shorter-term and exponential averages place greater weight on more recent data and will move quicker than longer-term and simple averages. However, these quicker averages are also prone to more false signals. We like a 200-day simple average be-

If a stock is trending high and its relative ratio starts trending lower, it indicates that market strength is masking weakness in the underlying equity.

cause it captures a 9-month lookback period, where momentum has been shown to exist.

Do you prefer candlesticks, bar charts, or another chart format?

We prefer candlestick charts for short-term daily horizons because we utilize reversal days for trading signals, which can clearly be seen on a candlestick chart. We prefer bar charts for intermediate- to longer-term horizons for aesthetic purposes because we find them to be less noisy.

How do you use the performance of the Russell 2000 in your analysis?

We use the Russell 2000 as a proxy for market breadth. We generally have found the relationship between large- and small-cap stocks to be one of the most important market relationships. Often, the Russell

2000 will peak ahead of the S&P 500 at a market top when internal breadth typically narrows. When this occurs, strength in the large-cap dominated benchmarks can mask the small-cap weakness developing underneath the surface.

Can you provide an example of how you use indicators and levels on a chart to make buy or sell decisions, as well as point out some key chart attributes?

See Figure 1 for an example chart. The following comments were included with the chart when it was

published, taken from our October 15, 2022 report titled “A Textbook Bottom Missing Rates”:

“Thursday’s turnaround marked a key reversal day; this is when opening losses are followed by a strong rally into the close. As an indication of downside exhaustion we believe the following adds to this reversal’s efficacy: 1) it occurred at the 50% retracement (3,505) of the prior bull market—the majority of bear cycles has been limited to this threshold; 2) it developed from deeply oversold readings in our market-cycle indicators measuring internal breadth and sentiment—levels that have been followed by above-average S&P returns; 3) it was confirmed with signs of less-intense selling vs. June’s high-intensity low; and 4) has aligned with the emergence of bullish seasonals. Overall, the textbook criteria for a market bottom has developed, and is why we

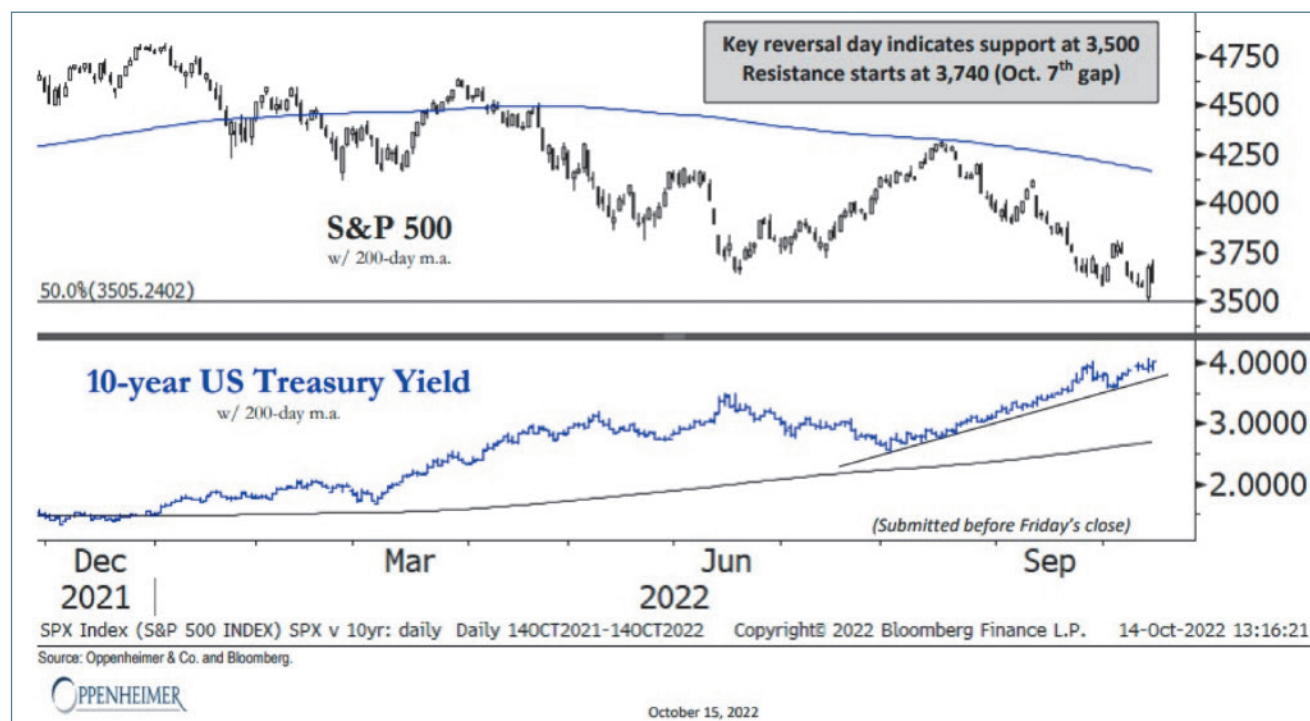


FIGURE 1: SOME EXAMPLE CHART ATTRIBUTES. In this example chart, the S&P 500 stock index is shown at top along with the 10-year Treasury yield in the lower pane, both with their respective 200-day moving averages. A key reversal day can be seen, where opening losses are followed by a strong rally into the close; additional factors would then typically be considered to confirm downside exhaustion.

still believe an opportunity has been presented for the long-term investor.”

Do you take into account the number of institutional holders of a stock and the percentage of outstanding shares they hold, or is that information not very important to consider?

We believe it’s important to consider. However, we haven’t calculated a way to use this information as a repeatable, consistent, and value-added indicator.

Whenever I hear you speak on shows or in interviews, I notice you are able to make complex market subjects very simple to understand, even to those with minimal market knowledge. Is that approach standard operating procedure for you?

Yes, most of our clients are fun-

damentalists and they appreciate our ability to break down the complex into direct insights that matter for all types of investors. Our attempt to identify relationships and trends that, from our view, are simply “hidden in plain sight” provide unique perspectives that allow the investors to make more informed decisions.

What impact will artificial intelligence have on the use and interpretation of technical analysis, and on the ability to provide improved stock selection for your firm’s clients?

It’s perhaps only anecdotal, but the rise of artificial intelligence and electronic trading has made us less reliant on short-term trading signals. From our vantage point, it seems these signals are getting exploited quicker and quicker, and if an in-

Cycle work is a critical input to our market call.

vestor does not act on day 1, they may have missed it. Or, a program learns where a convergence of stops are placed, and is able to trigger the lower price and wash out the weak hands before reversing the price higher again. While this requires more flexibility when it comes to day-to-day trading, we don’t think the programs have been able to alter the longer-term trends that we monitor. If the fundamentals are good, the price is likely going to trend higher, and the long-term technicals should be there for the bulk of the move.

Continued on page 16



FIGURE 2: S&P 500, 2018–2023. Will we see continued strength in 2024 that began in October 2022? In this example chart, the percentage of NYSE stocks above their 200-day moving average is displayed in the lower pane, which can be an indicator of market internal breadth.



What To Consider If Interest Rates Fall

Small-Cap Value ETFs: A Smart Bet For 2024?

Small-cap value stocks and ETFs may be the sleeper category that comes alive after underperforming their small-cap growth counterparts during the 2009 through early 2022 timeframe. Small-cap value performance overtook the S&P 500 index in December 2023 and the trend is expected to continue in 2024 and beyond. Discover which ETFs have the winning attributes to lead the category to higher returns.

by Leslie N. Masonson, MBA

Investors and traders are constantly striving to find the best stocks and ETFs to invest their money in for the highest returns based on their risk tolerance parameters. As we all know, various sectors and styles go in and out of favor over time. The key is to catch a trend change in its early stages to benefit from a potential large move ahead.

In 2023, small-cap stocks and ETFs were the underperformers. While the S&P 500 index gained 24.2%, the iShares Russell 1000 Growth ETF (IWF) advanced 42.60% and the iShares Russell 1000 Value ETF (IWD) gained only 11.36%.

During periods of falling interest rates, value beats growth about 90% of the time. So during 2024, if interest rates should begin to fall, the outlook on value could look promising.

The annual and multiyear performance variance between growth and value is significant. Therefore, investing in the stronger of these two categories can greatly enhance portfolio returns or vice versa. In 2023, the stock prices for the so-called “Magnificent 7” (a group of seven mega-cap stocks made up of tech companies) had an immense impact on the stock indexes. These seven companies had an average gain of over 100%. The S&P 500 index gained 24.2%. Since the index is cap-weighted, the Magnificent 7 stocks were 30% of the index value. When you exclude these seven stocks, the remaining 493 stocks in the S&P 500 index only gained about 7% in 2023. Meanwhile, the equally weighted ETF RSP (which is based on the S&P 500 Equal Weight Index), where the Magnificent 7 stocks had only a miniscule impact, was up about 11.4% in 2023.

In 2023, small-cap ETFs (with an average return of 17.6%) did not perform as well as large caps. Therefore, investors using a contrarian approach may see the small-

cap arena, as last year's underperformer, the place to be in 2024. In 2023, small-cap *value* stocks gained only 9.1%, although they held up well in 2022 on a comparative basis when the stock market had a very bad year.

According to ETFAction.com, there are 190 small-cap ETFs, valued at \$469.8 billion. However, there are only 26 small-cap *value* ETFs, valued at \$77.06 billion. There are 21 small-cap *growth* funds, valued at \$43.7 billion. The remainder are broader in scope.

In general, investors and traders do not pay as much attention to small-caps compared to mid-caps and especially large-cap stocks and ETFs. Investing appears to gravitate toward large companies and in particular tech stocks, which have had a very impressive track record over more than a decade. For example, over the last ten years as of December 30, 2023, while the S&P 500 (SPY) averaged an annual return of 11.93%, the Nasdaq 100 (QQQ) averaged 17.66%. When you include compounding, this 5.75 percentage point difference on an initial \$10,000 investment works out to \$20,000 more for the QQQ over this same period.

There are times when small caps have excelled over large caps. In particular, small-cap *value* ETFs (also sometimes called "small value ETFs" for short) tend to outperform during economic recoveries. Periods of small-cap outperformance include: January 2005 to mid-2008; January 2022 to April 2023; and more recently, from November 20, 2023 to December 30, 2023. Using relative strength analysis or comparing the ticker for Vanguard Value ETF (VTV) to Vanguard Growth ETF (VUG) will pinpoint a change in leadership, indicating when it is time to get aboard the value bandwagon.

BASIC KEY NUMBERS: AUM, EXPENSE RATIO, HOLDINGS, AND YIELD

This remainder of this article focuses only on small-cap *value* ETFs and their key metrics. Typically, investors consider small-cap value stocks to be undervalued, as they typically sell below their intrinsic value. Moreover, these stocks usually have both low price-to-earnings and price-to-book ratios.

ETFAction.com data is used exclusively in this article, unless otherwise noted. ETFAction.com is a comprehensive fee-based website that has undergone significant enhancements since its inception and since my review of the service in the May 2020 issue of this magazine.

Common characteristics of the small-cap value ETFs discussed here include: they are open-ended exchange-traded funds; they are equity-based with a heavy U.S. focus; eight are passively managed and four are actively managed; nine offer quarterly dividends, two offer annual

Ticker	Fund Name
VBR	Vanguard Small Cap Value ETF
IWN	iShares Russell 2000 Value ETF
AVUV	Avantis U.S. Small Cap Value ETF
IJS	iShares S&P Small-Cap 600 Value ETF
AVDV	Avantis International Small Cap Value ETF
DFSV	Dimensional US Small Cap Value ETF
DISV	Dimensional Int'l Small Cap Value ETF
VIOV	Vanguard S&P Small-Cap 600 Value ETF
BSVO	EA Bridgeway Omni Small-Cap Value ETF
VTWV	Vanguard Russell 2000 Value ETF
AVSC	Avantis U.S Small Cap Equity ETF
X SVM	Invesco S&P SmallCap Value Momentum ETF

FIGURE 1: SMALL-CAP VALUE ETFS. Here you see the names and tickers of a dozen ETFs in the category of small-cap value. They are the largest and some of the best performers in the category. Note that Avantis, Vanguard, Black Rock (iShares), and Dimensional have multiple ETFs in this space.

dividends, and one offers a semi-annual dividend; eight are listed on NYSE Arca, three on Nasdaq, and one on Cboe BZX US Equities Exchange; all have FactSet ratings; no leverage or currency hedging is used; and 1099 tax reporting is used.

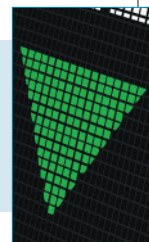
The small-cap value category contains 26 ETFs with assets under management of \$77.06 billion and an average expense ratio of 0.35%. However, I'll reduce my focus here to 12 small-cap value ETFs for ease of comparison. See Figure 1 for the list of 12 ETFs, and in Figure 2, you see some key data metrics for these ETFs.

Based on assets under management (AUM), the top five ETFs in this category are as follows:

1. Vanguard Small Cap Value ETF (VBR)
2. iShares Russell 2000 Value ETF (IWN)
3. Avantis U.S. Small Cap Value ETF (AVUV)
4. iShares S&P Small-Cap 600 Value ETF (IJS)
5. Avantis International U.S. Small Cap Value ETF (AVDV)

AUM is one of the most critical factors for an ETF to grow and remain viable. The two behemoths here are VBR and IWN, which have been around for 19 and 23 years, respectively. VBR has the lowest annual expense

During periods of falling interest rates, value beats growth about 90% of the time.



Ticker	VBR	IWN	AVUV	IJS	AVDV	DFSV	DIDV	VIOV	BSVO	VTWV	AVSC	X SVM	SPY	VTV	VUG
Issuer Name	Vanguard Group Inc.	Blackrock Fund Advisors	American Century Investment Mgt. Inc.	Blackrock Fund Advisors	American Century Investment Mgt. Inc.	Dimensional Fund Advisors Lp	Dimensional Fund Advisors Lp	Vanguard Group Inc.	Empowered Funds Llc	Vanguard Group Inc.	American Century Investment Mgt. Inc.	Invesco Capital Management Llc	S&P 500	Vanguard Value Etf	Vanguard Growth Etf
Inception Date	1/26/2004	7/24/2000	9/24/2019	7/24/2000	9/24/2019	2/23/2022	3/23/2022	9/7/2010	3/13/2023	9/20/2010	1/11/2022				
Aum (\$Mm)	\$27,289	\$12,685	\$9,099	\$8,100	\$5,010	\$2,493	\$1,582	\$1,410	\$1,130	\$835	\$738	\$718			
Expense Ratio	0.07%	0.24%	0.25%	0.18%	0.36%	0.31%	0.42%	0.15%	0.47%	0.15%	0.25%	0.36%			
Holdings	835	1,416	745	452	1,304	1,032	1,506	466	598	1,437	1,339	120			
Avg. Daily Volume	500,783	1,623,476	757,471	644,987	688,636	493,065	292,492	69,769	205,700	53,454	141,217	81,086			
Distributed Yield	2.10%	1.43%	1.63%	1.40%	3.28%	1.27%	0.00%	1.83%	0.00%	1.98%	1.14%	1.28%			
Perf. ytd	16.01%	14.57%	22.83%	14.69%	16.87%	19.24%	19.50%	14.98%		14.68%	19.33%	17.84%	26.19%	9.32%	46.83%
Performance 1 Year	15.47%	14.11%	22.37%	14.29%	16.10%	18.96%	18.86%	14.46%		14.68%	19.16%	17.28%	25.86%	9.08%	46.43%
Performance 3 Years	10.88%	8.18%	18.89%	10.40%	6.25%			10.47%		8.34%		10.13%	10.20%	11.09%	7.78%
Performance 5 Years	12.01%	9.91%		11.19%				11.32%		10.09%			15.80%	11.94%	19.37%
Performance 10 Years	8.53%	6.62%		7.98%				8.06%		6.70%			11.98%	9.76%	14.03%
Flows 1 Year (\$mm)	\$72	(\$777)	\$2,959	\$375	\$2,279	\$1,062	\$707	\$34	\$177	(\$83)	\$575	(\$79)			
Flows 3 Years (\$mm)	\$4,251	(\$1,457)	\$7,014	\$97	\$4,290	\$2,130	\$1,390	\$477	\$209	\$222	\$644	\$548			
Flows 5 Years (\$mm)	\$7,128	(\$590)	\$7,412	\$9	\$4,600	\$2,130	\$1,390	\$720	\$270	\$446	\$644	\$577			

FIGURE 2: KEY DATA METRICS COMPARISON FOR SMALL-CAP VALUE ETFs. VBR and IWN are the leaders in assets under management (AUM), which is an important metric. These two ETFs also have decent trading volume and a low annual expense ratio. However, one-year performance for these two top ETFs are weak at 14% to 15%.

ratio of the group at 0.07%. In second place was VIOV with a low 0.15% expense ratio, followed closely by IJS at 0.18%. Most of the other ETFs were in the range of 0.24% to 0.47%. The lower this ratio, the better since it eats into performance over the years.

These five ETFs managed \$6.2 trillion in AUM or 80% of the \$77.06 billion in that category. One interesting feature of six of these ETFs is the large portfolio size, exceeding 1,000 securities. Sometimes too many securities in a portfolio results in “diworsification” (a term coined by the legendary Fidelity Magellan Fund manager Peter Lynch in his glory days), where too many average stocks pull down the overall performance. IWN, AVDV, DISV, VTWV, and AVSC all have between 1,304 and 1,506 securities in their portfolios. DFSV, DISV, and AVSC, which are actively managed, were all able to

outperform their passively managed competitors. They had a one-year return of nearly 19% or better.

As far as distributed yield, AVDV led the pack at 3.28%, followed by VBR with 2.1%, and 1.98% for VTWV. The rest were clustered around an average of 1.25%. The outliers with no dividends were DISV and BSVQ. DISV, nevertheless, had one of the highest one- and three-year performances of the group at 19.5% and 18.9%, respectively.

CASH INFLOWS AND TRADING VOLUME

Incoming cashflow is the lifeblood for an ETF to remain a viable investment vehicle and to grow its footprint in its category. In this category, cash inflows have been solid for most of these ETFs with the exception of IWN, which has disgorged \$777 million over one year and \$1.5

billion over three years. Avantis U.S. Small Cap ETF (AVUV) was the big winner, picking up almost \$3 billion in one year and \$7 billion over three years with the best performance in all time periods. So, as expected, inflows follow performance. AVDV, with \$2.3 billion of inflows, has also performed very well, except for its weak 6.2% three-year annualized performance.

Three-quarters of these ETFs have average daily trading volume greater than 200,000. The big players are IWN with 1.6



FIGURE 3: AVANTIS SMALL CAP ETF (AVUV) PERFORMANCE 2023. In 2023, the actively managed ETF AVUV had the best performance of the dozen small-cap value ETFs reviewed in this article. This performance resulted in an inflow of cash from interested investors.

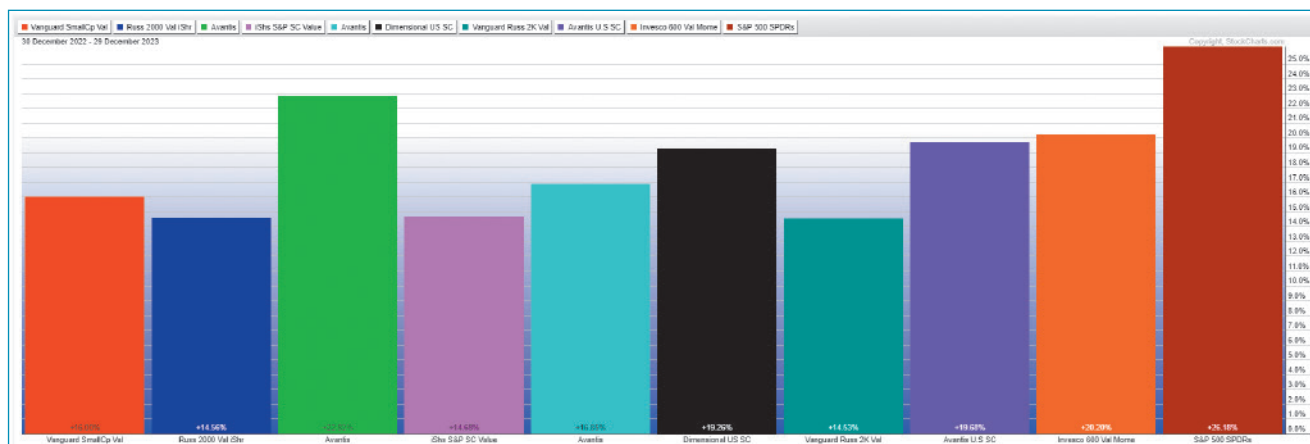


FIGURE 4: ETF PERFORMANCE 2023. The Avantis and Dimensional ETFs performed exceedingly well, as did the Invesco ETF XSVM. IWN (blue) had the lowest performance at 15%. The S&P 500 index performed better, but the S&P 500 index contains the “Magnificent 7” tech stocks and growth stocks, which did very well in 2023.

million shares a day, AVUV with 757,000 shares and AVDV at 689,000 shares. VBR, the AUM leader, comes in with a weak 500,000 shares, which is very low for a monstrous asset base. IJS at 645,000 is also a decent volume. Only VIOV, VTWV, and XSVM are below 100,000 shares a day, but that volume is still reasonable enough to have a low bid-to-ask price spread.

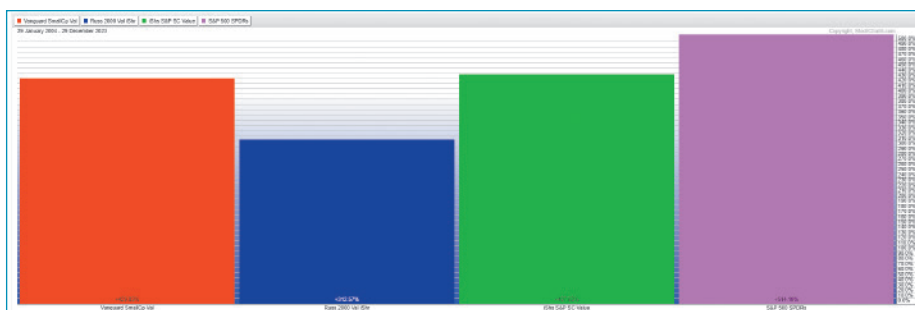


FIGURE 5: PERFORMANCE OF OLDEST SMALL-CAP VALUE ETFs. For the period January 29, 2004 through December 29, 2023, the S&P 500 index gained 514%. This compares with 437% for IJS (green), 429% for VBR (red), and 313% for IWN (blue).

ETF PERFORMANCE

AVUV had outstanding one- and five-year returns compared to its competitors. Refer to Figure 3 for its one-year performance view. Notice it closed the year at its high and well above its 40-DMA. It had slightly lower returns than the S&P 500 but a higher return than the generic value ETFs VTV (Vanguard Growth) and even VUG (Vanguard Value). The Vanguard Growth ETF had a phenomenal 2023 return of 46.8%. However, this latter ETF got creamed in 2022, losing 33.2%; therefore its three-year return of only 7.78% is understandable, while AVUV was up almost 19% in three years.

VBR performed well in all the timeframes shown and better than its competitor IWN. Observe that the S&P 500 index performed better than VBK in all time periods.

IWN’s weak performance over all time periods is most likely the main culprit of its unusually large asset drain. For example, its 6.6% return over 10 years is the worst of the five ETFs that have a record that long. A comparison to the S&P 500 return for the decade of almost 12% makes IWN’s performance look uninspiring. Of course, comparing a value ETF to the S&P 500

is not an apples-to-apples comparison, but many buy-and-holders just buy the SPY and forget about it. That has worked out well over long time periods, even with double-digit bear markets along the way. And trying to determine when value stocks and ETFs will hit their stride takes work, which most individuals have a lack of time or interest in doing.

Looking at a comparative price performance of these ETFs for 2023 (Figure 4), we notice that the S&P 500 index with a performance of 26.16% as of December 29, 2023 performed better than any of these small-cap value ETFs, since large-cap tech growth was the big winner in the past year. Nevertheless, AVUV came in a close second at 22.8%, and Invesco’s XSVM achieved a 20.2% return, with Dimensional’s DSFV at a respectable 19.3%. A line chart (not shown) instead of a bar chart representation would have shown a mirror image of the ups and downs during the year of all these ETFs, except that the S&P 500 was a consistently better performer from March 2023 through the remainder of 2023.

Figure 5 compares the oldest small-cap value ETFs against the S&P 500 since the common starting date of

	VBR	IWN	AVUV	IJS	AVDV	DFSV	VIOV	BSVO	VTWV	AVSC	XSVM
VBR											
IWN	28.2% 447 names										
AVUV	20.2% 268 names	39.1% 539 names									
IJS	16.2% 271 names	33.7% 343 names	23.8% 187 names								
AVDV	0.0% 0 names	0.2% 2 names	0.0% 0 names	0.0% 0 names							
DFSV	30.7% 403 names	49.1% 707 names	48.6% 561 names	28.5% 264 names	0.0% 1 names						
VIOV	17.6% 285 names	37.6% 357 names	30.1% 189 names	62.3% 363 names	0.0% 0 names	30.1% 260 names					
BSVO	4.5% 120 names	22.7% 453 names	28.5% 378 names	19.2% 128 names	0.2% 1 names	23.8% 483 names	21.0% 129 names				
VTWV	28.2% 451 names	93.6% 1404 names	38.8% 539 names	33.4% 343 names	0.2% 2 names	48.9% 711 names	37.7% 358 names	22.2% 455 names			
AVSC	13.8% 320 names	44.1% 916 names	42.4% 602 names	36.7% 309 names	0.0% 0 names	38.4% 683 names	38.0% 308 names	33.0% 474 names	43.1% 926 names		
XSVM	5.4% 75 names	14.9% 112 names	24.5% 86 names	20.4% 92 names	0.0% 0 names	16.5% 102 names	25.9% 105 names	22.6% 61 names	14.9% 112 names	14.4% 92 names	

FIGURE 6: ETF OVERLAP. From a top-down viewpoint, you can see the large number of common names among these small-cap value ETFs. The highest overlap percentage was shown by IWN and VTWV at 93.6%, followed by IWN and DFSV at 49%. Even with thousands of stocks in their portfolio, there was an unexpectedly high degree of overlap.

January 29, 2004. Again, the S&P 500 led the way with a 514% return compared to iShares Small-Cap Value (IJS) at 437%, VBR at 429%, and Russell 2000 Value (IWN) at 313%.

ETF OVERLAP

Figure 6 provides a snapshot of percentage and number of holdings in each ETF that is also held by all the other ETFs. Since the table is limited to ten ETFs, I eliminated two. The largest overlap is between IWN and VTWV with 94% or 1,404 stocks held in common. This is a rare occurrence from two different sponsors. IWN also has a high correlation with DFSV, AVSC, AVUV, and AVSC in the 35% to 50% range. Surprisingly, VBR, the AUM leader, has much less of an overlap with the highest, DFSV at 31%, followed by IWN and VTWV, both at 28%.

AVUV has 48.6% of its portfolio or 561 stocks that are also held by DFSV, 42.4% with AVSC, 39% with VTWV, and 29% with BSVO. IJS has a large 62% overlap with VIOV and 37% with AVSC. ADVV, on the other hand, has only three stocks in common with the other ETFs since it has an international focus.

DFSV has a decent size overlap with VIOV, BSVO, VTWV, AVSC, and XSVM. Also, BSVO has a 22% overlap with VTWV and XSVM. And XSVM has a mild overlap with eight other ETFs. Overall, there are a large number of core stocks that are represented in these portfolios.

ETF TOP COMMON HOLDINGS

Figure 7 provides a listing of the top 17 holdings of this entire ETF category combined. Moreover, the weight of these top 17 was a maximum of 0.31% for ODP (ticker for The ODP Corporation) stock to a low of 0.12% of EIG

(Employers Holdings, Inc.) stock. Ten ETFs all held these positions in varying quantities. There is no common thread except for their value proposition. Among the holdings are retailers, airlines, food products, machinery, household durables, automotive components, media banks, insurance, and more.

IN-DEPTH REVIEW

Let's delve into this

ETF category in more depth by reviewing the key attributes of both Avantis and Dimensional ETFs, as they have the best overall performance of the dozen reviewed. Both of these sponsors had top performers, and it is likely that they will continue to lead the pack in the years ahead. The small-cap value category already is saturated, so any new entrants will find it difficult to break in and gather sufficient assets to be viable going forward.

One exception may be EA Bridgeway Omni Small-Cap Value ETF (BSVO), which is the latest entrant, coming

Ticker	Name
ODP-US	ODP Corporation
ANDE-US	Andersons, Inc.
SKYW-US	SkyWest, Inc.
TDS-US	Telephone and Data Systems, Inc.
NAVI-US	Navient Corp.
FDP-US	Fresh Del Monte Produce Inc.
GBX-US	Greenbrier Companies, Inc.
LZB-US	La-Z-Boy Incorporated
AXL-US	American Axle & Manufacturing Holdings, Inc.
GIII-US	G-III Apparel Group, Ltd.
KELYA-US	Kelly Services, Inc. Class A
SCSC-US	ScanSource, Inc.
CAL-US	Caleres, Inc.
SCHL-US	Scholastic Corporation
PUMP-US	ProPetro Holding Corp.
FCF-US	First Commonwealth Financial Corporation
EIG-US	Employers Holdings, Inc.

FIGURE 7: TOP STOCKS HELD IN COMMON.

There was a wide variance in the portfolios of these ETFs, but the top 17 holdings held by 10 small-cap value ETFs are shown. In all cases, they represented a 1% or less position in most ETFs. Also, these companies were in very different businesses and sectors. That is why active management has excelled here.

Small-cap value ETFs tend to outperform during economic recoveries.

to market in March 13, 2023. It has gathered \$1.1 billion in assets, which is very impressive in a nine-month time period. Keep an eye on this one and compare its future performance with the other leaders to determine whether it deserves your investing attention.

Avantis Investors ETFs

Avantis Investors is owned by the well-known American Century Investments and has 27 ETFs along with eight mutual funds. Surprisingly, Avantis has three ETFs in the small-cap value category. AVDV (Avantis International Small-Cap Value ETF) is the only one with an international focus. AVUV (Avantis U.S. Small-Cap Value ETF) and AVSC (Avantis U.S. Small-Cap Equity ETF) were their first ones to the market in September 2019, with both pulling in substantial assets in just over three years to the tune of \$9 billion for AVUV and \$5 billion for AVDV. This is very impressive in that the leader, VBR, had a 15-year lead time to gather its substantial \$27 billion while IWN captured \$12.6 billion over 23 years.

AVUV is listed on the NYSE Arca and uses the Russell 2000 Value Index benchmark. For 2023, it exceeded the benchmark by 8 percentage points and over three years the performance was even better with a 10.49 percentage point beat. Its top 10 holdings are almost all in the industrials and consumer discretionary sectors with a weighting of 0.77% to 1.03% each. It pays a quarterly dividend.

AVSC is listed on the NYSE Arca and uses the Russell 2000 Value Index benchmark. For 2023, it exceeded the benchmark by 2.47 percentage points. Its top 10 holdings are almost all in the financial and consumer discretionary sectors with a weighting of 0.38% to 0.33% each. It pays a quarterly dividend.

AVDV is listed on the NYSE Arca and uses the Russell 2000 Value Index benchmark. For 2023, it exceeded the benchmark by 4.02 percentage points and over three years the performance was even better with a 6.39 percentage point beat. Its top 10 holdings were concentrated in the industrials, financial, and energy sectors with a weighting of 0.55% to 1.09% each. It pays a semi-annual dividend.

All these three ETFs are actively managed, with AVUV and AVSC both having an annual expense ratio of 0.25% while AVDV's is a bit higher at 0.36%. The number of holdings in each of these ETFs varies greatly, with AVUV on the low end with 745 stocks and AVSC at the high end with 1,339. AVDV was at 1,304.

As far as trading volume, AVUV was the leader with 757,000 shares a day, followed by 688,000 for AVDV and a much lower 141,000 for AVSC. As far as dividend

The annual and multiyear performance variance between growth and value is significant.



yield, AVDV led the group with 3.38% (distributed yield), while AVUV came in at half that. AVSC was on the low end at only 1.14%.

AVUV and AVSC have been the best performers over one and three years, with annual returns of 22.37% and 19.33% over one year, respectively, and 18.9% and 19.2% over three years, respectively. AVDV did not do as well with a one-year performance of 16.9% and a three-year annualized average return of 16.1%.

The real eye-opening numbers are the big inflows for AVUV and AVDV, with the former pulling in over \$7.4 billion in three and five years while AVDV gathered over \$4.2 billion in each of those periods. Moreover, over the past year, both of these ETFs captured over \$2.2 billion in AUM while the behemoths (VBR and IWN) pulled in a measly \$72 million. IWN actually lost \$777 million, a terrible performance. IWN's asset erosion is not surprising, as its performance over multiple time periods has been the worst of the group going back over a decade as well as in more recent years. This is one ETF to stay away from if you are looking for performance.

Dimensional Fund Advisors ETFs

Dimensional Fund Advisors LP is a very well-known and respected 42-year-old firm that has catered to registered investment advisors. Over the past three years, Dimensional has entered the ETF arena after ignoring ETFs for prior decades. Since March 2021, the firm has been converting a number of its existing mutual funds into ETF format to gain further exposure and assets. And it has been very successful in accomplishing that goal. Currently, the firm manages \$618 billion with 1,600 employees and offers 26 equity ETFs. The firm is renowned for its academic research.

Similar to Avantis, both DFSV and DISV are actively managed ETFs. It appears that both these firm's active managers have beaten their passive rivals, so in the value arena, portfolio manager expertise seems to make a difference. Their benchmark is the Russell 2000 Value Index. For the year ending November 30, 2023 it beat the Russell 2000 by 5 percentage points, which is substantial, and since inception by 7.2 percentage points.

DFSV has an 11% annual turnover, which is low by industry standards.

Both of these Dimensional ETFs came to market in the first quarter of 2022 with DFSV gathering \$2.5 billion in AUM and DISV \$1.58 billion, both great numbers in only 21 months. DFSV has the lower expense ratio at 0.31% with DISV's slightly higher at 0.42%. DFSV has 1,032 portfolio positions while DISV has 1,506. Interestingly, their performance data is almost identical at 19% and the highest compared to Avantis. DFSV has 493,000 daily volume transacted compared to DISV's 292,000. Also, DFSV pays a 1.27% distributed dividend while DISV does not. Lastly, DFSV's inflows of \$2.1 billion over the last 21 months are higher than DISV's \$1.39 billion.

DISV is an international small value ETF. Its benchmark is the MSCI World ex USA Small Value Index. The ETF beat its benchmark by a whopping 7.11 percentage points over one year and 4.26 percentage points over its short life. About a quarter of the portfolio holds Japanese stocks, about 13% is allocated to the United Kingdom, 11% to Canada, and 7% to both Switzerland and Australia.

CONCLUSIONS AND A LOOK AHEAD

Based on the analysis presented here, the Avantis and Dimensional ETFs are the clear winners based on multiple metrics. Any of them would fit into an investor's portfolio and offer exposure to the small-cap value area, which could be on the cusp of a multiyear advance. Two of them offer an international exposure (ADVD and DISV), which may provide better diversification than the 100% domestically oriented ETFs.

They all have sufficient trading volume, cash inflows, exceptional performance, and active management, which all are working very well to keep them in the lead. Sadly, the three top AUM leaders—VBR, IWN, and IJS—had disappointing relative performance, low cash inflows, and passive management. This has resulted in the newer players eating their lunch.

Starting in 2019, growth ETFs really started outpacing value ETFs. But since December 2021, the value ETFs

The Avantis and Dimensional ETFs are the clear winners based on multiple metrics.



have performed better. As far as small-cap *growth* versus small-cap *value* is concerned, the latter group has performed better since early 2022. And that trend could continue for the foreseeable future.

In summary, small-cap value ETFs should be a part of any investors' portfolios, especially conservative investors preferring a long-term holding period. Small-cap value ETFs can offer a middle ground between growth and volatility. Undervalued stocks have some potential to outperform over time, especially in difficult stock market environments. Remember to always check the sponsor's website for complete information on any ETF of interest.

S&C Contributing Writer and ETF Columnist Leslie N. Masonson is president of Cash Management Resources, a firm focusing on ETF strategies. He is an active NASDAQ futures and ETF trader, and the author of six books including Buy—Don't Hold: Investing With ETFs Using Relative Strength To Increase Returns With Less Risk, and All About Market Timing (two editions), as well as Day Trading On The Edge. He can be reached at lesmasonson@yahoo.com or 845 323-7276.

FURTHER READING & RESOURCES

Masonson, Leslie N. [2020]. "ETFAction.com," product review, *Technical Analysis of STOCKS & COMMODITIES*, Volume 38: May

- www.AvantisInvestors.com • www.bridgewayets.com
- www.dimensional.com • www.invesco.com
- www.iShares.com • www.vanguard.com

Find similar articles online at Traders.com



OSOBA

Continued from page 7

chance. Understand how it can help you recognize incompetence in yourself and in others and then train yourself with the intention to be better than you were last year.

FURTHER READING

Kruger, Justin, and David Dunning [2000]. "Unskilled And Unaware Of It: How Difficulties In Recognizing One's Own Incompetence Lead To Inflated Self-Assessments," *Journal Of Personality And Social Psychology*, January 2000, 77(6).

The lure of riches caused many to get in at the high.

‡StockCharts.com

‡See Editorial Resource Index

Find similar articles online at Traders.com



S&C DIGITAL EDITION

Did you know that every subscriber to *Technical Analysis of STOCKS & COMMODITIES* MAGAZINE has full access to the magazine in digital format? No waiting for the mail to be delivered, no need to carry around back issues — just log on to **Traders.com** on any internet-capable device to read any issue or article we've ever published, either in your browser, or downloaded to your device as a pdf for reading anytime, anywhere. Every subscription includes:

Digital Edition — the complete magazine as PDF, available to read in your browser or download to your device for offline viewing. You will still receive the printed magazine unless you opt for a digital-only subscription.

Complete Digital Archive — from 1982 through to the present. More than 17,000 pages of articles, product reviews, charts, spreadsheets, and code.

Working Money — insight on how to minimize your losses and maximize your profits while investing for maximum growth.

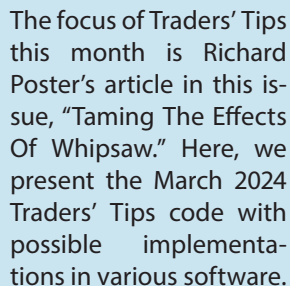
Traders.com Advantage — whether you need to learn how an indicator works or just want to know what a trader is looking at now, this is your source of real-time information.

Article Code — download or copy & paste code presented in past issues of *STOCKS & COMMODITIES* — including Traders' Tips code.

Optimized Trading — starting points when trying to decide what values to input into your charting software. Search for a certain symbol or company or build your own portfolio.



Visit **www.Traders.com** to find out more!



- Traders.com → S&C Magazine → **Traders' Tips**

At Traders.com you can also right-click on any chart to open it in a new tab or window and view the chart at a much larger size.

The Traders' Tips section is provided to help readers implement a selected technique from an article in this issue or another recent issue. The entries here are contributed by software developers or programmers for software that is capable of customization.



Indicator: Rate of Directional Change (RODC)

```
// TASC MAR 2024
// Rate of Directional Change (RODC)
// RODC based on zigzag
// Copyright 2023–2024, Richard Poster
```

```
inputs:
    int BkData( 30 ), // Window
    double Lamda( 15.0 ), // Zigzag Threshold
    int PerSmth( 3 ); // Smooth Period
```

variables:

```
int NumUp( 0 ),
int NumDn( 0 ),
int NumUD( 0 ),
int Idx( 0 ),
bool ModeUp( false ),
double Digits( 0 ),
double ExtZigzag( 0 ),
double OneTick( 0 ),
double LamUp( 0.0 ),
double LamDn( 0.0 ),
double MULT( 0 ),
double Smoothed( 0 ),
double Xcls( 0 ),
double Xext( 0 );
```

once
begin

```
OneTick = MinMove / PriceScale;  
Digits = NumDecimals(PriceScale);  
MULT = Iff(Digits = 5 or Digits = 3, 10, 1);  
LamUp = Lamda;  
LamDn = Lamda;
```

end:

```
NumUp = 1; // Assume starting in mode up
```

```
NumDn = 0;  
NumUD = 1;  
ModeUp = true; // Starting value  
Xext = Close[BkData];
```

```
for Idx = 1 to BkData - 1
begin
    Xcls = Close[Idx];
```

```
if ModeUp = false then
begin
  if Xtext > Xcls then // Still mode down
  begin
    Xtext = Xcls;
  end
  else if (Xcls - Xtext)
    / (MULT * OneTick) >= LamDn then
  begin
    // New mode
```



FIGURE 1: TRADESTATION. A TradeStation 60-minute chart of EURUSD shows a portion of December 2023 with the study applied.



```

ModeUp = true;
Xext = Close;
NumUp += 1; // Increment up mode counter
NumUD += 1; // Increment mode counter
end;
else
begin
if Xext < Xcls then // Still mode up
begin
Xext = Xcls;
end
else if (Xcls - Xext)
/ (MULT * OneTick) <= -LamUp then
begin
// New mode
ModeUp = false;
Xext = Xcls;
NumDn += 1; // Increment down mode counter
NumUD += 1; // Increment mode counter
end;
end;
end;

if NumUD = 0 then // Trend length > window size
ExtZigzag = 100 / BkData
else
ExtZigzag = 100 * NumUD / BkData;

Smoothed = Average(ExtZigzag, PerSmth);
Plot1(Smoothed, "RODC");
    
```

A sample chart is shown in Figure 1.

This article is for informational purposes. No type of trading or investment recommendation, advice, or strategy is being made, given, or in any manner provided by TradeStation Securities or its affiliates.

—John Robinson
TradeStation Securities, Inc.
www.TradeStation.com



◆ WEALTH-LAB: MARCH 2024 TRADERS' TIPS CODE

A large part of the coding for the *rate of directional change* indicator (RODC), discussed in Richard Poster's article in this issue titled "Taming The Effects Of Whipsaw," is natively encapsulated in WealthLab's PeakTroughCalculator class. We simply created a SegmentCount routine that navigates and counts the segments in the PeakTrough list generated by calculator, storing the result in a TimeSeries that becomes the RODC indicator after applying simple moving average smoothing.

Here, you'll find the code to mock up an

RODC indicator in Wealth-Lab. We didn't apply the RODC to a trading strategy, but you can use the sliders to see how changing parameters affect the indicator. The reversal parameter is set up for forex pips. You'll need much larger values to produce a zigzag for stocks or futures contracts.

A sample chart is in Figure 2 showing the rate of directional change (RODC) indicator plotted with a close-to-close ZigZag.

```

using WealthLab.Backtest;
using System;
using WealthLab.Core;
using WealthLab.Data;
using WealthLab.Indicators;
using System.Collections.Generic;

namespace WealthScript2023
{
    public class TASCMarch2024 : UserStrategyBase
    {
        TimeSeries _rodc;
        PeakTroughCalculator _ptc;

        public TASCMarch2024()
        {
            AddParameter("Reversal Pips", ParameterType.Int32,
                15, 10, 50, 5);
            AddParameter("Window Bars", ParameterType.Int32,
                30, 20, 50, 5);
            AddParameter("Smoothing Bars", ParameterType.Int32,
                3, 1, 10, 1);
        }

        public override void Initialize(BarHistory bars)
        {
            double reversal = Parameters[0].AsInt / 10000d;
            int window = Parameters[1].AsInt;
        }
    }
}
    
```

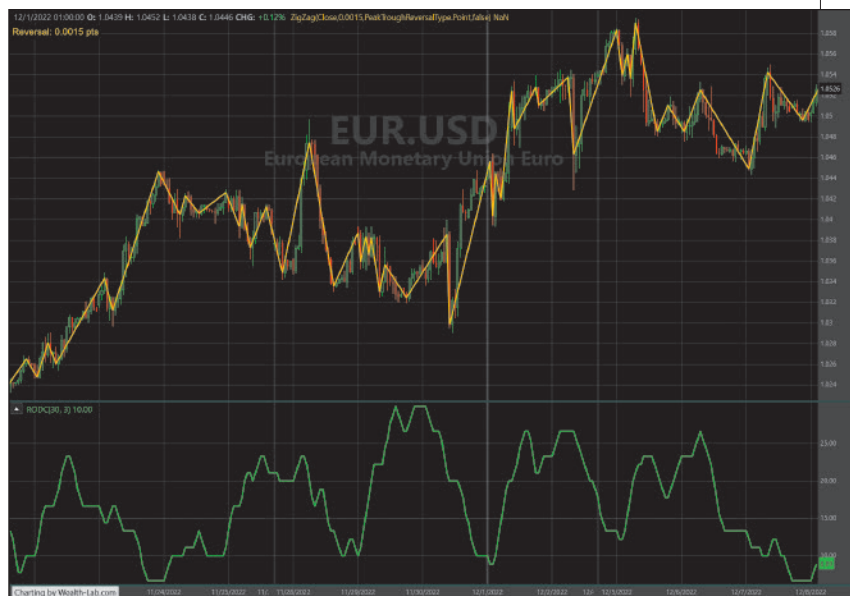


FIGURE 2: WEALTH-LAB. Here you see an example of the rate of directional change (RODC) indicator plotted with a close-to-close ZigZag.

—Robert Sucher
Wealth-Lab team
www.wealth-lab.com



```
// TASC Issue: March 2024 - Vol. 42, Issue 3
// Article: Taming The Effects Of Whipsaw.
// Improve Trading Performance With
// A Whipsaw Filter.
// Article By: Richard Poster
// Language: TradingView's Pine Script™ v5
```

```

// --- Main loop ---
// Initialize for each bar, assuming mode up
bool modeUp = true
int  nUp = 1 // up mode counter
int  nDn = 0 // down mode counter
int  nUD = 1 // node counter for new mode
// Iterate over bars within lookback window
int  limit = bkData + perSmth + 1
if bar_index > limit
    float xtext = close[bkData]
    for jj = bkData - 1 to 0
        float xcsl = close[jj]
        if not modeUp
            if xtext > xcsl
                // still mode down
                xtext := xcsl
        else
            if ((xcsl-xtext)/(MULT*_point)) >= lamDn
                // reversal to mode up
                modeUp := true
                nUp  += 1
                nUD  += 1
                xtext := xcsl
    else
        if modeUp
            if xtext < xcsl
                // still mode up
                xtext := xcsl
        else
            if ((xcsl-xtext)/(MULT*_point)) <= -lamUp
                // reversal to mode down
                modeUp := false
                nDn  += 1
                nUD  += 1

```



FIGURE 4: TRADINGVIEW. The rate of directional change indicator (RODC 30/15/3) is plotted here on a 60-minute chart of EURUSD.

```

        xtext := xcls
// Calculate RDOC indicator
float RDOC = nUD==0?(100.0/bkData):(100.0*(nUD/bkData))
// Calculate smoothed RDOC
float smaRDOC = ta.sma(RDOC, perSmth)

// --- Plotting ---
plot(smaRDOC, 'RDOC Smoothed', color.blue, 2)

```

The indicator is available on TradingView from the Pine-CodersTASC account: <https://www.tradingview.com/u/PineCodersTASC/#published-scripts>

An example chart displaying the indicator in TradingView is shown in Figure 4.

—PineCoders, for TradingView
www.TradingView.com



◆ **NEUROSHELL TRADER: MARCH 2024 TRADERS' TIPS CODE**

To implement the rate of direction change (RODC) indicator in NeuroShell Trader, simply select “New indicator...” from the insert menu and use the indicator wizard to create the following indicator:

```

NumSegments: Sum(A<B(Momentum(TPbars(High,Low,Close,3,1,0),1),0), BARS)
RODC:      Mul2(100,Divide(NumSegments, BARS))

```

To calculate the average zigzag duration during analysis and modeling of whipsaws, simply create the indicator shown here:

AvgDuration: Avg2(PVmeanbars(High,Low,3, BARS),VPmeanbars(High,Low,3, BARS))

The TPbars, PVmeanbars and VPmeanbars indicators can be found in Turning Points add-on.

A sample chart is in Figure 5 showing the RODC and AvgDuration for EUR/USD.

Users of NeuroShell Trader can go to the STOCKS & COMMODITIES section of the NeuroShell Trader free technical support website to download a copy of this or any previous Traders' Tips.

—Ward Systems Group, Inc.
sales@wardsystems.com
www.neuroshell.com



◆ **REALTEST: MARCH 2024**
TRADERS' TIPS CODE

In “Taming The Effects Of Whip-saw” in this issue, Richard Poster introduces a filter based on the rate of directional change (RODC) indicator and the principles of zig-zag.

Here is coding in text format for use in ReaTest (mhptrading.com) that implements the author's technique:

Parameters:

```
lookback: 30
pips: 60 // produces about as many flips in
150 days as 15 does in 150 hours
smoothing: 3
```

Data:

```
// zigzag is calculated as a self-referential data
array
// abs(zigzag) is latest peak or trough price
// sign(zigzag) is the direction flag
```

```
zigzag: if(barnum = 1, c,  
         if(zigzag[1] < 0,  
            if(c > -zigzag[1] * (1 + pips/10000), c,  
-min(-zigzag[1], c)),  
         // else  
         if(c < zigzag[1] * (1 - pips/10000), -c,  
max(zigzag[1], c)))
```

```
flip:  sign(zigzag) <> sign(zigzag[1])
```

```
flips: 100 * Sum(flip, lookback) / lookback
```

RDOC: Avg(flips, smoothing)

Charts:

```
zigzag: abs(zigzag)
flip: if(flip, sign(zigzag), 0) {^}
RDOC: rdoc {}
```

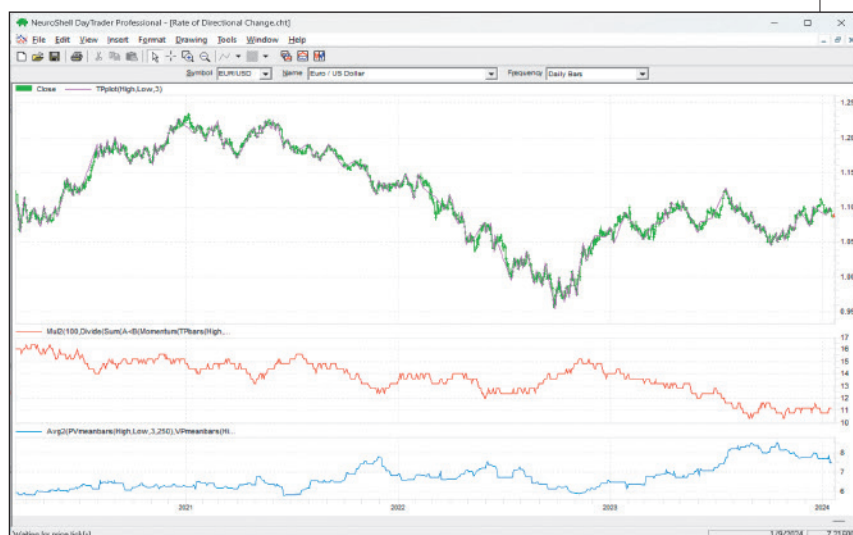


FIGURE 5: NEUROSHELL TRADER. This NeuroShell Trader chart shows the RODC and AvgDuration for EUR/USD.

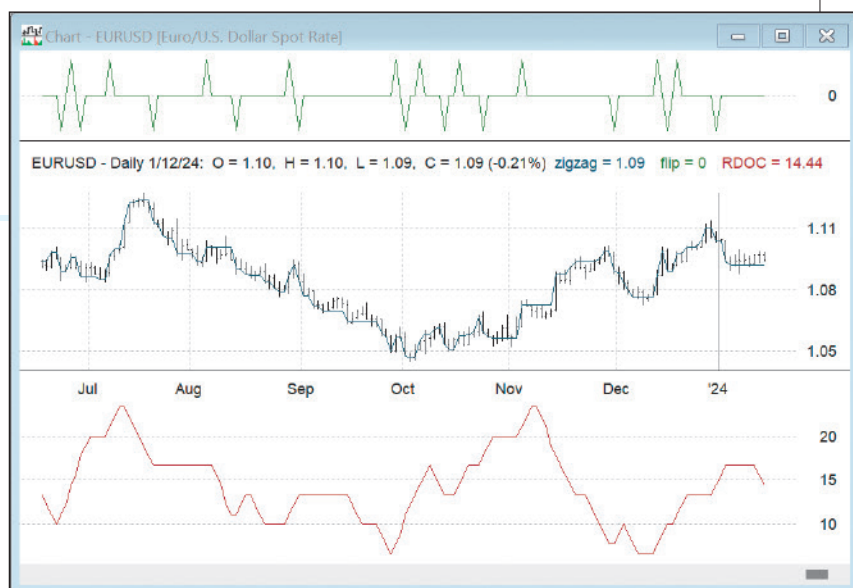


FIGURE 6: REALTEST. This example chart shows the rate of directional change (RODC) in the lower pane, calculated for 150 daily bars of EURUSD. The upper pane shows where the flips occur, and the zigzag peak or trough price line is plotted on the price bars.

calculated for 150 daily bars of EURUSD.

Note that the example chart in Poster’s article shows 150 hourly bars. Since RealTest does not have hourly data, we adjusted the pips parameter to produce the equivalent number of zigzag flips in 150 days as the author showed for 150 hours.

The upper pane shows where the flips occur, and the zig-zag peak or trough price line is plotted on the price bars.

—Marsten Parker
MHP Trading, Mhptrading.com
mhp@mhptrading.com

Figure 6 shows a ReatTest chart with RODC (lower pane)



FREE INFORMATION FROM ADVERTISERS

Advertiser	Page	Advertiser	Page
BROKERAGES			
Charles Schwab/thinkorswim Schwab.com/Trading	28-29	SOFTWARE	
Interactive Brokers ibkr.com/iwantmore	11	AbleSys www.wintick.com/SCM	56
Ninjatrade ninjatrade.com	3	Charles Schwab/thinkorswim Schwab.com/Trading	28-29
PUBLICATIONS			
Stocks & Commodities Store.Traders.com, Traders.com	2, 45, 55	Ninjatrade ninjatrade.com	3
SOFTWARE			
MetaStock MetaStock.com/TASC	5	WEBSITES	
		Stocks & Commodities Store.Traders.com, Traders.com	2, 45, 55



EDITORIAL RESOURCE INDEX

StockCharts.com	7	TradingView	48
MetaTrader	9	NeuroShell Trader (Ward Systems Group)	49
CME.com	19	RealTest/MHPTrading.com	50
TradeStation	19		
AIQ Tradingexpert	24		
www.OptionsAnalysis.com	24		
MultiCharts	27		
Oppenheimer & Co.	36		
Bloomberg	36		
ETFAction.com	39		
Wealth-Lab.com	47		
NinjaTrader	48		



For more information about our advertisers, go to **Traders.com/reader** where you will find the alphabetized list of this month's advertisers. For reference, the list is also printed above along with the corresponding page number for each ad. Just follow the simple directions below and the advertisers will get your requests the same day!

STEP 1: Go to **Traders.com/reader** and scroll through the list of our current month's advertisers. Click the box for each advertiser you'd like to hear from. At the bottom of the list, click **Continue** when finished.

STEP 2: Fill out your contact information and click **Send Request**. Your request will then be sent to the advertisers you selected. And that's it!

Reader Service Listing

☐ All Stocks & Commodities
☐ Stocks & Commodities
☐ Energy

SUBMIT REQUEST FOR ADDITIONAL INFORMATION

FIRST NAME: _____ LAST NAME: _____

EMAIL ADDRESS: _____

COMPANY: _____

MAILING ADDRESS: _____

CITY: _____ STATE/PROVINCE: _____

ZIP/POSTCODE: _____ COUNTRY: _____

PHONE: _____ FAX: _____

REQUEST: _____

What type of product or service are you looking for?

Send Request

TECHNICAL ANALYSIS OF STOCKS & COMMODITIES

HOW TO REACH US

For questions, address changes, or ordering information for *Technical Analysis of STOCKS & COMMODITIES* magazine and its online publications:



Toll-free 800 832-4642
(800-TECHNICAL) or:
206 938-0570.



Email us at:
circ@traders.com.



Or write to us at:
4757 California Ave. SW,
Seattle, WA 98116-4499.

Do your magazines arrive tattered and torn? Polybagging of magazines (domestic delivery) is available for \$6/year.

Single back issues from the current year (subject to availability) are \$8 prepaid. Subscribers have access to our digital archive of all past articles. Individual articles can be purchased from the Online Store at our website, Traders.com.

EDITORIAL FEEDBACK

We always want to know more about the needs of our readers: What kinds of articles would you like to see more of? What do you find useful? Address your written questions and comments to editor@traders.com or to: Editor, STOCKS & COMMODITIES, 4757 California Ave SW, Seattle, WA 98116-4499. Sorry, we cannot perform research on individual financial questions not related to this magazine and we cannot respond to all mail. Letters or emails containing questions or information that other readers may enjoy or that relate to our articles or technical analysis topics may be published in our Letters to S&C column.



Join us on Facebook at
www.facebook.com/STOCKSandCOMMODITIES



Follow us on Twitter
@STOCKSandCOMM

To receive information on the products and services listed in the Editorial and Advertisers' Indexes, go to: Traders.com/reader. These indexes are published solely as a convenience. While every effort is made to maintain accuracy, last-minute changes may result in omissions or errors.

FUTURES LIQUIDITY

Trading liquidity is often overlooked as a key technical measurement in the analysis and selection of commodity futures. The following explains how to read the futures liquidity chart published by *Technical Analysis of STOCKS & COMMODITIES* every month.

COMMODITY FUTURES

The futures liquidity chart shown below is intended to rank publicly traded futures contracts in order of liquidity. Relative contract liquidity is indicated by the number of dots on the right-hand side of the chart.

This liquidity ranking is produced by multiplying contract point value times the maximum conceivable price motion (based on the past three years' historical data) times the contract's open interest times a factor (usually 1 to 4) for low or

very high volumes. The greatest number of dots indicates the greatest activity; futures with one or no dots show little activity and are therefore less desirable for speculators.

Courtesy of CBOT



All futures listed are weighted equally under "contracts to trade for equal dollar profit." This is done by multiplying contract value times the maximum possible change in price observed in the last

three-year period. Thus, all numbers in this column have an equal dollar value.

Columns indicating percent margin and effective percent margin provide a helpful comparison for traders who wish to place their margin money efficiently. The effective percent margin is determined by dividing the margin value (\$) by the three-year price range of contract dollar value, and then multiplying by one hundred.

STOCKS

Trading liquidity has a significant effect on the change in price of a security. Theoretically, trading *activity* can serve as a proxy for trading liquidity and equals the total volume for a given period expressed as a percentage of the total number of shares outstanding. This value can be thought of as the turnover rate of a firm's shares outstanding.

Trading Liquidity: Futures

Commodity Futures	Exchange	% Margin	Effective % Margin	Contracts to Trade for Equal Dollar Profit	Relative Contract Liquidity
S&P 500 E-Mini (Mar '24)	CME	5.3	18.8	4	>>>
10-Year T-Note (Mar '24)	CBOT	2.1	8.9	9	>>
5-Year T-Note (Mar '24)	CBOT	1.4	8.5	13	>
Ultra T-Bond (Mar '24)	CBOT	5.6	8.6	3	>
Ultra 10-Year T-Note (Mar '24)	CBOT	2.9	8.4	6	>
30-Year T-Bond (Mar '24)	CBOT	3.8	9.2	5	>
2-Year T-Note (Mar '24)	CBOT	0.6	8	15	.....
Nasdaq 100 E-Mini (Mar '24)	CME	5.6	14	2	.....
Natural Gas (Mar '24)	NYMEX	28.5	7.7	3	.....
Crude Oil WTI (Mar '24)	NYMEX	9.7	13	4	.....
Russell 2000 E-Mini (Mar '24)	CME	3.6	15.4	5	.....
Soybean Meal (Mar '24)	CBOT	1.1	2.2	2	.....
3-Month SOFR (Jun '24)	CME	0.2	3.5	21	.....
Soybean (Mar '24)	CBOT	2.4	5.3	4	.....
Euro FX (Mar '24)	CME	1.7	13.6	14	.....
Corn (Mar '24)	CBOT	7	8.2	13	.....
30-Day Fed Funds (Feb '24)	CBOT	0.1	1.3	11	.....
Gasoline RBOB (Mar '24)	NYMEX	9.2	10	3	.....
Gold (Feb '24)	COMEX	4.5	22.3	6	.....
ULSD NY Harbor (Mar '24)	NYMEX	8.5	8.8	2	.....
Wheat (Mar '24)	CBOT	9.6	6.9	6	.....
Dow Futures Mini (Mar '24)	CBOT	4.8	19.3	5	.....
High Grade Copper (Mar '24)	COMEX	5.3	15.9	8	.....
Silver (Mar '24)	COMEX	8.9	24.6	6	.....
Hard Red Wheat (Mar '24)	KCBT	8.7	6.8	6	.....
Nasdaq 100 Micro (Mar '24)	CME	5.6	14	17	.....
Palladium (Mar '24)	NYMEX	17	6.5	1	.....
Australian Dollar (Mar '24)	CME	2.4	11.2	17	..
British Pound (Mar '24)	CME	2.6	14.5	17	..
Cocoa (Mar '24)	ICE/US	4.3	8.3	10	..
Coffee (Mar '24)	ICE/US	9.2	24.4	9	..
Cotton #2 (Mar '24)	ICE/US	7.8	9	7	..
Live Cattle (Apr '24)	CME	3.8	10.3	9	..
S&P 500 Micro (Mar '24)	CME	5.3	18.8	35	..
Sugar #11 (Mar '24)	ICE/US	8.4	22.4	25	..
Bitcoin Futures (Jan '24)	CME	31.2	43	2	.
Canadian Dollar (Mar '24)	CME	1.5	12.2	27	.
Canola (Mar '24)	ICE/CA	5.6	6.1	21	.
Crude Oil Brent (F) (Mar '24)	NYMEX	9.1	12.8	4	.
Feeder Cattle (Mar '24)	CME	3.9	8.8	5	.
Lean Hogs (Apr '24)	CME	5.3	9.1	14	.
Mexican Peso (Mar '24)	CME	5	22.6	39	.

2403

Trading Liquidity: Futures is a reference chart for speculators. It compares markets according to their per-contract potential for profit and how easily contracts can be bought or sold (i.e., trading liquidity). Each is a proportional measure and is meaningful only when compared to others in the same column.

The number in the "Contracts to Trade for Equal Dollar Profit" column shows how many contracts of one commodity must be traded to obtain the same potential return as another commodity. Contracts to Trade = (Tick \$ value) x (3-year Maximum Price Excursion).

"Relative Contract Liquidity" places commodities in descending order according to how easily all of their contracts can be traded. Commodities at the top of the list are easiest to buy and sell; commodities at the bottom of the list are the most difficult. "Relative Contract Liquidity" is the number of contracts to trade times total open interest times a volume factor, which is the greater of:

$$1 \text{ or } \exp \left(\frac{\ln(\text{volume})}{\ln(5000)} \right) - 2$$

ADVISORY SERVICES

Yes, You Can Cash In On Chaos! Certified Chaos Traders Courses teach you how. Learn to earn at <http://moneytide.com?r=s> EMini MoonTide Hotline up **263 months** in a row <http://daytradingforecasts.com?r=s>

SOFTWARE



SOFTWARE

Build and test systems without coding!

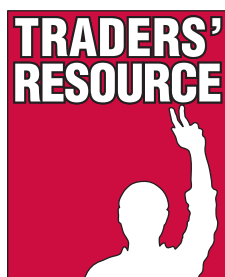
www.NeuroShell.com

TO ADVERTISE CONTACT: ESchramm@traders.com • (206) 660 8577



TRADERS' RESOURCE

EXCHANGES



With the explosion of exchanges around the world and the increasing poaching of products between exchanges, traders should be aware of all the places where trading opportunities occur. No longer bound by national borders or even physical locations, exchanges can be no more than a box in the corner of an office. Differentiation comes in the form of product, volume, speed, pricing, and investor protections.

Look for an exchange with extensive trade documentation so that disputes can be resolved quickly and with quick reference to events. Since more and more alternatives are rapidly becoming available, don't be afraid to direct your business to the exchange of your choice. The plethora of investor choice is forcing a rapid decline in transaction costs already, and exchange monopolies are a thing of the past.

Use the listing of exchanges in the Traders' Resource database at our website to find the websites of the exchanges handling your tradable, then go to the site to get the specifics of the trading vehicle. Better yet, get several equivalent products at several exchanges and be sure your broker can direct your business to the venue of your choice.

TRADERS' RESOURCE AT TRADERS.COM

In addition to our listing of exchanges at Traders.com, you'll also find listings of other trading-related products and services such as software, publications, courses and seminars, brokerages, data services, trading systems, and more. We hope this will help you learn about products to help in your

Traders' Resource

[Advanced Search](#) | [Products](#) | [Companies](#) | [Top 10](#) | [Information](#)

Search for:

Search in:

Traders' Resource Categories

Advisory Services	Browse	Companies	Messages	Top 10 List
Books	Browse	Companies	Messages	Top 10 List
Brokerages	Browse	Companies	Messages	Top 10 List
Consultants	Browse	Companies	Messages	Top 10 List
Courses and Seminars	Browse	Companies	Messages	Top 10 List
Data Services	Browse	Companies	Messages	Top 10 List
Exchanges	Browse	Companies	Messages	Top 10 List
Hardware	Browse	Companies	Messages	Top 10 List
Mutual Funds	Browse	Companies	Messages	Top 10 List
Online Trading Services	Browse	Companies	Messages	Top 10 List
Publications and Newsletters	Browse	Companies	Messages	Top 10 List
Software	Browse	Companies	Messages	Top 10 List
Trading Systems	Browse	Companies	Messages	Top 10 List

Vendors posting to Traders' Resource are responsible for their own listing ([full disclaimer](#)).

Questions or Comments? Send message to: Survey@Traders.com

trading endeavors.

To reach the Traders' Resource area of our website, just click on the Traders' Resource link from Traders.com. Then follow the category link for exchanges, or use the search feature to find products or services with specific attributes in this or other categories.

The information in Traders' Resource is the most accurate at the time of posting and is subject to change. Because the vendors posting to Traders' Resource are responsible for their own listing, Technical Analysis, Inc. declines any and all liability for any representations made by the businesses and individuals listed. Nor can Technical Analysis, Inc. endorse any business or individual listed on Traders' Resource. Technical Analysis, Inc. makes no warranties, express or implied, as to the accuracy and reliability of claims herein. You agree to release Technical Analysis, Inc., together with its respective employees, agents, officers, directors and shareholders, from any and all liability and obligations whatsoever in connection with or arising from your use of Traders' Resource. If at any time you are not happy with the information posted to Traders' Resource or object to any material within Traders' Resource, your sole remedy is to cease using it. This list is updated frequently. If you are aware of a business that should be listed, please email us at Editor@Traders.com.

THE WORLD OF RETAIL TRADING

Emilio Tomasini is an adjunct professor of corporate finance at the University of Bologna in Italy and is a professional trader. He has audited over 5,000 accounts of traders during 13 years of a real-money trading competition, giving him unique insights into what helps a retail trader to succeed. He has expertise in technical analysis and trading system design. In this column, he shares his sometimes “unserious” thoughts on serious topics in finance. In his writings, he hopes to help the retail trader better understand the leap from unprofitable to profitable trader, firmly believing that the right answers can come only if the right questions are asked. At his website at www.emiliotomasini.com, he offers some of his expertise in a free video course.



Emilio Tomasini

THE “CROWD” AND THE CONTRARIAN: WHO’S RIGHT MORE OFTEN?

In the financial markets, there’s always a pervasive storytelling narrative that’s repeated billions of times, passing from mouth to mouth, becoming more deeply ingrained in our minds. It’s as if all market players, in their fear of the unknown, are trying to convince themselves of something without which they wouldn’t know how to act. It’s the modern version of “misery loves company,” meaning if we all think something and it doesn’t happen, we can only absolve ourselves because it’s not just us who were wrong, but everyone else too. This is what technical analysis calls “the crowd.”

And it’s true: Financial markets behave like a crowd, where a whisper, passing from one person to another, slowly becomes a shout, then a stir, and finally, a revolution. Mimetic behavior underpins the movements of financial markets; there’s no doubt about that. But when *everyone* believes something, we must recognize that it’s not a comfortable place for investors because these beliefs rarely come true.

James Mackintosh, the legendary *Wall Street Journal* columnist, recently discussed this in a very fitting editorial. He wrote about how the three mantras that have been prevalent on Wall Street for the past three years have proven to be fallacious. Indeed, by the end of 2022,

investors believed a recession was inevitable. But that didn’t happen. The year before, in 2021, they thought big tech stocks would be immune to rising interest rates. That also proved untrue. And at the end of 2020, they were convinced that paying exorbitant prices for stocks popular with the general public was the smartest thing they could do. They didn’t get that right either. At the end of 2023 as I write this, Mackintosh wrote

When everyone believes something, we must recognize that it’s not a comfortable place for investors because these beliefs rarely come true.

about how everyone is convinced that 2024 will see a “soft landing” with an interest rate cut by March 2024 without affecting economic growth and labor stability. Mackintosh concludes: “Each of the past three years had a similarly strong consensus that proved entirely wrong. I don’t know whether next year will bring a rare soft landing and equally unusual correct consensus. But even if it works out, the market gains to be had from betting on something happening that pretty much everyone agrees will happen aren’t likely to be large.”

I fully agree with him. When all

market players share the same vision, there’s rarely any money left on the table. In fact, the punishment for those who believed can be quite severe.

However, I’d like to add another aspect that perhaps Mackintosh hasn’t considered. In the financial markets, there’s always been a figure known as the “contrarian.” This is a financially rewarding role and is simple to implement—just consistently take a position against the prevailing market view. Sooner or later, you’ll get it right against all odds and can boast, as often happens, of being the analyst who predicted the market crash, the end of a crisis, or the soft landing. Unfortunately, there are no fixed rules to follow, and if there are three cases where the market’s prevailing view was wrong, there are also three where it proved successful.

But we all must remember that this uncertainty is the beauty of our profession and the reason why we are here every day, scrutinizing charts. There are no shortcuts: the crowd is wrong just as much as the contrarians are. The only difference is that contrarians, when right, gain much more in terms of reputation because they took a bigger risk in fighting against the crowd instead of jumping easily on the bandwagon.

Subscribe Or Renew Today!

Every article at
your fingertips.



DID YOU KNOW THAT EVERY SUBSCRIBER TO *Technical Analysis of Stocks & Commodities* MAGAZINE has full access to the magazine in digital format? No waiting for the mail to be delivered, no need to carry around back issues — just log on to **Traders.com** on any internet-capable device and read any issue or article we've ever published, either in your browser, or downloaded to your device as a PDF for reading anytime, anywhere.

Each subscription comes with:

- Full access to our Digital Edition
The complete magazine as a PDF you can download.
- Full access to our Digital Archives
Every article since 1982!
- Complete access to WorkingMoney.com
The information you need to invest smartly and successfully.
- Access to Traders.com Advantage
Insights, tips and techniques that can help you trade smarter.

PROFESSIONAL TRADERS' STARTER KIT

A **5-year** subscription to S&C magazine that includes everything above PLUS a free* book, *Charting The Stock Market: The Wyckoff Method*, all for a price that saves you \$150 off the year-by-year price!

*Shipping & handling charges apply for foreign orders.

1 year \$89⁹⁹

2 years \$149⁹⁹

3 years \$199⁹⁹

5 years \$299⁹⁹

That's around \$5 a month!

Visit **www.Traders.com** to find out more!

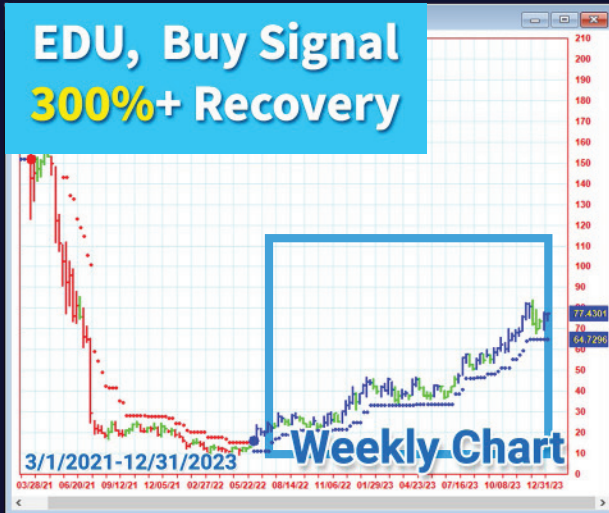
Discover the **Innovative Signal Chart** Now

Long Term

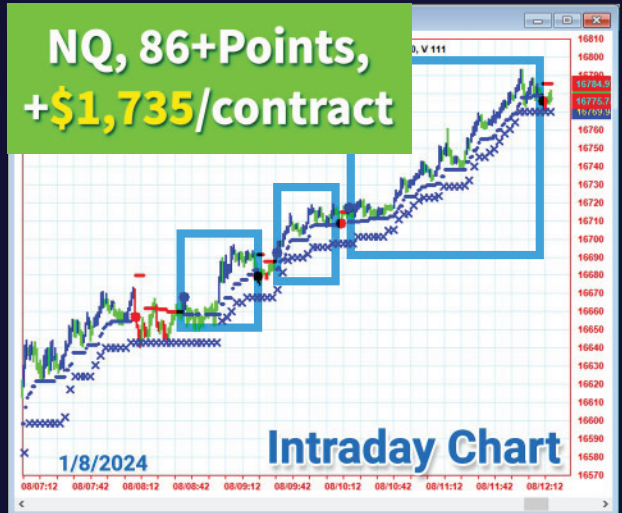
&

Intraday

EDU, Buy Signal
300%+ Recovery



NQ, 86+Points,
+\$1,735/contract



Works with stocks, commodities, futures, options, FOREX, bonds for intra-day or position trading

✓ Triple Confirmed **Buy/Sell Signals** ✓ Built-in **Dynamic Risk Control Signals**



Traders Rave Over AbleTrend

1997-2023 Award Winning Trading Systems for Stocks, Futures and Options



ABLETREND COLLECTED BY



- “**32 years in the market. This is the best I’ve seen yet.**” - Anthony
- “Those times that I lose money are usually because I haven’t followed the signals being generated by Ablesys. It’s a **very dependable system.**” - Peter
- “**Best ever** helper for my stock **Entry and Exit executions.**” - Neil
- “This system is **absolutely amazing**, I have been trading for over **twenty years** and **nothing can come to the accuracy of this awesome system.**” - Customer
- “**Great tool without bias. Extremely easy to use.**” - Steve
- “I am extremely happy with AbleTrend software. It has **changed my trading in the best possible way.**” - Francesco

- “I have used it for **10+ years** and have tried many other trading software systems. This is by far **the very best system** that can adjust to any market condition...I am exceptional pleased with its results.” - Joe S
- “**I have been using AbleTrend for 13 years!** Primarily for day trading stocks...I could not do without it!” - Ricardo DaSilva
- “**Have been using Able Trend for 20 years and it is just as effective and accurate as it was in 1999.** I have used it profitably for day trading for futures, just as I have for position trading stocks...Use every day whether trading that day or not.” - Dan Sawyer
- “**I never make a trade without checking with Ablesys.** The program is my important guiding light and has been for **over 10 years.**” - Harvey Saff

TEST DRIVE FOR THE LATEST SIGNALS
www.ablesys.com/SCM

Risk FREE AbleTrend 30-Day Trial
\$40 Discount code: SCVE40

©2024 Ablesys Corp. · 35111F Newark Blvd. Suite 506, Newark, CA 94560

☎ 510-495-0976 ✉ sales@ablesys.com

THESE RESULTS ARE BASED ON SIMULATED OR HYPOTHETICAL PERFORMANCE RESULTS THAT HAVE CERTAIN INHERENT LIMITATIONS. UNLIKE THE RESULTS SHOWN IN AN ACTUAL PERFORMANCE RECORD, THESE RESULTS DO NOT REPRESENT ACTUAL TRADING. ALSO, BECAUSE THESE TRADES HAVE NOT ACTUALLY BEEN EXECUTED, THESE RESULTS MAY HAVE UNDER-OR OVER-COMPENSATED FOR THE IMPACT IF ANY OF CERTAIN MARKET FACTORS, SUCH AS LACK OF LIQUIDITY. SIMULATED OR HYPOTHETICAL TRADING PROGRAMS IN GENERAL ARE ALSO SUBJECT TO THE FACT THAT THEY ARE DESIGNED WITH THE BENEFIT OF HINDSIGHT. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE BEING SHOWN. THE TESTIMONIAL MAY NOT BE REPRESENTATIVE OF THE EXPERIENCE OF OTHER CLIENTS AND THE TESTIMONIAL IS NO GUARANTEE OF FUTURE PERFORMANCE OR SUCCESS. TECHNICAL ANALYSIS OF STOCKS & COMMODITIES LOGO AND AWARD ARE TRADEMARKS OF TECHNICAL ANALYSIS, INC.