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JUNE 2024

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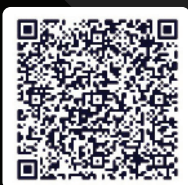
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editor@traders.com

Editor in Chief Jack K. Hutson

Production Manager Karen E. Wasserman

Graphic Designer Wayne Shaw

Webmaster Han J. Kim

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

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

OFFICE OF THE PUBLISHER

Publisher Jack K. Hutson

Industrial Engineer Jason K. Hutson

Project Engineer Sean M. Moore

ADVERTISING SALES

4757 California Ave. S.W.

Seattle, WA 98116-4499

206 660-8577 Fax 206 938-1307

advert@traders.com

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

CIRCULATION

Subscription & Order Service 1 800 832-4642

1 206 938-0570 Fax 1 206 938-1307

circ@traders.com

Subscription Manager Sean M. Moore

WEBSITE

http://www.traders.com

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

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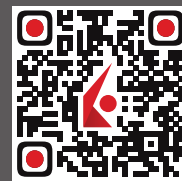
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Explore Your Options

GOT A QUESTION ABOUT OPTIONS?

Jay Kaepfel 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 Kaepfel at jay@sentimentrader.com. Selected questions will appear in a future issue of S&C.



Jay Kaepfel

BULL PUT SPREADS

I would like to sell premium on stocks I think are likely to rise or remain relatively unchanged. Are there any rules of thumb I should follow or pitfalls I should avoid?

A bull put spread is a strategy commonly used by traders who are not entirely sure that a stock will rally but are reasonably confident that the stock will not decline more than a given amount within a particular time period. The strategy typically involves selling an out-of-the-money put option and simultaneously buying another put option at a lower strike price to limit risk.

The steps detailed here represent one attempt to select bull put spreads strategically. This process should not, however, be considered

the “definitive” guide nor a “sure thing.”

We will use scanning routines built into the software at www.OptionsAnalysis.com for this process.

ESTABLISHING ENTRY CRITERIA

There is no one best way to time an entry into a bull put spread. For the sake of example, we will present one here, but no assumption should be made that this method is sure to generate profits. We will look for the following setup:

- The S&P 500 is above its 200-day moving average
- MACD oscillator crosses above the zero line

This process is an attempt to identify the potential resumption of an existing uptrend. The idea is shown in the chart in Figure 1 (courtesy of AIQ TradingExpert).

When this scenario unfolds, we will look for bull put spread opportunities.

LOOKING AT VOLUME AND BID/ASK SPREADS

Generally speaking, focusing on stocks with reasonable option trading volume is best. The greater the option volume, the tighter the bid/ask spreads. Tight bid/ask spreads are crucial to getting good fills. This is especially important when selling premium, as with a bull put credit, where your maximum profit potential is locked at the time the trade is entered.

Figure 2 displays an input screen to scan all optionable stocks and zero in on those stocks with an average bid/ask spread of 2.5% or less for options and at least 1,000 option contracts traded daily.

Figure 3 displays the output screen. Out of 5,028 scanned, 445 satisfied this criterion. We will save these 445 to a list called “My stock list.”

LOOKING FOR ABOVE-AVERAGE OPTION PREMIUM

A bull put spread is an example of “selling premium.” Our maximum profit potential is established when the trade is entered, so we want to

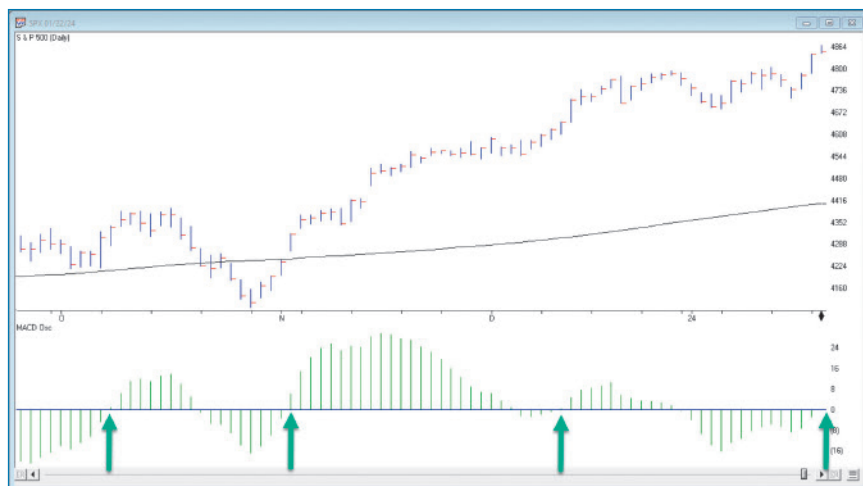


FIGURE 1: LOOKING FOR AN ENTRY OPPORTUNITY. In this example, we are seeking to time a potential entry into a bull put spread by identifying a possible resumption of an existing uptrend in the market. In this case, the example setup includes the market being above its 200-day moving average and the MACD oscillator (lower pane) crossing above its zero line.

Explore Your Options

maximize our profit potential. One way to do that is to look for stocks with high implied volatility. Remember that the higher the implied volatility, the greater the amount of time premium that is built into the options.

OptionAnalysis.com has a function that ranks current implied volatility (IV) versus its two-year range. A reading of zero means IV is at a two-year low, and a reading of 100 means IV is at a two-year high. For our purpose, we will look for stocks with an IV rating of 70 or higher. In other words, we will consider stocks whose current IV is in the highest 30% of readings in the last two years.

We will scan the stocks in “My stock list,” looking at options with 30–60 days left until expiration. The input screen appears in Figure 4, and the output screen appears in Figure 5.

In Figure 5, we see that of the 445 stocks in “My stock list,” 29 have an IV rank of 70 or higher. We will overwrite “My stock list” to include only those 29 stocks. We have a list of stocks with active option volume, reasonably tight bid/ask spreads, and relatively high implied volatility.

In reality, this guarantees nothing (since individual stocks can move the wrong way after a trade is entered), but it does put the odds on our side by putting certain factors in our favor.

SCANNING FOR BULL CALL SPREAD TRADES

Figure 6 displays certain criteria that we will use to scan for potential bull put spread trades among the 29 stocks in “My stock list.”

Let’s highlight specific criteria. Once again, note that none of these guarantees a favorable outcome; we are only putting the odds as much as possible in our favor at the time of trade entry.

FIGURE 2: SCANNING FOR OPTION VOLUME AND BID/ASK SPREAD CRITERIA. This shows an example input screen when scanning for options that display good volume and tight bid/ask spreads.

Search Output:

5028 stocks were found and the top 445 that satisfied the search are shown below.

Add the top: 445 Stocks to the list: My Stock List **ADD**

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

Rank Checked: **CLEAR** **CHECK ALL**

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

Rank	Name	Stock	Close	Stock Volume (/1000)	Open Interest (/100)	Option Volume (/10)	7-149 day ATM IV	Number of All Options	Bid Ask Spread Avg (% of Close)
1	NASDAQ-100 Index Weeklies	NDXP	17330.40	0	425	3032	15.67	13514	0.05
2	NASDAQ-100 Index	NDX	17330.40	0	996	668	16.34	5184	0.07
3	POWERSHARES QQQ	QQQ	421.73	43342	74260	194949	16.24	8122	0.13
4	Russell 2000	RUT	1983.38	0	7358	7197	19.61	8512	0.18
5	ISHARES RUSSELL 2000 INDEX	IWM	196.54	41351	92469	113785	20.70	4722	0.27
6	ISHARES BARCLAYS 20+ YEAR TREA	TLT	94.66	34611	20612	16094	15.21	3286	0.28
7	NVIDIA	NVDA	596.54	44580	24118	115317	39.69	6168	0.29
8	Booking Holdings Inc	BKNG	3506.02	449	343	749	26.17	5466	0.32
9	ISHARES DOW JONES US HOME CONS	ITB	104.35	2745	576	1941	24.27	1072	0.33
10	Meta Platforms Inc Class A	META	381.78	17456	18053	27364	40.15	3948	0.37
11	CHIPOTLE MEXICAN GRILL	CMG	2325.00	203	391	325	28.55	3844	0.43
12	MASTERCARD	MA	439.75	2715	1167	1419	20.30	1990	0.44
13	CAMECO	CCJ	46.18	4685	3447	10946	45.79	688	0.50
14	MICROSOFT	MSFT	396.51	24039	18192	32564	26.19	3010	0.50
15	ASML HOLDING	ASML	766.68	1414	551	1568	34.62	2146	0.51
16	HOME DEPOT	HD	356.69	3976	1743	1892	20.15	1640	0.52
17	AVAGO TECHNOLOGIES	AVGO	1220.50	3005	1992	7003	32.76	4050	0.55
18	Arista Networks	ANET	266.60	1442	663	830	40.51	1354	0.55
19	Airbnb Inc Class A	ABNB	142.01	4355	3015	3887	39.36	1222	0.56
20	APPLE	AAPL	193.89	59579	43796	92481	22.72	2030	0.57
21	NETFLIX	NFLX	485.71	5055	4985	11087	50.59	3880	0.57

FIGURE 3: SCAN RESULTS. After the screen from Figure 2 is performed, these option candidates resulted in this example.

A bull put spread is an example of “selling premium.”

Explore Your Options

Probability of profit: This is a mathematical calculation that weighs the theoretical probability that the stock in question will trade above the breakeven price for the option trade at the time of option expiration. We set a cutoff of 85% or more.

Stock prices $\geq$: We have arbitrarily chosen \$10 as the minimum price for the underlying stock shares.

Minimum sell bid: We want to collect at least \$50 for the option we sell.

Option volume: We want to be sure that the options we are looking to trade have some trading volume, so we set this value to 1.

Open interest: We set this value to 100 to ensure that there is a minimum level of interest in the options we wish to trade.

Days to expiration $\geq$ 14: This is an arbitrary selection.

Days to expiration $\leq$ 60: This is an arbitrary selection.

We chose 14 to 60 as a tradeoff between receiving a decent premium and not waiting forever for time decay to begin working in our favor.

Greek [deltas] $\leq$: We arbitrarily select 35 to ensure that we are selling reasonably far out-of-the-money options.

Though technically not mathematically correct, selling an option with a delta of 35 implies roughly a 65% probability that the option will expire out of the money.

SELECTING AMONG POTENTIAL TRADES

The output screen appears in Figure 7.

The goal is to obtain a solid combi-

FIGURE 4: SCANNING FOR IMPLIED VOLATILITY. Using the resulting list of candidates from Figure 3, the list is further screened for implied volatility (IV) and option expiration date. This example demonstrates looking for 30–60 days left until expiration and an IV rank of 70 or higher.

Rank	Name	Stock	State of Next Earnings	Days to Next Earnings	Close	IV 7-30 day Percentile	IV 30-60 day Percentile	IV 60-90 day Percentile	IV 90-99 day Percentile	IV >99 day Percentile	IV 7-30 day Value	IV 30-60 day Value	IV 60-90 day Value	IV 90-99 day Value	IV >99 day Value
1	Vanguard Long-Term Treasury	VGLT	Chart pic	100s	59.22	13.01	13.22	100.00	26.39	43.51	14.60	49.06	18.80		
2	Arm Holdings PLC ADRs	ARM	Chart pic	100s	2024-02-07	14	77.11	86.97	81.93	100.00	82.94	106.00	58.28	88.11	56.12
3	ENPHASE ENERGY	ENPH	Chart pic	100s	2024-02-06	15	107.15	47.81	74.71	98.98	79.53	79.67	64.81	93.18	68.16
4	ALLEN TECHNOLOGY	ALGN	Chart pic	100s	2024-01-31	9	271.61	63.62	72.31	98.16	58.98	62.42	49.67	100.00	52.83
5	WHEELPOOL	WHR	Chart pic	100s	2024-01-23	7	114.20	52.16	42.04	92.29	29.24			72.00	24.80
6	JO.com	JO	Chart pic	100s	2024-02-06	44	21.66	62.27	58.40	95.66	54.51			100.00	52.40
7	ESTEE LAUDER COS	EL	Chart pic	100s	2024-02-05	14	125.20	34.58	47.68	95.62	46.70	68.21	39.65	80.77	39.57
8	Replay Holdings Corp	REPL	Chart pic	100s	2024-02-07	16	62.74	72.74	65.84	94.67	82.21	78.76	43.67	82.10	45.40
9	ALDENARLE	ALB	Chart pic	100s	2024-02-14	23	120.75	54.94	58.02	93.21	54.16			80.63	51.39
10	Widgig Inc	WIDG	Chart pic	100s	2024-01-31	9	34.67	50.98	119.15	91.69	95.17	83.11	80.85	96.37	84.32
11	BRISTOL-MYERS SQUIBB	BMY	Chart pic	100s	2024-02-02	11	49.57	109.00	21.63	89.30	27.29	89.20	15.77	93.81	25.80
12	SUGGSBORN SOLAR	TAN	Chart pic	100s		43.56	83.15	48.99	88.15	46.25	88.63	44.83	92.08	44.90	89.29
13	VERTX	VRTX	Chart pic	100s	2024-02-08	14	440.11	86.32	31.08	88.43	31.63	62.83	27.85	60.21	27.74
14	FORTINET	FTNT	Chart pic	100s	2024-02-06	15	62.66	39.48	44.40	87.19	45.55			63.08	39.06
15	HERSHEY COMPANY	HSY	Chart pic	100s	2024-02-07	17	188.26	51.18	24.88	86.70	25.31			80.02	24.06
16	DECADE	DECO	Chart pic	100s	2024-01-30	8	137.72	85.64	26.84	84.41	33.66	77.80	33.56	61.53	31.27
17	SOUTHWEST AIRLINES	LUV	Chart pic	100s	2024-01-28	3	20.16	88.36	53.84	82.21	39.93			79.29	37.36
18	MASTEC	MITE	Chart pic	100s	2024-02-23	28	94.69	36.81	30.00	81.26	32.04	79.99	49.70	78.70	39.32
19	INTEL	INTC	Chart pic	100s	2024-01-23	3	48.22	78.84	40.00	81.11	41.34	57.58	34.68	44.32	39.08
20	On Semiconductor Corp	ON	Chart pic	100s	2024-02-05	14	75.19	67.92	53.11	80.20	46.49	43.66	43.52	35.73	43.61
21	STARBUCKS	SBUX	Chart pic	100s	2024-01-30	8	92.07	54.77	33.95	85.44	38.30	48.74	23.81	42.40	34.39
22	Delphi Automotive	DEL	Chart pic	100s	2024-01-31	9	60.00	62.71	43.43	79.81	38.29			62.82	37.20
23	ADVANCE AUTO PARTS	AA	Chart pic	100s	2024-02-08	37	65.44	25.21	48.54	75.40	58.81			83.74	54.29
24	Seagate Technology	STX	Chart pic	100s	2024-01-24	2	87.10	76.73	57.56	74.76	39.30	43.58	34.73	25.69	34.46
25	ELF Beauty Inc	ELF	Chart pic	100s	2024-02-06	15	153.86	30.68	65.99	74.25	63.80	67.17	54.57	53.66	55.56
26	ISLARM Holdings Inc	ISLM	Chart pic	100s	2024-02-08	17	73.12	33.96	77.62	73.38	79.37			70.82	72.09
27	ADVANCED MICRO DEVICES	AMD	Chart pic	100s	2024-01-30	8	160.16	57.54	57.21	73.16	49.12	40.54	45.29	50.60	46.13
28	Robinson-Matthews Inc	HOOD	Chart pic	100s	2024-02-13	22	10.99	34.83	58.62	71.87	62.55			50.88	55.33
29	PAID AUTO NETWORKS	PANW	Chart pic	100s	2024-02-05	38	245.48	35.14	35.33	71.34	41.80	63.67	57.27	59.63	56.70

FIGURE 5: SCAN RESULTS. After the screen from Figure 4 is performed, 29 option candidates resulted. This list resulted from screening for active option volume, tight bid/ask spreads, and relatively high implied volatility.

FIGURE 6: SCANNING FOR BULL CALL SPREAD TRADES. This displays example criteria that are used to scan for potential bull put spread trades from among the 29 stocks from Figure 5.

Explore Your Options

nation of a high probability of profit and decent profit potential. In Figure 7 we see many possible trades using put options on PayPal (PYPL). The fourth trade on the list has only a slightly lower probability of profit than the first trade on the list (98.86% versus 98.7%) but has a maximum profit potential of 10% versus only 7% for the first trade on the list. We will use this as our example trade.

OUR BULL PUT SPREAD EXAMPLE TRADE

For our example trade, we will assume that we sell a 10-lot using a limit order to buy and sell at the midpoint of the bid/ask spread for both options. Our trade involves:

- Selling 10 PYPL 2024 Feb 09 54 puts @ \$0.56
- Buying 10 PYPL 2024 Feb 09 51 puts @ \$0.26

The particulars for this trade appear in Figure 8 and the risk curves (that is, the expected profit/loss at a given price for PYL shares as of four dates leading up to the black expiration date line) appear in Figure 9.

With PYPL trading on 1/22/2024 at \$63.74 a share, we have a maximum profit potential of \$300, or 11.11%. The trade will show a profit as long as PYPL shares remain above the breakeven price of \$53.70 a share. The worst-case scenario is that we hold the trade until expiration when PYPL is trading at \$51 a share or lower. In this scenario, our maximum loss would be -\$2,700.

TRADE MANAGEMENT CONSIDERATIONS

Some bull put spread traders will consider closing a trade with a profit if the open profit reaches 50% to 90% of the maximum profit potential. Others will hold until expiration to collect the entire premium if the stock is

Search Name: Bull Put Credit List Searched: My Stock List Initial Sort: Probability of Profit													
Options Analysis Option Trade Search on: 2024-01-22 (Prices Delayed 15+ mins)													
Rk	Stock	Click trade below for Options Analysis	Stock Price	Cost	Prob Of Profit	Gamma	Vol	Max Profit/ Risk	Max Profit/ Cost	Expected Profit/ Risk	Bullish % to Double or Half	Bearish % to Double or Half	
1	□	PYPL Buy 1 Feb 09 2024 Put 48@ 0.15 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-39.00	98.97%	-1.30	9	7%	-100%	7%	0.00	0.00	
2	□	PYPL Buy 1 Feb 09 2024 Put 49@ 0.18 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-36.00	98.93%	-1.16	12	8%	-100%	7%	0.00	0.00	
3	□	PYPL Buy 1 Feb 09 2024 Put 50@ 0.22 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-32.00	98.90%	-1.00	33	9%	-100%	8%	0.00	0.00	
4	□	PYPL Buy 1 Feb 09 2024 Put 51@ 0.27 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-27.00	98.86%	-0.80	14	10%	-100%	9%	0.00	0.00	
5	□	PYPL Buy 1 Feb 09 2024 Put 52@ 0.36 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-18.00	98.83%	-0.54	33	10%	-100%	9%	0.00	0.00	
6	□	HSY Buy 1 Feb 16 2024 Put 165@ 0.50 Sell 1 Feb 16 2024 Put 170@ 0.70	188.26	\$-20.00	98.81%	-0.36	10	4%	-100%	4%	0.00	0.00	
7	□	PYPL Buy 1 Feb 09 2024 Put 53@ 0.46 Sell 1 Feb 09 2024 Put 54@ 0.54	63.74	\$-8.00	98.75%	-0.27	33	9%	-100%	8%	0.00	0.00	
8	□	PYPL Buy 1 Feb 09 2024 Put 48@ 0.15 Sell 1 Feb 09 2024 Put 55@ 0.60	63.74	\$-45.00	98.14%	-1.61	9	7%	-100%	6%	0.00	0.00	
9	□	PYPL Buy 1 Feb 09 2024 Put 49@ 0.18 Sell 1 Feb 09 2024 Put 55@ 0.60	63.74	\$-42.00	98.06%	-1.47	12	8%	-100%	7%	0.00	0.00	
10	□	PYPL Buy 1 Feb 09 2024 Put 50@ 0.22 Sell 1 Feb 09 2024 Put 55@ 0.60	63.74	\$-38.00	98.08%	-1.30	49	8%	-100%	7%	0.00	0.00	

FIGURE 7: SCAN RESULTS. After the screen from Figure 6 is performed, these option candidates resulted. To select from among the potential trades, *probability of profit* and *profit potential* are considered.

Stock:	PYPL Stock News	Quote Type: Entry Credit Profit Rate of Return											
Name:	Paypal Holdings Corp	Natural	\$300.00	\$-30.00	-1.1%	\$300.00	\$-2700.00	58.48	-8.351	\$-11.33	\$20.74		
Sector:	Business Services Miscellaneous	Natural/10	\$30.00	\$-3.00	-1.1%	\$30.00	\$-270.00	5.85	-0.84	\$-1.13	\$2.07		
Dividend:	0 %	Downside Breakeven		Upside Breakeven		Max Profit/Max Risk		Max Profit/Cost					
100 Day SV:	34.31%	53.70		53.70		11.11%		100.00%					
Trade:	PYPL 24Feb09 54-51 Put												

Leg Date	Position	Num	Option Symbol	Expire	Type	Entry	Bid/Ask	Leg Profit	IV %	Vol	OI	Days	Delta %	Gamma %	Vega %/IV	Theta \$/day
2024-01-22	Sold	10	PYPL240209P54	2024 Feb 09	54 Put	0.56	0.54/0.58	\$-20.00	66.2	33	291	18	11.60	-2.04	-2.8	5.1
2024-01-22	Bought	10	PYPL240209P51	2024 Feb 09	51 Put	0.26	0.25/0.27	\$-10.00	68.9	14	6172	18	-5.75	1.20	1.6	-3.0

FIGURE 8: TRADE DETAILS, BULL PUT SPREAD. This shows the particulars for the example trade.

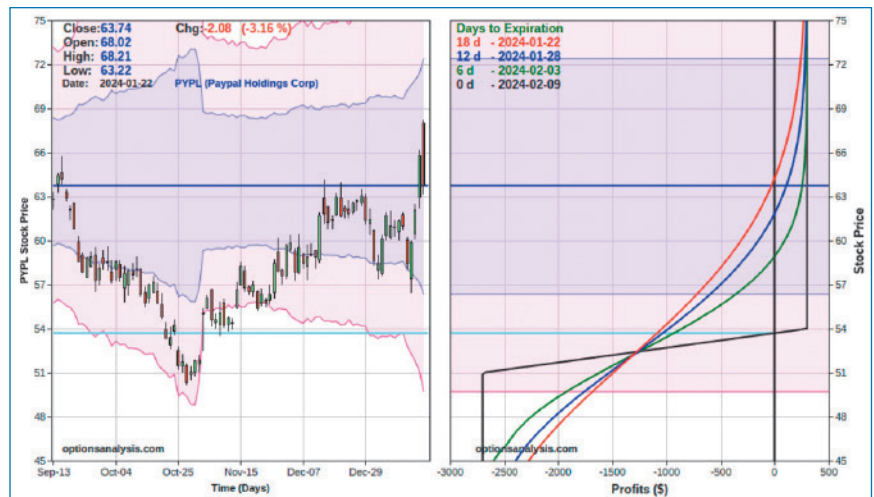


FIGURE 9: RISK CURVES, BULL PUT SPREAD. The risk curves are shown here for the trade depicted in Figure 8. Risk curves show the expected dollar gain or loss based on the price of the underlying stock as of four dates leading up to option expiration. The option expiration date is shown here as a black line.

holding up well, comfortably above breakeven.

The key to successfully trading bull put spreads is deciding what to do if the stock falls hard in price. Holding on and risking the maximum possible loss is not advised. As a result, each trader should establish a plan of action

at the time of trade entry (exit trade/adjust trade/etc.) in case things go the wrong way.

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An Approach To Real Estate Investment Trusts

Is The Price REIT?

Equity REITs were crushed during the last two years. Is it too soon to start buying? Are REITs going to recover soon or should you wait for the elusive interest rate cuts? To remove the guesswork, here is a strategy to trade REIT stocks based on their correlation with interest rates.



Investing in real estate can provide viable diversification to your portfolio. Real estate investment trust (REIT) stocks make it simpler and a REIT ETF even more diversified.

But are they good long-term investments?

Inflation and related interest rate hikes have dominated market sentiment since early 2022. This is clearly evident by the large drawdowns we've seen in interest rate-sensitive stocks like utilities and REITs.

The past two years have not been kind to REITs. From a high of \$116 at the end of 2021, the Vanguard Real Estate ETF (VNQ) tumbled 39% to \$71 in October 2023 (see Figure 1). In contrast, the S&P 500 index managed to close the year at about the same price as the 2021 peak. Most of this has been caused by rising interest rates, induced by galloping inflation in late 2021 and early 2022. But since the end of October 2023, REITs have bounced back, rising 24% until the end of 2023 and outpacing the S&P 500 by more than 8%, as the Federal Reserve's chairman hinted that they could be done with hiking interest rates.

Now, bearing in mind that the US Central Bank remains data-driven, there is no absolute certainty as to the future mon-

etary policy or the future price direction of REITs. If rates stay higher for longer, it reduces the possibility of income seekers choosing VNQ, which has a 4% yield, since risk-free investments like treasury bonds or CDs can fetch yields of 5% or higher.

In the next sections, I will present a strategy that will help you avoid any subjective decisions and which, by the way, outperformed the buy & hold passive strategy by a wide margin by trading REIT ETFs.

But first, I thought it would be useful to review some information about REITs.

ETF COMPARISON

Figure 2 provides an overview of eight popular REIT ETF properties and their performance. The table in Figure 3 shows a summary of their net industry-level exposures.

As you can see, the REIT sector is fragmented into industrial properties, data centers, cell towers, healthcare facilities, shopping malls, resort properties,



FIGURE 1: REIT ETF (VNQ), S&P 500 ETF (SPY), AND TREASURY YIELD INDEX (TNX). Here you see a weekly chart of the Vanguard Real Estate ETF (VNQ) with the SPY ETF superimposed in black, and the CBOE 10-Year Treasury Note Yield Index (TNX) in red, from July 2020 until the end of 2023. In the bottom windows, you can see the 52-week correlation with TNX (in red) and with SPY (in black), respectively. Notice that VNQ rebounded strongly one week after the yield turned down on 10/20/2023, depicted by the blue vertical line in the chart.

by Markos Katsanos

Ticker	Name	Inception Date	AUM (billions)	Expense Ratio	Average Volume – 000	Average Spread %	Dividend Yield	Total Annualized Return			
								1-Year	3-Year	5-Year	10-Year
VNQ	Vanguard Real Estate ETF	9/23/04	\$33.7	0.12%	5,315	0.01%	3.96%	11.8%	5.0%	7.3%	7.4%
RWR	SPDR Dow Jones REIT	4/23/01	\$1.4	0.25%	292	0.05%	3.75%	13.8%	6.9%	5.9%	6.7%
IYR	iShares U.S. Real Estate Index ETF	6/12/00	\$4.5	0.40%	8,487	0.01%	2.75%	11.9%	5.0%	7.0%	7.3%
SCHH	Schwab U.S. REIT ETF	1/13/11	\$6.6	0.07%	2,950	0.06%	3.24%	10.8%	6.6%	4.6%	6.1%
XLRE	Real Estate Select Sector SPDR Fund	10/7/15	\$5.8	0.10%	7,220	0.03%	3.31%	12.4%	6.6%	8.8%	–
ICF	iShares Cohen & Steers Realty Majors Fund ETF	1/29/01	\$2.2	0.33%	273	0.05%	2.76%	10.4%	5.6%	6.9%	7.8%
KBWY	Invesco KBW Premium Yield Equity RET	12/2/10	\$0.2	0.35%	74	0.10%	8.07%	12.3%	6.1%	1.9%	3.2%
FREL	Fidelity MSCI Real Estate Index ETF	2/2/15	\$1.0	0.08%	243	0.04%	3.71%	11.8%	5.0%	7.3%	–
SPY	SPDR S&P 500 ETF	1/22/93	\$494.0	0.09%	78,500	0.00%	1.42%	26.2%	9.9%	15.5%	11.9%

FIGURE 2: REIT ETFs. Comparison of eight REIT ETFs as of 12/31/2023. In the bottom line you can see, for comparison purposes, the corresponding SPY ETF statistics. In the last four columns, you can see the 1-, 3-, 5-, and 10-year total (including dividends and distributions) compound annualized performance. Data for the 10-year performance of XLRE and FREL were not available because they started trading in 2015. Sources: etf.com and official fund websites.

Sector	VNQ	RWR	IYR	SCHH	XLRE	ICF	KBWY	FREL
Retail	12.6	19.1	11.6	12.9	12.0	14.5	4.1	12.3
Industrial	12.2	18.1	13.1	14.4	12.2	10.2	6.3	12.6
Residential	12.7	18.4	13.2	15.2	12.0	18.5	4.7	13.9
Data Center REIT	9.1	11.7	8.2	8.6	12.6	12.3	0.0	8.7
Healthcare	8.1	10.7	8.2	8.3	8.0	6.1	14.8	8.3
Self Storage	6.3	9.9	7.5	7.7	4.4	10.0	3.0	6.6
Office REIT	4.3	5.8	3.8	4.3	3.0	4.1	23.9	4.5
Hotels & Resorts	2.8	4.0	1.1	2.9	1.4	1.7	6.8	2.8
Diversified	2.6	2.3	1.1	2.3	–	–	17.2	2.0
Specialized	6	–	8.4	6.8	12.1	5.0	19.2	6.4
Telecom Tower	13.7	–	13.7	13.8	15.9	17.2	–	11.6
Timber REIT	2.4	–	2.6	2.6	–	–	–	2.5
Real Estate Services	6.8	–	6.9	–	6.4	–	–	6.9
No. of holdings	163	103	77	122	33	32	31	151

FIGURE 3: REIT SECTOR ALLOCATION. Sector (industry) weight allocation of each REIT as of 12/31/2023. Sources: The Vanguard, State Street, Blackrock, Schwab, Invesco, and Fidelity websites.

self-storage facilities, distribution warehouses, and office properties, which have come under pressure in the new world of remote work.

Historical performance shows that State Street's XLRE has outperformed the other REITs during the last five years. Looking deeper, all ETFs employ a passive strategy and hold a basket of sector-diversified REITs as shown in Figure 3, but the reason for XLRE's outperformance seems to be related to its higher exposure to specialized REITs and fewer office, residential, and hotel & leisure

properties. It is precisely these sectors that have suffered during the last two years with office REITs suffering the most, as the COVID-related infection fears forced millions to work from home during the pandemic and many have continued to work remotely, thus decreasing demand for these properties. On the other hand, specialized REITs like data centers performed very well as demand for data center space has been increasing due to higher AI workloads.

Invesco's KBWY offers the highest dividend yield but this is not reflected in the overall performance. Investors should therefore focus on total returns instead of merely looking at dividend yields.

Another point to consider in choosing a REIT ETF is diversification. XLRE, ICF, and KBWY are concentrated in only 31 to 33 holdings (see Figure 3). This big bet can either

produce better or worse performance if one or two of the holdings crashes, as was the case with office REITs in the beginning of 2020 during the COVID pandemic crisis.

Sadly, for buy & hold REIT shareholders, none of the ETFs managed to beat the S&P 500, as depicted by its proxy, the SPY ETF, in the last line of Figure 2, underperforming the index by more than 5%. The REIT sector has been beaten down recently due to a higher interest rate environment, concerns about commercial real estate (mostly offices), and reversion from a strong performance

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Year	Correlation with IYR		Yearly return %		10-year yield %				CPI
	TNX	SPY	IYR	SPY	Mean	Max	Change%	Std Dev	Change%
2001	0.251	-0.051	5.1	-12.9	5.00	5.51	1.5	0.29	1.6
2002	0.735	0.63	-6.6	-23.4	4.59	5.43	24.2	0.54	2.4
2003	0.485	0.967	32.4	25.7	4.00	4.6	8.8	0.35	1.9
2004	-0.502	0.65	24.1	8.62	4.26	4.87	-1.0	0.27	3.3
2005	-0.177	0.802	4.1	3.01	4.28	4.66	4.3	0.18	3.4
2006	-0.324	0.901	30	13.7	4.79	5.25	7.2	0.24	2.5
2007	0.528	-0.202	-21.2	3.2	4.63	5.25	-14.3	0.3	4.1
2008	0.602	0.967	-43.3	-38.3	3.65	4.26	-44.4	0.45	0.1
2009	0.561	0.974	23.3	23.5	3.25	3.94	71.2	0.39	2.7
2010	-0.535	0.679	21.9	12.8	3.19	3.99	-14.0	0.47	1.5
2011	0.705	0.904	1.5	-0.2	2.76	3.73	-43.4	0.63	3
2012	-0.464	0.764	13.8	13.5	1.79	2.38	-6.2	0.2	1.7
2013	-0.814	-0.449	-2.5	29.7	2.34	3.03	72.4	0.42	1.5
2014	-0.858	0.918	21.8	11.3	2.53	3	-28.3	0.2	0.8
2015	-0.689	0.403	-2.3	-0.8	2.14	2.48	4.6	0.17	0.7
2016	-0.535	0.644	2.5	9.6	1.80	2.6	7.8	0.3	2.1
2017	-0.471	0.755	5.3	19.4	2.33	2.61	-1.7	0.1	2.1
2018	0.127	0.636	-4.5	-6.35	2.91	3.23	11.7	0.16	1.9
2019	-0.868	0.839	24.2	28.8	2.14	2.78	-28.6	0.4	2.3
2020	0.728	0.596	-8	15.1	0.88	1.88	-52.2	0.35	1.4
2021	0.244	0.976	35.6	27	1.44	1.75	64.9	0.18	7
2022	-0.876	0.922	-27.5	-19.5	2.96	4.23	156.6	0.71	6.5
2023	-0.596	0.105	8.6	24.3	3.96	4.99	-0.3	0.43	3.5
2001-23	-0.512	0.822	143	269	3.17	6.18	-21.4	1.25	78.1

FIGURE 4: CORRELATION BETWEEN A REIT ETF, TREASURY YIELDS, & SPY. Here you can see the yearly Pearson's correlation from 2001 to 2023 between the iShares Dow Jones US Real Estate Index Fund ETF (IYR), the CBOE 10-Year Treasury Yield Index Fund (TNX), and the SPY in the second and third columns. In the sixth column you see the 10-year yield yearly mean. In the seventh column is the maximum yield. In the eighth column is the yearly % change, and in the ninth column is the standard deviation (volatility). Finally, you can see the yearly % change of the Consumers Price Index (CPI) in the last column. I selected IYR to represent equity REITs here because it had the earliest inception date (and thus the most available historical data). Sources: Statistical data was created by the author using Excel and SPSS. CPI data from the US Bureau of Labor Statistics.

in 2020–2021.

STATISTICS

In the table in Figure 4 you can see the yearly correlation between IYR (iShares U.S. Real Estate ETF), TNX (CBOE 10 Year Treasury Note Yield Index), and SPY (SPDR S&P 500 ETF Trust). Looking deeper, I made the following observations:

Correlation with interest rates. The market looks at REITs as bond proxies, which means that prices move inverse to interest rates and treasury yields. The correlation with the 10-year treasury yield (TNX), however, was not always negative as expected. In fact, in six out of the 23 years from 2001 to 2023, it was significantly positive (greater

than +0.5). Notice that the years with high positive correlation (in red) were generally associated with negative or minimal returns.

Correlation with the S&P 500.

The correlation with the overall market and its proxy, the SPY ETF, was mostly positive. A notable exception was in 2013, most probably because interest rates were rising at a very fast rate at the time.

Interest rate level. Another thing I noticed is that when the 10-year yield is very low, then the interest rate direction is no longer the dominant factor in determining the REIT price direction. For example, in 2021, the IYR was up 36% despite rising yields. The average yield was only 1.4% during that period.

Rate of change. Another thing that affected REIT performance is the speed and degree by which rates were hiked by the Fed. This explains the negative returns in the last two years. In 2022 the 10-year yield increased by more than 270 basis points in 10 months from 1.5% in Janu-

ary to 4.2% in October of 2022. This has been the fastest rate-hiking since the 1980s and took REIT investors by surprise, who sold REIT stocks indiscriminately. During that time, the IYR ETF dropped 33% in 10 months or 0.12% for every 1 bps rise in yields.

Real estate investment trust (REIT) stocks make it simpler to invest in real estate and a REIT ETF is even more diversified. But are they good long-term investments?



REIT SYSTEM: TRADING RULES

Looking back at a long-term chart of the IYR ETF, I noticed that REITs have historically been particularly rewarding in the periods following market crashes or significant corrections when they were heavily discounted relative to their net asset values.

Historically, bear markets are followed, sooner or later, by bull markets, and those brave investors who bought when everyone else was selling were rewarded handsomely.

For example, after the financial crisis–related crash in 2008, REITs nearly tripled investors' money in the following two years.

In order to identify these oversold levels, I decided to use the Bollinger Band method. There was a problem, however, with this method, as REITs could stay suppressed for longer, usually during periods of rising interest rates. For example, when I applied the system to VNQ during the 2022 bear market, it produced three oversold signals that resulted in heavy losses as the ETF resumed the downtrend until the end of October 2023 when the 10-year yield peaked. Therefore, I decided to filter out these trades by adding a second condition that blocked trades during rising rates.

This filter improved the performance dramatically but reduced the number of trades as well. Looking closer at the trades on the chart I noticed that the interest rate condition blocked some profitable trades as well so I decided to add a second trend condition that identified trades that were missed by the first condition. This condition triggered trades if the ETF crossed over the 30-week upper Donchian channel, provided that interest rates were in a downtrend.

When it comes to designing any system, even though the premise is sound, backtesting can be a valuable tool in identifying any weaknesses or failures.

In this case, backtesting revealed that even though the strategy managed to outperform the passive buy & hold strategy, it suffered heavy losses and large drawdowns mainly during the 2008 financial crisis and the 2020 pandemic crash, so I decided to add a stop-loss and a trailing stop in order to preserve profits.

Thus, using the conditions described above, I came up with the following rules, which I applied to a weekly chart of the REIT ETFs.

Buy rules

- **Oversold.** I used the 15-week Bollinger Bands to identify oversold conditions. The system produced a buy signal if the weekly ETF low price crossed below the Bollinger Band bottom during the week

ETF	VNQ	IYR	RWR	ICF
Net Trading Profit	\$577,000	\$480,300	\$529,700	\$522,243
Total Profit	\$745,849	\$633,096	\$688,449	\$665,366
Total Comp. Annual Return	15.30%	14.20%	14.76%	14.53%
Total Number of Trades	9	11	11	11
Percent Profitable	100.0%	81.8%	90.9%	72.7%
Profit Factor	N/A	19.7	19.9	14.4
Avg. Win/Avg. Loss	N/A	4.4	2.0	5.4
Max Trade Loss	\$0	−\$17,380	−\$28,000	−\$21,150
Max Trade Drawdown	−\$62,200	−\$53,950	−\$67,070	−\$59,400
Max System Drawdown %	−21.0%	−21.2%	−21.8%	−21.4%
MAE	−14.5%	−13.1%	−15.5%	−15.4%
Ulcer Index	4.87	5.14	5.21	5.62
% in the market	60.8%	63.7%	61.2%	65.1%

FIGURES: REIT STRATEGY PERFORMANCE. You can see here the 15-year performance metrics for the trading strategy on four popular REIT ETFs, through 1/31/2024. In the first row, you see the net trading profits, in the second row the total profits, including dividends during the trades and interest when out of the market, and in the third row the total annualized return. The maximum trade drawdown (in the 11th line) is the largest peak-to-trough decline experienced in any single trade, the maximum adverse excursion (MAE) is the maximum amount of loss experienced by a trade from its entry point, and finally, the Ulcer index measures risk—the lower the better. It is calculated by dividing the square root of the sum of squared drawdowns by the drawdown duration (number of bars). Source (historical dividends): <https://www.nasdaq.com/market-activity/etf/spy/dividend-history>.

but managed to close above the Bollinger Band bottom and also above the midpoint of the week's trading range. Signals were only allowed if the 10-year treasury yield (TNX) was down more than 15% from the high of the last 25 weeks or the yield (TNX/10) was below 2%.

- **Trend.** The system produced a signal if the ETF crossed above the 30-week Donchian channel but only if rates peaked more than 10 weeks ago.

Sell rules

- **Trailing (chandelier) stop.** The trade was closed if the closing price fell 1.5 ATR (average true range) below the highest close of the last 5 weeks. This stop was only implemented if the yield was more than 4% or it was rising during the last 25 weeks.
- **Stop-loss.** The trade was closed if the ETF was down 8% or more below the previous week's closing price. This stop was deployed only in bear markets when the ETF was below its 30-week (or 150-day) moving average and the SPY ETF was also down by the same amount.
- **Overbought.** The trade was closed if the ETF was up more than 50% from the low of the last 100 weeks (about 2 years), the 10-week stochastic rose

ETF	VNQ	IYR	RWR	ICF	SPY	DVY
Net Trading Profit	\$185,400	\$184,300	\$181,000	\$219,700	\$491,600	\$233,800
Total Profit	\$336,051	\$312,011	\$313,453	\$339,370	\$571,421	\$358,297
Total Comp. Annual Return	10.32%	9.90%	9.92%	10.37%	13.54%	10.68%
Max Trade Drawdown	-\$153,000	-\$140,500	-\$148,700	-\$163,300	-\$148,400	-\$129,400
Max Trade Drawdown %	-42.9%	-42.3%	-44.9%	-40.2%	-34.1%	-42.0%
Ulcer Index	13.45	12.50	13.60	12.96	7.05	7.90

FIGURE 6: REIT BUY & HOLD PERFORMANCE. This shows the 15-year buy & hold performance through 1/31/2024. In the last two columns you can see, for comparison purposes, the performance of SPY ETF and the iShares Dow Jones Select Dividend Index Fund ETF (DVY). In the first row, you can see the net trading profits, in the second row the total profits including dividends, and in the third row the total annualized return (including dividends). To calculate the total annual return, I used the simple compound annual growth rate formula without reinvesting dividends.

above 90 during the last 3 weeks and the price fell more than 1.5 ATR below the highest high of the last 3 weeks.

All trades were executed next week at the open.

This is a weekly trading system, so it should be applied on a weekly chart.

If you want to code the system in your trading platform, please see the precise mathematical rules in the sidebar containing coding for the system in AmiBroker Formula Language, “REIT ETF Trading System, In AmiBroker Code.”

TESTING METHOD

For the current simulation, I used only those ETFs with 15 years or more of available historical data. Typical current discount commission rates (0.01 per share) were used throughout the test. In order to compare the system objectively with the buy & hold performance, I specified the trade size as a percent of equity.

Another comparison problem was that dividends were not accounted for in the performance. This created an unfair advantage of the trading system over buy & hold because the trader would not receive any dividends when the system was out of the market.

I decided therefore to include both trading (pure price) and total performance statistics using historical dividend data. Thus, in the second and third rows of Figures 5 and

6, you can see the total profit and the total annualized profit for the trading and buy & hold systems, respectively. In the case of the trading system, I also added the interest income when the system was out of the market so the total profit consisted of the historical dividends received during the trade and interest when out of the market. The additional historical interest income was calculated by

the program automatically using the short-term interest rate index symbol (IRX).

VERDICT

In the table in Figure 6, I compared the 15-year pure price, total return, and drawdown of four popular REIT ETFs with the S&P 500 (SPY ETF) and a high-dividend ETF (DVY) and found that the REIT ETFs vastly underperformed the SPY ETF. In addition, their performance was also marginally worse than DVY.

It looks like it is not a good idea to buy and hold REITs. But what if you trade them?

The strategy performance statistics in Figure 5 present a completely different picture.

The system managed to beat all buy & hold strategies easily, producing more than double the profits with less than half the risk, thus producing a smoother equity curve. The maximum drawdown of all buy & hold tests (except for the SPY and DVY) occurred in October of 2023 during the recent, interest rate-induced 2022–2023 bear market.

The system managed to avoid the heavy drawdowns during that period as it did not produce any trades in 2023. The last trade, at the beginning of March 2022, was closed by the trailing stop two months later with a modest profit.

The most profitable trades were in March 2009, which coincided with the end of the 2008 financial crisis, and at the end of March 2020, at the bottom of the COVID crisis.

MEDIUM-TERM OUTLOOK

I expect that REIT prices will continue to be driven by interest rates in 2024.

Lower interest rates are advantageous for REITs for two reasons: First, decreased borrowing costs benefit REITs that often rely on debt for property acquisitions and expansions. Additionally, the income generated by



History shows that REITs can rebound just as fast if not faster than they dropped when the recovery comes. But when is the right time to buy them?

REIT ETF TRADING SYSTEM, IN AMIBROKER CODE

Here, I will present a code listing for this strategy in AmiBroker Formula Language.

Before translating the strategy to another coding language, please keep in mind the following notes:

The default value of an indicator is the first number enclosed in the optimization parameters. For example, in the line `BBPERIOD=Optimize("BBPERIOD",15,15,20,5)`, the default value is 15, the optimization range is 15–20, and the increment is 5.

In calculating the correlation, I used Pearson's correlation function; in EasyLanguage, the formula is: `CORT=CoefficientR(C,TNX,20)`, and **not** `CORT=correlation(C,TNX,20)`.

There is a discrepancy in calculating the stochastic oscillator in various technical analysis software, mainly because of different methods used in smoothing the raw indicator value. So to avoid translation errors, I calculated the stochastic from first principles.

Also, there are two methods for calculating the average

true range (ATR). Some software (like AmiBroker and MetaStock) uses the original Wilder's smoothing method to calculate the average TR while others (like TradeStation and MultiCharts) use a simple moving average. To avoid translation errors, I calculated the ATR from first principles using Wilder's smoothing method, that is, $ATR(n) = \text{exponential average}(TR, 2 \cdot n - 1)$.

If you try to recreate my simulation tests with trading platforms other than AmiBroker (such as TradeStation or MultiCharts), you might notice that the first trades are missing. This is because the strategy needs to calculate all conditions before it starts producing trades. In this case, the number of bars that the strategy will reference is 100 weeks or approximately two years, so you will therefore need to load an extra two years or 17 years of data for the strategy to be able to produce all trades during the last 15 years.

Following is the code for the trading system in AmiBroker Formula Language:

```
// REIT ETF Trading System
//Copyright 2024 Markos Katsanos
//To be applied on a weekly chart of any REIT ETF

SetBacktestMode(backtestRegular);
IE=100000; // Initial equity
PosQty = 1; // Max open positions
SetOption( "MaxOpenPositions", PosQty );
SetOPTION( "INITIALEQUITY", IE );
SetPositionSize( 100, spsPercentOfEquity);
SetOption("AllowPositionShrinking", True );
SetOption("CommissionMode",3);
SetOption("CommissionAmount",.01); //$.01 per share
SetOption("MinPosValue",1000); // $1000 per trade
SetOption("MinShares",10); RoundLotSize = 1;
SetTradeDelays( 1, 1, 1, 1 );
SetOption("AllowSameBarExit", FALSE );
buyPrice = OPEN;
SELLPrice = OPEN;
BBPERIOD=Optimize("BBPERIOD",15,15,20,5); //Bollinger
//Band Period
SD=Optimize("SD",2,2,2,.5); //Bollinger Band StDev
TBARS=Optimize("TBARS",25,25,25,5); //Lookback period for
// TNX HH or LL
CL=Optimize("CL",30,30,30,5); // Donchian Channel Length
TNXPERC=Optimize("%TNXPERC",15,15,25,5); //MIN% TNX
//Change
CORMAX=Optimize("CORMAX",0.3,0.2,.3,.1); // Max correlation
//for buy signal
YLDMIN=Optimize("YLDMIN",2,2,2,.5); // Min yield (TNX/10)
ATRS=Optimize("ATRS",1.5,1.5,1.5,.5); // ATR STOP
maxlossperc=Optimize("MAXLOSSPERC",8,8,8,1); //Stop Loss

IMSEC2 = ParamStr( "Comparison Symbol2 ", "SPY" );
```

```
SPY = Foreign( IMSEC2,"C" );
IMSEC3 = ParamStr( "Comparison Symbol3 ", "TNX--X" );
TNX = Foreign( IMSEC3, "C" );
YLD=TNX/10;
STOCH=(C - LLV(L,10))/(HHV(H, 10)-LLV(L,10)+.0001)*100;
STOCH=MA(STOCH,3);
//ATR(15)
TH=Max(Ref(C,-1),H);
TL=Min(Ref(C,-1),L);TR=TH-TL;
ATR15=EMA(TR,15*2-1);
//TNX HH & LL
LLT=LLV(TNX,TBARS);HHT=HHV(TNX,TBARS);
TNXUP=(TNX-LLT)/(LLT+.001)*100;
TNXDN=(TNX-HHT)/(HHT+.001)*100;
//ETF HH & LL
LLBARS=If(BarIndex()>100,100,BarIndex());
LL=LLV(L,LLBARS);
PERCUP=(C-LL)/(LL+.001)*100;
Upper =Ref(HHV(C,CL),-1) ; // Donchian Upper Channel

//Correlations
CORT=Correlation(C,TNX,20);
CORS=Correlation(C,SPY,20); //Pearson's Correlation
BBBOT=MA(C,BBPERIOD)-SD*StDev(C,BBPERIOD);
STOP= C<MA(C,30) AND C<(1-MAXLOSSPERC/100)*HHV(C,2)
AND (SPY<(1-MAXLOSSPERC/100)*Ref(SPY,-1) OR CORS<0);

//BUY
BuyBB=(L<BBBOT AND C>BBBOT+.2*ATR15) AND
((TNXDN<TNXPERC AND CORT<CORMAX) OR YLD<YLDMIN)
AND C>(H+L)/2 AND STOP==False;
BUYTrend=C>UPPER AND SPY>MA(SPY,20)
AND ( HHVBARS(TNX,CL)>10 OR CORT>CORMAX OR
YLD<YLDMIN);
Buy=BuyBB OR BuyTrend;
```

```

//SELL
//Chandelier Sell Stop
Sell1=(TNXUP>TNXPERC OR (YLD>4 AND TNXUP>0) )
AND C<HHV(C,5)-ATRS*ATR15 AND BuyBB==False;
//Stop Loss
STOP= C<MA(C,30) AND C<(1-MAXLOSSPERC/100)*Ref(C,-1)
AND (SPY<(1-MAXLOSSPERC/100)*Ref(SPY,-1) OR CORS<0);
SELLOB=PERCUP>50 AND C<HHV(H,3)-ATRS*ATR(15) AND
HHV(STOCH,3)>90; //Sell OB
Sell=SELL1 OR SELLOB OR STOP;
SHORT = 0;Cover=0;

//PLOT
SetChartOptions( 0, chartShowArrows | chartShowDates );
Equity(1); // evaluate stops, all quotes
SetOption("EveryBarNullCheck", True );
Plot( C, "Price", colorDefault, styleCANDLE );
PlotShapes( If( SHORT, shapeDOWNTRIANGLE, 0 ), colorRED,
0, HIGH );
PlotShapes( If( COVER, shapeUParrow, 0 ), colorGrey40 ,
0,LOW );
PlotShapes( If( buy, shapeUPTRIANGLE, 0 ), colorBLUE,
0,LOW );
PlotShapes( If( sell, shapeDOWNARROW, 0 ), colorGrey40 ,
0, HIGH );
// Custom text labels displayed with PlotText
dist = 1.5*ATR(30);
dist1 = 2*ATR(30);
for( i = 0; i < BarCount; i++ )
{ if( BUY[i]==1 AND BUYBB[i]==1) PlotTextSetFont("BUY OS",
"Times New Roman", 10,
i-4, L[ i ]-dist[i], colorBlue, colorDefault, 0 );
if( BUY[i]==1 AND BUYTREND[i]==1) PlotTextSetFont("BUY
TREND", "Times New Roman", 10,
i-4, L[ i ]-dist[i], colorBlue, colorDefault, 0 );
if( Sell[i]==1 AND SELL1[i]==1 ) PlotText( "SELL TRAIL" , i,
H[i-1 ]+dist1[i],
colorGrey40 , colorDefault );
if( Sell[i]==1 AND SELLOB[i]==1 ) PlotText( "OB" , i,
H[ i-1]+dist1[i],
colorGrey40 , colorDefault );
if( Sell[i]==1 AND STOP[i]==1 ) PlotText( "STOP" , i, H[ i-1
]+dist1[i],
colorGrey40 , colorDefault );

if( SELL[i]==5 ) PlotText( "TIME EXIT" , i-3, H[i ]+dist[i],
colorBlueGrey, colorDefault );
if( SELL[i]==4 ) PlotText("TRAILING STOP",i, H[i ]+dist[i],
colorRED, colorDefault );
if( SELL[i]==3 ) PlotText( "PROFIT TARGET" , i, H[i ]+dist[i],
colorRED, colorDefault );
}
GfxSelectFont("Times New Roman", 10, 600, True );
GfxTextOut( "REIT System", 5, 17);
GfxTextOut( "Created By: Markos Katsanos", 5, 35 );
Title = Name() + " " + Date() + " Price = " + Close + " HIGH =
" + H + " LOW = " + L + " SPY = " + SPY +
" BBOT= "+BBBOT+" TNX= "+TNX+" BarIndex "+BarIndex()
+" Signal : " + Writelf( Buy, "Buy",
Writelf( Sell == 1, "Sell",
Writelf( Sell == 3, "Profit target",
Writelf( Sell == 5, "Time Exit", "None" ))));

//EXPLORATION
Filter=Buy OR Sell;
AddTextColumn( FullName(), "FullName");
AddColumn(C,"Price",1.2);
AddColumn(Volume,"Volume",1.0);
AddColumn(V/(MA(Volume,10)+1),"V/Vave",1.1);
AddColumn(YLD,"YLD",1.2);
AddColumn(L,"L",1.2);
AddColumn(BBBOT,"BBBOT",1.2);
AddColumn(BarIndex(),"BARINDEX",1);
AddColumn(CORT,"CORwTNX",1.2);
AddColumn(CORS,"CORwSPY",1.2);
AddColumn(TNXUP,"TNXUP%",1.1);
AddColumn(TNXDN,"TNXDN%",1.1);
AddColumn(HHVBars(TNX,CL),"HHVTNX",1);
AddColumn(UPPER,"UPPER CHANNEL",1.2);
AddColumn(HHV(STOCH,3),"HHVSTOCH",1.1);
AddColumn(PERCUP,"%UP",1.1);
AddColumn(ATR15,"ATR15",1.3);
AddColumn(HHV(C,5)-ATRS*ATR15,"TRAIL STOP",1.2);
AddColumn(BUYBB,"BUYBB",1);
AddColumn(BUYTREND,"BUYTREND",1);
AddColumn(SELL,"SELL",1);
AddColumn(SELL1,"SELLTRAIL",1);
AddColumn(SELLOB,"SELLOB",1);
AddColumn(STOP,"STOP",1);

```

REIT dividends becomes more attractive to investors in a low-interest-rate environment.

The last two-year period was one of the longest-lasting REIT bear markets in history and even though rates remain high and return-to-office has not returned to pre-COVID levels, I think that the sector is well positioned to outperform the market in the second half of 2024.



The past two years have not been kind to REITs.

Sector performance improved in the fourth quarter of 2023 as investors concluded that interest rates have at least leveled off. The bullish scenario, however, doesn't mean that there are no risks and that you should start buying hand over fist. REITs had a disappointing start to the year amid growing skepticism about the chance of a rate cut in the near term as the probability of a cut, implied by treasury futures, has moved lower. The Federal Reserve policy path is highly uncertain and some members expressed the opinion that keeping the benchmark rate at an elevated level might be necessary should inflation persist to stay above target.

BOTTOM LINE

History shows that REITs can rebound just as fast if not faster than they dropped when the recovery comes. But when is the right time to buy them? Rates may stay higher for longer and this would dampen investor spirits. On the other hand, if you wait until the Fed starts cutting rates, you might be leaving a lot of money on the table. In this article, I presented a trading strategy that will take the guesswork out of your investing decisions by taking into account the direction of interest rates to enter a trade during the early stages of the recovery but will also avoid large drawdowns and exit the trade during the early stages of a correction or a bear market. The backtest results indicate that this simple strategy produced substantially higher returns with less volatility and drawdown than buying and holding any REIT ETF.

You should, however, keep in mind that this was achieved with the benefit of hindsight and it is possible that the performance might not be as good in the future.

I hope you found this article helpful. If you have any questions or suggestions, don't hesitate to send me an email.

Markos Katsanos is the author of Intermarket Trading Strategies and is a STOCKS & COMMODITIES Contributing Writer. He can be reached at markos.katsanos@gmail.com or through his website at <http://mkatsanos.com>.

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

The backtest results indicate that this simple strategy produced substantially higher returns with less volatility and drawdown than buying and holding any REIT ETF.



See our **Traders' Tips** section beginning on page 44 for implementation of Markos Katsanos' technique in various technical analysis programs and trading platforms. Code found in the Traders' Tips section is also posted to Traders.com.

RESOURCES & READING

National Association of Real Estate Investment Trusts (NAREIT), <https://www.reit.com/>

Katsanos, Markos [2020]. "Buy & Hold Or Buy & Sell?" *Technical Analysis of STOCKS & COMMODITIES*, Volume 39: July.

Katsanos, Markos [2023] "Growth Or Value?" *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: December.

Katsanos, Markos [2008]. *Intermarket Trading Strategies*, John Wiley & Sons.

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TRADERS' TIPS

```
if (secondEntry == true)
{
    xMtp = eFateral(Calc, xM, 18);
    xMtp = getSeries(xMtp, 1);
    xMtp.Length = getSeries(xMtp, 2);
    xMtp.Length = true;
}
```



TRADERS' TIPS

Continued from page 48

```
And2( A>B(Divide(TNX Close,10),4),
      A>B(Mul2(Sub(Divide(TNX Close,Min(TNX
Close,25)),1,100),0))),
      A<B(Close,Sub(Max(Close,5),Mul2(1.5,ATR(High,Low,Close,15))))),
      Not(BuyBB))
```

SELLOB

```
And3( A>B(Mul2(Sub(Divide(Close,Min(Low,100)),1,100),50),
      A<B(Close,Sub(Max(High,3),Mul2(1.5,ATR(High,Low,Close,15))))),
      A>B(Max(Stoch%D(High,Low,Close,10,3),3),90))
```

To implement the trading system, select "New strategy..." from the *insert* menu and use the trading strategy wizard to create the following strategy:

BUY LONG CONDITIONS: [1 of which must be true]

BuyBB
BUYTrend

SELL LONG CONDITIONS: [1 of which must be true]

Sell1
SELLOB
STOP

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

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The Open And The Close

Trading Opening Gaps And Extreme Closes In Stocks

When large opening moves and large closing moves occur, what is the stock likely to do next?

by Perry J. Kaufman

During earnings season, when I look at my positions ahead of the stock market open, it happens that one stock has jumped 5% or 10% in my favor. Yes, sometimes the jump is the wrong way, but not as often. My habit is to take profits on the larger, favorable gap openings, or even before the open, then wait for a better place to reset the trade. I always reenter by the end of the day so I'm in line with my trading system. It makes me feel like a trader rather than a robot.

Most of the activity is in the first two hours of the trading day. Linda Raschke has said that the mornings are mean-reverting and the afternoons are trending. That's because economic reports come out before the stock market opens, and earnings are after the previous close, so the open can be volatile. Traders are position-

ing themselves for what they hope will be a profitable day. By midday, everything seems to settle down and the prices take on a more trending pattern.

At one point in time, I took profits on a jump of 10% in Boeing, only to watch it go up 20%. It never pulled back, so I didn't have a chance to reset. That bothered me, and when Sun Power (SPWR) and MasTec (MTZ) jumped the next day, I just watched while they reversed from a 5% profit on the open to a 5% loss on the close. Some days, you just can't win.

Being adept at programming, I decided to take a more scientific look at what happens. The following tables will show the results of gap opening and extreme closes from 2010 through January 2023. I've covered gap openings before but not extreme closes. Still, it's good to confirm patterns from time to time with new data. I will also separate stock prices into those above \$10 and below \$10.

I always have a portfolio of long stocks based on one of my trading systems, but any trend system will do for this example.

LEO HERDY/SHUTTERSTOCK

PRICE GAPS AND REACTIONS

Using the 425 stocks that I follow each day, I constructed a table of opening price changes, in percent, as follows:

Up under 1%	Down under 1%
Up 1% to 3%	Down 1% to 3%
Up 3% to 5%	Down 3% to 5%
Up 5% to 7%	Down 5% to 7%
Up 7% to 9%	Down 7% to 9%
Up 9% to 11%	Down 9% to 11%
Greater than 11%	Lower than 11%

The tables shown in Figures 1–4 are for *gap openings*.

- Row 2 holds the total number of days that any stock gapped opened in the range shown in row 1.
- Row 3 shows the percentage pullback from the gap opening. For example, a stock opens at a price of \$150 and has a pullback of 2.5% or \$3.75.
- Row 4 shows where that stock closed. If positive, it closed above the gap opening. If negative, it closed below the gap opening.

The tables separate the results into four groups: gaps up, gaps down, stock prices greater than \$10, and stock prices less than \$10. My experience is that stock prices under \$10 are generally more volatile.

UPWARD GAPS

First, we'll look at the upward gaps for stock prices greater than \$10. We omit stocks that have no data above \$10. If we average all 425 stocks, we get the results shown in Figure 1. It shows what we already expect. The overwhelming pattern is that most days open with a price change of less than 1%. Those days that gap higher have consistent pullbacks between 2% and 3% ("pullback" in the tables), regardless of the size of the gap. We also see that the close is at about the same price as the opening gap ("close vs. open" in the tables).

A day trader, or a position trader, looking for a better price on a volatile day can wait for a pullback, enter, and expect a profit at the end of the day.

If you are already holding a long position, you can exit on the gap opening, wait for a pullback, and reenter the trade. Keep in mind that stocks are biased upwards, so that there is a natural advantage to buying a pullback.

	GAP UP (PRICES GREATER THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
Gaps Up	2655.3	249.7	26.3	7.4	2.9	1.4	1.8
Pullback		-1.64%	-2.48%	-3.08%	-2.83%	-2.21%	-2.56%
Close vs Open		0.11%	-0.02%	-0.22%	0.21%	0.15%	0.20%

FIGURE 1: OPENING GAPS UP (STOCKS > \$10). The table shows the average results for upward gaps, pullbacks, and closes for 325 stocks priced greater than \$10 (2010–early 2023). The days that gap higher have pullbacks between 2% and 3% regardless of the gap size. The close price typically ends up being near the open gap price.

	GAP UP (PRICES LESS THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
Gaps Up	2787.8	106.8	19.3	6.2	2.7	1.2	1.9
Pullback		-2.39%	-2.65%	-2.87%	-2.73%	-2.79%	-3.08%
Close vs Open		0.38%	0.60%	0.39%	-0.70%	-0.20%	0.32%

FIGURE 2: OPENING GAPS UP (STOCKS < \$10). This table shows the average results for upward gaps, pullbacks, and closes for 380 stocks priced less than \$10 (2010 through early 2023). There are fewer cases than in Figure 1 and the pullbacks are marginally larger, but the pattern is similar to that of stocks priced over \$10.

	GAP DOWN (PRICES GREATER THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
Gaps Down	2682.6	223.3	26.1	6.9	2.9	1.1	1.8
Pullback		1.73%	2.71%	3.53%	3.91%	3.41%	5.15%
Close vs Open		0.07%	0.25%	0.11%	-0.31%	-0.15%	0.12%

FIGURE 3: OPENING GAPS DOWN (STOCKS > \$10). This table shows the average results for downward gaps, pullbacks, and closes for stocks over \$10. There are more downward gaps of less than 3%, but as the gaps get larger, the number of cases falls off sharply. The upward pullbacks are larger and prices tend to close near the original gap-down price. This is similar to what was seen with the gap-up cases in Figures 1 and 2.

	GAP DOWN (PRICES LESS THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
Gaps Down	2791.8	90.7	16.4	4.4	1.7	1.0	2.0
Pullback		2.27%	2.75%	2.87%	2.86%	2.65%	5.23%
Close vs Open		-0.19%	-0.33%	-0.30%	-0.23%	-0.11%	0.03%

FIGURE 4: OPENING GAPS DOWN (STOCKS < \$10). This table shows the average results for downward gaps, pullbacks, and closes for stocks priced less than \$10. The pattern seen here is similar to what was seen in Figure 3 for stocks over \$10.

Stocks priced under \$10

Are stocks priced under \$10 different? Figure 2 shows that there are fewer cases, and the pullbacks might be marginally larger, but the pattern is much the same as stocks priced over \$10. It's good to know that we don't need a special case, although it is not what I expected.

Those days that gap higher have consistent pullbacks between 2% and 3%, regardless of the size of the gap.



EXTREME MOVES: GAPS AND CLOSES

```
// Extreme Moves Gaps and Closes
// Copyright 2023–2024, P J Kaufman. All rights reserved. }

// Show frequency of gaps within a table of ranges: gap, pull-
// back, relative close
// Show frequency closes within a table of ranges: close, next
// open, next close

vars:   gap(0), gappb(0), gapclose(0), extremeclose(0),
found(false), ix(0), saveindex(0), x(0);

array:  thresholds[7](0), freq[7](0), gapfrequp[7](0), gapfreq-
down[7](0),
        gapup[7](0), gapdown[7](0), gapuppb[7](0), gapdown-
pb[7](0),
        gapupclose[7](0), gapdownclose[7](0), closefrequp[7](0),
closefreqdown[7](0),
        closeup[7](0), closedown[7](0), nextopenup[7](0), nex-
topendown[7](0),
        nextcloseup[7](0), nextclosedown[7](0);

once begin
x = -0.01;
  for ix = 1 to 7 begin
    x = x + 0.02;
    thresholds[ix] = x;
  end;
end;

// GAP LOGIC
gap = open/close[1] - 1;

// opening gap higher
if gap > 0 then begin
  found = false;
  for ix = 1 to 7 begin
    if found = false then begin
      if gap < thresholds[ix] then begin
        found = true;
        gapfrequp[ix] = gapfrequp[ix] + 1;
        gapup[ix] = gapup[ix] + gap;
        saveindex = ix;
      end;
    end;
  end;
  if found = false then begin
    gapfrequp[7] = gapfrequp[7] + 1;
    gapup[7] = gapup[7] + gap;
    saveindex = 7;
  end;
// pullback from gap higher
  gappb = low/open - 1;
  gapuppb[saveindex] = gapuppb[saveindex] + gappb;
// close relative to gap open
  gapclose = close/open - 1;
  gapupclose[saveindex] = gapupclose[saveindex] + gap-
close;
end;

if gap < 0 then begin
// opening gap lower
  found = false;
```

```
  for ix = 1 to 7 begin
    if found = false then begin
      if gap < 0 and absvalue(gap) < thresholds[ix]
then begin
        found = true;
        gapfreqdown[ix] = gapfreqdown[ix] + 1;
        gapdown[ix] = gapdown[ix] + gap;
        saveindex = ix;
      end;
    end;
  end;
// pullback from gap lower
  gappb = high/open - 1;
  gapdownpb[saveindex] = gapdownpb[saveindex] +
gappb;
// close relative to gap open
  gapclose = close/open - 1;
  gapdownclose[saveindex] = gapdownclose[saveindex] +
gapclose;
end;

// EXTREME CLOSE LOGIC
extremeclose = close/close[1] - 1;

// extreme close higher
if extremeclose > 0 then begin
  found = false;
  for ix = 1 to 7 begin
    if found = false then begin
      if extremeclose < thresholds[ix] then begin
        found = true;
        closefrequp[ix] = closefrequp[ix] + 1;
        closeup[ix] = closeup[ix] + extremeclose;
        saveindex = ix;
      end;
    end;
  end;
// next open and close
  nextopenup[saveindex] = nextopenup[saveindex] +
open/close[1] - 1;
  nextcloseup[saveindex] = nextcloseup[saveindex] +
close/close[1] - 1;
end;

// extreme close lower
if extremeclose < 0 then begin
  found = false;
  for ix = 1 to 7 begin
    if found = false then begin
      if absvalue(extremeclose) < thresholds[ix] then
begin
        found = true;
        closefreqdown[ix] = closefreqdown[ix] + 1;
        closedown[ix] = closedown[ix] + extreme-
close;
        saveindex = ix;
      end;
    end;
  end;
// next open and close
  nextopendown[saveindex] = nextopendown[saveindex]
+ open/close[1] - 1;
```

```

    nextclosedown[saveindex] = nextclosedown[saveindex]
+ close/close[1] - 1;
end;

// Print set-up to avoid divide by zero

if lastbaronchart then begin

// GAPS UP
print(file("c:\TradeStation\Extreme_Moves.csv"),"Range>>",
<1%, <3%, <5%, <7%, <9%, <11%, >11% ");

print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP UP",
gapfrequp[1]:6:1, "",
gapfrequp[2]:6:1, "", gapfrequp[3]:6:1, "", gapfrequp[4]:6:1,
"", gapfrequp[5]:6:1, "",
gapfrequp[6]:6:1, "", gapfrequp[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if gapfrequp[ix] <> 0 then freq[ix] = 100*gapuppb[ix]/
gapfrequp[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP UP
PULLBACK", freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if gapfrequp[ix] <> 0 then freq[ix] = 100*gapupclose[ix]/
gapfrequp[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP UP
CLOSE VS OPEN", freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);

// GAPS DOWN
print(file("c:\TradeStation\Extreme_Moves.csv"),"");
print(file("c:\TradeStation\Extreme_Moves.csv"),"Range>>",
<1%, <3%, <5%, <7%, <9%, <11%, >11% ");
print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP DOWN",
gapfreqdown[1]:6:1, "",
gapfreqdown[2]:6:1, "", gapfreqdown[3]:6:1, "", gapfreq-
down[4]:6:1, "",
gapfreqdown[5]:6:1, "", gapfreqdown[6]:6:1, "", gapfreq-
down[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if gapfreqdown[ix] <> 0 then freq[ix] =
100*gapdownpb[ix]/gapfreqdown[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP DOWN
PULLBACK", freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if gapfreqdown[ix] <> 0 then freq[ix] =
100*gapdownclose[ix]/gapfreqdown[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"GAP DOWN
CLOSE VS OPEN", freq[1]:6:1, "",

```

```

freq[2]:6:1, "", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "",
freq[6]:6:1, "", freq[7]:6:1);

// CLOSE UP
print(file("c:\TradeStation\Extreme_Moves.csv"),"");
print(file("c:\TradeStation\Extreme_Moves.csv"),"Range>>",
<1%, <3%, <5%, <7%, <9%, <11%, >11% ");
print(file("c:\TradeStation\Extreme_Moves.csv"),"CLOSE UP",
closefrequp[1]:6:1, "",
closefrequp[2]:6:1, "", closefrequp[3]:6:1, "", close-
frequp[4]:6:1, "",
closefrequp[5]:6:1, "", closefrequp[6]:6:1, "", close-
frequp[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if closefrequp[ix] <> 0 then freq[ix] =
100*nextopenup[ix]/closefrequp[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"NEXT OPEN",
freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if closefrequp[ix] <> 0 then freq[ix] =
100*nextcloseup[ix]/closefrequp[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"NEXT
CLOSE", freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);

// CLOSE DOWN
print(file("c:\TradeStation\Extreme_Moves.csv"),"");
print(file("c:\TradeStation\Extreme_Moves.csv"),"Range>>",
<1%, <3%, <5%, <7%, <9%, <11%, >11% ");
print(file("c:\TradeStation\Extreme_Moves.csv"),"CLOSE
DOWN", closefreqdown[1]:6:1, "",
closefreqdown[2]:6:1, "", closefreqdown[3]:6:1, "", close-
freqdown[4]:6:1, "",
closefreqdown[5]:6:1, "", closefreqdown[6]:6:1, "", close-
freqdown[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if closefreqdown[ix] <> 0 then freq[ix] =
100*nextopendown[ix]/closefreqdown[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"NEXT OPEN",
freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);
for ix = 1 to 7 begin
freq[ix] = 0;
if closefreqdown[ix] <> 0 then freq[ix] =
100*nextclosedown[ix]/closefreqdown[ix];
end;
print(file("c:\TradeStation\Extreme_Moves.csv"),"NEXT
CLOSE", freq[1]:6:1, "", freq[2]:6:1,
"", freq[3]:6:1, "", freq[4]:6:1, "", freq[5]:6:1, "", freq[6]:6:1, "",
freq[7]:6:1);

```

	NUMBER OF UPWARD GAPS (PRICES GREATER THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
AAPL	2938	312	23	7	5	1	0
AMZN	2958	290	18	6	5	4	5
BABA	1631	379	66	13	3	4	4
BAC	2877	372	25	7	4	1	0
NVDA	2894	328	47	8	4	3	2
TSLA	2634	401	77	29	11	6	6
WMT	3197	77	6	4	1	1	0

FIGURE 5: FREQUENCY OF GAPS UP (STOCKS > \$10). How often do upward gaps occur in actively traded stocks? Here you see the frequency of upward gaps for selected stocks.

	SIZE OF PULLBACKS FROM OPENING GAP					
Range >>>	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
AAPL	-1.26%	-1.74%	-2.36%	-2.79%	-1.55%	0.00%
AMZN	-1.60%	-2.30%	-4.15%	-2.69%	-2.41%	-3.09%
BABA	-1.54%	-2.30%	-2.33%	-4.02%	-4.51%	-4.91%
BAC	-1.26%	-2.03%	-3.23%	-3.32%	-1.14%	0.00%
NVDA	-1.91%	-2.82%	-3.80%	-1.78%	-4.12%	-0.76%
TSLA	-2.30%	-3.04%	-4.00%	-4.57%	-3.62%	-4.44%
WMT	-1.22%	-2.30%	-1.32%	-0.87%	-2.19%	0.00%

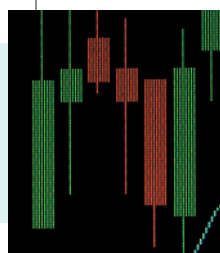
FIGURE 6: PULLBACKS FROM OPENING GAP UP. After upward opening gaps occur in actively traded stocks, how large do pullbacks tend to be? Here you see the size of pullbacks after gap openings (upward) for selected stocks.

	CLOSE RELATIVE TO THE OPENING GAP					
Range >>>	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
AAPL	0.11%	0.42%	-0.33%	-0.23%	-1.28%	0.00%
AMZN	-0.09%	-1.08%	-1.75%	0.53%	-0.16%	0.29%
BABA	-0.03%	-0.10%	-0.82%	0.06%	-1.32%	1.37%
BAC	0.11%	0.69%	1.46%	-0.97%	4.00%	0.00%
NVDA	0.00%	-0.86%	-5.57%	5.99%	1.74%	8.07%
TSLA	0.00%	-0.33%	-0.39%	-0.11%	4.39%	-0.19%
WMT	-0.49%	-1.03%	3.38%	2.58%	-2.27%	0.00%

FIGURE 7: CLOSES AFTER AN OPENING GAP UP. After an upward opening gap occurs, what tends to happen most often by the close of the trading day? Here you see the closes relative to the upward opening gap for selected stocks. A few large gaps show a large recovery from the pullback, with the stock's price ending above the opening gap level.

	CLOSE UP (PRICES GREATER THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	>11%
Higher Close	2256.0	530.2	107.7	29.6	10.8	4.4	6.0
Next Open		0.05%	0.00%	-0.14%	-0.37%	-0.75%	-0.69%
Next Close		0.04%	-0.01%	-0.17%	-0.48%	-0.79%	-0.34%

FIGURE 8: EXTREME UPWARD CLOSES (STOCKS > \$10). Here you see upward closes (for stocks priced greater than \$10). Unlike in the cases of gap openings, there isn't much follow-through after higher closes.



Most of the activity is in the first two hours of the trading day.

DOWNWARD GAPS

We know that the stock market is biased to the upside, but a large downward gap may not play out in the same way as a pullback from an upward gap. Figure 3 shows that there are twice as many downward gaps less than 3%, but as the gaps get larger, the number of cases falls off sharply.

The pullbacks are larger (a move up after a gap down) and prices tend to close at the level of the original gap down, much the same as the gap up.

For consistency, Figure 4 shows the results of the gap down for stocks priced under \$10. It has the same pattern as seen in the previous tables. Ho-hum.

SPECIFIC STOCKS

Averages can hide a lot of interesting data, so we'll look at a few stocks that have had the news spotlight on them. Figures 5, 6, and 7 show the frequency of upward gaps, the size of the pullback, and the close relative to the opening gap. As you would expect, some are more active, others are average.

The most interesting numbers are the few large gaps that show a huge recovery from the pullback (Figure 7), ending above the opening gap.

EXTREME CLOSES IN STOCKS

An extreme close in a stock is similar to a wide-ranging day on a bar chart or a candle. Thomas Bulkowski has an analysis of this pattern in *The Encyclopedia of Candlestick Charts* as well as his previous book, *The Encyclopedia of Chart Patterns*. But here we'll look at it again using data starting in 2010.

Results are different from the gap openings. There are a few more events, but there is no follow-through after higher closes (Figure 8). We might expect something different because the data includes all of the 10-year bull market. It shows that stocks are, on average, noisy.

Prices that close lower are more interesting because they all show a reversal on the following day, that is, there is no follow-through but rather a confirmation of the upward bias in stocks (Figure 9). It could also be that traders like to buy dips.

Extreme close for stocks priced under \$10

While we did not find anything interesting in the gap tables for stocks under \$10, these extreme closes are

different. Figure 10 shows that there is consistent follow-through for lower-priced stocks at all levels of upward closes.

Similarly, low-priced stocks also show the pattern of closing higher after a lower close. Perhaps it is just the upward bias of the stock market, but it seems to affect the lower-priced stocks more than those over \$10 (Figure 11).

SUMMARY

To summarize, gap openings of any size, whether upward or downward, tend to reverse by a similar amount and close near the price of the gap opening.

Extreme upward closes for stocks priced over \$10 have no noticeable follow-through and tend to reverse the next day. But stocks under \$10 have significant reversals to the upside after a lower close.

While the tables presented in this article show averages, they can give you a good idea of what to expect from large opening moves as well as large closing moves. In general, you can count on the upward bias of the stock market to resolve these patterns with a higher-price follow-through.

The sidebar “Extreme Moves: Gaps and Closes” presents coding in EasyLanguage that will create tables for one stock at a time.

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.

FURTHER READING

Kaufman, Perry J. [2022]. *Learn To Trade*, Amazon.
 — [2020]. *Trading Systems and Methods*, 6th Edi-

	CLOSE DOWN (PRICES GREATER THAN \$10)						
Range >>>	0 to -1%	-1% to -3%	-3% to -5%	-5% to -7%	-7% to -9%	-9% to -11%	> -11%
Lower Close	2323.4	471.5	103.7	28.2	9.8	3.8	4.3
Next Open		0.05%	-0.01%	-0.01%	0.31%	0.53%	1.16%
Next Close		0.06%	0.02%	0.06%	0.64%	1.17%	2.34%

FIGURE 9: EXTREME DOWNWARD CLOSES (STOCKS > \$10). Here you see downward closes (for stocks priced above \$10). Stocks that closed lower tended to reverse the next day and head up rather than continue down in the direction of the downward extreme close.

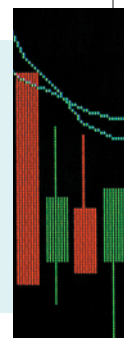
	CLOSE UP (PRICES LESS THAN \$10)						
Range >>>	< 1%	1-3%	3-5%	5-7%	7-9%	9-11%	> 11%
Close UP	2695.6	137.2	48.8	18.5	8.9	4.3	6.9
Next Open		0.25%	0.11%	0.16%	0.38%	0.37%	0.14%
Next Close		0.31%	0.11%	0.31%	0.36%	0.56%	0.44%

FIGURE 10: EXTREME UPWARD CLOSES (STOCKS < \$10). Here you see upward closes (for stocks priced under \$10). Unlike in the cases of downward closes in higher-priced stocks in Figure 9, for lower-priced stocks there is follow-through at all levels of upward closes.

	CLOSE DOWN (PRICES LESS THAN \$10)						
Range >>>	0 to -1%	-1% to -3%	-3% to -5%	-5% to -7%	-7% to -9%	-9% to -11%	> -11%
Close Down	2682.7	143.2	53.0	20.5	8.6	3.8	5.6
Next Open		0.28%	0.12%	0.05%	0.26%	0.34%	1.15%
Next Close		0.40%	0.30%	0.07%	0.37%	0.46%	1.80%

FIGURE 11: EXTREME DOWNWARD CLOSES (STOCKS < \$10). Here you see downward closes (for stocks priced under \$10). Similar to the pattern seen in Figure 9 with higher-priced stocks, the lower-priced stocks also show the pattern of closing higher after a lower close. Sometimes significant reversals to the upside are seen following a lower close.

Gap openings of any size, whether upward or downward, tend to reverse by a similar amount and close near the price of the gap opening.



tion, Wiley.

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

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An Overview For Traders

Writing Covered Calls

Part 1: Examining Your Choices

In the last series, we provided an introduction to trading options and what this type of instrument is all about. Here, we dive into strategies for option trading by explaining a straightforward, lower-risk type of option trade you can make: the covered call.

by John Devcic



my recent three-part article in this magazine, I wrote about the basics of trading options and offered an overview of how to trade them, along with some examples. This time, as a follow-up, I wanted to take an in-depth look at an approach to trading options.

There are so many different ways to use options that, for this article, I thought it best to go with what is often called the easiest option strategy a trader could employ: the *covered call write* (or CCW for short).

To trade a CCW, you normally won't need brokerage approval to trade options beyond tier 1. (If you need a review of the option trading tiers typically used at brokerage firms for trading options, you can refer to my

earlier article, "Introduction To Options, part 3.") The reason you don't need specific approval from your broker to trade CCWs is because when you trade a CCW, you already own the underlying stock (hence the name *covered call*). Tier 1 option approval is usually little more than acknowledging the risks associated with option trading. Before you begin trading options, I highly suggest you take the time to read about the risks in the information your broker will provide (which may be sent to you electronically as a PDF file). To obtain the information, you can place a call to your broker or brokerage firm and tell them you're interested in writing covered calls.

COVERED CALLS

Open up any introductory book on option trading or watch any introductory video on options and you will find a discussion of trading the covered call, and usually not in any great detail. The CCW is basically "options trading 101." Covered call writing is easy in theory—and I sincerely mean the theory behind it is very easy to follow. Even so, trading them is not so easy to master. In fact, they can be as difficult to master as more complex

option strategies.

An introductory course always starts off with a brief introduction, so I'll start with that. A CCW is simply selling—*writing*—an option on at least 100 shares of a stock that you already own in your brokerage account. That's it! I told you it was simple, and really, the mechanics are just that easy to follow. Of course, in life, "easy" does not always actually mean easy, and that is indeed the case with the CCW.

So the first question to consider when writing covered calls is: What strike do you choose?

Strike price

The *strike price* is critical to all option trading and probably even more so when it comes to the CCW. There are a few reasons for that. Let's start with the most obvious one: the *cost basis*, or what you paid for your long stock. Your cost basis can immediately tell you if your stock is going up or down. A strike price that is lower than the purchase price (cost basis) of your long stock means that if your option is called, you may garner a loss.

Using the fictional stock "XYZ" in an example, suppose that earlier we purchased 100 shares of XYZ stock for \$50 a share. We look at the current price and see it is now selling for \$49 a share. That means we are down \$1 a share, or down by \$100 since we own 100 shares. The next step is to look at the *option chain*. For now, I am going to ignore time and instead just focus on the difference between the strike price and stock price.

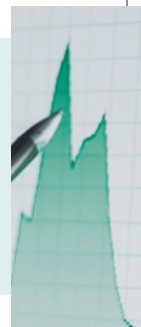
In the option chain, which is a matrix of available options to trade and the particulars for each, we can view the different price levels available for the options. We can choose to sell a call at 49, which is the current stock price but it's below our cost basis. We can choose to sell a call at the 50 level, which equals our cost basis and would mean generally no loss. Or we could go a strike higher, the 51 level—this is above our cost basis and would garner a \$100 win (minus any costs associated with the trade). The first example at 49 is selling a call *at-the-money* (ATM). That means the option strike price is equal to the stock price. The other two examples would both be considered *out-of-the-money* (OTM) call options.

Those are the basics of looking at the available strike prices for an option in comparison to what we paid for our long stock, or our cost basis. However, after we add the element of *time* back in to our scenario, everything changes. So how would time affect our call option?

Time

Keep in mind that options have two important components: price and time. We just discussed the first one, the

A covered call write is simply selling—writing—an option on at least 100 shares of a stock that you already own in your brokerage account.



strike price. The second one is time: *How long into the future are you willing to wait?*

You can choose to wait a day, a week, a month, maybe 45 days, maybe even longer. That's entirely up to you as the option writer. This is where things get complicated and can often make it difficult for the CC writer to choose the right strike price for the option. The longer out in time you go, two things happen. The first is you will receive more *premium* (what you get paid when you sell a call option). The second is you give yourself more time for the underlying stock to come back to or trade above your cost basis.

So you can begin to see that the strike price and the time component are strongly linked, and both price and time must be factored into your goals when you go to write a call option.

BENEFITS OF WRITING COVERED CALLS

Before moving on, we need to answer a question most new option traders ask: Why would I want to consider selling a call option on a stock?

(To review, a *call option* gives the buyer the right but not the obligation to buy the underlying stock at the option's strike price.)

On the surface, as a call option seller, you may think you would not want to sell your XYZ stock at the \$49 price nor would you want to sell it at \$50. You may consider selling XYZ at \$51. However, when you add in the last component to the equation—the *premium*—your goal could change. The premium can dictate a lot. The premium is instant cash that is deposited into your account. If you sell an at-the-money option, that premium will be higher compared to the out-of-the-money call option.

I'll illustrate this further by adding time and premium into our example. Say we choose to sell a month-out call. The premium for the option writer in this example is 1.25. We choose to sell the call option on XYZ stock at the \$49 price level, and in return, we receive 1.25 a share, or \$125. That \$125 is immediately deposited in our account.

If XYZ stock goes nowhere for the next 30 days and



Many option writers will sell calls serially to continually receive income from premiums.

closes on expiration Friday at \$49, we will be paid \$49 a share. But if you factor in the premium you already received for selling the call, you are actually selling the stock for \$50.25 a share. In this case, our stock actually made us money even though it traded flat for the last 30 days.

Now let's consider the two other ways this trade could have played out during that same 30 days. Suppose over the next 30 days the stock trades *above* your call's strike price and potentially above your cost basis. Recall that we sold our covered call at the 49 strike price for a premium of \$1.25 a share. If XYZ trades above \$49 (regardless of how much above), then the most you will receive is \$50.25 per share. Your profit is capped at the strike price plus the premium you received. (There are some ways around this, which I will address a little later.)

Now suppose that XYZ stock trades *down* over the 30 days and closes at \$48 on expiration Friday. In many ways, this is the situation you want—you're looking for the stock to close *below* the strike price. In this scenario, you keep the premium and also keep your long stock (since the trader who bought your call 30 days ago would not want to buy—that is, *call*—the stock at a strike price that is *higher* than the current stock price; and in fact, some brokerages will exercise or not exercise the option automatically according to whether the option is in-the-money or out-of-the-money).

Accounting-wise, CC writers can use the premium received to lower their cost basis of their long stock. But be aware that your brokerage generally will not use the premium to lower your cost basis unless you use your premium to buy more shares. Thus, some CC writers will choose to use that \$125 premium to purchase more shares of XYZ stock.

Putting numbers to it, here's a summary of what occurred in the above scenario and how you benefited. This scenario is typical of what most CC writers look to do with their CCW trades.

- You bought the stock at \$50 a share; a round lot of 100 shares cost you \$5,000.
- You then sold a call on the same stock at the \$49 strike price. The stock price proceeded to fall

below \$49, closing at \$48 a month later on option expiration Friday.

- Your long stock is now worth \$4,800.
- Once you deduct the \$1.25 premium you received for selling the call from your \$50-per-share cost basis, your new cost basis is \$48.75.
- Since the stock is selling for \$48, taking into account the premium you received, now you are only down \$75 on your long stock instead of being down \$100.

At that point, you could choose to write another CCW on XYZ stock for another 30 days if you wish. (Many option writers will sell calls serially in this way to continually receive income from premiums.)

THE TIME COMPONENT: OPTION EXPIRATION

There are many schools of thought when it comes to choosing a strike price and expiration date for an option contract. It's always important to analyze the time portion, or how far into the future you are going to go.

Note that not all listed securities offer a weekly expiration date; some only offer monthly expirations. When you look at an option chain on your trading platform or brokerage website, you may see the designation "(w)" next to the date; that signifies it is a weekly option. The monthly-only options will usually have better bid/ask spreads.

In the earlier example using XYZ stock, we chose to do a 30-day-out option expiration date. We could choose a shorter timeframe and the result would be less premium, since the option will expire sooner. A longer timeframe would generally mean a higher premium. I want to mention here that a lot of newer option traders who sell covered calls often only choose the shortest timeframe. But keep in mind that stocks do not go up in a straight line. Selling a call further into the future can often become beneficial. In a 30- or 45-day timeframe—that is, a longer timeframe—your stock could see prices of \$52, \$50, or it could fall to \$47.

So if XYZ stock is now trading *higher* than the strike price, how does this affect you as the call writer? If your stock is trading higher, in this case at \$52, you don't need to panic; you should focus on the amount of time left in the trade and wait it out.

On the other hand, if you see your stock trading *lower*, at \$47, well, in that case, your option premium will go down and you can choose to close the call and buy it back. In our example, we sold for a \$1.25 premium. Depending on the time left till expiration, the cost to buy it back could be 0.50. You had received 1.25 a share and now to

buy it back, that option will cost you 0.50, or \$50. That's a \$75 profit without holding till expiration and without losing money. (Remember, you are not obligated to hold the call you wrote till expiration. You can choose to buy back the call at any time.)

As you begin to trade more CCs, you will likely find that it is often advantageous to place a standing buy order for something like 50% or more of a profit. The closer to expiration it gets and the farther away from the strike price the stock is trading, you are either looking at closing the trade early or holding on. Of course, these are not the only two choices you are left with; you can employ other strategies to protect your stock position. I'll look at that next.

PROTECTING YOUR STOCK POSITION IF THE STOCK PRICE RISES

Let's return to the scenario where the stock price is *above* our strike price. If the stock price is above the strike price on expiration day, your underlying stock will be called away at expiration (since the holder of your call will want to purchase the stock at the strike price rather than at the higher current stock price). Say it's coming into expiration Friday. (And here's a word of caution: Be careful on expiration Friday or on expiration day; some brokerages will close your trade early, especially if it is in-the-money.) If XYZ has gone up to \$51, we know the stock will be called away from us and we won't see the upside from our cost basis of \$50 plus our \$125 premium. What are the choices we have in this situation? We could choose to leave it alone and let the shares be called away from us and in their place we will receive \$5,025 in our account (49 strike price plus 1.25 premium = 50.25×100).

If you prefer not to lose your underlying stock at that point, there are some strategies you can employ.

Rolling the option

One choice you have is called *rolling forward*. You will also hear the term *rolling out*. This refers to a trade with two components: a buy and a sell. Here's how it works.

If we *roll* the trade, we buy back the option and sell another one 30 days into the future at our \$49 strike price. For the roll, we will receive more premium and therefore more cash instantly deposited into our account. This new option position ensures that we keep our long stock for now and in the meantime we may be able to close the sold call and keep the bulk of the premium we received.

Rolling is a fairly common practice and almost all brokerage firms offer an easy way to roll forward.

Options have two important components: price and time.



There's another type of roll called the *up-and-out roll*. The up-and-out roll is also simple: You buy back the current sold call and you sell another call in the future but no longer at the strike price (in our example, that was the 49 strike); instead, you can roll *up* in price. Depending on how far up you choose to roll, you will receive less premium and you could also end up with a debit to pay instead of having a credit.

When it comes to rolling, do it as early as you can. There are a number of very good reasons why. The first is because you could get called early, especially around any earnings or ex-dividend dates. Be mindful of these dates because the trader holding your call can call it early, especially if the stock is well above the strike price. The next reason is that time is a benefit for the options writer, and that time is decaying daily. This constant decay affects the call option you sold. The closer to expiration, the more the decay will impact the price of the option.

To illustrate, I'll continue with our example of the \$49 strike price. When XYZ was selling for \$52, say we chose to roll it. We chose to roll *up and out* and bought back the 49 strike and replaced it with a 50 strike. A month later, we find that XYZ is now 50.50 per share with a couple of weeks left till option expiration. In this case, the 50 strike is now selling for less compared to what we sold it for and allowing us to buy it back with a nice profit. You could continue to roll up and out or just roll out continually.

Buying a new call with the same expiration date but a higher strike price

If you think rolling is complicated and requires too much effort, you have another way to protect from any potential loss in appreciation: You can sell the call on the stock you own as usual, then, you go into the option chain and buy a call with the same expiration date but this time you choose a higher strike price. If the stock does indeed go past your strike price, you are now going to see an appreciation in the call you bought.

Try to keep the call you buy fairly close to the current strike price. While this will cost you more to purchase, it also will gain the maximum amount of appreciation if the

Continued on page 43



Identifying Entry And Exit Levels

Developing A Trend-Following Strategy For Futures Based On Price Channels

Which futures markets work well with using price channels to identify entries and exits? Here's a test to find out using an example trend-following strategy.

by Andrea Unger



he *price channel* is a well-known technical analysis technique also known as the *Donchian channel*. This indicator is characterized by two parallel bands, an upper and a lower one, that are plotted on a chart to encompass prices as if they were inside a channel. See

Figure 1 for an example.

For the price channel, the two lines forming the band are obtained by joining the highest values of the highs and the lowest values of the lows of the last *n* bars. Besides being easy to understand and use, the price channel's versatility supports various trading strategies.

For instance, we could use it in a trend-following strategy by buying at the channel's upper limit or selling at its lower limit to capitalize on trend continuation. Or alternatively, we could use it in a reversal strategy, selling near the channel's top and buying near its bottom, anticipating price direction changes after a bullish or bearish excess in the short term.

LOGIC OF A TREND-FOLLOWING STRATEGY USING THE PRICE CHANNEL

In this article, we will study the behavior of price channels within a trend-following strategy to check which markets actually offer the best performance. To do this, we will test it on a wide basket of futures ranging from equity indexes and commodities to currencies.

We will use a simple strategy that we will apply on a 60-minute timeframe with backtesting from 2010 to the end of 2023.

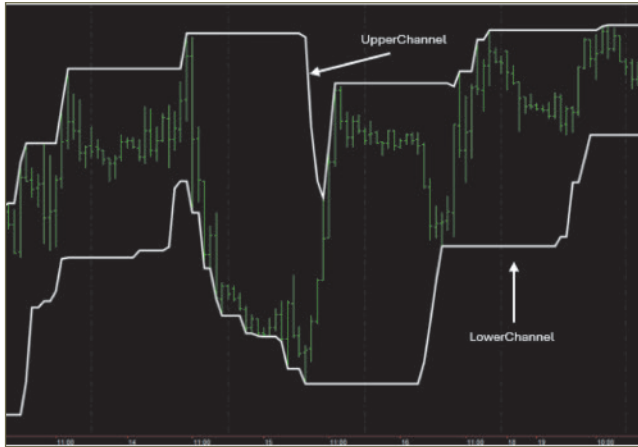


FIGURE 1: PRICE CHANNEL EXAMPLE. A price channel is a band plotted on a price chart that encompasses or envelopes prices. The price channel is calculated based on highest highs and lowest lows in a lookback period.

Net Profit	Total Trades	% Profitable	Max Intraday Drawdown	MyLength (UA_Tasc Price Channel)
1.878.672,43	69.308	44,92 %	-304.123,03	10
2.361.132,80	50.504	39,98 %	-232.837,73	20
2.092.246,70	34.945	38,26 %	-256.485,23	30
2.206.153,85	28.061	38,36 %	-195.299,60	40
1.541.596,00	22.122	37,54 %	-245.476,68	50
1.050.676,83	19.033	37,24 %	-278.885,48	60
844.344,33	16.182	36,89 %	-297.348,33	70
792.327,68	14.257	36,63 %	-321.727,28	80
831.197,60	12.689	36,89 %	-306.616,83	90
1.037.717,30	11.247	36,85 %	-258.331,60	100

FIGURE 2: OPTIMIZING THE LOOKBACK PERIOD FOR CALCULATING THE CHANNEL. This test seeks to optimize the “MyLength” input to choose the number of periods for calculating the price channel. Here, increments of 10, from 10 to 100 periods, are used. The test results suggest that setting the number of periods between 20 and 40 produces the best net profit values in this test case.

Here is the code for this system. We created two variables (*upper channel* and *lower channel*) that identify respectively the upper and lower limit of the Donchian channel, and an input (*MyLength*), where we determine the period to calculate the highs and lows of the channel.

```
inputs: MyLength(0);
var: UpperChannel(0), LowerChannel(0);

UpperChannel = HighestFC(h, MyLength);
LowerChannel = LowestFC(l, MyLength);

if EntriesToday(d)=0 then begin
    buy next bar UpperChannel stop;
    sellshort next bar LowerChannel stop;
end;
setstopcontract;
```

The rules are simple and consist of buying at the upper

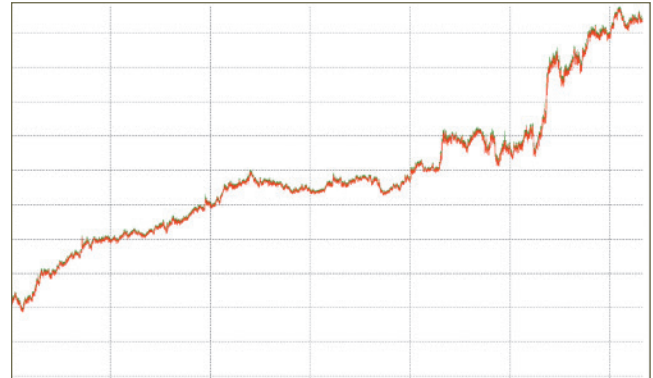


FIGURE 3: EQUITY CURVE FOR STARTING SYSTEM. This shows the resulting equity curve of the trend-following strategy using 20 periods for calculating the price channel.

NetProfit	Average Trade	Num Trade	Max DD
\$2,361,132	\$46.75	50,504	-\$232,837

FIGURE 4: RESULTS USING A 20-PERIOD CHANNEL CALCULATION. This shows the results from the trend-following strategy using 20 periods for the price channel lookback calculations.

limit and selling at the lower limit of the channel. In this first test, we will not apply any stop-loss or profit target, therefore, each trade will only close with the opening of a position in the opposite direction.

First, we will optimize the *MyLength* input from 10 to 100 in steps of 10 to find the best period number (Figure 2).

The results tell us that we get the best *net profit* values by setting the number of periods between 20 and 40. Considering we work on 60-minute bars, this means that the highs and lows oscillating between just under a day (*MyLength*=20) and just over (*MyLength*=40) are the most significant and effective for entering a position. We therefore choose to select 20, as it offers the best performance and a wide number of trades on which to perform our tests. The resulting equity curve for the trading system using 20 periods is shown in Figure 3. The trading strategy results from using 20 periods is shown in the table in Figure 4.

Delving a bit deeper into the results (see Figure 5), we can make some observations. We can see that all commodities, with the exception of the copper futures @HG, achieve positive performances. Futures in the

The price channel's versatility supports various trading strategies.



energy sector (crude oil, heating oil, RBOB gasoline, and natural gas) together with metals (gold, platinum, and silver) show quite good net profits. Some soft commodities like coffee @KC and cotton @CT also perform well. Notably, the futures on bitcoin @BTC, despite its recent inception, shows excellent results, surely due to the strong bullish trend that characterizes it. As expected, markets with a more mean-reverting tendency show the worst results, like most currencies and bond futures (@TY and @US).

Overall, we can be satisfied with the test we did. The results are good considering we have yet not applied any stop-loss and any filter to limit the number of trades executed, which are actually very numerous.

REFINEMENT OF EXIT CONDITIONS

We take a step further in our study and try to apply a more advanced risk management to open positions.

The question at this point might be: Do we apply a fixed monetary stop-loss knowing we have a basket of futures with very different characteristics, or do we try to limit the risk in other ways?

We know that our strategy uses the price channel not only to determine entry levels but also for exits from positions. In practice, once the trade is opened, we close it when prices touch the opposite side of the channel, opening a position in the opposite direction.

For instance, we could add a condition on the market position. This will allow us to close without a reverse entry all those trades that, on the same day they were generated, had the conditions to be closed, thus with prices that touched the opposite side of the channel.

We then integrate our script with these few lines of code:

```
if marketposition=1 then sell next bar LowerChannel
stop;
if marketposition=-1 then buytocover next bar Upper-
Channel stop;
```

The results shown in Figure 6 by applying this “Donchian trailing” show us that its use—and thus a better

Market	Start Date	End Date	Net Profit	# Trades
@CL	08/01/2010 15:00:00	29/12/2023 23:00:00	134.130,00	2348
@HO	08/01/2010 14:00:00	29/12/2023 23:00:00	219.710,40	2287
@RB	08/01/2010 15:00:00	29/12/2023 23:00:00	272.092,80	2261
@GC	08/01/2010 15:00:00	29/12/2023 23:00:00	150.790,00	2338
@PL	08/01/2010 13:00:00	29/12/2023 23:00:00	159.735,00	2229
@ES	08/01/2010 15:00:00	29/12/2023 23:00:00	112.525,00	2307
@NQ	08/01/2010 15:00:00	29/12/2023 23:00:00	133.585,00	2371
@S	11/01/2010 20:00:00	29/12/2023 20:20:00	73.987,50	1782
@KC	19/01/2010 13:15:00	29/12/2023 19:30:00	218.606,25	980
@LH	05/02/2010 18:30:00	29/12/2023 20:05:00	32.860,00	547
@LC	02/02/2010 20:05:00	29/12/2023 20:05:00	28.900,00	546
@NG	08/01/2010 14:00:00	29/12/2023 23:00:00	(37.920,00)	2484
@OJ	28/01/2010 15:00:00	29/12/2023 20:00:00	67.290,00	623
@AD	08/01/2010 15:00:00	29/12/2023 23:00:00	(39.085,00)	2331
@BP	08/01/2010 10:00:00	29/12/2023 23:00:00	28.812,50	2323
@BTC	22/12/2017 15:00:00	29/12/2023 23:00:00	171.125,00	955
@C	11/01/2010 14:00:00	29/12/2023 20:20:00	29.362,50	1799
@CC	21/01/2010 15:45:00	29/12/2023 19:30:00	41.200,00	935
@HG	08/01/2010 12:00:00	29/12/2023 23:00:00	(19.725,00)	2332
@CT	11/01/2010 18:00:00	29/12/2023 20:20:00	138.590,00	1622
@EC	08/01/2010 14:00:00	29/12/2023 23:00:00	(13.118,75)	2338
@SB	19/01/2010 18:30:00	29/12/2023 19:00:00	32.569,60	1019
@SI	08/01/2010 15:00:00	29/12/2023 23:00:00	321.785,00	2301
@TY	08/01/2010 15:00:00	29/12/2023 23:00:00	(2.031,25)	2417
@US	08/01/2010 15:00:00	29/12/2023 23:00:00	(58.875,00)	2443
@W	11/01/2010 20:00:00	29/12/2023 20:20:00	54.712,50	1789
@JY	11/01/2010 01:00:00	29/12/2023 23:00:00	22.093,75	2265
@FC	05/02/2010 17:30:00	29/12/2023 20:05:00	87.425,00	532

FIGURE 5: BASKET OF FUTURES. Here you see the performance of the trend-following system on the basket of futures used in the test. Most commodity futures achieved positive performances in the test, and energy and metals futures showed good net profits. Soft commodities performed well as did bitcoin futures. Markets with a mean-reverting tendency such as currencies and bond futures showed the worst results.

NetProfit	Average Trade	Num Trade	Max DD
\$2,610,876	\$48.345	54,011	-\$251,290

FIGURE 6: RESULTS USING AN EXIT CONDITION. Adding conditions for closing the position, aside from just a touch of the price channel, can improve results. In this example, net profit is improved while leaving max drawdown mostly unchanged.

management of the open trade—brings evident benefits in terms of net profit, substantially leaving the overall max drawdown unchanged.

IMPROVEMENT OF TRADE QUALITY THROUGH THE USE OF FILTERS AND CONDITIONS

Until now, the test has been limited to the use of the price channels for both entries and exits without any limitation to the trades, which are still high in number, leaving ample space for the use of some filter to skim those potentially more profitable.



The highs and lows oscillating between just under a day and just over are the most significant and effective for entering a position.

What filters to apply then? Some development hypotheses could be to use filters related to volatility, trend, particular price configurations, or a different management of the times in which to allow entries within the session of each instrument.

Being a study on a trend-following system applied to a basket mainly composed of commodities, the idea could be to apply some filter that allows us to identify those situations where prices are in a volatility contraction and ready for a subsequent expansion, which we know to be particularly effective on this type of futures.

For this purpose, a price pattern analyzed in one of our previous articles, “The Daily Factor: A Volatility Filter,” could be useful for our analysis. What is this pattern?

It relates the price swing of the entire previous session to today’s session, the so-called range ($highs(I) - lows(I)$), with its respective body ($open(I) - close(I)$). Situations of low volatility will be identified by a low ratio between body and range, a sign of market and operators’ uncertainty. Differently, a high ratio between body and range will indicate that volatility and prices are in a strong expansion.

We therefore integrate our script in the following manner, with the introduction of a variable *DF*, an acronym for “daily factor,” and the input *df_level*, to identify the threshold value of the daily factor above which we will not operate.

```
input:df_level(1);
var: DF(0);

if (highs(1)-lows(1))<>0 then begin
    DF=absvalue(opens(1)-closes(1))/(highs(1)-lows(1));
end;

if EntriesToday(d)=0 and DF<df_level then begin
    buy next bar UpperChannel stop;
    sellshort next bar LowerChannel stop;
end;
```

We then optimize the input “df_level” from 0.3 to 1 in steps of 0.05.

The optimization report from MultiCharts in Figure 7 indicates an undeniable advantage in limiting entries within a certain threshold level of the “daily factor.” All combinations up to 0.55 are in fact improvements compared to the starting situation, both in terms of net profit and max drawdown. It is clear that going down to ever-lower threshold levels, the conditions for opening the trades will be increasingly stringent, with a direct impact on the number of trades, which will

Net Profit	Total Trades	% Profitable	Max Intraday Drawdown	df_level (UA_Tasc Price Channel)
1.642.121,63	23.982	37,14 %	-180.290,50	0,30
1.955.322,55	27.649	37,00 %	-238.199,10	0,35
2.200.571,10	31.075	36,99 %	-225.978,95	0,40
2.360.905,68	34.451	36,86 %	-229.607,03	0,45
2.510.570,80	37.474	36,90 %	-238.906,58	0,50
2.616.958,95	40.680	36,89 %	-223.605,20	0,55
2.744.431,03	43.389	36,96 %	-212.713,48	0,60
2.776.792,73	45.849	36,87 %	-230.474,60	0,65
2.695.473,35	47.974	36,83 %	-219.988,98	0,70
2.779.827,68	49.808	36,75 %	-220.924,90	0,75
2.727.116,93	51.429	36,72 %	-246.585,00	0,80
2.743.027,85	52.617	36,63 %	-241.058,50	0,85
2.692.837,45	53.389	36,58 %	-243.045,40	0,90
2.629.935,40	53.856	36,49 %	-254.111,25	0,95
2.610.876,80	54.011	36,47 %	-251.290,80	1,00

FIGURE 7: OPTIMIZING THE ENTRY CONDITION. Here, different values are tested for “df_level” to introduce a trade filter based on the daily factor. When entries are limited by using a threshold level based on the “daily factor,” results improve in terms of net profit and max drawdown. The lower this threshold, the fewer trades are signaled.

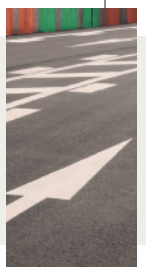
consequently decrease.

Among the various alternatives, we choose the value of 0.55. This means that we will add to our system the condition whereby a position will be opened only if the body of the previous day’s session had been less than 55% of the range of that same session. This value allows us to filter a good number of trades, going from 54,000 to just over 40,000, maintaining a net profit slightly higher than the unfiltered system but with an average trade that goes from \$48 to \$64 (see Figure 8).

Going a bit more into detail in the individual markets, we will notice that, for example, the future on gold @ GC goes from \$150,790 to \$183,310, the future on RBOB gasoline @RB from \$272,000 to \$285,625, and the bitcoin @BTC from \$171,000 to \$306,850. As highlighted previously, it is still the energy futures, the metal futures, and bitcoin futures that show the best performances even with the application of the filter.

Figure 9 shows the performance of the refined system applied to the basket of futures used. Figure 10 shows an equity curve for the refined system.

We can see that all commodities, with the exception of the copper futures, achieve positive performances.



CONCLUSIONS

In this article, we showed the results of a simple strategy in which we applied the price channel as a tool for identifying entry levels on a wide list of futures. The comparison of the results with and without risk management has nevertheless demonstrated the effectiveness of the price channel as a flexible tool for the construction of trading systems.

We have subsequently seen, for example, that the simple application of a very effective pattern like the “daily factor” is able to filter and improve the equity line and metrics, especially for certain categories of futures.

We leave it to the reader to test it more thoroughly by developing strategies on specific markets to fully verify its 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.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/tasc>).

FURTHER READING

Unger, Andrea [2023]. “The Daily Factor: A Volatility Filter,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: June.

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

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

‡TradeStation, ‡MultiCharts

‡See Editorial Resource Index

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Markets with a more mean-reverting tendency show the worst results, like most currencies and bond futures.

	Net Profit	Average Trade	Max DD
Without Daily Factor & Without Trailing Stop	\$2,361,132	\$46.75	−\$232,837
With Trailing Stop	\$2,610,876	\$48.34	−\$251,290
With Daily Factor & Trailing Stop	\$2,616,958	\$64.33	−\$223,605

FIGURE 8: RESULTS COMPARISON. Here you can compare the performance of the starting system and the same system with the two refinements applied. The average trade \$ increases from \$48 to \$64.

Market	Start Date	End Date	Net Profit	# Trades
@CL	08/01/2010 15:00:00	29/12/2023 23:00:00	136.580,00	1833
@HO	08/01/2010 14:00:00	29/12/2023 23:00:00	201.692,40	1794
@RB	08/01/2010 15:00:00	29/12/2023 23:00:00	285.625,20	1768
@GC	08/01/2010 15:00:00	29/12/2023 23:00:00	183.310,00	1910
@PL	08/01/2010 13:00:00	29/12/2023 23:00:00	167.005,00	1849
@ES	08/01/2010 15:00:00	29/12/2023 23:00:00	73.575,00	1847
@NQ	08/01/2010 15:00:00	29/12/2023 23:00:00	98.630,00	1849
@S	11/01/2010 20:00:00	29/12/2023 20:20:00	88.550,00	1472
@KC	19/01/2010 13:15:00	29/12/2023 19:30:00	189.000,00	872
@LH	08/02/2010 17:30:00	29/12/2023 20:05:00	32.710,00	488
@LC	02/02/2010 20:05:00	29/12/2023 20:05:00	21.660,00	492
@NG	08/01/2010 14:00:00	29/12/2023 23:00:00	25.500,00	1853
@OJ	28/01/2010 15:00:00	29/12/2023 20:00:00	68.340,00	539
@AD	08/01/2010 15:00:00	29/12/2023 23:00:00	(21.565,00)	1878
@BP	08/01/2010 10:00:00	29/12/2023 23:00:00	28.087,50	1856
@BTC	22/12/2017 15:00:00	29/12/2023 23:00:00	306.850,00	784
@C	11/01/2010 14:00:00	29/12/2023 20:20:00	17.975,00	1463
@CC	21/01/2010 15:45:00	29/12/2023 19:30:00	41.640,00	823
@HG	08/01/2010 12:00:00	29/12/2023 23:00:00	16.187,50	1892
@CT	11/01/2010 18:00:00	29/12/2023 20:20:00	130.460,00	1345
@EC	08/01/2010 14:00:00	29/12/2023 23:00:00	9.718,75	1842
@SB	19/01/2010 18:30:00	29/12/2023 19:00:00	24.897,60	889
@SI	08/01/2010 15:00:00	29/12/2023 23:00:00	341.105,00	1939
@TY	08/01/2010 15:00:00	29/12/2023 23:00:00	(4.687,50)	1827
@US	08/01/2010 15:00:00	29/12/2023 23:00:00	(2.718,75)	1792
@W	11/01/2010 20:00:00	29/12/2023 20:20:00	19.587,50	1470
@JY	11/01/2010 01:00:00	29/12/2023 23:00:00	54.231,25	1850
@FC	02/02/2010 20:05:00	29/12/2023 20:05:00	83.012,50	464

FIGURE 9: RESULTS OF REFINED SYSTEM. Here you see the performance of the refined strategy applied to the basket of futures used in the test.

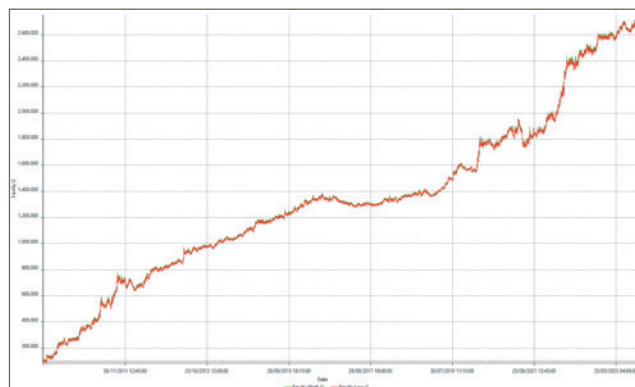


FIGURE 10: EQUITY CURVE FOR REFINED SYSTEM. This shows the resulting equity curve of the refined trend-following system (after the conditions and filters were added).

ALGORITHMIC TRADING

Have a question about system or algo trading? Kevin J. Davey has over 30 years of system trading experience. Davey is a full-time trader, and also teaches and consults via his Strategy Factory online workshop (<https://kjtradingsystems.com>), which was the winner of the 2024 Readers' Choice Award in this magazine for the category of "Trading Schools." Davey is also the author of five books on trading. Send your questions or topic suggestions to Kevin Davey at kdavey@kjtradingsystems.com. Selected questions will appear in a future issue of S&C.



Kevin J. Davey

THE LONG AND SHORT OF IT

How do I go about trading long and short at the same time, in the same futures market? I might be long in ES but want to scalp it short without closing my long. What are my options for enabling this capability?

In the U.S., being long and short at the same time is prohibited. Why? My guess is that it is because being long and short at the same time is the same as being flat. (I'll demonstrate that via an example in a minute.)

That said, the concept has some merit. If you are long and expect a pullback, and maybe exit a long when expecting the market to fall, you get the benefit of being long-term long while being temporarily flat (which can be considered staying in the long trade and being short in another trade).

There are a few ways to accomplish this "long and short" setup.

TRADING DIFFERENT CONTRACT MONTHS

One way to do this is to be long one contract month, and short a later contract month. The problem is, volume and open interest in back months in many markets (such as ES) are very thin. You might incur additional slippage trading these illiquid contracts. Plus, depending on the market, having a long/short setup (also known

as a calendar spread) has its own risks, since the two contract months will not always move in lockstep.

MULTIPLE ACCOUNTS

In this scenario, you are long in account A, and short in account B. Depending on the broker, both positions may require margin. So even though you are long in one and short in the other, you still need margin for each! You are net flat overall, but your broker might require margin for both—if margins are calculated only on the subaccount level. This is a very inefficient use of capital. You'd have to check with your broker's policies on this. I know at least two brokers who

do *not* co-margin subaccounts.

Also, if you do this often with multiple accounts, expect a call from Broker Compliance, as they will claim you are trading against yourself. This actually happened to me. I had to convince the broker's chief financial officer that what I was doing was perfectly legal. Eventually I was exonerated and cleared to trade this way. When you trade multiple algos of the same instrument, there will be times when some algos are long and some are short. This is not trading against yourself; it is merely trading algos with different approaches and methods.

SINGLE ACCOUNT, OUTSIDE BOOKKEEPING

Realize though that depending on your setup, you could combine positions in your account, and bookkeep positions outside of the account. Many traders do not understand that being long and short is equivalent to being flat. An example of this is shown in Figure 1.

In Figure 1, the trader on the left uses one account to place his trades. The trader is long or flat throughout the period. The trader on the right uses two accounts, and for a while is long and short simultaneously. In the end, you'll see that

If you do this often with multiple accounts, expect a call from Broker Compliance, as they will claim you are trading against yourself.

One Account Method			Two Account Method		
	ES Price	Trade P/L		ES Price	Trade P/L
Enter Long at	5200		LONG TRADE - Account 1		
Exit Long, Go Flat	5220	\$1,000	Enter Long at	5200	
			Exit Long	5250	\$2,500
			SHORT TRADE - Account 2		
Reenter Long	5210		Enter Short At	5220	
Exit Long	5250	\$2,000	Exit Short	5210	\$500
Total P/L		\$3,000	Overall Total P/L		\$3,000

FIGURE 1: FLAT VS. LONG AND SHORT. The trader on the left is long or flat throughout the period. The trader on the right, using two accounts, is long and short simultaneously for a time. In the end, both traders have the same profit & loss.

Continued on page 39

Jeff Tompkins' TradeTrend

METASTOCK

4548 Atherton Drive, Suite 200

Salt Lake City, UT 84123

Phone: 800 882-3040

Contact: MetaStock.com/saleschat
or Metastock.com/tradetrend

Requirements: MetaStock version 16 or higher, Windows 10 or higher

Product: MetaStock add-on real-time momentum-based trading system and trade scanner for stocks, futures, and forex markets in all timeframes

Price: \$90 per month subscription

by Barbara Star, PhD

What trader hasn't wished for a crystal ball to eliminate the decision-making involved in trading? This

MetaStock add-on, TradeTrend, seeks to do just that with its real-time buy and sell signals and automatically generated risk management tools. Developed by Jeff Tompkins of Altos Trading, the program identifies potential momentum trend reversal or

continuation trades up to three bars in advance and offers traders directional entry and stop-loss information that can be put in place prior to taking the trade. The goal is to enter trades on a confirmation of the anticipated momentum direction.

TradeTrend includes both the signal generator and a scanning method that identifies potential trades in advance of their triggering event. MetaStock adds an additional component to those built-in TradeTrend features that enables traders to backtest the performance of an individual or list of financial assets or tradables. TradeTrend works in all timeframes with stocks, ETFs, commodities, and forex.

TRADETREND FEATURES

Trading signals. The MetaStock Expert Advisor provides a TradeTrend template that contains the setup, entry, and exit signals, as seen on the chart of Apple in Figure 1. The template includes a green diamond when the algorithm identifies the setup of a

potential bullish trade and a red diamond for the setup of a bearish trade. A green or red arrow appears if price reaches the necessary confirmation level to trigger a trade entry.

The price bars change color to reflect the strength of the underlying momentum. Momentum is strongest when the price bars are a light green in an uptrend or a light red in a downtrend. The darker greens and reds signify caution that momentum is waning, and a blue candle or dark red candle warns that momentum may soon run out of steam and price may consolidate or change direction. The exit symbol marks the end of the trade if a stop-loss is hit. A diamond setup of the opposite color can also trigger an exit. All prior signals remain on the chart at the point they appeared with no shifting or reprinting after the fact.

It should be noted that I changed the bar type from the traditional bar chart default in the TradeTrend template to a candlestick price chart template for greater visual clarity. Readers should not assign any special significance to the typical candlestick reversal or continuation patterns in relation to the TradeTrend signals. And, for the purposes of this review, I only included stocks on a daily timeframe rather than the full range of trading

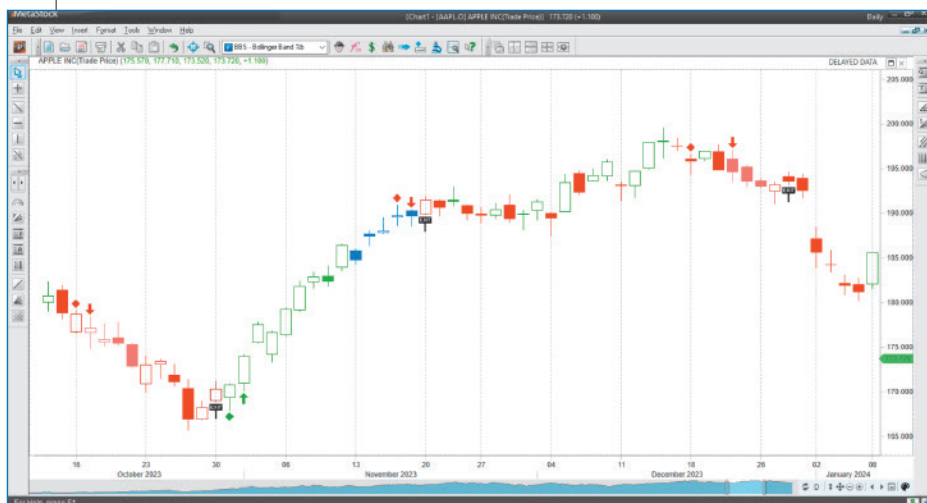


FIGURE 1: THE TRADETREND TEMPLATE. The TradeTrend template, applied here to this daily chart of Apple (AAPL), shows its setup diamonds, buy and sell directional arrows, and exit symbols. The color of the price bars changes in relation to increasing and decreasing momentum.

TradeTrend includes both the signal generator and a scanning method that identifies potential trades in advance of their triggering event.

vehicles and timeframes possible with TradeTrend.

Commentary information. The symbols on the price chart only tell part of the TradeTrend story. Located in the MetaStock commentary section of the expert advisor are the trading specifics and recommendations related to long and short trade setup positions.

The commentary identifies the direction and exact buy or sell price based on a proprietary algorithm and automatically calculates an entry above or below the setup price bar. It even specifies the use of a buy- or sell-stop limit order to prevent an entry if price gaps too far from the suggested entry price. It also suggests the initial stop-loss placement if a trade is triggered. All of this occurs from one to three bars prior to the actual trade entry, which gives traders time to prepare in the event a trade is initiated.

As seen in the daily chart of Chevron (CVX) in Figure 2, the commentary on October 23, 2023 noted that TradeTrend projected a move down because the volume, volatility, momentum, and trend factors that go into creating the criteria for a sell setup had occurred.

The algorithm suggested placing a sell-stop limit entry price at 160.1947 but not to enter if price was below 155.4296. The initial stop-loss would be placed at 170.2293 if the trade is entered. The trade was triggered when, during the next bar, price fell from a high of 161.080 to a close of 156.650.

Once a trade is initiated, the program automatically calculates ongoing trailing volatility stops for each completed bar in the trading timeframe selected and records them in the commentary section. In this case, the exit came when the stop-loss of 146.4953 given on October 30 was hit on October 31.

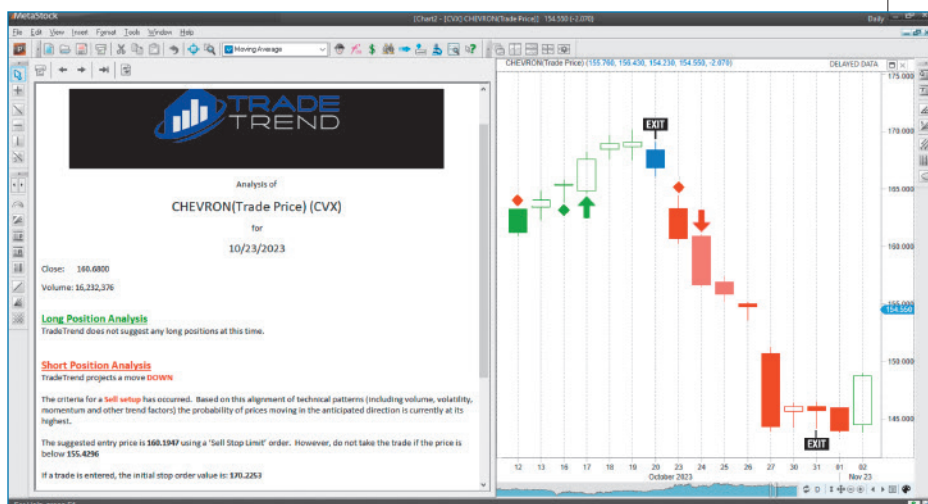


FIGURE 2: METASTOCK COMMENTARY WITH PRICE CHART. The MetaStock commentary attached to this daily chart of Chevron (CVX) details the exact criteria for direction, entry price, type of order entry, and initial stop-loss price when TradeTrend identifies a trade setup. It also provides trailing stop price and exit information once a trade is initiated.

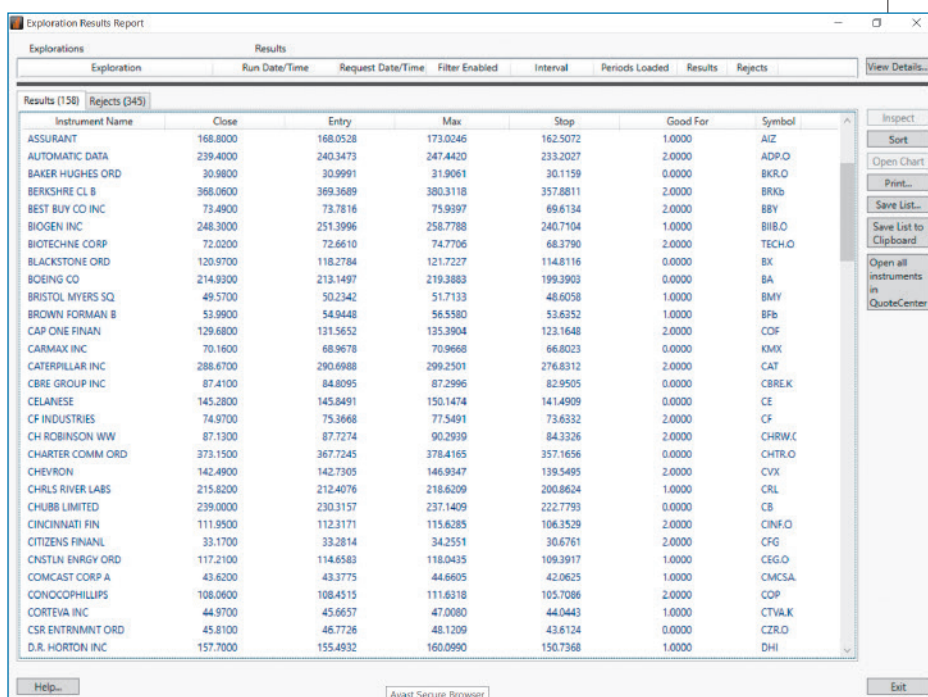


FIGURE 3: A SCAN FOR TRADING CANDIDATES. The MetaStock Explorer enables the scan feature in TradeTrend. Here, a scan of S&P 500 stocks reveals a list of those stock trades that have signaled buy setups. The scan also shows the preferred and maximum entry price, the initial stop-loss, and how many days remain for price to trigger a valid trade.

Because the initial entry and the initial stop-loss are calculated in advance, a trade would be entered during the same bar identified by the triggering arrow, or the same bar as the exit symbol, instead of waiting for the open or close of the next bar.

LOCATE THE TRADING CANDIDATES

In addition to manually searching for trading signals, the MetaStock explorer enables the TradeTrend scan feature to identify four separate scans: long or short setups as well as long or short trades that triggered on a user-

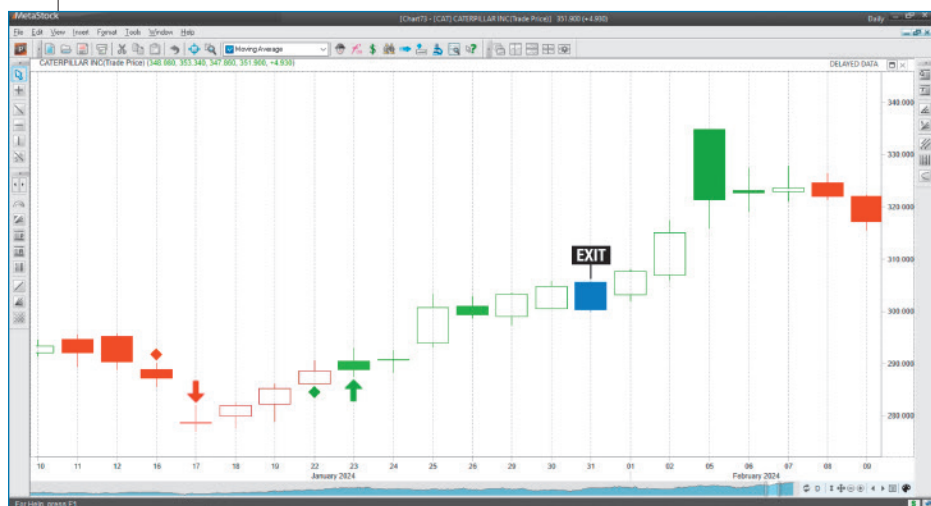


FIGURE 4: A TRADE IN CATERPILLAR STOCK. Caterpillar, one of the stocks identified in the scan, triggered into a trade during the next bar and continued to rally for several days before hitting a stop-loss exit.

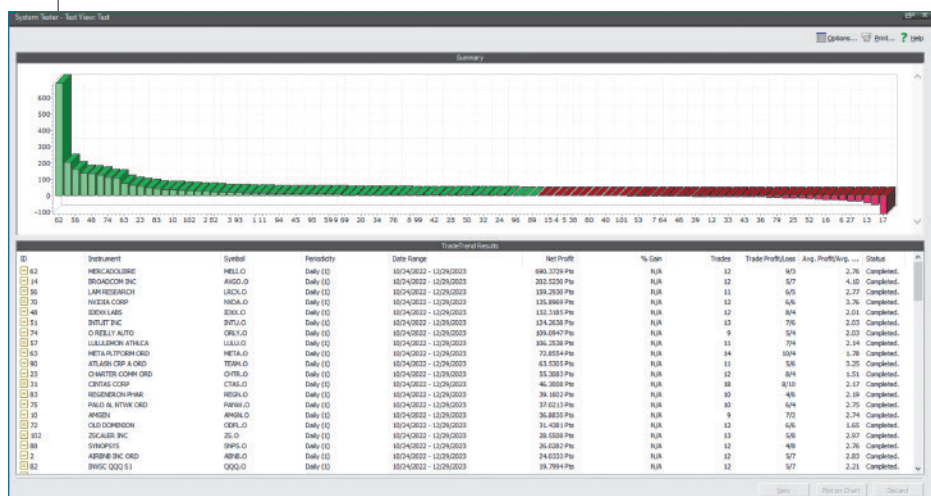


FIGURE 5: BACKTESTING TRADETREND SIGNALS. Using the MetaStock system tester, a points-only test of the long trades of Nasdaq 100 stocks administered for the year 2023 shows that the majority of TradeTrend trades were profitable. The system tester includes specific details about each trade for every stock in the list and provides various ways to view the results.

selected timeframe ranging from intraday to monthly. No matter what timeframe is selected, each long or short scan includes setups that could trigger within the next three bars. A trade that triggers beyond three bars is considered void.

The scan results in Figure 3 contain a portion of a daily long scan of the S&P 500 stocks that was run on January 22, 2024. It found that 158 stock signals were either initiated or were still in force on that day. The results list can be sorted by the closing price, entry price, maximum price to pay, the stop-loss, and a column

labeled “good for” which identifies the number of bars remaining until a trade is either triggered or canceled if not filled by that time.

TRADING WITH TRADETREND

Not all setup signals on a chart or a scan result list will trigger an entry. In some cases, entries do not occur because price does not move in the desired direction and in other cases, some will become void because they reach the price trigger after the three-bar limit has expired. However, Caterpillar, a company well known for the manufacture and sale of heavy

The commentary identifies the direction and exact buy or sell price based on a proprietary algorithm and automatically generates a calculation above or below the setup price bar.

equipment, was one of a majority of stocks on the January 22nd scan whose price did initiate a trade. A buy setup diamond signal appeared on the daily chart, which also caused the exit of the down signal that had been in play (see Figure 4).

According to the MetaStock explorer result list, the stock setup was valid for two more days. The commentary confirmed the buy setup but stated it needed to reach the price level of 290.6033, and not higher than 299.2501, in order to initiate the trade. With that knowledge, a trader could either place a buy-stop limit order for the purchase of shares or select some type of directional option play for entry.

The chart shows the price progression that followed. An arrow indicated that the trade to the upside was triggered at some point during the following day. Traders who followed the suggested trailing stops given each day in the commentary would have remained in the trade until its exit six days later with a \$10 profit when the \$300.4196 trailing stop price was hit.

BACKTESTING THE PERFORMANCE

Every trading method and every tradable financial asset works better in some market conditions than others. The MetaStock system tester adds the ability to discover the most profit-

able and least profitable performers within the TradeTrend system during a specific period of time.

I ran a points-only backtest of the long trades taken on the stocks in the Nasdaq 100 from January–December 2023. When running the backtest I learned that TradeTrend requires 40–50 bars of data prior to the desired start period be entered in order to catch all the 2023 signals. For example, to backtest the daily performance for the year 2023, it was necessary to assign a start date after mid-October of 2022.

As seen in Figure 5, more than half the stocks were profitable, with Mercado Libre (MELI), a South American online retailer similar to Amazon, leading the way with the most points gained, and Booking Holdings (BKNG), a travel-related search engine that also includes Priceline and Kayak, registering the largest number of points lost.

The default overview both lists and numbers the stocks in alphabetical order by stock name but it can be sorted by column heading for net profits, number of trades triggered and of that

total, how many were profitable and how many were not, and the average number of points per trade.

The net profits column was selected for Figure 5 to identify the stocks showing the most point gains. Since TradeTrend does not reprint or shift the location of its signals and exits, a click on any stock in the list will plot the price chart along with an equity line and each of the trades taken during the backtest. A more detailed report offers several options for analyzing the results of a stock in more depth, including the ability to examine each trade.

SUMMARY

TradeTrend provides buy and sell signals based on momentum shifts or continuations that could lead to larger price moves on both intraday and end of day data. However, given its built-in setup alerts that provide advance warning, precise entry price levels, price and time limits for valid entries, specific buy/sell order placement, and automatic risk management stop-loss placement, it is more than a series of buy and sell signals: It

The program identifies potential momentum trend reversal or continuation trades up to three bars in advance.

encompasses a complete rules-based trading system. With rules that are straightforward and easy to follow, it offers traders a systematic approach to trading various types of asset classes either directly or via options.

Barbara Star, PhD, is a contributing writer to Technical Analysis of Stocks & Commodities magazine. Currently, she trades part-time and provides individual instruction and consultation to those interested in the technical analysis of the financial markets. She lives in Woodland Hills, CA and can be reached at 818 224-4070 or star4070@aol.com.

‡MetaStock

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Algo Q&A

DAVEY

Continued from page 35

both traders have the same P/L.

I use this approach all the time with one account, with multiple strategies. I'll be long one strategy, and if a second strategy goes short,

Many traders do not understand that being long and short is equivalent to being flat.

then I am flat in the actual account. The strategies don't know about each other; they think they are each long/short, and the strategies themselves perform the proper bookkeeping math, sending signals for their respective positions. The account reflects the actual net position at all times. This works really well.

Sometimes though, due to FIFO accounting rules, if you combine algos into one account, prices and buy/sell matches will seem wrong/off at times. Trades you thought were winners will be listed on

your statement as losers, and vice versa. But when you do the overall math, everything adds up correctly in the end. It just might get a little confusing.

SUMMING UP

In the U.S., you can't be long and short at the same time; however, there are valid and equivalent ways to achieve the same effect. By examining your options beforehand, you can determine the right approach for yourself.

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Harnessing Artificial Intelligence Indicators

A Strategy For Crypto Trading Based On Machine Learning

Here's a trading strategy that relies on the Hull butterfly oscillator and an AI algorithmic indicator to forecast price movements and together generate buy and sell signals for cryptocurrency trading.

by Azeez Mustapha

In

the dynamic realm of financial markets, staying ahead of the curve is paramount. The emergence of machine learning has revolutionized trading, offering unprecedented opportunities to uncover insights and predict market movements.

Machine learning algorithms have transformed trading by enabling the rapid analysis of vast amounts of data, identifying patterns, and uncovering hidden correlations. This technological leap has empowered traders to make informed decisions in real time, leveraging data-driven insights to capitalize on market opportunities.

In this rapidly evolving landscape, the importance of machine learning in trading cannot be overstated. By har-

nessing the power of advanced computational techniques, traders can gain a competitive edge, adapt to changing market conditions, and maximize their profitability.

THE INDICATORS

The 5-minute timeframe will serve as our canvas for chart analysis here. While the approach is adaptable to a 1-minute timeframe, the 5-minute interval offers enhanced reliability. The cardinal requisites are ample trading volume and liquidity, ensuring minimal slippage and optimal execution.

The strategy hinges on two pivotal indicators. First in line is the Hull butterfly oscillator, a free tool from Lock Algo. This oscillator, predicated on differential moving averages, aptly delineates market momentum shifts. Positive (green) oscillations signify bullish momentum, while negative (red) oscillations denote bearish sentiment. Centerline crossovers and divergence patterns augment its utility. The indicator is set to a length of 500 and a levels multiplier of 1.5, furnishing a broader perspective on market trends.

ANTONKHUPINART/SHUTTERSTOCK



FIGURE 1: EXAMPLE TRADE SIGNAL IN BITCOIN. Here, the Hull butterfly indicator oscillator changes to green. The buy decision for this swing trade preceded the indicator's ascent beyond the highest two horizontal demarcations on its phase, indicative of an early entry.

Complementing the butterfly oscillator is the Lorentzian Distance Classifier (LDC), a sophisticated algorithmic construct crafted by J. Dorty based on machine learning, which is available on the platform I use, TradingView. By leveraging the Lorentzian distance classification and the approximate nearest-neighbors algorithms, this indicator prognosticates future price movements. On the chart, I chose to solely display its buy/sell signals to streamline the chart for clarity.

THE STRATEGY

Trading with this strategy is straightforward and easy. During periods of red histogram readings on the butterfly oscillator, only short positions are entertained. However, not all short signals are used. Meticulous scrutiny of histogram dynamics is indispensable. A downward trajectory with increasing magnitude underscores robust downtrends, while convergence towards zero hints at weakening bearish sentiment. Signals during these transitional phases are disregarded, safeguarding against false entries.

Conversely, green histogram readings warrant exclusive consideration of long positions, while vigilance is imperative during gradient shifts. Divergence from extreme levels indicates oversold conditions, portending potential reversals. Signals following such divergences merit cautious evaluation, with a heightened risk of false trades.

Implementation entails entering positions upon confirmation signals, with stop-loss placement and profit targets calibrated to maintain a risk-reward ratio of 1.5. Below are a few examples to help explain the strategy.

EXAMPLES

In the trade scenario seen in Figure 1, a deliberate buy decision was initiated, characterized by the discernible shift in the Hull butterfly indicator oscillator to a green hue. Notably, the timing of the buy decision preceded the indicator's ascent beyond the highest two horizontal demarcations on its phase, indicative of an early entry.

Crucially, the trade was executed in alignment with a buy signal generated by the AI indicator. It is worth emphasizing that subsequent signals observed towards the far right of the chart, while indicative of potential buy opportunities, lacked validity due to the Hull butterfly indicator being in an overbought state, surpassing the uppermost horizontal line on the indicator phase. Additionally, the indicator exhibited a rising trajectory towards zero, signaling the possibility of an impending bearish reversal.

Outlined next is the trade signal in detail:

Trade signal for bitcoin (swing trade)

Instrument: BTCUSD

The emergence of machine learning has revolutionized trading, offering unprecedented opportunities to uncover insights and predict market movements.



FIGURE 2: EXAMPLE OF MISLEADING SIGNALS. Here, you can see numerous instances of misleading signals—the AI indicator shows green buy signals while the Hull butterfly indicator shows red histogram bars, leading to contrary indications. The final two red (sell) signals are erroneous, as the histogram is already retracing back towards zero, suggesting a bullish reversal. Traders should wait until the requisite criteria for a favorable trade setup are fulfilled.

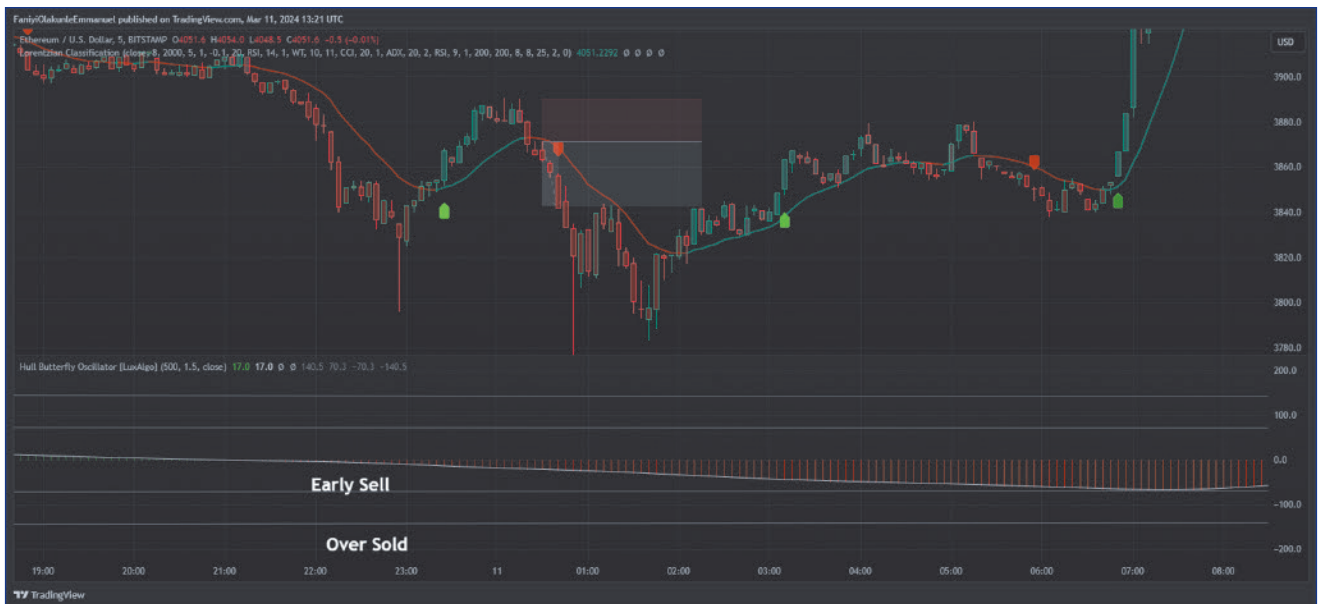


FIGURE 3: EXAMPLE TRADE SIGNAL IN ETHERIUM. A swing trade was initiated on March 7, 2024 at 1:50 pm. The red (sell) histogram bars were in their early phase, positioned at the midpoint, and simultaneously, the AI indicator indicated a sell signal. A stop-loss was placed above the last significant high. The target was extended to achieve a risk-to-reward ratio of 1:1.5.

Opinion: Buy
Entry price: \$66,105.37
Stop: \$65,597.99
Target: \$66,875.96

Recommended risk: 1%
Risk-to-reward ratio (RR): 1:1.5

The example depicted in **Figure 2** illustrates numerous instances of misleading signals. Primarily, attention

should be directed towards the Hull butterfly indicator, which indicates a sell position through the presence of red histogram bars. Consequently, the green (buy) signals highlighted by the AI indicator are deemed invalid. Traders are advised to exercise patience until the requisite criteria for a favorable trade setup are fulfilled. Furthermore, the trade is deemed unsuitable even for short positions, as evidenced by the histogram descending into oversold territories below the lowest horizontal

lines. The final two red (sell) signals are erroneous, as the histogram is already retracing back towards zero, suggesting a bullish reversal.

In the example provided in Figure 3, a trade was initiated on March 7, 2024, at 1:50 pm.

It's noteworthy that the trade in Figure 3 was executed when the red (sell) histogram bars were in their early phase, positioned at the midpoint. Simultaneously, the AI indicator indicated a sell signal. The stop-loss was strategically placed above the last significant high, while the target was extended to achieve a risk-to-reward ratio of 1:1.5.

Here's the trade signal breakdown:

Trade signal for etherium (swing trade)

Instrument: ETHUSD

Direction: Sell

Entry price: \$3,871.4

Stop-loss: \$3,890.2

Target: \$3,842.8

Recommended risk: 1%

Risk-to-reward ratio (RR): 1:1.5

CONCLUSION

It is imperative to acknowledge that no trading strategy is flawless. Thorough due diligence through both backtesting and forward testing is crucial to familiarize oneself with the strategy's nuances to optimize its effectiveness in navigating the market. Additionally, exercising prudent risk management and caution is essential, particularly considering that the strategy depends on the utilization of mathematical AI algorithms to forecast price movements.

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.

‡Lock Algo, ‡TradingView

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DEVIC/WRITING COVERED CALLS

Continued from page 29

stock does go higher. You cannot make it a 1:1 scenario if you plan on not spending all your premium.

This approach takes some trial and error and will become a little easier as you trade more CCWs.

PROTECTING YOUR STOCK POSITION IF THE STOCK PRICE FALLS

What if the stock price falls? What strategies can you employ to protect your stock position in that case?

One approach is to buy a *put* at a lower price than the strike price as a floor. Remember that buying a put gives you the right but not the obligation to *sell* the stock shares at the strike price (which is “exercising” your option to sell the shares).

If you buy a put and the stock does fall, you will be able to sell that put for a higher price, if you choose to keep your stock and not exercise the put (exercising the put would mean selling the stock shares).

NEXT TIME

In this article, I looked at the basics of covered call writing, including the components to consider when choosing an option contract to write. When you write a covered

call, you are selling an option on a stock you already own in your account. This makes it a lower-risk type of option to sell compared to some other types of options, since the trade is backed by your long stock (and so is “covered”), rather than you having to put up capital later to cover the obligation.

Next time in part 2, I'll provide a way to help you choose which strike to use for your covered call, I'll also discuss ways to structure your CCWs, and I'll reveal more uses for this popular instrument.

John Devcic is a trader, market historian, and freelance writer. He may be reached at jdevcic@gmail.com.

FURTHER READING

Devcic, John [2023]. “An Introduction To Options, Part 1: Form And Function,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: August.

—— [2023]. “An Introduction To Options, Part 2: The Greek Variables,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: September.

—— [2023]. “An Introduction To Options, Part 3: Putting Options To Work For You,” *Technical Analysis of STOCKS & COMMODITIES*, Volume 41: October.

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The focus of Traders' Tips this month is Markos Katsanos' article in this issue, "Is The Price REIT?" Here, we present the June 2024 Traders' Tips code with possible implementations in various software.

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



◆ TRADESTATION: JUNE 2024 TRADERS' TIPS CODE

In the article "Is The Price REIT?" in this issue, Markos Katsanos provides an in-depth analysis of the REIT landscape and provides a weekly trading system for trading REIT stocks and REIT ETFs, centered around their correlation with interest rates.

The EasyLanguage code is provided here for the strategy. Within the "Strategy properties for all" window, the "Maximum number of bars study will reference" (MaxBarsBack) must be set to at least 100. The strategy requires three weekly symbols. Data1 should represent the REIT stock or REIT ETF for trading, while Data2 should correspond to SPY, and Data3 to \$TNX.X.

```

Weekly REIT Strategy
//TASC JUNE 2024
// Weekly REIT Strategy
// Markos Katsanos

```

```

inputs:
  BBPeriod( 15 ),
  SDev( 2 ),
  TBars( 25 ),
  ChannelLength( 30 ),
  TNXPerc( 15 ),
  CorMax( 0.3 ),

```



FIGURE 1: TRADESTATION. This TradeStation weekly chart of the Vanguard Real Estate ETF VNQ demonstrates the strategy applied.

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

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

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

```

YieldMin( 2 ),
ATRs( 1.5 ),
MaxLossPerc( 8 );

```

```

variables:
  Yield( 0 ),
  Stoch( 0 ),
  TH( 0 ),
  TL( 0 ),
  TR( 0 ),
  ATR15( 0 ),
  LLT( 0 ),
  HHT( 0 ),
  TNXUp( 0 ),
  TNXDn( 0 ),
  LLBars( 0 ),
  LL( 0 ),
  PercUp( 0 ),
  Upper( 0 ),
  Cort( 0 ),
  Cors( 0 ),
  BBBOT( 0 ),
  BuyBB( false ),
  BuyTrend( false ),
  BuySignal( false ),
  Sell_1( false ),
  StrategyStop( false ),
  SellOB( false ),
  SellSignal( false );

```

```

Yield = Close of Data3 / 10;
Stoch = (Close - Lowest(Low, 10)) / (Highest(High, 10)
- Lowest(Low, 10) + .0001) * 100;
Stoch = Average(Stoch, 3);

```

```

TH = MaxList(Close[1], High);
TL = MinList(Close[1], Low);
TR = TH - TL;
ATR15 = XAverage(TR, 15 * 2 - 1);

```

```

LLT = Lowest(Close of Data3, TBars) of Data3;
HHT = Highest(Close of Data3, TBars) of Data3;
TNXUp = (Close of Data3 - LLT) / (LLT + .001) * 100;
TNXDn = (Close of Data3 - HHT) / (HHT + .001) * 100;
LL = Lowest(Low, 100);
PercUp = (Close - LL) / (LL + .001) * 100;
Upper = Highest(Close, ChannelLength)[1];
Cort = CoefficientR(Close, Close of Data3, 20);
Cors = CoefficientR(Close, Close of Data2, 20);
BBBOT = BollingerBand(Close, BBPeriod, -SDev);

```

```

StrategyStop = Close < Average(Close, 30)

```




```

        AddParameter("Bollinger Band StDev", ParameterType.
Double, 2, 2, 2, 0.5);
        AddParameter("Min% TNX Change", ParameterType.Int32, 15,
15, 25, 5);
        AddParameter("Max correlation for buy signal", Parameter-
Type.Double, 0.3, 0.2, 0.2, 0.1);
        AddParameter("Min yield (TNX/10)", ParameterType.Double, 2,
2, 2, 0.5);
        AddParameter("Stop Loss", ParameterType.Int32, 8, 8, 8, 1);
        AddParameter("ATR Stop", ParameterType.Double, 1.5, 1.5, 1.5,
0.5);
    }

    public override void Initialize (BarHistory bars)
    {
        spy = GetHistory (bars, _spy);
        tn timer = GetHistory (bars, _2nd);

        stoch = StochD.Series(bars, stochPeriod, stochSmoothing);
        hhvStoch = Highest.Series(stoch, 3);
        atr = ATR.Series(bars, atrPeriod);

        /* TNX HH & LL */
        tbars = Parameters[0].AsInt;
        var llt = Lowest.Series(tnx.Close, tbars);
        var hht = Highest.Series(tnx.Close, tbars);
        tn timerUp = (tnx.Close - llt) / (llt + .001) * 100;
        tn timerDn = (tnx.Close - hht) / (hht + .001) * 100;

        /* ETF HH & LL */
        cl = Parameters[1].AsInt;
        var ll = Lowest.Series(bars.Low, llbars);
        percUp = (bars.Close - ll) / (ll + .001) * 100;
        upper = Highest.Series(bars.Close, cl) >> -1; /* Donchian Up-
per Channel */

        /* Pearson's Correlation */
        bbPeriod = Parameters[2].AsInt;
        sd = Parameters[3].AsDouble;
        corT = Corr.Series(bars, _2nd, PriceComponent.Close, 20);
        corS = Corr.Series(bars, _spy, PriceComponent.Close, 20);
        bbBot = SMA.Series(bars.Close, bbPeriod) - sd * StdDev.
Series(bars.Close, bbPeriod);

        tn timerPerc = Parameters[4].AsInt;
        corMax = Parameters[5].AsDouble;
        yld = tn timer.Close / 10d;
        yldMin = Parameters[6].AsDouble;

        sma30 = SMA.Series(bars.Close, 30);
        maxLossPerc = Parameters[7].AsInt;
        hhv2 = Highest.Series(bars.Close, 2);
        hhv3 = Highest.Series(bars.Close, 3);
        spyMA = SMA.Series(spy.Close, 20);
        hhvBars = TimeSeries.BarsSince( tn timer.High >= Highest.
Series(tnx.High, cl));
        atrs = Parameters[8].AsDouble;
    }

    public override void Execute (BarHistory bars, int idx)
    {
        bool stop = bars.Close[idx] < sma30[idx] && bars.Close[idx] <
((1 - maxLossPerc / 100d)*hhv2[idx]) &&
        ((spy.Close[idx] < ((1 - maxLossPerc / 100d) * spy.Close[idx -
1])) || corS[idx] < 0);
        var buyBB = (bars.Low[idx] < bbBot[idx] && bars.Close[idx] >
bbBot[idx] + 0.2 * atr[idx]) &&
        ((tn timerDn[idx] < -tn timerPerc && corT[idx] < corMax) || yld[idx] <
yldMin) &&
        bars.Close[idx] > bars.AveragePriceHL[idx] && !stop;
    }
}

```

```

if (!HasOpenPosition (bars, PositionType.Long))
{
    var buyTrend = bars.Close[idx] > upper[idx] && spy.
Close[idx] > spyMA[idx] && hhvBars[idx] > 10 || corT[idx] > corMax ||
yld[idx] < yldMin;
    var buy = buyBB || buyTrend;

    if(buy)
        PlaceTrade(bars, TransactionType.Buy, OrderType.Mar-
ket);
}
else
{
    /* Chandelier Sell Stop */
    var Sell1 = (tnxUp[idx] > tnxPerc || (yld[idx] > 4 &&
tnxUp[idx] > 0) ) && bars.Close[idx] < (hhv3[idx]-atr * atr[idx]) &&
!buyBB;

    /* Stop Loss */
    var Stop = bars.Close[idx] < sma30[idx] &&
((bars.Close[idx] < ((1 - maxLossPerc / 100d) * bars.
Close[idx - 1])) &&
((spy.Close[idx] < ((1 - maxLossPerc / 100d) * spy.
Close[idx - 1])) || corS[idx] < 0));
    var SellIOB = percUp[idx] > 50 && bars.Close[idx] <
(hhv3[idx] - atrs * atr[idx]) && hhvStoch[idx] > 90;
    var Sell = Sell1 || SellIOB || Stop;

    if (Sell)
        PlaceTrade(bars, TransactionType.Sell, OrderType.Mar-
ket);
}
}

/* declare private variables below */
BarHistory tnx, spy;
int stochPeriod = 0, stochSmoothing = 3, atrPeriod = 15, tbars,
llbars = 100, cl, bbPeriod, tnxPerc, maxLossPerc;
double sd, corMax, yldMin, atrs;
string _2nd = "^TNX", _spy = "SPY";
TimeSeries bbBot, corT, corS, atr, tnxUp, tnxDn, yld, sma30, hhv2,
hhv3, upper, spyMA, hhvBars, percUp, stoch, hhvStoch;
}
}

```

Since it uses Yahoo's ^TNX as the symbol for the CBOE 10-Year Treasury Note Yield Index, to run it properly you should either check Yahoo Finance's "Data Manager's Historical Providers" list or choose the symbol name of your preferred data provider.

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

◆ **TRADINGVIEW: JUNE 2024 2024 TRADERS' TIPS CODE**

The TradingView Pine Script code (available at [Traders.com](https://tradingview.com/scripts/REIT-ETF-Trading-System/) in the Traders' Tips section) implements the REIT ETF trading system described in Markos Katsanos' article in this issue, "Is The Price REIT?" It functions as a strategy script, displaying filled order marks on the chart and providing performance metrics in the Strategy Tester tab beneath the

```
if (IsConditionMet == 1) {
  xVmp = vInternalCalc_VMC_TR(1);
  xVmp = getSeries(xVmp, 1);
  xVmp_TraitRange = getSeries(xVmp, 2);
  xVmp_TraitRange = true;
}
```



```
if (xVmp.getValueLength() == null || xVmp.TrueRange.getValueLength() == null || xVmp.TrueRange.getValueLength() == 0) {
  if (i == Length(xVmp)) {
    xVmpSum += xVmp.getValue(i);
  }
}
```



TradingView chart.

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

An example chart is shown in Figure 5.

—PineCoders, for TradingView
www.TradingView.com



◆ AIQ: JUNE 2024 TRADERS' TIPS CODE

The importable AIQ EDS file based on Markos Katsanos' article in this issue, "Is The Price REIT?" can be obtained on request via rdencpa@gmail.com. The code is also available on the magazine's website, Traders.com, in the Traders' Tips section.

The code for the author's system is set up in the AIQ EDS code file. To run a backtest of the system in AIQ EDS, first make a list of the ETFs that you want to test. Then set up the backtest as shown in Figure 6.

—Richard Denning
rdencpa@gmail.com
for AIQ Systems



◆ NEUROSHELL TRADER: JUNE 2024 TRADERS' TIPS CODE

The REIT trading system presented in Markos Katsanos' article in this issue, "Is The Price REIT?", can be easily implemented in NeuroShell Trader by combining some of NeuroShell Trader's 800+ indicators. To implement the indicators, select "New indicator..." from the *insert* menu and use the indicator wizard to create the following indicators:

STOP

```
And3( Price<Avg(Close,30),
  A<B(Close,Mul2(Sub(1,Divide(8,100)),Lag(Close,1))),
  Or2( A<B(SPY Close,Mul2(Sub(1,Divide(8,100)),Lag(SPY
  Close,1))),
  A<B(LinXYReg r(Close,SPY Close,20),0)))
```

BuyBB

```
And4( And2( A<B(Low,BB Low(Close,15,2)),
  A>B(Close,Add2(BB Low(Close,15,2),Mul2(0.2,ATR(High,L
  ow,Close,15))))),
  Or2( And2( A<B(Mul2(Sub(Divide(TNX Close,Max(TNX
  Close,25)),1),100),-15),
  A<B(LinXYReg r(Close,TNX Close,20),0.3)),
  A<B(Divide(TNX Close,10),2)),
  A>B(Close,Avg2(High,Low)),
  Not(STOP))
```

BUYTrend

```
And3( A>B(Close,Lag(Max(Close,30),1)),
  Price>Avg(SPY Close,20),
  Or3( A>B(Max(TNX Close,30),
  Max(TNX Close,10)),
  A>B(LinXYReg r(Close,TNX Close,20),0.3),A<B(Divide(TNX
  Close,10),2)))
```

Sell1

```
And3( Or2( A>B(Mul2(Sub(Divide(TNX Close,Min(TNX
  Close,25)),1),100),15),
```



FIGURE 5: TRADINGVIEW. This TradingView chart demonstrates the REIT trading strategy applied on the SPDR Dow Jones REIT ETF (RWR).

FIGURE 6: AIQ. Demonstrated here are selected setup screens for the EDS backtest of the REIT ETF trading system.

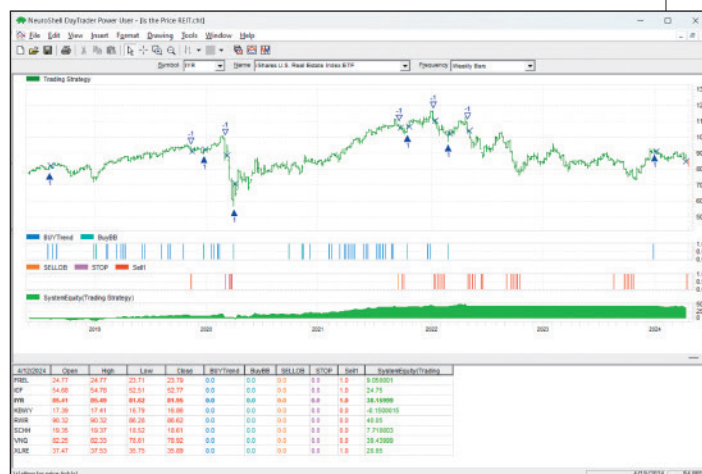


FIGURE 7: NEUROSHELL TRADER. This NeuroShell Trader chart demonstrates the REIT trading system applied to eight different REIT ETFs.

Continued on page 19

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

ARE BITCOIN ETFS A BETTER WAY TO PLAY CRYPTOCURRENCY THAN THE OUTRIGHT FUTURES OR SPOT MARKETS? (PART 2 OF 2)

Last month, we discussed the advent of bitcoin ETFs and how other futures-based ETFs have impacted price discovery. In the second installment, we will continue the discussion by pointing out why bitcoin ETFs are attracting so much investment capital and why these reasons might, or might not, be sustainable in the long run.

There are four primary reasons investors are flocking to bitcoin ETFs; I have listed them here with additional context.

- **Fear of missing out (FOMO)**— Usually occurs at the end of a mania, not at the beginning. For years, we've been seeing social media posts and hearing newscasts about the massive amount of wealth individuals have amassed via the cryptocurrency market. But what most people don't realize is that the stories of those who have made and kept said riches are the exception, not the rule. There isn't anybody keeping score, but I've been in this business long enough to know a small percentage of traders, brokerages, and fraudsters are the only people making money.
- **Ease of access**— Anyone with

a stock account can participate in ETFs; it is no longer limited to those with crypto wallets, crypto brokerage accounts, or futures accounts. This is attracting fresh investment dollars, but convenience has unintended consequences. In life, particularly in money matters, the most convenient method or product is rarely the optimal choice. For instance, stopping at the gas station to buy a gallon of

For years, we've been seeing social media posts and hearing newscasts about the massive amount of wealth individuals have amassed via the cryptocurrency market.

milk accomplishes the goal, but it comes at a higher cost and possibly a shorter expiration date. ETFs are similar; they are packaged products designed for comfort, not efficiency.

- **Regulatory oversight of ETFs**— As we have learned in WEAT and other commodity ETFs, regulatory oversight can't prevent market composition or logistic issues. Further regulations are meaningless for a

product that can go to zero in seconds due to a lack of intrinsic or transactional value. In short, regulators can't protect the markets from human emotions or poor decision-making. If every trader on the planet decides to buy or sell a futures-based ETF simultaneously, there is nothing regulators can do to provide the liquidity needed to absorb the demand.

- **Mainstream acceptance**— New asset classes sometimes gain legitimacy via regulator acceptance, but the track record for such assets isn't always positive. Cannabis stocks went through a phase of mainstream acceptance and euphoric rallies, but most of them quickly imploded. Will crypto ETFs go the way of cannabis, a popular but overregulated product with nonexistent profit potential? Only time will tell.

Bitcoin and Nvidia, and therefore the NASDAQ 100 and even the S&P 500, have become highly correlated. Despite the appeal of crypto being an off-the-grid portfolio diversifier, it is now neither of those things.

There are undoubtedly a lot of people making a lot of money, but all I see when I look at a bitcoin

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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

DON'T IGNORE NEGATIVE DIVERGENCES

Amidst all the euphoria of rising markets, sometimes it's wise to catch your breath and try to understand what some of the more obvious technical signals might be telling us. One such signal is *negative divergence*.

Figure 1 shows a negative divergence that has formed between the relative strength index (RSI) and the moving average convergence/divergence (MACD) oscillator in the Dow Jones Industrial Average (DJIA). The red lines on the chart show the direction of the divergence. Figure 2 is a chart of a negative divergence that has formed between the RSI and MACD in the S&P 500 index. Figure 3 is a chart showing a negative divergence that price action in the NASDAQ index has formed with the same two indicators.

WHAT IS NEGATIVE DIVERGENCE?

Quite simply, negative divergence is the nonconfirmation of price with a relevant momentum indicator. There are bullish and bearish divergences. A bullish divergence occurs when price is making lower lows while the

indicator is not. A bearish divergence happens when price is making higher highs but the indicator is not.

The divergence simply points to a change in momentum. With a bullish divergence, a decline in prices has slowed and momentum has strengthened. With a bearish divergence, an increase in prices has slowed and momentum has weakened.

Slowing or strengthening momentum is a signal that points to a change in underlying market conditions. But it is not confirmation. Confirmation should always only ever come from price.

RSI BEARISH DIVERGENCE

The RSI is an oscillator that was developed by J. Welles Wilder in the 1970s. It has a few features that traders find useful. Here, we will concentrate on its use as a divergence indicator.

The chart examples given in this article show that according to this indicator, the speed of price change is slowing, since there is evidence of weakening momentum in the indicators. But the reason we do not act on signals from indicators alone is because indicators can often be wrong or early. In strong trends, up or down, a single divergence is not evidence of a market top or bottom. Many divergences may happen before an eventual reversal.

So, though it is never wise to ignore a signal as obvious as this one, it is also not wise to act in anticipation of what you have determined price is likely to do as a result of the appearance of the signal. Price might react to the 200-day moving average and then continue to make higher highs while the indicators continue to not confirm. In that case, acting early will be the same as being wrong.

MACD BEARISH DIVERGENCE

Another popular indicator showing negative divergence with price in all three major indexes, as I write this in April 2024, is the MACD. This indicator was developed by Gerald Appel in the 1970s. Like the RSI, this indicator has various uses



FIGURE 1: DOW JONES INDUSTRIAL AVERAGE. You can see a negative divergence that recently formed between the RSI and the MACD in the DJIA.

Negative divergence is the nonconfirmation of price with a relevant momentum indicator.

to help clarify price action, including spotting divergence with the indicator and price. The interpretation of bullish or bearish divergence is the same as with the RSI: When price is making lower lows and the MACD is making higher lows, we have bullish divergence. When price is making higher highs and the MACD is making lower highs, we have bearish divergence.

The reason we look to price for confirmation of this and any other signals from indicators is because price will often not act in ways we expect it to. As noted above, one observation is that often in strong trends, price can form more than one negative or positive divergence with its indicator and still continue moving in the original direction.

Momentum is simply the speed of price movement. In the early stages of trends, it is quite usual for price to move fast or with increasing momentum. As the trend ages, price change might slow, but this does not mean



FIGURE 2: S&P 500 INDEX. Here you can see a negative divergence that has formed between the RSI and the MACD in the S&P 500 stock index.



FIGURE 3: NASDAQ INDEX. Here you can see a negative divergence that has formed between the RSI and the MACD in the NASDAQ stock index.

that the trend has changed; it simply means that the speed of change is not as fast as it was earlier. The indicator that tracks the speed of price change is likely then to note the change in the slowing of price increase or decrease and divergences are more likely to form.

While you should pay attention to the slowing of price change, that in and of itself does not mean the trend has changed or will change. Indeed, the slowing momentum might just as likely signal a reaction or a sideways congestion move, after which the

A single divergence is not evidence of a market top or bottom.

original trend will resume.

So, while it is important not to ignore divergences, it is important also not to act too hastily before price has had a chance to confirm its change in direction.

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GARNER

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chart is the impending misery that will eventually come when the music stops. Not everyone will keep the money they have made thus far. Truthfully, most will give it back, plus more. That is how these things have panned out historically.

Technology is a blessing and a curse. Technology, combined with government manipulation of natural market and business cycles, has allowed the markets to become

gamified. Warren Buffett's recent shareholder letter stated, "The markets have become a lot more casino-like"; the bitcoin and Nvidia rallies are what he was talking about. He suggested the goal isn't to thrive in this environment; it is simply not to lose your shirt, and we tend to agree.

Sometimes it feels like market participants think they are playing *World of Warcraft* or *Call of Duty*, but there is a lot more at stake. I love that young people are getting involved in the markets, but I hate that instead

In short, regulators can't protect the markets from human emotions or poor decision-making.

of building lasting wealth, they could dig themselves a big hole if they aren't careful.

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THE WORLD OF RETAIL TRADING

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



Emilio Tomasini

THE RSI ISN'T A PANACEA

Who among us hasn't been enchanted by one indicator or another at some point? Typically, early in our trading careers, we explore all the technical analysis tools we can to try to find what works for us. As a matter of professional creed, I don't rely on indicators for trading. After 30 years, I can almost guess where the RSI will be on a price chart. I'm no guru, but any experienced readers of this magazine can also play this game.

I think a problem can arise with the use of indicators when traders consider them infallible or when a trader becomes too enamored with one particular tool. When interpreting charts, they may resort to justifying why some signals should be heeded and others ignored. In their mind, their favorite tool never errs; if it misses a market high or low, it must be due to misinterpretation. Rather than admit their favorite tool may be ineffective, they may renounce systematic trading altogether. They may conclude that systematic trading itself is flawed.

Magical thinking never serves a trader well. It's better to use a tool as a tool toward the task at hand and an indicator as an indication. Indicators or tools are usually best considered in context within your system.

Let's return to the RSI for a minute. The RSI, or relative strength index, was developed by J. Welles Wilder

in the 1970s and became known to traders through Wilder's 1978 book, *New Concepts In Technical Trading Systems*. The RSI is an oscillator that compares the size of recent gains to recent losses in an attempt to determine overbought and oversold conditions of an asset. The calculation returns a value between zero and 100, providing clear boundaries on the chart. The RSI could often

Financial markets move in fits and starts, and a confirmed trend is often over.

lead market turns beautifully, especially for some markets. Many were enamored.

Around that era, a leading trading platform for a time used a different formulation for the RSI, one that didn't adhere to Wilder's original formula. This meant that those who put blind faith in the tool were in reality following something other than what they thought, and something other than what they believed in. Just as magical thinking doesn't serve a trader well, neither does blind faith.

I will say this about the RSI. While I wouldn't rely on it wholesale anymore in the way it was originally designed to be used or in many of the ways it's

come to be used, it has an undeniable merit: It reminds us that financial markets move in fits and starts, and a confirmed trend is often over. In trading, it's always wise to buy on retracements and sell on rallies.

The challenge is that when markets retrace and the RSI goes into oversold territory, it's hard to trust what the charts show. Similarly, during a rally, it's incredibly tough to accept that the rise will end, and the savvy trader should leave the last 10% of the gain for others.

Tools can be incredibly helpful. But a tool is not a deity, technical analysis software is not its prophet, and questioning its use and implementation is not heresy.

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FUTURES LIQUIDITY

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

COMMODITY FUTURES

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

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

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

Courtesy of CBOT



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

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

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

STOCKS

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

Trading Liquidity: Futures

Commodity Futures	Symbol	Exchange	% Margin	Effective % Margin	Contracts to Trade for Equal Dollar Profit	Relative Contract Liquidity
S&P 500 E-Mini (Jun '24)	ESM24	CME	5.1	16.4	3	>>>
10-Year T-Note (Jun '24)	ZNM24	CBOT	2.2	8.5	9	>>
5-Year T-Note (Jun '24)	ZFM24	CBOT	1.5	7.8	12	>>>
Ultra T-Bond (Jun '24)	UDM24	CBOT	5.5	7.6	3	>
Ultra 10-Year T-Note (Jun '24)	TNM24	CBOT	2.8	7.5	6	>
30-Year T-Bond (Jun '24)	ZBM24	CBOT	3.8	8.1	5	>
2-Year T-Note (Jun '24)	ZTM24	CBOT	0.6	7.1	14	>
Nasdaq 100 E-Mini (Jun '24)	NQM24	CME	5.5	13.8	2	.....
Gold (Jun '24)	GCM24	COMEX	4.4	14.4	3	.....
Soybean Meal (Jul '24)	ZMN24	CBOT	1	1.9	2	.....
Russell 2000 E-Mini (Jun '24)	QRM24	CME	3.6	15.7	5	.....
Soybean (Jul '24)	ZSN24	CBOT	2.2	4.4	4	.....
Crude Oil WTI (Jun '24)	CLM24	NYMEX	8.3	14.4	5	.....
Natural Gas (Jun '24)	NGM24	NYMEX	15.3	3.7	3	.....
3-Month SOFR (Dec '24)	SQZ24	CME	0.1	2.7	20	.....
Corn (Jul '24)	ZCN24	CBOT	6.4	7.6	13	.....
Euro FX (Jun '24)	E6M24	CME	1.7	11.9	13	.....
ULSD NY Harbor (Jun '24)	HOM24	NYMEX	7.2	6.9	2	.....
Wheat (Jul '24)	ZWN24	CBOT	8.4	6.4	6	.....
Gasoline RBOB (Jun '24)	RBM24	NYMEX	7	11.7	4	.....
30-Day Fed Funds (Apr '24)	ZQJ24	CBOT	0.1	1.3	11	.....
Dow Futures Mini (Jun '24)	YMM24	CBOT	4.8	18.5	5	.....
Hard Red Wheat (Jul '24)	KEN24	KCBT	7.7	6.5	7	....
High Grade Copper (Jul '24)	HGN24	COMEX	3.9	13.2	7	....
Australian Dollar (Jun '24)	A6M24	CME	2.5	11.5	18	...
British Pound (Jun '24)	B6M24	CME	2.7	16.2	19	...
Coffee (Jul '24)	KCN24	ICE/US	7.8	20.2	7	...
S&P 500 Micro (Jun '24)	ETM24	CME	5.1	16.4	31	...
S&P 500 VIX (May '24)	VIK24	CFE	38.6	29.4	12	...
Canadian Dollar (Jun '24)	D6M24	CME	1.5	10.7	24	..
Cocoa (Jul '24)	CCN24	ICE/US	11.2	14	3	..
Cotton #2 (Jul '24)	CTN24	ICE/US	8.1	8.6	6	.. CBOT Chicago Board of Trade, Division of CME
Live Cattle (Jun '24)	LEM24	CME	3.8	10.6	10	.. CFE CBOE Futures Exchange
Nasdaq 100 Micro (Jun '24)	NMM24	CME	5.5	13.8	17	.. CME Chicago Mercantile Exchange
Palladium (Jun '24)	PAM24	NYMEX	13.7	5.8	1	.. COMEX Commodity Exchange, Inc. CME Group
Silver (May '24)	SIK24	COMEX	7.7	21	5	.. ICE-EU Intercontinental Exchange-Futures—Europe
Sugar #11 (Jul '24)	SBN24	ICE/US	10	23.6	26	.. ICE-US Intercontinental Exchange-Futures—US
Bitcoin Futures (Apr '24)	BTJ24	CME	26.3	34.4	1	.. KCBT Kansas City Board of Trade
Canola (Jul '24)	RSN24	ICE/CA	5.6	6.1	21	.. MGEX Minneapolis Grain Exchange
Crude Oil Brent (F) (Jun '24)	QAM24	NYMEX	6.8	12.2	5	.. NYMEX New York Mercantile Exchange
Feeder Cattle (Aug '24)	GFO24	CME	3.5	7.1	4	..
Lean Hogs (Jun '24)	HEM24	CME	3.8	9.6	14	..

2406

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

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

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

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

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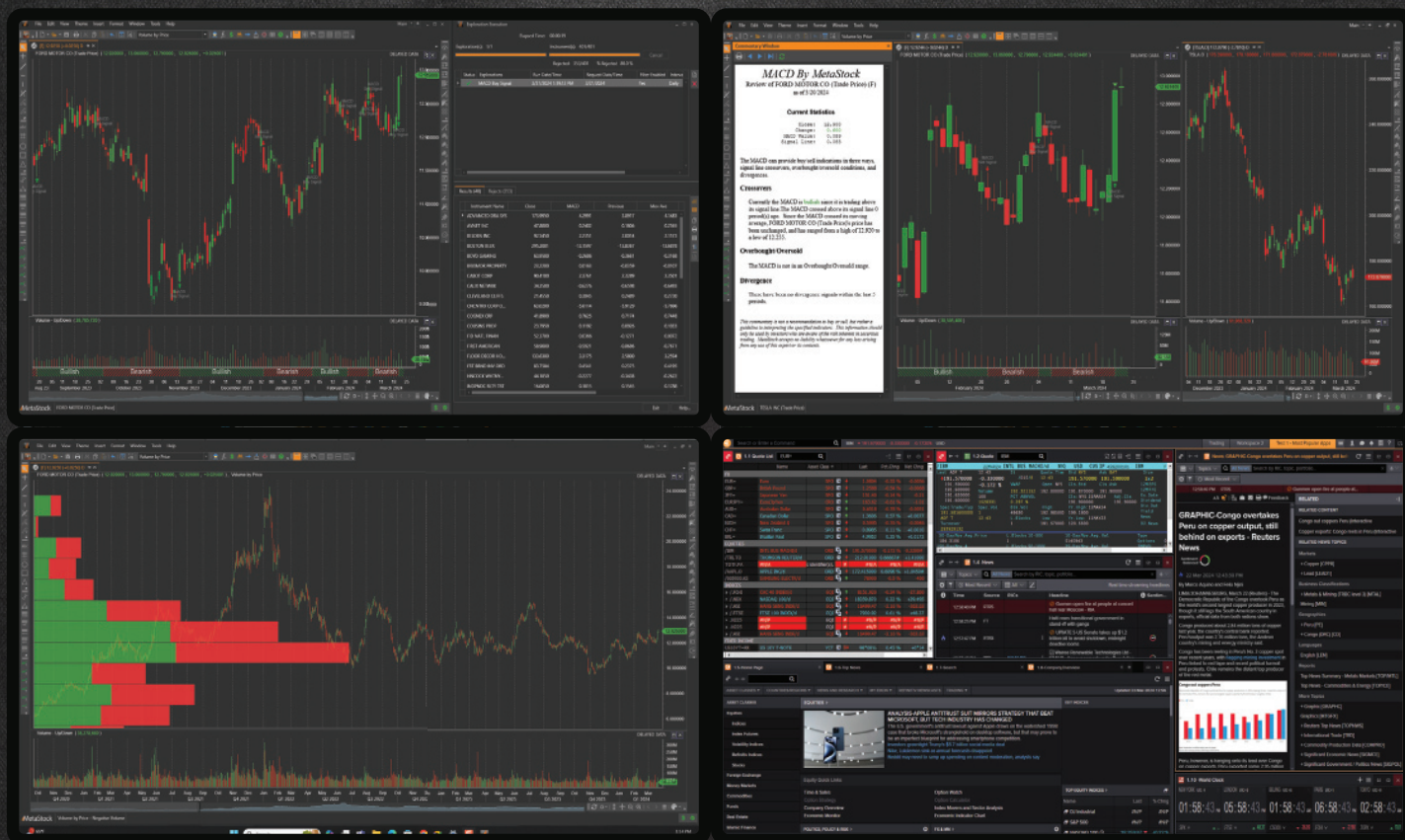
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