1 INDICATORS

Tokode Market Study (TMS) provides an end-of-day snapshot of US equity market conditions. Its five proprietary indicators examine pullbacks, breakouts, volatility, directional regime and behavioural regime. Together, they help you assess the market surrounding your trades: whether prices are broadly rising or falling, whether stocks are trending or mean reverting, and whether participation and volatility support your assessment. TMS gives discretionary and systematic traders a multi-factor tool for assessing market conditions on any day, leading to further tactical or strategic analysis.

1.1 TPI: Tokode Pullback Index

TPI examines market breadth to evaluate weakness/exhaustion during a pullback or correction. Its readings help identify oversold conditions and provide context for assessing potential recovery opportunities. TPI ranges from 0 to 100, with higher readings indicating increasingly oversold conditions. TPI has a proven edge when used for designing mean reversion strategies in 3X levered S&P500 ETFs.

Table 1: TPI thresholds for oversold readings.

Reading	Interpretation
95 and above	Oversold threshold and potential downside exhaustion
100	Deeply oversold
0	Overbought

1.2 TBI: Tokode Breakout Index

TBI examines breakout conditions through market breadth. It helps you assess whether improving prices are accompanied by stronger participation, particularly following a pullback or correction. It ranges from 0 to 100, with higher readings indicating stronger breakout conditions. The key reference level is above 70; this identifies breakout conditions following a TPI long setup and provides a reference for evaluating additions to an existing position.

Read together, TPI and TBI help you follow the development from oversold conditions towards renewed upside participation. Like all indicators it is not correct every time, but over time.

1.3 TVI: Tokode Volatility Index

TVI brings together information about realised market movement, volatility across stocks and options-implied volatility to describe prevailing volatility pressure. TVI ranges from 0 to 100: Below 25 is Low, 25 to below 50 is Normal, 50 to below 75 is Elevated and 75 to 100 is High. It helps put the other readings in context; a pullback in low volatility presents a different environment from a pullback accompanied by high volatility pressure.



Figure 1: TPI indicates oversold at the bottom of the 2022 bear market.

1.4 TRI: Tokode Regime Index

TRI evaluates the directional backdrop of an index of market regime indicators, helping distinguish conditions associated with rising prices (TRI >= 7) from those associated with falling prices (TRI < 7). In familiar market terms, this is the bull or bear market. TRI ranges from **0 to 13**, higher readings indicate broader support for rising prices; lower readings indicate a weaker directional environment.

1.5 TMR: Tokode Market Regime

TMR examines whether stocks are predominantly exhibiting persistent trends, mean-reverting behaviour or a transition between these conditions. It reports one of three states (Table 2)

Table 2: Behavioural Market Regime

State	Interpretation
Trend	Stocks are exhibiting persistent trending behaviour, which can occur in either direction
Revert	Mean-reverting behaviour predominates, with movements tending to reverse rather than develop into sustained trends
Transition	The market is between regimes, without a clear Trend or Revert classification

The distinction from TRI is important: TRI assesses direction, TMR assesses behaviour. A market can trend downwards as well as upwards. Reading both indicators helps you assess the directional backdrop and its suitability for your trading approach.

1.5.1 Sample Strategy (SPXL)

Entry and Exit can be based on “Oversold” and “Overbought” market conditions. TPI is the most suitable oscillator for determining these levels. Default threshold for both are:

- 95 for oversold
- 0 for overbought

Entry and exit at these default thresholds for TPI, with a basic stretch as is commonplace for mean reversion, reveals the edge in TPI signals for SPXL (Figure 2). Although, the win rate and payoffratio are unusual for mean reversion, the results are reproducible in other levered ETFs. Other indicators could be used as filters on any TPI setups.

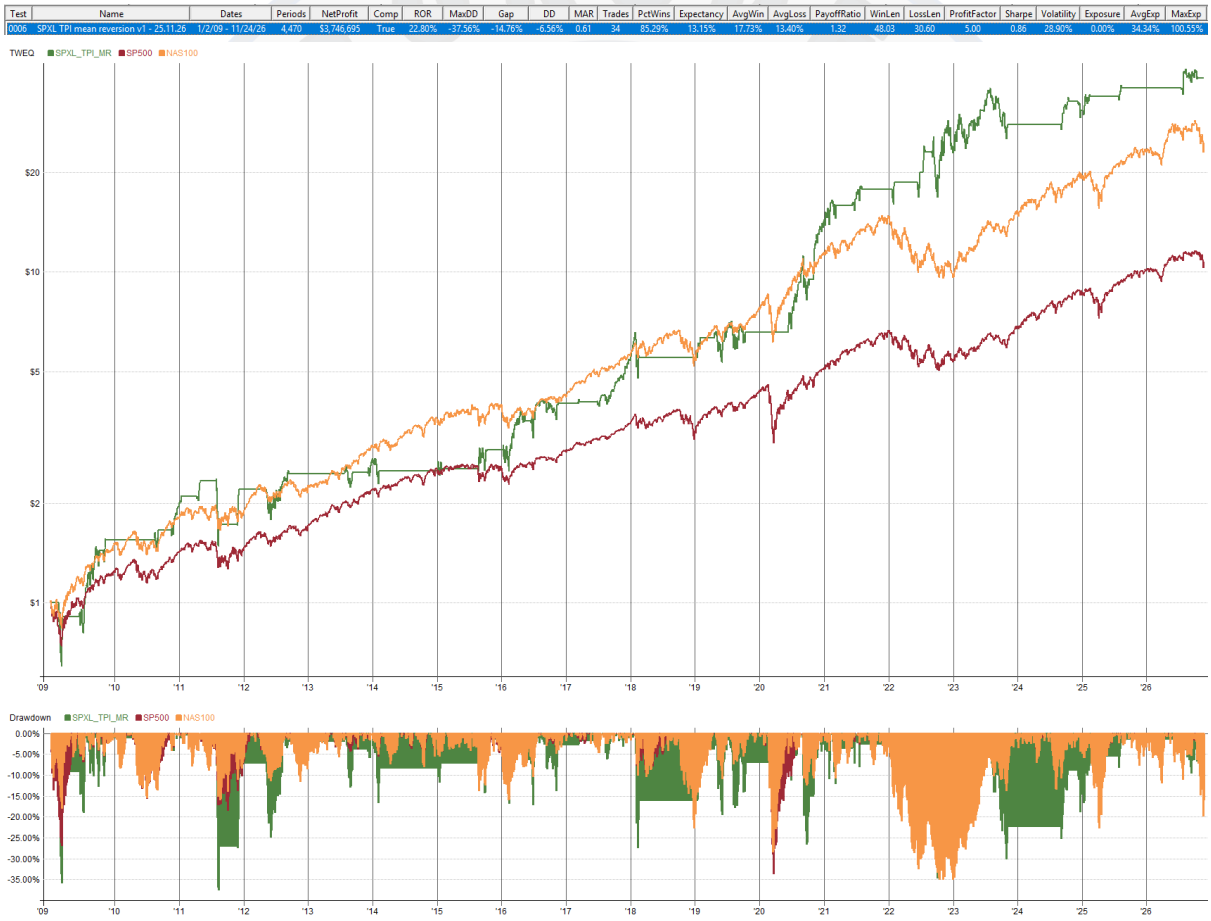

Figure 2: SPXL mean reversion strategy with TPI oversold, including trading costs and slippage.

The time series begins in 2009, number of trades and drawdown are not great but other metrics make up for them. The results are similar with entry at deep oversold (TPI = 100) but there are fewer trades.

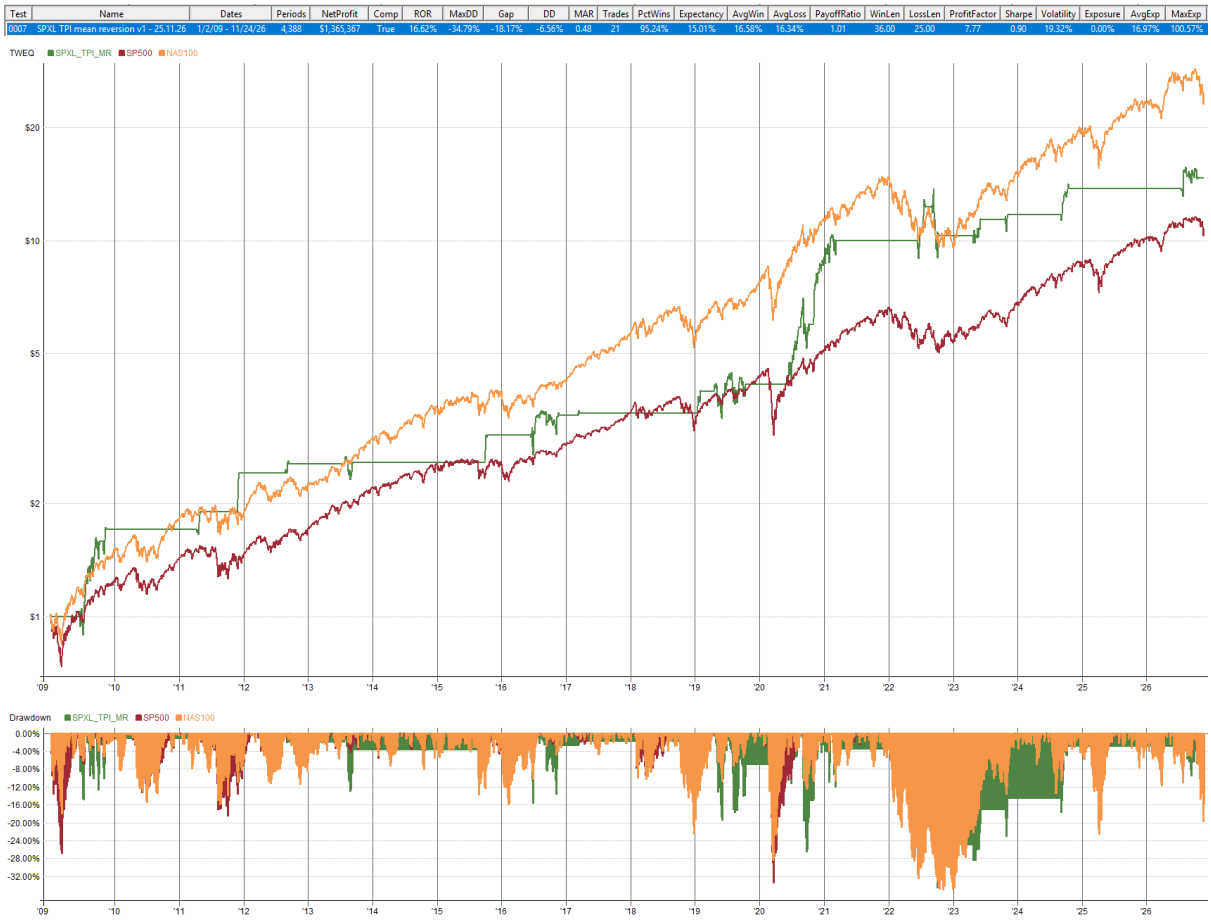

Figure 3: SPXL mean reversion strategy with TPI deeply oversold, including trading costs and slippage.

NOTE:

Both strategies' performance worsens if traded without a stretch. The stretch requires price to move a little further in your favour before entry: below the signal day's low for a long trade, or above its high for a short trade. Compared with entering immediately, this can improve the entry price and the potential reward relative to risk. It also filters out setups that never reach the limit, reducing the number of trades and their transaction costs.

1.5.2 Sample Strategy (UVXY)

The VIX reflects expected volatility derived from S&P 500 index option prices, making equity market conditions relevant to the study of volatility-linked instruments. TMS can therefore provide context for evaluating trading setups in products such as UVXY. Its assessment of pullbacks, participation and market regimes can help frame research into periods of market stress and subsequent recovery. The strategies presented here examine short positions in UVXY using TPI signals alongside an additional price-stretch condition. UVXY provides leveraged exposure to short-term VIX futures, so its performance can differ substantially from movements in the VIX itself.

NOTE:

Both strategies suffered account blowouts in the historical tests when traded without an additional price-stretch condition. This condition is therefore a critical part of the tested entry rules. The results highlight the risk of using TPI thresholds alone to enter these trades. Including the stretch condition does not eliminate the possibility of substantial losses.

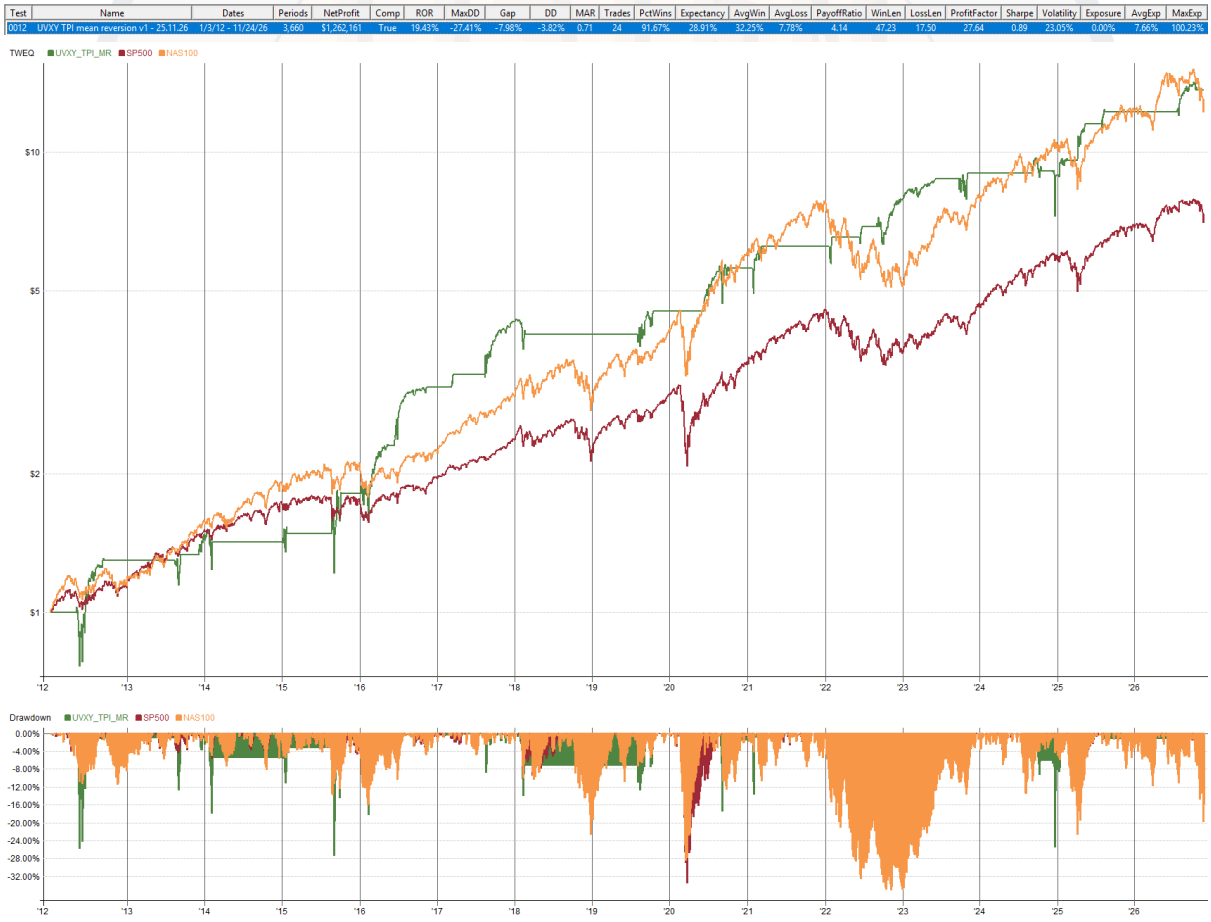

Figure 4: UVXY mean reversion strategy with TPI oversold, including trading costs and slippage.

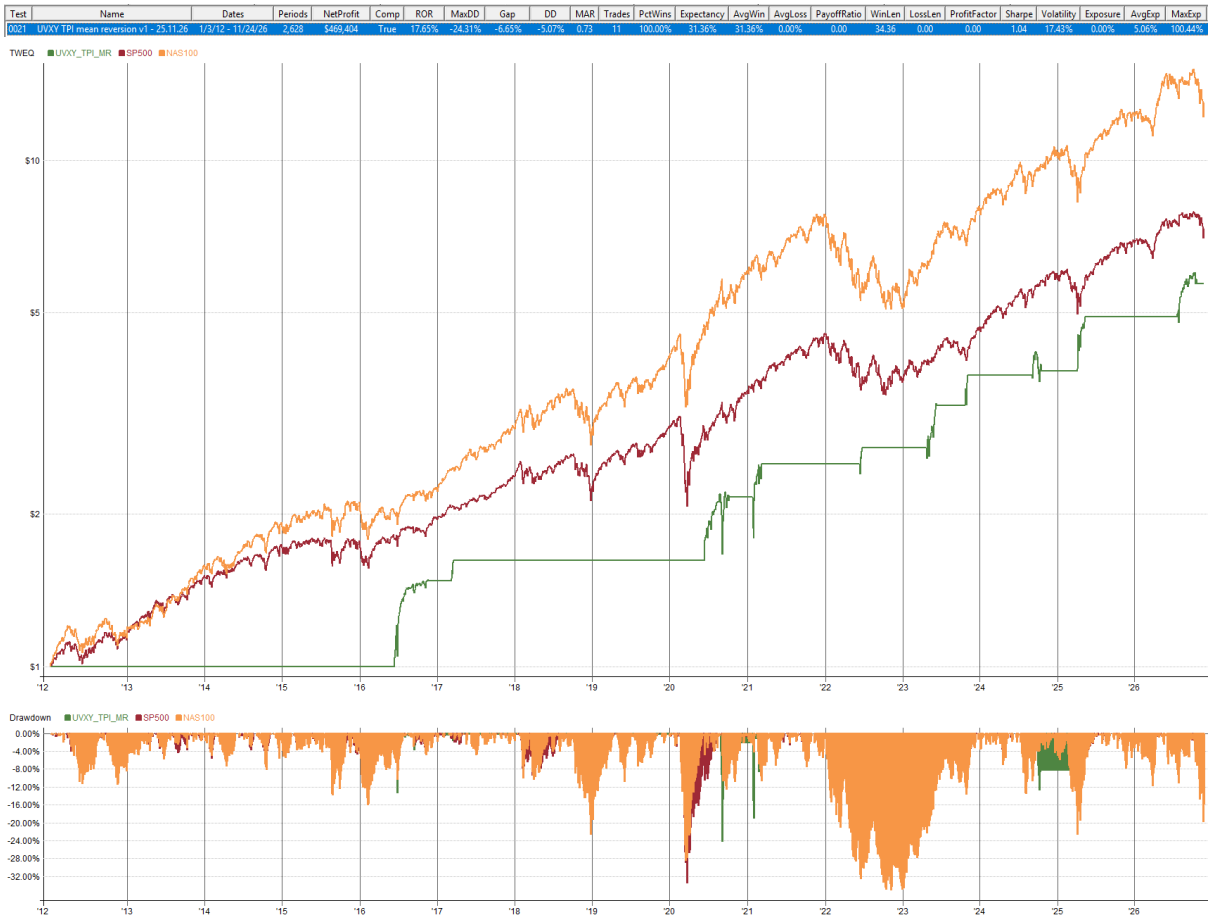

Figure 5: UVXY mean reversion strategy with TPI deeply oversold, including trading costs and slippage.

2 STUDIES

Two additional measures complement the five TMS indicators. The Bullish Percent Index (BPI) measures the percentage of S&P 500 stocks exhibiting a bullish setup on a point and figure chart, providing context on the breadth of bullish participation. Drawdown Percent (DDP) measures how far SPXL's closing price has fallen below its recent closing high, expressed as a percentage. Although neither forms part of the proprietary TMS indicator suite, both are included in the dataset and used alongside the five TMS indicators to define the market conditions examined in historical event studies. The data from TMS can be plotted as an indicator on a chart (Figure 1) or shown as a table (see table below).

Table 3: TMS indicator dataset.

Date	Symbol	SPXL	DDP	BPI	TPI	TBI	TVI	TRI	TMR
11/24/26	SPXL	225.65	25.12	38.80	35.45	54.11	73.53	6.00	Revert
11/23/26	SPXL	229.06	23.99	35.80	63.49	39.53	71.78	6.00	Revert
11/20/26	SPXL	201.97	32.98	35.80	75.77	12.40	69.63	5.00	Transition
11/19/26	SPXL	225.68	25.11	43.40	83.70	11.63	66.47	7.00	Transition
11/18/26	SPXL	239.97	20.37	48.00	83.70	6.20	65.10	7.00	Transition
11/17/26	SPXL	242.10	19.66	51.80	84.78	0.00	64.45	8.00	Transition
11/16/26	SPXL	250.09	17.01	57.40	81.16	3.51	64.45	8.00	Transition
11/13/26	SPXL	265.10	12.03	62.00	59.42	12.24	64.91	8.00	Transition
11/12/26	SPXL	268.38	10.94	64.20	59.42	21.33	67.41	8.00	Transition
11/11/26	SPXL	271.18	10.01	64.00	46.38	37.22	69.38	8.00	Transition
11/10/26	SPXL	261.05	13.37	57.80	56.52	36.36	68.75	8.00	Transition
11/9/26	SPXL	264.01	12.39	59.00	71.74	45.45	68.28	8.00	Transition
11/6/26	SPXL	246.75	18.12	57.00	55.07	56.97	67.76	8.00	Transition
11/5/26	SPXL	244.98	18.71	60.20	34.92	61.21	65.55	8.00	Transition
11/4/26	SPXL	281.79	6.49	61.80	3.17	63.03	61.18	9.00	Transition
11/3/26	SPXL	268.76	10.81	58.40	7.94	41.21	59.52	8.00	Transition
11/2/26	SPXL	266.32	11.62	59.20	6.35	62.42	57.15	8.00	Transition
10/30/26	SPXL	270.35	10.29	57.80	31.43	42.42	54.98	7.00	Transition
10/29/26	SPXL	285.67	5.20	57.40	26.67	42.36	53.84	10.00	Transition
10/28/26	SPXL	288.95	4.11	55.00	26.67	21.53	55.12	10.00	Transition
10/27/26	SPXL	286.21	5.02	53.00	26.09	21.53	55.25	10.00	Transition
10/26/26	SPXL	281.52	6.58	51.00	27.54	33.33	55.26	10.00	Transition
10/23/26	SPXL	275.63	8.53	50.20	37.68	43.75	55.09	10.00	Revert
10/22/26	SPXL	280.41	6.95	49.60	11.59	72.92	53.98	10.00	Revert
10/21/26	SPXL	290.87	3.48	48.80	10.14	54.17	51.76	10.00	Revert

2.1 Event Studies

The question “How has the market performed after comparable market conditions in the past?” can be explored through a historical forward-return study using TMS data by constructing a seven-factor framework. The framework consisting of the seven indicators for pullbacks, breakouts, volatility, directional regime, behavioural regime, bullish participation and drawdown can identify historical trading days that satisfy all seven selected conditions, then measures SPXL’s subsequent price changes over 10, 20, 30, 40, 50, etc, trading days. This is particularly useful to options traders, informing the assessment of potential holding periods and expiries.

In Table 4, each row represents a qualifying trading day of a defined market condition where: DDP < 10, BPI >= 51, < 71, TPI >= 76, TBI < 26, TVI = Elevated, TRI >= 9, TMR = Transition. The PctChgDayX columns show the percentage change from SPXL’s closing price on that date to its closing price X trading days later.

Table 4: Event study for the market condition as of 21st July 2026.

Date	Symbol	DDP	BPI	TPI	TBI	TVI	TRI	TMR	Day10Close	Day20Close	Day30Close	Day40Close	Day50Close	Day60Close	PctChgDay10	PctChgDay20	PctChgDay30	PctChgDay40	PctChgDay50	PctChgDay60
7/21/26	SPXL	5.90	56.00	94.33	5.56	53.71	13.00	Transition	294.56	288.87	281.35	271.57	281.10	287.63	8.68	6.58	3.80	0.20	3.71	6.12
7/20/26	SPXL	8.16	58.60	78.01	24.55	51.88	13.00	Transition	279.68	294.99	287.33	275.27	283.20	297.42	5.72	11.51	8.61	4.06	7.05	12.43
6/22/26	SPXL	6.24	55.00	80.00	9.60	59.00	12.00	Transition	271.56	271.04	294.56	288.87	281.35	271.57	0.56	0.36	9.07	6.97	4.18	0.56
2/23/26	SPXL	7.01	60.00	81.48	9.32	63.92	12.00	Transition	211.53	191.01	192.32	232.68	251.45	260.70	-2.35	-11.82	-11.22	7.41	16.08	20.35
10/28/24	SPXL	2.23	70.40	80.75	5.70	50.76	12.00	Transition	182.70	180.43	184.48	182.64	163.09	178.20	8.70	7.35	9.76	8.67	-2.96	6.03
7/19/21	SPXL	8.15	54.20	90.23	9.60	51.73	13.00	Transition	113.27	120.57	124.59	117.94	110.34	110.03	8.87	15.89	19.75	13.36	6.06	5.76
1/26/21	SPXL	0.49	67.80	100.00	13.28	55.98	12.00	Transition	81.25	82.08	80.13	79.48	92.82	95.29	4.47	5.54	3.03	2.20	19.35	22.53
1/25/21	SPXL	0.00	69.60	100.00	16.31	55.28	12.00	Transition	81.45	79.47	78.64	80.68	91.50	97.91	4.22	1.69	0.63	3.24	17.08	25.28
9/24/19	SPXL	7.01	67.00	91.11	3.57	51.50	13.00	Transition	47.88	53.03	57.26	59.90	59.46	64.13	-7.62	2.32	10.48	15.57	14.72	23.73
9/23/19	SPXL	4.66	68.80	91.11	3.57	51.03	13.00	Transition	50.14	53.64	57.45	59.95	58.38	64.13	-5.65	0.94	8.11	12.82	9.86	20.68
9/20/19	SPXL	4.81	68.80	100.00	7.84	51.63	13.00	Transition	50.82	52.50	56.80	59.90	59.61	64.11	-4.22	-1.06	7.05	12.89	12.34	20.83
9/19/19	SPXL	3.21	68.20	80.00	15.69	51.50	13.00	Transition	48.86	53.19	55.24	58.64	61.22	62.80	-9.43	-1.41	2.39	8.69	13.48	16.40
8/2/19	SPXL	9.10	61.40	99.50	18.24	55.34	12.00	Transition	48.08	49.64	53.50	52.31	51.59	55.33	-5.11	-2.03	5.59	3.24	1.82	9.20
5/9/19	SPXL	7.36	66.40	96.25	12.35	65.44	12.00	Transition	45.89	48.26	52.16	53.23	53.58	46.13	-5.28	-0.39	7.66	9.87	10.59	-4.79
5/8/19	SPXL	6.63	70.00	91.87	12.35	61.93	12.00	Transition	47.57	46.89	52.41	53.99	53.18	50.67	-2.58	-3.97	7.33	10.57	8.91	3.77
6/17/16	SPXL	6.66	67.00	77.78	3.03	57.50	11.00	Transition	88.46	96.92	97.41	100.41	99.14	91.94	3.84	13.77	14.34	17.87	16.38	7.92
6/16/16	SPXL	5.50	67.40	89.30	0.00	53.98	11.00	Transition	87.96	96.09	97.81	99.44	97.71	96.12	1.98	11.41	13.40	15.29	13.29	11.44
11/11/15	SPXL	9.55	69.80	76.19	5.18	56.37	9.00	Transition	88.99	84.34	85.00	68.84	66.29	61.04	2.05	-3.28	-2.53	-21.06	-23.98	-30.00
11/10/15	SPXL	8.46	70.80	82.54	10.98	55.73	9.00	Transition	89.04	83.77	85.47	68.80	63.69	61.12	0.90	-5.08	-3.15	-22.04	-27.83	-30.74

A quick calculation in Microsoft Excel shows in the table below, the average percent rise X days later, for all 19 days of the market condition.

Table 5: SPXL Forward Returns for the market condition of 21st July 2026.

Horizon	N	Higher	Avg rise	Lower	Avg decline	Payoff ratio
Day 10	19	57.89%	4.54%	42.11%	-5.28%	0.86
Day 20	19	57.89%	7.03%	42.11%	-3.63%	1.94
Day 30	19	84.21%	8.19%	15.79%	-5.63%	1.45
Day 40	19	89.47%	9.00%	10.53%	-21.55%	0.42
Day 50	19	84.21%	10.93%	15.79%	-18.26%	0.60
Day 60	19	84.21%	13.31%	15.79%	-21.84%	0.61

Day 30 offers the strongest balance in this sample: SPXL rose in 84.21% of observations, and its average gain of 8.19% exceeded its average decline of 5.63%, giving a 1.45 payoff ratio. Day 20 had the best payoff ratio at 1.94, but a lower success rate of 57.89%. Holding for 40–60 days increased the average winning return, but losing outcomes became much larger. Longer holding periods offered greater gains when successful, but substantially greater losses when unsuccessful. With only 19 observations, the reported success rates and payoff ratios are sensitive to individual outcomes and may not represent future performance.