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 Technical Analysis of Stocks & Commodities™ (ISSN 0738–3355) is published monthly for $130 per year by Technical Analysis, Inc., 4757 California Ave. S.W., Seattle, WA 98116–4499. Periodicals postage paid at Seattle, WA and at additional mailing offices. **Postmaster: Send address changes to Technical Analysis of Stocks & Commodities™ 4757 California Ave. S.W., Seattle, WA 98116–4499 U.S.A. Printed in the U.S.A.**

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Want to find out how the futures markets really *work? Carley Garner is Senior Strategist for DeCarley Trading, a division of Zaner, where she is also a broker. She authors widely distributed e-newsletters; for a free subscription, visit www.DeCarleyTrading.com. Or find her work at DeCarleyTrading.Substack.com. She has written five books, with the latest being* Trading Commodity Options With Creativity. *Her commodity market analysis is frequently referenced on Jim Cramer's "Mad Money" on CNBC and she is a regular guest on media outlets including Bloomberg Television, Schwab, and Cow Guy Close. 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.*

WHY DID THE PRECIOUS METALS MARKETS GO PARABOLIC? (PART 1 OF 2)

This is a column on commodity futures and options trading, and I wouldn't be doing it justice without talking about the enormous metals rally of 2025 and, at least as of the time of this writing, early 2026, even if it means rubbing salt in my wounds. I had been vocal against the prospects of a historic metals rally, but I was wrong. As it turns out, gold and silver managed to deliver the kind of price appreciation not seen since 1979. Sometimes, low-probability events occur, and they have little mercy for anyone in their way, including those who have been around for a while.

There are fundamental narratives driving prices higher as buyers experience FOMO (fear of missing out) and even outright panic. However, from where I am sitting, and in my experience, there is no reasonable justification for parabolic price action in any market, and, in commodities, it has never been sustainable. Nevertheless, the reasons for buying gold and silver were sound; it is the magnitude and volatility of the move that are unusual.

Gold is a portfolio diversifier with a multi-faceted personality. There are times when gold rises to hedge against inflation, but there are times when it doesn't. There are times gold rises in sympathy with the stock market, and other times they move higher together. In other words, the primary benefit of having gold exposure in a portfolio is to provide diversification from stocks and bonds, with the goal to smooth overall performance.

Over time, gold has always appreciated, but there are multiple periods spanning a decade or more in which gold prices retreat or trade sideways. Occasionally, as has been the case recently, a gold-buying frenzy ensues, pulling decades of performance into a year or two. For instance, gold prices rallied in the late 1970s from $150 per ounce to $850 per ounce but spent the next two decades giving back nearly all of the rally. Then, from about 2000 through 2011, it ran from $250 to $1,900 but spent the next 4 years shaving off half its value and failed to regain its 2011 high for almost a decade. So, while the headlines are currently touting gold as a better investment than stocks, it must be recognized that statements have been true on two other occasions in history, but both were followed by a decade or two of severe suffering. Remember, gold doesn't pay dividends, so there is no getting paid to wait out drawdowns.

I believe the primary factor driving the metals bull market is distrust in holding U.S. dollars as a reserve currency.

The primary reason money is flowing into gold probably isn't inflation hedging. The bull market started with that as a driver, but as inflation has been trickling down, gold has moved higher. Further, there is an argument that lower interest rates cause gold to move higher; in theory, that is true because as interest rates decline, the opportunity cost of holding gold relative to bonds diminishes. Yet, gold has been moving up sharply while rates at the short end of the curve have been cut only minimally, and the long end of the curve has actually seen interest rates increase. So, this doesn't explain what we see in metals. Furthermore, just five years ago, interest rates were near zero, and gold was trading under $2,000, so gold increased in value as interest rates went up, which takes some credibility away from Fed rate cuts as a reason to buy gold today.

I believe the primary factor driving the metals bull market is distrust in holding U.S. dollars as a reserve currency. Central banks and global business players took note when the U.S. froze U.S.-denominated deposits by Russians (government agencies and some individuals

identified as oligarchs with Putin ties) and prohibited dollar-based transactions following the invasion of Ukraine. Suddenly, it was clear that assets held in dollars (U.S. banks or Treasuries) were fair game for political retribution.

Whether we agree or disagree with U.S. sanctions and equivocal seizures of Russian assets, it is a deterrent to holding U.S. currency. I suspect many of those looking for a new place to park idle assets likely had similar concerns regarding other political entities and chose gold, and even silver, as an alternative.

Additionally, there is a widespread belief that fiat currencies (paper currencies backed by nothing but a promise), including the U.S. dollar, are a depreciating asset. Thus, money has flowed out of the dollar and into gold as investors attempt to maintain buying power. While this is a valid concern and a strategy that has been working as of late, history suggests the slow burn of the U.S. dollar's buying power due to consistent inflation might not be as painful as a 40% to 50% drawdown in metals if that pattern were to repeat. This feels like a good time to remind everyone that even the smartest people in the room can get carried away and often end up wrong. Going back to 1979 or 2011, being bullish on metals was among the best trades on the board, but that was a temporary reality. When commodities trade like GameStop shares, something is wrong. Recall 2022 energies (crude oil and natural gas), 2022 wheat, 2024 cocoa, etc.

Next month, we will discuss how the blistering metals rally might have been exacerbated by exotic ETFs and how the event prompted the CME Group to change its margin policy. We will also analyze how the event sheds light on the battle between trend trading and swing trading.

This feels like a good time to remind everyone that even the smartest people in the room can get carried away and often end up wrong.

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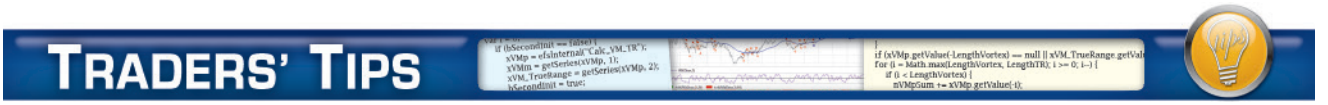

TRADERS' TIPS

Continued from page 52

NINJATRADER®

✦ NINJATRADER: MARCH 2026 TRADERS' TIPS CODE

The following NinjaTrader link provides a downloadable file to help implement some ideas from Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ":

NinjaTrader 8: www.ninjatrader.com/SC/March2026SCNT8.zip

Once the file is downloaded, you can import it into NinjaTrader 8 from within the control center by selecting Tools → Import → NinjaScript Add-On and then selecting the downloaded file for NinjaTrader 8.

You can review the source code in NinjaTrader by selecting the menu New → NinjaScript Editor → Indicators folder from within the control center window and selecting the file.

A sample chart is shown in Figure 5.

NinjaScript uses compiled DLLs that run native, not interpreted, to provide you with the highest performance possible.

FIGURE 5: NINJATRADER. The trading system discussed is demonstrated on a chart of TQQQ.

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10%

Trading Snapbacks In A Leveraged ETF

One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ

Part 1

Here's a look at developing a mean-reversion trading strategy with a minimal number of rules, low time commitment, and a consistent weekly profit target. It could be used by systematic traders and discretionary traders alike. Find out how the strategy fares.

Exchange-traded funds have transformed the way traders express directional bias, manage risk, and access leverage. Among them, TQQQ, a 3× leveraged fund based on the Nasdaq-100 index, stands out for its combination of trend persistence and intraday volatility. Over the years, TQQQ has attracted both long-term growth investors and short-term traders looking for opportunities for quick profits.

Several years ago, I began researching a structured way to exploit the short-term pullbacks that frequently occur during strong uptrends in TQQQ. The goal was simple: to design a strategy with very few rules, extremely low time commitment, and a consistent weekly profit target. I wanted something that could be executed by systematic traders and discretionary traders alike.

The result was a strategy I named the "one percent a week" trading strategy.

This two-part article will begin with the original model, its rationale, rules, weekly workflow, and the market behavior it seeks to capture. In Part 2, I'll look at variations that enhance performance, increase robustness, or adapt well to other ETFs and market conditions.

Why TQQQ?

TQQQ (ProShares UltraPro QQQ) is designed to deliver three times the daily return of the Nasdaq-100 index. Because it is rebalanced daily and uses derivatives to achieve the 3× objective, its price movement tends to exhibit the following characteristics:

- Strong trend behavior during bullish periods
- Frequent and sometimes steep intraday pullbacks
- High volatility, even on otherwise quiet market days
- Long-term compounding when the underlying index rises

These characteristics create fertile ground for a structured mean-reversion entry with a fixed profit target.

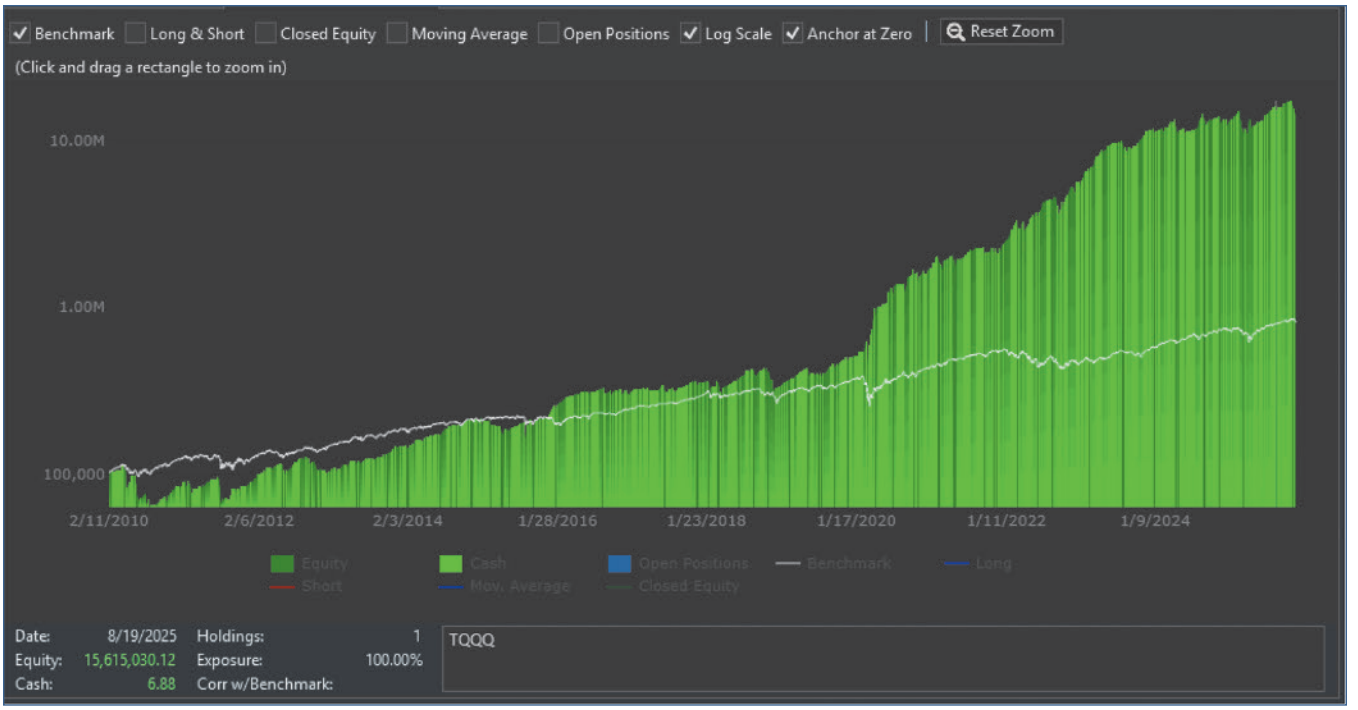
The "one percent a week" strategy is built around this idea: *Wait for a small discount at the start of the week, enter on weakness, and capture a modest, statistically reliable rebound.*

Overview of the Strategy

The "one percent a week" strategy is a weekly rhythm system. Every trade begins on Monday and must end by Friday. The key design goals were:

- Minimal screen time
- Clear, objective rules
- Quick exits for both profits and risk management

by Dion Kurczek



WEALTH-LAB

FIGURE 1: EQUITY CURVE. Here you see an equity curve from a backtest of the basic "one percent a week" strategy, from TQQQ's inception. The green area represents strategy results and the white line is an SPY buy-and-hold benchmark.

- No overnight hold across weekends
- Compatibility with both automated and manual trading

Each rule exists to serve one overarching purpose: capture a 1% gain on TQQQ once per week, on average, without excessive drawdowns or overtrading.

Let's walk through the rules in exact sequence.

THE RULES OF THE ORIGINAL "ONE PERCENT A WEEK" STRATEGY

1. Observe the Monday opening price

At the opening bell each Monday, note the official opening price of TQQQ. Let's call it:

$$O_{Mon} = \text{Monday open}$$

This price anchors the entire trade.

The "one percent a week" strategy was designed to capture a simple phenomenon: the frequent small rebounds that occur after early-week pullbacks in TQQQ.

You do not enter immediately. Instead, the system waits for a modest pullback.

2. Enter on a 1% dip from the Monday open

After the open, place a limit buy order at:

$$\text{Entry price} = O_{Mon} \times 0.99$$

If TQQQ drops 1% below the Monday open at any point during the week, the limit order fills and you are in the trade. If the price never reaches this level, no trade is taken that week.

3. Once filled, set a 1% profit target

If the limit entry fills during the week, we place a limit exit order for the following trading day:

$$\text{Target price} = \text{Entry price} \times 1.01$$

The goal is simple: capture a 1% rebound from the dip. TQQQ's typical intraday volatility often makes a 1% rebound highly achievable, especially after a pullback entry.

4. Risk management: Exit at breakeven after a 0.5% drawdown

To keep losses small and infrequent, the system uses a two-stage exit logic:

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

FIGURE 2: EXAMPLE TRADE. Shown here is the most recent trade at the time this article was being written. This trade was entered on Monday, November 17, 2025 at $51.12. Since TQQQ declined, it triggered the breakeven exit rule and the trade was exited at the same price on Wednesday, November 19, right before the 7% decline on the following day.

1. If the position drops 0.5% below the entry price, we attempt a breakeven exit.
2. The breakeven exit is implemented via a limit order set to the entry price.

The rationale is that leveraged ETFs often "snap back" after short periods of oversold behavior. Rather than forcing a stop-loss exit at a fixed loss, the system gives the market an opportunity to recover to the starting line. Losses do still occur, but this mechanism softens the typical drawdown curve.

5. Hard exit at Friday close

Regardless of what has happened, if neither the profit target nor the breakeven exit has been hit by the end of the week, the position is closed at the market-on-close (MOC) on Friday. This rule ensures:

- No weekend gap risk
- Clean weekly accounting
- Predictable exposure

WHY THESE RULES WORK

The edge in the strategy does not come from predicting direction. It comes from positioning. TQQQ frequently exhibits "midweek dips and recoveries" as options flows, leveraged rebalancing, and Nasdaq tech rotation produce short-term oscillations. Capturing these pullbacks with a small, predefined target yields favorable hit rates.

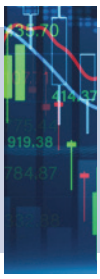
A 1% target may seem small, but in a highly volatile instrument like TQQQ, weekly 1% rebounds are common. Also, they often occur quickly after a dip. Trades resolve early, freeing the remainder of the week for new opportunities. (In part 2, I'll explore some of these opportunities in later variations of the strategy).

By only entering after a 1% discount from the open, and exiting if a controlled rebound does not occur, the system avoids chasing strength and avoids deep drawdowns during trending selloffs.

HISTORICAL PERFORMANCE CHARACTERISTICS

While I haven't focused here on optimization or alternative exit schemes (which I will do in part 2), the original rule set produced the following performance profile based on my backtest as of November 2025, backtested on the entire history of TQQQ:

Wait for a small discount at the start of the week, enter on weakness, and capture a modest, statistically reliable rebound.



- Annualized return of 37.2%
- 685 positions, with 64.4% of them profitable
- Profitable positions have an average profit of 2.7%, which is higher than the average loss of losing trades, which was –2.6%
- Maximum drawdown was high at –45% but lower than what TQQQ buy-and-hold experienced, which was –82%
- Sharpe ratio of 1.27
- Annualized returns strong enough to attract a devoted following

While the "one percent a week" strategy has historically delivered strong annualized returns, it is important to acknowledge that its performance profile includes periods of elevated drawdown, particularly during extended Nasdaq corrections or volatility regime shifts. Because TQQQ is a 3× leveraged ETF, even well-structured mean-reversion systems can experience sharp equity swings when market conditions turn unfavorable. For this reason, the strategy is best deployed with modest capital allocation, not as an oversized position intended to carry a portfolio alone. Instead, traders may benefit from treating the "one percent a week" strategy as one component within a diversified stable of strategies, where its weekly rhythm and unique edge complement trend-following, rotational, or lower-volatility systems. This portfolio context allows traders to capture the strategy's strengths while mitigating the psychological and financial impact of its natural drawdowns.

Execution considerations

I incorporated dividends into the backtest and set slippage and commission to zero. If your broker charges commission, be sure to set the appropriate value in your backtesting platform of choice. In practice, since the strategy uses limit and market-on-close orders, slippage has been a non-factor and my live trading results have perfectly matched my backtest results.

Manual traders

The system requires attention primarily on Monday at the open. You'll need to observe the open price of TQQQ and place the limit order to buy at 1% below that price. During the week, if filled, you'll have to set the appropriate limit exit orders and then place a market-on-close exit Friday if those other exits have not been hit.

Algorithmic traders

Because the rules are unambiguous (limit entries, fixed target, breakeven logic, timed exit), the strategy can be implemented cleanly in any backtesting or automation platform. The only potential wrinkle is basing the entry price on the market open price of Monday. Be sure your backtesting platform has the capability of using the open of the current bar to make trading calculations. Special considerations will also be required when attempting to autotrade the strategy. Your platform should have the capability of deferring execution until shortly after market open so the open price can be determined, and then run the strategy and place the limit order.

TQQQ stands out for its combination of trend persistence and intraday volatility.

Summary

The "one percent a week" strategy was designed to capture a simple phenomenon: the frequent small rebounds that occur after early-week pullbacks in TQQQ. By entering on weakness, targeting small gains, enforcing tight weekly cycles, and managing risk in a structured way, the original version of the strategy provides a clean foundation for systematic weekly trading.

But does it live up to its name and return "one percent a week" on average? In this initial version of the strategy, no, it actually falls short, delivering an average weekly return of 0.69%.

In part 2, I'll explore variations of the model that can deliver the average 1% per week return. The variants apply adjustments to entry triggers, exit logic, volatility filters, and reinvestment mechanics that improve performance and adapt the approach to a wider range of market conditions.

Dion Kurczek is founder of Wealth-Lab, a platform for market analysis, backtesting, strategy development, and automated trading. He can be reached at info@wealth-lab.com.

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

*See the **Traders' Tips** section beginning on page 49 for implementation of Dion Kurczek's technique in various technical analysis programs and trading platforms. Accompanying program code can be found in the Traders' Tips area at Traders.com.*

FURTHER READING

Kurczek, Dion [2018]. "Survivorship Bias—A Wake-Up Call," *Technical Analysis of* STOCKS & COMMODITIES, Volume 36: April.

‡Wealth-Lab

‡See Editorial Resource Index

"ONE PERCENT A WEEK" STRATEGY, IN WEALTH-LAB CODE

Recommended backtest settings:

- Symbol: TQQQ
- Position size: 100% of equity when backtested alone for validation, 10% of equity when deployed with a stable of strategies

```
using WealthLab.Backtest;
using System;
using WealthLab.Core;
using WealthLab.Indicators;
using System.Collections.Generic;
using WealthLab.PowerPack;

namespace WealthScript2
{
  public class MyStrategy : UserStrategyBase
  {
    //create indicators and other objects here, this is execut
    //ed prior to the main trading loop
    public override void Initialize(BarHistory bars)
    {
        nso = NextSessionOpen.Series(bars);
    }

    //execute method
    public override void Execute(BarHistory bars, int idx)
    {
        //highlight first bar of week
        DateTime dt = bars.DateTimes[idx];
        if (idx > 0 && dt.DayOfWeek < bars.DateTimes[idx -
1].DayOfWeek)
        {
            tradedThisWeek = false;
            SetBackgroundColor(bars, idx, WLColor.Green.
MakeTransparent(32));
        }

        //highlight last bar of week
        if (bars.TomorrowIsLastTradingDayOfWeek(idx))
            SetBackgroundColor(bars, idx + 1, WLColor.
Red.MakeTransparent(32));

        //create some flags to track the strategy state
        bool tomorrowIsFirstDayOfWeek =
IsLastTradingDay(bars, idx);
        bool tomorrowIsLastDayOfWeek = bars.TomorrowIs
LastTradingDayOfWeek(idx);

        //are we in a trade?
        if (LastOpenPosition != null)
        {
            tradedThisWeek = true;
            string sigName = "breakeven";
            double target = LastOpenPosition.EntryPrice;
            if (LastOpenPosition.ProfitPctAsOf(idx) > -0.5)
            {
                target = target * 1.01;
                sigName = "1% profit";
            }
            PlaceTrade(bars, TransactionType.Sell, Order-
Type.Limit, target, sigName);
            if (tomorrowIsLastDayOfWeek)
                PlaceTrade(bars, TransactionType.Sell,
OrderType.MarketClose, 0, "at close");
        }
        else if (!tradedThisWeek && !Double.
IsNaN(entryPrice) && !tomorrowIsFirstDayOfWeek)
        {
            PlaceTrade(bars, TransactionType.Buy, Order-
Type.Limit, entryPrice);
            if (tomorrowIsLastDayOfWeek)
                PlaceTrade(bars, TransactionType.Sell,
OrderType.MarketClose, 0, "at close");
        }

        //we always place the trade for beginning of next
        //week
        if (tomorrowIsFirstDayOfWeek)
        {
            entryPrice = nso[idx] * 0.99;
            PlaceTrade(bars, TransactionType.Buy, Order-
Type.Limit, entryPrice);
        }
    }

    //declare private variables below
    private NextSessionOpen nso;
    private double entryPrice = Double.NaN;
    private bool tradedThisWeek = false;

    //check to see if this is the last trading day of the week
    private bool IsLastTradingDay(BarHistory bars, int idx)
    {
        DateTime dt = bars.DateTimes[idx];
        if (idx == bars.Count - 1)
        {
            DateTime nextDate = dt.AddDays(1);
            return !MarketManager.UsaStocks.
IsTradingDay(nextDate);
        }
        else
            return dt.DayOfWeek > bars.DateTimes[idx +
1].DayOfWeek;
    }
  }
}
```

Algo Q&A

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), which was the winner of the 2024 Readers' Choice Award in this magazine for the category of "Trading Schools." Davey is also the author of five books on trading. 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

OVERNIGHT ALGO TRADING

I am looking into automating my trading, but I am scared about overnight trading. Can you offer any advice?

The thought of algos going crazy, buying and selling in rapid succession, scares most newer traders. Especially if that activity occurs overnight. I recall a bot I ran a few years ago that, due to a programming bug, accounted for 25% of volume on micro emini S&P 500 index futures (MES) in a 15-minute span, until I was able to turn it off. It just recklessly continued buying and immediately selling. And that was during the day—while I was watching! Imagine if that happened overnight…

No doubt, there are legitimate fears and concerns for overnight traders. Let's discuss a few of them.

MONITORING

Regardless of how involved you are in your trading, you have to monitor your positions and orders. This is a requirement of the CME futures exchange. You can't just open a position or turn on an algo and ignore it for a few months. You have to monitor and supervise any trading you do. How you actually supervise it is up to you, but I have heard of brokers and exchanges asking individual traders to explain how they trade around the clock and still properly monitor their trading.

This monitoring applies to all times of the day. If your algo takes trades in the middle of the night, you have to supervise it. If you live in Australia, where overnight is really daytime in the U.S., the same rule applies. Exactly how you supervise positions and orders is left to your discretion. It might involve text messages from your trading platform, or possibly hourly alerts sent via email. It could also include phone app access to your account.

The key point here is that overnight trading requires some level of monitoring.

No doubt, there are legitimate fears and concerns for overnight traders. Let's discuss a few of them.

LACK OF VOLUME

If you have an algo, allowing it to take trades overnight can lead to problems. For example, many smaller futures markets have thin to no volume in the wee hours. Depending on your trade size, you could see significant slippage on your orders, since there might not be anyone willing to take the other side of your trade.

One alternative to this is to restrict trading to the liquid hours of the day. This could be accomplished via strategy code. Or, the restriction could be volume based; simply skip orders if the current volume suggests an illiquid market.

OVERNIGHT RISK

The scariest part of being in trades overnight is probably adverse market movements. Most markets react instantly to bad news, whether it is day or night. And if you are asleep or away from the trading desk during that time, it can lead to disaster.

Of course, the surefire way to avoid an overnight debacle is just to be flat overnight. No exposure means no worries. The problem with this approach is that many traders find opportunity (profits) in overnight holds. For them, intraday trading just doesn't provide enough profitable opportunities.

Another approach would be to have large stops and targets overnight. Those would provide some relief from overnight shocks, and might even work in your favor in the case of a windfall profit. The downside though is that a stop order does not guarantee protection. The market might blow right past your stop if a major adverse event occurs.

CONCLUSION

The simple rule for overnight trading is: if it makes you uncomfortable, don't do it. You have to be confident and comfortable in your trading. Maybe overnight trading brings too many risks for you, and that is okay. Sleeping well at night is reward in and of itself.

PROFIT_IMAGE/SHUTTERSTOCK

Finding Trend Early

The RSI(5): A Modification Of The Relative Strength Index

Here's a version of the RSI indicator that can find trend early and reduce drawdown.

by Bill Dodd, PhD

In this article, I'll describe a modification of the relative strength index. This variation allows a trader to enter a new trend in any security very early, or alternatively, sell a trend near its high. As well as potentially increasing profitability, this RSI(5) application is very effective in reducing portfolio drawdown.

What it is

The relative strength index (RSI) developed by J. Welles Wilder and introduced in his 1978 book is a momentum oscillator that measures the momentum and magnitude of price movements. As a leading or coincident indicator, the RSI is commonly used with the default lookback period of 14. The data are expressed over a range of 0% to 100%, which provide the upper and lower boundaries, with the 50% level representing an equilibrium line signaling a change of direction.

The lookback

Some 25 years ago, when assessing different lookback periods for the RSI, I recognized an opportunity to use a shorter lookback time with the RSI. One of the consequences of lowering the lookback period is a significant increase in volatility in the plotted RSI. Most traders prefer a smoother RSI, so they choose to use Wilder's original value of 14 as the default lookback.

Figure 1 shows the significant difference in volatility when comparing the RSI(5) and the RSI(14).

However, the RSI(5) modification takes advantage of this volatility to help get the trader in or out of the trade earlier. Figure 2 illustrates its potential. This weekly chart shows a security with a strong price trend. The trend ends abruptly with a prominent RSI divergence. The increased volatility in the RSI(5) now provides the

opportunity to draw the dashed black line of best fit under the troughs of the RSI(5). The point at which this line intersects the falling RSI line is shown with the red circle. From this point, a vertical dashed red line is drawn up to the price action. Note how this line intersects the price of the security close to the end of the trend and gives the point of exit from the trade.

This application of the RSI(5) provides an opportunity for the trader to exit a trend very close to the highest price of that trend. This allows greater profit than would be available if the trade had been sold on a trailing stop. This RSI(5) pattern can potentially be found on the chart of any security.

I have used and further developed this RSI(5) technique since first observing it in 2000. I was able to use it very effectively during the 2008 bear market. Figure 3 shows this bear market on the monthly Dow Jones Industrial Average (DJIA). The point of exit is shown by the red dashed line.

The signal can be applied to any security or any major index. What was particularly notable about the 2008 bear market was that all the major world markets were showing a similar RSI(5) pattern and sell indication at the same time. Figure 4 shows the indexes for four different world stock markets, the Japanese Nikkei, the Australian ASX200, the Indian Sensex, and the German DAX, along with timely sell signals provided by the RSI(5). Clearly, the worldwide bull market was at an end.

In 2008, the RSI(5) provided me with a signal to exit the Australian stock market, and I was able to sell my holdings near the highs. I was fully in cash during the significant bear market that followed.

It is important to note in Figure 4 that the sell signals were given on monthly charts for these four international indexes, as well as for the DJIA in Figure 3. The RSI(5) signal for any security is rarely evident on charts of all timeframes at the same time, so it is necessary to monitor both the monthly and weekly charts to look for an RSI(5) effect. I regularly monitor both weekly and monthly charts for signals for the end of a trend for indexes and individual securities. I continue to use an ATR trailing stop as well as the RSI(5). The RSI(5) exit signal will take the trader out of the trade earlier than the ATR stop. This helps to increase profit from the trade and lower the

FIGURE 1: RSI(5) VS. RSI(14). A weekly chart of a security demonstrates the difference in volatility between the RSI(5) and the RSI(14) lines.

FIGURE 2: TRADE EXIT. In this weekly chart, the RSI divergence line and the lower RSI(5) black dotted line intercept the falling RSI at the red circle. The vertical red line shows the point of exit from the trade.

FIGURE 3: 2008 BEAR MARKET, DJIA. In this monthly chart of the Dow Jones Industrial Average, the vertical red line suggests an exit at the end of the 2008 bear market.

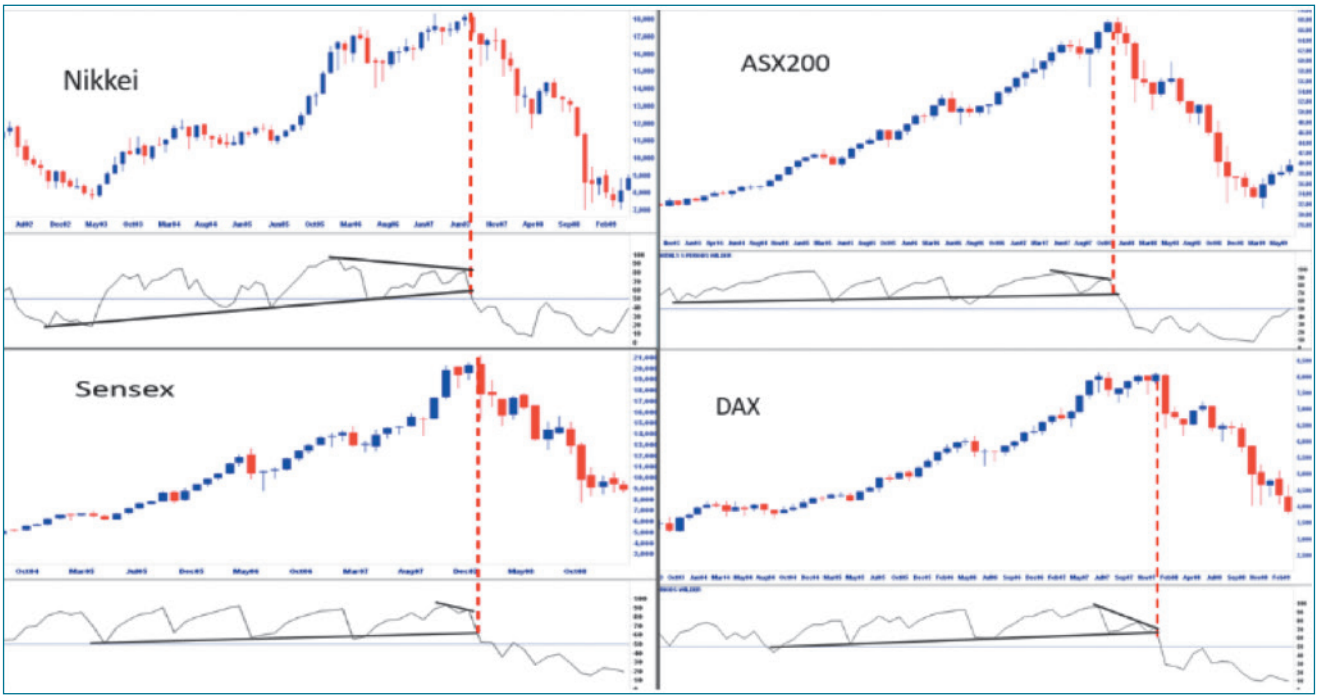


FIGURE 4: 2008 BEAR MARKET, VARIOUS INDEXES AROUND THE WORLD. A comparison of the monthly charts of four major world indexes shows exit points that were indicated by the RSI(5) at the end of the 2008 bear market. An RSI(5) sell indication appeared in the different indexes at approximately the same time, demonstrating how the RSI(5) can help to find the end of a trend.

FIGURE 5: 2009 BULL MARKET, DJIA. The RSI(5) can also help to find the start of a new trend. Here, an RSI(5) entry signal is shown on a weekly chart of the DJIA in early 2009 at the start of the bull market. A move across the 50% equilibrium level can provide a good market entry point.

portfolio drawdown.

If this RSI(5) approach is effective in finding the end of a trend, it should also be effective in finding the start of a new trend.

In Figure 5, an RSI(5) entry signal is shown on a weekly chart of the DJIA in early 2009. This was the time when the new bull market was about to start. Towards the end of any bear market, particularly a protracted bear market as was experienced in 2008, traders and investors have become emotionally drained and are overly cautious and reluctant to enter a new bull market.

In Figure 5, the RSI(5) had been below the 50% equilibrium level for some time before moving up across the 50% level. That gave the entry point in the DJIA for the trade. I have found that the move across the 50% equilibrium level provides an excellent entry point to any trade. It is notable from Figure 5 that the volatility of the RSI allows a dashed black line of best fit to be drawn across the tops of the RSI peaks. This gives further confirmation that this is an ideal entry point for this trade and is shown by the red circle. This signal, which was unambiguous, made it clear that the bear market was finished. It was clearly time to buy U.S. stocks for the new bull market.

The relative strength index is a momentum oscillator that measures the momentum and magnitude of price movements.

Divergence

Price moving in one direction while momentum moves in the opposite direction gives the divergence that is a characteristic of momentum indicators, and it is accepted that this divergence will accompany a change in price. When using the RSI(14), a price change will not always accompany a divergence because during a very strong trend, there can be one or more divergences. Likewise with the RSI(5), in a strongly trending market, the RSI(5) may show multiple false divergence signals before the trend actually reverses. So when using the RSI(5), observing a divergence shouldn't be taken as an indication of the end of a price trend unless confirmed by an RSI trendline.

FIGURE 6: FANG+ ETF, MONTHLY. This shows a monthly chart of the FANG+ ETF over almost a 5-year period from its date of issue in 2020. A buy & hold investor would have had an annualized rate of return of 51% but also a very large drawdown of 45%.

Portfolio drawdowns

Portfolio drawdowns are an inevitable consequence of trading and investing. Use of the RSI(5) system, while increasing profit, can also reduce portfolio drawdowns.

Figure 6 shows the ETF FANG+ over almost a 5-year period from its date of issue in January 2020. FANG+ is an ETF listed on the Australian Stock Exchange that follows 10 stocks including the so-called "FANG" stocks listed on the New York Stock Exchange.

A buy & hold investor who held the FANG+ ETF over this five-year period had an annualized rate of return of 51%. That return is impressive, but it has a very large drawdown of 45%.

If the FANG+ ETF had been approached instead as a trading opportunity using the RSI(5) trend indicator with a trailing stop, a return of 93% would have been achieved, with a significantly lower drawdown of 22%.

Figure 7 compares two approaches for this case. The RSI(5) system provided not only increased profit in this example but also lower portfolio drawdowns.

Trading Strategy	ARR	CAGR	Drawdown
FANG+ buy & hold investor	51.2%	27.1%	45.2%
FANG+ traded using the RSI(5)	92.9%	38.2%	22.3%

FIGURE 7: RSI(5) TRADING STRATEGY VS. BUY & HOLD. A test shows that using the RSI(5) as a trading strategy over a 5-year period on the FANG+ ETF produced a higher annualized return (ARR), higher compounded annual growth rate (CAGR), and lower portfolio drawdown than the buy & hold strategy.

Oversold or overbought indication does not apply

Traditionally, the RSI is often used to determine if the price is overextended or exhausted and likely to reverse. However, when using the RSI(5), the overbought/oversold concept is not usefully applied.

With the RSI(14), the overbought and oversold levels are typically represented by horizontal lines at the 30% and 70% levels. While those levels may be meaningful when using the RSI(14), they are much less useful when using the RSI(5). Frequently, the RSI(5) is above the 80% level for extended periods without any indication that the trend will reverse. This is similarly observed with the oversold situation.

How dependable is the RSI(5) signal?

I examined the weekly and monthly charts of 500 stocks, indexes, and ETFs to determine how accurate the RSI(5) signal is in finding the end of a trend. For this study, I only examined uptrends, and I considered an RSI(5) sell signal as the termination of a trade. Here are my conclusions from the study:

- On **monthly charts,** when there is a monthly RSI(5) divergence sell signal on any security, that security should be sold. In my test, the signal had a 100% success rate, so I conclude that it offers a high probability of a profit when used with monthly charts.

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This variation allows a trader to enter a new trend in any security very early, or alternatively, sell a trend near its high.

CompuTrac Software And Early Computerized Charting

The Beginnings Of Charting Software With Timothy Slater

One of the very first software products for financial charting and technical analysis was CompuTrac. Tim Slater, who dreamt up the idea for the product and then co-founded CompuTrac, Inc., offers some of his remembrances of how the groundbreaking software came to be. He also offers a few words about what he'd tell traders today. Following is some background and an encapsulation of a recent conversation with Slater.

by Barbara Diamond

The time was the mid to late 1970s. Computers were on the rise. The telecommunications industry was advancing, as fiber optics began to replace copper wire in high-capacity routes and infrastructure. Time & sales data at stock and futures exchanges was broadcast to the public.

Traders now had access to price data that traveled the world within minutes. A new era of financial markets and the broadcasting of real-time price data was developing. Using Automated Data Processing (ADP) terminals and other systems, data vendors and resellers (such as Quotron, Telerate, or Reuters) could distribute data to brokers, banks, and trading desks across the U.S. and around the world, viewable in real time on dedicated quote terminals.

Meanwhile, a new era in personal computers was also emerging. In 1977, several brands of popular personal computers were introduced, and a newly introduced modem model would soon allow users to connect their personal computers to online databases via their telephone service. What this would mean for traders and investors who wanted to view charts of the financial markets was that soon, they would have access to *computerized* charting instead of manually created price charts.

But first, software to chart that data had to be developed—and this is where CompuTrac makes its mark.

Where It Started

Tim Slater's home office (a space that was formerly his garage) in New Orleans had three filing cabinets filled with math-based ideas that he thought could be used to

JOSEPH SOHM/COMPUTRAC/SHUTTERSTOCK

evaluate price direction. But his new TI-59 (remember that hand-held device with a mylar strip?) was limited to 100 stocks and a moving average, so he headed to the computer store to ask about the new Apple computer that had recently come onto the market. That was 1976.

Slater recalls that a young man waiting next to him at the computer store overhead Slater explain his requirements to the salesman and interrupted with, "My professor could do that." So off they went to meet James ("Jim") Schmit at Loyola University New Orleans. Soon Schmit and his students were working in Slater's home office adapting the limited functions of an Apple II computer, which was introduced in April 1977, to display a bar chart. (Later on, IBM introduced a personal computer that could be programmed to work with continuous data to produce a live chart on the screen.)

THE VENTURE TAKES OFF

It was time for Slater and Schmit ("Tim and Jim") to form a partnership and find space to accommodate their growing staff for the development of the first CompuTrac product, launched in 1977. In a short time, the company was housed in three cable-connected buildings. At full capacity there were 56 employees, of which 23 were talented student programmers. Slater says that their team even developed an application that could perform spreadsheet functions two years before the Visicalc software came on the market in 1979 for the Apple II computer.

CompuTrac became a true collaboration between market traders and programmers—traders explaining what they wanted to see on the screen and the programmers making it appear. Early on, Slater says he had an insider network of traders using the product, some of whom were well-known technicians: Jim Sibbet, Manning Stoller, and Walter Bressert, as well as the broker Rick Redmond.

The following year, the stochastics indicator was added to the program after George Lane and Ralph Dystant developed it, and Gerald Appel added his moving average convergence/divergence (MACD). In 1983 Bollinger Bands were added to the program. In addition, formulas for many other studies were added to the program based on books such as *Technical Analysis of Stock Trends* (1958) by Edwards & McGee, and *Trading Systems And Methods* (originally published in 1978, with its most recent edition published in 2020) by Perry Kaufman.

MARKETING THE COMPUTRAC PROGRAM

It had all come together—the exchanges published transaction information, personal computers were being introduced, and now there was a software product that let traders use price data to help make decisions. It was time for Slater to start marketing CompuTrac.

In 1980, he held the first conference in New Orleans (named "TAG-NOLA," where "TAG" stood for Technical Analysis Group), with Slater's hand-picked presenters explaining how they find trade opportunities using their new CompuTrac screen.

Slater vetted new material for more conferences and seminars with an eye for interesting speakers, and for the next twenty years, any city that had an exchange became a target for one of Slater's conferences with his choice of presenters. Slater introduced more than 180 market experts in venues around the world. A person was invited to speak based on their market experience and their interest in sharing knowledge with other traders. Sibbet, Stoller, Bressert, and Lane were popular speakers and drew an audience. Slater's foundational list also included speakers who had authored books that covered other aspects of trading. One of those was Mark Douglas, author of a book on trading psychology, *The Disciplined Trader* (1990), since the mental side of trading is such a key ingredient for successful trading. Another was Alexander Elder, author of *Trading For A Living* (1993), a book that covers practical aspects of trading. And another was Linda Raschke, who authored *Streets Smarts* (1996).

Speaking at the seminars gave speakers some exposure in the financial field and lent them some recognition that could help them to build their own trading-related businesses. Many speakers went on to work in brokerage houses, write books, or publish newsletters. [*Editor's note:* One of those early speakers was the publisher and founder of this magazine, Jack K. Hutson, who was an early CompuTrac user and who spoke at a TAG seminar in 1982. Hutson launched this very magazine at the same time.]

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CompuTrac became a true collaboration between market traders and programmers—traders explaining what they wanted to see on the screen and the programmers making it appear.

WILLIAM POTTER/SHUTTERSTOCK

A Test Of Leveraged Positions

An Aggressive Money Management Method: Evidence From SPY

Here's a study exploring the use of leverage. The test will compare Ralph Vince's "optimal f" position-sizing approach against several other investment approaches. Which approach produced the best results in the test?

by Massoud Metghalchi, PhD, and Xavier Garza-Gomez, PhD

In 1990, Ralph Vince came out with an influential book titled *Portfolio Management Formulas* that combined ideas about position sizing and portfolio diversification. The book sought to give traders mathematical tools to diversify their portfolio with respect to trading an optimal quantity for each market based on intercorrelation of returns. The book presents that concept as part of a recipe for successful trading made up of trade selection tools, position sizing tools, and asset allocation. The book also examines the importance of nonstationary distribution of profits, losses, and drawdowns for determining how to best leverage assets.

In the study presented in this article, we want to focus on the topic of *leverage*. Traders know that the use of leverage can magnify returns, possibly making it a key factor in achieving a successful outcome, but it also can potentially wipe out a trader. We wanted to examine the use of leverage in speculative trading on the stock market by using Vince's method of position sizing.

In this study, we'll apply Vince's position-sizing technique to the S&P 500 (represented by SPY), adjusting position size on a daily basis to increase or decrease the amount of shares according to the methodology, and we'll compare the results against simple buy & hold of SPY using a fixed amount of shares. Then, for comparison, we'll also test a popular trading strategy known as the "golden cross" strategy.

RALPH VINCE'S "OPTIMAL F"

Vince's "optimal *f*" system of position sizing is a mathematical formula that establishes the optimal fraction (that is, "*f*") of capital to risk on each trade to maximize long-term geometric growth (compounded returns) of the portfolio.

Optimal *f* is derived from historical trade data, with a particular focus on maximum drawdown and the distribution of wins and losses. If optimal *f* is 0.25, the trader risks 25% of the capital on each trade.

To determine the amount to invest, the *f* is adjusted by the historical largest loss, which produces the following factor for daily returns (where "HPR" stands for *holding period return*):

$$HPR_i = 1 + f\,(\text{Daily return}_i / \text{Biggest loss}) \qquad \textbf{Eq. 1}$$

Vince determines the optimal *f* (*f**) that will maximize the geometric growth of the portfolio:

$$\text{Optimal } f = f^* = 1 + \text{Maximize } ln\,(1 + R) \qquad \textbf{Eq. 2}$$

where *R* is the return of each trade as a percentage of the account balance.

The idea is to determine the best fraction of the account to allocate per trade based on past performance. The optimal *f* is the value that maximizes the terminal wealth relative (TWR), which is the ratio of ending wealth to starting wealth, given a set of trades. The way to obtain *f** is to examine various *f* values ranging from 0.01 to 1.0 in increments of 0.01 for *f* and select the value that produces the highest TWR, according to Vince's 1990 book.

Leverage in Vince's method

The implied leverage in Vince's optimal *f* position-sizing method is equal to *f* divided by the biggest loss. Depending on the value of *f** estimated, this method often requires the use of high leverage. For example, if *f** is 0.40 and the largest historical loss is 10%, the resulting implied leverage is 4×.

Considering the significant loss during Black Monday in October 1987, we use 20% as the largest one-day loss in the history of the S&P 500. With that parameter set at 20%, values of *f* above 0.40 would require leverage to be above 2×, which is unavailable in typical equity accounts in the U.S., so for practical purposes, we limit leveraged investment to a maximum of 2×, allowing a trader to borrow up to 100% of their SPY investment, which is what is permitted under regulation *T* in the U.S. If we set the allowed leverage at 2×, then the range of *f* will have an upper limit of 0.40, and we use *f*=0.40 in this study.

After estimating each day's HPR according to the above formula, we estimate *terminal wealth relative* as follows:

$$TWR = \prod_{i=1}^{N} HPR_i \qquad \textbf{Eq. 3}$$

where *N* is the total number of trades, or in this case, the number of days.

After estimating TWR, we estimate the average annual return (AAR) as:

$$AAR = (1 + TWR)^{1/m} - 1 \qquad \textbf{Eq. 4}$$

where *m* is the number of years in the sample.

DATA AND ESTIMATION

For the study, we use the SPDR S&P 500 ETF Trust (SPY), which tracks the S&P 500 index, since it is the world's most widely traded ETF. The data in this study spans from SPY's inception on 1/29/1993 to 6/18/2025. Since we'll be comparing Vince's position-sizing approach with both buy & hold (B&H) and the golden cross trading strategy, which uses moving averages of 50 and 200 days (more on that strategy in the next section), all estimations are made from July 1, 1994 to June 18, 2025.

We use the federal fund rate as a proxy for the money market.

Optimal f values

Figure 1 shows the average annual returns for various *f*

f used	Trade size (× = portfolio size) assuming a maximum loss of 20%	AAR obtained (ignoring borrowing costs)	AAR obtained (considering borrowing costs)
0.1	0.5×	5.67%	5.67%
0.2	1×	10.65%	10.65%
0.3	1.5 ×	14.81%	13.39%
0.4	2×	18.04%	15.15%
0.5	2.5 ×	20.25%	15.85%
0.55	2.75×	21.35%	15.47%
0.6	3×	21.30%	14.00%
0.7	3.5×	20.09%	11.46%
0.8	4×	17.70%	7.89%
0.9	4.5×	14.19%	3.37%
1	5×	5.67%	5.67%

FIGURE 1: TRADE SIZE AND ANNUAL RETURNS. This shows the average annual returns (AAR) obtained with various *f* values from 0.1 to 1. The implied leverage in Vince's method is equal to *f* divided by the biggest loss (leverage is calculated here using a max daily loss of 20%). The effects of using leverage can be seen in the last column. For low *f* values, no borrowing is needed, so the results are the same as in the third column. When *f* goes above 0.2, the resulting AARs are lower once borrowing costs are considered.

values from 0.1 to 1. After looping many numbers between 0 and 1, we conclude that, ignoring borrowing costs, the optimal *f* is 0.55, which produces the highest AAR.

However, margin accounts charge interest when investors borrow to increase their position size. Using the federal funds rate as a proxy for the margin rate, we recalculate the daily HPR by subtracting the amount borrowed multiplied by the daily interest rate.

The results shown in the last column of Figure 1 clearly show the effects of the use of leverage. For low *f* values, no borrowing is needed, so the results are the same as in column 3. However, because loans start when *f* goes above 0.2, all the resulting AARs are lower once borrowing costs are considered. The optimal *f* value falls to 0.5, which implies a leverage of 2.5×, which exceeds the maximum allowed in margin accounts in the U.S.

THE STRATEGIES TESTED

For the test, we invest $10,000 in SPY on July 4, 1993 using four approaches:

1. Buy & hold (B&H)
2. Vince's position-sizing method
3. Golden cross trading strategy
4. Golden cross trading strategy with leverage

Comparing Vince method to B&H

Figure 2 shows results from the first two above approaches. The graph compares the terminal values of a $10,000 investment in SPY using B&H versus Vince's position-sizing method applied to SPY, accounting for borrowing costs, between July 1, 1994 and June 18, 2025. Over the long run, Vince's method outperformed simple B&H by a significant amount. During the financial crisis of 2008, B&H had a short period that outperformed Vince's method, but by the end of 2010, the levered investment surpassed B&H. After that, the levered strategy clearly outperformed B&H and ended the 31 years with almost $800,000, more than three times the $229,260 obtained by the B&H strategy.

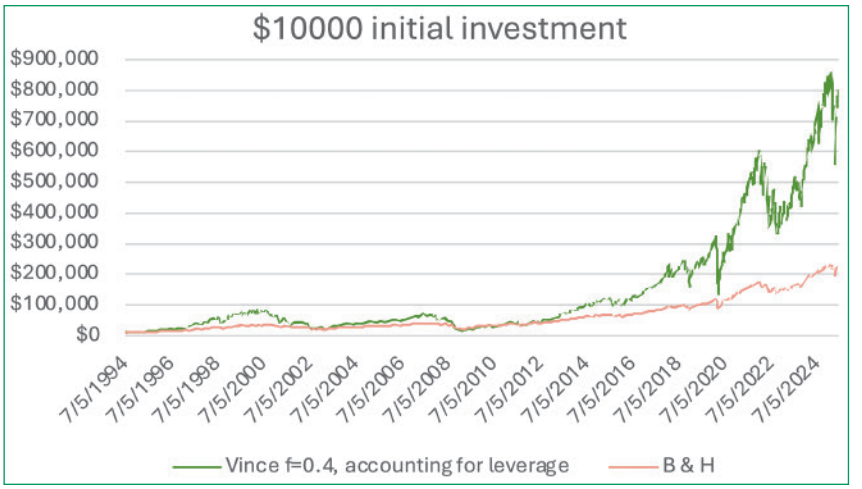

FIGURE 2: SPY BUY & HOLD VS. VINCE POSITION-SIZING METHOD. A plot of the test results (based on an initial investment of $10,000, 7/1994–6/2025) is shown for simple B&H of SPY (in red) versus Ralph Vince's position-sizing method on SPY (green), where the trader's position size in SPY is increased or decreased daily to meet targets. Vince's method implies using leverage, so borrowing costs are included here. Over the long run, the levered investment using Vince's method outperformed simple B&H by a significant amount, ending the 31-year period with more than three times B&H.

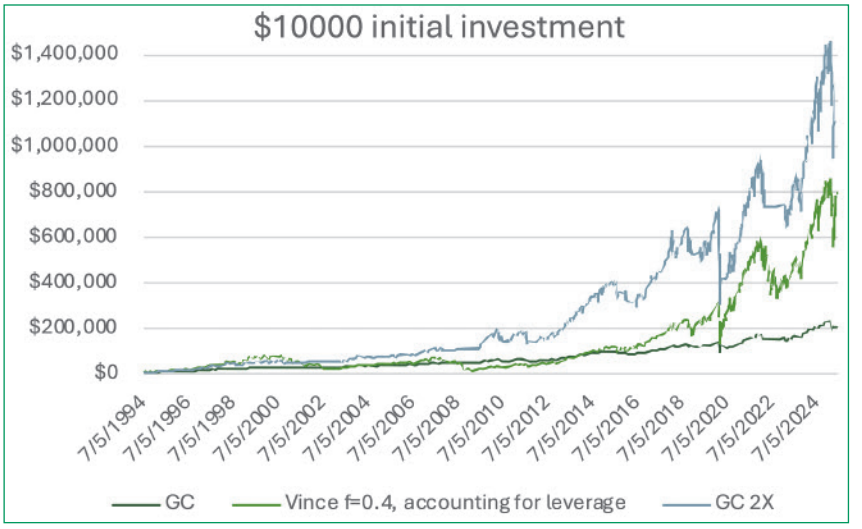

FIGURE 3: GOLDEN CROSS TRADING STRATEGY (WITH AND WITHOUT LEVERAGE) VS. VINCE POSITION-SIZING METHOD. A plot of the test results (based on an initial investment of $10,000, 7/1994–6/2025) is shown for the golden cross trading strategy (dark green), the golden cross trading strategy with leverage (gray), and Vince's money management position-sizing method applied to SPY (light green) with borrowing costs included. The two levered approaches outperformed the unlevered one, with the levered golden cross trading strategy yielding the best result in this study.

Comparing Vince method to golden cross strategy

Figure 3 compares a $10,000 investment using Vince's position-sizing method on SPY versus the golden cross trading strategy, which is as follows:

> **Golden cross strategy:** A trader buys SPY the next day after the MA50 crosses above the MA200. The trader remains in SPY until the 50-day MA line falls below the 200-day MA line. At that point, the trader exits SPY and invests the funds in a money market.

MICROSOFT EXCEL

We can observe that, following the 2008 financial crisis, the golden cross trading strategy (dark green plotline) outperformed Vince's position-sizing method (light green plotline) for nearly five years, prompting us to investigate the potential of the golden cross strategy *with leverage*. The strategy used for the test is as follows:

> **Golden cross strategy with leverage:** Same as above except that when the buy is emitted, the trader buys the SPY on 100% margin (2×).

As Figure 3 clearly shows, adding the leverage to the golden cross strategy (gray plotline) yields the best results in our study. The final value was over $1.1 million, outperforming Vince's position-sizing technique.

Performance metrics

Figure 4 shows various performance metrics for the strategies. The terminal values of the initial $10,000 investment on June 18, 2025 for the B&H approach are $229,260, for the golden cross strategy it's $208,395, and for Vince's method using f=0.40**,** the final value of the account is $787,836—more than three times that of the B&H strategy and almost four times the final value of the simple golden cross strategy. However, the winner here is the golden cross strategy with leverage. It had the highest terminal value in the test of more than $1.1 million over the 31-year sample period.

As seen in Figure 4, Vince's strategy outperforms both B&H and the simple golden cross strategies. However, as shown in the next row, Vince's strategy with zero borrowing cost has the best results, but zero borrowing cost is not realistic. When including borrowing costs, Figure 4 shows that the golden cross strategy with leverage yields the highest terminal value and AAR, making it the best strategy.

Strategies	AAR	Terminal Value	Max Drawdown
B&H	10.65%	$229,260	55.2%
Golden cross	10.31%	$208,395	33.7%
Vince (f=0.40) considering borrowing costs	15.15%	$787,836	87.0%
Vince (f=0.40) with zero borrowing costs	18.04%	$1,699,473	83.7%
Golden cross with 2X leverage, accounting for borrowing costs	16.44%	$1,113,062	58.8%

FIGURE 4: PERFORMANCE METRICS. This shows a summary of the average annual mean, terminal values (ending balances), and max drawdown of the different strategies.

MANAGING RISK WHEN LEVERAGE IS USED

Evidence so far suggests that leverage is beneficial. However, leverage is a two-edged sword. It may provide benefits when conditions are favorable but it can also amplify losses, including the real possibility of losing the entire initial investment. While unsupervised use of leverage can certainly cause margin calls or position liquidation by brokers, Vince's method is designed to protect against blowing up the account in one day. The combination of using f and the largest loss ensures that you don't go bankrupt in one day, as long as the one-day loss is below the max loss parameter used, or 20%. The largest loss is set at 20% based on Black Monday (October 1987), and we believe that the regulatory changes enacted after that have made it unlikely for a day as negative as Black Monday to recur. Still, if it were to happen again, a leverage of 5× would wipe out the portfolio.

Another concern when using leverage is getting a margin call. On typical margin accounts, most brokers will let investors borrow 50% of a new investment and require a maintenance margin of 40%. Under those conditions, a one-day decline of 16.67% or higher would cause a margin call. For the period analyzed in this study, the largest one-day loss was 11.6%, so if loans were rebalanced at the end of each day, using Vince's methodology with f=0.40 would not have triggered any margin calls.

Daily portfolio adjustment is not a passive approach

The next concern is what happens if the asset enters a correction period lasting several days and the drawdown exceeds 16.67%. Be aware of one peculiarity of Vince's technique: Vince's method is not a passive method like B&H. Using Vince's method (or the golden cross with leverage) forces traders to adjust the amount invested at the end of each day. On good (bad) days, investors must buy (sell) more of the asset to keep the leverage at the desired level. The daily adjustment ensures that consecutive negative days don't produce significant losses and guarantees that good days help compound higher profits. For the levered golden cross case, the daily portfolio adjustment involves evaluating conditions to open or close the position.

Drawdowns

Another measure that investors care about is the ac-

In Vince's method, risk is evaluated after every trade, and the size of the position is determined.

count's drawdown. When Vince explains his method in his 1990 book, he downplays this parameter because the daily adjustment of the investment will allow investors to survive severe downturns while waiting for good times. Comparing the drawdowns of the competing strategies, we see that B&H is quite risky with a max drawdown of 55%. The golden cross strategy brings a reduction of the drawdown with a similar average return, making it a superior trading strategy on a risk-adjusted basis.

When leverage is used, drawdown from the high-water mark is around 80% for Vince's methods, but only around 58% for the golden cross with leverage strategy. If the asset recovers in the long run, the leverage should compensate for the large drawdowns that inevitably appear along the way. For example, if the investor's horizon were June 2025, leverage would have been profitable. But as Figure 2 shows, if the investor had to liquidate his/her position for an emergency need after the financial crisis of 2008, leverage would have *reduced* the liquidation value (relative to B&H) at that critical time.

SUMMARY

The buy & hold approach essentially involves a fixed bet size, which is the initial investment. An investor buys a fixed number of shares (not a fixed dollar amount), such as in SPY, and the compounding mechanism allows this initial fixed number of shares to grow. For the 31 years used in this study, a $10,000 investment in SPY initiated in July 1994 would produce a final balance of $229,260, which implies an annual return of 10.65%, but also suffered a drawdown in March 2009 of 55% from the high-water mark reached in October 2007. These return and risk metrics can serve as a benchmark to evaluate any active investment strategies.

This study used leverage methods proposed by Ralph Vince to review pros and cons of leverage use. We also revisit the popular golden cross strategy. Vince's method examines past trades to identify the fraction that yields the highest geometric average return. Vince's position size is based on historical trading results and the largest loss experienced. His method seeks to find the optimal f (f*) that maximizes the long-term value of the portfolio. High values of f* will require high values of leverage used, sometimes above 2×, which is the maximum allowed in regular margin accounts in the U.S.

In Vince's method, risk is evaluated after every trade (every day in our study), and the size of the position is determined. This means that investors, to maintain the target leverage, must actively add (reduce) their position after a positive (negative) return on the previous day.

Vince argues that the drawdown in his method is meaningless, since the size of the trade remains proportional to the account equity; he thinks it is theoretically impossible for the account equity to reach zero. We used 20% as the biggest one-day loss for SPY.

As long as the asset (or strategy) has positive expectancy over time, the use of leverage will allow the compounding effect of time to work for a trader's benefit.

After calculating various f values from 0.01 to 1 through historical data, we found the optimal f value to be 0.55 when we ignored borrowing costs and 0.50 when we accounted for the fact that investors must pay interest for their margin use. An f value of 0.55 implies a very high leverage that could not be allowed for equity traders, but futures traders could make use of more leverage and maximize their terminal wealth. To make it applicable to equity traders in the U.S., we limited f to 0.40, which implies 100% leverage.

We then estimated each day's holding period return and the terminal value of $10,000, comparing it with the terminal values of buy & hold, the golden cross strategy, and the golden cross with leverage. The terminal value based on Vince's method beat both B&H and the simple golden cross strategy. Nevertheless, the best results are obtained when we allow 2× leverage with the golden cross trading rules: a trader buys SPY on margin when the MA50 crosses above the MA200 and parks the funds in the money market when the MA50 goes below the MA200.

Overall results reported here suggest that leverage in investments works as expected: It increases both risk (seen as higher drawdowns) and returns (reflected by higher terminal values). The usefulness to investors will depend on the investment horizon of the portfolio. As long as the asset (or strategy) has positive expectancy over time, the use of leverage will allow the compounding effect of time to work for a trader's benefit, and given enough time, a recovery will typically follow any drop. The fact that leverage, combined with a profitable strategy, produces even better results should be an obvious conclusion. The key to capturing this benefit is to constantly adjust the trade size to avoid bankruptcy in downturns and to take full advantage of positive compounding in good periods.

Massoud Metghalchi, PhD, and Xavier Garza-Gomez, PhD, are both professors of finance at Texas A&M University-Victoria. Metghalchi may be reached at Metghalchim@tamuv.edu.

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DIAMOND/INTERVIEW

Continued from page 21

INDUSTRY TIMING

The timing couldn't have been better for CompuTrac and for the growing financial industry. The new expertise in using technical analysis and financial data was being absorbed at brokerage firms and banks. CompuTrac conferences and seminars were helping to educate people at private institutions as well as in the public. The educational opportunities helped everyone—those who were developing new products and services as well as those who were gaining the knowledge to be able to use and buy those products and services. Managed stock and futures funds were created, adding to exchange volume.

CompuTrac had increased its relevance, and in 1985, Telerate bought into the company, continuing with product development and continuing to hold conferences renamed to TeleTrac.

That lasted until 1994, when support and development for CompuTrac/Teletrac wound down under Dow Jones, which had acquired Telerate. But what had been created by the CompuTrac team—in concept and development—got passed down (to Bridge Information Systems in the late 1990s and later to Reuters) and paved the way for financial charting software. Charting live financial data, plotting studies, and backtesting ideas and systems remains foundational to technical analysts and traders to this day.

RECENT THOUGHTS FROM SLATER

Trading psychology

"Successful trading depends as much on mindset as on method. Think of it as an intelligent leash—a reminder to control emotion, recognize when you're wrong, and get out of a poor trade. Even with computers, we remain human. Poor money management can destroy a trader's career. It sounds simple, but few traders truly master their own psychology."

Candlestick charts

"Our agent in Japan—also a trader—once sent me a worn, nearly irreplaceable copy of a Japanese book on candlestick charting. At the time, it had never been computerized. CompuTrac became the first to program it and distribute it to all users. Personally, I still prefer the bar chart; to me, its clarity and realism stand out more than the ornamental representations of other formats."

Pattern recognition

"A crucial skill is recognizing patterns—the overall flow of movement up, down, sideways, or at an angle. Understanding these recurring structures helps you interpret both current and historical market behavior."

Essential reading

"Build your education with the right books. I maintain a library of about 25 key titles and have given away the rest—too repetitive to keep."

CLOSING WORDS

What words did Slater leave me with when I asked him for some concluding remarks for this article? He offered: "I can't do your homework for you, but I can shine a light on the path. Learn the techniques—the cost is only the price of some good books—and then use your capital wisely. Trade with discipline, knowledge, and judgment."

Barbara Diamond is an active trader and a past exchange member.

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Recognize Underlying Market Dynamics

Simplifying The Wyckoff Method: A Practical Approach To Trading Market Psychology

The Wyckoff method, developed nearly a century ago, was a novel approach to examining the markets and can offer beneficial insights into the market even today. However, it can be difficult to implement. Cut through the complexity by focusing on these core aspects.

by Azeez Mustapha

Richard D. Wyckoff (1873–1934), a technical analysis pioneer, gained invaluable insights into market dynamics through his experiences as a stockbroker. By witnessing transactions firsthand, analyzing trader behavior, and identifying patterns, Wyckoff developed a profound understanding of market psychology. His observations led to the development of key market principles including supply and demand, cause and effect, and effort versus result. These principles formed the foundation of what he named the "Wyckoff method," a groundbreaking approach to understanding market behavior that has been a cornerstone of successful trading for nearly a century.

The Wyckoff method's brilliance lies in its ability to identify underlying market dynamics, revealing the intentions of large institutions and smart money. This enables traders to recognize accumulation and distribution phases, make informed decisions, and position themselves for profitable trades.

However, the complexity of the Wyckoff method has been a significant barrier for many traders. The intricate web of concepts, including market phases, structures, and events, can be overwhelming, even for experienced traders. The method's nuance and subtlety require a deep understanding of market psychology, making it challenging to apply in real time.

This article aims to simplify the Wyckoff method, preserving its core principles while making it more

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accessible and actionable for traders of all levels. By breaking down the complexity and focusing on the essential elements, we can unlock the full potential of this powerful trading approach.

What is the Wyckoff method?

In the forex market, institutions significantly influence currency price movements. The process begins with *accumulation*, where institutions buy a currency from sellers, building a long position. As market sentiment shifts, institutions start *distribution*, selling the currency to buyers, unwinding their long position. This leads to a *markup* phase, where buyers drive the currency price up, followed by a *markdown* phase, where sellers push the price down. When institutions adjust their strategy, the market reverses, and the cycle begins again.

1. **Accumulation (or distribution)**—A consolidation phase where large institutions and smart money accumulate (buy) or distribute (sell) assets. This phase is often marked by a trading range and occurs:
   - after a significant downtrend, preceding a new uptrend (accumulation)
   - after a significant uptrend, preceding a new downtrend (distribution)
2. **Liquidity sweep and reversal**
   - **Spring (accumulation)**: A brief price break below support, followed by a swift reversal, indicating buying pressure
   - **Upthrust (distribution)**: A brief price break above resistance, followed by a swift reversal, indicating selling pressure
3. **Markup (or markdown)**—A breakout from the consolidation phase, followed by a strong directional move, either up (markup) or down (markdown), marking the beginning of a new trend

Overcoming hindsight bias in the Wyckoff method

One of the most significant challenges in applying the Wyckoff method is overcoming hindsight bias. While analyzing historical charts, it is relatively straightforward to identify accumulation and distribution phases, markdowns, and markups. However, in real time, the market often generates false signals, making it difficult to accurately determine the current market phase.

This challenge is particularly pronounced when dealing with complex concepts, such as:

- reaccumulation
- selling climax
- automatic rally
- secondary test
- spring
- jump across the creek
- last point of support (LPS)
- last point of resistance (LPR)
- cause and effect
- effort vs. result

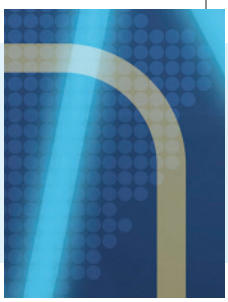
These nuances require a deep understanding of market dynamics and the ability to distinguish between genuine and false signals. To successfully navigate the Wyckoff method, traders must develop strategies to mitigate hindsight bias and improve their real-time analysis and decision-making skills.

A simplified approach to Wyckoff

To address these challenges, the following is a simplified version of the Wyckoff method that focuses on price action and key levels. Here's how it works:

1. **Identify the liquidity range**
   Focus on identifying a clear consolidation range (liquidity range), where buyers and sellers are in equilibrium.
2. **Look for the liquidity sweep (spring or upthrust)**
   Wait for a liquidity sweep, a false breakout beyond the consolidation range. In an accumulation phase, this is often called a "spring," while in a distribution phase, it's called an "upthrust."
3. **Wait for the break of structure**
   After the liquidity sweep, wait for a clear break of structure (BOS). In an accumulation phase, this would be a break above the consolidation range, while in a distribution phase, it would be a break below the range.
4. **Enter at supply or demand zones**
   Once the break of structure occurs, look for entries at key supply or demand zones, areas where price previously showed strong reactions.

The Wyckoff method's brilliance lies in its ability to identify underlying market dynamics.



TRADINGVIEW

FIGURE 1: GBP/AUD. A trade was signaled on February 11, 2025, based on analysis of a 30-minute chart. At the time, the market was in a markdown phase, showing a clear downtrend with strong selling pressure. The price had entered a liquidity range, consolidating sideways and forming a clear range. A liquidity sweep occurred as the price broke below the range, but it quickly reversed, forming a spring. This was followed by a break of structure, where the price broke above the consolidation range, confirming the start of a new uptrend. The trade was entered long at a demand zone within the consolidation range, targeting the next supply zone above, with a stop-loss set at the last swing low before the breakout.

Example 1 (Figure 1)
Let's look at a practical example using a chart of GBP/AUD (Figure 1). A trade was taken on February 11, 2025, based on analysis of a 30-minute chart. The following criteria were observed before taking this trade: At the time, the market was in a *markdown phase*, showing a clear downtrend with strong selling pressure. The price had entered a *liquidity range*, consolidating sideways and forming a clear range. A *liquidity sweep* occurred as the price broke below the range, but it quickly reversed, forming a spring. This was followed by a *break of structure*, where the price broke above the consolidation range, confirming the start of a new uptrend. The trade was entered long at a demand zone within the consolidation range, targeting the next supply zone above, with a stop-loss set at the last swing low before the breakout.

GBPAUD trade signal (swing trade)
Instrument: GBP/AUD
My opinion: Buy limit
Entry price: 1.97266
Stop: 1.96983
Target: 1.99424
Recommended risk: 1%
RRR: 1:7

Example 2 (Figure 2)
On July 15, 2024, the trade seen in Figure 2 was executed based on analysis from a daily chart. At the time, the market was experiencing a *markup phase*, characterized by a clear uptrend and strong buying pressure. However, the price entered a *liquidity range*, consolidating sideways and forming a distinct range. An *upthrust* occurred when the price broke above the range, but it quickly reversed, forming a false breakout. This reversal was followed by a *break of structure*, where the price broke below the consolidation range, confirming the start of a new downtrend.

The trade was entered short in the *premium zone*, which was identified above 50% of the breakout displacement range. Specifically, an *order block* was used at the 61.8% Fibonacci level (0.618), which is a significant Fib level. The stop-loss was placed above the order block, and the target was set at the next *liquidity zone*, denoted by a clear presence of equal lows.

EURCHF trade signal (swing trade)
Instrument: EUR/CHF
My opinion: Sell limit
Entry price: 0.97693
Stop: 0.98399
Target: 0.92707
Recommended risk: 1%
RRR: 1:7

In the forex market, institutions significantly influence currency price movements.

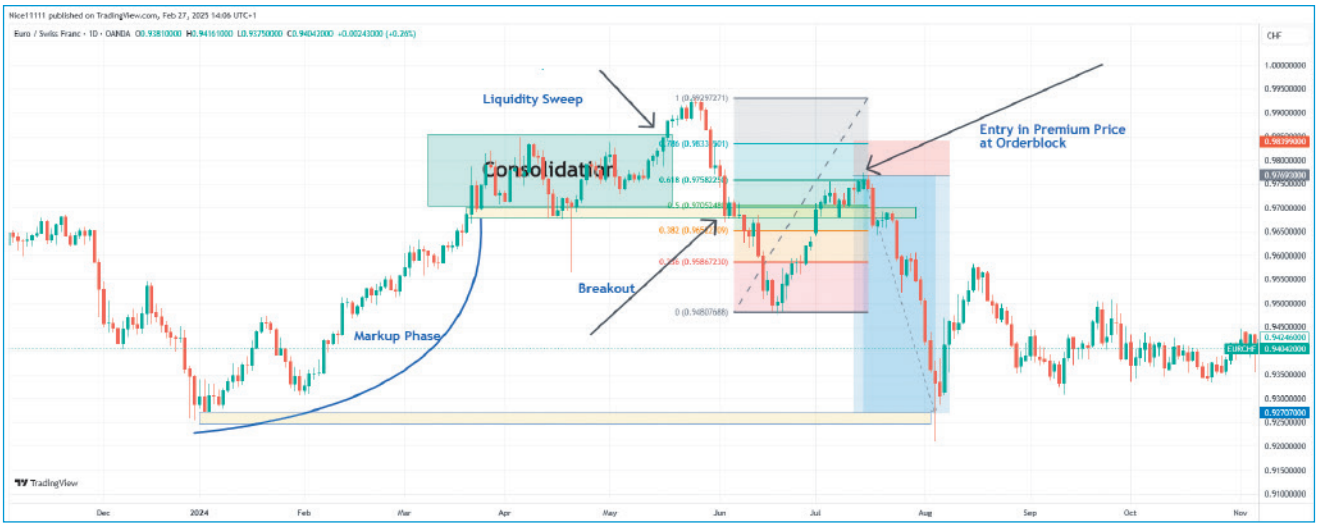


FIGURE 2: EUR/CHF. A trade was signaled on July 15, 2024 based on analysis from a daily chart. At the time, the market was experiencing a markup phase, characterized by a clear uptrend and strong buying pressure. However, the price entered a liquidity range, consolidating sideways and forming a distinct range. An upthrust occurred when the price broke above the range, but it quickly reversed, forming a false breakout. This reversal was followed by a break of structure, where the price broke below the consolidation range, confirming the start of a new downtrend.

FIGURE 3: NZD/JPY. A buy trade was signaled on the NZD/JPY pair on December 11, 2024 based on analysis from a 2-hour chart. This trade resulted in a loss. At the time, the market was experiencing a markdown phase, characterized by a clear downtrend and strong selling pressure. The price then entered a consolidation phase, consolidating sideways and forming a distinct range. A liquidity sweep occurred when the price broke below the range, but it quickly reversed, forming a potential buying opportunity. The market then entered a markup phase, confirming the start of a new uptrend. The buy trade was entered at a bullish order block below the breakout, upon a pullback, targeting the next supply zone above. The stop-loss was set at the last swing low before the breakout, but unfortunately, the trade did not go in the anticipated direction.

Example 3 (Figure 3)

On December 11, 2024, a buy trade was executed on the NZD/JPY pair based on analysis from a 2-hour chart (Figure 3). Unlike previous successful trades, this one unfortunately resulted in a loss, highlighting the importance of effective risk management. The strategy is not loss proof. The favorable risk-to-reward keeps disciplined traders profitable. At the time, the market was experiencing a *markdown phase*, characterized by a clear downtrend and strong selling pressure. The price then entered a *consolidation phase*, consolidating sideways and forming a distinct range. A *liquidity sweep* occurred when the price broke below the range, but it quickly reversed, forming a potential buying opportunity. The market then entered a *markup phase*, confirming the start of a new uptrend. The buy trade was entered at a bullish order block below the breakout, upon a pullback, targeting the next supply zone above. The stop-loss was

Continued on page 33

Least-Squares Polynomial Fitting

The Savitzky–Golay Filter

It's always worth the search for helpful tools and techniques that can be applied to trading. Does the Savitzky–Golay filter offer traders value? Take a look.

by John F. Ehlers

The Savitzky–Golay filter is a mathematical smoothing filter that is often used in signal processing. It was first described in 1964 by Abraham Savitzky, a chemist, and Marcel Golay, a physicist. Their work was published in the context of analytical chemistry, specifically in processing spectroscopic data.

While the filter relies on mathematical concepts from least-squares polynomial fitting, which are widely used in statistics, its development was driven by practical needs in signal processing—particularly smoothing noisy experimental data without distorting the signal's features like peak height and width.

Some Excellent Properties

The filter uses a polynomial regression over a series of values to find a smoothed value. One feature of the Savitzky–Golay filter is that, unlike other smoothing filters, high-frequency components are not simply cut off, but are included in the calculation. As a result, the filter shows excellent properties with regard to the relative maxima, minima, and scatter.

Matrix Arithmetic

Calculation of the Savitsky–Golay filter coefficients require matrix arithmetic, which is difficult to impossible for many coding languages typically used for trading. However, the filter coefficients can be found in lookup tables. For example, using a data length of 7 and a second-order smoothing polynomial, the coefficients are [–2 3 6 7 6 3 –2] / 21. Given the coefficients, the filter can be hardcoded into an indicator, just like any other finite impulse response (FIR) filter.

How Does It Compare?

I tested the Savitzky–Golay filter against a Hann windowed FIR filter of the same length, and found the Hann windowed filter has a significantly smoother output. I also tested the Savitzky–Golay filter against a SuperSmoother having essentially the same lag, and found the Super-

BEST BACKGROUNDS/SHUTTERSTOCK

Smoother also had a significantly smoother response.

The conclusion I reached was that although the Savitzky–Golay filter has an exotic name and promises so much by polynomial fitting, I believe it should not be used for trading because there are better filters that are available.

I hope this saves you some time trying to make a filter work for trading when it just isn't in the cards.

John Ehlers is a retired electrical engineer and a retired technical analyst, specializing in the application of DSP (digital signal processing) to trading. His new book is Cybernetic Trading Indicators. *For more information about his work, see www.mesasoftware.com.*

The filter uses a polynomial regression over a series of values to find a smoothed value.

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MUSTAPHA/THE WYCKOFF METHOD

Continued from page 31

set at the last swing low before the breakout, but unfortunately, the trade did not go in our favor.

NZDJPY trade signal (swing trade)
Instrument: NZD/JPY
My opinion: Buy limit
Entry price: 87.582
Stop: 86.995
Target: 91.766
Recommended risk: 1%
RRR: 1:7

KEY BENEFITS OF THE SIMPLIFIED APPROACH

Reduced complexity: Focus on price action and key levels to avoid confusion.

Clear entry and exit points: Supply and demand zones provide precise areas for entering and exiting trades.

Fractal nature: This approach works on any timeframe, making it suitable for day traders, swing traders, and long-term investors.

Improved risk management: Waiting for the break of structure reduces the risk of entering trades too early.

High risk-to-reward ratio: By waiting for confirmation and precise entry points, traders can achieve a high risk-to-reward ratio, making for safe and effective risk management. The risk-to-reward ratio should be a minimum of 1:5. This gives room for partialing.

FINAL THOUGHTS

The Wyckoff method is a powerful tool for understanding market psychology, but its complexity can be a barrier for many traders. By simplifying the approach and focusing on liquidity ranges, sweeps, and breaks of structure, you can retain the core principles of Wyckoff while making it more practical and actionable.

Azeez Mustapha is an analyst at Learn2Trade and a blogger at Advfn.com, and as well as a freelance author for various trading and financial websites. He is a trading signals provider. He can be reached via email at azeez@learn2.trade.

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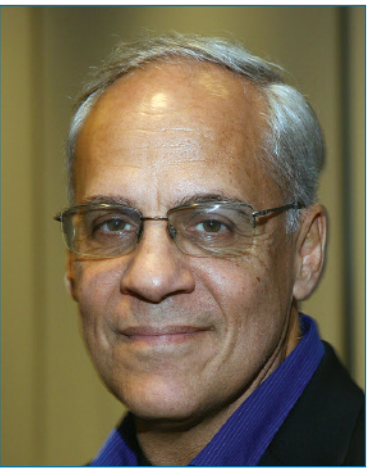
‡TradingView
‡See Editorial Resource Index

Explore Your Options



Jay Kaeppel

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 may appear in a future issue of S&C.*

BUYING STRADDLES FOR A VOLATILITY PLAY

I have struggled at times to get market direction right. However, I have noticed a significant amount of volatility among the stocks I typically follow and trade. I am looking for information on buying straddles, so I can play that volatility without having to always be right about direction.

A straddle involves buying a call and a put at the same strike price and the same expiration month. A related strategy is the *strangle*, which consists of buying a call and a put with the same expiration month but with different strike prices. Sometimes buying a strangle can help to "center" the trade around the price of the underlying shares. More on that later.

The keys to successfully trading straddles/strangles are:

1. limiting the amount you buy to enter the position,
2. giving the underlying security enough time to make the move you expect, and
3. identifying stocks that are about to make a meaningful price movement in one direction or the other.

A straddle involves buying a call and a put at the same strike price and the same expiration month.

A PROCESS FOR SELECTING CANDIDATES

Ideally, you want to trade stocks with active option volume, tight bid/ask spreads, and enough price volatility to move the stock far enough so that the profit on one side of the straddle more than offsets the loss on the other side.

Generally speaking, the greater the option volume for a given stock, the tighter the bid/ask spreads. This helps to limit the amount we pay for the options. For our example, we will look for stocks that:

- Trade at least 2,000 options a day
- Have average bid/ask spreads of no more than 2%

We can do this in Optionsanalysis using the settings shown in Figure 1 for all optionable stocks and indexes.

When we run this test on 4,880 stocks and ETFs, we end up with 193 that meet the volume of options and bid/ask criteria listed above. We save these 193 stocks to "my stock list." The twenty stocks with the smallest average bid/ask spreads appear in Figure 2.

As an aside, I like to run this process after the 3-day RSI for the S&P 500 has reached an extreme level such as 90 or higher or 10 or lower. These readings are often (though definitely not always) followed by either a sharp reversal or a strong follow-through. Either way, that can be a good environment for straddle buyers.

Next, we want to filter for low implied volatility to limit the time premium we pay to buy the call and put options that will comprise our straddle.

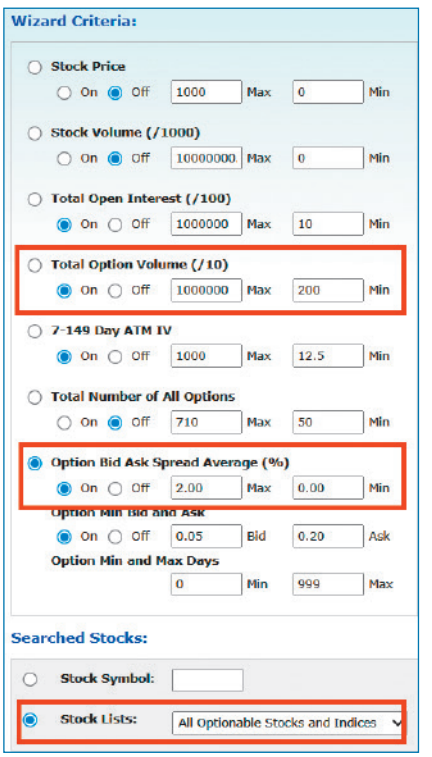


FIGURE 1: SCANNING FOR POTENTIAL CANDIDATES. A scan using the Optionsanalysis software demonstrates looking for potential underlying stocks or ETFs with good option volume and tight bid/ask spreads.

WWW.OPTIONSANALYSIS.COM

The higher the prices for the call and put options we buy, the greater the cost to enter the trade, and the further the stock price must move to generate a profit. Implied volatility enables us to assess the relative amount of time premium embedded in the option's price. The lower the implied volatility, the lower the cost of entering the trade and the greater the likelihood of making a profit.

Filtering for Relatively Low Option Implied Volatility

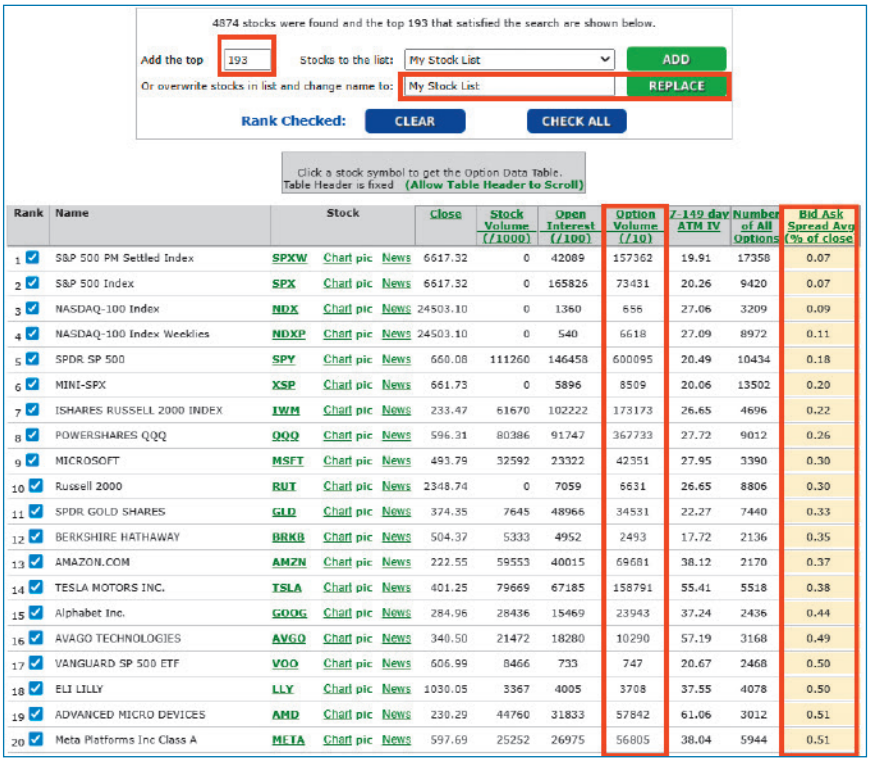
Remember, high implied volatility means a relatively large amount of time premium is built into the price of the options for that stock. Low implied volatility means a relatively small amount of time premium is built into the price of the options for that stock. Therefore, we can gain an edge by focusing on stocks with low option implied volatility.

Figure 3 shows the input screen for performing this action in Optionsanalysis. There, we examine IV for all options with 30 to 60 days remaining until expiration and sort by "low IV." The current day's average IV for each stock is compared to the range of IV for that stock over the past year and then ranked based on where today's IV falls within the one-year range of high and low readings.

A zero reading indicates a stock with IV at (or very near) a one-year low, and a reading of 100 indicates a stock with IV at (or very near) a one-year high. The output appears in Figure 4 and is sorted by IV rank (lowest to highest). For straddle buying, we will focus only on those stocks with an "IV 30–60 day percentile" of less than 30.

Of the original 193 stocks, 101 show an IV rank of less than 30. We save those stocks to "my stock list," overwriting the original list.

We now have a list of 101 stocks with actively traded options and relatively low option implied volatility. Let's look for an actual trade.


4874 stocks were found and the top 193 that satisfied the search are shown below.

Add the top 193 Stocks to the list: My Stock List ADD

Or overwrite stocks in list and change name to: My Stock List REPLACE

Rank Checked: CLEAR CHECK ALL

Click a stock symbol to get the Option Data Table.
Table Header is fixed (Allow Table Header to Scroll)

Rank	Name	Stock			Close	Stock Volume (/1000)	Open Interest (/100)	Option Volume (/10)	7-149 day ATM IV	Number of All Options	Bid Ask Spread Avg (% of close
1	S&P 500 PM Settled Index	SPXW	Chart pic	News	6617.32	0	42089	157362	19.91	17358	0.07
2	S&P 500 Index	SPX	Chart pic	News	6617.32	0	165826	73431	20.26	9420	0.07
3	NASDAQ-100 Index	NDX	Chart pic	News	24503.10	0	1360	656	27.06	3209	0.09
4	NASDAQ-100 Index Weeklies	NDXP	Chart pic	News	24503.10	0	540	6618	27.09	8972	0.11
5	SPDR SP 500	SPY	Chart pic	News	660.08	111260	146458	600095	20.49	10434	0.18
6	MINI-SPX	XSP	Chart pic	News	661.73	0	5896	8509	20.06	13502	0.20
7	ISHARES RUSSELL 2000 INDEX	IWM	Chart pic	News	233.47	61670	102222	173173	26.65	4696	0.22
8	POWERSHARES QQQ	QQQ	Chart pic	News	596.31	80386	91747	367733	27.72	9012	0.26
9	MICROSOFT	MSFT	Chart pic	News	493.79	32592	23322	42351	27.95	3390	0.30
10	Russell 2000	RUT	Chart pic	News	2348.74	0	7059	6631	26.65	8806	0.30
11	SPDR GOLD SHARES	GLD	Chart pic	News	374.35	7645	48966	34531	22.27	7440	0.33
12	BERKSHIRE HATHAWAY	BRKB	Chart pic	News	504.37	5333	4952	2493	17.72	2136	0.35
13	AMAZON.COM	AMZN	Chart pic	News	222.55	59553	40015	69681	38.12	2170	0.37
14	TESLA MOTORS INC.	TSLA	Chart pic	News	401.25	79669	67185	158791	55.41	5518	0.38
15	Alphabet Inc.	GOOG	Chart pic	News	284.96	28436	15469	23943	37.24	2436	0.44
16	AVAGO TECHNOLOGIES	AVGO	Chart pic	News	340.50	21472	18280	10290	57.19	3168	0.49
17	VANGUARD SP 500 ETF	VOO	Chart pic	News	606.99	8466	733	747	20.67	2468	0.50
18	ELI LILLY	LLY	Chart pic	News	1030.05	3367	4005	3708	37.55	4078	0.50
19	ADVANCED MICRO DEVICES	AMD	Chart pic	News	230.29	44760	31833	57842	61.06	3012	0.51
20	Meta Platforms Inc Class A	META	Chart pic	News	597.69	25252	26975	56805	38.04	5944	0.51

FIGURE 2: SCAN RESULTS. After the scan from Figure 1 was run on a universe of 4,880 stocks and ETFs, 193 met the criteria used for the search. (Shown here are the 20 with the smallest average bid/ask spreads.) These scan results can be saved to a list for further filtering.

FIGURE 3: SCANNING FOR LOW IMPLIED VOLATILITY. The next filter performed on the scan results for this trade example is to look for relatively low implied volatility, since the lower the implied volatility, the lower the cost of entering the trade. The software will be used to rank the results according to the criteria.

Scanning for Straddles

Many variables can be considered when scanning for straddles, and there is no "one magic set of criteria" that will always be better than any other. But for our purpose, we will set the following criteria:

- Options with between 35 and 90 calendar days left until expiration
- Options with volume and open interest of at least 50
- For sorting purposes, we will assume buying at the ask price (that is, using the "natural" setting in the Optionsanalysis software)
- Our sorting criteria is the high-

Search Output:

193 stocks were found and 184 that satisfied the search are shown below.

Add the top 101 Stocks to the list: My Stock List ADD

Or overwrite stocks in list and change name to: My Stock List REPLACE

Rank Checked: CLEAR CHECK ALL

Stocks ranked by Lowest IV Percentile for IV : 30-60 day Options
Click a stock symbol to get the Option Data Table.
Table Header is fixed (Allow Table Header to Scroll)

Rank	Name	Stock			Date of Next Earnings	Days to Next Earnings	Close	IV 7-30 day Percentile	IV 7-30 day Value	IV 30-60 day Percentile	IV 30-60 day Value
1	Cidara Therapeutics Inc	CDTX	Chart pic	News	2026-03-05	107	218.41	0.00	16.25	0.14	12.77
2	Pinduoduo Inc American Deposit	PDD	Chart pic	News	2025-11-18	0	119.58	9.49	35.13	3.00	31.00
3	CHUBB	CB	Chart pic	News	2026-01-27	70	296.57	22.94	22.55	9.00	17.98
4	BOEING	BA	Chart pic	News	2026-01-28	71	189.63	9.38	31.81	10.10	30.55
5	Datadog Inc	DDOG	Chart pic	News	2026-02-12	86	176.46	29.81	47.00	10.78	43.73
6	Exxon Mobil	XOM	Chart pic	News	2026-01-30	73	119.03	10.74	23.19	11.14	21.77
7	MARATHON PETROLEUM	MPC	Chart pic	News	2026-02-03	77	199.61	21.35	37.59	11.76	30.79
8	VALERO ENERGY	VLO	Chart pic	News	2026-01-29	72	185.43	15.37	35.97	13.02	33.12
9	W.W. GRAINGER	GWW	Chart pic	News	2026-02-03	77	918.18	44.40	29.55	13.22	21.15
10	Reddit Inc	RDDT	Chart pic	News	2026-02-11	85	185.69	19.76	73.19	13.38	67.73
11	Gold and Silver Sector Index	XAU	Chart pic	News			292.90	65.08	50.68	14.23	42.70
12	BERKSHIRE HATHAWAY	BRKB	Chart pic	News	2026-02-21	95	504.37	14.81	17.89	14.23	17.13
13	3M	MMM	Chart pic	News	2026-01-20	63	165.79	15.69	27.97	14.41	26.38
14	DIREXION DAILY 20+ YR TRSY BUL	TMF	Chart pic	News			39.92	13.01	35.69	14.91	37.81
15	Vistra Energy Corp	VST	Chart pic	News	2026-02-26	100	174.42	17.69	59.99	14.95	55.19
16	JAZZ PHARMACEUTICALS	JAZZ	Chart pic	News	2026-02-24	98	180.52	44.53	50.98	14.99	28.99
17	Uber Technologies Inc	UBER	Chart pic	News	2026-02-04	78	90.86	16.82	37.67	15.34	35.91
18	PHILLIPS 66	PSX	Chart pic	News	2026-02-04	78	138.41	13.64	31.62	15.64	30.27
19	CHEVRON	CVX	Chart pic	News	2026-01-30	73	153.62	13.58	23.16	15.91	22.63
20	CHENIERE ENERGY	LNG	Chart pic	News	2026-02-19	93	212.46	17.17	30.07	15.95	27.55

FIGURE 4: SCAN RESULTS. After scanning for low IV in Figure 3, the scan results are sorted here by IV rank (lowest to highest). Of the original 193 stocks from Figure 2, 101 met the criteria for having relatively low option implied volatility. These results will be considered for a potential option trade.

Wizard Criteria:

Option Strike Search Direction from Stock Close
(●) Up and Down ( ) Up Only ( ) Down Only

Option Strike Search Distance from Stock Close
(0 for both finds the option strike closest to Close)
0 Minimum 0 Maximum

Calendar Days To Option Expiration
35 Minimum 90 Maximum

Minimum Volume and Open Interest of Both Options
50 Volume 50 Open Interest

When to compute % to Double
0 Calendar Days Before Expiration

Maximum Straddle Trades Displayed Per Stock
3 Maximum Displayed

Use Natural Bid/Ask or Mid Quotes=(Bid+Ask)/2
(●) Natural ( ) Mid Quotes

Trade Ranking Criteria:
( ) Minimum Cost as Percent of Stock Close
( ) Lowest Put+Call combined % to Double
(●) Probability of Touch to either % to Double
Using above Calendar Days Before Expiration
( ) Greek Gamma divided by Greek |Theta|

Searched Stocks:
( ) Stock Symbol: MRK
(●) Stock Lists: My Stock List

FIGURE 5: SCANNING FOR A POTENTIAL STRADDLE OR STRANGLE TRADE. This shows an example set of criteria used to look for an option straddle to enter. These criteria help to further filter the possible choices from the scan results in Figure 4.

Rank	Stock	Cost Close	Strikes	Expire	Prices Call/Put	Volume	Open Interest	Days to Expire Earnings	Cost/ Close (%)	Call/Put % to Double	Probability of Touch Either	Gamma/ Theta‡
1	UPS Chart pic News	8.96 92.83	90.00	2026 Jan 16	6.40 2.56	312 97	8057 4974	59 : 70	9.65	16.2 -22.3	27.59	1.00
2	SHOP Chart pic News	23.25 140.45	140.00	2026 Jan 16	12.45 10.80	79 115	1359 1527	59 : 85	16.55	32.7 -33.4	26.06	0.14
3	MRK Chart pic News	9.00 96.43	95.00	2026 Jan 16	5.20 3.80	299 711	3292 10450	59 : 77	9.33	17.1 -20.1	22.98	0.93
4	QCOM Chart pic News	19.15 165.06	165.00	2026 Jan 16	9.95 9.20	130 108	3590 1699	59 : 78	11.60	23.1 -23.2	22.19	0.20
5	RDDT Chart pic News	40.95 185.69	185.00	2026 Jan 16	21.45 19.50	59 58	194 297	59 : 85	22.05	43.7 -44.4	21.70	0.04
6	FSLR Chart pic News	44.05 252.19	250.00	2026 Jan 16	24.10 19.95	64 68	1037 7670	59 : 98	17.47	34.0 -35.8	18.34	0.04
7	AAPL Chart pic News	17.75 267.44	265.00	2025 Dec 26	10.75 7.00	176 834	170 1047	38 : 72	6.64	12.3 -14.1	16.68	0.15
8	AAPL Chart pic News	22.15 267.44	265.00	2026 Jan 16	13.35 8.80	746 532	6360 33434	59 : 72	8.28	15.6 -17.4	16.47	0.15
9	TSLA Chart pic News	54.90 401.25	400.00	2025 Dec 26	29.00 25.90	352 1323	704 3291	38 : 71	13.68	27.0 -27.6	15.85	0.02
10	TSLA Chart pic News	59.90 401.25	400.00	2026 Jan 02	31.75 28.15	234 413	215 389	45 : 71	14.93	29.5 -30.1	15.76	0.02
11	KO Chart pic News	4.16 71.22	70.00	2026 Jan 16	2.74 1.42	556 705	6712 14419	59 : 84	5.84	9.9 -13.4	15.24	4.52
12	TSLA Chart pic News	69.45 401.25	400.00	2026 Jan 16	36.95 32.50	1925 3165	13039 21746	59 : 71	17.31	34.3 -34.9	15.23	0.02
13	PLTR Chart pic News	31.20 167.33	165.00	2026 Jan 16	17.45 13.75	1015 410	4847 3157	59 : 76	18.65	35.9 -38.6	12.95	0.08
14	DIS Chart pic News	8.80 106.28	105.00	2026 Jan 16	5.15 3.65	903 212	10513 3975	59 : 78	8.28	15.3 -17.7	12.70	0.97
15	WFC Chart pic News	8.85 83.86	82.50	2026 Jan 16	5.50 3.35	92 190	2691 3237	59 : 57	10.55	19.4 -22.7	11.24	0.96

FIGURE 6: SCAN RESULTS. After running the scan in Figure 5, the results are ranked, helping the trader to find potential trades with better probabilities than others.

est probability that the underlying stock will reach the "% to double" price for either the call or put

These criteria appear in Figure 5.

The output for this scan appears in Figure 6. It should be noted that there is no guarantee that the trade at the top of the list will necessarily be a better trade. This ranking simply means that, based on current criteria, it has the most favorable mathematical odds at the moment.

A CLOSER LOOK AT THE SELECTED TRADE

The "top" listed trade involves buying the January 16, 2026 90 strike price call and put for ticker UPS. However, we will alter this and trade a strangle instead of a straddle. The price for UPS shares is $92.83. The 90 strike price call is $2.83 in-the-money and has a delta (or stock equivalent position) of 59.70. The 90 strike price put is $2.83 out-of-the-money and has a delta of –37.04. Therefore, the net delta is 22.66, indicating that the position is somewhat biased to the upside.

To make this trade more "neutral," we will buy the 95 strike price call

A strangle consists of buying a call and a put with the same expiration month but with different strike prices.

instead and the 90 strike price put. As you can see in Figure 7, the 95 call has a delta of 42.83, so the net position delta is only 5.80, so it is closer to "delta neutral."

The 95/90 strangle position has a "vega" of $28.51; this means that the position will gain or lose roughly that amount if implied volatility rises or falls by one whole percentage point. Since we filtered for stocks with IV on the low end of the historical range, we expect an increase in IV during the life of the trade, which would result in more time premium being built into the option's price.

The position also has a "theta" of –$6.45. That is how much dollar value the position will lose based on the passage of one day. This reflects the effect of time decay (that is, all options lose all of their time premium by option expiration, and we are long not one but two options. We want the underlying stock to make a big move as soon as possible, so we can take a profit and avoid the inevitable adverse effect of time decay.

Entering and Managing the Position

In scanning for trades, we used the "natural" selection, rather than the "bid/ask midpoint." This was to present a "worst case" outlook for each trade that assumes that we simply would place a market order and buy both options at their ask price. In real-world straddle trading, it is usually best to try to get filled at the midpoint

Continued on page 41

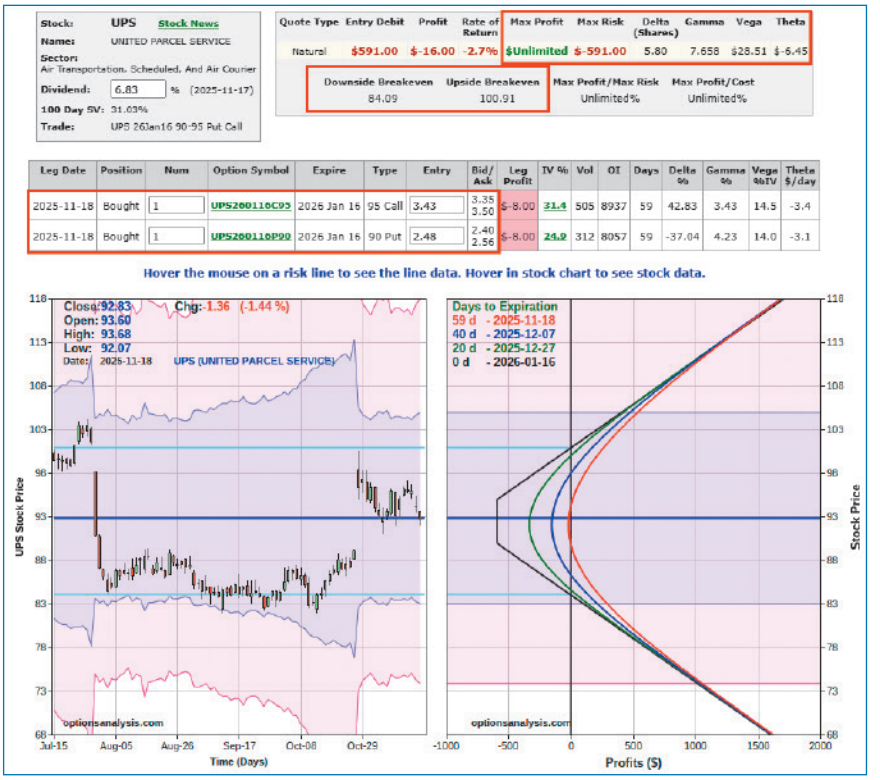


FIGURE 7: TRADE ENTRY DETAILS FOR EXAMPLE STRANGLE POSITION. Using the top-ranked result from Figure 6, which in this example is the stock UPS, available options for a strangle are considered, and the strike prices for a call and put are selected to create a position that is close to being "delta neutral."

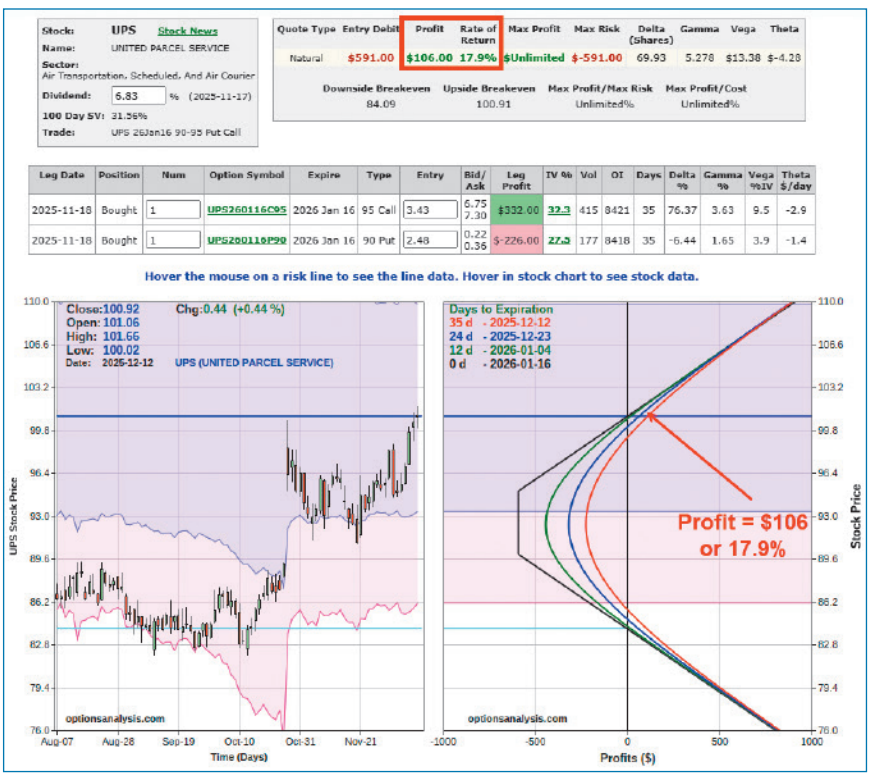


FIGURE 8: MANAGING THE TRADE. In the example strangle option trade, the hoped-for scenario is for the underlying to make a large move early enough in the trade so the trader can exit the trade with a profit at least a week before option expiration. In this example, the open profit exceeded the target 15% on December 12, presenting a profit-taking opportunity.

From Trend To Correction To Overextension

A Spectrum For Financial Markets

If you can identify the condition of the market, you can better select the methods to apply. Here are some indications that could help you to decide.

by Richard J. Johnson

Some years ago, I devised a theory to explain a political spectrum. It suggested that responses to change and continuance were the operative factors. From left to right it listed four categories: radical; liberal; conservative; reactionary. The *radical* insisted on change despite an absence of its necessity, just as the *reactionary* insisted on continuance despite clear evidence of a necessity of change. The *liberal* favored change as desirable at most times and that the burden of proof lies with continuance, while the *conservative* favored continuance at most times and that the burden of proof lies with change.

Since what *is* was spawned by what *was*, and what *was* can be known while what *will be* cannot, in the short term, there is a bias in favor of continuance. However, in the long term, due to many factors of random cultural mutations, distortions, and various dynamics, change is favored. Now, what does all this have to do with financial markets?

Explaining Financial Markets

This spectrum can be applied to many social phenomena directly and indirectly, including the condition of financial markets, if we just replace the terminology. So transforming the terminology of "continuance" to *trend*, and the terminology of "change" to *correction*, we begin to envision that this theory might help to identify market conditions. Further, we can change "reactionary" to *trend overextension*, and "radical" to *correction overextension*. Either of these latter conditions can lead to reversals. The trick is to design methods and indicators that will identify where in the spectrum the market is at any point in time.

ZAKHARCHUK/SHUTTERSTOCK

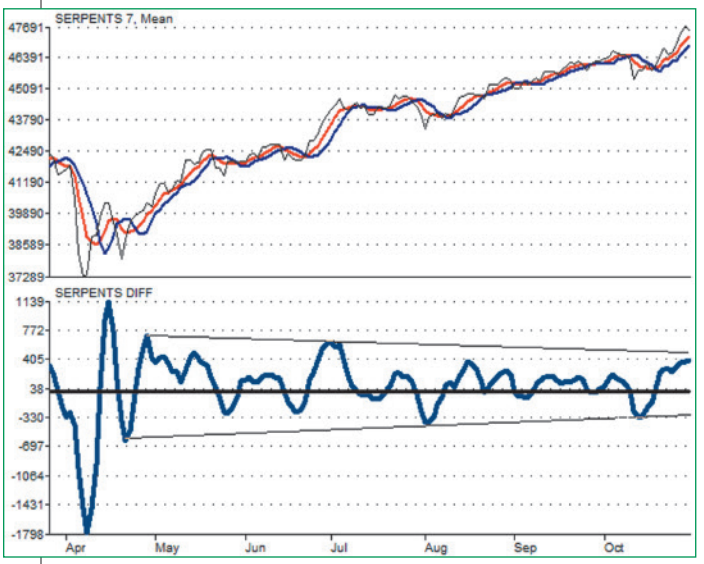


FIGURE 1: WMA & IWMA. A daily chart of DJIA mean data is overlaid with a weighted moving average (red) and an inverted weighted moving average (blue), producing a serpentine-like plot display. The bottom pane displays the difference in values of the WMA and IWMA with a zero line. In April, large amplitudes signaled the reversal. The dwindling amplitudes that followed suggest an overextension is nearing.

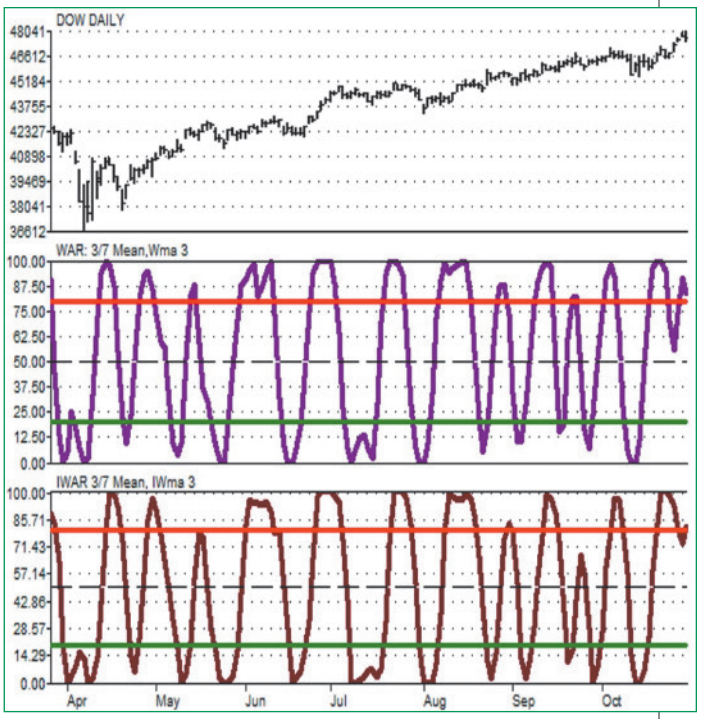


FIGURE 2: WAR & IWAR INDICATORS. The WAR indicator (middle pane) divides the shorter WMA (3) by the longer (7). IWAR (bottom pane) does the same but uses the inverted moving averages. The top pane is daily chart of DJIA mean data.

The weighted moving average (WMA)

We can use an established form of a moving average—a *weighted moving average* (WMA)—where there is an increased weighting on the front data point (that is, front-loaded). For example: In a three-period WMA, two periods back is weighted by 1, one period back is weighted by 2, and the front data point weighted by 3. Note that the front period then comprises half of the average, not just a third. The data one period back is weighted at a third. Two periods back is weighted at only a sixth of the value. Add up the totals and divide by 6 and you have your WMA.

The inverted weighted moving average (IWMA)

Using a form of "backwardation," we can invert the process by valuing the period two data points back by 3, one data point back by 2, and the front data point by now only 1. Add and divide by 6 again. The front value is then only a sixth of the total, one period back at a third, but two periods back is now comprising half of the value, a reverse of the standard WMA. This is the inverted weighted moving average (IWMA). Instead of being front-loaded, it is back-loaded.

A SERPENTINE PLOT

By plotting both the WMA (red) and the IWMA (blue) on the mean (midpoint between high and low) data in black, we observe a display I call "serpents"—because they wind around the mean data and each other.

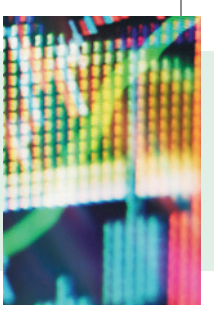
Figure 1 shows the "serpents" (seven period) as of October 29, 2025 overlaying the daily Dow Jones Industrial Average (DJIA) mean data. When the WMA (red) is extended in time separated from the IWMA (blue), it is a trend. When they cross, a correction is taking place.

Large amplitudes suggest that a potential reversal might be imminent, and diminishing amplitude suggests that soon, a breakout in the direction of the trend is possible.

This display is coupled with the difference in values of the WMA and IWMA on the bottom pane with a zero line. Now the amplitudes begin to offer clues as to market character.

In April 2025, large amplitudes signaled the reversal. Then, dwindling amplitudes that followed suggest an

We observe a display I call "serpents"—because they wind around the mean data and each other.



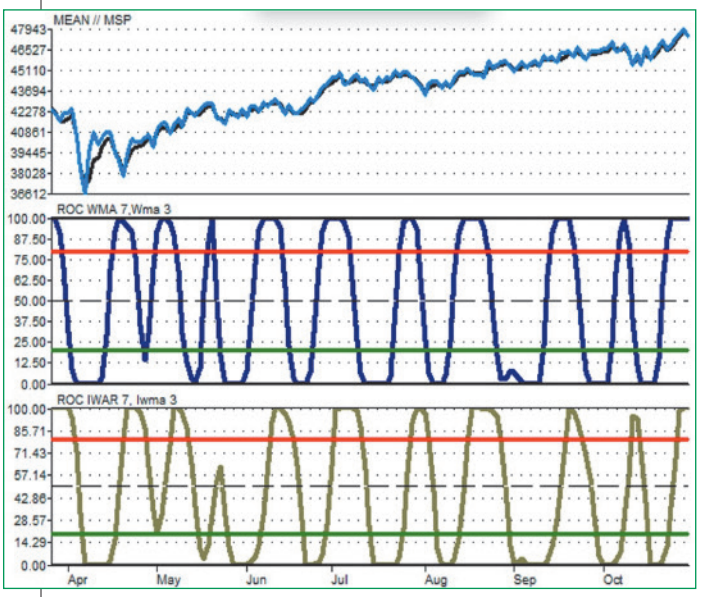


FIGURE 3: RATE OF CHANGE. Rate of change (ROC) indicators can be constructed by dividing the front data point by the WMA or IWMA. The mean and the most significant point (MSP) are displayed on the top chart.

overextension is near.

Crossing the zero line provides signals. And note that trendlines can be drawn with the amplitudes (see bottom pane of Figure 1).

We can now construct a WAR indicator (Figure 2), which divides the shorter weighted moving average (3) by the longer (7). IWAR does the same but uses the inverted moving averages. Figure 2 demonstrates both the WAR and IWAR indicators on a daily chart of DJIA mean data.

We can now also construct simple indicators such as rates of change by dividing the front data point by the WMA or IWMA. An example is shown in Figure 3. Note the mean and most significant point (MSP) on the top chart. (For more on my concept of the "most significant point," please see my July 2025 article in S&C.)

These indicators can be applied to different data periods. When they correlate closely to each other and to a different data series such as weekly data, it confers a high confidence for deciding *where* on the market spectrum the present action is.

Figure 4 shows a longer-in-time DJIA "serpents" weekly chart for the week ending 10/24/2025. Note the obvious

The amplitudes begin to offer clues as to market character.

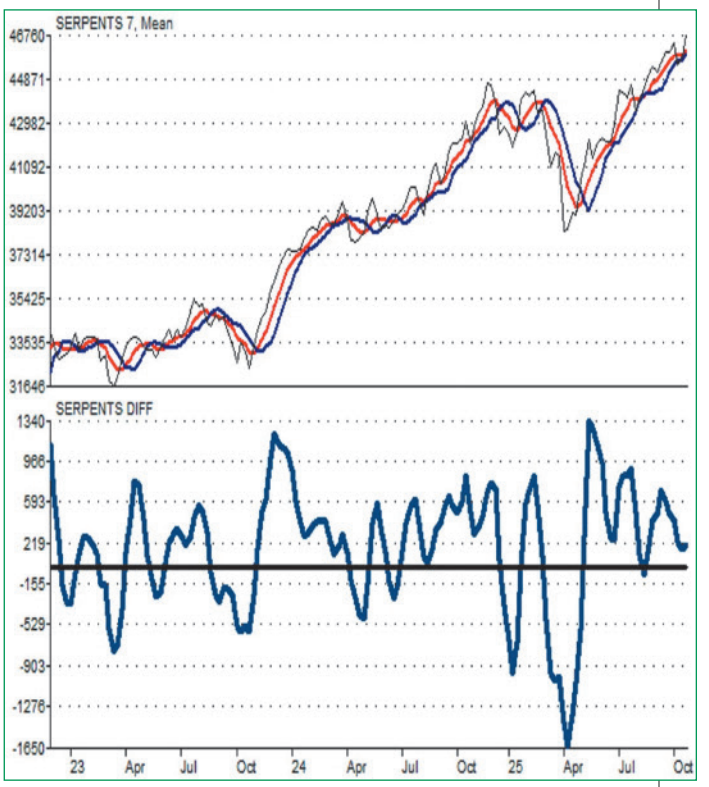


FIGURE 4: WEEKLY CHART. Here we switch from a daily chart to a weekly chart. Using a different data frequency can help to confirm the observed market characteristics. Note that the red WMA line signals trend by its long periods of separation.

indication of the red (WMA) signaling trend by its long periods of separation.

Richard J. Johnson has been interested in trading and technical analysis since the 1970s and began devising his own indicators and methodologies at the advent of personal computing. He is the author of Finding Waves: Objectively Identifying Wave Patterns In Financial Market Data. *He may be reached at rickj3@hotmail.com.*

FURTHER READING

Johnson, Richard J. [2011]. *Finding Waves: Objectively Identifying Wave Patterns In Financial Market Data*, CreateSpace.

_____ [2025]. "Polarization Of Market Data," *Technical Analysis of* STOCKS & COMMODITIES, Volume 43: July.

‡MetaStock

‡See Editorial Resource Index

KAEPPEL

Continued from page 37

using a limit order. If the order does not get filled at our hoped-for limit price by the end of the day, we might consider pulling that order and buying at the market in order to secure the position by the end of the day.

For our example trade, we assume that we bought the 95 call at $3.43 (the bid/ask is $3.35 and $3.50) and the 90 put at $2.48 (the bid/ask is $2.40 and $2.56). Thus, our entry cost is $591 for a 1-lot.

Managing a straddle can be tricky. While we want to see "a big move," the obvious question is "what constitutes a big move?" and "how long will the big move last?" The first question usually involves an arbitrary answer chosen by the trader, and the second is simply unknowable. Hence, it is typically helpful to think in terms of taking a profit (or at least partial profits) if trading in size and honestly expecting a big move. While there are no definitive answers, one suggestion is to consider taking a profit on a straddle when the open profit exceeds 15% of the position's cost. For our example trade, we might set a profit target of $88 ($591 × 0.15). Each trader must decide for each straddle/strangle whether to cut their loss at some point or let it ride through expiration. Since the worst-case loss can only be experienced at expiration, it is advised to exit a straddle at least a week before option expiration.

Each trader must decide for each straddle/ strangle whether to cut their loss at some point or let it ride through expiration.

In this example, UPS shares rose from $92.83 a share to $100.92 on December 12, 2025. The strategy showed an open profit of $107 or almost 18% (Figure 8), thus presenting us with a profit-taking opportunity.

‡Optionsanalysis.com
‡See Editorial Resource Index

DODD/THE RSI(5)

Continued from page 19

- On **weekly charts,** the RSI divergence signal showed some losses in the study. These losses occurred in situations where there was a temporary change in the price trend before the original trend resumed its upward trajectory. In such a situation, if there is an RSI(5) signal and the position is sold, it would be reentered with a loss. But those losses were small and became negligible compared to the preservation of capital that resulted from selling all shares in a security when the weekly RSI(5) sell signal is first apparent. However, it does mean that about 4% of RSI(5) signals on a weekly chart could be losing trades. Based on this test and these data, the weekly RSI(5) sell signal had a 96% probability of being accurate.

This RSI(5) pattern can potentially be found on the chart of any security.

SUMMARY

Here's a summary of the key features of the RSI(5).

- The RSI(5) provides a useful entry signal. The highest probability of success for the entry signal is when RSI(5) has been below 50% and moves up through the 50% equilibrium level.
- The RSI(5) is useful to find an early exit from any trend near its high point and before a trailing stop is triggered. Similarly, it can also provide an early entry to an emerging trend.
- As well as improving profit by allowing an early exit or early entrance, use of the RSI(5) can significantly reduce portfolio drawdown.
- As with using other lookback periods for the RSI, the RSI(5) can exhibit strong divergence properties but these divergences on the chart cannot be used reliably as overbought or oversold indicators.

Bill Dodd has a PhD in biochemistry and trades the Australian and international markets.

FURTHER READING

Wilder, J. Welles. Jr. [1978]. *New Concepts In Technical Trading Systems*, Trend Research.

Stella Osoba

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.

ARE STOCK SPLITS A GOOD THING?

There are two types of stock splits: *forward* and *reverse*. When a stock undergoes a *forward* stock split, the company undergoes a corporate action with the result of increasing its total outstanding shares. The number of shares increases while the market capitalization of the company remains unchanged. When a corporate action results in a *reverse* stock split, the opposite happens. The company is effectively shrinking the total number of its outstanding shares and attempting to increase the unit price of each individual share. Market capitalization is unchanged.

The following is a technical analysis of a few random companies that executed stock splits, both forward and reverse, in 2024. The study is a quick attempt to determine whether stock splits on the whole tend to be positive or negative signals. It also tries to shed light on which type of stock split has often performed better in the months after the split.

FORWARD SPLITS AND PRICE PERFORMANCE

The following section will study three companies that underwent forward stock splits in 2024. These companies are Nvidia Corp. (NVDA), Walmart Inc. (WMT), and Chipotle Mexican Grill Inc. (CMG).

Figure 1 is a daily chart of NVDA showing three years of price history. On June 10, 2024 the company executed a 10-to-1 share split. The reason it gave for the split was to make its shares more accessible to investors by reducing the individual price of each share from around $1,200, which was its closing price the prior Friday, to the opening price of $120.39 on the day of the split.

There are two types of stock splits: forward and reverse.

Prior to the split, shares of NVDA were in an uptrend, with price making higher highs and higher lows. The 50-day moving average (MA) was comfortably above the 200-day MA. After the split, price on its second reaction dipped below the 200-day MA, but then recovered, rising to new highs and then closing at $190.53 on December 26, 2025.

From a pre-split price of $120 to $190 six months later, this impressive rise is an example of what has led many to believe that stock splits are a positive for the stock. While the splits in and of themselves are not signifiers of any change to the fundamentals of the company, they can confer positive sentiment, and the reduced price of the individual shares can increase demand for the stock, pushing up price.

FIGURE 1: NVIDIA CORP. (NVDA), FORWARD STOCK SPLIT. This daily chart of NVDA shows three years of price history. The company executed a 10-to-1 share split in June 2024. Following the split, price dipped below its 200-day MA on its second reaction but went on to rise to new highs.

Figure 2 is a daily chart of Walmart Inc. (WMT) showing three years of price history. On February 26, 2024, the company underwent a 3-to-1 stock split and the stock opened at $57.86. Similar to NVDA, WMT was in an uptrend when the stock split occurred. Apart from the now-lower price of the individual

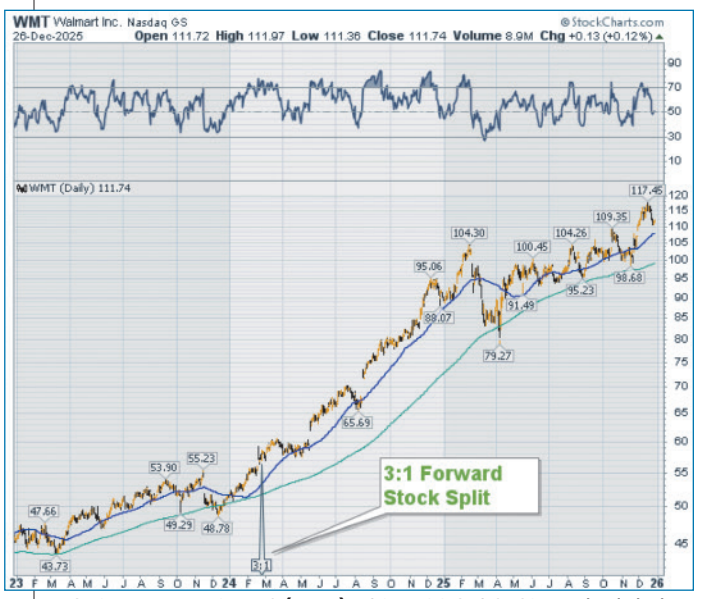


FIGURE 2: WALMART INC. (WMT), FORWARD STOCK SPLIT. This daily chart of WMT shows three years of price history. The stock underwent a 3-to-1 stock split in February 2024. WMT was in an uptrend when the stock split occurred and the uptrend continued uninterrupted by the split.

FIGURE 3: CHIPOTLE MEXICAN GRILL INC. (CMG), FORWARD STOCK SPLIT. This daily chart of CMG shows three years of price history. CMG declared a 50-to-1 stock split in June 2024. The stock touched its highs and entered a downtrend.

shares, the uptrend was uninterrupted by the split and the stock continued to rise until a brief reaction in the first quarter of 2025 followed by a quick recovery. The stock closed at $111.74 on December 26, 2025.

Figure 3 is the last in this sampling of forward stock splits. It is a daily chart of Chipotle Mexican Grill (CMG) showing three years of price history. CMG declared a 50-to-1 stock split on June 26, 2024. The day before the stock split, shares of CMG closed at a pre-split price of $3,383 or a post-split price of $65.66. As we can see from its price chart, it has bucked the trend of NVDA and WMT because the stock had recently touched its highs and proceeded to enter into a downtrend, marking a series of lower highs and lower lows, which continues as I write this toward the end of 2025.

The lesson here is that while forward stock splits are often seen as a positive for richly priced stocks, the split in and of itself does not mean that the share price will rise. It could just as easily fall, as we can see with CMG. A corporate action that results in the execution of a forward stock split should not be a significant reason for entry into the stock. Rather, look for positive momentum in price or breakouts of basing patterns to inform your entry positions.

FIGURE 4: RENT THE RUNWAY INC. (RENT), REVERSE STOCK SPLIT. This daily chart of RENT shows three years of price history. RENT underwent a 1-to-20 reverse share split in April 2024. Over the next few days, price closed lower, then gapped up. But the stock could not sustain the upward momentum.

REVERSE SPLITS AND PRICE PERFORMANCE

Reverse stock splits are basically the opposite of forward stock splits. Often, smaller companies will execute a reverse stock split when seeking to boost the price of their individual stocks. That could be for a variety of reasons such as complying with the minimum requirements for being listed on an exchange. A reverse stock split does not usually generate the same investor optimism

Which type of stock split has often performed better in the months after the split?

FIGURE 5: BUZZFEED INC. (BZFD), REVERSE STOCK SPLIT. This daily chart of BZFD shows three years of price history. BZFD executed a 1-to-4 reverse stock split in May 2024. After a few price spikes, the stock traded lower for most of 2025.

FIGURE 6: SIRIUS XM HOLDINGS INC. (SIRI), REVERSE STOCK SPLIT. This daily chart of SIRI shows three years of price history. The stock underwent a 1-to-10 reverse stock split in September 2024 during a prolonged downtrend in the stock. After the split, price went on to resume its downtrend.

as that generated by a forward stock split, and the studies of the following charts will illustrate this point.

Figure 4 is a daily price chart of Rent The Runway Inc. (RENT) showing three years of price history. RENT is a small market capitalization company. On April 3, 2024, RENT underwent a 1-to-20 reverse share split. After the split, over the next few days, price closed lower, then gapped up. But the stock could not sustain the upward momentum. Price reversed and continued to fall, eventually trading at lows below those seen after the lows during the days following the price split. Price went on to trade sideways for the bulk of 2025 and touched lower lows of $3.70. A rebound from the last $3.70 low took price up to a high of $9.51 on December 17, 2025. But the technical picture shows a lack of significant positive momentum.

Figure 5 is a daily price chart of BuzzFeed Inc. (BZFD) showing three years of price action. On May 6, 2024, BZFD executed a 1-to-4 reverse stock split, thereby reducing its outstanding shares. Apart from a couple of temporary price spikes taking price up to a high of $5.63 into the end of 2024, price reversed in 2025 and traded lower for the whole of 2025. In early October 2025, it gapped down, and as of December 26, 2025, it traded at a high of $1.11.

Reverse splits are viewed as less attractive by investors than forward stock splits.

Figure 6 is a daily chart of Sirius XM Holdings Inc.(SIRI) also showing three years of price history. On September 10, 2024, the stock underwent a 1-to-10 reverse stock split during a period of a prolonged downtrend for the stock, and it traded at $25.82 on the close. Price action subsequent to the split showed price continued to make a series of lower highs and lower lows, confirming the downtrend was still in effect.

TAKEAWAY

The takeaway from this brief study of charts that have undergone either reverse or forward stock splits is this: The stocks that undergo reverse stock splits usually do so for some underlying issue that they are trying to resolve such as to boost a falling share price to meet listing requirements. Because of the possible underlying issues, reverse splits are viewed as less attractive by investors than forward stock splits. Meanwhile, forward stock splits are usually an attempt by a company to reduce the individual stock price and attract more buyers. Because positive sentiment often accompanies such action, this can serve to propel the stock higher. But a forward stock split on its own does not do anything more than reduce the price of individual shares and increase the number of shares outstanding. It should not be seen as a shortcut to analyzing price action.

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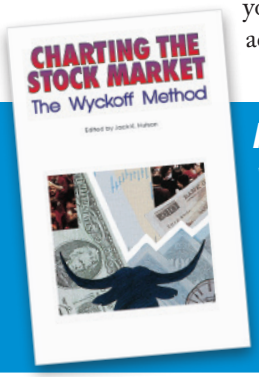

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Machine Learning Corner

Domenico D'Errico

MACHINE LEARNING MEETS TECHNICAL TRADING

Want to better understand complex concepts like pattern recognition, forecasting, and classification—in plain English without complex formulas? Domenico D'Errico has over 20 years of experience in the financial markets, including as a quant developer for small hedge funds. He is the author of TradeStation EasyLanguage for Algorithmic Trading *(2024). He offers the EasyLangage Crash Course at https://gandalfproject.com/easylanguage-crash-course-beginner-level/. In this column, he explains how the core concepts of machine learning for pattern recognition often have more in common with traditional trading techniques than you might expect. Have a question? Send it to dderrico@tradingalgo.it. Selected questions may appear in a future issue of S&C.*

IS AI MAKING PRICE CHARTS INEFFECTIVE?

Does the spread of artificial intelligence risk making price-based trading and chart analysis ineffective? What changes could I introduce to the way I read the market?

The original purpose of technical analysis has always been straightforward: to understand what large investors are doing when you lack access to qualified or privileged fundamental information.

That goal has never changed. What has changed—dramatically—is how hard it has become to pursue it.

As computers and the web made technical tools widely accessible, the informational edge they once offered steadily eroded. Today, the challenge is no longer reading the chart, but extracting meaningful signals from patterns that everyone can now see.

As artificial intelligence becomes widespread, markets evolve accordingly: noise increases, margins compress, and opportunities disappear more quickly.

Patterns that are obvious to many participants are rapidly absorbed into prices, leaving little room for slow or isolated decision-making.

For this reason, relying on a single, static trading approach applied to one market, without a well-defined rationale, is increasingly unlikely to produce durable results.

A clear rationale is essential because it defines why a model should work, not just how it reacts to price movements. As market behavior becomes noisier and more adaptive, this logic acts as a filter, helping distinguish meaningful structure from random fluctuations. Without an underlying rationale, any apparent performance is likely driven by chance rather than by a repeatable process.

Let's take the trend rationale as an example.

FROM THE CONCEPT OF TREND TO THE CONCEPT OF TREND QUALITY

Trend is often described as the cornerstone of any trading strategy.

Yet the fundamental question re-

Price direction alone is no longer sufficient and must be complemented by a measure of trend stability.

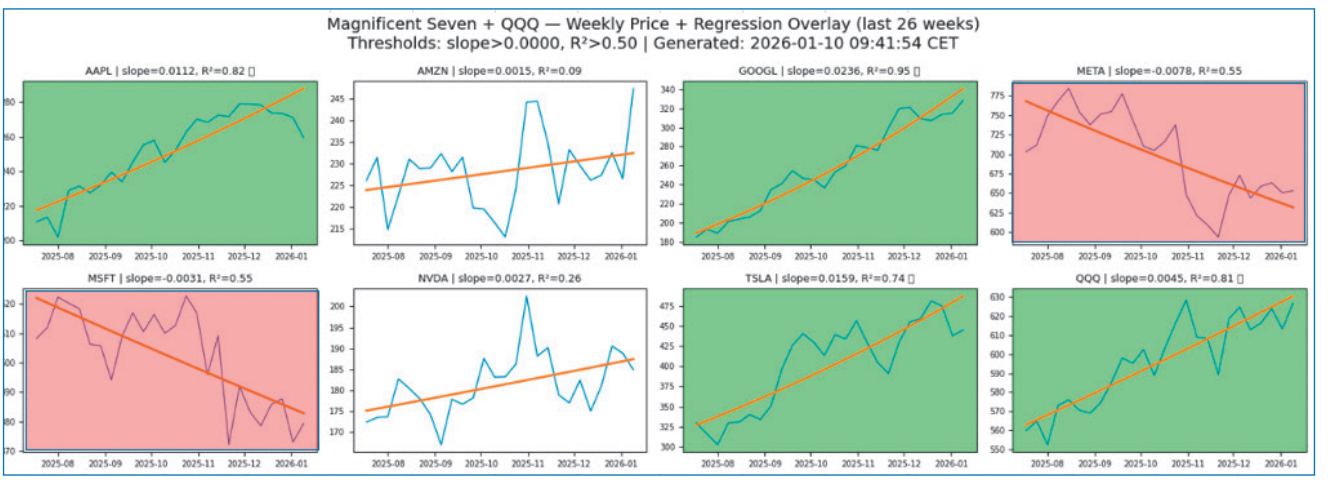

FIGURE 1: A SYSTEMIC VIEW OF THE MARKET. The charts of the Magnificent Seven stocks are analyzed through the combined lenses of direction and stability. Stocks highlighted with a green background are those that are exhibiting both a positive direction and a high stability measure (at the time of examination)..

mains unanswered: *What exactly is a trend, and how does it differ from simple price direction?*

Most traders begin their journey with a moving average. However, a moving average on its own cannot define a trend. A moving average:

- does not reliably separate signal from noise
- provides no information about the *quality* of a trend, as it does not measure the stability of price movements

And yet, stability is the only meaningful—albeit imperfect—condition that increases the probability that a trend will persist.

For this reason, *price direction* alone is no longer sufficient and must be complemented by a measure of *trend stability*. The logic is simple: a stable trend is more likely to persist. This is not a technical nuance or a modeling choice—it is a structural principle of market behavior, and one that is unlikely to be eroded by technological innovation.

Still, even *stability*, when applied to a single market in isolation, is not sufficient. What is required is a systemic view of the market.

A PRACTICAL ILLUSTRATION

In Figure 1, the charts of the Magnificent Seven stocks are analyzed through the combined lenses of direction and stability. (See sidebar, "Quantifying Trend Direction And Stability.")

Not all of them show a positive direction over the past year, and more importantly, some assets with a positive direction display highly unstable price behavior.

Stocks highlighted with a green

Today, the challenge is no longer reading the chart, but extracting meaningful signals from patterns that everyone can now see.

QUANTIFYING TREND DIRECTION AND STABILITY

To formalize the concept of *trend quality*, price behavior can be decomposed into two complementary components: *direction* and *stability*.

Trend direction (slope)

Direction is measured as the slope of a linear regression applied to log-transformed prices over a fixed lookback window. It captures the average directional bias of price over time.

- Positive slope: upward trend
- Negative slope: downward trend
- Near-zero slope: flat or directionless behavior

Slope answers the question: *Is price moving in a persistent direction over the selected horizon?*

Trend stability (R^2)

Stability is measured using the coefficient of determination (R^2) of the same regression. R^2 quantifies the proportion of price variance explained by the linear trend.

- High R^2: Price evolves consistently around the trend
- Low R^2: Price behavior is dominated by noise

R^2 answers the question: *How orderly and reliable is that directional movement?*

WHY DIRECTION AND STABILITY MUST BE COMBINED

Direction alone is insufficient. A market may exhibit a positive slope while remaining highly unstable, resulting in poor trend persistence.

Conversely, a stable price path with no direction offers consistency but limited opportunity.

By combining slope and R^2, assets can be classified into market regimes such as:

- Up & stable
- Down/flat & stable
- Up & unstable
- Down/flat & unstable

This regime-based representation shifts technical analysis away from isolated signal generation and toward *systematic market filtering*, a prerequisite for portfolio-level decision-making.

Methodology note

Slope and R^2 are descriptive, not predictive, statistics. They do not forecast future prices, but provide a structured framework for identifying market conditions in which specific trading or allocation approaches are more likely to be effective.

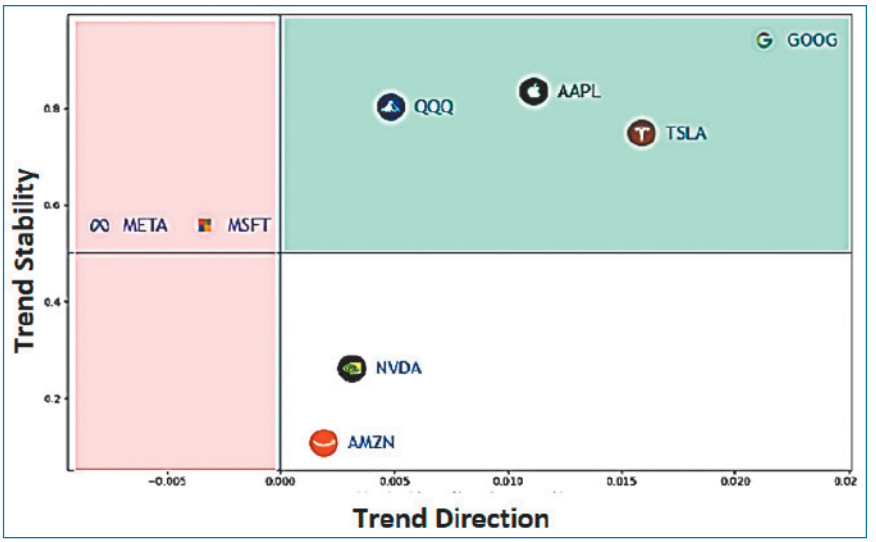

FIGURE 2: SCATTER PLOT, TREND DIRECTION VS. TREND STABILITY. Here, the same information from Figure 1 is synthesized into a scatter plot. The horizontal axis represents trend direction while the vertical axis represents trend stability. This representation allows all assets to be observed simultaneously, making differences in market behavior immediately visible.

background are those that exhibit *both* a positive direction and a high stability measure.

In Figure 2, the same information is synthesized into a scatter plot, where:

- the horizontal axis represents trend direction
- the vertical axis represents trend stability

This representation allows all assets to be observed simultaneously, making differences in market behavior immediately visible.

Interpreting direction and stability together

When analyzed through this framework, the scatter plot results reveal clear distinctions among assets:

GOOGL, AAPL, QQQ, and TSLA all combine positive direction with high stability. They fall into the "up & stable" quadrant, representing conditions in which trend-following exposure is structurally supported rather than driven by short-term price fluctuations.

META and MSFT, despite showing relatively high stability, exhibit a negative or flat direction. They belong to the "down/flat & stable" quadrant, where price behavior is consistent but does not justify long exposure under a directional framework.

NVDA and AMZN illustrate a different case. Both display a positive slope, yet their low stability highlights irregular and noisy price dynamics. These assets fall into the "up & unstable" quadrant, where upward movement lacks the structural persistence required for systematic allocation.

The purpose of this classification is not to rank assets in absolute terms, but to understand where each one stands within the broader market structure, given predefined thresholds for direction and stability.

FROM ENTRY SIGNALS TO SYSTEMIC RULES

At this point, entry rules will no longer be determined by a price condition on a single asset: they emerge from a *systemic approach*.

At this stage, we move beyond trading rules applied to single assets and begin to define a portfolio allocation rule that governs how capital is distributed. For example:

> "Capital is allocated only to assets that simultaneously exhibit positive direction and sufficient stability, all other assets are excluded. This evaluation is not performed continuously, but reviewed at a fixed interval—for instance, once per week or once per month."

Within this framework, the focus shifts away from precise entry timing and toward consistent exposure to favorable market regimes. The decision is no longer triggered by a specific price pattern, but by the asset's position within a broader market map.

CLOSING THOUGHTS

Artificial intelligence does not make price-based analysis obsolete.

What it makes obsolete is a naïve, isolated reading of price charts.

In an AI-driven market, technical analysis must evolve—from chasing individual signals to building robust, repeatable decision frameworks that operate across assets and over time.

And as market randomness increases, a clear underlying rationale is no longer just important—it is mandatory. Without it, models collapse into sophisticated forms of randomness, mistaking noise for information and complexity for insight.

In a market that is becoming less predictable, rationale is the only stable edge.

In an upcoming issue, I will explore this idea in greater detail, focusing on a price-based asset allocation strategy designed to translate direction and stability into systematic portfolio decisions.

The focus of Traders' Tips this month is Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ." Here, we present the March 2026 Traders' Tips code with possible implementations in various software.

The code for the following Traders' Tips selections is posted here:

• 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.

✦ WEALTH-LAB: MARCH 2026 TRADERS' TIPS CODE

Note: See Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ" for this month's Wealth-Lab code.

✦ TRADESTATION: JANUARY 2026 TRADERS' TIPS CODE

In the article "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ, Part 1" in this issue, Dion Kurczek introduces a rules-based strategy designed to capture rebounds in TQQQ after early-week pullbacks. The strategy waits for a 1% dip below the week's open, enters with a limit order, and exits either at a 1% profit, breakeven after a 0.5% drawdown, or at the end of the week.

The EasyLanguage implementation shown here closely mirrors the Wealth-Lab strategy, using weekday comparisons to detect the start of the week and assuming Friday as the final trading day by exiting at the close if neither the target nor breakeven has been reached. This simplifies the logic but does not account for holiday-shortened weeks, where Friday may not be the actual last trading session. To more accurately track intraday price movements, the strategy has been applied to a 1-minute chart.

FIGURE 1: TRADESTATION. Shown is an example TradeStation 1-minute chart of TQQQ from June 30, 2025, illustrating the strategy in action with an entry on a 1% pullback from the weekly open and an exit at the 1% target.

```
Strategy: Reversion Index
{
    TASC MAR 2026
    One Percent A Week: A High Probability Weekly Trading
    Strategy For TQQQ
    Dion Kurczek
}

inputs:
    EntryMult( 0.99 ),
    TargetMult( 1.01 ),
    BETriggerMult( 0.995 );

variables:
    WeekStartTrades( 0 ),
    WeekStartDate( 0 ),
    EntPrice( 0 ),
    OpenOfWeek( 0 ),
    TargetPrice( 0 ),
    BETrigger( 0 ),
    IsBEActive( false );

if DayOfWeek( Date ) < DayOfWeek( Date[1] )
 and Date <> WeekStartDate then
begin
    WeekStartDate = Date;
    WeekStartTrades = TotalTrades;
    OpenOfWeek = Open;
    EntPrice = OpenOfWeek * EntryMult;
    TargetPrice = EntPrice * TargetMult;
    BETrigger = EntPrice * BETriggerMult;
    IsBEActive = false;
end;

if Date >= WeekStartDate and WeekStartTrades = TotalTrades
 and MarketPosition = 0 then
begin
    Buy ("1% Dip") next bar at EntPrice limit;
end
else if MarketPosition = 1 then
begin
    if Low <= BETrigger then
        IsBEActive = true;

    if IsBEActive then
        Sell ("BrkEven") next bar at EntPrice limit
    else
        Sell ("Target") next bar at TargetPrice limit;

    if DayOfWeek( Date ) = 5 then
        SetExitOnClose;
end;
```

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.
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MetaStock

✦ METASTOCK: MARCH 2026 TRADERS' TIPS CODE

Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ," introduces a trading strategy for TQQQ. Here are some entry and exit signal formulas to create an expert advisor in MetaStock based on this strategy:

```
ONE PERCENT A WEEK
Buy signal:
{buy}
nw:=ROC(DayOfWeek(),1,$)<0;
Omon:= ValueWhen(1, nw, O);
ePrice:= Int(100*(Omon * 0.99))/100; {truncates price to 2 decimal
places}
sPrice:= ePrice * 0.995;
tPrice:= ePrice * If(LowestSince(1,nw, L)<sPrice, 1, 1.01);
hExit:= DayOfWeek() = 5 AND Hour()= 16; {hard exit on Friday Close}

Track:=
If(nw, 0, {reset tracking for the start of a new week}
If(PREV =0, {only look for trades if not already in one}
If((L<=ePrice) AND (hExit=0), 1, 0 ), {initiates a trade if the entry price
is hit}
If(H >= tPrice, -1,
If(hExit, -2, PREV))));
Cross( track, 0.5)

Exit signal:
{exitl}
nw:=ROC(DayOfWeek(),1,$)<0;
Omon:= ValueWhen(1, nw, O);
ePrice:= Int(100*(Omon * 0.99))/100; {truncates price to 2 decimal
places}
sPrice:= ePrice * 0.995;
tPrice:= ePrice * If(LowestSince(1,nw, L)<sPrice, 1, 1.01);
hExit:= DayOfWeek() = 5 AND Hour()= 16; {hard exit on Friday Close}

Track:=
If(nw, 0, {reset tracking for the start of a new week}
If(PREV =0, {only look for trades if not already in one}
If((L<=ePrice) AND (hExit=0), 1, 0 ), {initiates a trade if the entry price
is hit}
If(H >= tPrice, -1,
If(hExit, -2, PREV))));
Cross( 0, track )
```

—William Golson
MetaStock Technical Support
www.MetaStock.com

✦ REALTEST: MARCH 2026 TRADERS' TIPS CODE

Following is coding for use in the RealTest platform based on Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ."

Notes:

FIGURE 2: REALTEST. This example chart demonstrates an implementation of the "one percent a week" strategy on TQQQ.

```
    Dion Kurczek "One Percent A Week: A High Probability Weekly Trad-
ing Strategy For TQQQ (part 1)"
    TASC March 2026

Import:
    DataSource:  Norgate
    IncludeList:   TQQQ, SPY
    StartDate: 2010-02-11 // first day of TQQQ
    EndDate:   Latest
    SaveAs: TQQQ.rtd

Settings:
    DataFile:   TQQQ.rtd
    StartDate: Earliest
    EndDate:   2025-11-30 // to match author's results
    BarSize: Daily
    AccountSize: 100000

Strategy: TQQQ_ONE_PCT
    Side: Long
    EntrySetup:   Symbol = $TQQQ and not thisWeekEntry
    EntryLimit:    0.99 * thisWeekOpen
    ExitLimit:   Select(BarsHeld = 0, 0, // no exit limit on entry day
            C > 0.995 * FillPrice, Reason(1.01 * FillPrice, "1% profit"), // 1%
target when near break even
            Reason(FillPrice, "breakeven")) // else breakeven target
    ExitRule:    Select(EndOfWeek, "end of week")
    ExitTime:   ThisClose // hard exit at close of last trading day of week
if no ExitLimit fills

TestData:
    thisWeekOpen:  if(EndOfWeek, NextOpen, thisWeekOpen[1]) //
look ahead to open for Monday's order or use Monday's open
    thisWeekEntry:  if(EndOfWeek, 0, thisWeekEntry[1] or Extern(@
TQQQ_ONE_PCT, Shares > 0)) // enforce only one entry per week

Benchmark: SPY
    Side: Long
    EntrySetup:   Symbol = $SPY

Charts:
    thisWeekOpen:  thisWeekOpen[1]
```

—Marsten Parker
MHP Trading
mhp@mhptrading.com

TradingView

✦ TRADINGVIEW: MARCH 2026 TRADERS' TIPS CODE

The TradingView Pine Script code presented here implements the "one percent a week" trading strategy for TQQQ

as described by Dion Kurczek in his article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ."

```
// TASC Issue: March 2026
//    Article: Trading Snapbacks In A Leveraged ETF
//             One Percent A Week: A High-Probability
//             Weekly Trading Strategy For TQQQ - Part 1
// Article By: Dion Kurczek
//   Language: TradingView's Pine Script® v6
// Provided By: PineCoders, for tradingview.com

//@version=6
strategy("TASC 2026.03 One Percent A Week", "1%/W", overlay = true,
 initial_capital = 1000,
 default_qty_type = strategy.percent_of_equity,
 default_qty_value = 10)

//#region 1. Observe Weekly open price on monday.
var float wOpen = na
var float pt = na

bool newSession =
 dayofweek == dayofweek.monday and session.isfirstbar_regular

if newSession
   wOpen := open
   log.info("\nNew Week\n Open Price: " + str.tostring(open))

//#endregion

//#region 2. Set limit buy at a 1% dip from Monday open.

down1 = wOpen * 0.99

if newSession
   strategy.entry("buy",
   strategy.long,
   limit = down1)
   log.info("\nLimit Buy set: " + str.tostring(down1))
   pt := na

//#endregion

//#region 3. Once filled, set a 1% target on the next day.

newFill = ta.change(strategy.position_size) != 0
var sendPT = false
var beSent = false

if strategy.position_size > 0 and newFill
   sendPT := true
   beSent := false
   log.info("\nOrder Filled @ " + str.tostring(
    strategy.opentrades.entry_price(0)))

if sendPT == true and session.isfirstbar_regular and not beSent
   strategy.exit("profit",
    "buy",
    limit = strategy.position_avg_price*1.01,
    oca_name = "Order",
    comment = "Profit")

   pt := strategy.position_avg_price*1.01
   sendPT := false
   log.info("\nNext Day \nLimit Exit set: " + str.tostring(pt))

//#endregion

//#region 4. Risk management: Exit at breakeven after a -0.5%.

bet = strategy.position_avg_price*0.995 // Break Even Trigger

if low < bet and not beSent
   strategy.exit("profit",
    "buy",
    limit = strategy.position_avg_price,
    oca_name = "Order",
    comment = "Break Even")

   beSent := true
   pt := strategy.position_avg_price
   log.info("\nBreak Even Triggered")

//#endregion

//#region 5. Hard Exit at Friday close.

if dayofweek == dayofweek.friday and
    strategy.position_size > 0 and
    session.islastbar_regular and barstate.isconfirmed

   strategy.close_all("End Of Week", immediately = true)
   log.info("\nEnd of Week Closing Out")

//#endregion

//#region Exit Fill Logs

if newFill and strategy.position_size == 0
   switch
      beSent => log.info("\nBreak Even Filled @ " +
       str.tostring(strategy.closedtrades.exit_price(
       strategy.closedtrades-1)))
      => log.info("\nProfit Target Filled @ " +
       str.tostring(strategy.closedtrades.exit_price(
       strategy.closedtrades-1)))

//#endregion

//#region Plots

plot(newSession?na:wOpen,
 "Weehly Open",
 color.yellow,
 style = plot.style_linebr)

plot(newSession?na:down1,
 "Weekly 1% Dip",
 color.blue,
 style = plot.style_linebr,
 linestyle = plot.linestyle_dashed)

plot(strategy.position_size > 0?bet:na,
 "0.5% Drawdown",
 color.rgb(255,0,0),
 style = plot.style_linebr,
 linestyle = plot.linestyle_dashed)

plot(strategy.position_size > 0?pt:na,
 "Profit Target",
 color.rgb(0,255,0),
 style = plot.style_linebr,
 linestyle = plot.linestyle_solid)

//#endregion
```

FIGURE 3: TRADINGVIEW. This shows an example of the strategy on TQQQ.

An example implementation and output are shown in Fig-

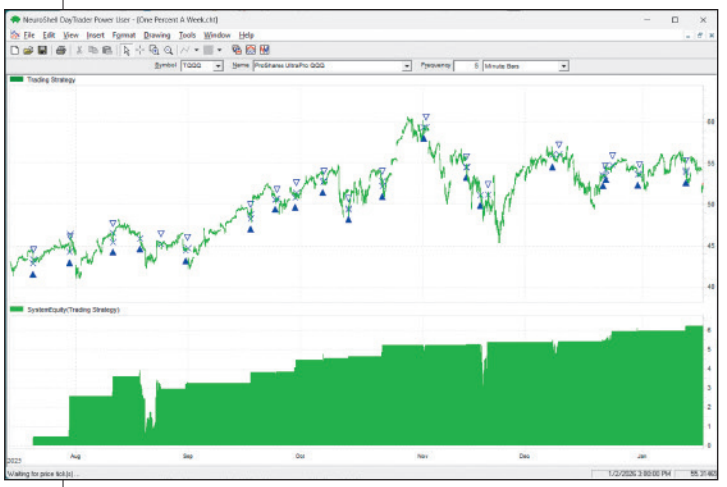

FIGURE 4: NEUROSHELL TRADER. This example chart demonstrates the "one percent a week" trading system and a sample equity curve.

ure 3.

The code is available on TradingView from the PineCodersTASC account at: https://www.tradingview.com/u/PineCodersTASC/#published-scripts.

—PineCoders, for TradingView
www.TradingView.com

✦ NEUROSHELL TRADER: MARCH 2026 TRADERS' TIPS CODE

The "one percent a week" strategy described in Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ," can be easily implemented in NeuroShell Trader on an intraday chart. Select "*New indicator …*" from the *insert* menu and use the indicator wizard to create the following indicators:

```
MOPEN:SelectiveLag( Open, And2(Monday Flag(Date), Not(
Lag(Monday Flag(Date), 1))
MLIMIT: CrossBelow( Close, Mul2(0.99, MOPEN))
MCOUNT:  CumSum( MLIMIT, 0 )
MCOUNT2:    Sub( MCOUNT,SelectiveLag(MCOUNT, MOPEN , 1) )
```

To create the "one percent a week" trading system, select "*New trading strategy …* from the *insert* menu and enter the following in the appropriate locations of the trading strategy wizard:

```
BUY LONG CONDITIONS: [All of which must be true]
    MLIMIT
    A<=B( MCOUNT2, 1 )

SELL LONG CONDITIONS: [1 of which must be true]
    PriceTarget%(Trading Strategy,1)
    IfThenElse( A<B(MinValEntryFill(Trading Strategy,Close,1),
Mul2(0.995,EntryPrice(0))),
CrossAbove(Close,EntryPrice(0)), 0)
    And2(Friday Flag(Date),Time>=X(Date,3:50:00 PM))
```

After entering the system conditions, you can also choose whether the parameters should be optimized. After backtesting the trading strategy, use the "*detailed analysis*" button to view the backtest and trade-by-trade statistics for the system.

An example chart is shown in Figure 4.

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

✦ AIQ: MARCH 2026 TRADERS' TIPS CODE

AIQ code based on Dion Kurczek's article in this issue, "One Percent A Week: A High-Probability Weekly Trading Strategy For TQQQ," for trading TQQQ is provided in the code file below. Note that the code provided does not implement the breakeven exit, so once a trade is entered, it is held until it hits the profit target or Friday's close if the profit target is never hit.

```
! One Percent A Week (TQQQ)
! Author: Dion Kurczek, TASC March 2026
! Coded by Richard Denning, 1/16/26

!*********BREAK EVEN EXIT NOT IMPLEMENTED*********

! Abbreviations:
O is [open].
L is [low].
H is [high].
C is [close].
OSD is offsettodate(month(),day(),year()).

! Return values for DayOfWeek() function:
Mon if DayOfWeek()  = 0.
Tues if DayOfWeek()  = 1.
Wed if DayOfWeek()  = 2.
Thur if DayOfWeek()  = 3.
Fri if DayOfWeek()  = 4.

! Get the open on Monday:
Mon_os is scanany( DayOfWeek()  = 0, 5) then OSD.
O_Mon is valresult(O,^Mon_os).

! Get the close on Friday:
Fri_os is scanany( DayOfWeek()   = 4, 5) then OSD.
C_Fri is valresult(C, ^Fri_os).

! Limit and profit targets:
LimEnt is O_Mon * 0.99.   ! Enter at Limit
PT is LimEnt * 1.01.        ! Exit at profit target

ExitPrice is iff(Mon and H>=PT,PT,
    iff(Tues and H>=PT,PT,
    iff(Wed and H>=PT,PT,
    iff(Thur and H>=PT,PT,
    iff(Fri and H>=PT,PT,^C_Fri))))).

CountEntries is countof(L <= LimEnt, DayOfWeek() + 1).
CountExits is countof(H >= PT, DayOfWeek()  + 1).

 ! Limit trades to one per week:
Buy if L <= LimEnt and CountEntries = 1 and CountExits <= 1.

!Exit at profit target or Friday's close:
Sell if H >= PT or DayOfWeek()=4.

ShowValues if 1.
```

—Richard Denning
rdencpa@gmail.com
for AIQ Systems

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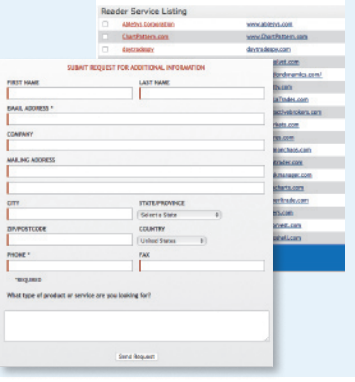

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FUTURES LIQUIDITY

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	Symbol	Exchange	% Margin	Effective % Margin	Contracts to Trade for Equal Dollar Profit	Relative Contract Liquidity
S&P 500 E-Mini (Mar '26)	ESH26	CME	7.2	16.3	2	••>>>>>>
Nasdaq 100 E-Mini (Mar '26)	NQH26	CME	7.3	12.7	1	••>
Gold (Feb '26)	GCG26	COMEX	5	8.6	1	••>
10-Year T-Note (Mar '26)	ZNH26	CBOT	1.8	27.8	46	••
Ultra T-Bond (Mar '26)	UDH26	CBOT	4.8	20.5	12	••
5-Year T-Note (Mar '26)	ZFH26	CBOT	1.3	23.9	60	••
2-Year T-Note (Mar '26)	ZTH26	CBOT	0.6	18.9	49	••
30-Year T-Bond (Mar '26)	ZBH26	CBOT	3.5	21.7	18	••
Russell 2000 E-Mini (Mar '26)	QRH26	CME	4.1	11.7	4	••
Ultra 10-Year T-Note (Mar '26)	TNH26	CBOT	2.4	34	42	••
Silver (Mar '26)	SIH26	COMEX	6.8	9.7	2	••••••••••••••••••••••••••••••••••••••
Soybean Meal (Mar '26)	ZMH26	CBOT	0.9	1.3	3	••••••••••••••••••••••••••••••••
Euro FX (Mar '26)	E6H26	CME	2	15	17	••••••••••••••••••••••••
Soybean (Mar '26)	ZSH26	CBOT	2.1	4	6	••••••••••••••••••••••••
Crude Oil WTI (Feb '26)	CLG26	NYMEX	8.4	12	9	••••••••••••••••••••
Corn (Mar '26)	ZCH26	CBOT	4.8	8.8	28	••••••••••••••
3-Month SOFR (Mar '26)	SQH26	CME	0.1	4.7	73	••••••••••••
Sugar #11 (Mar '26)	SBH26	ICE/US	5.2	5.5	22	••••••••
30-Day Fed Funds (Feb '26)	ZQG26	CBOT	0.1	3.4	47	••••••
Dow Futures Mini (Mar '26)	YMH26	CBOT	6.5	18.5	4	••••••
High Grade Copper (Mar '26)	HGH26	COMEX	7.3	20.8	7	••••••
Natural Gas (Mar '26)	NGH26	NYMEX	14	19.5	15	••••••
Gasoline RBOB (Feb '26)	RBG26	NYMEX	6.9	9.1	6	•••••
S&P 500 VIX (Jan '26)	VIF26	CFE	42.3	30.4	13	•••••
ULSD NY Harbor (Feb '26)	HOG26	NYMEX	7.4	10.7	6	•••••
Coffee (Mar '26)	KCH26	ICE/US	7.6	13	4	••••
Nasdaq 100 Micro (Mar '26)	NMH26	CME	7.3	12.7	12	••••
S&P 500 Micro (Mar '26)	ETH26	CME	7.2	16.3	23	••••
Wheat (Mar '26)	ZWH26	CBOT	7.1	12.5	24	••••
Bitcoin Futures (Dec '25)	BTZ25	CME	28.7	35.5	1	•••
Cocoa (Mar '26)	CCH26	ICE/US	11	9.3	5	•••
Cotton #2 (Mar '26)	CTH26	ICE/US	3.9	5.7	16	•••
Hard Red Winter Wheat (Mar '26)	KEH26	CBOT	6.8	8.5	16	•••
Live Cattle (Feb '26)	LEG26	CME	4	12.4	12	•••
S&P Midcap E-Mini (Mar '26)	EWH26	CME	7.5	24.9	3	•••
Australian Dollar (Mar '26)	A6H26	CME	3.2	30.9	51	••
British Pound (Mar '26)	B6H26	CME	2.6	22.3	35	••
Ether Futures (Dec '25)	ERZ25	CME	40.9	51.2	3	••
Platinum (Jan '26)	PLF26	NYMEX	7.3	12.8	6	••
Swiss Franc (Mar '26)	S6H26	CME	3.1	18.8	13	••
Canadian Dollar (Mar '26)	D6H26	CME	1.5	21.4	67	•
Canola (Mar '26)	RSH26	ICE/CA	4.7	10.1	62	•

CBOT	Chicago Board of Trade, Division of CME
CFE	CBOE Futures Exchange
CME	Chicago Mercantile Exchange
COMEX	Commodity Exchange, Inc. CME Group
ICE-EU	Intercontinental Exchange-Futures—Europe
ICE-US	Intercontinental Exchange-Futures—US
KCBT	Kansas City Board of Trade
MGEX	Minneapolis Grain Exchange
NYMEX	New York Mercantile Exchange

2603

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:

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

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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.

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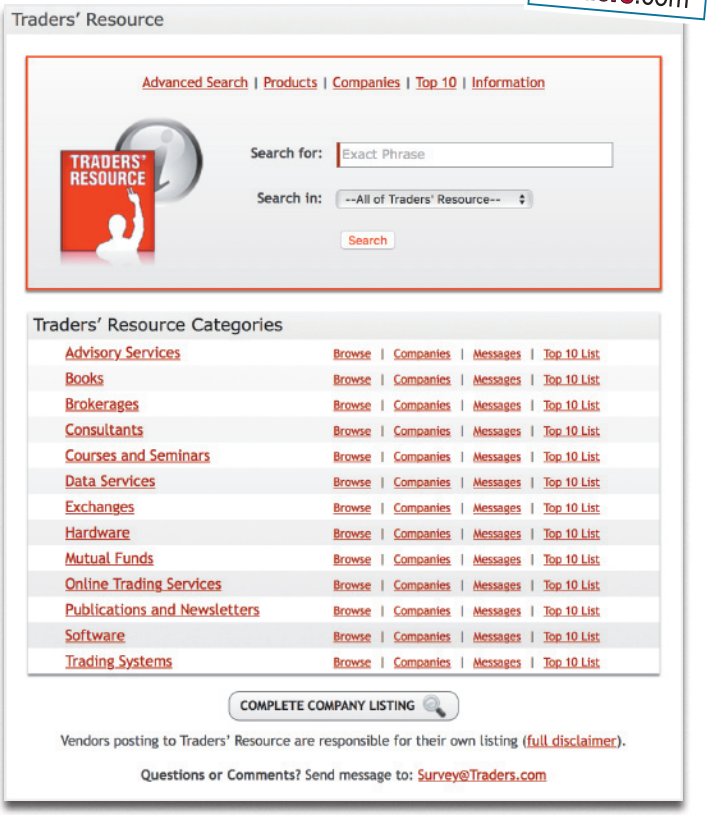

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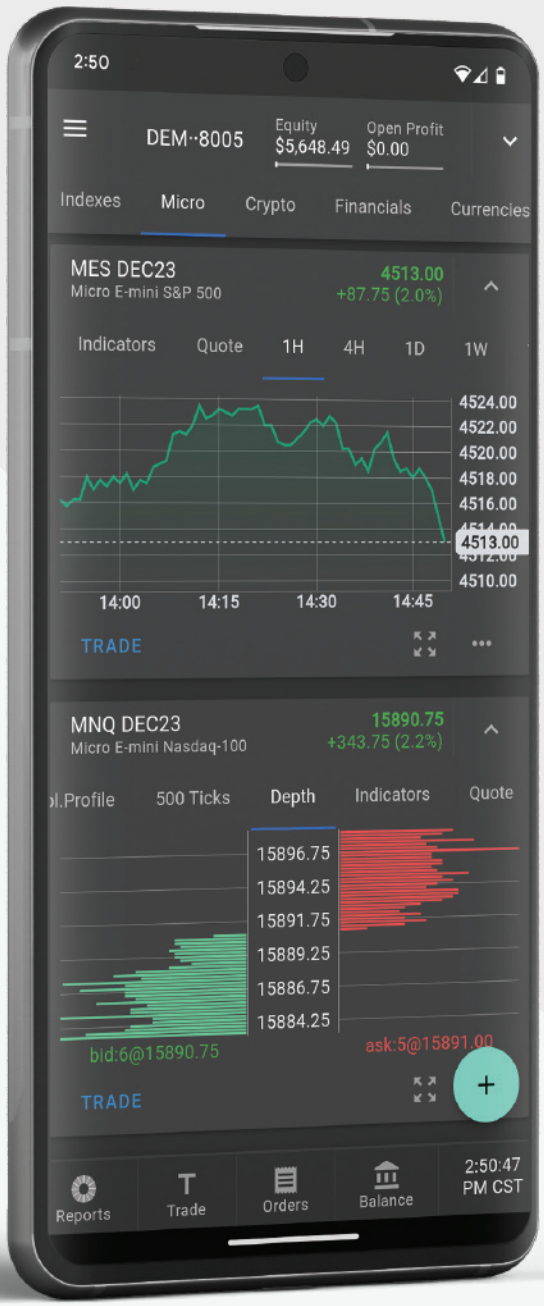

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