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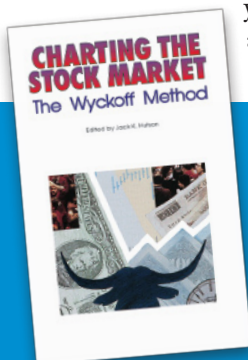
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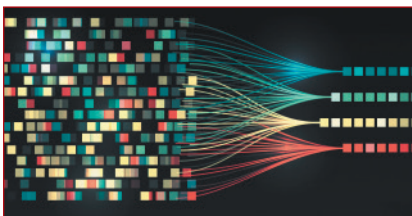
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ALGORITHMIC TRADING

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



Kevin J. Davey

ALWAYS IN THE MARKET

All my algos are always in the market, long or short. Any caveats for trading systems that are always in a position?

Let's start with a sample trade. Consider the price movement of gold futures on December 4, 2023. It is shown in Figure 1.

If you were long going into that day, at one point you were up \$5,790 per contract, at one point you were down \$5,600 and at settlement you had lost \$5,220 on the day.

If you were short going into that day, at one point you were up \$5,600 per contract, at one point you were

down \$5,790, and at settlement you had gained \$5,220 on the day.

Traders who were always in the market that day (without changing directions) had an equity swing of over \$10K per contract—in one day! Could you handle that?

That is one of the drawbacks of “always in” strategies: the large

When you are always in the market, you are subjected to every unfavorable price movement.

equity swings before a reverse signal is generated. When you are always in the market, you are subjected to every unfavorable price movement. Of course, your plan is for the favorable price movements to be more frequent than the adverse swings, but the point is you'll eventually see plenty of both if you are always in the market.

Psychologically, then, being always in the market is tough, especially if it is only one of a few strategies you trade. Hitting all the highs and lows, seeing good trades give back most of their profit, wondering when the pain will end with a reverse signal—you will experience all that with those



FIGURE 1: THE PRICE MOVEMENT OF GOLD FUTURES ON DECEMBER 4, 2023. Traders who were always in the market on this day (without changing directions), as an example, had an equity swing of over \$10K per contract in one day.

Algo Q&A

types of strategies.

Even though that all sounds bad, these types of strategies can be very good, too. I did a study on the best exit for strategies, comparing simple stop-losses, profit targets, trailing stops, and more. None of them could beat the performance of a “stop and reverse” always in the market strategy. Why is that? I believe that stops are good at limiting losses, but in return get hit frequently before the market turns around. Referring back to Figure 1 on December 4th, imagine if you were short. Without a stop, you would have gained \$5,220 that day. But even with a large \$5,000 stop-loss, your stop would have been triggered and you would have exited during the day with a significant loss. Having a stop-loss was definitely not better in this case!

Another consideration with *always-in* strategies is the percent of time in market. All other things being equal, it is better to be in the market as little as possible. This reduces the possibility of adverse price shocks, and unfortunately, favorable shocks. As a disciplined trader, you should be more concerned about the adverse price shocks, since they can wipe out your account.

Since there are advantages and disadvantages of these algos, which is the best way forward? My approach is to have a diversified portfolio of strategies, not only of instruments and bar sizes traded, but also in style of strategies. A few strategies always in the market, along with some strategies that are in for shorter periods of time, some with stop-losses and profit targets and others without, will give you coverage over a wide range of market movement. With correctly developed strategies, you can reap the advantages of all types of strategies, and not be subject to the flaws of one particular style.

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Riding Sustained Price Trends

Trend Identification By Price And Time Filtering

Minimize the impact of random price movements by using this concise, combined price-and-time filter to identify trends, along with some unique ways to display it all on a chart.

Profitable trading hinges on a trader's skill in distinguishing between random market fluctuations and genuine trading signals. Traders employ diverse techniques to effectively filter data, such as using moving averages to sift through price data, using point & figure charts, and using more modern approaches like three-line break and renko charts, which seek to filter *time* dynamics.

The success of these methods varies, underscoring the nuanced nature of the trading landscape.

I use a concise, combined price and time filter to identify trends, designed to minimize the impact of random price movements. The rules are:

- If the most recently completed week's close is greater than the previous week's high, the trend is up.
- If the most recently completed week's close is less than the previous week's low, the trend is down.
- The trend remains in the same direction until changed by one of the above conditions.

The same logic can be applied to monthly bars for a longer-term view:

- If the most recently completed month's close is greater than the previous month's high, the trend is up.
- If the most recently completed month's close is

less than the previous month's low, the trend is down.

- The trend remains in the same direction until changed by one of the above conditions.

Through my observation of the markets over the years, I have determined these rules to be most effective on the weekly and monthly timeframes. Longer timeframes lack fidelity, while shorter timeframes result in frequent and unpredictable whipsaws.

The sidebar titled "Price-Time Filtering In Weekly Or Monthly Timeframes, In EasyLanguage Code" presents code that formulates these rules for trend identification and plots a histogram of the result in TradeStation or MultiCharts.

EXAMPLES

Figure 1 shows NASDAQ-100 index futures daily bars with the weekly trend filter applied to the price bars. Subgraph 1 counts the number of bars in the uptrend and downtrend and subgraph 2 shows cumulative volume on each trend period.

The proficiency of the trend identification algorithm is evident as it follows the major uptrends and downtrends, marking the preliminary phase of our analysis. Subsequently, we turn our focus to the observation that *cumulative volume closely reflects price action*.

In other words, substantial trends are consistently accompanied by noteworthy volume, underscoring the symbiotic relationship between significant price movements and the corresponding level of trading activity.

Figure 2 shows NASDAQ-100 index futures daily bars with the weekly trend filter in the middle subgraph and the monthly trend filter in the bottom subgraph

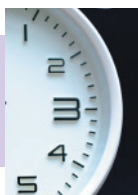
by Alfred François Tagher



FIGURE 1: DAILY NASDAQ FUTURES WITH WEEKLY TREND FILTER AND CUMULATIVE VOLUME. The price plot at top is daily bars of the NASDAQ-100 index continuous futures. Subgraph 1 is the weekly trend filter based on the NASDAQ futures daily bars; it's plotted by counting the number of bars in the uptrends and downtrends in the price plot. Subgraph 2 shows cumulative volume on each trend period. The trend identification algorithm clearly follows the major uptrends and downtrends.



FIGURE 2: DAILY NASDAQ FUTURES WITH WEEKLY & MONTHLY TREND FILTERS. Here you see both the weekly and monthly trend filters based on the NASDAQ-100 index continuous futures daily data. The weekly trend filter is displayed in the middle subgraph (the wedge-shaped graph; "AFT" is the author's initials). The monthly trend filter is displayed in the bottom subgraph, beneath a repeat of the daily NASDAQ futures price bars. You can see that the monthly trend filter remained in an uptrend from December 2022 to October 2023 while the weekly trend filter fluctuated through the same period.



I use a concise, combined price and time filter to identify trends.

Notice how the monthly filter remains in an uptrend from December 2022 until the end of October 2023, but has just turned down because October's close was less than September's low. Meanwhile, the weekly trend filter fluctuated through the same period.

A PLOT BASED ON THE CONCEPT OF POINT & FIGURE CHARTING

Continuing with the NASDAQ example, I aim to present the weekly and monthly trend filters in a format resembling a point & figure (P&F) chart. In Figure 3, you see a chart of NASDAQ futures data modified by the weekly trend filter. Uptrends are represented by blue bars, while downtrends are denoted by red bars; the length of each bar corresponds to the duration of the respective trend.

Additionally, cumulative volume for each uptrend and downtrend is graphically represented. It is noteworthy to observe the two price bars positioned at the extreme right of the chart (pointed out by down arrows) and the accompanying blue volume bars. Despite these two blue volume bars being the largest on the chart, the upward price progress in the NASDAQ is minimal.

This underscores one of Richard D. Wyckoff's fundamental principles—that the interplay between *effort expended*, signified by the volume, and *reward* represent the extent of price movement resulting from that effort.

Figure 4 is a chart of NASDAQ futures data with the

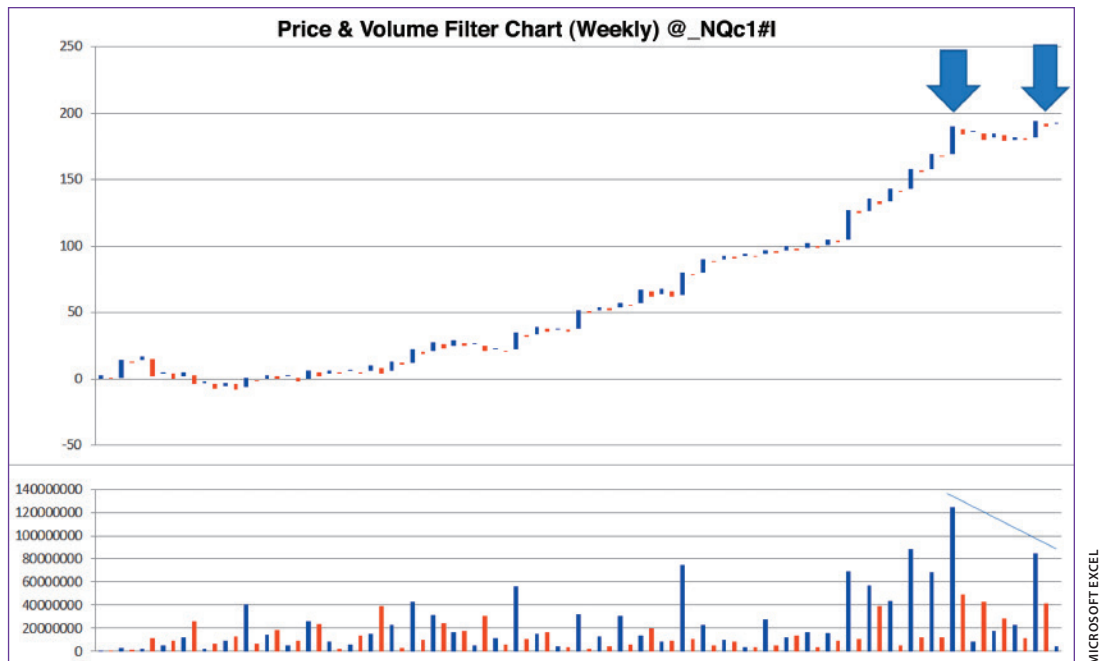


FIGURE 3: WEEKLY TREND FILTER APPLIED TO NASDAQ FUTURES, WITH CUMULATIVE VOLUME. This chart of filtered data, plotted from a spreadsheet, is based on the concept of the point & figure chart in that it is not a time-based chart; uptrends in the NASDAQ futures daily data are represented by blue bars and downtrends are denoted by red bars. The length of each bar corresponds to the duration of the respective trend. In the subgraph, cumulative volume for each uptrend and downtrend is plotted. You can see here that despite the tall size of the two blue volume bars toward the right of the chart, upward price movement is minimal.

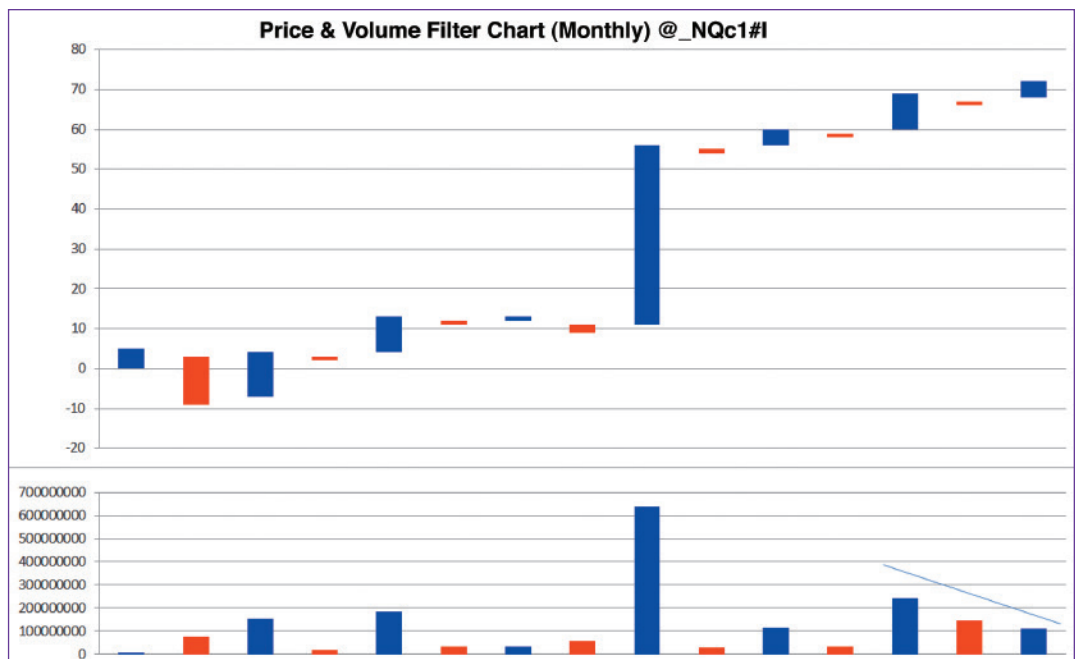


FIGURE 4: MONTHLY TREND FILTER APPLIED TO NASDAQ FUTURES, WITH CUMULATIVE VOLUME. As in Figure 3, data is plotted from a spreadsheet, this time filtered by the monthly trend filter: Uptrends in the NASDAQ futures data are represented by blue bars and downtrends are denoted by red bars. The length of each bar corresponds to the duration of the respective trend. Cumulative volume for each uptrend and downtrend is in the subgraph. At right you see a divergence as price makes higher highs but volume is not confirming.

monthly trend filter applied. Cumulative volume is in the subgraph. Again, note the price action at the extreme right of the chart, where price is making higher highs with volume

PRICE-TIME FILTERING IN WEEKLY TIMEFRAME, IN EASLANGUAGE CODE

{ Price-Time Filtering }
{ copyright 2023 Alfred François Tagher }

{AFT Strong Trend Weekly - Format as Histogram, Scaling: same as price }

{ If Friday's close is greater than last week's high then the trend is up.
If Friday's close is less than last week's low then the trend is down.}

Inputs: UpColor(Green), DnColor(Red);
Vars: WeekHi(0), WeekLo(0), WeekCl(0), WeekKnt(0), PriorWeekHi(0), PriorWeekLo(0), PriorWeekCl(0), Trend(0);

If (DayOfWeek(date)<DayOfWeek(date[1]) and
DayOfWeek(date[1])<>5)
or (DayOfWeek(Date)=5) then Begin

{this uses Monday if there was no Friday}

If DayOfWeek(Date)=5 then begin
Value1=C;

If H>WeekHi then WeekHi=H;
If L<WeekLo then WeekLo=L;
End

else Value1=C[1];

{Need to check if Close exceeds prior Week}

If Value1>PriorWeekHi then Trend=+1;
If Value1<PriorWeekLo then Trend=-1;

PriorWeekHi=WeekHi;
PriorWeekLo=WeekLo;
WeekKnt=WeekKnt+1;
End;

If DayOfWeek(date)<DayOfWeek(date[1]) then begin
WeekHi=H;
WeekLo=L;
End;

If H>WeekHi then WeekHi=H;
If L<WeekLo then WeekLo=L;

If WeekKnt>1 then begin
If Trend=+1 then Plot1(High,"Week UP",UpColor);
If Trend=+1 then Plot2(Low,"Week UP",UpColor);
If Trend=-1 then Plot1(High,"Week Up",DnColor);
If Trend=-1 then Plot2(Low,"Week Up",DnColor);
End;

PRICE-TIME FILTERING IN MONTHLY TIMEFRAME, IN EASLANGUAGE CODE

{AFT Strong Trend Mo }

Inputs:Lkbbk(500), UpColor(Green), DnColor(Magenta);
Vars:WeekHi(0), WeekLo(0), WeekCl(0), WeekKnt(0), PriorWeekHi(0), PriorWeekLo(0), PriorWeekCl(0), Trend(0), NumBarsUp(0), NumBarsDn(0);
Vars: Cnt(0), Dir(0);

If Month(date)<>Month(date[1]) then begin

Value1=C;
If H>WeekHi then WeekHi=H;
If L<WeekLo then WeekLo=L;

Value1=C[1];

If Value1>PriorWeekHi then Trend=+1;
If Value1<PriorWeekLo then Trend=-1;

PriorWeekHi=WeekHi;

PriorWeekLo=WeekLo;
WeekKnt=WeekKnt+1;
End;

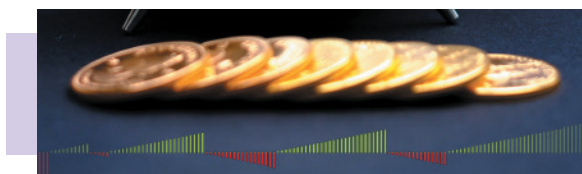
If Month(date)<>Month(date[1]) then begin
WeekHi=H;
WeekLo=L;
End;
If H>WeekHi then WeekHi=H;
If L<WeekLo then WeekLo=L;

If WeekKnt>1 then begin

NumBarsUp = MRO(Trend = +1,Lkbbk,1);
NumBarsDn = MRO(Trend = -1,Lkbbk,1);

Plot1(-NumBarsUp,"NumBarsUp");
Plot2(NumBarsDn,"NumBarsDn");

End;



The divergence between rising prices and lower volume is readily apparent.



FIGURE 5: DAILY CRUDE OIL FUTURES WITH WEEKLY & MONTHLY TREND FILTERS. Here, the weekly and monthly trend filters (in the subgraphs) are applied to a daily chart of WTI Crude Oil. Both trend filters capture and ride important trends.

not confirming. This is classic divergence.

CRUDE OIL EXAMPLE

Last, I would like to show an example of price action in crude oil futures. Figure 5 shows WTI Crude Oil daily bars along with the weekly and monthly trend filters.

In this chart, we can see, as with the NASDAQ chart, how both filters capture and ride important trends.

During the sideways price action of August 2022 to June 2023, the weekly trend filter alternates between uptrend and downtrend, while the monthly trend remains down throughout the entire period.

Figure 6 shows a weekly point & figure-type chart for crude oil, with cumulative volume in the lower pane. Prices are making higher highs with volume not confirming.

Figure 7 shows a monthly point & figure-type chart



FIGURE 6: WEEKLY TREND FILTER APPLIED TO CRUDE OIL FUTURES, WITH CUMULATIVE VOLUME. Here, WTI Crude Oil continuous futures daily data is filtered by the weekly trend filter and plotted from a spreadsheet. Cumulative volume for each uptrend and downtrend is in the subgraph. You can see that prices are making higher highs but volume is not confirming.

Substantial trends are consistently accompanied by noteworthy volume.

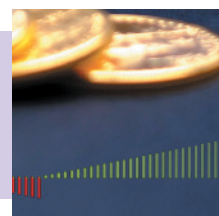




FIGURE 7: MONTHLY TREND FILTER APPLIED TO CRUDE OIL FUTURES, WITH CUMULATIVE VOLUME. Here, WTI Crude Oil data is filtered by the monthly trend filter, with cumulative volume in the lower pane. The divergence between rising prices and lower volume is readily apparent.

for crude oil, with cumulative volume in the lower pane. Again, the divergence between rising prices and lower volume is readily apparent.

CONCLUSION

With the preceding examples, I have shown that using a price and time filter based on weekly and monthly price action can eliminate a considerable amount of market noise in order to capture, ride, and profit from sustained price trends.

Alfred F. Tagher is an independent trader with 32 years of market experience. He is currently based in Austria. He can be reached by email at fredtag@club-internet.fr.

The author wishes to thank Scott Bunny for the Microsoft Excel tools used in this article. Scott Bunny can be contacted at solutions@wabbit.com.au.

The Excel spreadsheet used to create Figures 3, 4, 6, & 7 is available free of charge by contacting the article's author at fredtag@club-internet.fr.

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

*See the **Traders' Tips** coding section of this magazine beginning on page 48 for translation of Alfred Tagher's coding to various technical analysis programs and trading platforms. Code from the Traders' Tips section is also posted at Traders.com.*

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‡TradeStation, ‡MultiCharts

‡See Editorial Resource Index

INSIDE THE FUTURES WORLD

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



Carley Garner

COMMODITY SPECULATION

What are the two most important aspects of commodity speculation?

In my eyes, patience and position sizing are the most essential disciplines of trading. Traders who habitually jump the gun or trade too heavily might succeed in the short run, but their long-run prospects are dire. Eventually, a black swan, or even something less severe, will wreak havoc on the trading account.

Position sizing is defined as the number of positions or contracts traded in a particular commodity in an individual trading account. While you might find some position sizing calculators online, it isn't a mathematical equation. This is because, along with account size, the account holder's risk tolerance, personality, and financial security should be considered. In other words, determining position size isn't a black-or-white scenario; there are shades of gray and plenty of trial and error. Further, in commodities, futures contracts are leveraged products. Thus, in addition to the quantity of positions being held, traders should be aware of their margin requirements and, more importantly, the excess margin available in their trading account. Excess margin, often labeled as "buying power" in platforms and on statements, is the funds held in the account that are not currently used toward the margin requirement. Or

simply, the excess margin is what is available in the trading account to finance new positions. In my view, traders should merely use a small portion of their account toward margin and leave the rest as a cushion against unexpected volatility. You can look at this as a rainy day fund. Specifically, it is a good idea to leave 70% or more of the account unused. Given the amount of leverage offered by futures exchanges, a 30% margin to equity usage is still quite

The ability to trade small and exercise patience is a significant edge for market participants.

leveraged and comes with enough risk to quickly become catastrophic to complacent traders.

Although most futures market participants are attracted to the free and seemingly endless leverage offered by exchanges and brokerages, a better approach is eliminating the leverage by over-funding an account. Or, at least, reducing the leverage by funding by some amount much greater than the margin requirement. Few realize it, but the exchange sets the margin requirements for each commodity at the dollar amount of the most significant expected one-day

move. We all know there is no such thing as a worst-case scenario, but the margin is set at an amount that is believed to be just that (without interference from an unfathomable event). In other words, if the exchange margin is \$3,000, you should be willing to lose that amount in that position on a single trading day. With that in mind, the margin for a single *emini* S&P 500 futures contract is \$12,320 or the equivalent of about 250 points; a trader holding this contract overnight should be willing to tolerate a loss tomorrow in that amount should volatility arise. If your stomach churns thinking about this, the contract is probably too big for you.

You can reduce risk by using option spreads or *micro emini* S&P 500 futures. The *micro* version of the contract carries a margin requirement of \$1,232 and a potential daily loss of the same amount. It should be evident that a trader with \$15,000 in risk capital shouldn't try to squeeze an *emini* S&P 500 futures position into the account. Doing so nearly utilizes the maximum leverage and runs the risk of an account blowup in a single day. On the other hand, a trader with the same amount of risk capital employing a *micro emini* S&P 500 has eliminated the majority of the leverage and can now comfortably

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CHARTING THE MARKETS

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



Stella Osoba

SELF-TRUST IS SELF-EMPOWERMENT

One of the most important characteristics of a successful trader is self-trust. Self-trust by its very nature is self-empowerment. Once we have studied and begun to understand the workings of the markets we are trad-

ing, we need to develop the confidence to trust our own judgment. Only then can we start to lay the foundations of building the other skills that will complete our transformation from a novice to a successful trader.

Figure 1 is a chart that I showed

last month in my column in the January 2024 issue, titled “Reversal Or Reaction: Which Is It?” In the chart, the S&P 500 index (SPX) had completed the formation of a double bottom in the fourth quarter of 2022. The uptrend was clear in 2023 and the 50-day moving average broke above the 200-day moving average. Then in August 2023, price peaked and began moving lower. At the time, there was no way to know if it was a reaction or a reversal, hence the title of that article.

Figure 2 shows an updated chart of the SPX. So how did the chart develop in the intervening month? Did it turn into either a reversal or reaction? On November 7, 2023, price broke out of the upper channel line. This breakout was confirmation that the trend that had preceded the entry of price into the channel was intact. Flags, as we know, are continuation patterns. Therefore, the next thing to do would be to determine the extent of the move prior to price entering the channel and to measure the move. The charting platform I use allows me to



FIGURE 1: REVERSALS AND REACTIONS. In this two-year chart of the S&P 500 index (SPX), you can see that the market had completed the formation of a double bottom in the fourth quarter of 2022. The uptrend was clear in 2023 and the 50-day moving average broke above the 200-day moving average. Then in August 2023 price peaked and began moving lower. At this point in time, there was no way to know if it was a reaction or a reversal. So what happened after that point in time? How did it develop? See Figure 2 for an updated chart.

When we choose to trust ourselves, we know that we can stay in tune with the rhythms of the market.

draw the percentage change from the low of the initial move to the high of the move (see Figure 2). The move here measures 21.6%. When price leaves the flag, it should travel the approximate distance of the prior move. So, we know that a move up from the breakout of the upper trendline to a distance measuring approximately 21.6% should be our target.

KEEPING IT SIMPLE

Chart patterns take weeks or sometimes months to play out. We can never determine ahead of time what direction prices will take to reach their eventual destination. But when we choose to trust ourselves, we know that we can stay in tune with the rhythms of the market. We can trade in the direction of the trend even when sentiment is not on our side. So even if we know inflation is high, interest rates are high, and the world seems troubled, that is not our focus when we trade.

We are also fully aware that even when we recognize a signal and see confirmation, the market can still go against us. Not because our analysis was faulty, but because the market does not have to do what we want it to do.

When we can learn to trust ourselves, we no longer have to rely on the “experts,” or financial journalists or anyone else to make a decision or form a judgment. There are just too many opinions out there and too many variables to consider. Our most successful strategy then is to keep it simple. To keep it simple, we need to still the noise and calm the torrent of our emotions. Trying to second-guess ourselves is the road to trouble.

SUCCESS IS BORN OUT OF FAILURES

Trading is a skill, and like most other skills, the longer you work at it, the better you are likely to become at



FIGURE 2: ALLOWING PATTERNS TO COMPLETE BEFORE REACTING TO THEM. Here you see some further price action in the SPX since the chart in Figure 1. On November 7, 2023, price broke out of the upper channel line, and this breakout was confirmation that the trend was intact. From here, we can set a price target based on the price action.

it. You can choose to think of the numerous failures you are likely to experience as learning steps on your path to eventual mastery. Many people start trading with position sizes that are too big and so they flame out quickly, before they have learned to master themselves. Giving up ensures failure. To become the trader you dreamt of being when you first entered the game, you must *stay* in the game. Success comes out of many failures. And if we are prepared to learn the lessons we are being taught, failures can be our best friends. Failure teaches us what does not work and what not to do. Failure gives us the material to begin to analyze ourselves and hence our trades. The more we are willing to

fail, the more we are willing to expose ourselves to the eventual arrival of success through our knowledge of what we must not do.

We all experience atychiphobia (fear of failure) from time to time, sometimes more intensely than at other times. Failure is hard, and repeated failure is harder still. Many people do not and cannot endure the pain of multiple setbacks. Psychologists have determined that the pain

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Trying to second-guess ourselves is the road to trouble.

THE WORLD OF RETAIL TRADING

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



Emilio Tomasini

AUTOMATION IN TRADING: A REAL LIFE SAVER (PART 2 OF 2)

Last month, I discussed two poles in trading: at one end, there is classic technical analysis and discretionary trading, and at the other end, there is the higher-tech approach of quantitative analysis and automated algorithmic trading. In algorithmic trading, formulas—sometimes even very simple ones—can be used to anticipate metrics such as the percentage of profitable trades, the average trade, the maximum drawdown of the profit curve. And the field of technical analysis has made thousands of trading strategies available or made it possible to develop them.

Despite this, most retail traders don’t operate with automatically executed trading algorithms, even with the increased accessibility and availability we’ve seen in recent years for trading support including real-time data, low (or no) commission and transaction costs, and advanced software.

Here, I’ll look at an intermediate pole—a pole sometimes overlooked but very accessible: It’s the one that believes that even if you don’t have an automated system that buys and sells independently, you can still use automation to help you separate the potential trading opportunities that reflect certain statistical characteristics (or patterns) from the vast sea of all others.

This approach, which only gives the green light to certain stocks

while discarding all others, has several advantages, even though it’s not a complete model of automatic trading:

1. The first advantage, as obvious as it may seem, is to operate only on stocks with a higher likelihood of profitability.
2. The second advantage stems from the first, as it involves focusing attention and analysis on only a handful of stocks rather than the entire market. This saves time and energy and increases operational efficiency.
3. The third advantage, which should not be underestimated, is to reduce nervous stress and mental fatigue in a profession inherently anxiety-inducing.

Aswath Damodaran, a professor of corporate finance at New York University, reminds us that in finance, all stocks are always ranked in one way: return relative to risk. It may seem monotonous, but all of finance is based on this ratio. Therefore, for each ranking, we must select a *return* factor for the numerator and a *risk* factor for the denominator.

I’ll illustrate this with some examples of automatic scans, keeping in mind how financial indicators are constructed:

Bonds: In the table in Figure 1, I conducted a scan on approximately 2,000 bonds on the Italian Stock Ex-

change for illustrative purposes only. I ordered them not according to *yield to maturity* (YTM) but based on an indicator that considers not only yield but also risk within a predefined time horizon. The indicator is the YTM/duration ratio, and it’s just a practical example to explain what bond ranking entails. Note also that the bonds are denominated in various emerging market currencies with higher interest rates. However, we can manipulate the risk factor in various ways, such as using bond volatility, duration, months to maturity, credit risk, or a synthetic indicator of various risk parameters.

Stocks: In the realm of stocks, we have two avenues to explore: fundamental analysis and technical analysis. For the time being, let’s set aside the aspects of fair price evaluation and other fundamental analysis elements and focus solely on the aspects of technical analysis. In this context, the key consideration often revolves around momentum. This involves selecting stocks that have appreciated the most within a predetermined timeframe, with the hope that the upward trend will continue (a trend-following approach). Alternatively, the trader may choose stocks that have depreciated significantly, anticipating a bounce back (a mean-reverting approach). In other cases, the focus shifts to the health of the trend itself, specifically, how closely stock prices have hugged the average. An action with a linear

Isin	Denominazione	Valuta	Emissione	Scadenza	Rendimento	Prezzo_Rif	Score
XS2432520166	Adb Tf 8% Ge24 Rub	RUB/RUB	2/16/2022	1/25/2024	44.53	92.74	5.51
XS2280643276	Ebrd Tf 13% Ge24 Try	TRY/TRY	1/21/2021	1/19/2024	33.57	95.683	5.29
FR0013394681	Veolia Env Tf 0,892% Ge24 Call Eur	EUR/EUR	1/23/2019	1/14/2024	31.49	95	5.28
XS1850250710	Kfw Tf 1,25% Dc23 Gbp	GBP/GBP	1/16/2019	12/29/2023	21.57	97.5	5.19
XS2114159911	Ebrd Tf 8% Fb24 Try	TRY/TRY	10/25/2021	2/6/2024	32.91	94.308	5.05
XS2290377733	Aiib Tf 13,5% Ge24 Try	TRY/TRY	10/12/2021	1/22/2024	23.87	97.403	4.89
XS2205081297	Eib Tf 3,75% Lg24 Rub	RUB/RUB	9/1/2020	7/17/2024	53.06	75	4.66
XS2530041420	Aiib Tf 45% Mz24 Try	TRY/TRY	9/12/2022	3/8/2024	29.93	98.726	4.64
XS2118438618	Ebrd Tf 8,5% Fb24 Try	TRY/TRY	6/8/2021	2/14/2024	22.78	96.223	4.55
XS2539377262	Aiib Tf 46% Mz24 Try	TRY/TRY	12/1/2022	3/29/2024	31.89	97.5	4.54
XS2334027963	Aiib Tf 18% Ap24 Try	TRY/TRY	6/15/2021	4/29/2024	30.89	92.873	4.35

FIGURE 1: BOND SCREENING. Here, bonds are screened and ranked according to the highest relationship yield-to-maturity (YTM) / duration. This type of ranking helps the trader to quickly pinpoint opportunities to focus on.

upward trend, for instance, increases the odds of success when purchased during a transient oscillation.

In Figure 2, I present a stock that, according to an automatic ranking based on the independent trend index (ITI), falls among those with the highest values. Consequently, it closely resembles a 45-degree straight line.

Investment funds and ETFs: In this context, investors typically rely on statistical parameters derived from the academic sphere (such as Fortino, Modigliani Miller, the Sharpe ratio, etc.). However, these metrics often come with two drawbacks: they lack a precise definition (for instance, the Sharpe ratio requires an interest rate input, which can be subject to varying opinions on its selection), and they frequently return hundreds of interesting securities, each with slightly different values from the others. From this perspective, I've identified an indicator called the ETI (expected trend indicator), which measures how closely a fund or ETF aligns with a 45-degree upward trendline, indicating persistent upward movement with minimal oscillations. The numerator represents a performance indicator, while the denominator is our risk indicator. The higher the return relative to the risk, the more appealing the fund.



FIGURE 2: STOCK SCREENING (EXAMPLE RESULT). Stocks were screened according to readings in the independent trend index (ITI), and the stock seen here had a high ITI ranking. You can see that it closely resembles a 45-degree straight line, indicating persistent upward movement. An automated scan can help the trader to quickly find desired characteristics for potential trading opportunities.

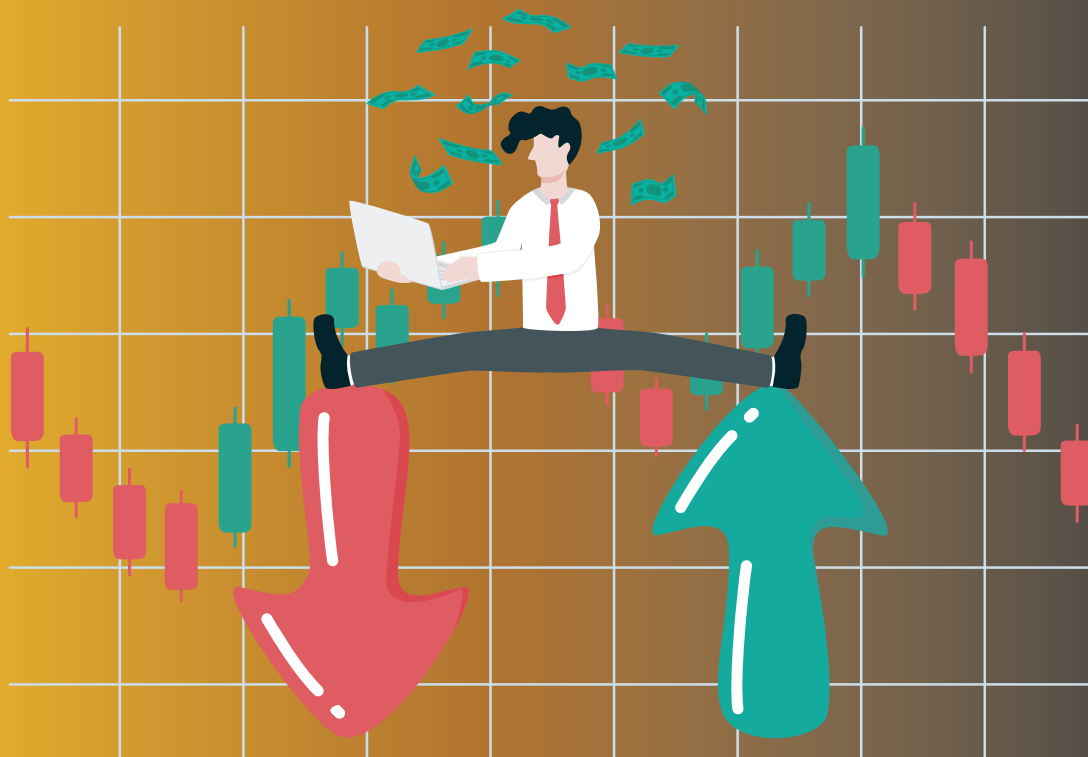


FIGURE 3: FUND SCREENING (EXAMPLE RESULT). Funds were screened and ranked according to readings in the expected trend indicator (ETI), and the fund plotted here scored high in the ranking. The fund (in blue) consistently outperformed the benchmark (purple line).

In the example in Figure 3, you see the Jupiter Merian Global Equity Absolute Return LH Cap EUR ISIN IE00BLP5S460 fund. Over the past

three years, it has delivered a return of 37.65% and exhibited a trend re-

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It's All Relative

Crossover Trading: Arbitraging The Physical With The Stock

Arbitrage trading isn't limited to stock pairs or interest rate markets. You can also pair equities with futures. How do you find good candidates for an arbitrage trade? Here are several methods you can use to evaluate a potential pairing.

by Perry J. Kaufman



Every trader should know how an arbitrage works. For equities we find two stocks in the same business, driven by the same fundamental factors. We check that they have a similar pattern on a chart. When their prices diverge, we buy one stock and sell the other.

The most common arbitrage is called *relative value arbitrage* because it looks for relative differences in price. One way to see that is using a momentum indicator: one stock is temporarily strong and the other is weak. It often happens during earnings season when one company reports before another.

Figure 1 is an example of two semiconductor stocks,

Advanced Micro Devices (AMD) and Broadcom (AVGO). The price pattern in this chart is very similar during the last two months of this chart, and not as clear before that. We might attribute that to the rapid interest in artificial intelligence.

The chart in Figure 2 shows the ratio of AMD to AVGO. Values above 1.0 show that AMD has been gaining on AVGO, but prices swings of 0.2% present good arbitrage opportunities.

An advantage of arbitrage is that it does not depend on the direction of the stock prices. Prices can go up or down. It only matters that the two markets move closer together once we set a position. Arbitrage offers good portfolio diversification.

Semiconductor manufacturers, computer manufacturers, home builders, and many other sectors have stocks that move together most of the time. When one stock in a sector diverges from the others, it may not be a temporary event but a permanent change. While it may not happen often, it presents an unknown risk. Anytime you make assumptions about a stock, you can be wrong.

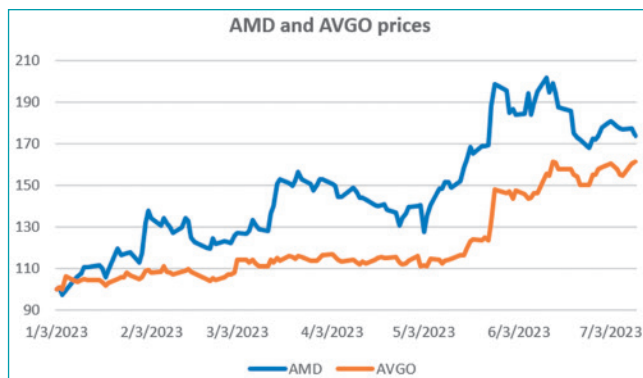


FIGURE 1: PRICE ACTION IN TWO EQUITIES OF THE SAME INDUSTRY. For an arbitrage trade, you might consider two stocks in the same business and driven by the same fundamental factors, and then look to see if they have a similar price pattern on a chart. Here, you see some similar price action in two semiconductor stocks, AMD and AVGO, during a portion of 2023, particular toward the right side of the chart.

You are dealing with a business run by people who make day-to-day decisions. Not all decisions made are good decisions.

You can see the risk of arbitrage in Figure 2. If we had bought AMD and sold AVGO when the ratio dropped to 1.1 at the beginning of July 2023 (at the far right in the chart), we would be holding a loss and we couldn't be certain how far the position would move against us.

Let's look at a different type of arbitrage, what I call *crossover arbitrage*.

COMPANIES FOCUSED ON ONE COMMODITY

Some companies have a narrow focus. They mine primarily one metal, or they process crude oil and sell gasoline. Their profits are very dependent on the price of their raw materials. It may be difficult to find those companies because many companies try to be diversified.

When we look for an arbitrage between a highly focused stock and its primary commodity input, we remove half of the business uncertainty. The price of gold, for example, is not subject to scandals or poor management. It is driven by supply and demand.

GOLD, COPPER, AND CRUDE OIL

We are going to limit this crossover arbitrage to gold, copper, and crude oil. You may find others that are interesting, such as lumber and housing or feed and cattle.

For gold I have narrowed the stocks to Barrick Gold (ABX), Agnico Eagle Mines (AEM), Gold Fields Limited (GFI), Kinross Gold (KGC), and Newmont Corporation (NEM).

For copper we have BHP Group (BHP), Freeport-McMoRan (FCX), and Rio Tinto (RIO).

And for crude oil we have the smaller refiners, Hess

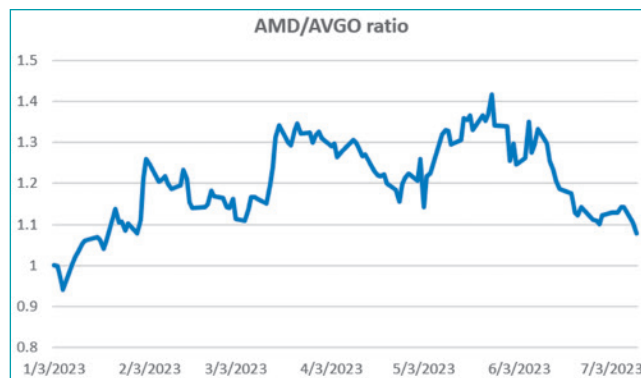


FIGURE 2: RATIO OF PRICES. When scouting for arbitrage trading opportunities, using a ratio of one stock's price to another can be helpful. A ratio of the two stocks from Figure 1 is plotted here. Values above 1.0 show that AMD has been gaining on AVGO. Prices swings of more than 0.2% may present arbitrage opportunities.

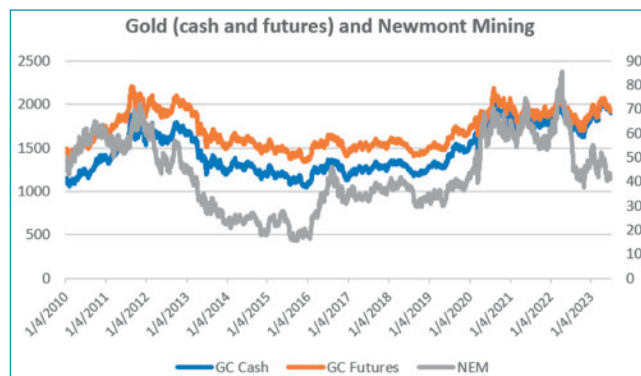


FIGURE 3: GOLD (STOCK AND PHYSICAL). Here you see a price chart of cash gold, gold futures, and a gold-mining stock. When looking for arbitrage opportunities, you might look for assets that tend to move more or less together, such as seen here.

(HES), Marathon (MRO), and the not-so-small Exxon-Mobile (XOM), just for curiosity.

To see that an arbitrage makes sense, we will find the correlations in the next section. However, it is always good to look at a chart to be sure the two markets move more-or-less together. Figure 3 shows gold cash prices, gold futures prices, and a gold-related stock, Newmont Mining. Newmont is on the right scale.

FINDING THE BEST COMBINATIONS

To decide which stocks to use in these examples, we look at the correlation between the cash price of the

The most common arbitrage is called *relative value arbitrage* because it looks for relative differences in price.

commodity and the stock price. We'll use cash commodity prices and not futures because futures price series tend to be back-adjusted, which makes the daily returns

unusable. However, we will use futures when we trade the arbitrage.

	GC_cash	GC_futures	ABX	AEM	GFI	KGC	NEM
GC_cash	1.00	0.76	0.33	0.40	0.37	0.39	0.39
GC_futures	0.76	1.00	0.47	0.59	0.53	0.56	0.56
ABX	0.33	0.47	1.00	0.61	0.54	0.60	0.63
AEM	0.40	0.59	0.61	1.00	0.67	0.76	0.77
GFI	0.37	0.53	0.54	0.67	1.00	0.69	0.67
KGC	0.39	0.56	0.60	0.76	0.69	1.00	0.75
NEM	0.39	0.56	0.63	0.77	0.67	0.75	1.00

FIGURE 4: CROSS-CORRELATIONS OF PHYSICAL GOLD WITH SEVERAL GOLD STOCKS. To locate potential arbitrage opportunities, you can use correlations as well as the price ratio seen in Figure 2. The cross-correlation table shown here uses the daily returns of gold futures, the gold cash market, and gold-related stocks. It indicates a strong correlation between the different gold stocks and some slight correlation to physical gold (cash and futures).

	HG cash	HG futures	BHP	FCX	RIO
HG cash	1.00	0.63	0.36	0.41	0.35
HG futures	0.63	1.00	0.53	0.56	0.54
BHP	0.36	0.53	1.00	0.72	0.88
FCX	0.41	0.56	0.72	1.00	0.70
RIO	0.35	0.54	0.88	0.70	1.00

FIGURE 5: CROSS-CORRELATIONS OF PHYSICAL COPPER WITH SEVERAL COPPER STOCKS. This cross-correlation table uses the daily returns of copper futures, the copper cash market, and copper-related stocks. The table shows strong correlation between different copper stocks, with some correlation between the stock prices and futures, and little correlation between the stock prices and cash prices.

	CL cash	CL futures	HES	MRO	XOM
CL cash	1.00	-0.04	0.24	0.25	0.24
CL futures	-0.04	1.00	0.02	-0.01	0.04
HES	0.24	0.02	1.00	0.80	0.74
MRO	0.25	-0.01	0.80	1.00	0.70
XOM	0.24	0.04	0.74	0.70	1.00

FIGURE 6: CROSS-CORRELATIONS OF PHYSICAL CRUDE OIL WITH SEVERAL ENERGY STOCKS. The cross-correlation table shows strong correlation between different energy stocks, marginal correlation between the stocks and cash prices, and no apparent correlation between the futures and stock prices.

Gold correlations

Using the daily returns of cash and futures gold from 2010 and the corresponding returns of each stock, we get the cross-correlation in Figure 4. While there are high correlations between stocks, there is a lower correlation to physical gold. However, the correlation to gold futures is high enough to go further. We will use Newmont Mining stock with a correlation of 0.56, because it is easily tradable on the NYSE.

Copper correlations

The copper correlations are similar to gold, with the stocks showing higher correlations and futures better than cash Figure 5. We will use Rio Tinto (RIO) stock for our arbitrage.

Crude oil correlations

While the energy stocks are highly correlated to one another, the crude cash prices are marginally correlated and the futures prices are uncorrelated Figure 6. We expected that XOM would not be correlated because of its diverse business model, but it shows strong correlations to the smaller energy companies. We will still go ahead and try an arbitrage between Hess stock and crude oil.

THE PROCESS

To compare the relative strength of two markets, we can use a simple raw stochastic for each, then subtract one stochastic from the other. The formula for an N -day raw stochastic using only closing prices C is:

$$\text{Stochastic} = (C - \text{LOWEST}(C,N)) / (\text{HIGHEST}(C,N) - \text{LOWEST}(C,N))$$

If $S1$ is the stochastic value for the cash price and $S2$ is the value for the stock, where each has the range from 0

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Date	GC Cash	GC Futures	NEM	GC Ret	NEM ret	Cash GC	NEM	Diff	Entry	Position	Cash Avg	NEM Avg	Ratio	Pos Ratio	\$Return	total Return
2	1/4/2010	1121.5	1453.9	48.45			20			0.7		20		Both GLD and IAU track gold bullion			
3	1/5/2010	1123.2	1454.3	48.58	0.00152	0.0027	Stochastics										
54	3/18/2010	1122.7	1461.9	51.27	0.00089	0.0008	0.6573	0.8773	-0.2200	0	0	0.63870	0.01372	46.6	0.0		
55	3/19/2010	1105.5	1442	50.76	0.01532	0.0099	0.2256	0.7839	-0.5583	0	0	0.69159	0.01408	49.1	0.0		
56	3/22/2010	1097.2	1433.9	51.4	0.00751	0.0126	0.0499	0.9011	-0.8512	-1	-1	0.71790	0.01388	51.7	51.7	0.00	0
57	3/23/2010	1101.5	1438.1	51.45	0.00392	0.0010	0.1410	0.9103	-0.7693	-1	-1	0.70073	0.01272	55.1	51.7	1.61	1.61
58	3/24/2010	1090.7	1423.2	49.72	0.00980	0.0336	0.0000	0.2397	-0.2397	0	-1	0.73169	0.01430	51.2	51.7	74.60	76.21
59	3/25/2010	1093	1427.3	48.35	0.00211	0.0276	0.0752	0.0000	0.0752	0	0	0.70370	0.01294	54.4	0.0	74.97	151.18
60	3/26/2010	1096.5	1438.7	49.38	0.00320	0.0213	0.2844	0.2869	-0.0025	0	0	0.65713	0.01374	47.8	0.0	0.00	151.18
61	3/29/2010	1107.5	1444.7	50.37	0.01003	0.0200	0.3945	0.5627	-0.1682	0	0	0.68112	0.01373	49.6	0.0	0.00	151.18
62	3/30/2010	1107	1438.9	50.74	0.00045	0.0073	0.2881	0.6657	-0.3777	0	0	0.62727	0.01268	49.5	0.0	0.00	151.18
63	3/31/2010	1115.5	1447.7	50.93	0.00768	0.0037	0.5280	0.8063	-0.2782	0	0	0.62128	0.01264	49.2	0.0	0.00	151.18
64	4/1/2010	1123.5	1459.3	52.91	0.00717	0.0389	0.7780	1.0000	-0.2220	0	0	0.64834	0.01354	47.9	0.0	0.00	151.18

FIGURE 7: RELATIVE STRENGTH CALCULATIONS. Comparing the relative strength of two markets can help to evaluate a potential arbitrage opportunity. This spreadsheet shows some example calculations using gold futures and Newmont Mining (NEM) stock.

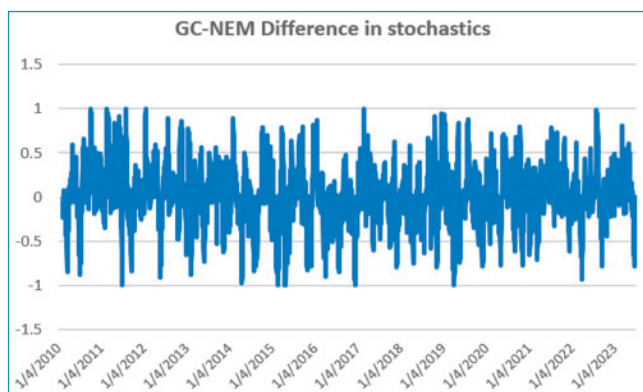


FIGURE 8: STOCHASTIC DIFFERENCES. To compare the relative strength of two markets, you can use raw stochastic values of the assets under consideration and take the difference. The example here plots the difference in stochastic values between the gold spot prices and Newmont Mining stock, using a spreadsheet to calculate and plot it. The frequent moves from positive to negative values suggest that an arbitrage trade between the two assets may be possible.

to +1, then $S1 - S2$ will range from +1 to -1.

In a spreadsheet (Figure 7), we can use the following calculations:

1. Column G is the 20-day stochastic of cash GC (column B)
2. Column H is the 20-day stochastic of NEM (column D)
3. Column I is column G – column H
4. Column J is “-1” when column G is less than -0.7 (Cell J2); it is “+1” when column G is greater than +0.7. If you change cell J2 the positions will change. Values greater than 0.7 will have fewer trades.
5. Column K will continue to show the position as long as the stochastic difference (column I) does not cross zero (our exit criterion).
6. Column L is the 20-day average return (using column E) of the cash price, always as positive values.
7. Column M is the 20-day average return of NEM using positive values.
8. Column N is the ratio of column L to column M, allowing use to balance the position sizes.
9. Column O holds the ratio unchanged while there is a position.
10. Column P is the daily return, adjusting for the relative sizes.
11. Column Q is the total return, the sum of values in column P.

Note that we do not calculate the number of shares for the stock, only the ratio of the futures returns to the stock returns, which allows you to size the positions for equal volatility. You would need to calculate that

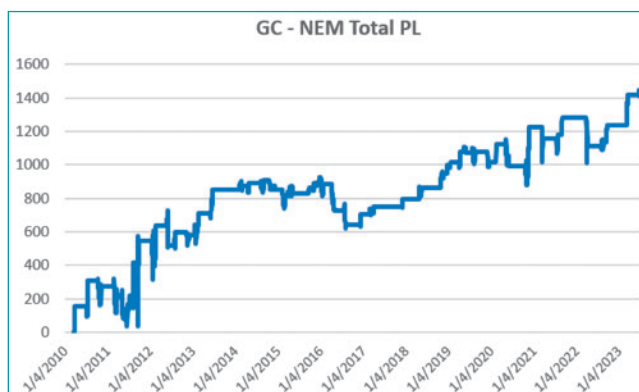


FIGURE 9: PHYSICAL COMMODITY & STOCK ARBITRAGE (GOLD). This shows a profit & loss graph for an example arbitrage trade in gold futures and Newmont Mining stock.

yourself based on the futures contract you choose. In this example we use the full-sized gold contract with a conversion factor of 100.

The four cells highlighted in yellow can all be changed, causing the calculations to change.

- Cell G2 changes the calculation period of the stochastic.
- Cell J2 is the trigger for column I. When $I > J2$ then futures are overbought relative to the stock. We sell futures and buy stocks. When $I < -J2$ then the stock is overbought.
- Cell L2 is the calculation period for the average return.
- Cell L3 is the size of the gold futures contract.

CHARTING THE STOCHASTIC DIFFERENCE

To show that prices move from overbought to oversold between the two markets, Figure 8 is a plot of the stochastic difference between gold and NEM. It shows frequent moves from positive to negative values, giving us confidence that an arbitrage can work.

SAMPLE RESULTS

The results shown in Figures 9, 10, and 11 convert the returns to dollar profits and losses essentially using one

To decide which stocks to use in these examples, we look at the correlation between the cash price of the commodity and the stock price.





FIGURE 10: PHYSICAL COMMODITY & STOCK ARBITRAGE (COPPER). This shows a profit & loss graph for an example arbitrage trade in copper futures and Rio Tinto metals & mining stock.

futures contract and adjusting the size the stock to match the short-term volatility. As with most arbitrage strategies, you can enter sooner and get more trades, but risk the prices moving against you for longer. If you wait for the spread to start to close, you miss most of the profits.

Figure 9 shows the results of the gold-NEM arbitrage. There is a drawdown of \$300, more than 30%. An arbitrage system is out of the market most of the time, so you can take the first trade that occurs in any of the combinations you are following. If they happen at different times, the total profits will be the sum of all the trades. If two occur at the same time, it is usually best to trade the combination that has been performing the best.

A FINAL WORD

The purpose of this crossover method is to show that an arbitrage is not limited to two stocks or two interest rate markets.

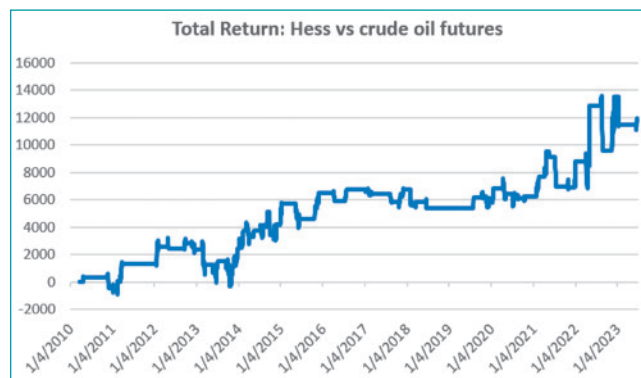


FIGURE 11: PHYSICAL COMMODITY & STOCK ARBITRAGE (OIL). This shows a profit & loss graph for an example arbitrage trade in crude oil futures and Hess Corp. oil & gas stock.

You should be able to find smaller companies that are dependent on a single commodity that show much better results. You can use the spreadsheet and simply substitute the commodity and the stock(s). The calculations are already there.

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

*The spreadsheet discussed in this article is available in the **S&C Article Code** section of Traders.com.*

FURTHER READING

Kaufman, Perry J. [2023]. "How To Trade Merger Arb," *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: October.

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An advantage of arbitrage is that it does not depend on the direction of the stock prices.

TOMASINI/MARKET RAP

Continued from page 19

sembling a 45-degree straight line (the blue line represents the fund, while the purple line represents the benchmark).

In conclusion, this middle ground in automated trading—automated

scanning—offers significant time and energy savings in the selection of the best trading opportunities. It revolves around the algorithmic methodologies of scanning and ranking according to some selected criteria. It also includes a quantitative trading component that goes beyond the individual predictive abilities of a trader.

So, even though a trader may choose to use discretion during the trading process, automated scanning will serve up a handful of stocks and trading opportunities on which to focus. And that can be a real time (and life) saver.

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Futures For You

GARNER

Continued from page 15

survive what the exchange believes is a near worst-case scenario in a single trading day. In fact, the trader in the second scenario could withstand 12 consecutive 250-point moves against the position without running out of money. This is why position sizing matters. The odds of still having chips on the table following an unforeseen adverse event are more likely for those using less leverage and carrying more margin excess in their trading account relative to a trader who maximizes leverage and minimizes margin excess in their account. Just as one should *live* beneath their means, market participants should trade beneath them.

Patience is a skill that cannot be

learned from a book or class; only real-life experience will do. More specifically, it can only be taught by emotional and financial pain. Without ever living through a bad trade, one simply doesn't respect the market enough to exercise patience. Unfortunately, humans need to be humbled to thwart overconfidence and complacency.

Trading small and only when the stars align offers market participants the best chance of survival. Yet, our minds play tricks on us, leading us to believe we are missing out on opportunities or not capitalizing on all our resources. Yet, the only true thing is that we can't lose money on the sidelines. Sideline money is relatively safe (ignoring things like eroding buying power and low-probability bank or brokerage risk); money employed in the markets,

Just as one should *live* beneath their means, market participants should trade beneath them.

regardless of the asset or strategy, can be lost (sometimes instantly). The longer a trader has risk exposure in any market, the higher the odds of being in the wrong place at the wrong time.

The ability to trade small and exercise patience is a significant edge for market participants. In my opinion, these two things are more important than trading strategy, research acquisition, market analysis, or even chartwork.

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The Savvy Technician

OSOBA

Continued from page 17

of losing is twice as powerful as the pleasure we derive from winning. There is no pride in failure, no bragging rights. Many times, we want to hide from failure, close the trade and pretend it never happened. Admitting failure can be embarrassing. But we must learn to stare failure in the face. Embrace failure as an ally along our journey.

Our journey to self-trust is accessed only through fields littered with multiple failures. We must learn to move forward even when we have

not liked our past results. We must keep moving forward knowing this is an essential part of the game. As we continue to move forward, we will come to the place where we begin to understand that the skill to become a successful trader is through our own individual journeys. There are no shortcuts. We must all travel alone in that regard. And when we reach our destination, we will have become empowered with the knowledge that we were always the student *and* the teacher at once. There was no one else out there who could have led us on our journey. It all had to come from within.

We must keep moving forward knowing this is an essential part of the game.

FURTHER READING

Osoba, Stella [2024]. "Reversal Or Reaction, Which Is It?" *The Savvy Technician, Technical Analysis of STOCKS & COMMODITIES*, Volume 42: January.

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A Three-Day Pattern

The Trend Compression Pattern

The three-day compression (3DC) pattern can be used to filter trade entries for improved system results. Here, we explain this useful pattern and how to code it, and we show step-by-step how you can design, test, and optimize a trading system with trade filtering.

by **Andrea Unger**



Is it possible to use a pattern to identify and ride the price wave? Let's see how!

At Unger Academy, we teach how to use price patterns to filter market entries and make our trading strategies more profitable and robust. Here, we'll talk specifically about the pattern we call "3DC" (which stands for "3-day compression"). It's a filter that requires volatility compression in the last session compared to the previous two sessions.

We will test it with a real strategy on one of the most buoyant markets: gasoline futures.

WHAT IS 3DC?

The easiest way to understand this is to look at how the

pattern is coded in EasyLanguage:

$(\text{highS}(1) - \text{lowS}(1)) < (((\text{highS}(2) - \text{lowS}(2)) + (\text{highS}(3) - \text{lowS}(3))) / 3)$

where:

$\text{highS}(N)$ indicates the high touched N sessions ago

$\text{lowS}(N)$ indicates the low touched N sessions ago

$\text{highS}(N) - \text{lowS}(N)$ indicates the range of N sessions ago

If we look at the above formula, we can see why this pattern is called *trend compression*: It is indeed confirmed only when the range of the last session is less than one-third of the previous two ranges combined, and this happens only at the end of a session with particularly low volatility compared to the days before.

A STRATEGY FOR RBOB GASOLINE FUTURES EXPLOITING THE 3DC

We start with a straightforward system that trades according to these rules:

- Open a long/short position on the break of the high/low of the previous session
- Set a stop-loss of \$2,000
- Allow no more than one trade per session opened in the same direction

Basically, we are drawing a trend-following breakout strategy based on the previous session's levels. We can code it in EasyLanguage as follows:

```
input: SL(2000);
var: okl(true), oks(true), slb(false), longlevel(0), shortlevel(0);
slb = sessionlastbar[1];
if slb then begin
    okl = true;
    oks = true;
end;

longlevel = highS(1);
shortlevel = lowS(1);
if okl then buy next bar longlevel stop;
if oks then sellshort next bar shortlevel stop;
setstopcontract;
```

```
if marketposition = 1 then okl = false;
if marketposition = -1 then oks = false;
if SL > 0 then setstoploss(SL);
```

If we apply such a system to a gasoline futures chart (RBOB Gasoline) with 60-minute timeframes and data from 2010 to today, we get the equity curve shown in Figure 1 and the metrics shown in Figure 2.

Although this is a starting system with very few conditions, the result seems to be a good start. Equity increases and shows reasonable regularity.

However, in this instrument, the average trade can be increased to better cover the trading costs. Therefore, we must continue the system's development, aiming to maximize this metric and, if possible, improve the regularity of the curve.

We have not provided a time window so the system can enter the market at any time. Now, let's optimize the trade's start and end times to see if we get any benefit. To do this, we need to modify the code slightly as follows:

```
input: SL(2000), MyStartTime(0), MyEndTime(2300);
if tw(MyStartTime, MyEndTime) then begin
    if okl then buy next bar longlevel stop;
    if oks then sellshort next bar shortlevel stop;
end;
```

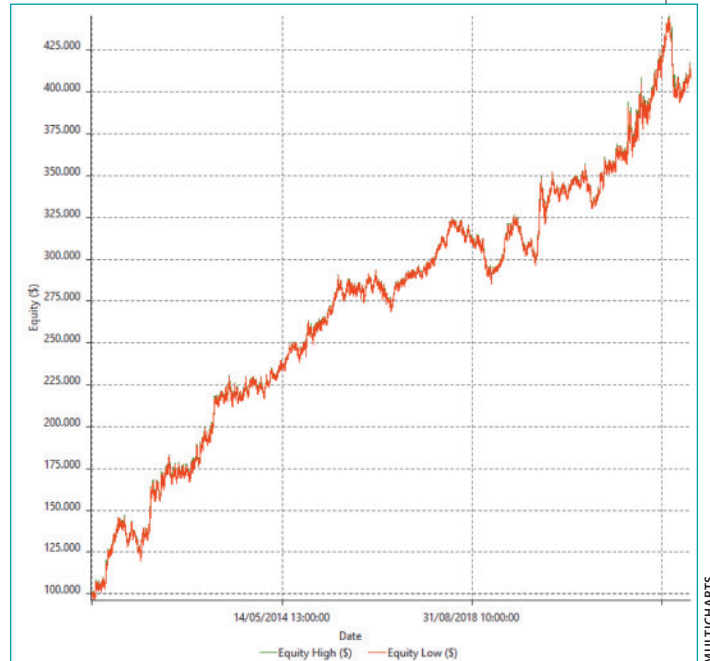


FIGURE 1: EQUITY CURVE, STARTING SYSTEM. A simple trend-following breakout system is created that looks at the previous session's levels for evidence of trend compression. For the test, the trading system is applied to gasoline futures (RBOB) with 60-minute timeframes and data from 2010 to today. The resulting equity curve, shown here, shows increasing equity with reasonable regularity. It's a good start.

Average trade	Num trade	NetProfit	Max DD
206 \$	1.495	308.502 \$	-51.727 \$

FIGURE 2: METRICS, STARTING SYSTEM. The starting system, which has very few conditions, has good-enough results to continue working with it. An improvement might be to increase the average trade to better cover trading costs.

where **tw** is a function that becomes true only in the time window between **MyStartTime** and **MyEndTime** (while an eventual exit when stop-loss is reached remains valid at all times).

In Figure 3, you can see MultiCharts' optimization report, which shows an undeniable advantage in limiting market entries between 8:00 pm and 2:00 pm in the exchange's local time (EST). We have increased both the average trade and the net profit while decreasing the maximum drawdown of the system; therefore, we decide to use these parameters.

It's a filter that requires volatility compression in the last session compared to the previous two sessions.



There is one aspect we have not yet dealt with: How do we exit a position? Is there a limit to the duration of the trades? We analyzed the list of trades and we noticed that some last even longer than three weeks. This aspect needs to be corrected: A trade that bases its entry on the previous day's high or low cannot have such a prolonged duration, as these values would lose all validity as the days go by.

So, we need to make a small change to the code to close all trades still open after a certain number of days. This is done using an input (**MaxDaysInTrade**) that we can optimize, which is simply the maximum duration of the trades expressed as the number of sessions:

```
input: MaxDaysInTrade(0);
var: DaysInTrade(0), MP(0);
MP = marketposition;
```

```
if date<>date[1] and MP<>0 then
DaysInTrade=DaysInTrade+1;
if MP<>MP[1] and MP<>0 then DaysInTrade=1;
if DaysInTrade>=MaxDaysInTrade and
MaxDaysInTrade>0 then setexitonclose;
```

The **DaysInTrade** variable counts how many sessions a trade has been open for and increases with each new day; when the **MaxDaysInTrade** set value is reached, the code triggers the **setexitonclose** command, which closes the trade at the end of the session.

We run an optimization of **MaxDaysInTrade** from value 0 (which corresponds to the absence of this condition) to value 15 (beyond which we do not want to go for the reasons mentioned above) and observe the results

MultiCharts64 - Optimization Report - @RB - 60 Minute - TradeStation

Spreadsheet 2D Graph 3D Graph

	Avg Trade	Total Trades	Net Profit	Max Intraday Drawdown	MyStartTime (trend compression)	MyEndTime (trend compression)
1	235,27	1.430	336.436,80	-40.916,40	2.000	1.400
2	231,49	1.452	336.130,20	-40.916,40	2.000	1.500
3	230,41	1.446	333.169,20	-41.727,00	2.100	1.500
4	233,81	1.424	332.942,40	-41.727,00	2.100	1.400
5	225,34	1.456	328.099,80	-40.916,40	2.000	1.600
6	224,30	1.450	325.239,60	-41.727,00	2.100	1.600
7	228,80	1.419	324.664,20	-40.916,40	2.000	1.300
8	225,67	1.413	318.876,60	-41.727,00	2.100	1.300
9	218,17	1.442	314.605,20	-40.916,40	1.800	1.400
10	218,17	1.442	314.605,20	-40.916,40	1.900	1.400
11	218,62	1.439	314.592,60	-42.264,60	2.300	1.500
12	214,68	1.464	314.286,00	-40.916,40	1.800	1.500
13	214,68	1.464	314.286,00	-40.916,40	1.900	1.500
14	220,51	1.417	312.467,40	-41.433,00	2.300	1.400
15	212,94	1.443	307.267,80	-42.071,40	2.300	1.600
16	212,07	1.447	306.864,60	-43.709,40	2.200	1.500
17	208,28	1.468	305.751,60	-40.916,40	1.800	1.600
18	208,28	1.468	305.751,60	-40.916,40	1.900	1.600
19	214,14	1.425	305.155,20	-42.877,80	2.200	1.400
20	211,73	1.431	302.988,00	-40.916,40	1.800	1.300
21	211,73	1.431	302.988,00	-40.916,40	1.900	1.300
22	214,58	1.404	301.270,20	-41.433,00	2.300	1.300
23	206,14	1.451	299.103,00	-43.516,20	2.200	1.600
24	208,49	1.412	294.386,40	-42.877,80	2.200	1.300
25	190,35	1.407	267.825,60	-42.919,80	2.000	1.200

FIGURE 3: OPTIMIZATION REPORT, TIME OF MARKET ENTRY. Testing trade entry times to find optimal performance shows an advantage in limiting market entries to between 8:00 pm and 2:00 pm (in the exchange's local time).

MultiCharts64 - Optimization Report - @RB - 60 Minute - TradeStation

Spreadsheet 2D Graph

	Avg Trade	Total Trades	Net Profit	Max Intraday Drawdown	MaxDaysInTrade (trend compression)
1	227,65	1.490	339.192,00	-40.798,80	6
2	235,04	1.435	337.285,20	-40.916,40	12
3	235,27	1.430	336.436,80	-40.916,40	0
4	232,92	1.441	335.638,80	-40.916,40	11
5	233,80	1.432	334.803,00	-40.916,40	14
6	233,50	1.433	334.605,60	-40.916,40	13
7	233,33	1.432	334.126,80	-40.916,40	15
8	224,78	1.468	329.977,20	-41.370,00	7
9	227,49	1.445	328.721,40	-40.916,40	10
10	226,37	1.448	327.784,80	-40.916,40	9
11	221,11	1.454	321.493,20	-40.916,40	8
12	200,07	1.601	320.313,00	-44.179,80	4
13	204,23	1.540	314.517,00	-42.546,00	5
14	173,87	1.696	294.890,40	-41.189,40	3
15	141,37	1.868	264.070,80	-38.913,00	2
16	60,44	2.201	133.039,20	-35.603,40	1

FIGURE 4: OPTIMIZATION REPORT, TRADE DURATION. Once a market entry is taken, how many days spent in the trade is optimal? This optimization report suggests 12 days is the most sustainable.

	Average trade	Num trade	NetProfit	Max DD
without 3DC	235 \$	1.435	337.285 \$	-40.916 \$
with 3DC	605 \$	493	298.410 \$	-35.733 \$

FIGURE 5: METRICS, FILTERING TRADE ENTRIES USING THE 3DCPATTERN.

When the code for the system is modified to use the trend compression pattern to filter trade entries, the effect is positive. The number of trades is greatly reduced and the profit per trade is significantly improved.

(Figure 4).

We notice that value 6 provides the best result in terms of net profit, but it worsens the average trade, and the values around 5 and 7 are quite far apart, indicating some

instability in this result.

Value 12, on the other hand, leaves the previous metrics (which we can read at the value of 0) almost unchanged, but protects us from the risk of possible trades with excessive duration; we chose this parameter.

Now, it is time to use our pattern and determine what contribution it can make to the strategy. To do this, we will modify the code as follows:

```
var: con1(true);
con1 = (highS(1)-lowS(1)) < (((highS(2)-
lowS(2))+(highS(3)-lowS(3)))/3);
```

```
if tw(MyStartTime,MyEndTime) and con1 then begin
    if ok1 then buy next bar longlevel stop;
    if oks then sellshort next bar shortlevel stop;
end;
```

Comparing system metrics with and without this pattern (Figure 5), we immediately see that the effect was there and it was disruptive!

The pattern reduced the trades by about 65%, reduced the net profit by about 10%, reduced the maximum drawdown by about 10%, but most importantly it increased the average trade by over 250%!

The average trade achieved is over \$600, a very high value for the instrument we are trading.

Given our results, we might be greedy to try to improve the system further. Still, the percentage of trades we have filtered out since the beginning of the development is already considerable, so we decide not to add more conditions.

However, we can check if the value of the stop-loss set at the beginning can be refined. For this purpose, we start an optimization of the parameter SL from \$1,500 to \$2,500 at step \$100 and get the results shown in Figure 6.

Based on this report, setting a stop-loss of \$1,800 instead of \$2,000 results in a loss of about 5% net profit and average trade but reduces the maximum drawdown by almost 20%. Since we can expect an already large average trade, we decide to set the stop-loss at \$1,800 to limit the maximum system loss.

When we reach this point, the final equity curve looks like Figure 7.

Can the system be improved further?

The last check we can do is for the take-profit level, which we have not implemented in the system. To find out whether it is better to introduce it or not and, if so,

MultiCharts64 - Optimization Report - @RB - 60 Minute - TradeStation

Spreadsheet 2D Graph

	Avg Trade	Total Trades	Net Profit	Max Intraday Drawdown	SL (trend compression)
1	605,29	493	298.410,00	-35.733,60	2.000
2	610,93	485	296.301,60	-41.848,80	2.200
3	614,45	477	293.092,80	-34.729,80	2.400
4	581,47	503	292.479,60	-26.346,60	1.700
5	590,18	495	292.139,40	-32.621,40	1.900
6	571,33	501	286.234,20	-29.471,40	1.800
7	599,95	475	284.974,20	-37.115,40	2.500
8	578,58	490	283.504,20	-38.715,60	2.100
9	584,15	483	282.143,40	-44.839,20	2.300
10	531,56	509	270.564,00	-25.998,00	1.500
11	526,72	508	267.573,60	-29.874,60	1.600

FIGURE 6: OPTIMIZATION REPORT, EXITS. An optimization test of potential stop-loss values to use can help you find the best exit strategy for the system. Here, an optimization test is run to test stop levels from \$1,500 to \$2,500 in steps of \$100. A stop-loss value of \$1,800 appears to have the best tradeoff between risk and profit, so this level is chosen for the system.

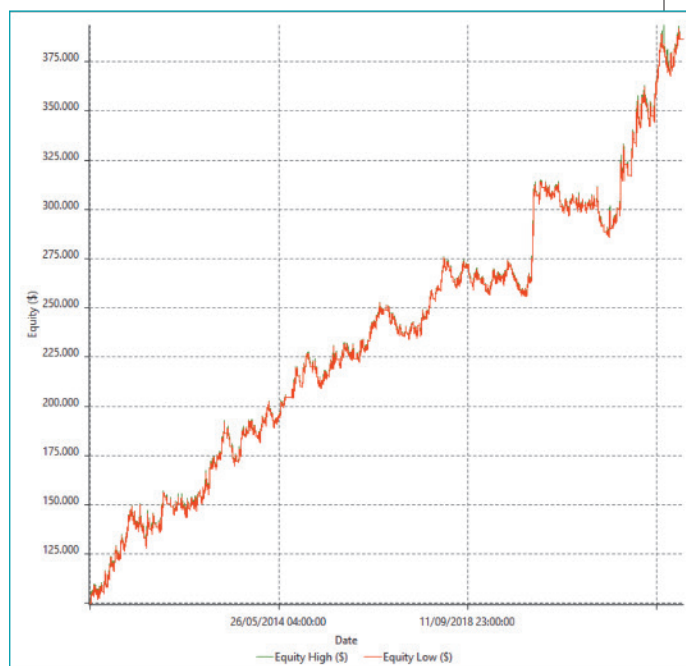


FIGURE 7: EQUITY CURVE, FINAL SYSTEM. The trend-following breakout system using the 3DC pattern to filter trade entries has an improved equity curve. The system shows very good success on gasoline futures.

what the optimal value would be, we will add these two lines of code:

```
input: TP(0);
if TP > 0 then setprofttarget(TP);
```

And, as before, we launch an optimization of the TP parameter from \$0 (corresponding to the absence of take-profit) to \$6,000 at step \$500 (see Figure 8).

From the results obtained, we quickly conclude that it is best not to add any take-profit to the system and,

Continued on page 35



Assessing The Primary Trend

The Most Important Stock Sector To Monitor For Bull And Bear Market Trends

Want to know one simple gauge the pros use for determining the overall health of the stock market? Find out what to look for.

by Jon Wolfenbarger, CFA

If

you could look to just one sector to tell you about the overall trend of the stock market, what would it be? I can tell you what I use: the KBW Bank Index.

The KBW Bank Index is one of the oldest and most popular indexes for US bank stocks. It was started in 1991 by the investment bank Keefe, Bruyette & Woods (KBW), which specializes in the financial services sector. It is comprised of over 20 banking stocks representing large money center banks, regional banks, and thrift institutions.

WHY BANK STOCKS ARE SO IMPORTANT

Bank stocks are key for monitoring the health of the stock market because the banking industry is the primary driver of the boom–bust business cycle.

As first explained by Austrian School economists Ludwig von Mises and Nobel Prize-winner F.A. Hayek a century ago, in what is now known as Austrian Business Cycle Theory, the “boom” phase of the business cycle starts when banks create new money out of thin air to make loans. Only banks are legally allowed to create money out of thin air.

This newly created money artificially lowers interest rates, which encourages businesses and consumers to borrow the newly created money to fund long-term capital-intensive projects such as factories and houses. Since money can be created out of thin air, but scarce resources such as land, labor, and capital cannot be,

eventually the borrowers realize there are not enough scarce resources available to complete their projects, according to the theory. This results in slowing lending and money supply growth and the “bust” phase of the business cycle begins.

Thus, when bank stocks are in an uptrend, that is usually a sign that the boom phase of the business cycle is starting or is in effect. Conversely, when bank stocks are in a downtrend, that is usually a sign that the bust phase of the business cycle is starting or is in effect.

KBW BANK INDEX AS A LEADING AND CONFIRMING STOCK MARKET INDICATOR

The KBW Bank Index has historically provided two very valuable clues to the future trend of the S&P 500:

- The KBW Bank Index typically peaks before, along with, or after major tops in the S&P 500, serving as a useful leading or confirming indicator of bear market downturns
- The KBW Bank Index typically rallies strongly along with the S&P 500 when a new bull market is starting, serving as useful confirmation of a new bull market

Let’s look at some charts to see how the KBW Bank Index can be helpful in identifying and profiting from major bull and bear markets.

The chart in Figure 1 shows the KBW Bank Index in the top clip since 1995, with the S&P 500 index in the bottom clip, along with the 250-day moving averages for both indexes.

I’ve placed red vertical lines on important bull market peaks in the KBW Bank Index and green vertical lines on important bear market troughs in the KBW Bank Index.

Occasionally, the KBW Bank Index peaks before the S&P 500, making it a helpful leading indicator for the S&P 500. Other times it peaks at the same time or after the S&P 500 peak, which helps confirm the S&P 500 peak.

The KBW Bank Index typically bottoms at the same time as the S&P 500 and then rallies strongly. (I’ve highlighted this in the chart with green rising arrows). This bottoming in the index helps confirm the S&P 500 bottom.

Now let’s zoom in on the major bear market periods to get a closer look at how helpful the KBW Bank Index can be in assessing the bull or bear market trend of the



FIGURE 1: KBW BANK INDEX AND S&P 500, 1995–2023. Daily prices of the KBW Bank Index (upper pane) and the S&P 500 index (lower pane) since 1995 are shown along with their 250-day moving averages.



FIGURE 2: KBW BANK INDEX AND S&P 500, 1995–2005. Daily prices of the KBW Bank Index and the S&P 500 index from 1995 to 2005 are shown along with their 250-day moving averages.

Bank stocks are key for monitoring the health of the stock market because the banking industry is the primary driver of the boom–bust business cycle.



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FIGURE 3: KBW BANK INDEX AND S&P 500, 2006-2010. Daily prices of the KBW Bank Index (upper pane) and the S&P 500 index (lower pane) from 2006 to 2010 are shown along with their 250-day moving averages.



FIGURE 4: KBW BANK INDEX AND S&P 500, 2019-2023. Daily prices of the KBW Bank Index and the S&P 500 index since 2019 are shown along with their 250-day moving averages.

broader market as represented by the S&P 500 index.

The chart in Figure 2 shows the KBW Bank Index and the S&P 500 from 1995 to 2005. The KBW Bank Index reached a high for this period in July 1998 (first red line), which confirmed the significant 1998 selloff in the S&P 500. The KBW Bank Index then rebounded and reached a modestly higher high in January 2001 (second red line). That was 10 months after the S&P 500 bull market high in March 2000. While the peak in bank stocks lagged the peak in the overall market, the choppy behavior of the KBW Bank Index from mid-1998 to early 2001 was a warning sign that the stock market was not as healthy as the performance of the S&P 500 implied, which was then being driven by a huge bubble in technology stocks. The final low for both the KBW Bank Index and S&P 500 index in March 2003 (green line) was followed by a clear and convincing rally in both indexes above their respective 250-day moving averages, which signaled that a new bull market had begun.

The next chart in Figure 3 shows the KBW Bank Index and S&P 500 from 2006 to 2010. The KBW Bank Index reached a high for this period in February 2007 (red line), which preceded the S&P 500 bull market high in October by eight months. Banks were “ground zero” for this bear market, since it was driven by the housing bust and subsequent global financial crisis, so it makes sense that it would lead the overall market. The final low for both the KBW Bank Index and S&P 500 in March 2003 (green line) was also followed by a strong rally above their respective 250-day moving averages, signaling the next bull market.

As my final example, the chart in Figure 4 shows the KBW Bank Index and S&P 500 since 2019. Interestingly, the KBW Bank Index reached a high in December 2019 (first red line), two months before the S&P 500 started its brief but severe “Covid lockdown panic” bear market. Once again, the low (green line) in both indexes was followed by a strong rally, signaling another bull market uptrend.

Then the KBW Bank Index reached a high in January 2022 (second red line), about one week after the S&P 500 peaked. While the S&P has rallied strongly since October 2022, the KBW Bank Index remains near its lows of the past two years and is still down over 40% from its highs. That is not surprising with three of the

When bank stocks are in an uptrend, that is usually a sign that the boom phase of the business cycle is starting or is in effect.

four largest bank failures in US history occurring in 2023 after the rapid increase in interest rates in recent years. This suggests that a sustainable new stock bull market has not yet begun.

SUMMARY

To determine whether the US stock market is in a sustainable bull or bear market trend, keep a close eye on the KBW Bank Index. It generally peaks before, along with, or after the S&P 500 at the end of a bull market and rallies strongly with the S&P 500 at the end of a bear market.

Jon Wolfenbarger, CFA, is founder & CEO of BullAndBearProfits.com, an investment website dedicated

to helping investors earn high profits in both bull & bear markets. He can be contacted via email at Jon@BullAndBearProfits.com.

FURTHER READING

Wolfenbarger, Jon [2023]. “Two Simple Indicators To Identify Bull And Bear Markets,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: October.

—— [2022]. “Simple Rules To Profit From Bear Markets,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 40: April.

‡StockCharts

‡See Editorial Resource Index

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UNGER/TREND COMPRESSION

Continued from page 29

therefore, we decide to consider our strategy as finished.

CONCLUSIONS

In this article, we have shown the results of a simple strategy where we applied the trend compression pattern, which we called 3DC.

The comparison of the results with and without the pattern showed the effectiveness of the 3DC pattern, which manages to identify the “pause phases” of volatility to allow a subsequent market entry by taking the direction of the prices.

So we have seen how powerful the 3DC pattern is: first, because it can strongly filter the trades of a system, and second, because in combination with a simple breakout entry, it can already become a winning strategy.

We leave it to the reader to test it on other instruments to verify its full strength.

Andrea Unger is a full-time professional trader, president of The Unger Academy, and author of The Unger Method. He is a four-time World Trading Champion (2008, 2009, 2010, and 2012), an honorary member of SIAT (Italian Society of Technical Analysis, a branch of IFTA), and speaks throughout Europe, America, Australia, and Asia. He may be reached at Andrea@UngerAcademy.

MultiCharts64 - Optimization Report - @RB - 60 Minute - TradeStation

	Avg Trade	Total Trades	Net Profit	Max Intraday Drawdown	TP (trend compression)
1	571,33	501	286.234,20	-29.471,40	0
2	383,68	546	209.491,80	-25.552,80	6.000
3	318,34	551	175.404,60	-28.778,40	5.500
4	267,76	564	151.019,40	-25.300,80	4.500
5	270,75	553	149.725,80	-26.380,20	5.000
6	237,58	574	136.369,80	-31.626,00	4.000
7	221,02	590	130.401,60	-26.094,60	3.500
8	210,47	601	126.491,40	-28.203,00	3.000
9	172,16	733	126.193,20	-17.409,00	1.000
10	185,13	673	124.593,00	-21.919,80	1.500
11	196,37	622	122.144,40	-30.760,80	2.500
12	178,42	641	114.370,20	-25.128,60	2.000
13	80,50	924	74.386,20	-17.648,40	500

FIGURE 8: OPTIMIZATION REPORT, TAKE-PROFIT LEVEL. Would incorporating a take-profit level into the system code improve the system's results and profits? To help find out, a range of possible take-profit values are tested in steps of \$500, but the best result is zero, so a take-profit level is not used in the final system.

com. The Unger Academy provides services to traders, including individuals, to help them improve their approach to trading (more information can be found at <https://autc.pro/tasc10>).

FURTHER READING

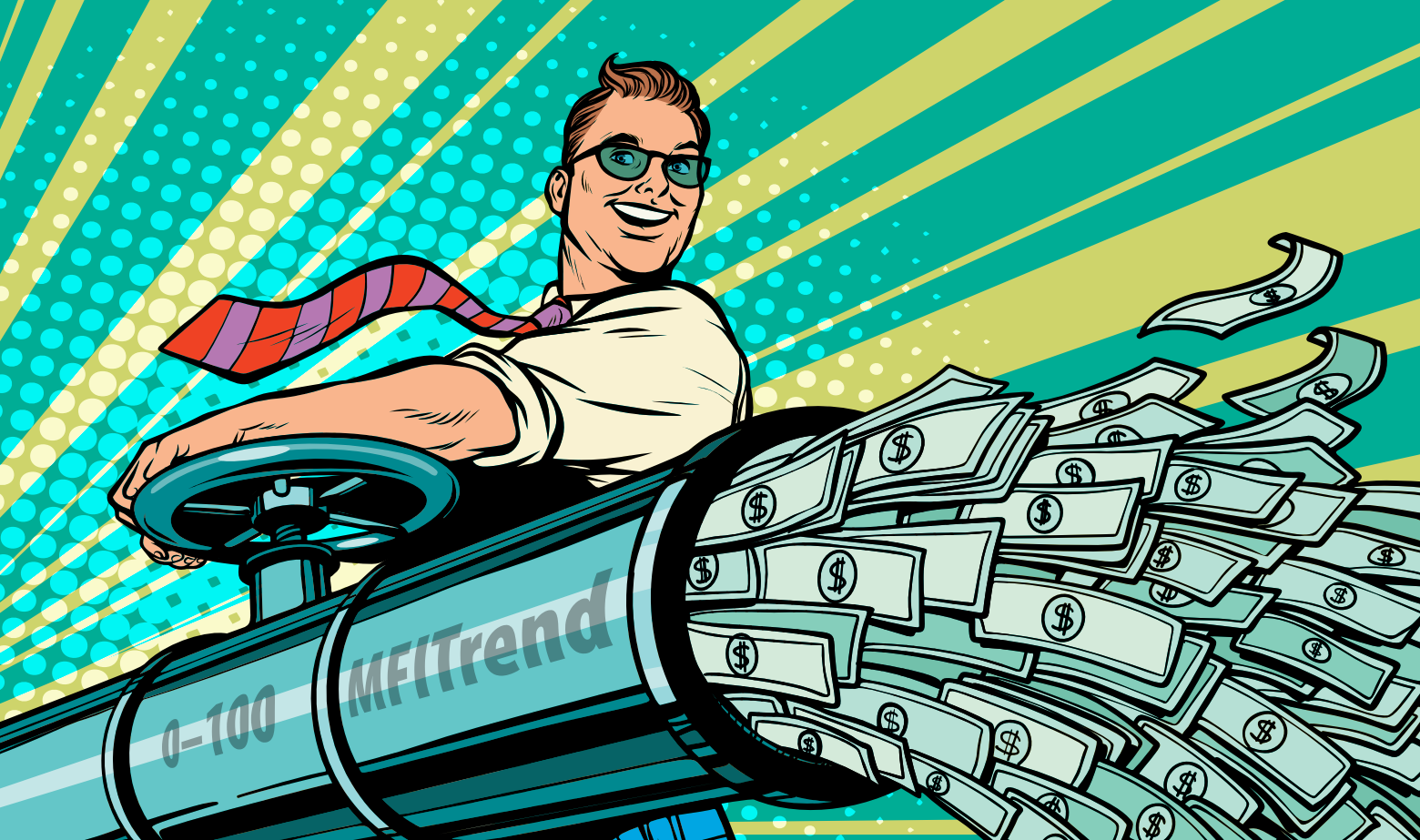
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‡TradeStation, ‡MultiCharts

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A Strategy For Bullish Trends

MFITrend: A Daytrading Strategy For Cryptocurrency

You can keep your fear, uncertainty, and doubt in check by having a trading strategy in hand that you feel confident using. Here is one example strategy to consider for trading cryptocurrencies based on high readings in the money flow index.

by Azeez Mustapha

the best ways to overcome FUD over events and come out of crashes unscathed is by having a reliable and effective trading strategy.

Here, I'll present a crypto daytrading strategy that can turn your losing streak around and set you on the path to a more successful trading journey in the crypto market. This strategy I will discuss here is the MFITrend daytrading strategy.

WHY YOU NEED A TRADING STRATEGY

Before we proceed, let me take a minute to discuss the importance of trading strategies. As we know, the cryptocurrency market can be incredibly volatile. Prices can shoot up or plummet in a matter of minutes or hours, and it's easy to get caught up in the hype or fear.

However, making impulsive decisions based on emotions can lead to major losses. Having a trading strategy can help you avoid making rash decisions and instead approach trading in a more systematic and strategic manner.

Barely into the first quarter of 2023, the crypto industry recorded another major crash following the previous crash stemming from the collapse of FTX in November 2022. The FUD (fear, uncertainty, and doubt) in the market at that time emanated from the liquidity crunch at Silvergate crypto bank and the Silicon Valley bank. The market shed billions of dollars in liquidation, with the total market valuation falling below the critical \$1 trillion mark for the first time in several weeks.

As a trader, crashes like this can be overwhelming and demoralizing. However, it doesn't have to be so. One of



FIGURE 1: MFI TREND TRADING STRATEGY. The MFI Trend strategy is shown applied to a five-minute chart of Bitcoin/US dollar (BTCUSD). This strategy is best used for cryptocurrencies that have high volatility and liquidity. While an intraday chart is pictured here, the strategy could also be adapted to other timeframes.

Here are some things to keep in mind as you wade through your everyday adventures in the crypto arena:

1. Define your goals and risk tolerance. Before you can create a trading strategy, you need to define your goals and risk tolerance. What do you hope to achieve through cryptocurrency trading? Are you looking to make a quick profit, or are you in it for the long haul? Understanding your goals will help you determine what kind of trading strategy is best for you.

Additionally, you need to consider your risk tolerance. How much risk are you willing to take on? Cryptocurrency trading can be high-risk and high-reward, so it's important to assess how much you're comfortable losing.

2. Conduct research. Once you've established your goals and risk tolerance, it's time to do some research. You need to stay informed about the latest developments in the cryptocurrency industry, such as new listings or regulations. You can keep up with the news by following reputable sources such as CoinDesk, The Motley Fool, and Cointelegraph.

Additionally, you should conduct technical analysis to identify trends and potential trading opportunities. This involves studying charts and indicators to make informed trading decisions. There are many technical analysis tools and resources available, including those found on trading platforms such as TradingView or MT4.

3. Determine your trading style. There are several trading styles to choose from, and the one you choose

will depend on your goals and risk tolerance. Here are a few common trading styles:

- **Day trading:** Daytraders buy and sell cryptocurrency within a single day, aiming to make small profits from short-term price movements.
- **Swing trading:** Swing traders hold onto their positions for a few days to a few weeks, aiming to profit from medium-term price movements.
- **Position trading:** Position traders hold onto their positions for weeks or months, aiming to profit from long-term price movements.

In this article, I will present the MFI Trend trading strategy as an intraday trading strategy, although it can be adapted to other trading styles.

THE MFI TREND TRADING STRATEGY

The MFI Trend trading strategy is derived from the MFI (money flow index) indicator. The MFI is a tool that financial experts use to figure out how much people are buying and selling in the market. It takes into account both the price and the volume of trades to calculate a

The MFI is a popular tool for traders and investors to help them spot trends and potential changes in the market.





FIGURE 2: MFI INDICATOR SETTINGS. For the MFITrend trading strategy, the recommended setting for the MFI indicator is three periods.

number between zero and 100 that shows whether buyers or sellers have more power.

The MFI is a popular tool for traders and investors to help them spot trends and potential changes in the market.

The MFITrend strategy discussed here involves using the MFI indicator to identify trends in the market and make trading decisions accordingly. Basically, the idea is that changes in the MFI can tell you when buying or selling pressure is changing, which can give you a clue about what prices might do next.

This strategy works best with high-volume cryptocurrencies. You can use crypto aggregators such as CoinMarketCap to get an updated list of high-volume cryptos. Also, keep in mind that the MFITrend strategy only works in bullish market settings.

Now, onto the trading strategy proper.

APPLYING THE MFITREND TRADING STRATEGY

Here are the steps to applying the MFITrend strategy.

Step 1: Find a cryptocurrency with high volatility and trading volume

When it comes to selecting coins for the MFITrend trading strategy, it is essential to choose those with high volatility and liquidity. Daytraders who prefer trading altcoins should pick coins with good liquidity and volatility.

That said, Bitcoin is the most liquid coin on the market, and it is the best choice for daytraders who are not interested in daytrading smaller cryptocurrencies. Daytrading smaller cryptocurrencies can be profitable, but it comes with higher risks.

Step 2: Apply the MFI indicator on a 5-minute chart (Figure 1)

As previously mentioned, the MFITrend trading strategy uses the money flow index (MFI) indicator. The MFI indicator helps track the activity of smart money, and it is used to determine when big players are buying and selling cryptocurrencies.

For the MFITrend trading strategy, it is recommended to set the MFI indicator to three periods. For example, in TradingView, I would go to the MFI setting and click on the “length” tab and input “3” (see Figure 2).

The default buying and selling levels should be adjusted from 80 to 100 and from 20 to 0, respectively.

Step 3: Let the MFI tap the 100 mark

When the MFI reading reaches 100, it shows the presence of large investors entering the market. It is an indication of smart money entering the market, and we can read the activity of the market through the MFI indicator.

However, technical indicators aren’t always correct, so it is essential to add a few more conditions to fine-tune the daytrading strategy. Specifically, the first two MFI readings of 100 of the day should be skipped, and the crypto price reaction should be studied. (See Figure 3.)

Changes in the MFI can tell you when buying or selling pressure is changing.





FIGURE 3: SPOTTING A TRADE OPPORTUNITY. When an MFI reading reaches 100, it's an indication that large investors are entering the market and suggests a bullish trade opportunity, although more entry conditions should be added to fine-tune and qualify the entry criteria.



FIGURE 4: ENTERING A TRADE. For this strategy, a stop should be placed below the low of the day, and the trader should look to exit within 60 minutes after entry.

The price should hold up during the first and second 100-level MFI readings. If the price drops after the first two MFI 100-level readings, then this suggests that we are most likely going to have a down day.

Step 4: Open a trade at the sighting of a bullish candle

After waiting for the third MFI reading above 100, the next step is to look for a bullish candlestick. It doesn't have to be the third 100-level MFI; you can take every other 100-level MFI readings. If time does not allow catching the third 100-level reading on the MFI indica-

tor, the next one can be picked as long as all the other technical conditions are met.

When the MFI indicator reaches 100 and the subsequent candle is bullish, the trader can enter a long position.

PLACING YOUR STOP-LOSS AND TAKE-PROFIT

It is essential to place a stop below the low of the day to minimize losses if the trade does not go as expected. If the price breaks below the stop-loss level, it signals a shift in market sentiment, and it is best to exit the trade.

When it comes to the exit strategy, the trader should take profits within the first 60 minutes after the trade



FIGURE 5: HOW DID THE TRADE FARE? In this example trade in ETHUSD applying the MFITrend trading strategy to a five-minute chart, the trade finished up 3,676 pips. The trade was entered upon seeing the third 100-level MFI reading of the day and a subsequent bullish candle.

You can use crypto aggregators to get an updated list of high-volume cryptos.

has been triggered. Holding the trade longer than one hour will result in a lower success rate, according to backtested results. The exit strategy is more flexible than the entry strategy.

However, it is essential to abide by the rule of taking profits within the first hour after the trade has been triggered. This rule ensures that profits are made before market conditions change, reducing the chances of losing the profits made.

An example of entering a trade in Ethereum/US dollar is shown in Figure 4.

THE MFITREND TRADING STRATEGY IN ACTION

So how did the trade from Figure 4 go? See Figure 5 for the outcome. Following is a summary of the particulars for this example trade:

Buy trade

Timeframe: 5-minute chart

Forex pair: ETH/USD

Entry level: \$1,447

Stop loss: \$1,428

Take profit: \$1,484

Risk-to-reward ratio: 1:2

Profit or loss: +3,676 pips

Following is a summary of the particulars of the strategy:

Strategy snapshot

Strategy name: The MFITrend trading strategy

Trading style: Daytrading and scalping

Instrument names: High-volume cryptocurrencies

Timeframe: 5-minute chart

Indicators: MFI indicator

Buy signal: Enter an instant buy at the third 100 reading on the MFI indicator after two 100-level reading on the indicator right after the start of the day

Position sizing: 1% of your total portfolio per trade

Risk-reward ratio: Fluid

Stop-loss: At the day's low

Take-profit: Exit within the first hour.

Azeez Mustapha is an analyst at Instaforex Companies Group and a blogger at Advfn.com, and as well as a freelance author for various trading publications. He is a trading signals provider at some websites. He can be reached via email at azeez.mustapha@analytics.instaforex.com.

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THE MATH IS SIMPLE. THE BENEFITS ARE CLEAR.



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Requirements: Windows 10 or higher

Products: Stock trading and investing education portal; a Breakout Scanner tool for stocks; nearly 100 YouTube videos; and “The Strategy: A Proven Stock Trading Strategy” (downloadable PDF file)

Membership pricing plans: 3 months £84; annual £252; lifetime access £899. The strategy PDF is free with any membership or £59.99 as a standalone purchase.

by Leslie N. Masonson, MBA

About two years ago, I discovered Financial Wisdom TV on YouTube, and I’ve been hooked ever since, probably viewing at least 50 of their videos since then. I found the content appealing in all respects, with its color graphics and cartoon characters, but more importantly because of Financial Wisdom founder Gareth Packer’s understanding of the markets, his trading acumen, the investing strategy he offers, his discussions of behavioral psychology, and the reviews of trading books he offers. The typical video’s length is about 9 to 16 minutes, which provides adequate coverage on the given topics. The Financial Wisdom TV YouTube channel has 160,000 subscribers and offers 93 videos (Figure 1) at the time of this writing, with new videos added every month. Packer’s Twitter profile @FWisdomTV shows 2,400 followers since October 2019.

I decided to write this review to

make S&C readers aware of what I feel is a first-rate source of stock market educational content, technical analysis basics, and more. For beginners, the site is awesome at providing a quick overview of trading with technical tools, and for more experienced traders it offers some useful insights that can be put to good use or can be followed up on through other resources.

For those who are looking for more in-depth information about investing than what is presented in the videos, Financial Wisdom offers a time-tested trading approach on their website, including a 19-page trading guide with complete trading rules. (It is geared toward a holding period of several weeks to several months.) Moreover, a Breakout Scanner tool is also offered that pinpoints stocks breaking out of horizontal patterns with a predetermined set of fundamental and technical data. More about this later.

According to Trustpilot, a well-known third-party review and rating site, the Financial Wisdom platform has a rating of “excellent” with 4.7 out of 5 stars based on 39 reviews at the time of this writing.

WEBSITE COMPONENTS

The homepage (Figure 2) presents graphic tiles with links to the Breakout Scanner tool, the downloadable trading strategy guide, the YouTube channel, and membership pricing plans.

The blog menu from the top of the homepage takes you to many educational posts on investing and trading, in video and article format. There, you can read some 40 articles on technical trading tools, trading

methods, and pitfalls to avoid, among other topics.

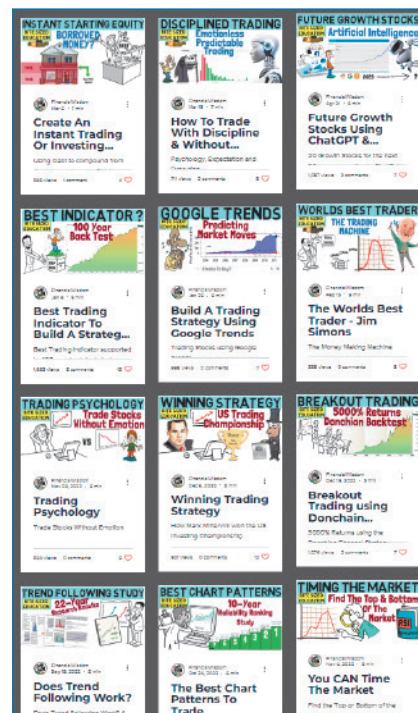


FIGURE 1: FINANCIAL WISDOM TV YOUTUBE CHANNEL. The channel offers 93 videos on different aspects of trading and technical analysis. There are also some profiles of top traders. New videos are added every few weeks.



FIGURE 2: FINANCIAL WISDOM TV HOMEPAGE. The homepage provides links to the YouTube channel, the membership pricing plans, a detailed trading strategy guide, and the Breakout Scanner software tool.

Paid website membership includes:

- a community forum
- weekly reports including the site's stock portfolio, performance data based on every trade made, and market analysis
- the Breakout Scanner
- a number of spreadsheets to download and use
- a list of past trades for further analysis
- a link to a Monte Carlo analysis trading simulator
- weekly commentary (published late Sunday)
- a list of the latest daily and weekly breakout stocks.

The trading simulator analyzes potential returns and drawdowns based on historical or expected data. Also offered is a portfolio and position sizing calculator and a Critical Net Worth Calculator for retirement planning. The site recommends Stockopedia for fundamental analysis, MarketInOut Stock screener for stock selection and strategy backtesting, and the Edgewonk Trading Journal software (\$169 per year) to record and analyze your trading results so that you can observe your mistakes, hopefully leading to improved win/loss ratios and better trading profits.

Upon signup, a video will acquaint new members with all the offerings that membership brings. Another video introduces the trading strategy that members are privy to. A third video offers a quick overview of the Breakout Scanner software's settings and how to read the results it produces.

A weekend market commentary includes a portfolio review. Complete performance data on every trade from 2015 is provided in a downloadable spreadsheet file showing date of

purchase and sale, percent profit and loss, cumulative totals, and annual rate of return.

The community forum gives members a place to ask questions and get answers.

The website's terms and conditions clearly state that the information provided is for "educational purposes only," and that members should perform their own analysis before making any investment decisions. The investment ideas presented should be treated as candidates for further research. Therefore, the company and website are not liable or responsible for investors' results, and any investments made by users are done at their own risk. This type of legal disclaimer is common with services that discuss financial information but that are not registered as investment or financial advisors nor are seeking to be a formal stock recommendation service.

THE TRADING STRATEGY

In his 30 years of studying the stock market, Packer says he has read hundreds of market-related books, performed thousands of hours of backtesting, and spent hundreds of hours trading live. Over this time period, he has fine-tuned his trading strategy based on his real-life trading results as well as based on his personality, risk tolerance, and trading timeframe. The strategy is delineated in detail in a 19-page downloadable PDF (Figure 3), which is included with membership in any of the annual or quarterly subscriptions. (The PDF otherwise sells separately for £59.99.) This manual covers how to replicate Packer's approach to the market, which combines both fundamental and technical analysis. The manual is easy to read, flows in a logical manner, has clear instructions, rules, and examples, and also has colorful charts, visuals, and tables. All in all, I found

it to be a masterful document.

One of Packer's key principles is that market timing is an indispensable aspect of investing. Packer is not a financial advisor. His clearly states that his site is not geared to short-term traders but rather to those with a longer timeframe and more patience.

The manual is divided into the following topics:

- theory
- concept
- setup examples
- entries and exits
- filter criteria
- historical results

The strategy's objective is to uncover quality stocks in a trading range with the potential for upward momentum when the trading range breaks to the upside. The manual covers the trading theory, the filter criteria, performance, and examples. Packer states his goal is to put the odds in his favor with a minimum win-to-loss ratio of 2:1 but with a goal of 4:1. To do this on a consistent

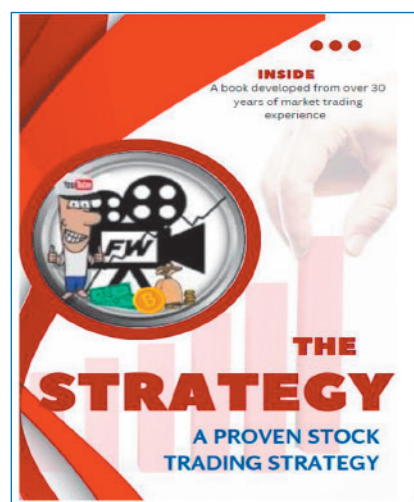


FIGURE 3: TRADING STRATEGY GUIDE. A 19-page downloadable PDF titled "The Strategy: A Proven Stock Trading Strategy" provides a complete strategy to trade the market. It includes trading rules and explains what technical indicators are used in the strategy.

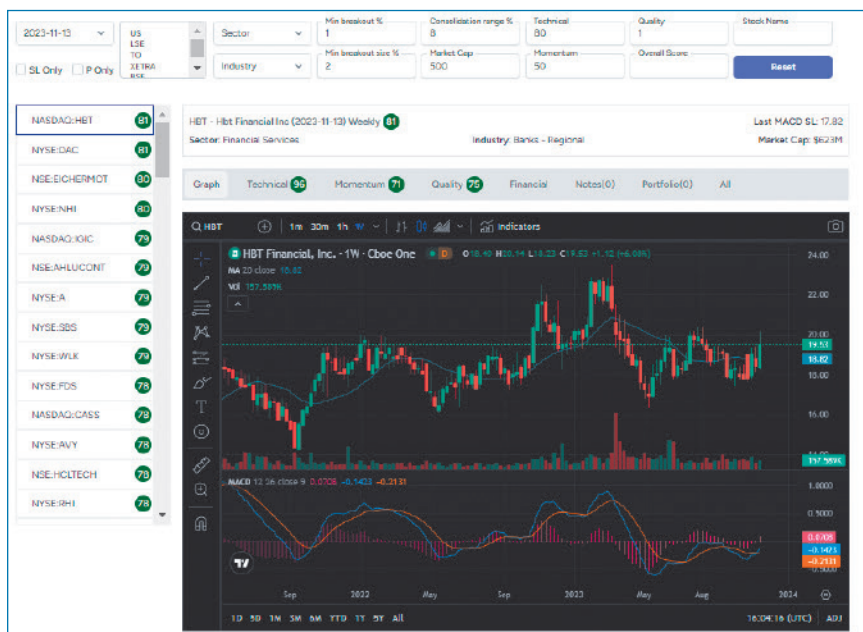


FIGURE 4: BREAKOUT SCANNER. All paid members can access the list of top-ranked stocks with each stock's score, found on the left side of the screen. The scanner settings are adjustable by the user. A TradingView chart is provided for each stock.

basis, it is critically important to get the entry and exit position nailed down, and then properly manage risk and position sizing.

For entries and exits, technical indicators are used to identify high-probability breakouts after consolidations. Weekly charts are used instead of daily charts to avoid the random daily market noise. A 10-week and 20-week exponential crossover strategy is used as a broad indicator signaling the right trading environment, but requiring a confirming MACD and certain price action structure for buy and sell signals, respectively.

To consider a market entry, specific rules are provided regarding the required breakout candle behavior. Moreover, fundamental analysis criteria are used to pinpoint high-quality stocks including return on

capital, return on equity, operating margin, generally positive revenue and net profit, and reasonable debt. These criteria are employed to reduce the universe of potential candidates. The software provides the values for each of the variables with the raw data source indicated.

The next topic in the trading strategy manual covers the criteria for an optimal exit, with the initial stop-loss rules and stop value adjustments made as the stock is rising. Then risk management and position sizing, win/loss ratios, the Kelly criterion, and minimizing drawdowns are covered with examples. Moreover, a link to a Monte Carlo analysis simulator is provided, so that users can calculate and view a profit and loss analysis that is based on predetermined average win and loss amounts.

In summary, the manual provides a comprehensive look at the strategy used by the site to have a profitable long-term track record with minimal drawdowns. Provided at the end of the PDF are four links: membership, MarketInOut software link for

backtesting, Stockopedia link for fundamental data, and Interactive Brokers contact information.

THE BREAKOUT STOCK SCANNER

Packer developed software to identify stocks setting up for breakouts from consolidation patterns, his favorite pattern. The powerful and easy-to-use Breakout Scanner (Figure 4) is the end result of his time-consuming efforts. It ranks stocks for purchase based on his settings. The scanner observes the daily or weekly price bars on charts with multiday or multiweek trading ranges, and then calculates the range's characteristics that meet fully disclosed criteria, which include the minimum breakout percentage, minimum breakout size, and consolidation range percentage.

Moreover, other factors evaluated by the scanner are technical, momentum, and quality scores. All these data filters are aggregated into an overall score called the "FW score," which has a maximum score of 100. Each of the other three factors are also scored between 0 to 100 (highest score). The default settings are based on historical testing and are designed to find the "needles in the haystack." These are the settings embedded in the scanner when it is first opened.

The scanner can be used in either the daily or weekly mode, with the latter as the site's preference. The scanner has stock price data from seven global stock exchanges including the U.S. market. For each exchange, the data available goes back about 20 weeks. I would have liked to see data go back a few years to do some analysis at key market turning points, but that wasn't an option at this time.

At the user's option, the scanner can analyze all the stocks in any exchange for the variables mentioned. The software's default setting is to

The service offers quality education on trading and investing in a lively video format.

use weekly data, since testing and backtesting showed it to be the better choice. But the user can change any of the scanner settings and observe the resulting scores.

The user can also limit the number of stocks considered by selecting one of 11 sectors and/or one of about 50 industry groups. If there are no stocks appearing in the scanner that means that the input was too restrictive or the market is in such a condition that no strong stocks emerge. For example, on September 4, 2023 there were 20 U.S. stocks with an overall FW score of 56.7 or higher on a scale of 1 to 100. The top three ranked stocks were: LPL Financial (LPLA) at 83.77, Blackstone Inc. at 79.09, and GSK plc (GSK) at 77.87. In a weak market, there may be no candidates showing up on the scanner, while during big bull runs there could be hundreds. As mentioned, they will be ranked from the strongest to the weakest based on the preset scanner criteria.

The Breakout Scanner output automatically provides a high-resolution TradingView candlestick chart for each stock with a 20-week moving average, daily volume, and MACD indicator. The user can change the timeframe to daily, weekly, hourly or one- or 30-minutes, as well as add any of over 100 other technical indicators from TradingView's indicator panel.

Candlesticks can be changed to bars or an area chart. Next to the chart, the stock's four scores are provided. For example, LPLA's scores were: Technical 95, Momentum 65, and Quality 91 with an overall FW score of 84.

Furthermore, the three component factors are backed up with 22 lines of data points showing the components of those scores. That is followed by financial summary data in table form of 25 key metrics for the seven prior years. In total, the scanner provides an

					2:1 Leverage Used (Margin)
Year	Trades	Profit/Loss	Return On Risk	Maximum trades held	Return on Margin Used
2015	107	£ 51,556.00	48%	50	21%
2016	49	£119,838.00	245%	20	120%
2017	103	£155,559.00	151%	50	62%
2018	32	£ 17,168.00	54%	15	23%
2019	53	£ 21,303.00	40%	20	21%
2020	44	£ 75,110.00	171%	20	75%
2021	66	£ 7,090.00	11%	30	5%
2022	33	-£ 18,530.00	-56%	15	-25%
					Avg Annual Return On Cash Used
Totals	487	£429,094.00	88%	220	39%

Assumes a £1000 risk per position

FIGURE 5: TRADING PERFORMANCE. The 2015 to 2022 annual returns earned by Financial Wisdom's portfolio averaged 39%, according to the company's self-published report. The loss of 25% in the following year, 2022, was a year when the S&P 500 was down 18% and the Nasdaq Composite tumbled 33%.

Portfolio Summary (Open & Closed Trades)								
Total Trades	Average Days	Average Days (Win)	Average Days (Loss)	Annualised Return	Average Loss	Average Win	RR Ratio	Win Rate
537	102.0	151.2	54.3	32.5%	-6.92%	25.0%	3.93	49.2%

FIGURE 6: PORTFOLIO SUMMARY. Here, the 8-year (2015–2022) performance is tallied. The apparent average annualized return of 32.5% is clearly market beating, as is the 3.93 risk-to-reward ratio where the average win is 25% versus average loss of 6.92%.

amazing array of data to back up the scores. The scanner by itself is worth the price of the subscription. That will be made clear when looking at all the trades provided by the site since 2015 pointing to a market-beating annual return of 32.5% over the nearly nine years of the company's existence.

**TRADING RESULTS
PERFORMANCE HISTORY**

The site provides an Excel spreadsheet of all of Packer's apparent trades since January 2015 showing the buy and sell dates, prices, profit and loss in pound sterling, ROI, and rolling profit. (*Note:* This list of trades is self-published and not independently verified by us.) The trades taken are stated to be based on the strategy and approach detailed in the PDF offered to members (discussed earlier). He uses Interactive Brokers for his trades and all these trades are with U.S. stocks, although he may trade non-US exchange securities from time to time. His objective is to have a maximum of 15 portfolio positions

and replace them based on his sell rules as necessary with the current higher-ranked candidates. Although he traded U.S. stocks, he is a U.K. citizen, so he displays the results in British pounds.

The yearly performance (Figure 5) based on cash used resulted in an apparent annual average return of 39% through 2022, assuming a 2:1 margin usage. The worst year was 2022 with a 25% loss, which was seven percentage points worse than the benchmark S&P 500. According to Packer, his approach in down periods is to limit his trade frequency

The strategy's objective is to uncover quality stocks in a trading range with the potential for upward momentum when the trading range breaks to the upside.

Stock	Purchase Date	Price	Sale Date	Price	P/L	ROI	Rolling Profit
Zoetis	1/16/2023	160.93	9/27/2023	174.84	£ 864.4	8.6%	864.35096
CSW Industrials	6/5/2023	158.04	9/26/2023	174.78	£ 1,059.2	10.6%	1923.576473
nVent Electric PLC	2/13/2023	44.61	10/2/2023	52.03	£ 1,663.3	16.6%	3586.880664
VMware	10/16/2023	178.4	10/17/2023	157.62	-£ 1,164.8	-11.6%	2422.082458
Alphabet	5/15/2023	117.65	10/23/2023	134.92	£ 1,467.9	14.7%	3889.99576
Erie Indemnity	10/9/2023	303.83	10/27/2023	282.09	-£ 715.5	-7.2%	3174.464049
Murphy USA	9/18/2023	334.61	11/16/2023	378.84	£ 1,321.8	13.2%	4496.301411
Dollarama	9/18/2023	95.64	11/16/2023	95.96	£ 33.5	0.3%	4529.760215
The GEO Group	10/2/2023	8.79	11/16/2023	9.04	£ 284.4	2.8%	4814.174322
CME Group (US)	10/9/2023	212.15	11/16/2023	208.62	-£ 166.4	-1.7%	4647.782618
Vertex Pharma	10/16/2023	372.12	11/16/2023	376.2	£ 109.6	1.1%	4757.424669
= Positions open at the time of update							

FIGURE 7: RECENT TRADES. This is a small sample from the trading history spreadsheet provided at the website to members, a trading history that spans January 2015 to present. Eight out of the last 11 trades were apparently profitable. The largest loss on a trade is not unreasonable at -7.2%.

and position size, and during more favorable market conditions, do the reverse of that.

Based on the self-published portfolio summary from early 2015 through the fall of 2023 that he shows at the website (Figure 6), Packer appears to have executed 537 open and closed trades with a long-term average win ratio of 49.2%, with an impressive risk-reward ratio of 3.93 (4:1 is his goal). It shows the average winning trade to be 25% while the average losing trade was 6.92%, with an annual average return of 32.5% (his goal is 40% unleveraged annual return). Data on drawdowns was not provided, but the strategy seeks to control for drawdown via its exit strategy and tight stop criteria.

Figure 7 shows only the last 11 trades as of November 16, 2023, as an example. The five trades highlighted in green were closed out with profits. Out of the 11 trades shown, there were 8 winners and 3 losers. As a side note, Packer entered the 2023 U.S. Trading Championship and as of mid-November 2023 his portfolio was up 20%.

EDUCATIONAL YOUTUBE VIDEOS

The 93 videos in his YouTube channel provide viewers with an education on a wide selection of technical indicators, market strategies, and

the trading strategies of well-known traders. There are also reviews of trading-related books, and there are nine trading psychology videos on topics including the trading mindset and expectation theory as well as on the work of Van Tharp and Mark Douglas.

Specifically, the trading and investing videos cover subjects including discipline, candlesticks, swing trading, Kelly criterion, spread betting, market direction, options basics, technical indicators, strategy, market timing, gap trading, dollar cost averaging, probability, and the Piotroski F score. The various book review videos look at books written by Mark Minervini, Stan Weinstein, Van Tharp, Alexander Elder, William O'Neil, Mark Douglas, Michael Covel, Gary Antonacci, Martin Schwartz, Robbie Burns, Thomas Bulkowski, and Nicolas Darvis.

Some of the videos offer a synopsis of the trading strategies of well-known traders such as Paul Tudor Jones, Jim Simons, David Ryan, Oliver Kell, Kristjan Qullamagie, Timothy Sykes, Ed Seykota, Peter Brandt, Fred Saffore, and Jesse Livermore.

The videos have nice graphics and explanations. There is tremendous educational content here for new investors or those new to the material. Very recent videos have about

The scanner by itself is worth the price of the subscription.

11,000 views while some older ones top 100,000 views.

IN CLOSING

Investors and traders might want to spend some time checking out FinancialWisdomTV.com offerings. The service offers quality education on trading and investing in a lively video format. It also offers a fully disclosed trading strategy in a downloadable manual that also outlines a practical approach to the stock market. Your first step could be viewing a handful of the free YouTube videos to see if you are in sync with Gareth Packer's methodology and approach.

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

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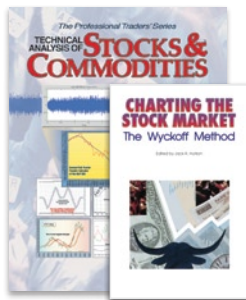
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The Traders' Tips section is provided to help readers implement a selected technique from an article in this issue or another recent issue. The entries here are contributed by software developers or programmers for software that is capable of customization.

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

New contributor this month: RealTest



Code in text format:

Data:

```
trendUpW: Extern(~Weekly, C > H[1])
trendDnW: Extern(~Weekly, C < L[1])
trendW: Select(IsNaN(trendUpW), 0,
  trendUpW, Max(1, trendW[1] + 1),
  trendDnW, Min(-1, trendW[1] - 1),
  trendW[1] + Sign(trendW[1]))
```

```
trendUpM: Extern(~Monthly, C > H[1])
trendDnM: Extern(~Monthly, C < L[1])
trendM: Select(IsNaN(trendUpM), 0,
               trendUpM, Max(1, trendM[1] + 1),
               trendDnM, Min(-1, trendM[1] - 1),
```

```
trendM[1] + Sign(trendM[1]))
```

Charts:

```
trendW: trendW {}
trendM: trendM {}
```

A sample RealTest chart showing both indicators in the lower pane can be seen in Figure 1.

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



◆ **TRADESTATION: FEBRUARY 2024 TRADERS' TIPS CODE**

In the article “Trend Identification By Price And Time Filtering” in this issue, author Alfred François Tagher formulates rules for trend identification. By utilizing price and time filters centered on weekly and monthly price action, one can effectively reduce market noise. This technique aims to capture, sustain, and benefit from prolonged price trends. The studies provided consist of a PaintBar and two indicators.

PaintBar: Price-Time Filtering PB (Weekly)

{
TASC FEB 2024
PaintBar
Price-Time Filtering PB (Weekly)
© 2023 Alfred François Tagher

AFT Strong Trend Weekly

If Friday's close is greater than last week's high then the trend is up. If Friday's close is less than last week's low then the trend is down.



FIGURE 1: REALTEST. This example chart shows both the weekly and monthly versions of the indicator in the lower pane.



```

}

inputs:
  UpColor( Green ),
  DnColor( Red );

variables:
  WeekHi( 0 ),
  WeekLo( 0 ),
  WeekCl( 0 ),
  WeekKnt( 0 ),
  PriorWeekHi( 0 ),
  PriorWeekLo( 0 ),
  PriorWeekCl( 0 ),
  PlotColor( 0 ),
  Trend( 0 );

if (DayOfWeek(Date) < DayOfWeek(Date[1]) and
  DayOfWeek(Date[1]) <> 5) or (DayOfWeek(Date) = 5) then
begin
  {This uses Monday if there was no Friday}
  if DayOfWeek(Date) = 5 then
  begin
    Value1 = Close;
    if High > WeekHi then
      WeekHi = High;
    if Low < WeekLo then
      WeekLo = Low;
  end
  else
    Value1 = Close[1];

  {Need to check if Close exceeds prior Week}
  if Value1 > PriorWeekHi then
    Trend = 1;
  if Value1 < PriorWeekLo then
    Trend = -1;

  PriorWeekHi = WeekHi;
  PriorWeekLo = WeekLo;
  WeekKnt = WeekKnt+1;
end;

if DayOfWeek(Date) < DayOfWeek(Date[1]) then
begin
  WeekHi = High;
  WeekLo = Low;
end;

if High > WeekHi then
  WeekHi = High;
if Low < WeekLo then
  WeekLo = Low;

if WeekKnt > 1 then
begin
  PlotColor = Iff(Trend = 1, UpColor, DnColor);
  PlotPB( High, Low, Open, Close, "Trend", PlotColor );
end;

Indicator: Price-Time Filtering PB (Weekly)
  
```

```

{
TASC FEB 2024
Price-Time Filtering (Weekly)
© 2023 Alfred François Tagher

AFT Strong Trend Weekly

If Friday's close is greater than last week's high then
the trend is up. If Friday's close is less than last week's
low then the trend is down.
}

inputs:
  UpColor( Green ),
  DnColor( Red );

variables:
  WeekHi( 0 ),
  WeekLo( 0 ),
  WeekCl( 0 ),
  WeekKnt( 0 ),
  PriorWeekHi( 0 ),
  PriorWeekLo( 0 ),
  PriorWeekCl( 0 ),
  Trend( 0 ),
  NumBarsUp( 0 ),
  NumBarsDn( 0 );

if (DayOfWeek(Date) < DayOfWeek(Date[1]) and
  DayOfWeek(Date[1]) <> 5) or (DayOfWeek(Date) = 5) then
begin
  {this uses Monday if there was no Friday}
  if DayOfWeek(Date) = 5 then
  begin
    Value1 = Close;
    if High > WeekHi then
      WeekHi = High;
    if Low < WeekLo then
      WeekLo = Low;
  end
  else
    Value1 = Close[1];

  {Need to check if Close exceeds prior Week}
  if Value1 > PriorWeekHi then
    Trend = 1;
  if Value1 < PriorWeekLo then
    Trend = -1;

  PriorWeekHi = WeekHi;
  PriorWeekLo = WeekLo;
  WeekKnt = WeekKnt+1;
end;

if DayOfWeek(Date) < DayOfWeek(Date[1]) then
begin
  WeekHi = High;
  WeekLo = Low;
end;

if High > WeekHi then
  
```



```
WeekHi = High;
if Low < WeekLo then
    WeekLo = Low;

if Trend <> Trend[1] then
begin
    NumBarsUp = 0;
    NumBarsDn = 0;
end;

if Trend = 1 then
    NumBarsUp += 1
else if Trend = -1 then
    NumBarsDn -= 1;
```

```
if WeekKnt > 1 then
begin
    if Trend = 1 then
        Plot1(NumBarsUp, "Week UP", UpColor);
    if Trend = -1 then
        Plot2(NumBarsDn, "Week UP", DnColor);
end;
```

Indicator: Price-Time Filtering PB (Monthly)

```
{
TASC FEB 2024
Price-Time Filtering (Monthly)
© 2023 Alfred François Tagher
```

```
AFT Strong Trend Monthly - Format as Histogram
}
```

```
inputs:
    Lkbk( 500 ),
    UpColor( Green ),
    DnColor( Magenta );
```

```
variables:
    WeekHi( 0 ),
    WeekLo( 0 ),
    WeekCI( 0 ),
    WeekKnt( 0 ),
    PriorWeekHi( 0 ),
    PriorWeekLo( 0 ),
    PriorWeekCI( 0 ),
    Trend( 0 ),
    NumBarsUp( 0 ),
    NumBarsDn( 0 ),
    Cnt( 0 ),
    Dir( 0 );
```

```
if Month(Date) <> Month(Date[1]) then
begin
    if High > WeekHi then
        WeekHi = High;
    if Low < WeekLo then
        WeekLo = Low;
```

```
if Close[1] > PriorWeekHi then
    Trend = 1;
if Close[1] < PriorWeekLo then
    Trend = -1;
```

```
PriorWeekHi = WeekHi;
PriorWeekLo = WeekLo;
WeekKnt = WeekKnt + 1;
```

end;

```
if Month(Date) <> Month(Date[1]) then
begin
    WeekHi = High;
    WeekLo = Low;
end;
```

```
if High > WeekHi then
    WeekHi = High;
if Low < WeekLo then
    WeekLo = Low ;
```

```
if WeekKnt > 1 then
begin
    NumBarsUp = MRO(Trend = 1, Lkbk, 1);
    NumBarsDn = MRO(Trend = -1, Lkbk, 1);
    Plot1(-NumBarsUp, "NumBarsDn", DnColor);
    Plot2(NumBarsDn, "NumBarsUp", UpColor);
end;
```

A sample chart is shown in Figure 2.

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

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

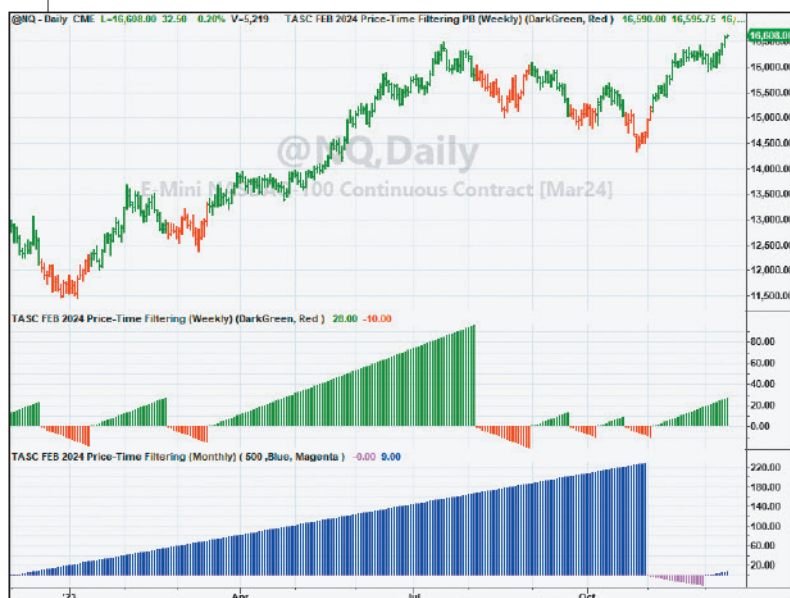


FIGURE 2: TRADESTATION. This shows a TradeStation daily chart of the NASDAQ-100 index continuous futures showing 2023 with the studies applied.



◆ WEALTH-LAB: FEBRUARY 2024 TRADERS' TIPS CODE

We've added our own rendition of the Strong-Trend indicator from Alfred François Tagher's article in this issue, "Trend Identification By Price And Time Filtering," to Wealth-Lab 8, exposing it to the gamut of tools and extensions of the software.

Wealth-Lab's ability to compress time series and bar data into higher scales simplified our coding greatly, automatically making the indicator available to any supported bar scale from intraday to yearly.

In under a minute, a quick demo system is created without any programming, buying when the ST (weekly) indicator is at its high and selling when it crosses under its signal line. The screenshot on Figure 3 illustrates the gist of composing the system using Wealth-Lab's Building Blocks feature.

Figure 4 shows the system applied to the Nasdaq 100 index.

The Nasdaq-100 has a trending nature, having not spend a lot of time in consolidations, making it a suitable candidate for this kind of trend indicator.

—Gene Geren (Eugene)
Wealth-Lab team
www.wealth-lab.com

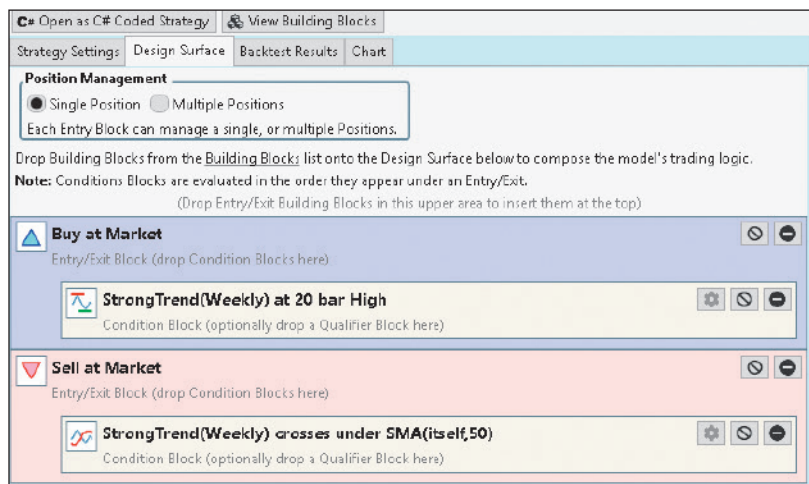


FIGURE 3: WEALTH-LAB. This shows an outline of the system's trading logic expressed with Building Blocks.



FIGURE 4: WEALTH-LAB. Here you can see the system's latest trades as applied to ^NDX, Nasdaq 100 index. Data provided by Yahoo! Finance.

MetaStock

◆ METASTOCK: FEBRUARY 2024 TRADERS' TIPS CODE

Alfred François Tagher's article in this issue, "Trend Identification By Price And Time Filtering," introduces his price-time filtering indicator. Here are three formulas you can use to add that indicator to MetaStock:

Price & Time Filter (Monthly on Daily):

```
{a monthly Price & Time Filter calculated on daily data}
{expects to be plotted on a daily chart}
new:= ROC(DayOfMonth(),1,$)<1;
mhi:= HighestSince(1, new, H);
mlo:= LowestSince(1, new, L);
up:= new AND C > Ref(mhi, -1);
dn:= new AND C < Ref(mlo, -1);
trend:= If( up, Max(1, PREV+1), If(dn, Min(-1, PREV-1),
If(new, If(PREV>0, PREV+1, PREV-1), PREV));
If(trend>0, trend, 0);
If(trend<0, trend, 0)
```

Price & Time Filter (Weekly on Daily):

```
{a weekly Price & Time Filter calculated on daily data}
{expects to be plotted on a daily chart}
fri:= DayOfWeek() = 5;
new:= ROC(DayOfWeek(),1,$)<1;
recalc:= fri OR (new AND Ref(fri=0, -1));
hi:= HighestSince(1, new, H);
lo:= LowestSince(1, new, L);
whi:= If(fri, hi, Ref(hi, -1));
wlo:= If(fri, lo, Ref(lo, -1));
up:= recalc AND C > Ref(whi, -1);
dn:= recalc AND C < Ref(wlo, -1);
trend:= If( up, Max(1, PREV+1), If(dn, Min(-1, PREV-1),
If(recalc, If(PREV>0, PREV+1, PREV-1), PREV));
If(trend>0, trend, 0);
If(trend<0, trend, 0)
```

Price & Time Filter (native):

```
{calculates the Price & Time Filter on the data interval of the chart}
up:= C > Ref(H, -1);
dn:= C < Ref(L, -1);
trend:= If( up, Max(1, PREV+1), If(dn, Min(-1, PREV-1),
```



```

If(PREV>0, PREV+1, PREV-1));
If(trend>0, trend, 0);
If(trend<0, trend, 0)

```

—William Golson
MetaStock Technical Support
www.MetaStock.com



◆ NINJATRADER: FEBRUARY 2024 TRADERS' TIPS CODE

The weekly and monthly time-price filters, which are introduced in the article “Trend Identification By Price And Time Filtering” by Alfred François Tagher in this issue, are available for download at the following link for NinjaTrader 8:

NinjaTrader 8:
ninjatrader.com/SC/February2024SCNT8.zip

Once the file is downloaded, you can import the indicator 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 indicator source code in NinjaTrader 8 by selecting the menu New → NinjaScript Editor → Indicators folder from within the control center window and selecting the “AFTStrongTrend” file.

A sample chart displaying the indicator is shown in Figure 5.

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

—Emily Christoph
NinjaTrader, LLC
www.ninjatrader.com

TradingView

◆ TRADINGVIEW: FEBRUARY 2024 TRADERS' TIPS CODE

This TradingView Pine Script code implements the price-and-time filter introduced in the article in this issue titled “Trend Identification By Price And Time Filtering” by Alfred François Tagher. The script visualizes identified trends by coloring price bars in the main chart. Additionally, it plots the trend filter in the subchart by counting the number of bars in uptrends and downtrends on the price chart.

```

// TASC Issue: February 2024 - Vol. 42, Issue 2
// Article: Trend Identification By Price
// And Time Filtering.
// Riding Sustained Price Trends.
// Article By: Alfred François Tagher

```



FIGURE 5: NINJATRADER. The AFTStrongTrendWK and AFTStrongTrendMO indicators are displayed here on a daily CL 01-24 chart from June 2023 through December 2023.

```

// Language: TradingView's Pine Script™ v5
// Provided By: PineCoders, for tradingview.com

//@version=5
string title = 'TASC 2024.01 Price-Time Filtering'
string stitle = 'PTF'
indicator(title, stitle, false)

// --- Inputs ---
string t = input.string('weekly', 'Period',
  options = ['weekly', 'monthly'])
color ColUp = input.color(color.green, 'Uptrend Color')
color ColDn = input.color(color.red, 'Downtrend Color')
bool BarCol = input.bool(true, 'Bar Color')
bool ShowTab = input.bool(true, 'Show Table')

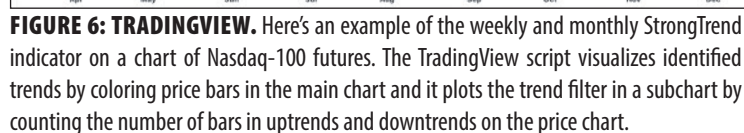
// --- Calculations ---
if not timeframe.isdaily
  string eMsg = 'Use daily timeframe for this indicator'
  runtime.error(eMsg)

bool isNewWeek = ta.change(weekofyear) != 0
bool isNewMonth = ta.change(month) != 0
bool isFriday = dayofweek == dayofweek.friday

AFTOverlay(string period = 'weekly') =>
  var float Value1 = na
  var float WeekHi = na
  var float WeekLo = na
  var int WeekKnt = na
  var float PriorWeekHi = na
  var float PriorWeekLo = na

```

```
// --- Output ---  
// Bar Coloring:  
color col = Trend>0 ? ColUp : ColDn  
barcolor(BarCol ? col : na)
```



```
// Trend Oscillator:
ph      = plot.style_histogram
int TUpCount = ta.barssince(Trend<0)
int TDnCount = ta.barssince(Trend>0)
plot(TUpCount<1?na:TUpCount, " , ColUp, 2, ph)
plot(TDnCount<1?na:TDnCount, " , ColDn, 2, ph)

// Summary Table:
var table tbl = table.new(position.top_right, 2, 3,
    color.yellow, color.navy, 1, color.white, 2)
if ShowTab and barstate.islast
    strng tFormat = t == "weekly" ? "Weeks" :
        t == "monthly" ? "Months" : "Count"
    tbl.cell(0, 0, "Up " + tFormat + ":", text_color=ColUp)
    tbl.cell(0, 1, "Down " + tFormat + ":", text_color=ColDn)
    tbl.cell(0, 2, "Total " + tFormat + ":")
    tbl.cell(1, 0, str.tostring(TUpCount), text_color=ColUp)
    tbl.cell(1, 1, str.tostring(TDnCount), text_color=ColDn)
    tbl.cell(1, 2, str.tostring(TUpCount + TDnCount))
```

—PineCoders, for TradingView
www.TradingView.com



 To implement the trend identification indicators that are described by Alfred François Tagher in his article in this issue, “Trend Identification By Price And Time Filtering,” in


```
if (IsSecondary == 10000)
{
    xVmp = xVmp + xVmp * 1.1;
    xVmp = getSeries(xVmp, 1);
    xVmp = xVmp * 1.1;
    xVmp = xVmp * 1.1;
    xVmp = xVmp * 1.1;
}
```



```
if (xVmp.GetValue(LengthVortex) == null || xVmp.TrueRange.GetValue(
    for (i = Math.Max(LengthVortex, LengthTR); i >= 0; i--)
    {
        if (i == LengthVortex)
        {
            xVmpSum += xVmp.GetValue(i);
        }
    }
}
```



NeuroShell Trader, here are the steps.

For the weekly indicator, select “new indicator” from the *insert* menu and use the indicator wizard to create the following indicators:

```
BarFlag: Friday(Date)
UpTrend: And2( BarFlag, A>B(Close, Lag(
    PriceHigh(High,5),5)))
DownTrend: And2( BarFlag, A<B(Close, Lag(
    PriceLow(Low,5),5)))
Signal: Remember2( Add2(1,0), UpTrend,
    Sub(0,1), DownTrend)
BarsSince: Add2( BarsSinceCond( A not equal
    B( Momentum(Signal,1), 0), 0), 1 )
TrendID: Mul2(Signal, BarsSince)
```

To implement the monthly trend identification indicator in NeuroShell Trader, calculate *Signal*, *BarsSince*, *TrendID* above using the *BarFlag*, *UpTrend* and *DownTrend* calculations as follows:

```
BarFlag: A<B( Momentum( DayOfMonth(Date),
    1 ), 0 )
UpTrend: And2( BarFlag, A>B(Close, Lag(
    PriceHigh(High,20),20)))
DownTrend: And2( BarFlag, A<B(Close, Lag(
    PriceLow(Low,20),20)))
```

The *BarsSince* and *remember* indicators can be found in Advanced Indicator Set 2 and 3, respectively.

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

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



◆ OPTUMA: FEBRUARY 2024 TRADERS' TIPS CODE

Here is an Optuma script formula based on the article in this issue, “Trend Identification By Price And Time Filtering,” to color the bars green for the weekly version of the filter:

```
//Get previous week's high;
H1=HIGH(Week(PERIODAMOUNT=1)[1]);
//Get previous week's low;
L1=LOW(Week(PERIODAMOUNT=1)[1]);
//Get current week's close;
C1=CLOSE(Week(PERIODAMOUNT=1));
//Use the switch function to turn on when close > previous
```

```
high until the close < previous low;
SWITCH(C1>H1, C1<L1)
```

When the above isn't true, the bars will be red by default.

Here is an Optuma script to color the bars green for the

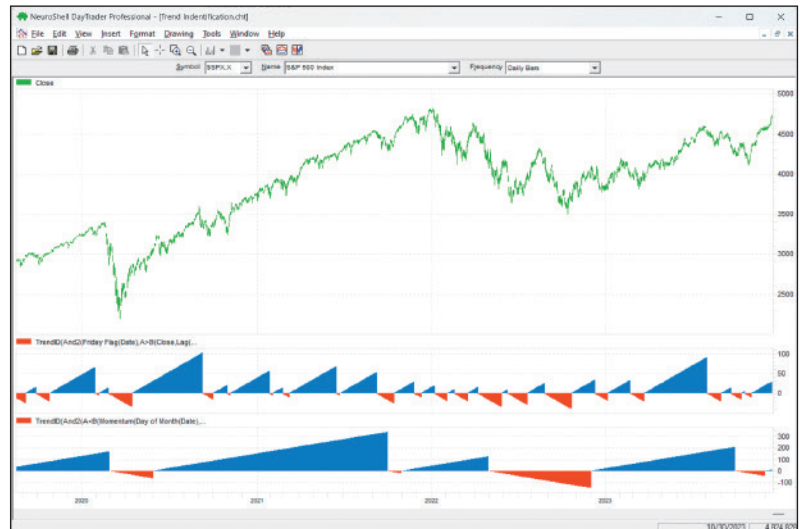


FIGURE 7: NEUROSHELL TRADER. This NeuroShell Trader chart shows the trend identification indicator on the S&P 500.



FIGURE 8: OPTUMA. This sample chart displays the weekly trend identification indicator on a chart of NASDAQ-100 emini futures.



FIGURE 9: OPTUMA. This sample chart displays the monthly trend identification indicator on a chart of crude oil futures.



monthly filter histogram:

```
//Get previous month's high;
H1=HIGH(MONTH(PERIODAMOUNT=1)[1]);
//Get previous month's low;
L1=LOW(MONTH(PERIODAMOUNT=1)[1]);
//Get current month's close;
C1=CLOSE(MONTH(PERIODAMOUNT=1));
//Use the switch function to turn on when close >
previous high until the close < previous low;
R1=SWITCH(C1>H1, C1<L1);
//Count the bars since the switch was false;
TIMESINCESIGNAL(R1==0)
```

For the red trend down histogram, change the last line to:

```
TIMESINCESIGNAL(R1==1) * -1
```

—support@optuma.com



◆ **TRADE NAVIGATOR:**
FEBRUARY 2024
TRADERS' TIPS CODE

We have created a downloadable file to make it easy to download the library based on the article in this issue, “Trend Identification By Price And Time Filtering” by Alfred François Tagher. The file name is “SC202402.”

To download it, click on Trade Navigator’s blue telephone button, select *download special file*, then erase the word “upgrade” and type in “SC202402.” Then click the *start* button. When prompted to upgrade, click the *yes* button. If prompted to close all software, click on the *continue* button. Your library will now download.

This library contains two indicators: *PriceTime Filter W* and *PriceTime Filter M*. (Figures 10 and 11 show a screenshot of the coding for these two indicators.)

There are four highlight bars:

```
PriceTime Filter W Dn
PriceTime Filter W Up
PriceTime Filter M Dn
PriceTime Filter M Up
```

(See Figures 12–15 for a screenshot of the coding for these four functions.)

It also comes with two studies, “Monthly Price-Time Filter” and “Weekly PriceTime Filter,” as well as a template named “S&C PriceTime Filter” that can be applied to your chart (see Figure 16).

Manually creating indicators

If you would like to create these indicators manually,

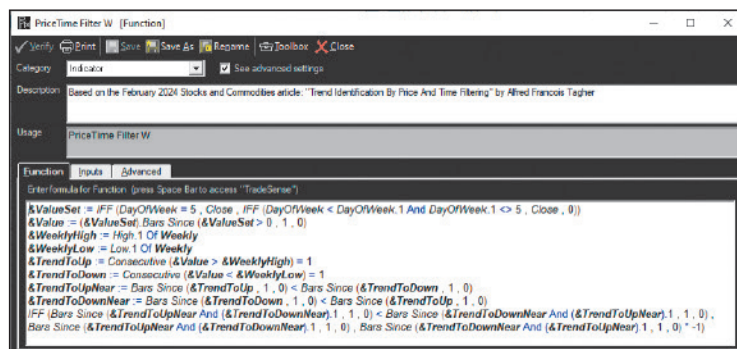


FIGURE 10: TRADE NAVIGATOR. The code shown is for the indicator named “PriceTime Filter W” for the weekly indicator.

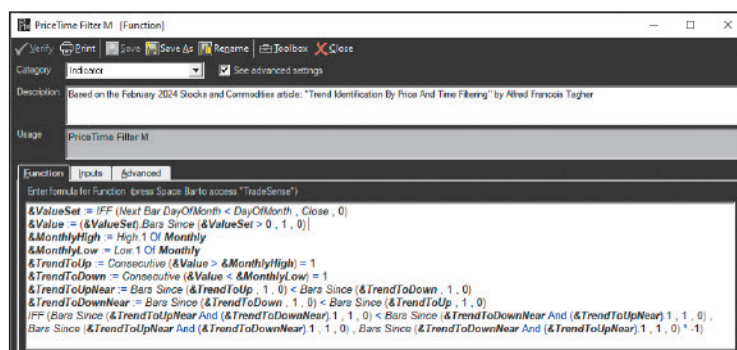


FIGURE 11: TRADE NAVIGATOR. The code shown is for the indicator named “PriceTime Filter M” for the monthly indicator.

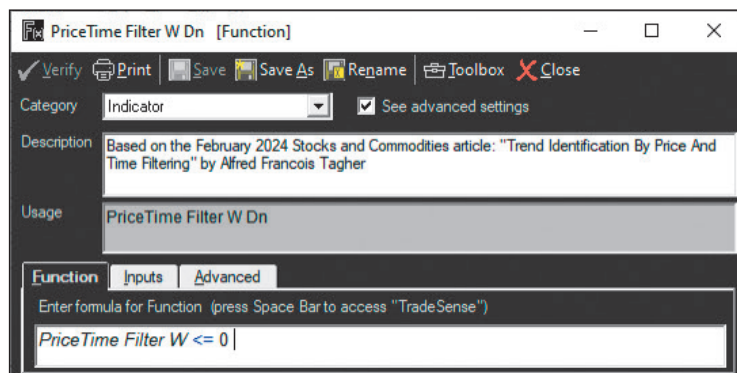


FIGURE 12: TRADE NAVIGATOR. The code shown is for the indicator named “PriceTime Filter W Dn.”

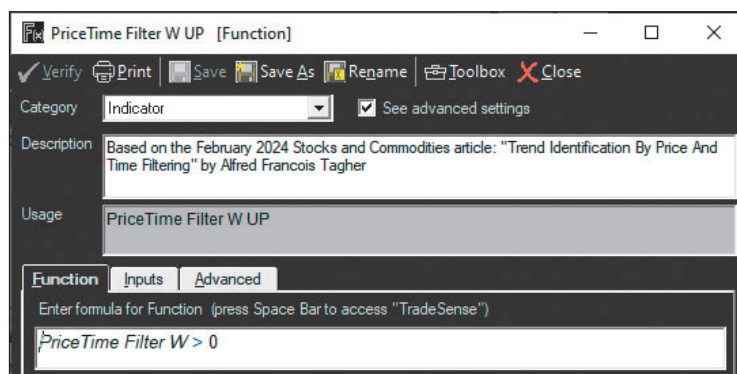


FIGURE 13: TRADE NAVIGATOR. The code shown is for the indicator named “PriceTime Filter W Up.”



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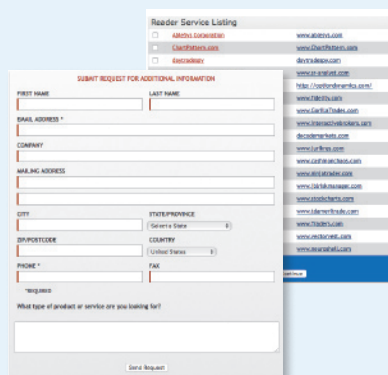
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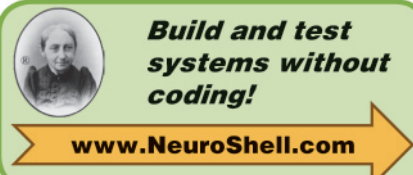
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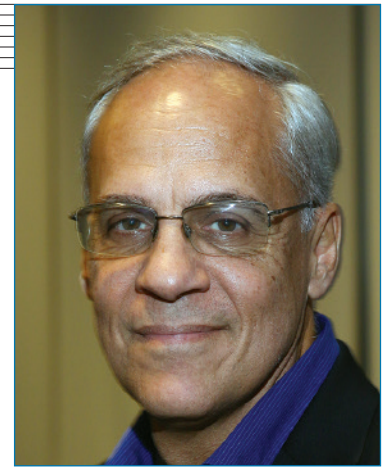
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Explore Your Options

GOT A QUESTION ABOUT OPTIONS?

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



Jay Kaeppel

FOUR-LEGGED CALENDAR SPREADS

You wrote about directional calendar spreads last month. My question is, "Is there a way to create a larger profit zone" to give the trade more upside potential and a higher probability of profit?

Last month, I discussed looking for 2-legged out-of-the-money calendar spreads using the following guidelines:

- An established uptrend in price (see last month's column for one suggested approach)
- Find the expiration month with at least 50 days left until expiration and buy the first call option with a delta less than 40.
- Sell a short call at the same strike price in the previous expiration month

This month, we will look at an alternative approach that may offer a broader profit zone and, therefore, potentially a higher probability of profit.

We will look at an alternative approach that may offer a broader profit zone and, therefore, potentially a higher probability of profit.

A 4-LEGGED MSFT EXAMPLE

As detailed in last month's column for the 2-legged example trade, on 10/16/2023 we:

- Bought the MSFT Dec15 2023 350 strike price call (delta 34.56)
- Sold the MSFT Nov17 2023 350 strike price call (delta -28.75)
- The cost to enter a 1-lot was \$295

- With MSFT trading at \$331.64, this position had a profit range of \$331.19 to \$375.36

Let's first equalize the risk to compare this position to the one we will introduce in a moment. For this original trade, we will trade a 5-lot (with a cost and maximum risk of \$1,475). The particulars and risk

Stock:	MSFT	Stock News	Quote Type	Entry	Debit	Profit	Rate of Return	Max Profit	Max Risk	Delta (Shares)	Gamma	Vega	Theta
Name:	MICROSOFT		Natural		\$1475.00	\$-150.00	-10.2%	\$3487.98	\$-1475.00	29.07	-0.879	\$80.59	\$18.43
Sector:	Computer Programming, Data Processing		Natural/S		\$295.00	\$-30.00	-10.2%	\$697.60	\$-295.00	5.81	-0.18	\$16.12	\$3.69
Dividends:	0.81	% (2023-11-15)											
100 Day SV:	23.07%												
Trader:	MSFT 23Nov17-23Dec15 350 Call												
			Downside Breakeven					Upside Breakeven					
			331.19					375.36					
										Max Profit/Max Risk			Max Profit/Cost
										241.20%			241.20%

Leg Date	Position	Run	Option Symbol	Expire	Type	Entry	Bid/Ask	Leg Profit	IV %	Vol	OI	Days	Delta %	Gamma %	Vega %IV	Theta \$/day
2023-10-16	Sold	5	MSFT231117C350	2023 Nov 17	350 Call	4.37	4.25/4.50	\$-65.00	25.7	1157	9982	32	-28.75	-1.31	-33.6	15.0
2023-10-16	Bought	5	MSFT231215C350	2023 Dec 15	350 Call	7.32	7.15/7.50	\$-85.00	24.8	567	12023	60	34.56	1.13	49.7	-11.3

FIGURE 1: TRADE PARTICULARS, 2-LEGGED CALENDAR SPREAD. Similar to the trade that was examined in last month's column, here, the same trade uses a 5-lot, with a cost and maximum risk of \$1,475. In this type of trade, one call is bought and one call is sold short, both with the same strike price, on an underlying stock in an established uptrend.

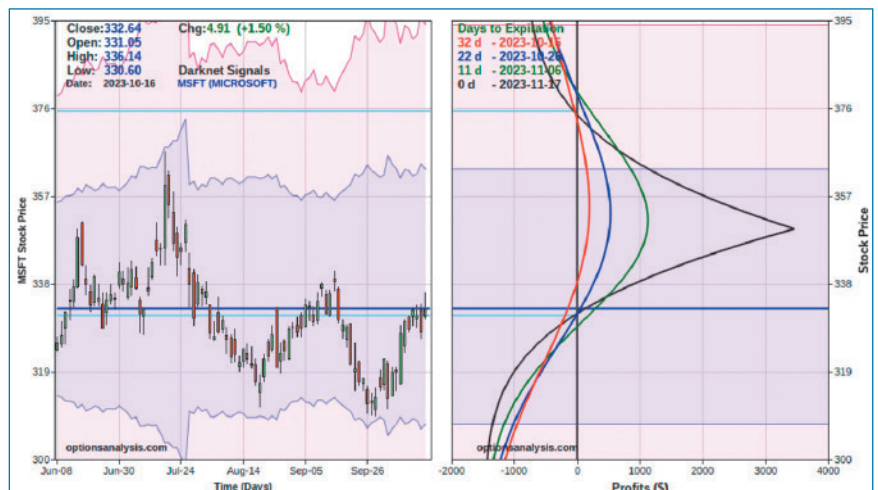


FIGURE 2: RISK CURVES, 2-LEGGED CALENDAR SPREAD. Here you see the risk curves for the trade from Figure 1. The risk curves show the expected P/L for the option position based on the price of the underlying shares as of four different dates leading up to option expiration.

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curves for this position (duplicated from last month's column, but this time trading a 5-lot) appear in Figures 1 and 2.

This month, let's look at an alternative using slightly different guidelines:

- Using options with at least 50 days left until expiration
- Buy the call option with a delta closest to 40 and the call option with a delta closest to 20
- Sell two short calls at the same strike prices in the previous expiration month

Let's again consider an example using options on MSFT. For this iteration, we:

- Buy 3 MSFT Dec15 2023 345 call @ \$9.18 (delta 40.36)
- Buy 3 MSFT Dec15 2023 365 call @ 3.40 (delta 19.50)
- Sell 3 MSFT Nov17 2023 345 call @ \$5.95
- Sell 3 MSFT Nov17 2023 365 call @ \$1.72

This example assumes that we place a limit order to buy and sell the options at the midpoint of their bid/ask range and that we could get filled at those prices. The cost and maximum risk for this position is \$1,473.

The particulars for this position appear in Figure 3, and the risk curves in Figure 4. With MSFT trading at \$332.64, this position had a profit range of \$330.81 to \$388.27.

HOW THESE POSITIONS DIFFER

The 4-legged position highlighted this month has several potential advantages over the original 2-legged position.

As long as the underlying security is within the profit range, the passage of time helps a calendar spread (due

Stock: MSFT Stock News		Quote Type: Entry Debit Profit Rate of Return Max Profit: Max Risk Delta Gamma Vega Theta									
Names: MICROSOFT											
Sector: Computer Programming, Data Processing											
Dividend: 0.81 % (2023-11-15)											
100 Day SV: 23.07%											
Trades: MSFT Double Calendar											
		Downside Breakeven		Upside Breakeven		Max Profit/Max Risk		Max Profit/Cost			
		330.81		388.27		183.93%		183.93%			

Leg Date	Position	Num	Option Symbol	Expire	Type	Entry	Bid/Ask	Leg Profit	IV %	Vol	OI	Days	Delta %	Gamma %	Vega %	Theta %/day
2023-10-16	Sold	3	MSFT231117C365	2023 Nov 17	365 Call	1.72	1.50 1.95	-\$69.00	25.3	1580	10768	32	-14.56	-0.85	-22.5	10.2
2023-10-16	Sold	3	MSFT231117C345	2023 Nov 17	345 Call	5.95	5.85 6.05	-\$30.00	26.2	517	10380	32	-35.46	-1.41	-36.6	16.7
2023-10-16	Bought	3	MSFT231215C365	2023 Dec 15	365 Call	3.4	3.25 3.55	-\$45.00	24.1	1675	6771	60	19.50	0.88	37.2	-8.0
2023-10-16	Bought	3	MSFT231215C345	2023 Dec 15	345 Call	9.18	9.05 9.30	-\$39.00	25.1	647	2545	60	40.36	1.17	52.2	-12.2

FIGURE 3: TRADE PARTICULARS, 4-LEGGED CALENDAR SPREAD. With the underlying MSFT trading at \$332.64, this position had a profit range of \$330.81 to \$388.27. The cost and maximum risk for this position is \$1,473. In this type of trade, two calls are bought and two calls are sold short.

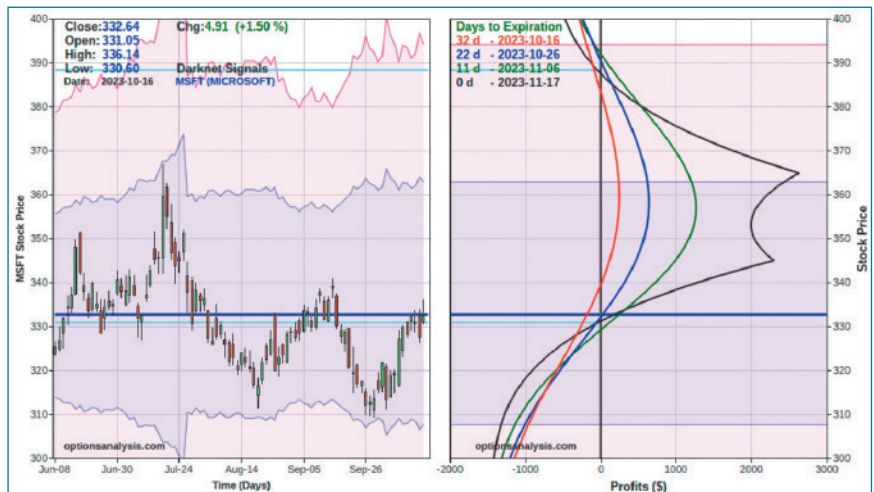


FIGURE 4: RISK CURVES, 4-LEGGED CALENDAR SPREAD. The 2-legged trade depicted in Figure 2 has a "risk curve peak price" of \$350, whereas the 4-legged position depicted here has a "risk curve peak price" of about \$355.

to the accelerated time decay of the short options). That said, once the underlying security reaches the "peak" risk curve price, the risk curves "roll over" and head back down. So, for the original trade (with a strike price of \$350), once MSFT hits \$350, exiting the position makes sense to avoid giving back gains. However, this action also eliminates the potential for further profit based on time decay.

The original trade has a "risk curve peak price" of \$350. The 4-legged position has a "risk curve peak price" of roughly \$355. This means that the holder of the more complex position can wait a little longer before feeling compelled to "shut things down." If MSFT were to hit \$350 and then trade sideways for a week, the trader

holding the 2-legged trade would likely feel compelled to exit as soon as \$350 was hit. However, under this scenario, the holder of the 4-legged trade would enjoy another week of time decay eating away at the value of the short calls.

The greek value of *vega* tells us how a one-point increase in implied volatility would affect an option position. The 4-legged example trade has a vega value of \$90.58, while the 2-legged trade has a vega value of \$80.56. If implied volatility were

The 4-legged position has several potential advantages over the 2-legged position.

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to rise significantly (which is not guaranteed), the trader holding the 4-legged trade would see the value of their position increase more than the holder of the 2-legged trade.

COMPARING POSITIONS AFTER A RALLY

By 11/7/2023, MSFT stock had rallied to \$360.53. Figure 5 displays the particulars for the 2-legged trade (the left-hand trade in Figure 5) and the 4-legged trade (the right-hand trade in Figure 5).

As long as the underlying security is within the profit range, the passage of time helps a calendar spread.

The risk curves for both trades as of 10 days left until the expiration of the short option appear in Figure 6.

Note that at this point:

- The risk curve for the 2-legged trade has already rolled over
- The 2-legged trade shows an open profit of \$500 (or 33.9%)
- The 4-legged trade risk curve is at its peak and has an open profit of \$963 (or 65.4%)

SUMMARY

There is technically no “correct” answer to which is the “better” trade. The simplicity of the 2-legged trade has an appeal to many traders. Likewise, there will likely be instances when simply taking a profit on the 2-legged trade when it hits its risk curve peak will outperform holding on a similar 4-legged trade in the hope of more time decay and/or an increase in implied volatility. That said, when choosing one trade over the other, routinely choosing trades with higher profit potential and a higher probability of profit will generally pay off over time.

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Left Trade										2-legged trade	
Quote Type	Entry (Cost)	Profit	Rate of Return	Max Profit	Max Risk	Delta (Shares)	Gamma	Vega	Theta		
Natural	\$1475.00	\$500.00	33.9%	\$696.48	\$-1475.00	-40.32	-2.989	\$112.85	\$49.76		
Natural/5	\$295 Debit	\$100.00	33.9%	\$139.30	\$-295.00	-8.06	-0.60	\$22.57	\$9.95		
Right Trade										4-legged trade	
Quote Type	Entry (Cost)	Profit	Rate of Return	Max Profit	Max Risk	Delta (Shares)	Gamma	Vega	Theta		
Natural	\$1473.00 Debit	\$963.00	65.4%	\$963.03	\$-1473.00	0.42	-4.991	\$135.96	\$54.58		
Natural/3	\$491.00	\$321.00	65.4%	\$321.01	\$-491.00	0.14	-1.66	\$45.32	\$18.19		

Left Trade													2-legged trade	
Leg Date	Position	Num	Option Symbol	Expire	Strike	Type	Entry	Bid/Ask	IV %	Vol	OI	Days		
2023-10-16	Sold	5	MSFT231117C350	2023 Nov 17	350	Call	4.37	11.9/12.65	18.9	3231	14845	10		
2023-10-16	Bought	5	MSFT231215C350	2023 Dec 15	350	Call	7.32	16.6/17	21.4	1278	11190	38		
Right Trade													4-legged trade	
Leg Date	Position	Num	Option Symbol	Expire	Strike	Type	Entry	Bid/Ask	IV %	Vol	OI	Days		
2023-10-16	Sold	3	MSFT231117C365	2023 Nov 17	365	Call	1.72	2.1/2.98	15.8	8890	15402	10		
2023-10-16	Sold	3	MSFT231117C345	2023 Nov 17	345	Call	5.95	16.25/17.1	18.2	734	10419	10		
2023-10-16	Bought	3	MSFT231215C365	2023 Dec 15	365	Call	3.4	7.65/7.75	19.5	3415	13925	38		
2023-10-16	Bought	3	MSFT231215C345	2023 Dec 15	345	Call	9.18	20.55/21	22.7	934	7977	38		

FIGURE 5: TRADE PARTICULARS, 2-LEGGED CALENDAR SPREAD VS. 4-LEGGED CALENDAR SPREAD.

Here you see the 2-legged trade (marked as the left trade) and the 4-legged trade (marked as the right trade) for comparison. By this point in time, the underlying stock MSFT stock had rallied to \$360.53.



FIGURE 6: RISK CURVES, 2-LEGGED CALENDAR SPREAD VS. 4-LEGGED CALENDAR SPREAD. Here you see the risk curves for both trades as of 10 days left until the expiration of the short option. By this point in time, the risk curve for the 2-legged trade has already rolled over, while the risk curve for the 4-legged trade is at its peak.

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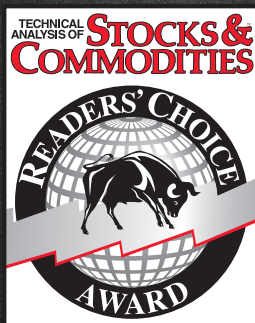
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