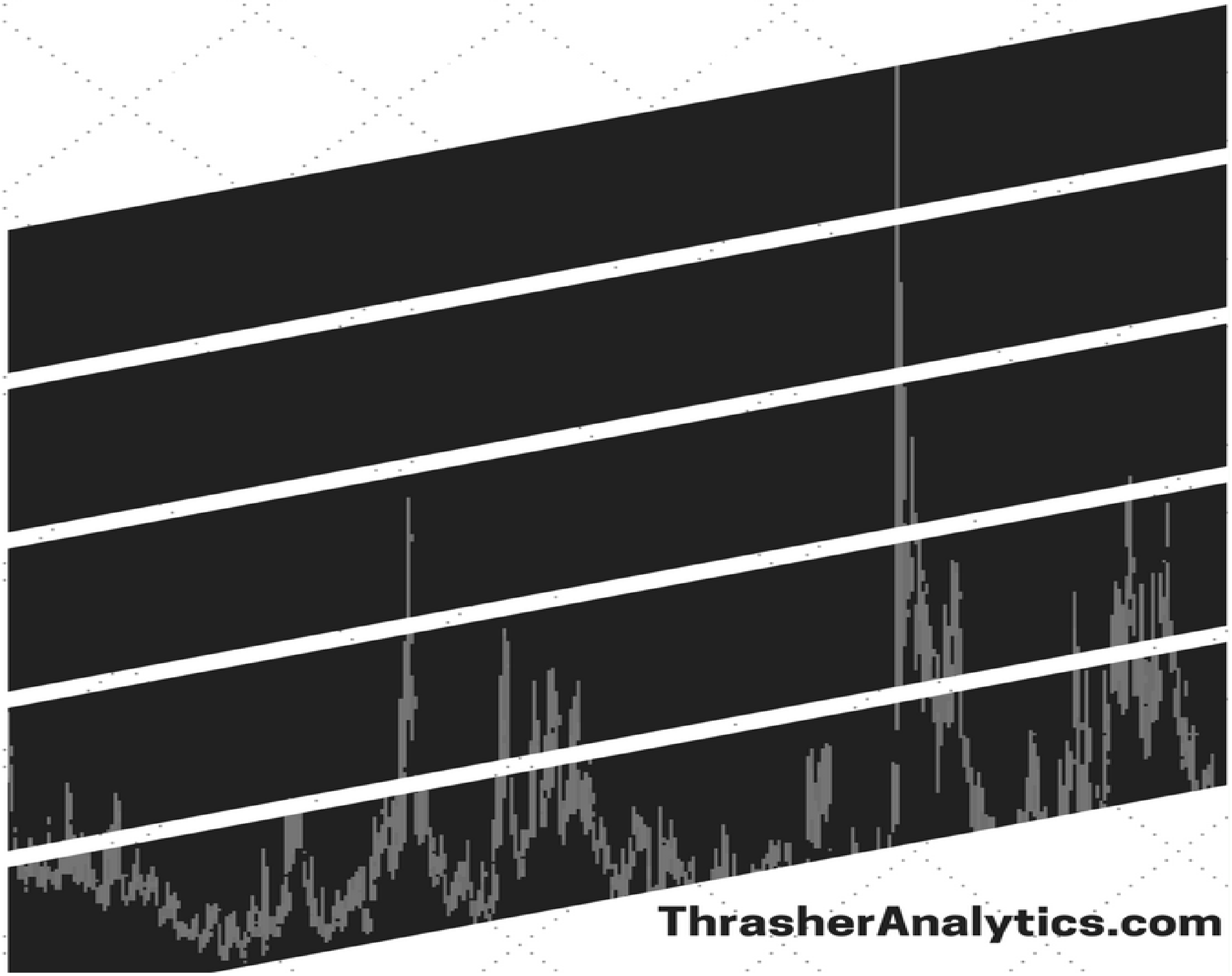
THRASHER ANALYTICS

BI-WEEKLY RESEARCH & ANALYSIS



ThrasherAnalytics.com

Thrasher Analytics Market Dashboard

THRASHER ANALYTICS

Sector Rotation: November	
Real Estate	XLRE
Utilities	XLU
Health Care	XLV

Fixed Income Rotation: Q4	
Junk Bond	JNK
Aggr Bond	AGG

Index & Sector Adaptive Trend Models	Up Trend	Down Trend
SPX	X	
QQQ	X	
IWM	X	
XLF	X	
XLY	X	
XLK	X	
XLV	X	
XLU	X	
XLP	X	
XLI	X	
XLRE	X	
XLE		X
XLB	X	

Daily Sentiment Index	% Bullish
S&P 500	79
Nasdaq 100	80
Nikkei	82
VIX	14
10yr Treasury	26
5yr Treasury	31
CRB Index	55
Gold	29
U.S. Dollar	57

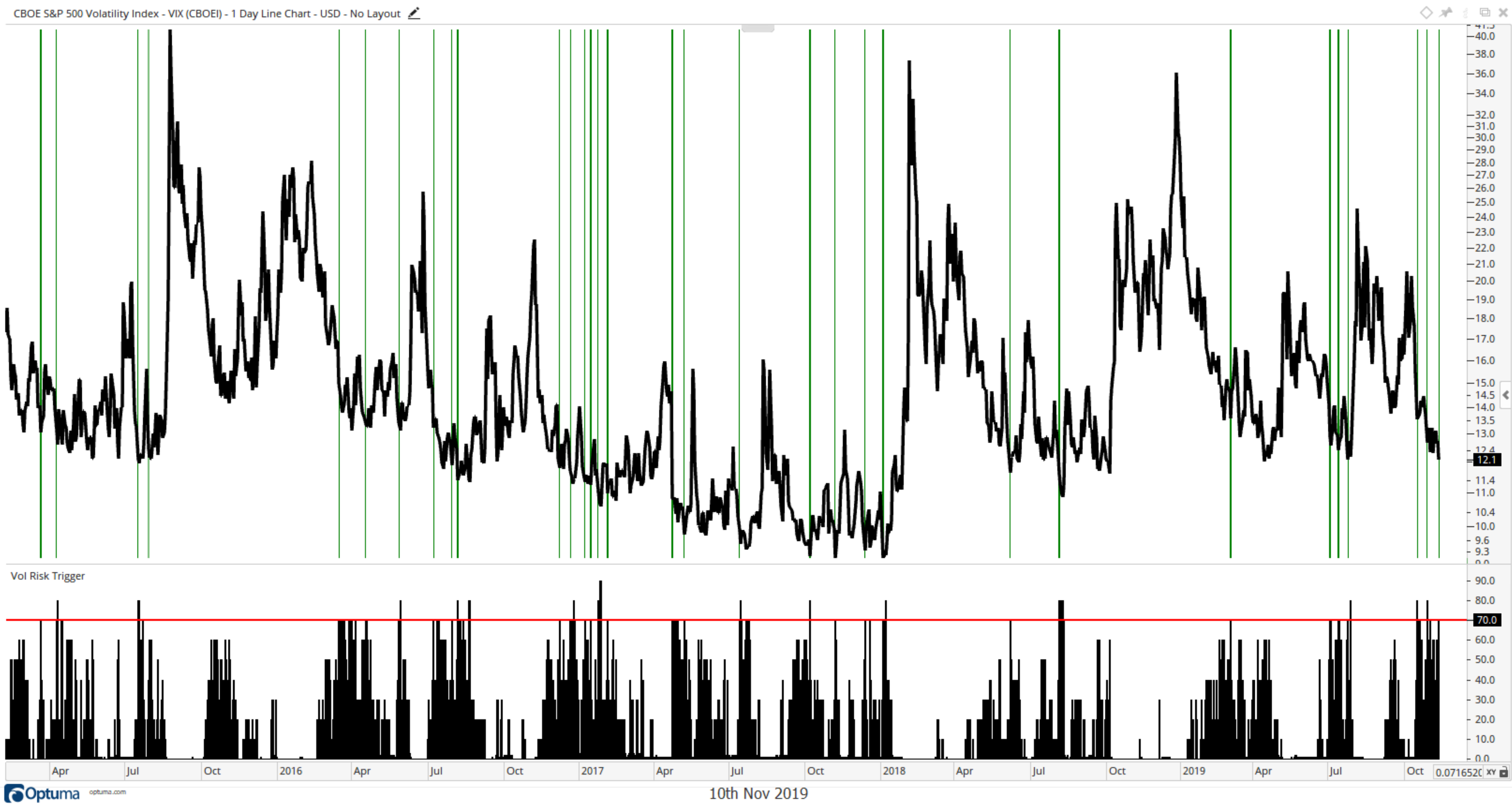
**Green<25%*   *Red>80%*

Notable Breadth Data:	
SPX >50MA	65.50%
SPX >200MA	69.70%
Nasdaq >50MA	69.90%
Nasdaq >200MA	67.90%

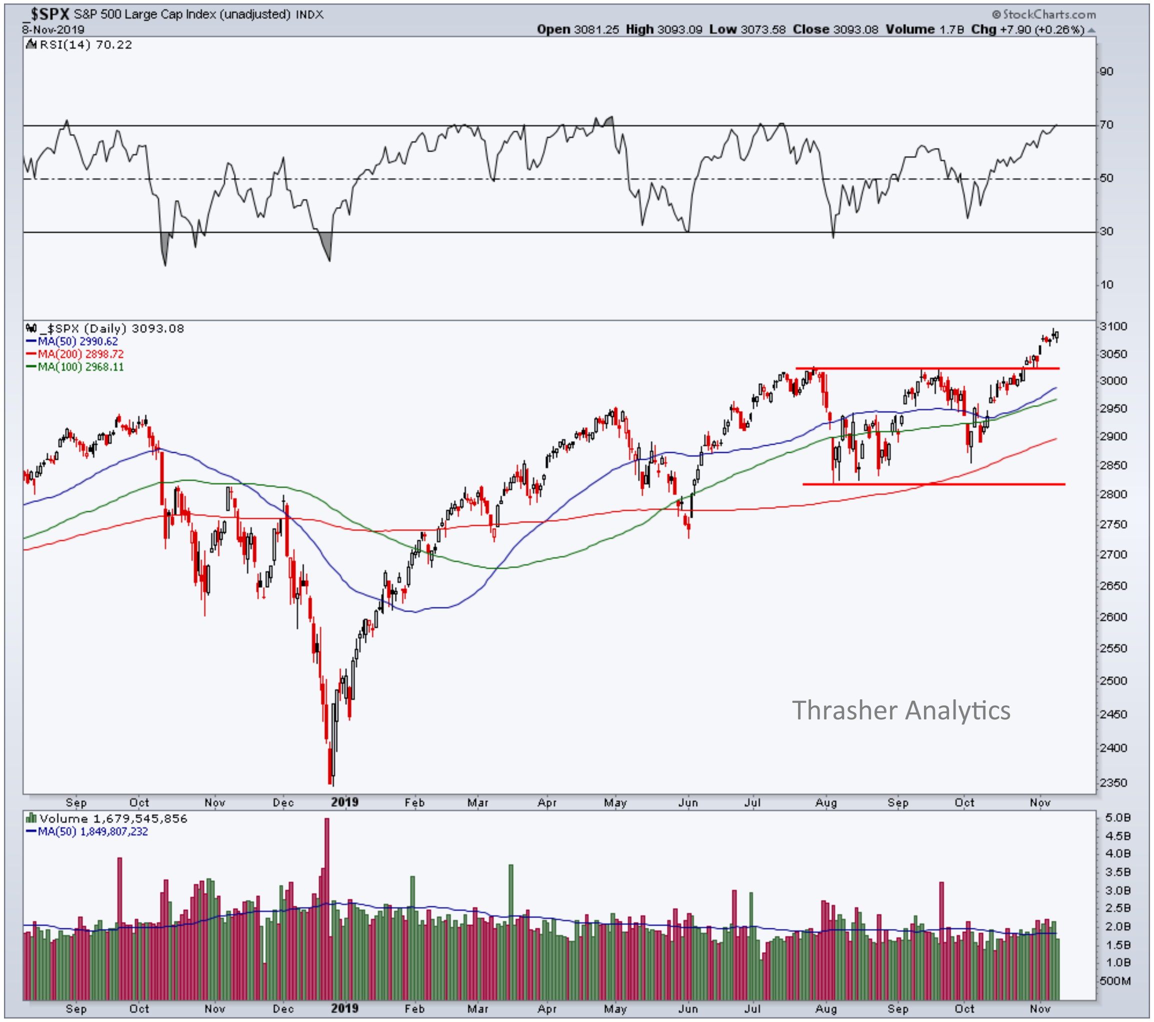
1 Day - Watch List - No Layout

Sector	> 50MA	> 200MA	1wk Perf	1mo Perf	3mo Perf	12mo Perf
SPDR Financial Select Sector Fund ETF	True	True	2.47%	11.43%	9.46%	9.02%
SPDR Energy Select Sector Fund ETF	True	False	2.38%	8.57%	1.56%	-11.56%
SPDR Materials Select Sector Fund ETF	True	True	1.97%	9.14%	3.4%	7.91%
SPDR Industrial Select Sector Fund ETF	True	True	1.92%	10.38%	7.49%	11.76%
SPDR Technology Select Sector Fund ETF	True	True	1.71%	9.37%	8.48%	21.18%
SPDR Communication Services Select Sector ETF	True	True	1.14%	6.01%	2.69%	11.25%
SPDR Health Care Select Sector Fund ETF	True	True	0.27%	7.96%	4.21%	2.05%
SPDR Consumer Discretionary Select Sector Fund ETF	True	True	-0.25%	3.31%	1.62%	8.76%
SPDR Consumer Staples Select Sector Fund ETF	False	True	-0.64%	0.73%	1.86%	7.56%
SPDR Utilities Select Sector Fund ETF	False	True	-3.65%	-3.39%	1.56%	12.7%
SPDR Real Estate Select Sector Fund ETF	False	True	-3.7%	-3.47%	-1.82%	14.21%

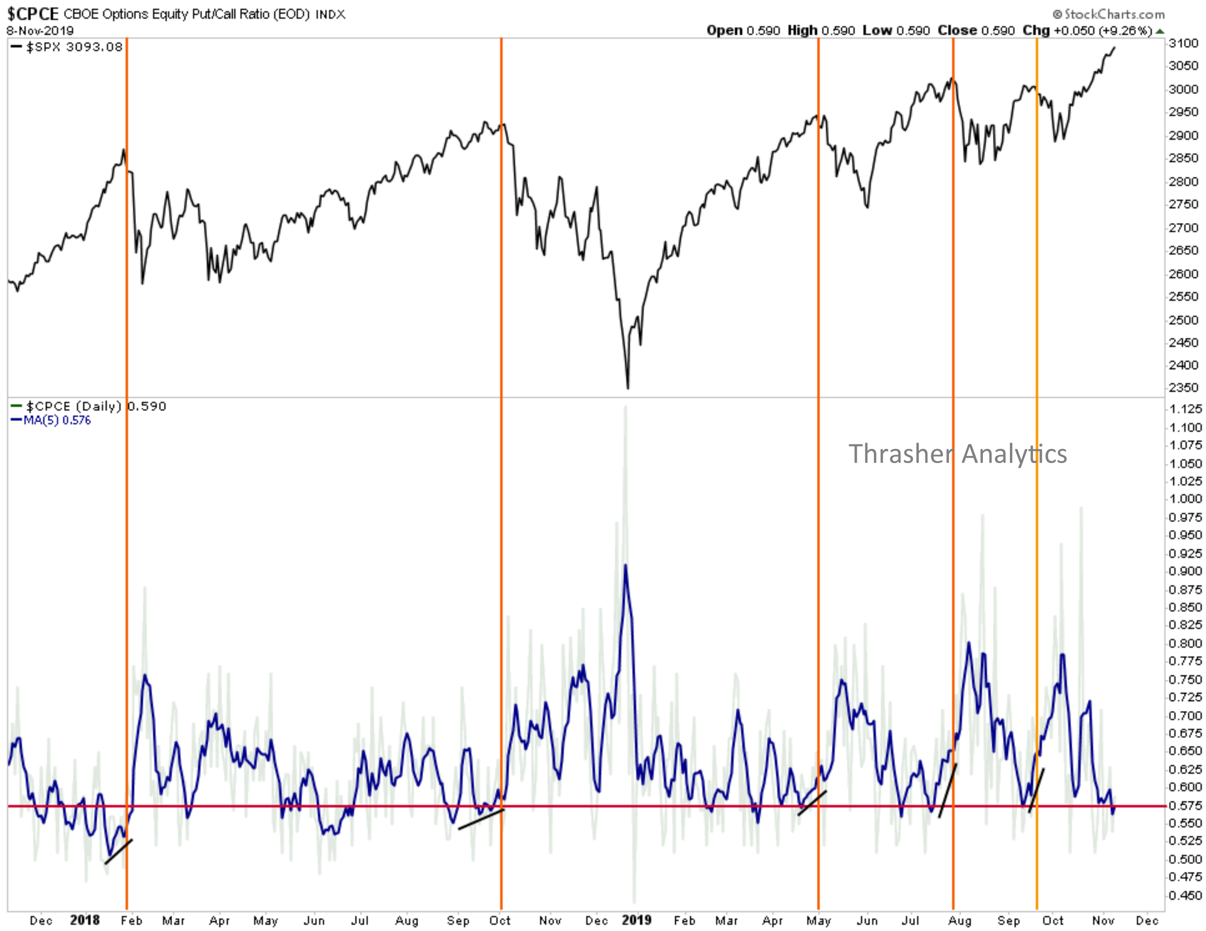
The best performing sector last week was Financials and the worst performing sector was Real Estate.



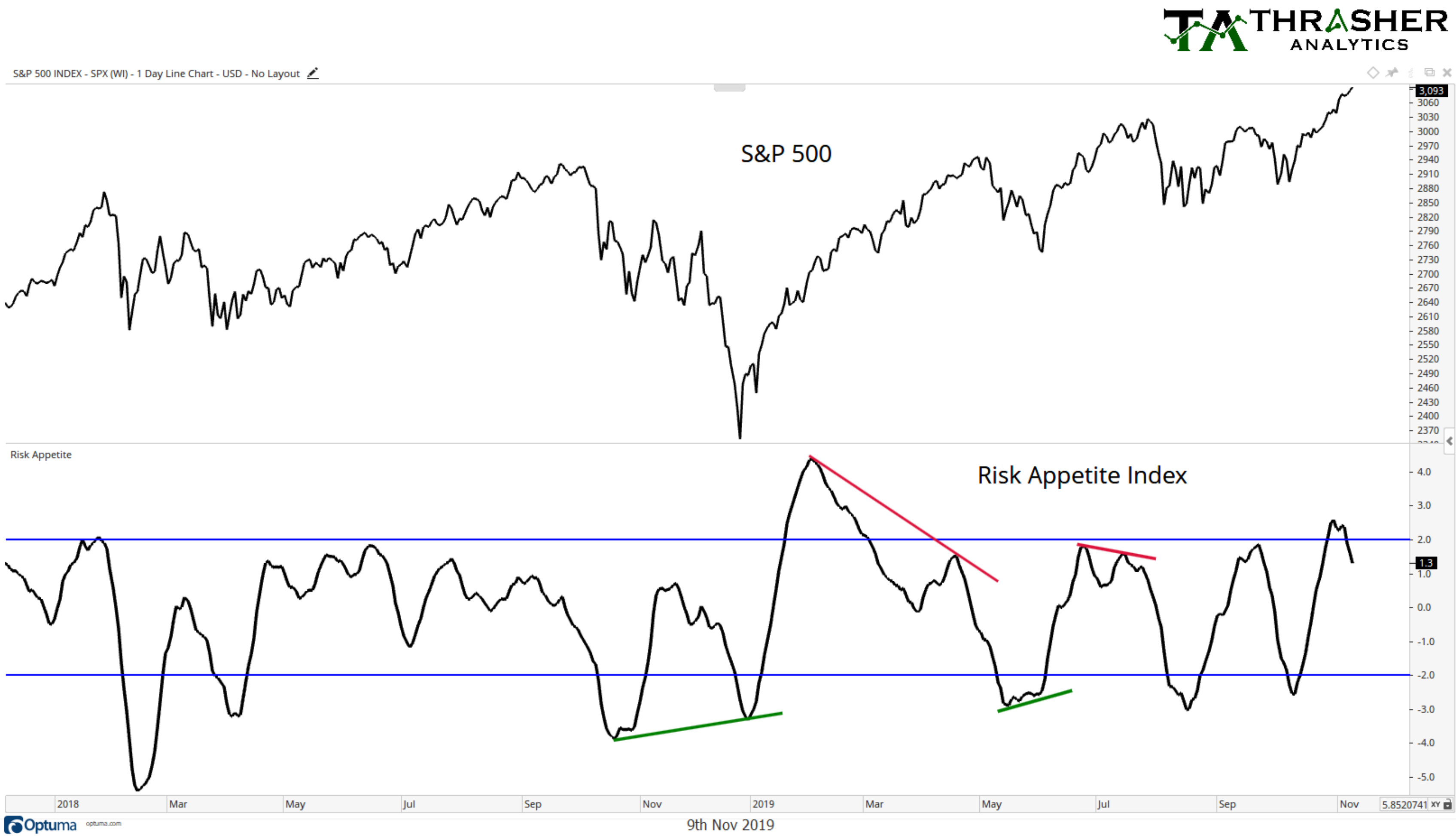
The VRT continues to signal heightened risk of volatility moving higher. Another signal was produced on Friday with the VIX closing near 12, just above the prior April low. What's unique about the latest signal of the VRT is it now has participation of the compression in dispersion components. Volatility has now compressed quite a bit, which is something I'll be covering later in the letter as well. I think volatility is now a powder keg ready to blow based on the VRT, sentiment, record net-short positioning in the futures market and the dearth of compression in multiple volatility indices. The kindling has been set, it's just a matter in my view of what will strike the match. As I wrote last week, I think the major risk in the market is not structural but one based on excessively bullish sentiment. Which means the market's reaction historically is of a decline in the 5-10% range compared to if we had major structural weakness which could move the market by 15-20%. I use this to set my expectations accordingly but still keeping an open mind with what supply/demand does with price action in equities and ultimately for volatility.



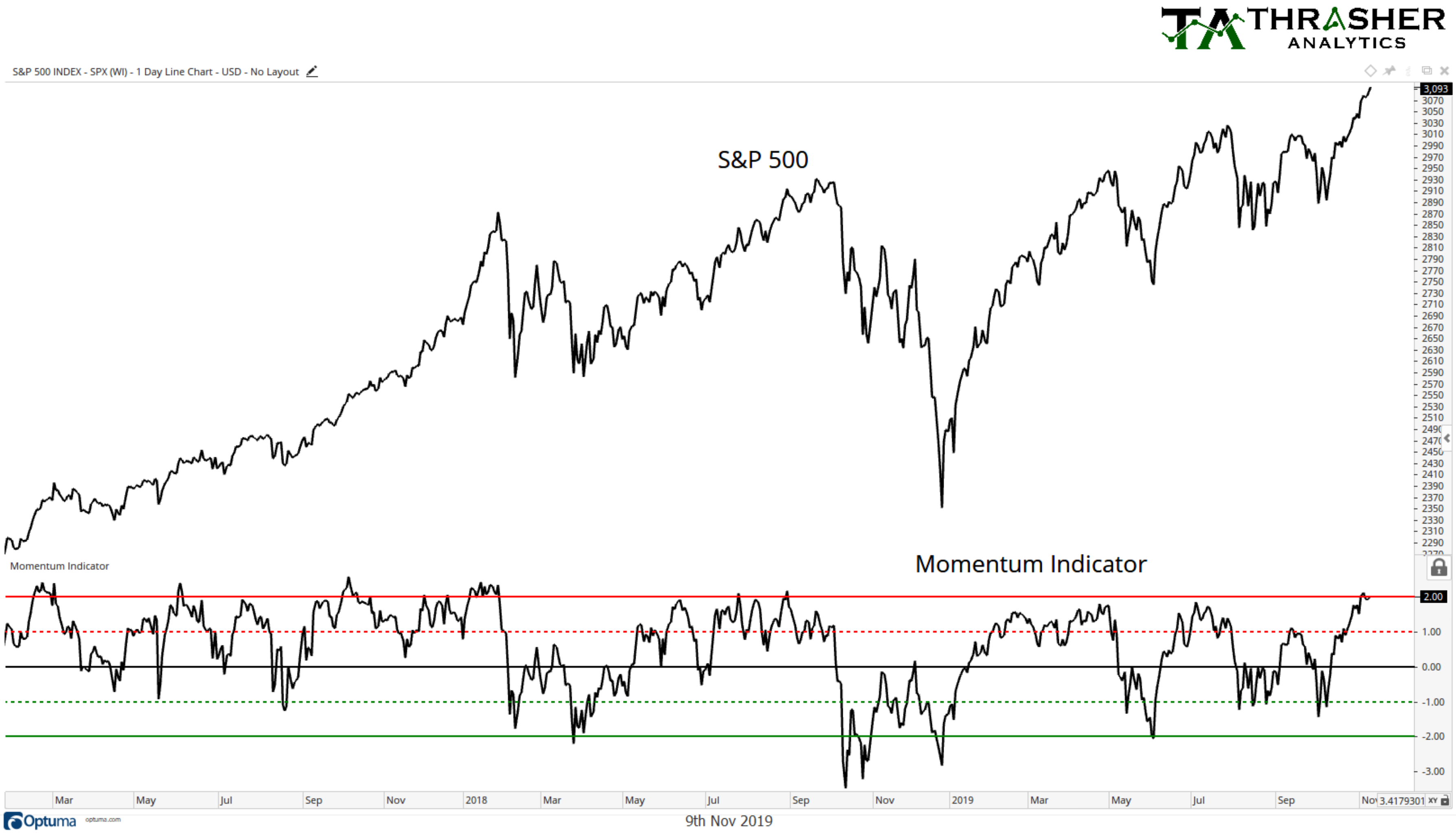
The S&P 500 continued higher last week, setting a new high to close out the week. Momentum is now above 70 for the 14-day RSI, an 'overbought' level but I do not view overbought momentum has a long-term bearish sign, it's an Newtonian indication that the object is in motion, and that's not a bad thing! But short-term, it can cause profit taking as we saw in July and May earlier int his year when equities pulled back at or near the 200-day MA.



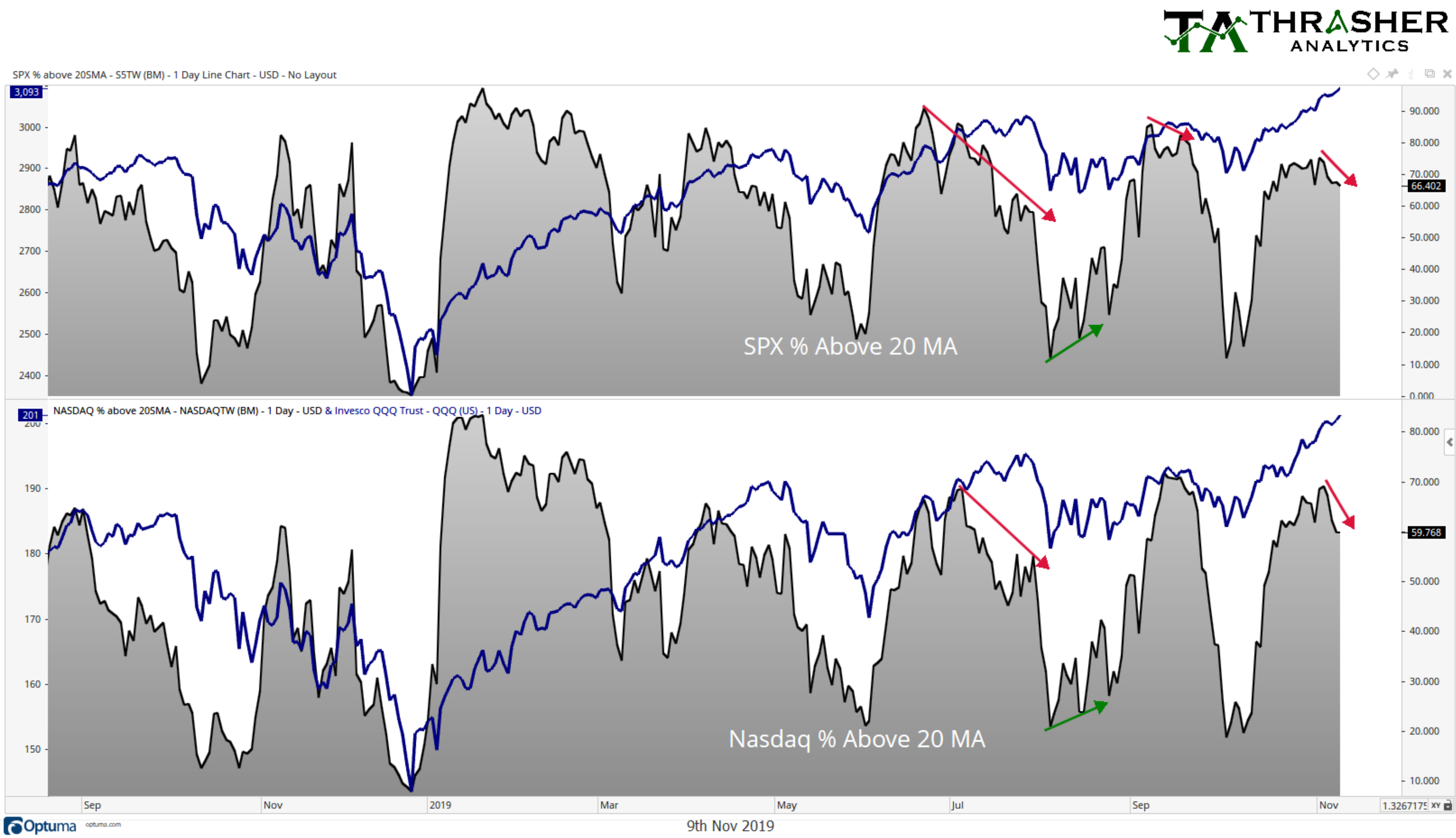
There's been a pick up in discussion on financial social media of the decline in the put/call ratio with the perceived impact being mixed between the bulls and the bears. I've noted this chart above before, with the purpose of reminding that a low put/call ratio is not alone a bearish catalyst for stocks. It's when that ratio begins moving higher, a sign that traders have begun to show interest in buying puts that can have a negative impact on stocks. The vertical lines on the chart show market peaks, each occurring AFTER the smoothed put/call ratio has bottomed. Friday saw a new low in the P/C, so I'll be watching this week if the ratio begins to firm up as traders start to buy puts again, which would then be a stronger signal for potential short-term weakness in equities.



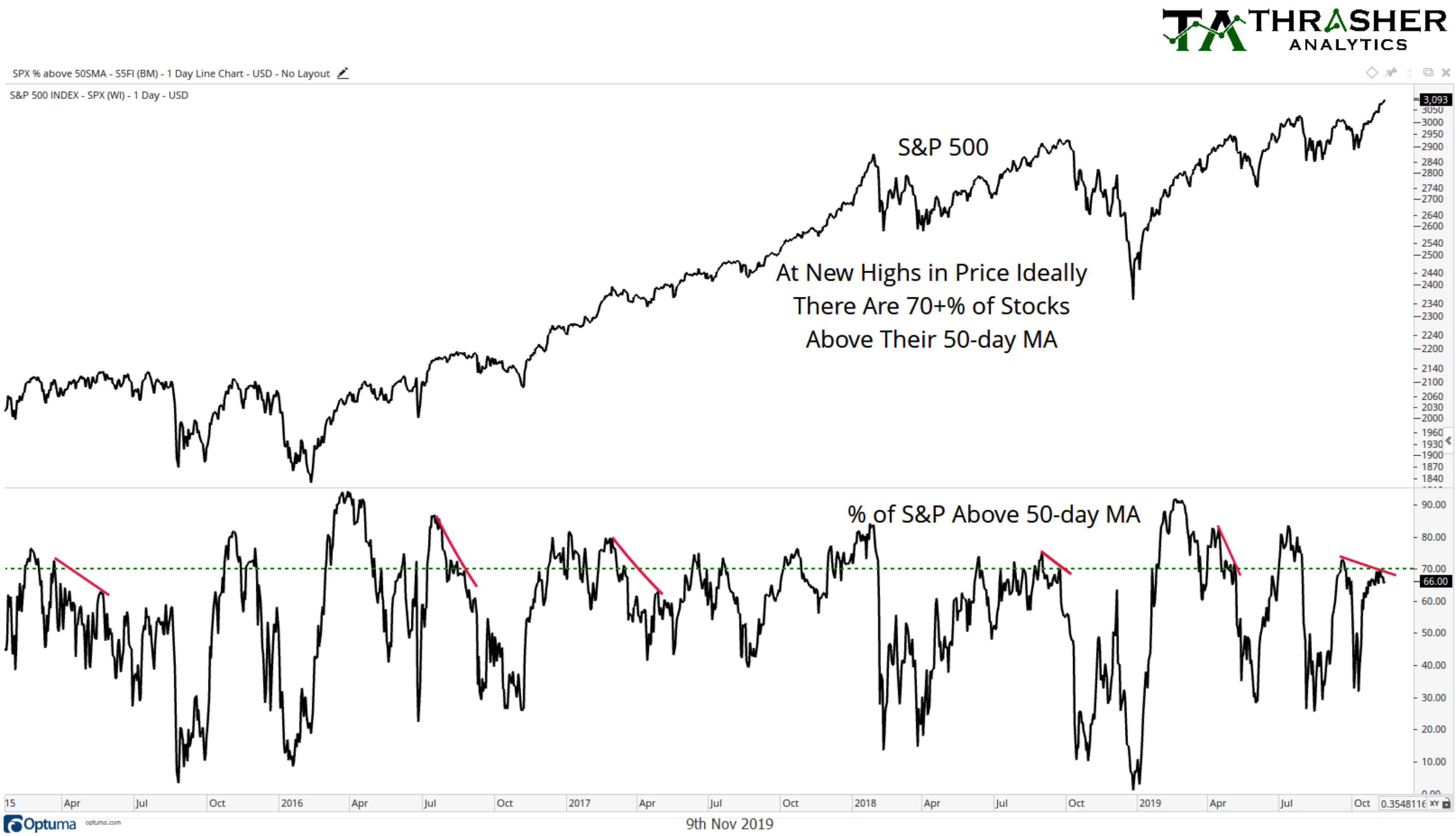
The Risk Appetite Index has started to move lower as traders begin to get a bit more defensive with equities hitting new highs. The divergence, at this point, is not major like we've seen at prior short-term peaks but its notable that we've come off an elevated reading and the sentiment in risk appetite may have begun to shift.



Above is my proprietary momentum indicator and the S&P 500. It has now reached 'overbought' status, which unlike common measures of momentum which would be a long-term positive, my custom momentum indicator was built to signal an overheating in momentum so overbought is truly a sign of being 'overbought' (hopefully that makes sense!). We haven't seen a reading this high since September, July, and January of last year. When applying this indicator to many equity markets, the theme persists in equities being overheated in the short-term.



While long-term breadth still remains positive after improving two weeks ago, short-term breadth - as measured with the % of stocks above their respective 20-day Moving Average - has begun to break down for both the Nasdaq and the S&P 500, as shown on the chart above. While both equity indices finished the weak at highs, there was a decline in the percentage of stocks above their short-term moving average. We saw this happen earlier this summer too which took equities briefly lower by roughly 5%.

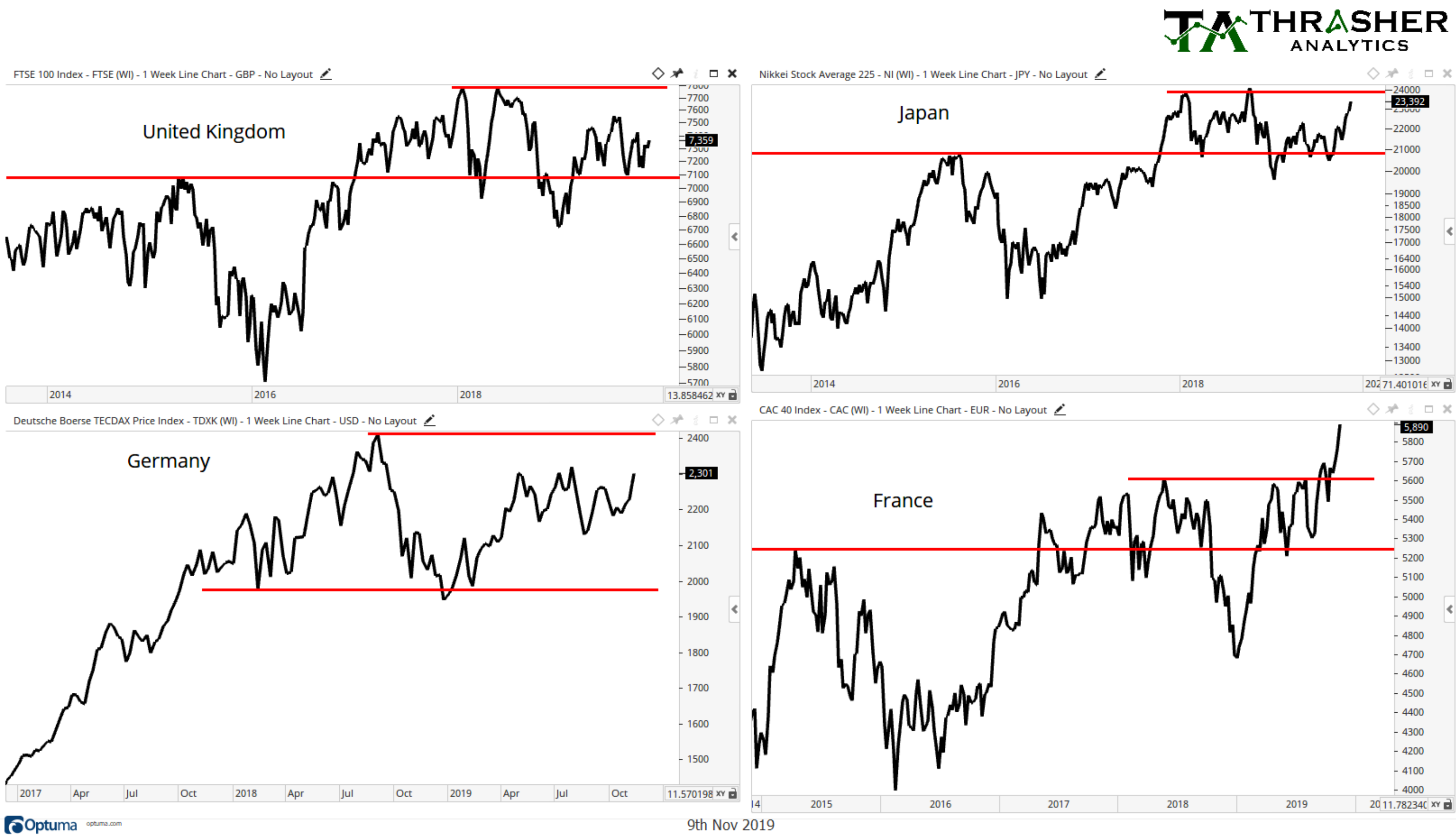


As of I've said, breadth has been improving but we're still not at levels that would provide signs of broad participation in the market's up trend. Ideally we'd see repeated moves above 70% in the percentage of SPX stocks above their 50-day Moving Average. We closed out last week at 66%, which is a tick lower than where it had been earlier in the week and still below the prior summer highs. Many point to divergences regardless of where he absolute level is, I believe this is an incorrect way to evaluate breadth. We can't expect the market to recover the 90% level seen off the Dec. '18 lows as the only sign of positive breadth. This is why I look for at least 70% reads, when we don't get them the market often falters. In fact since 2009 when the S&P hits a 1-year high with less than 70% of stocks above their 50-day MA, the index was lower 58% of the time 1-month later and 72% of the within 3 months (N=98).

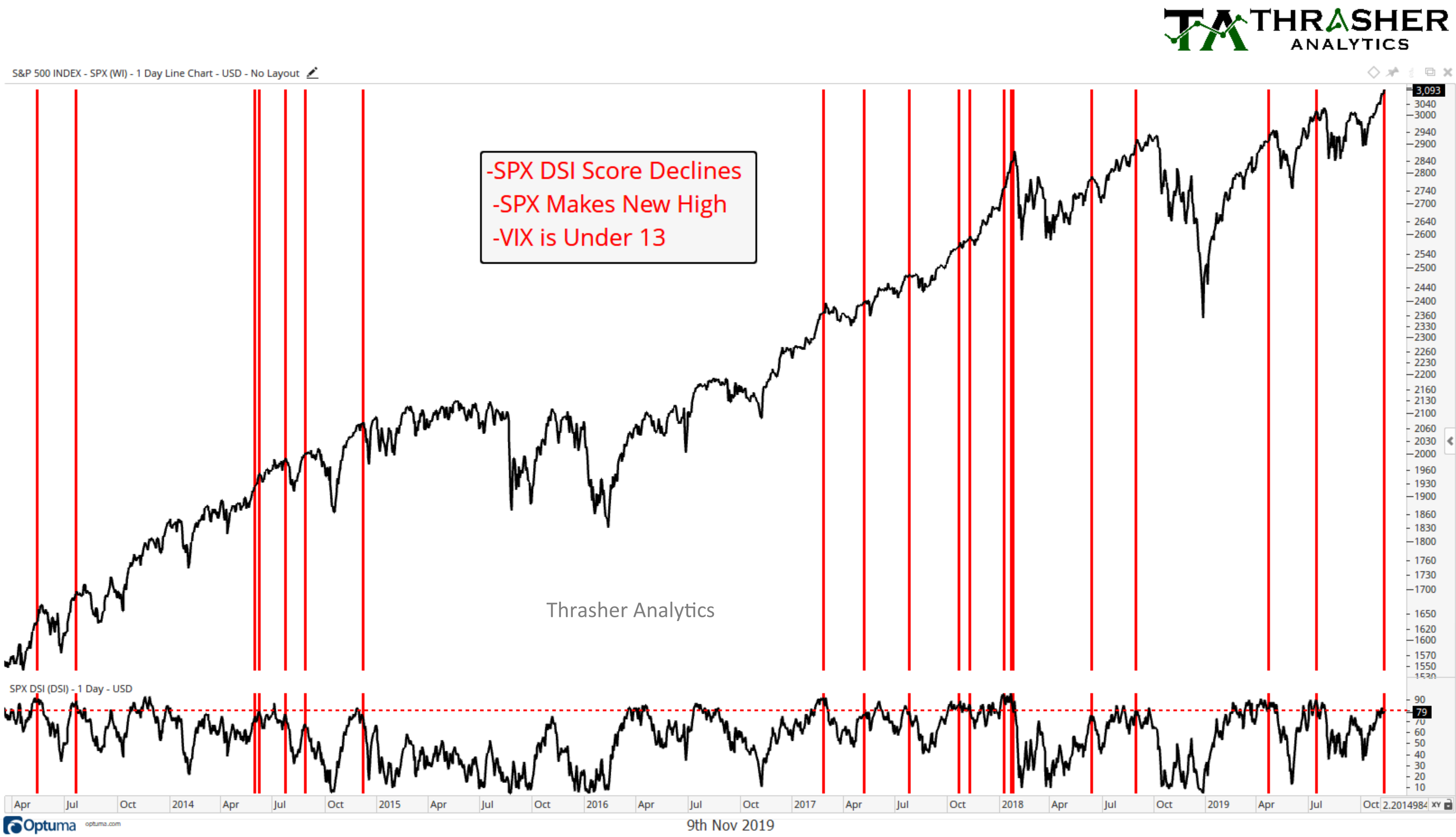
The 10-year Treasury Yield has seen a sharp rise off the summer lows. When yield begins to move, I look for signs of confirmation in metals and in equity risk appetite. When copper is outperforming gold, that's a positive sign for rates going higher as we saw in 2017, with the opposite being true like we saw in mid-2018. The same applies for small caps vs. utilities. Utilities are highly correlated to rates, so they become a good bond proxy in the equity market. When small caps are outperforming utilities then I begin looking for rates to move higher.

Both of these ratios are trending higher along with TNX, confirming the current short-term trend playing out in fixed income.

From a sector performance standpoint, the outlook remains bullish as offensive sectors have continued to outpace defensive sectors. This fits with the view that the structure of the market remains fairly positive.

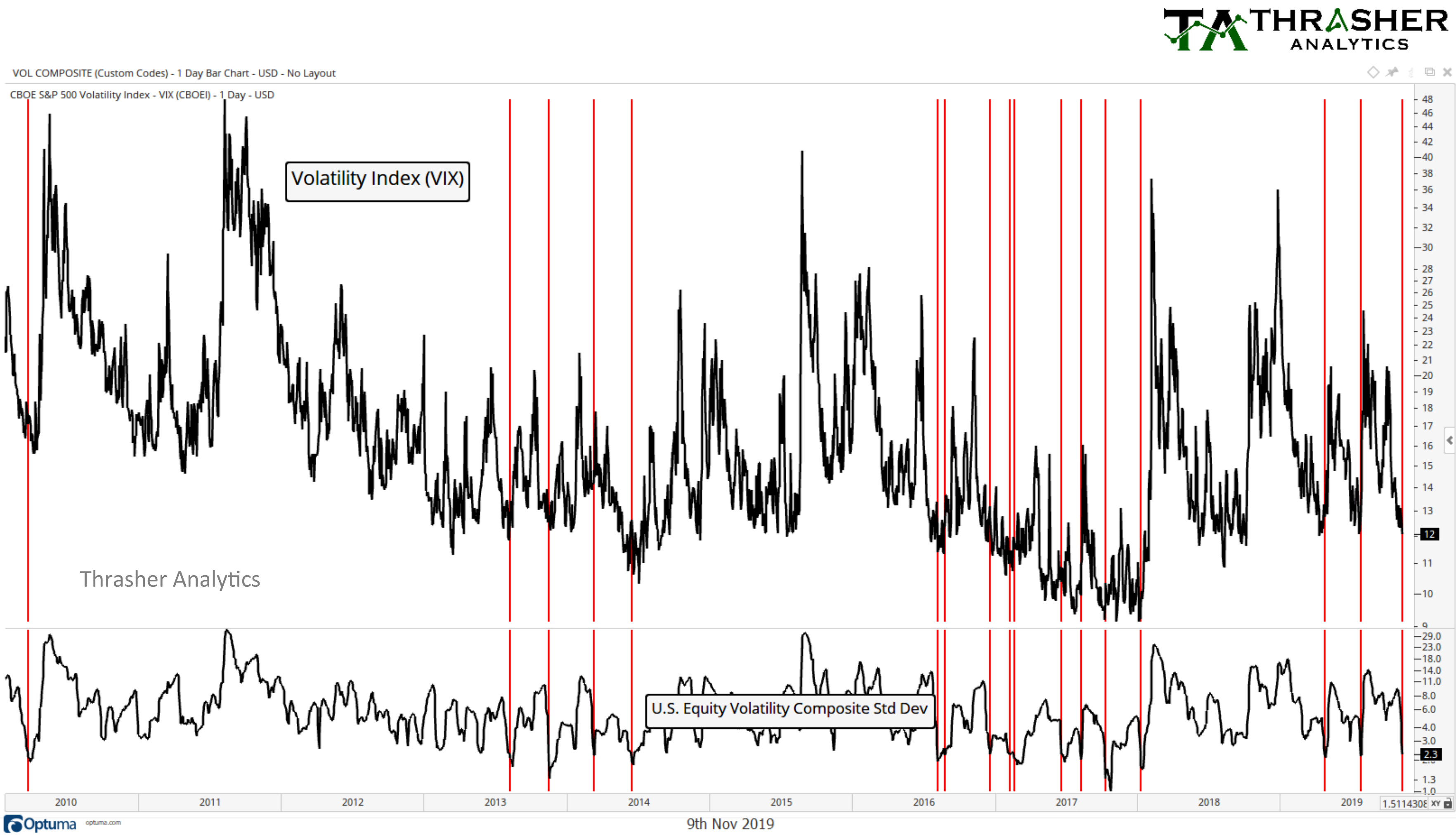


Above are the four major markets that make up the MSCI EAFE Index. France is clearly the strongest of the four, having broken out to a new high. The remaining three continue to consolidation under their prior highs but their overall trends are positive and the price action has more or less been bullish, with Japan nearing its own breakout.



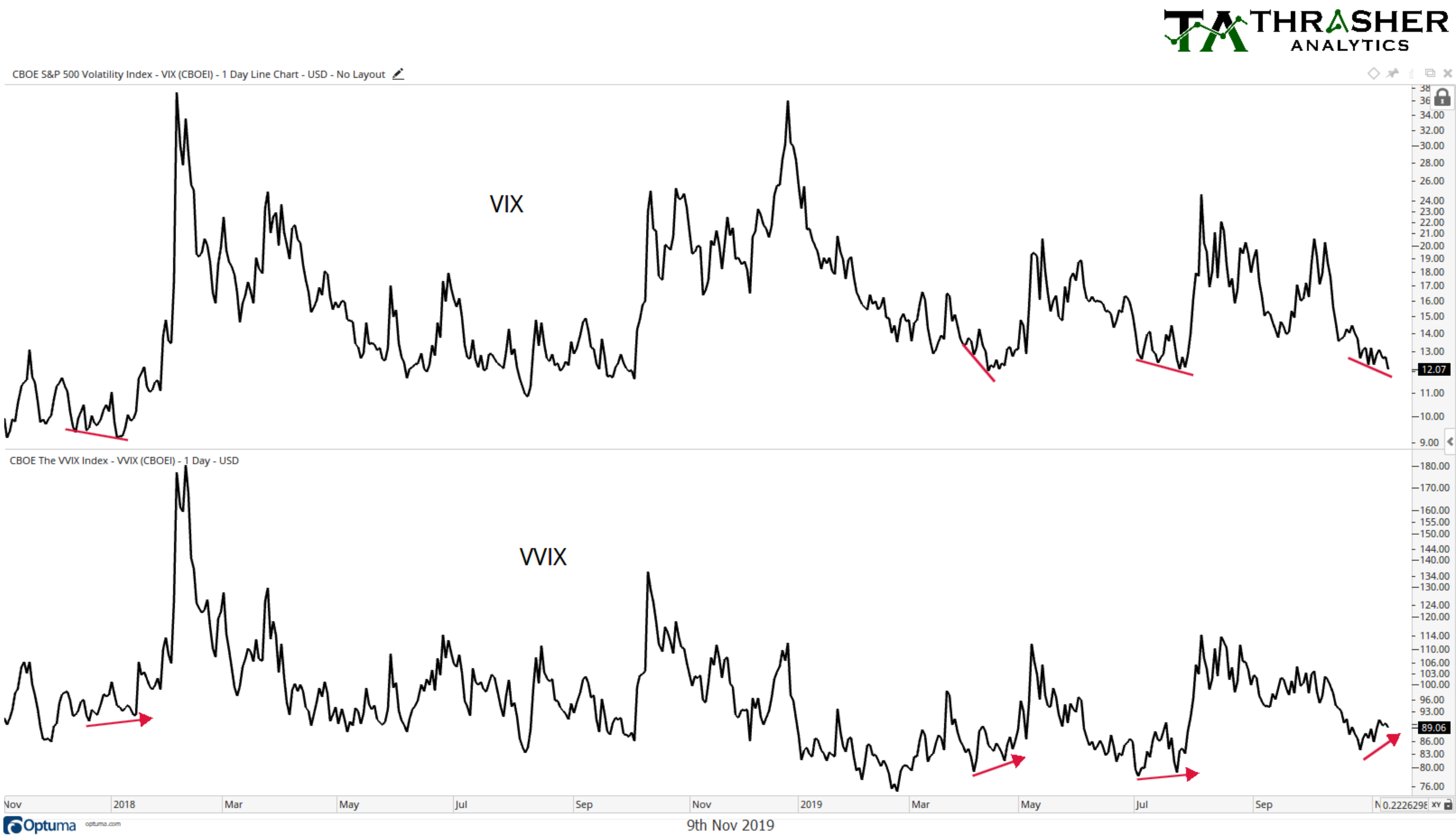
Through the lens of the Daily Sentiment Index we can get an excellent view of market sentiment. While the SPX made a new high on Friday, the DSI score for the S&P actually declined. When this has happened while the VIX has been under 13, short-term peaks have often formed in the S&P 500 as shown by the red vertical lines on the chart above. I've plotted the DSI for the S&P 500 in the bottom panel for additional reference.

The Semiconductors are one of the most important markets I watch each day as a sign of market health for the tech sector and for the market as a whole. The semis are also one of the most bullish charts we have right now as the group broke out in relative performance against the S&P 500 last week. Both the SMH (Semiconductor ETF) and SOX (Semiconductor Index) saw new highs, which is a positive sign for tech and for the broad market. Going forward to we want to see semis continue to show relative strength and I'd hate to see them create a false breakout this week, falling back below their prior high (red horizonal line).



Above is the Volatility Index in the top panel and the 20-day standard deviation of my volatility composite, which is a compilation of volatility indices for the S&P 500, Nasdaq, Dow, and Russell 2000. While there's a strong correlation between the vol composite and the VIX itself, they do give different views into the volatility landscape. Once again, dispersion has compressed for the composite (just like the VIX). The red lines show when the standard deviation has fallen to its current level, you'll notice that volatility moved higher after this has occurred just about every time since 2010. The degree vol moved has varied but it's notable how often the VIX has bottomed once dispersion compresses this much.

The Vol composite (not shown) has actually begun to firm up a bit lately and did not make a lower-low with the VIX last week. When this has happened over the last ten years the VIX was higher 5-days later 83.3% of the time (N=97). I very much believe we've now seen a material low in volatility



Above is the Volatility Index and the Volatility of the VIX (VVIX). While the VIX made a lower-low on Friday, there's been a strengthening in the VVIX, a sign that traders are showing greater interest in VIX seeing a larger move than equities. This type of diverge is not uncommon before the VIX moves and confirms the VVIX. We saw it earlier this summer as well as the before the major move in early 2018. When the

1 Day - Watch List - No Layout

Market	% Bullish	History
VIX DSI	14	
Swiss Franc DSI	21	
Corn DSI	24	
10Y DSI	26.00	
British Pound DSI	27.00	
Gold DSI	29.00	
Euro DSI	29.00	
Orange Juice DSI	30.00	
5YR DSI	31.00	
Australian Dollar DSI	44.00	
Lumber DSI	47.00	
New Zealand Dollar DSI	49.00	
Mexican Peso DSI	50.00	
Lean Hog DSI	51.00	
Copper DSI	51.00	
Platinum DSI	53.00	

1 Day - Watch List - No Layout

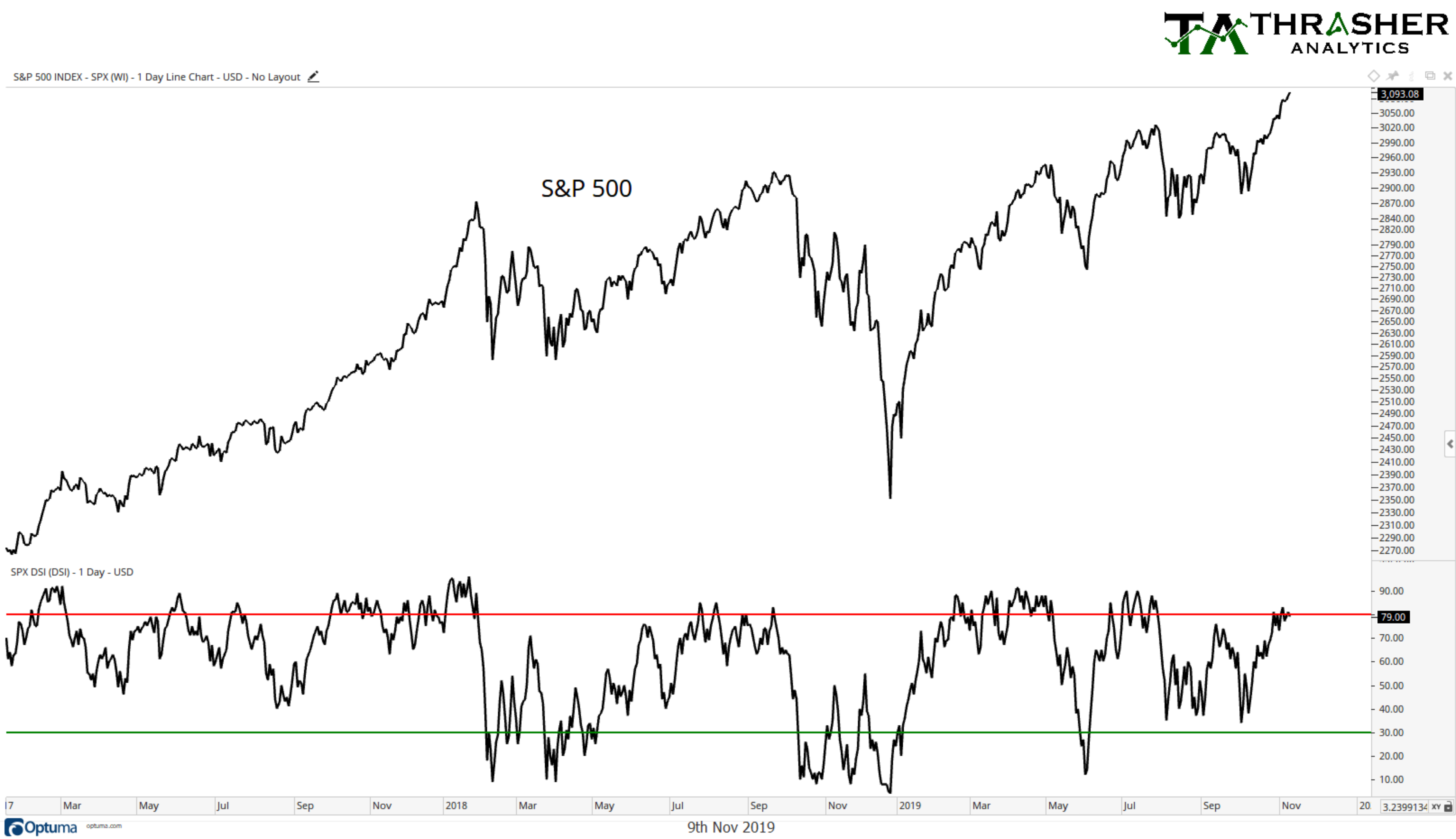
Code	% Bullish	History
Silver DSI	55.00	
Heating Oil DSI	55.00	
CRB Index DSI	55.00	
US Dollar DSI	57.00	
Crude Oil DSI	57.00	
Coffee DSI	58.00	
Palladium DSI	63.00	
EuroDollar DSI	63.00	
Wheat DSI	65.00	
Sugar DSI	67.00	
Cotton DSI	67.00	
Gasoline DSI	69.00	
Cocoa DSI	70.00	
SPX DSI	79.00	
Cattle DSI	79.00	
Nasdaq DSI	80	
Nikkei DSI	82	
Natural Gas DSI	85	

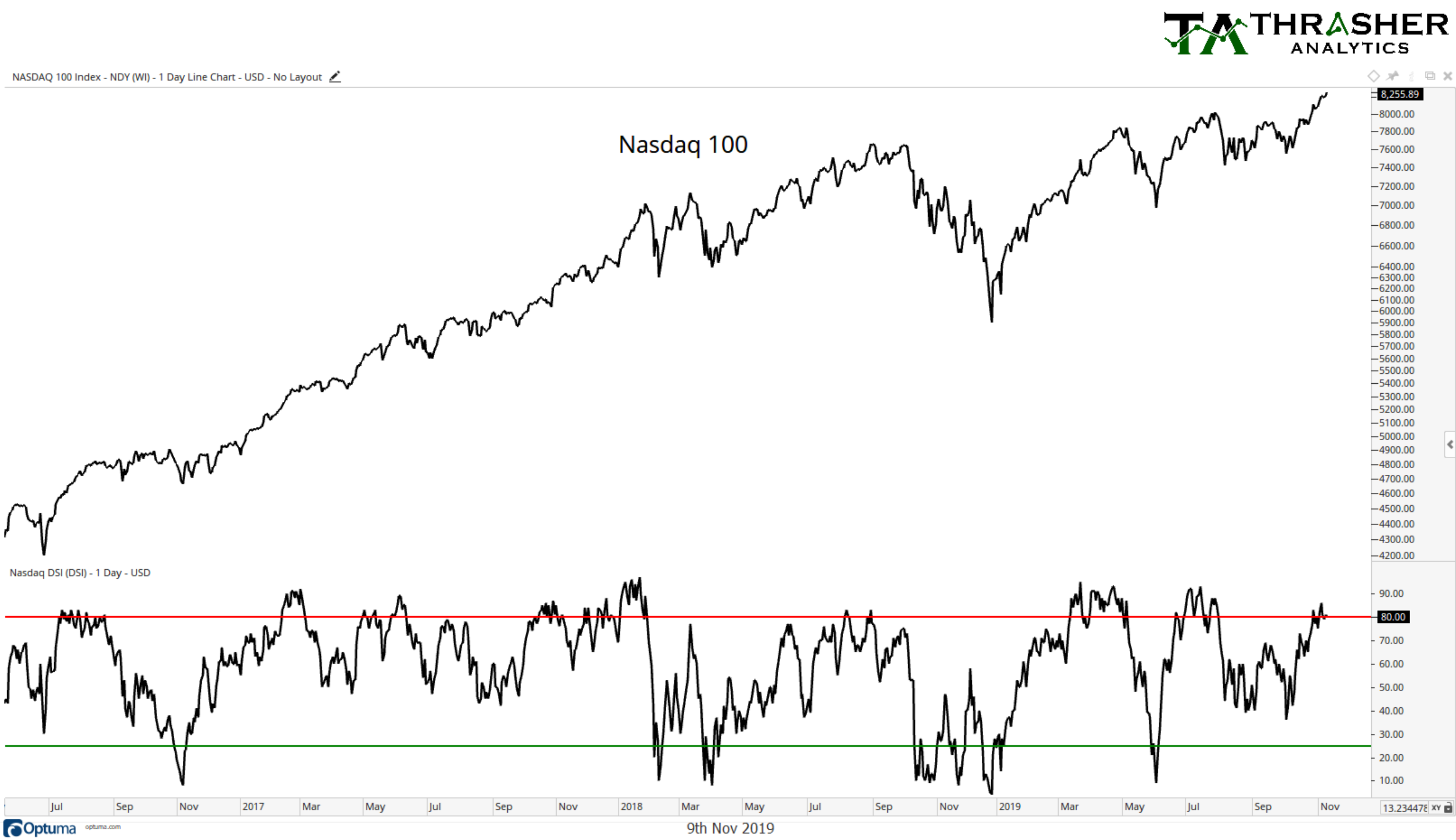
Type Code or Name to add an item to the watchlist

Above is the DSI score for each of the futures markets. The VIX, Swiss Franc, and Corn all have scores below 25% bullish while Nat Gas, Nikkei, and Nasdaq are all at or above 80% bullish. Individual charts of some of the futures and DSI scores are on the following pages.

Daily Sentiment Index 10-year Treasury

Daily Sentiment Index S&P 500




NASDAQ 100 Index - NDY (WI) - 1 Day Line Chart - USD - No Layout
Nasdaq 100
8,255.89
Nasdaq DSI (DSI) - 1 Day - USD
80.00
Jul
Sep
Nov
2017
Mar
May
Jul
Sep
Nov
2018
Mar
May
Jul
Sep
Nov
2019
Mar
May
Jul
Sep
Nov
9th Nov 2019


Gold Futures - GCSpot (NYMEX) - 1 Day Line Chart - USD - No Layout
Gold
Gold DSI (DSI) - 1 Day - USD
1,462.90
29.00
May
Jul
Sep
Nov
2018
Mar
May
Jul
Sep
Nov
2019
Mar
May
Jul
Sep
Nov
Optuma
9th Nov 2019


U.S. Dollar Index - DXSpot (AFUT) - 1 Day Line Chart - USD - No Layout
U.S. Dollar
US Dollar DSI (DSI) - 1 Day - USD
98.201
57.00
Oct
2015
Apr
Jul
Oct
2016
Apr
Jul
Oct
2017
Apr
Jul
Oct
2018
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2019
Apr
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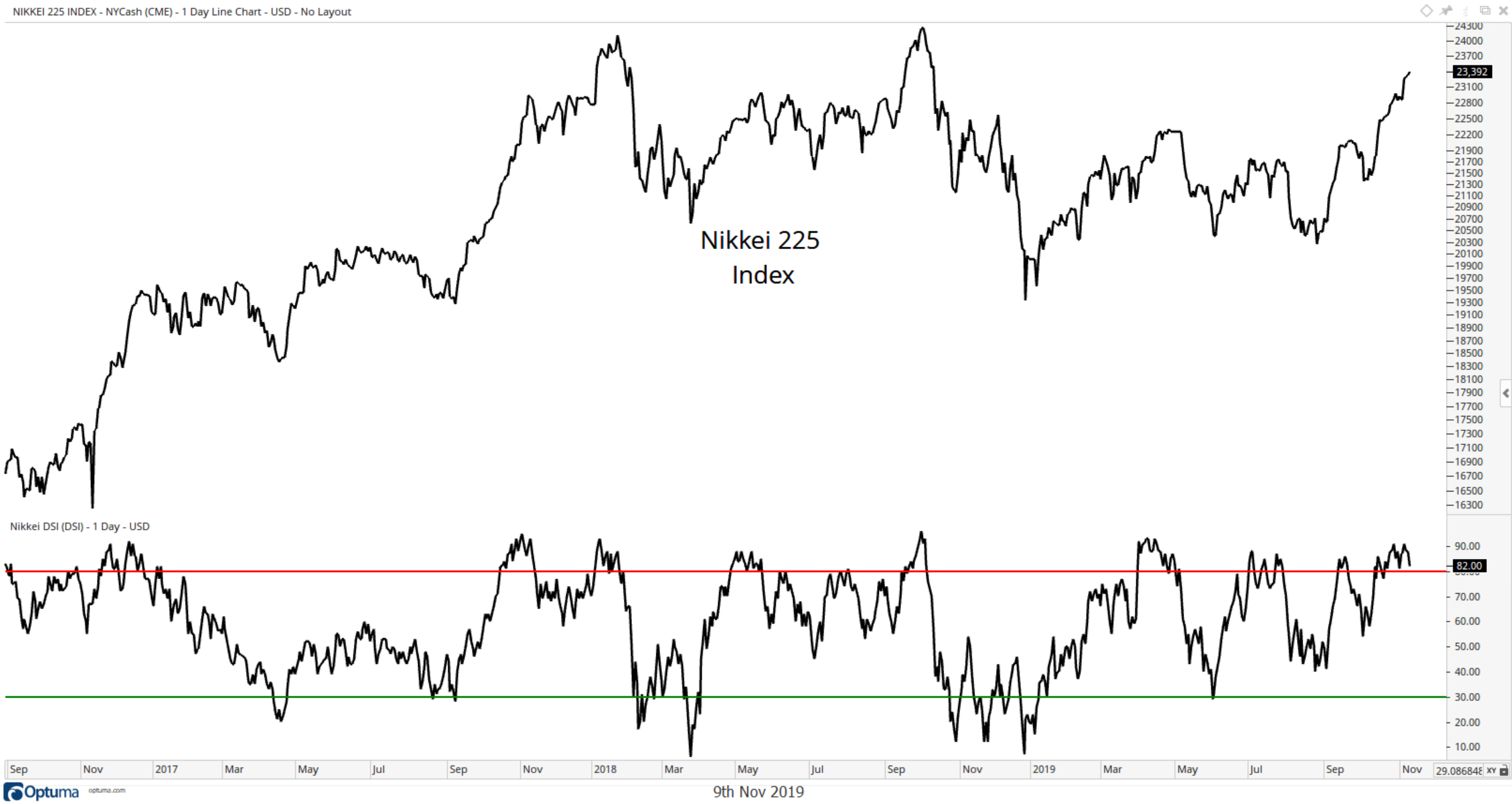
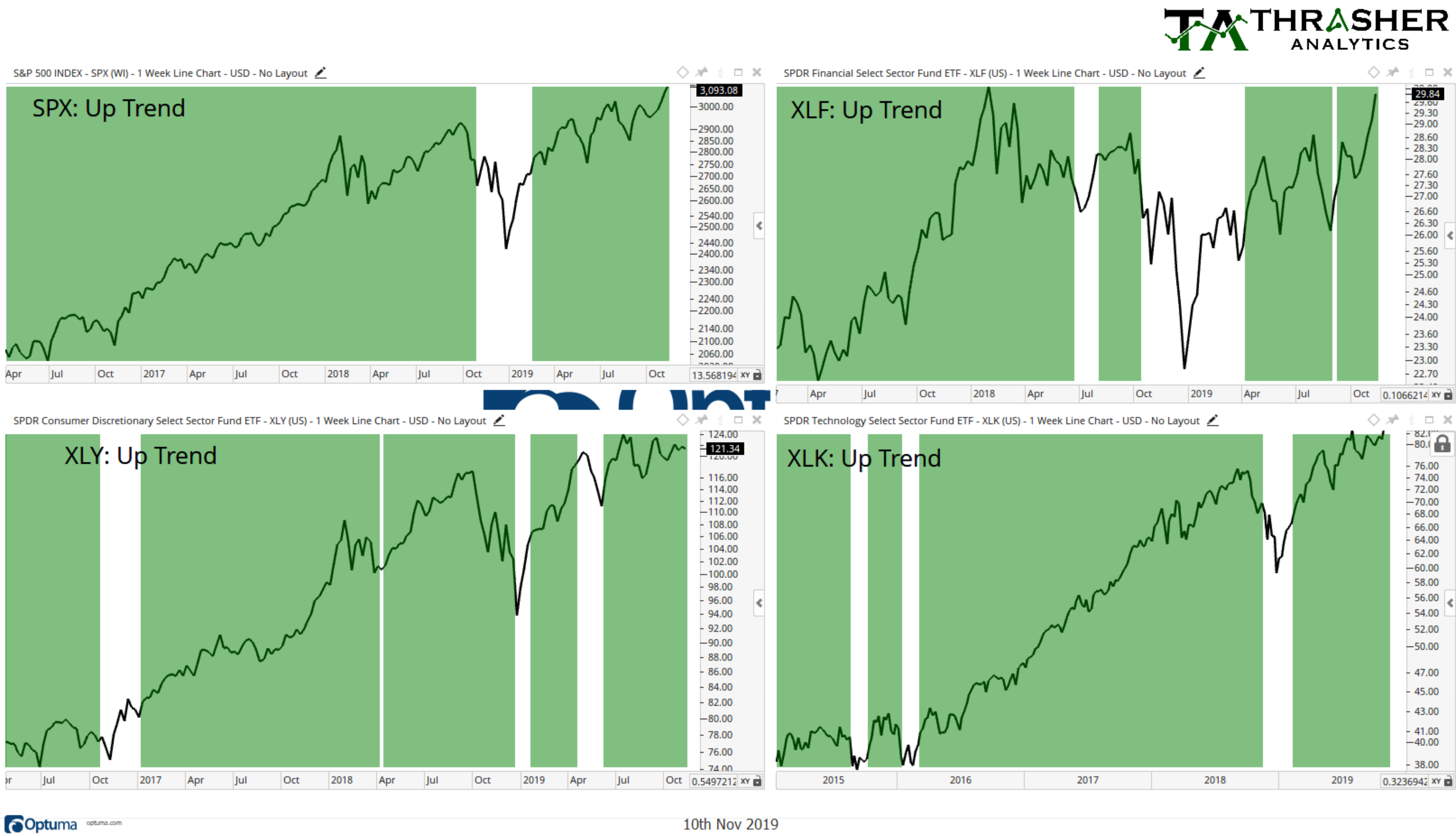
Oct
9th Nov 2019

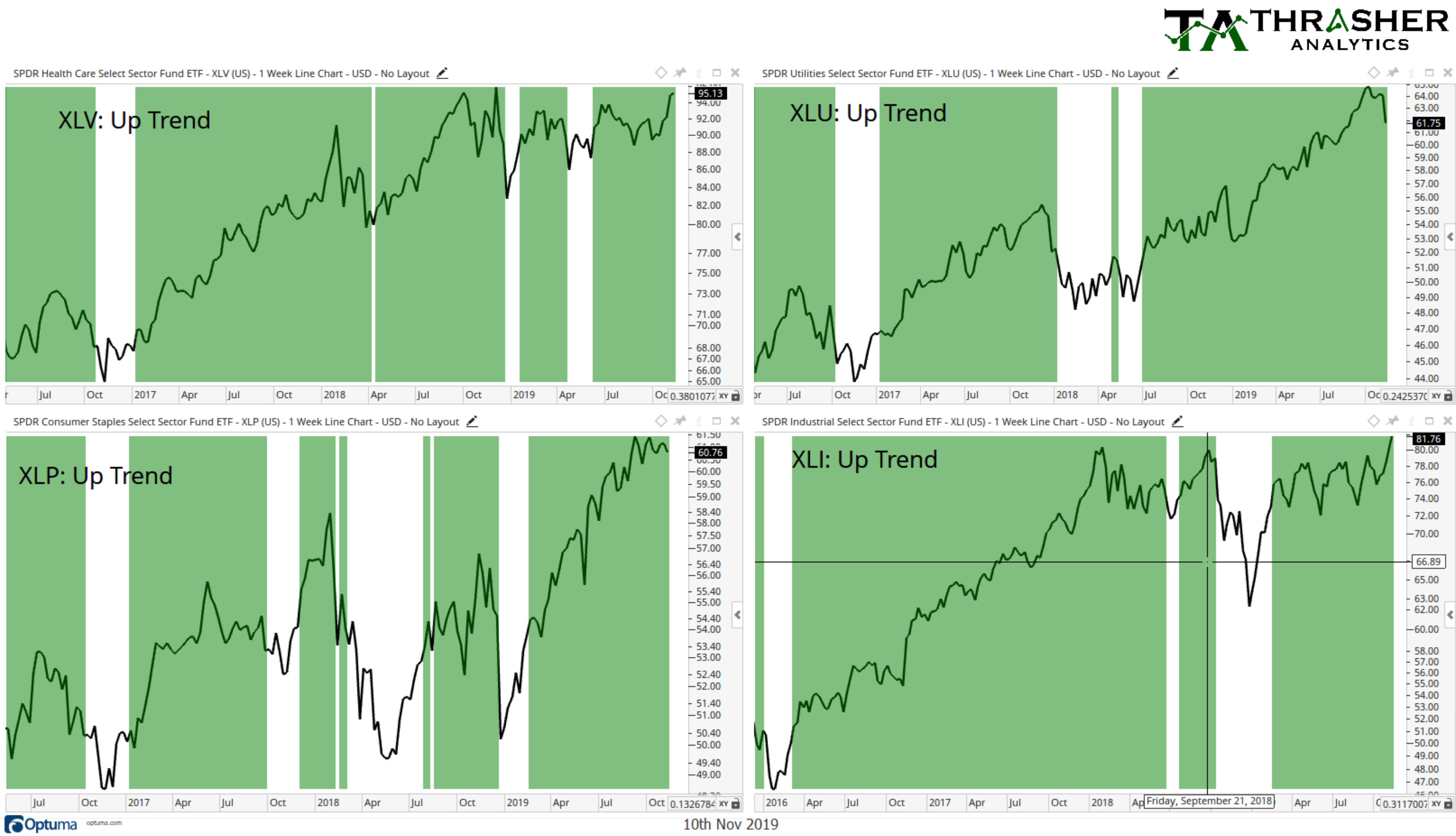
Daily Sentiment Index VIX

Daily Sentiment Index Nikkei 225

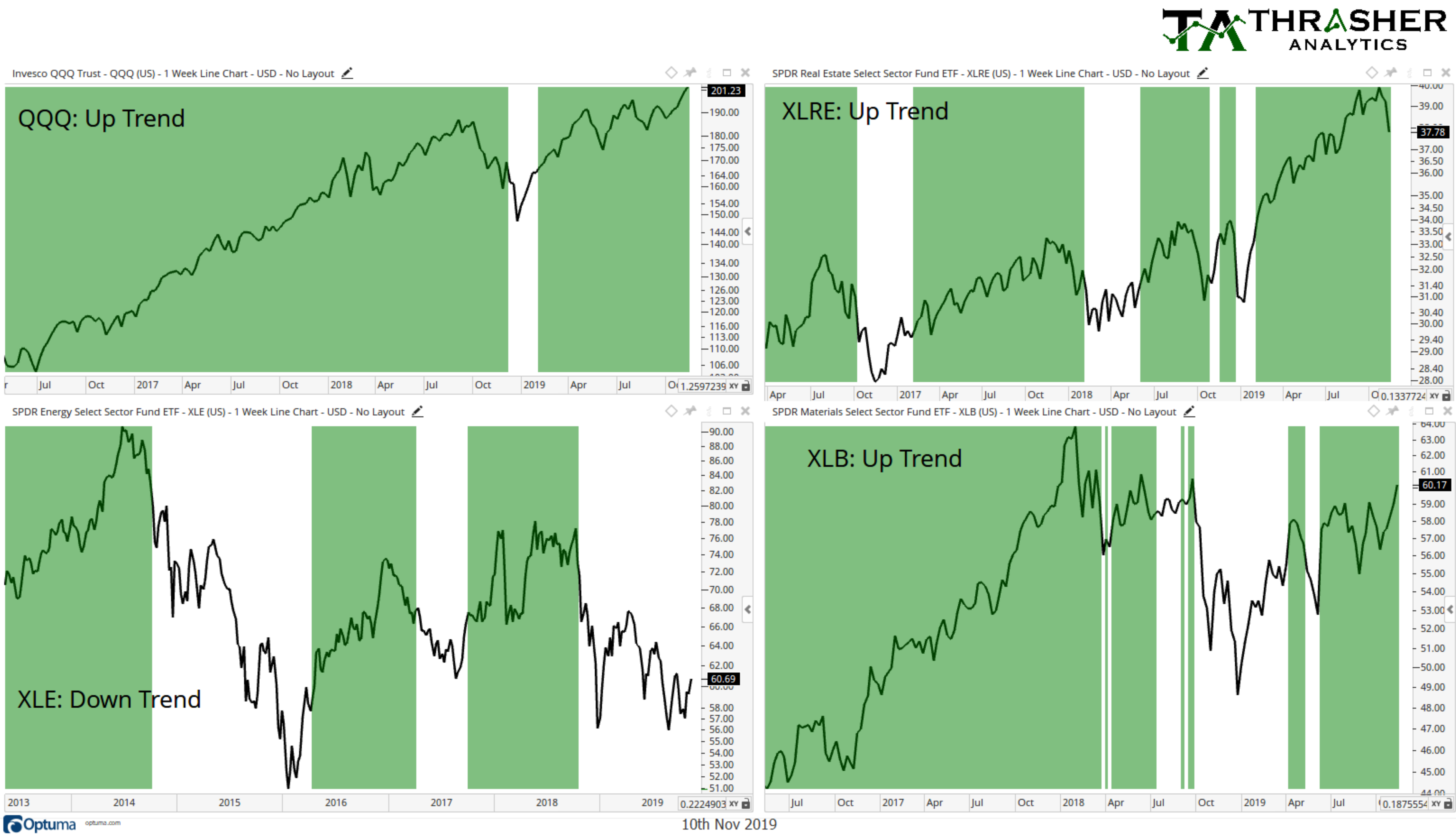




SPX, XLF, XLY, and XLK are all in up trends.



XLV, XLU, XLP, and XLI are all in up trends.

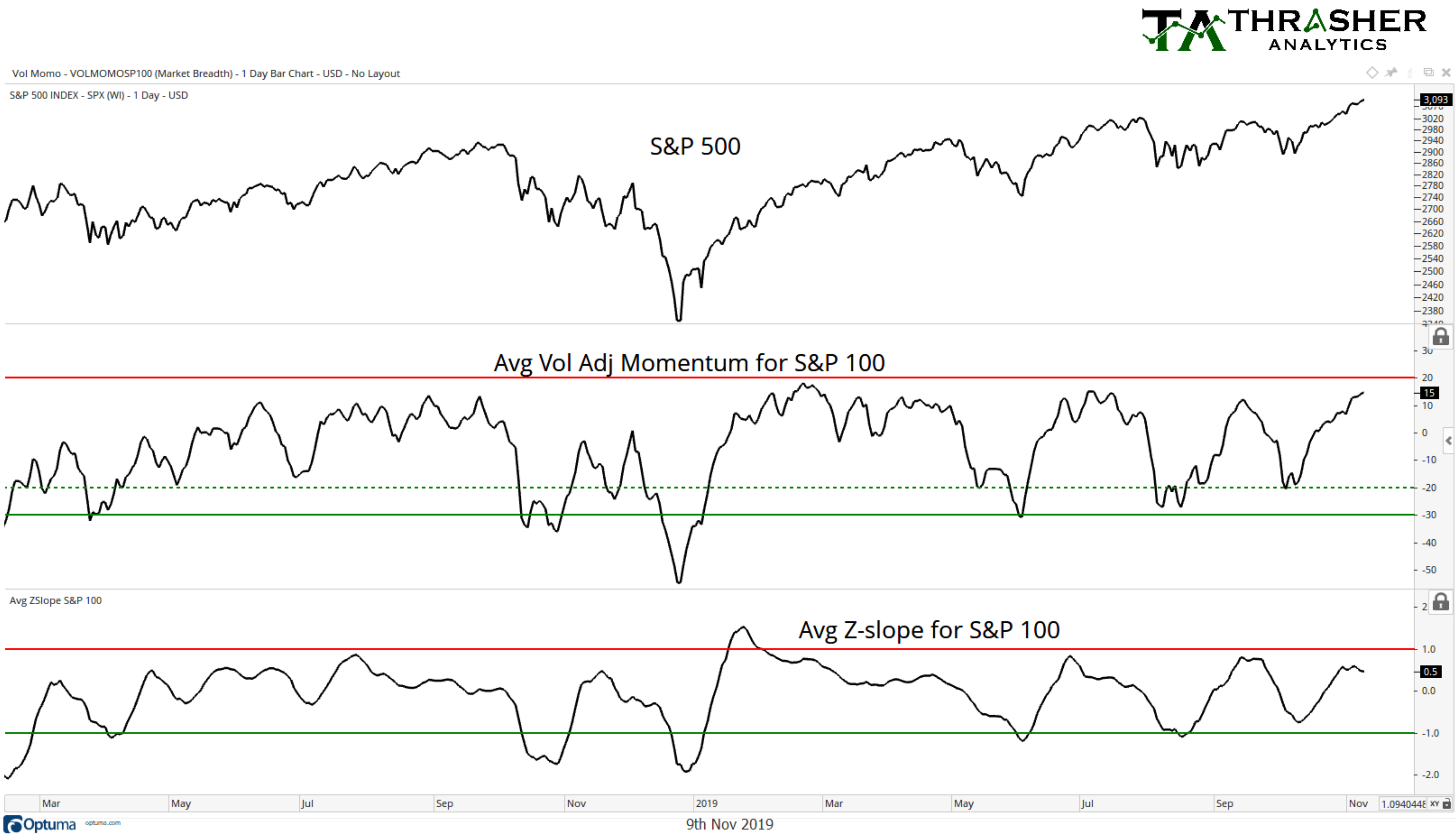


QQQ, XLRE, and XLB are in up trends. XLE is in a down trend.

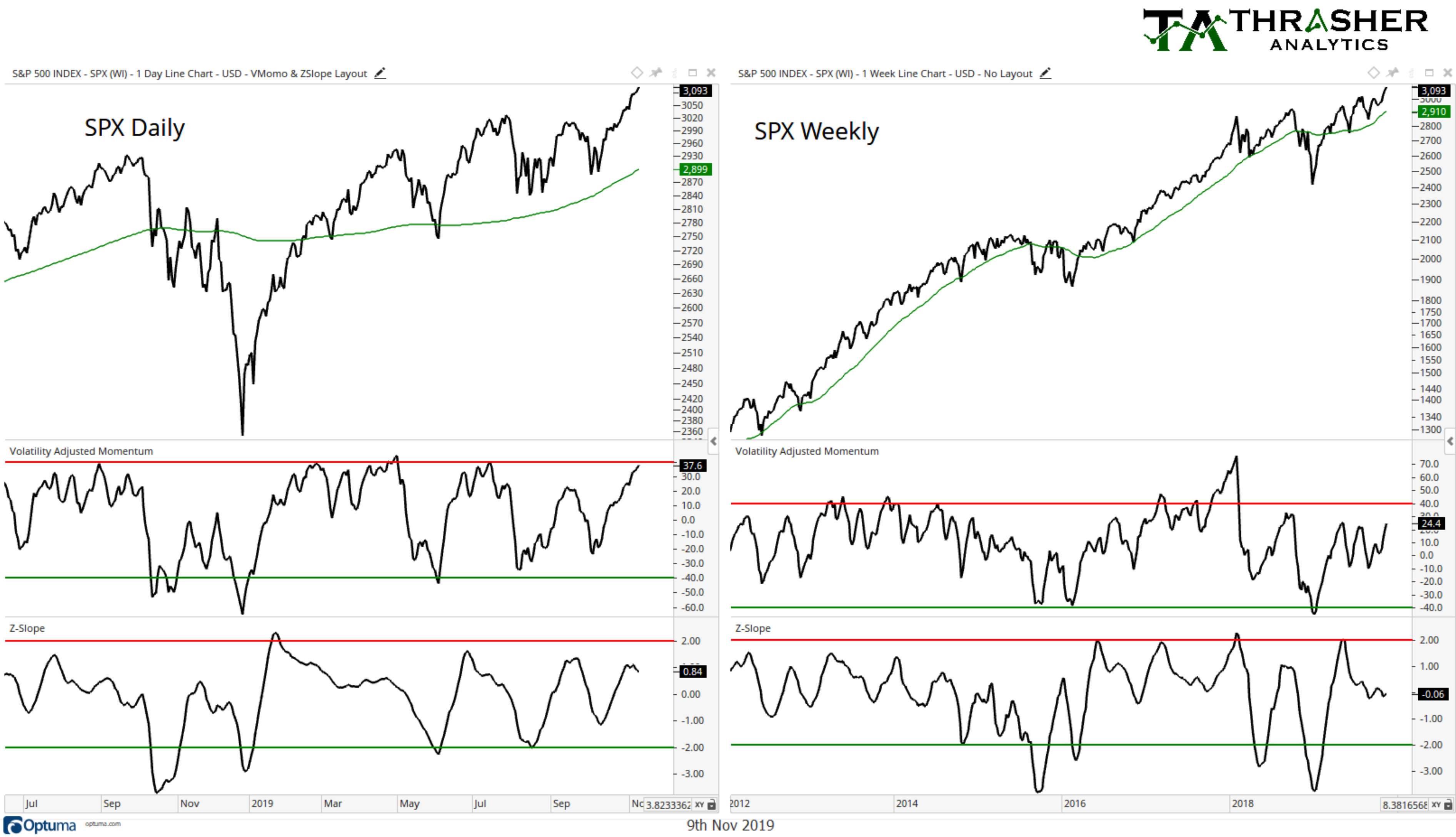
The following charts will become a regular installment for this, and future letters. Each page will include a daily and weekly chart with two indicators that are unique to Thrasher Analytics. With a focus on risk mitigation, the focus of these charts is on potential mean-reversion of each asset through the analysis of the two indicators described below.

Volatility-Adjusted Momentum (VaM: This is a spin on the traditional measures of momentum, taking into account the volatility of the underlying asset into the calculation. By adjusting for volatility we can get a better look at potential mean-reversion signals when risk/ reward becomes unbalanced towards 40 as 'overbought' or –40 as 'oversold.'

Z-Slope: This indicator takes two lookback periods, one long and one short, for calculating the slope and evaluates the z-score of the difference. This provides insight into whether the current slope of the trend fits within the long-term price history of the security. If a z-score breaks above 2, then the slope has gotten to upward sloping compared to its history. And the opposite is true when we get readings below –2, that the downward sloping trend has gotten 'oversold' compared to the asset's price history.

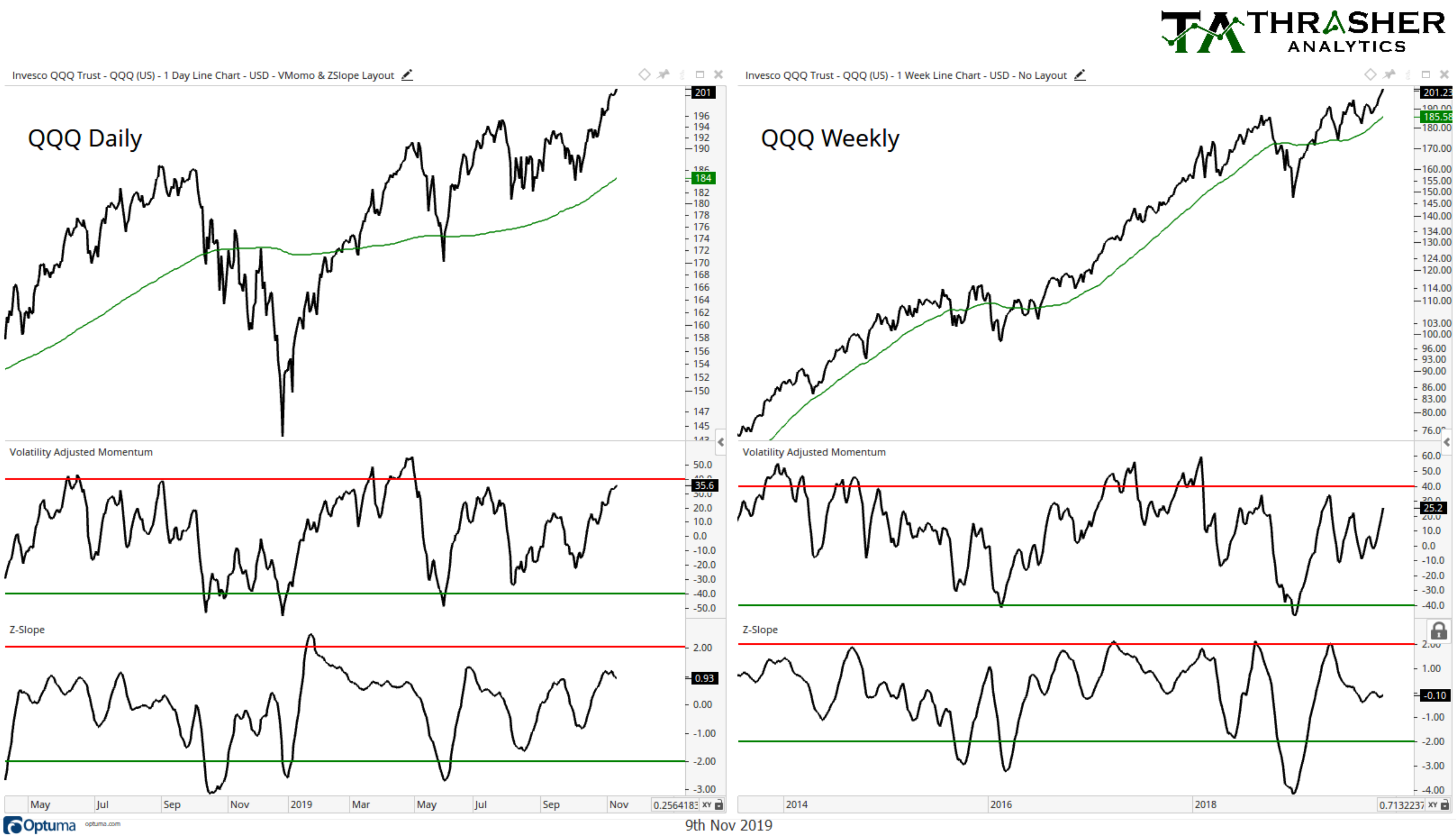


Above are the average Volatility Adjusted Momentum Indicator (VaM) and Z-slope scores for the S&P 100.

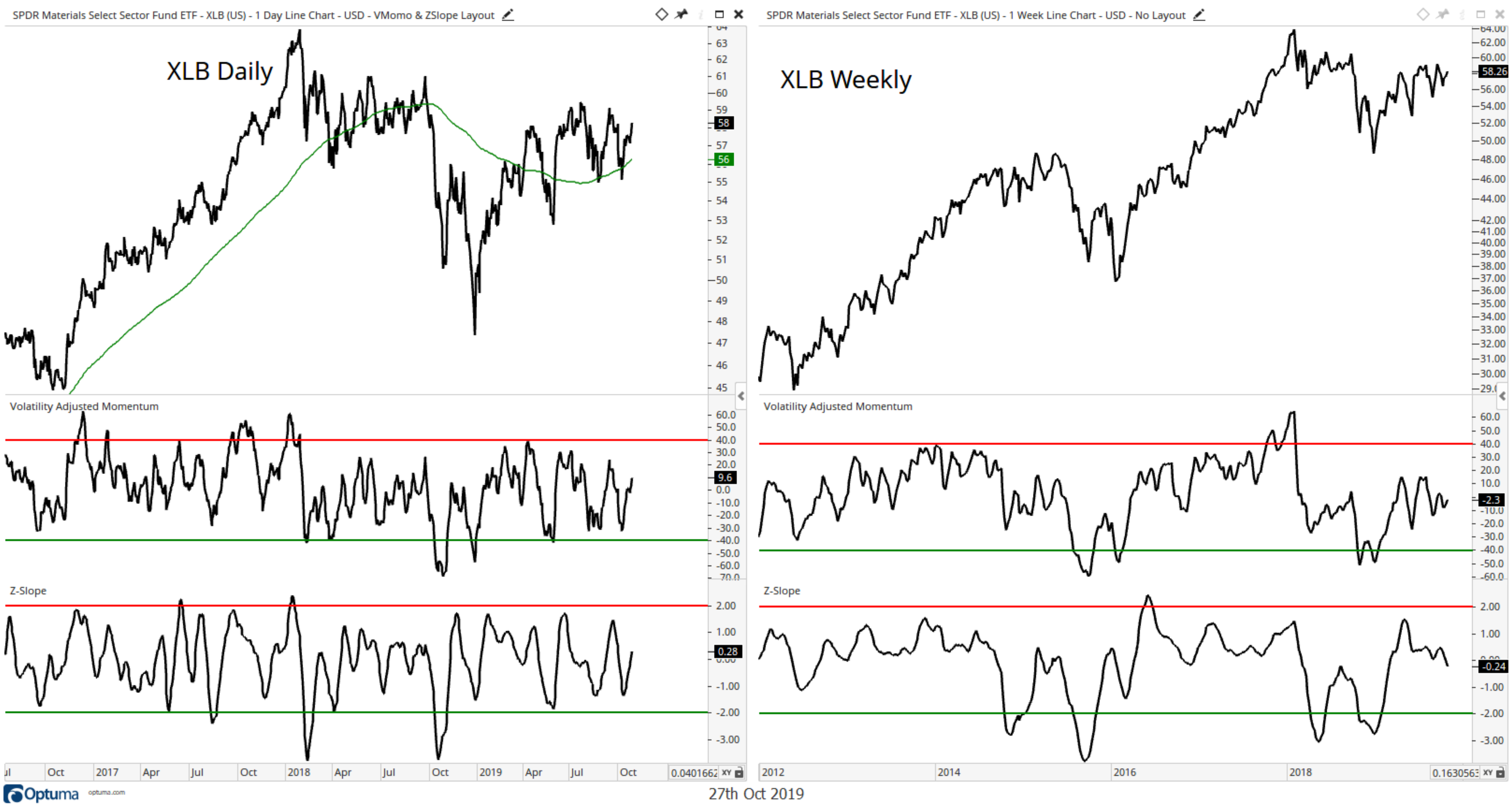


Daily Z-Slope and VaM both are neutral.

Neutral readings for both VaM and Z-slope.



Neutral readings for both VaM and Z-slope.

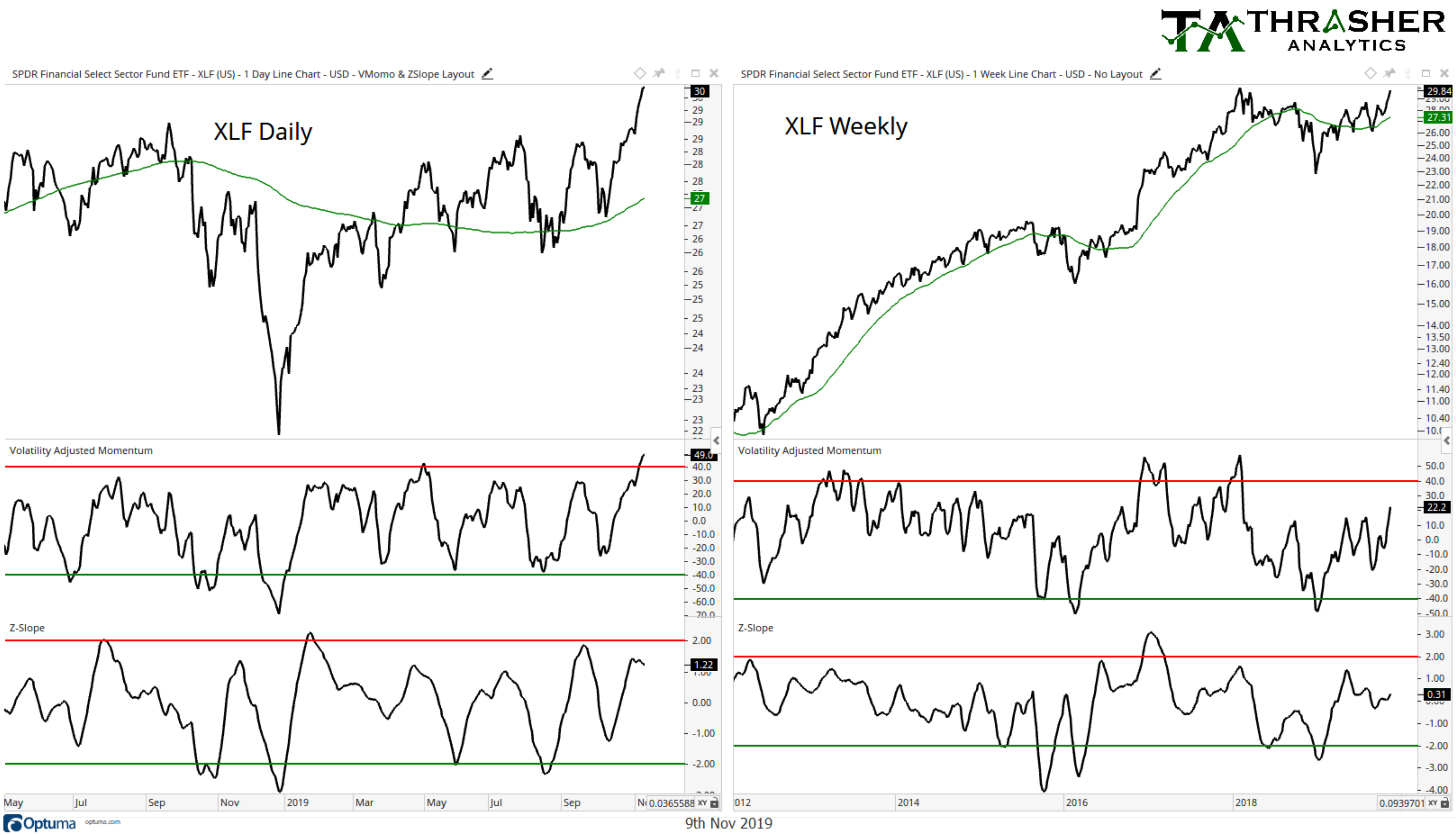


27th Oct 2019

Neutral readings for both VaM and Z-slope.

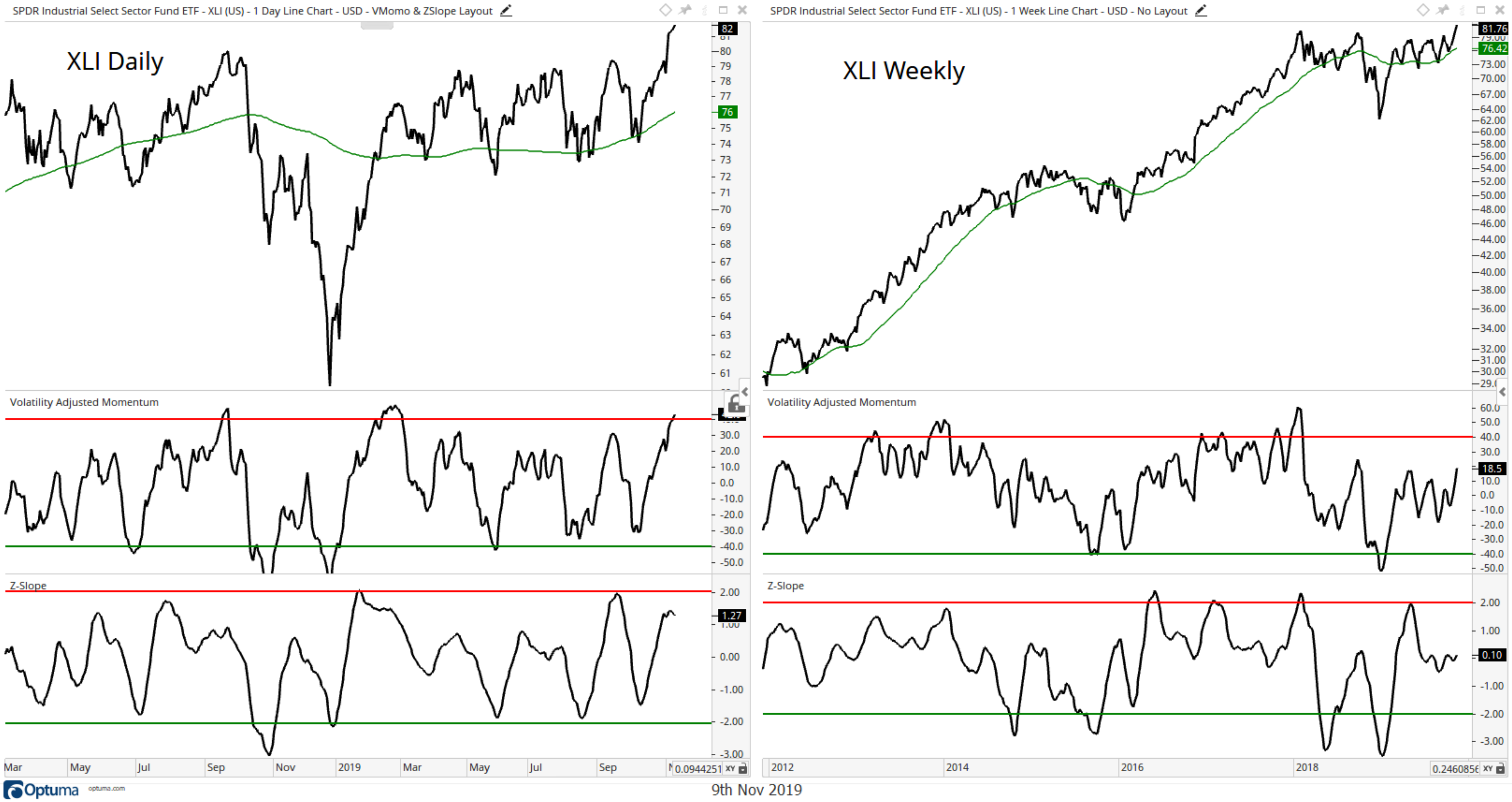
Neutral readings for both VaM and Z-slope.

Neutral readings for both VaM and Z-Score.

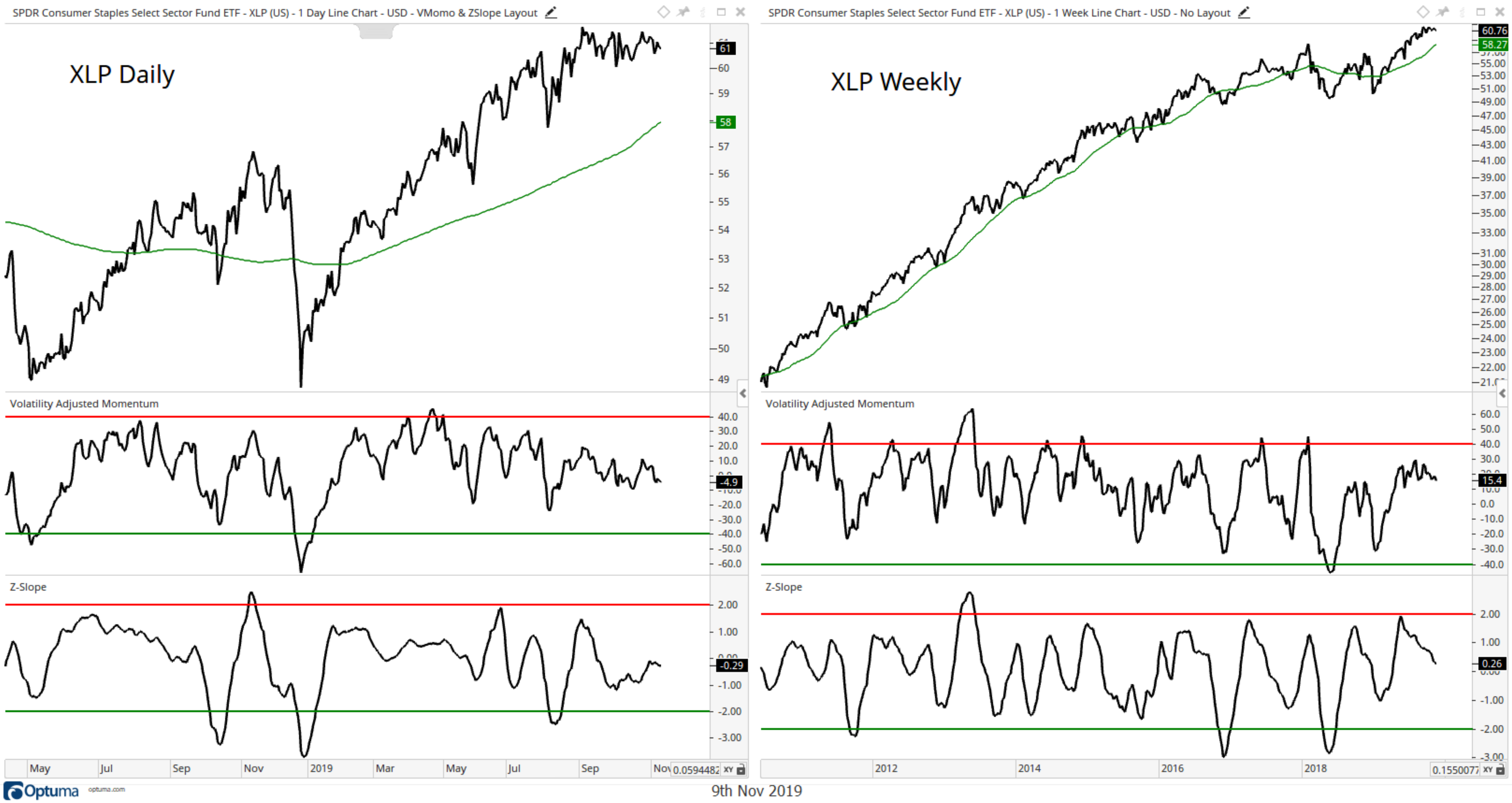


Neutral readings for Z-slope with VaM now overbought.

Neutral readings for both VaM and Z-slope.



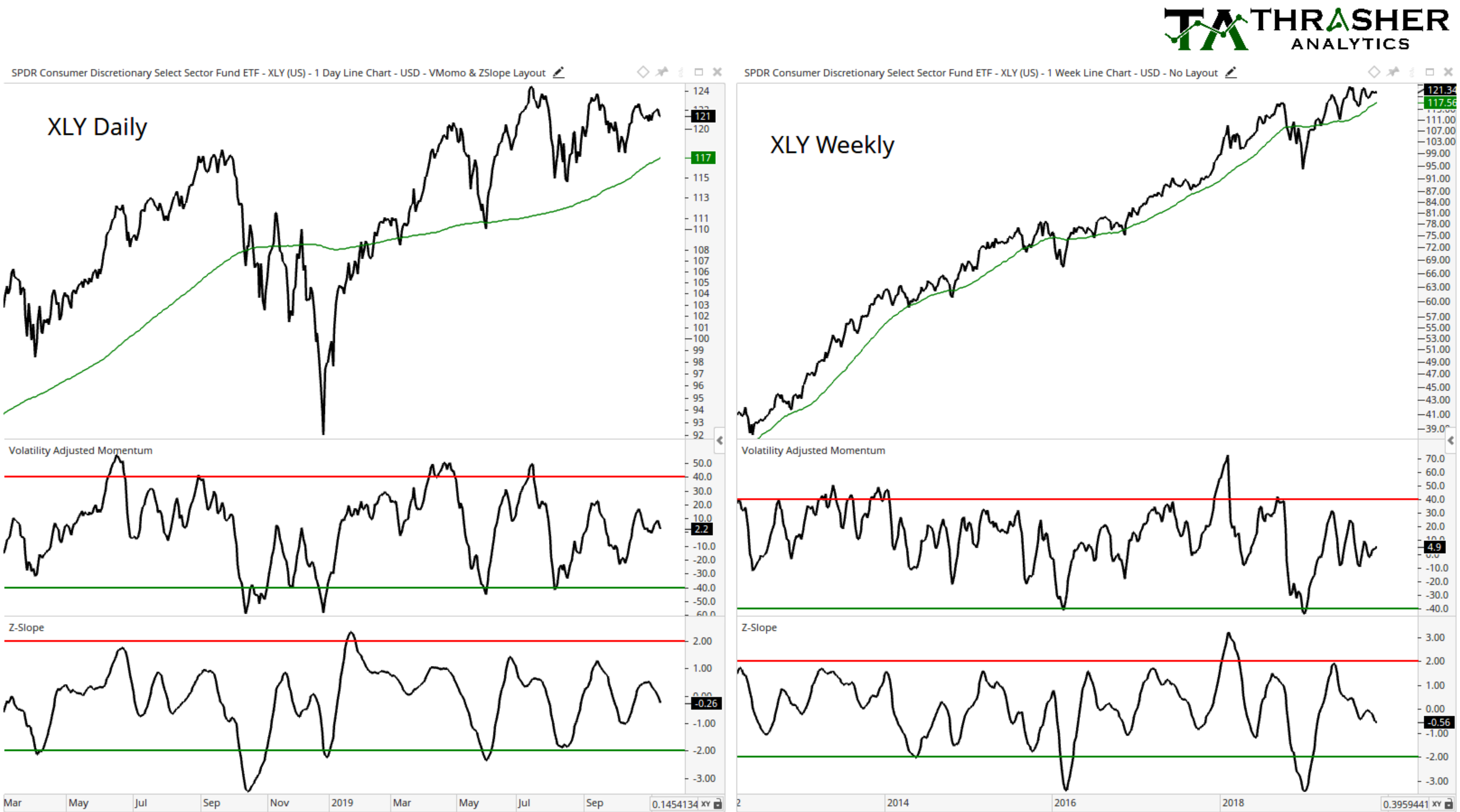
Neutral reading for Z-slope with VaM now overbought.



Neutral readings for both VaM and Z-slope.

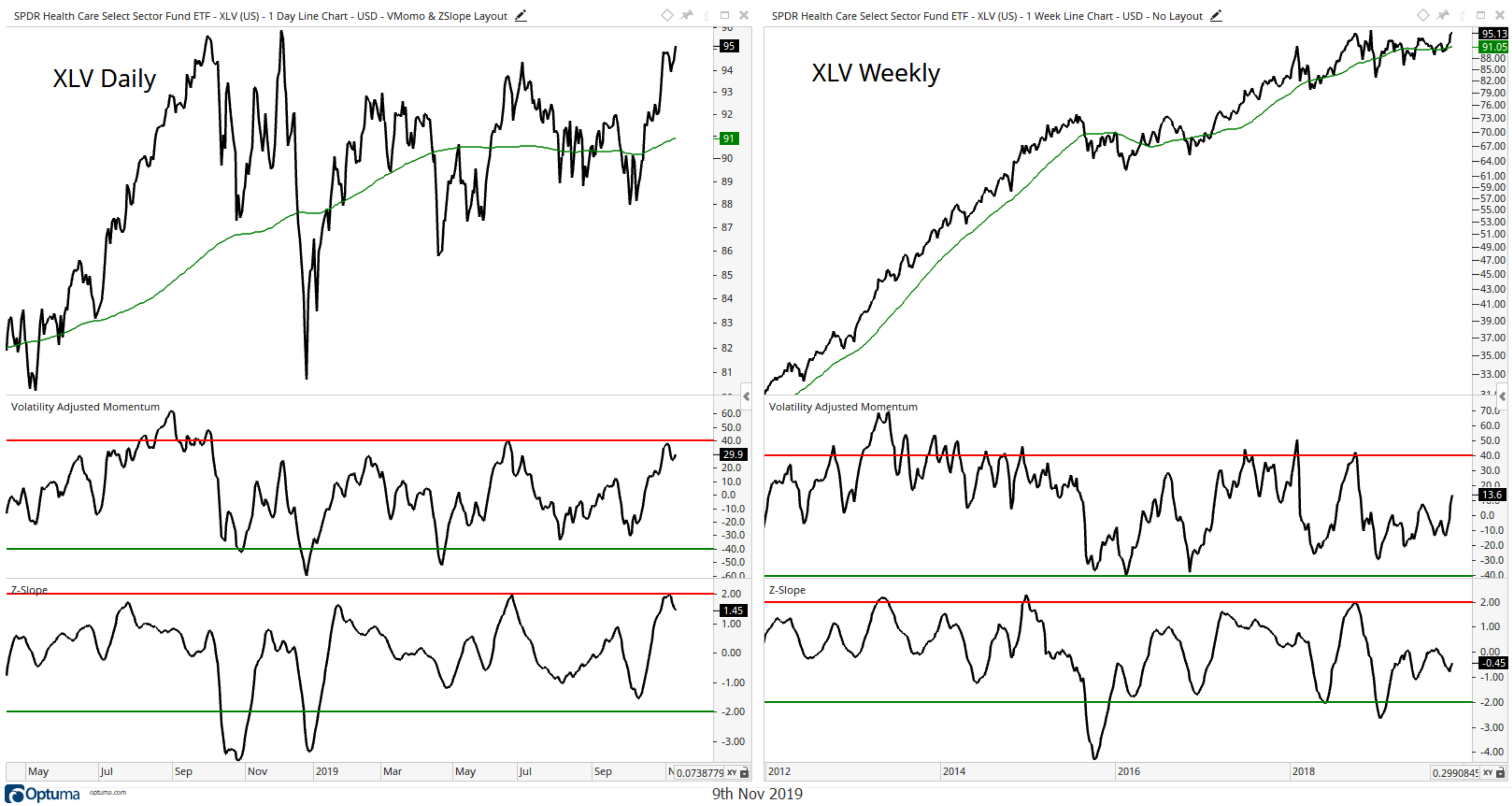
Both Z-slope and VaM are oversold.

Neutral readings for both VaM and Z-slope.

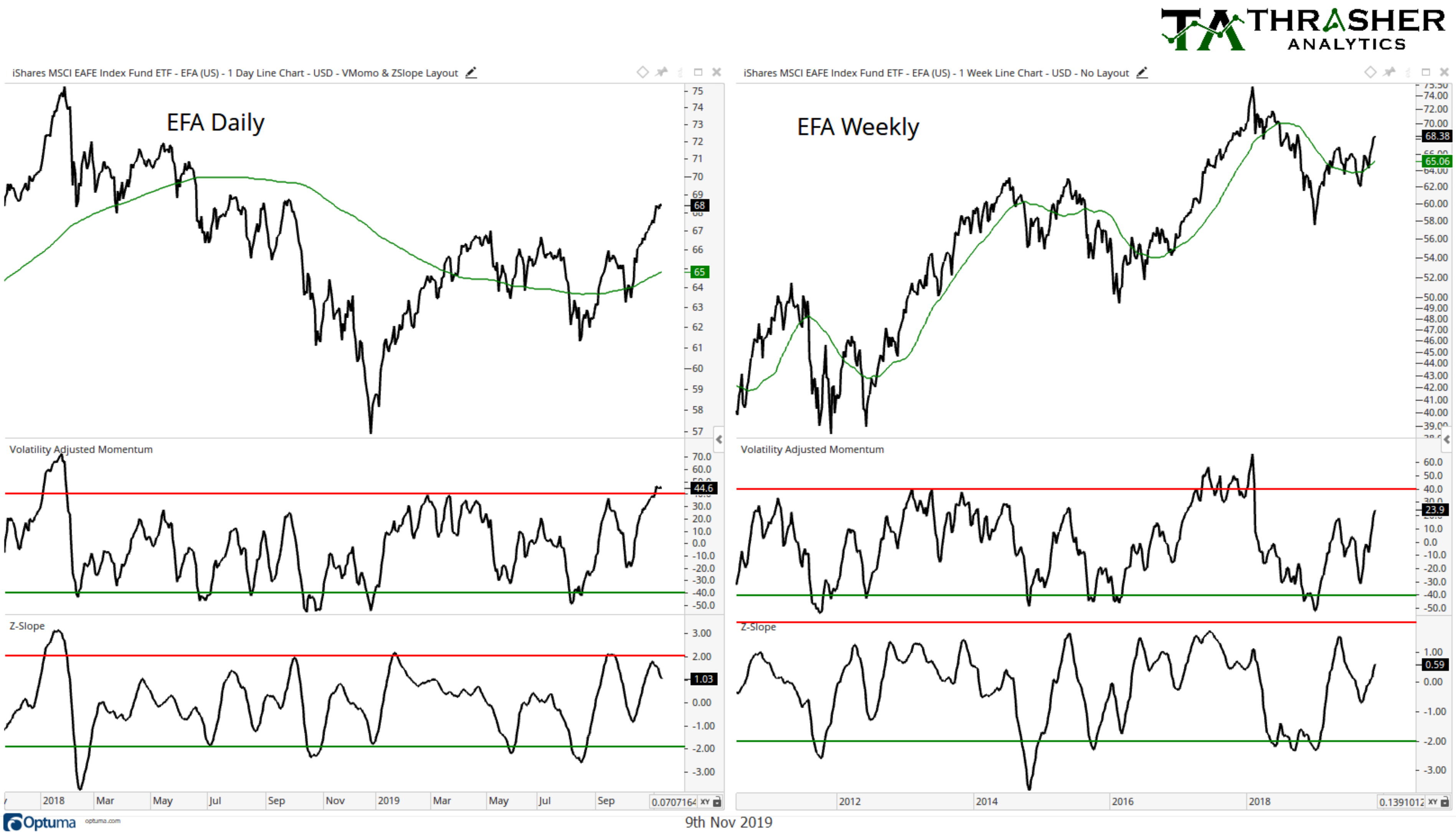


9th Nov 2019

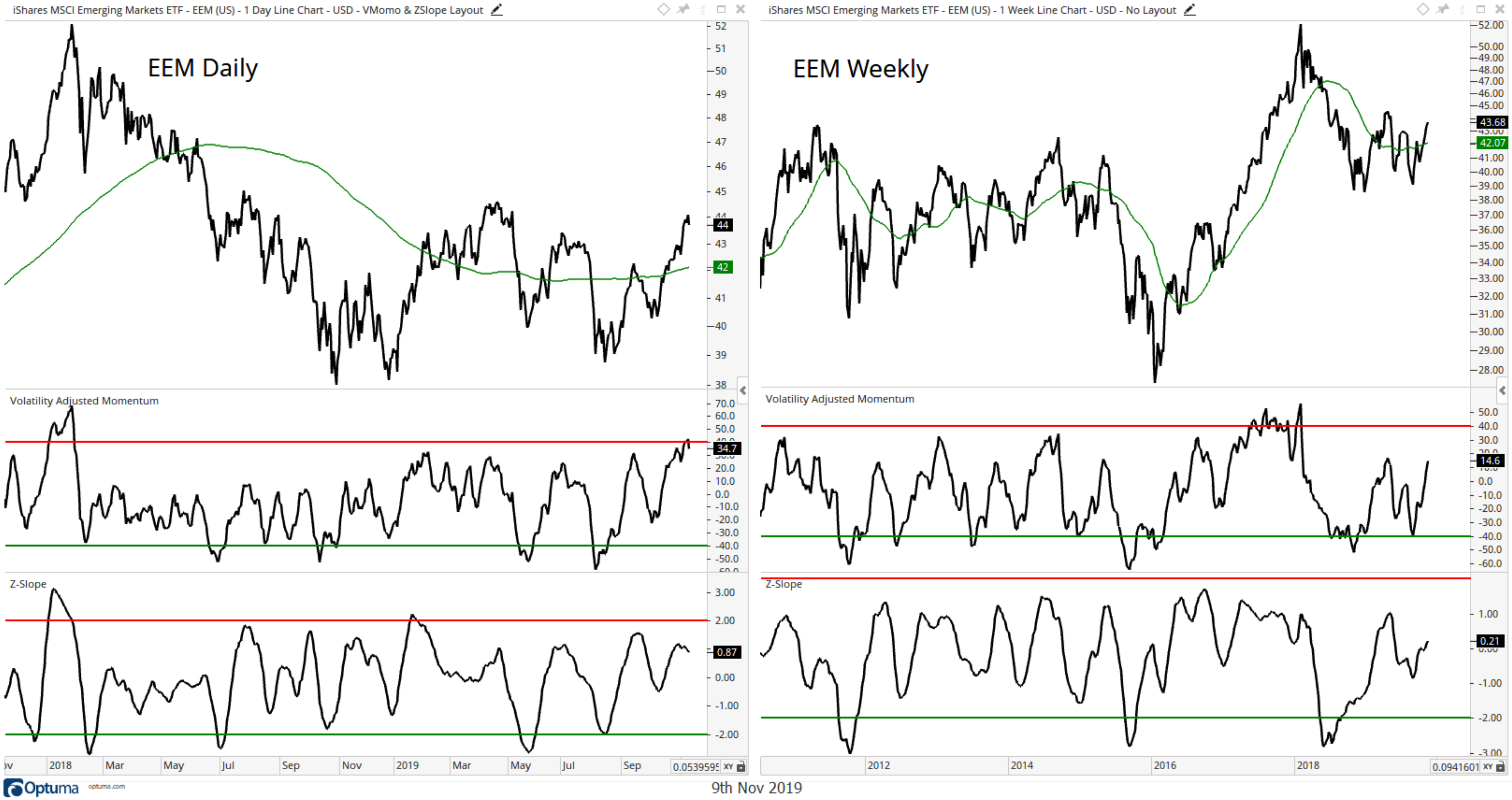
Neutral readings for both VaM and Z-slope.



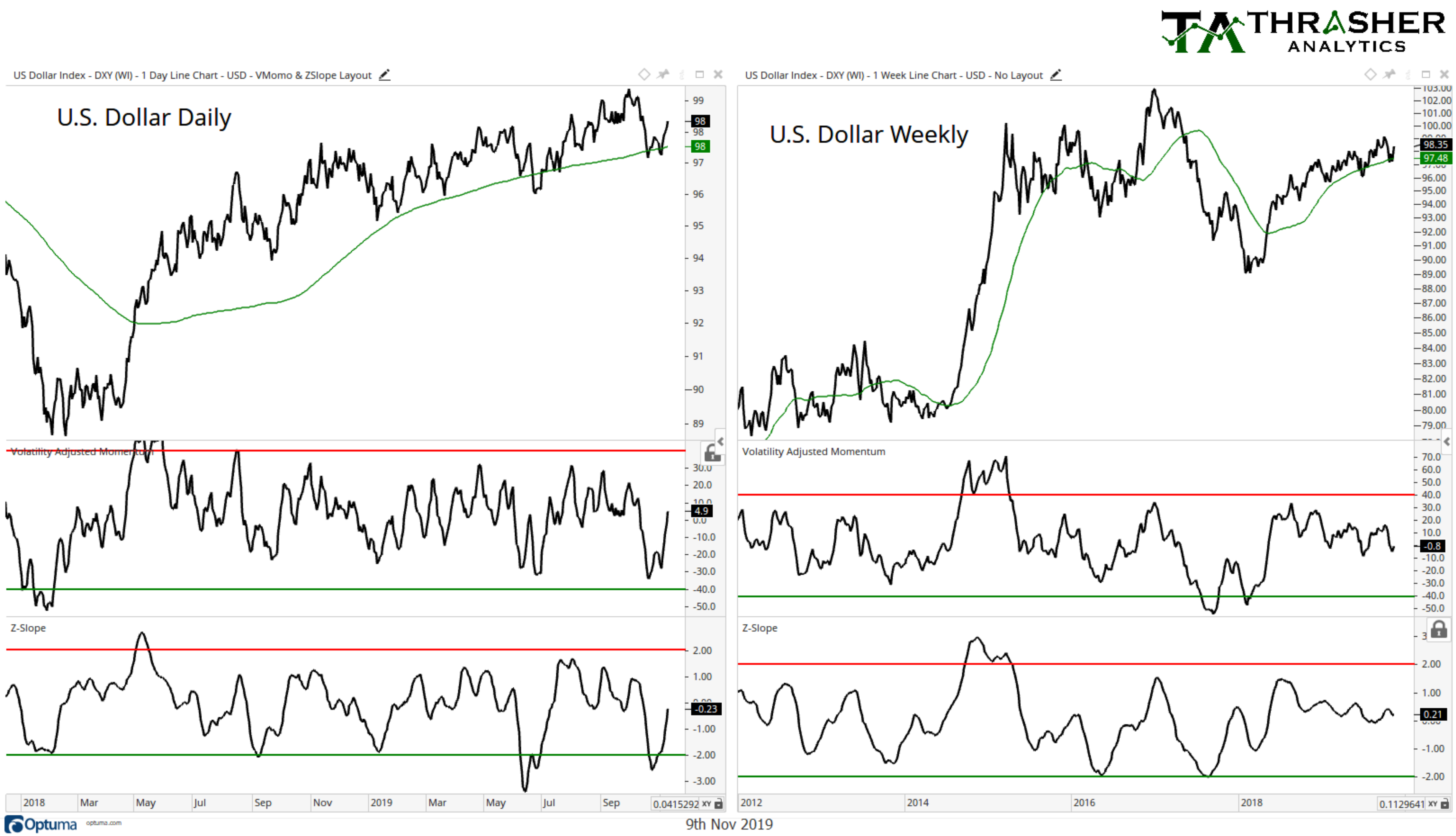
Neutral readings for both VaM and Z-slope.



Neutral reading for z-slope with VaM now overbought.



Neutral readings for both VaM and Z-slope.

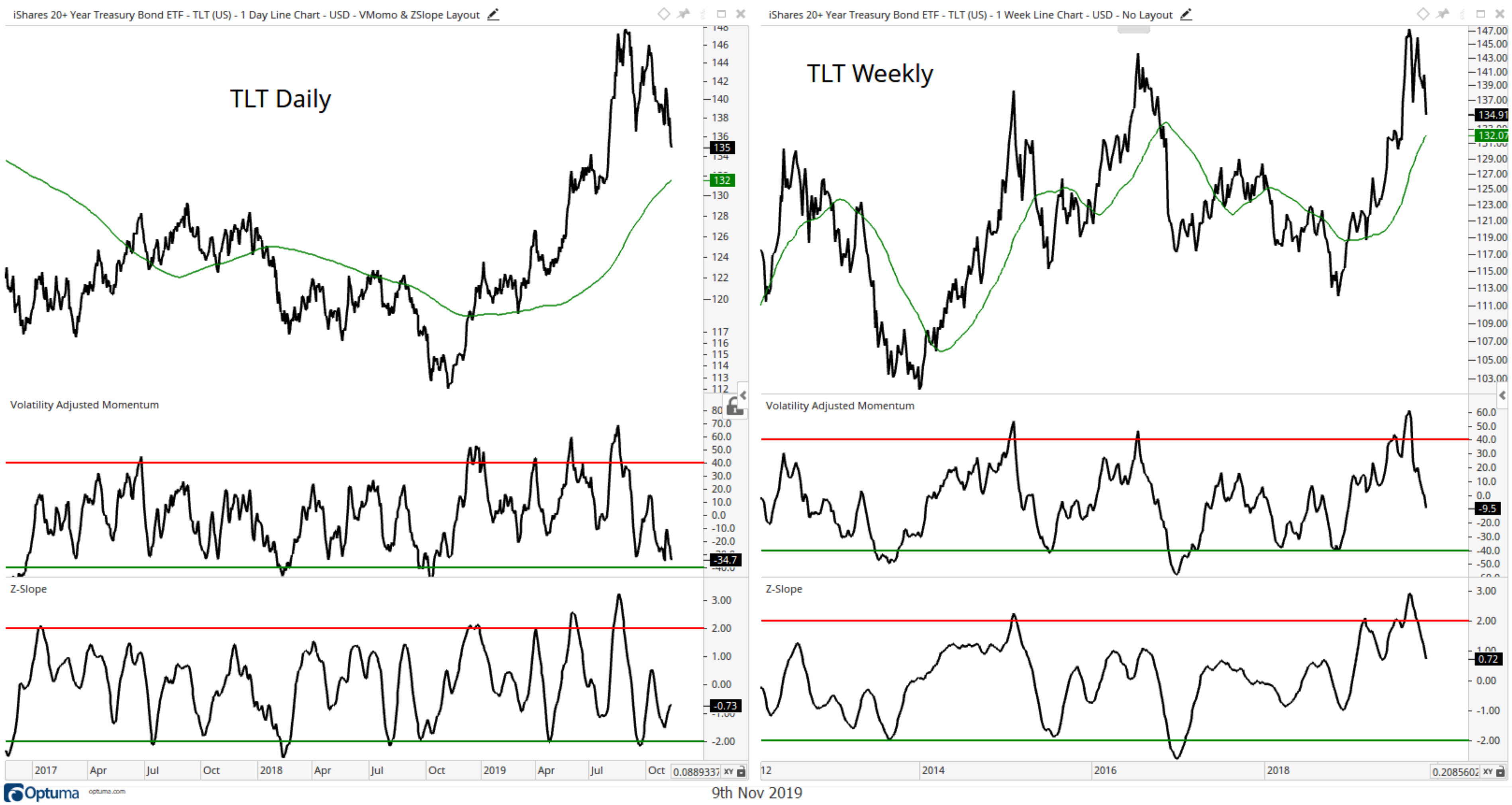


Neutral readings VaM and Z-slope.

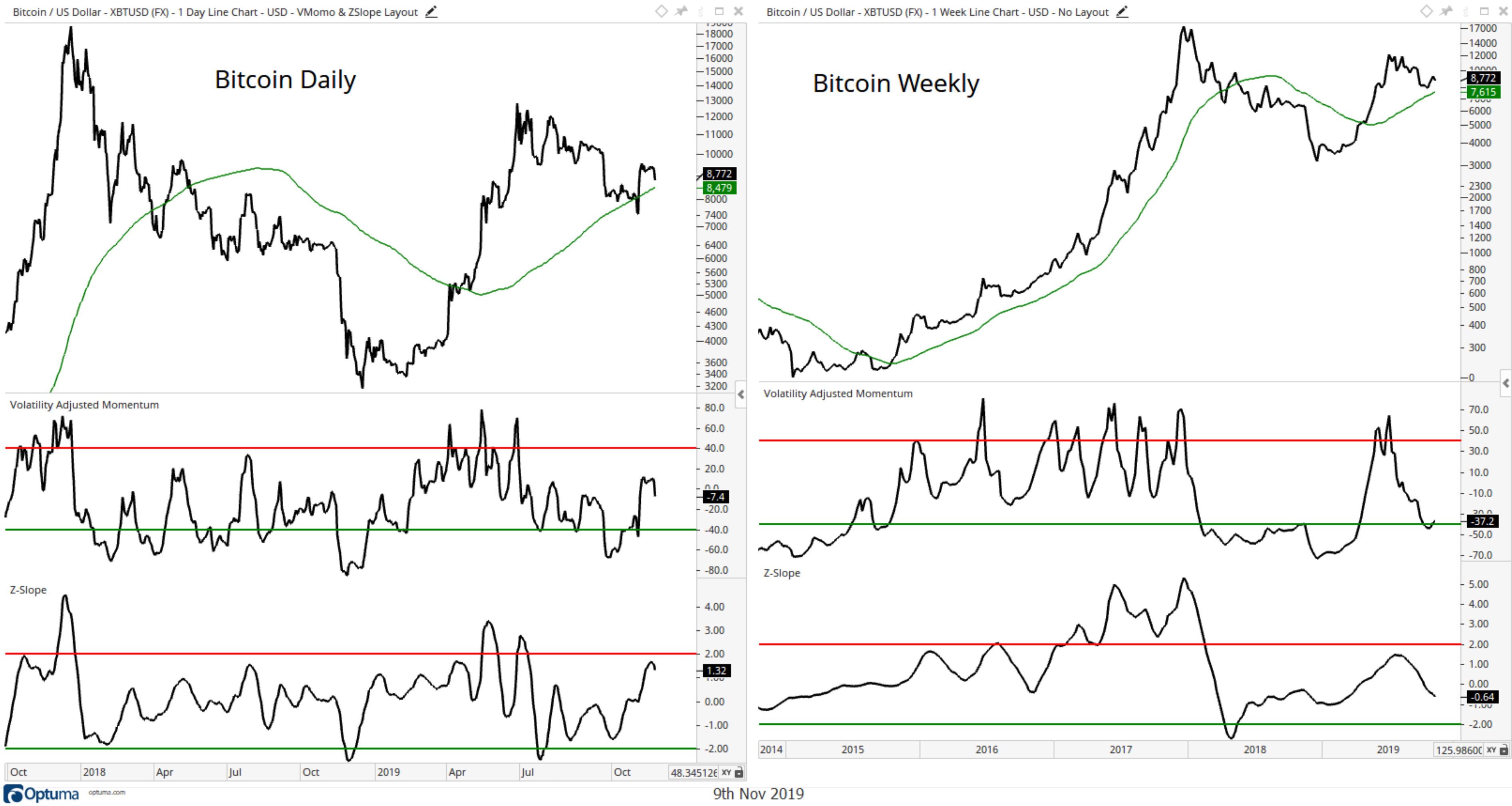
9th Nov 2019

Neutral readings for both VaM and Z-slope.

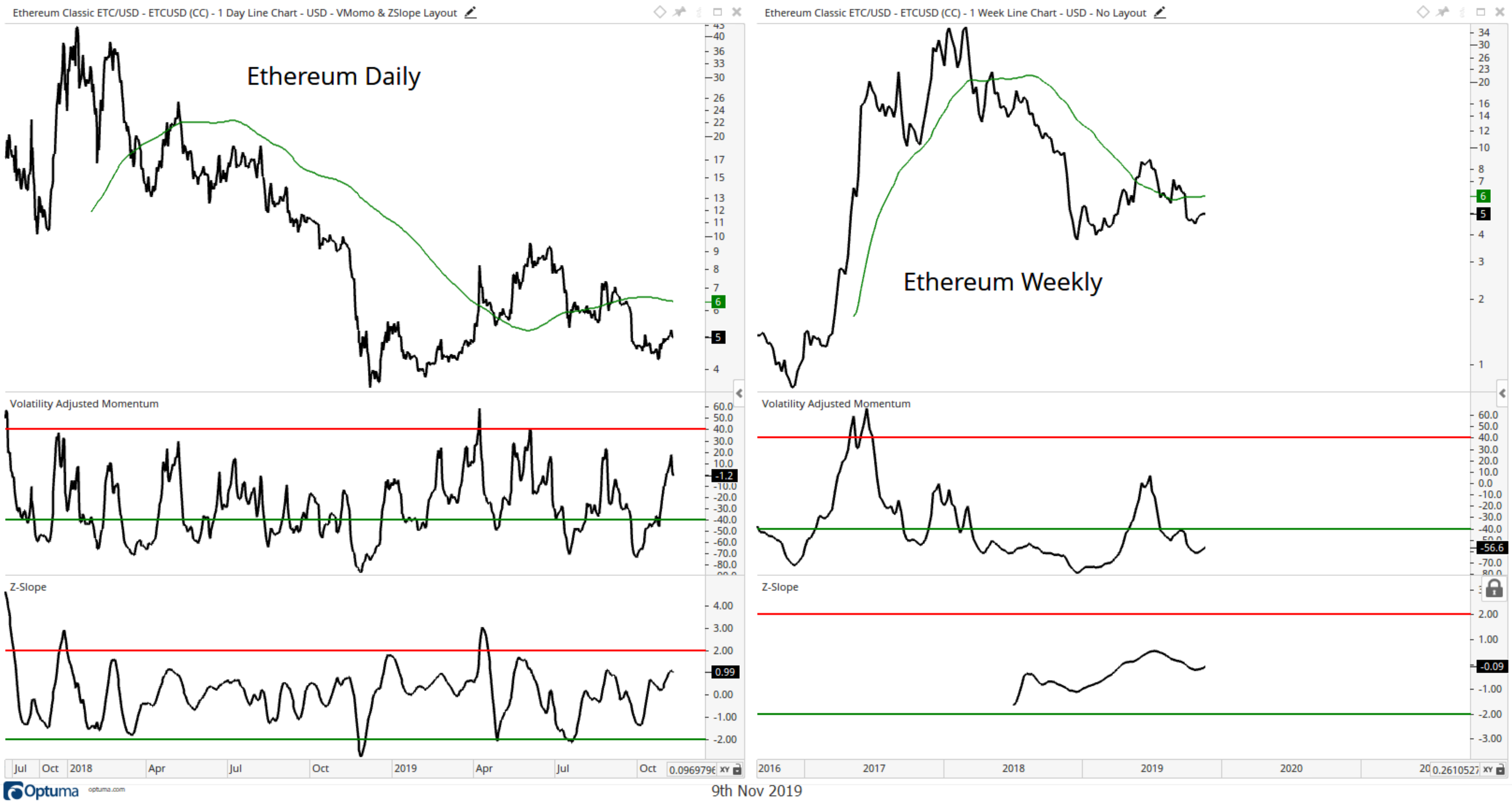
Neutral readings for both VaM and Z-slope.



Neutral readings for both VaM and Z-slope.



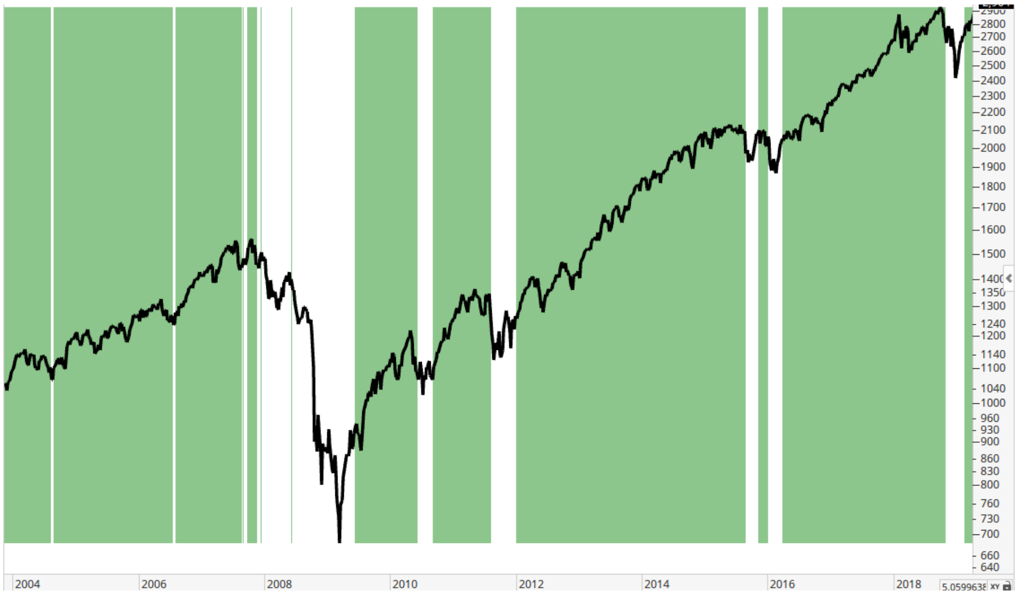
Neutral readings for both VaM and Z-slope.

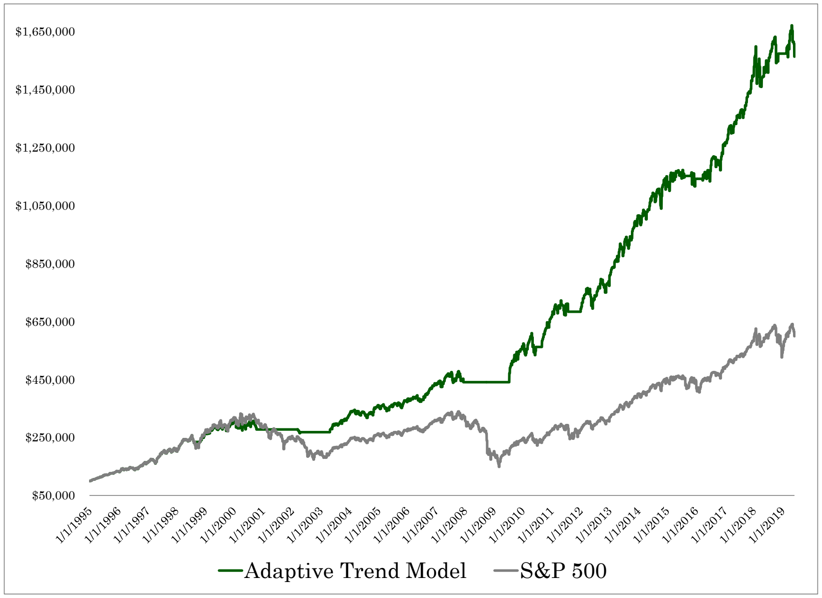


Neutral readings for both VaM and Z-slope.

Trend-based analysis is a process built on the idea of enduring minor pullbacks in the anticipating of avoiding protracted drawdowns in financial markets. With a focus on stepping out of the market during large down trends, the Thrasher Analytics Adaptive Trend Model (TAATM) pursues to minimize the “whipsaws” of signals during highly volatile periods of market activity. To accomplish this, TAATM incorporates multiple look-back time periods and incorporates volatility gauges in its evaluation of the equity market’s overall trend.

Thrasher Analytics analysis concludes the market’s trend is led by the resulting trend of its individual stocks. This means, if the majority of stocks are trending in one direction, then the broad index will be persuaded to follow that trend as well. By incorporating the individual stock trends, volatility, and multiple time periods, the TAATM provides a data-focused look at the overall trend of the U.S. equity market.



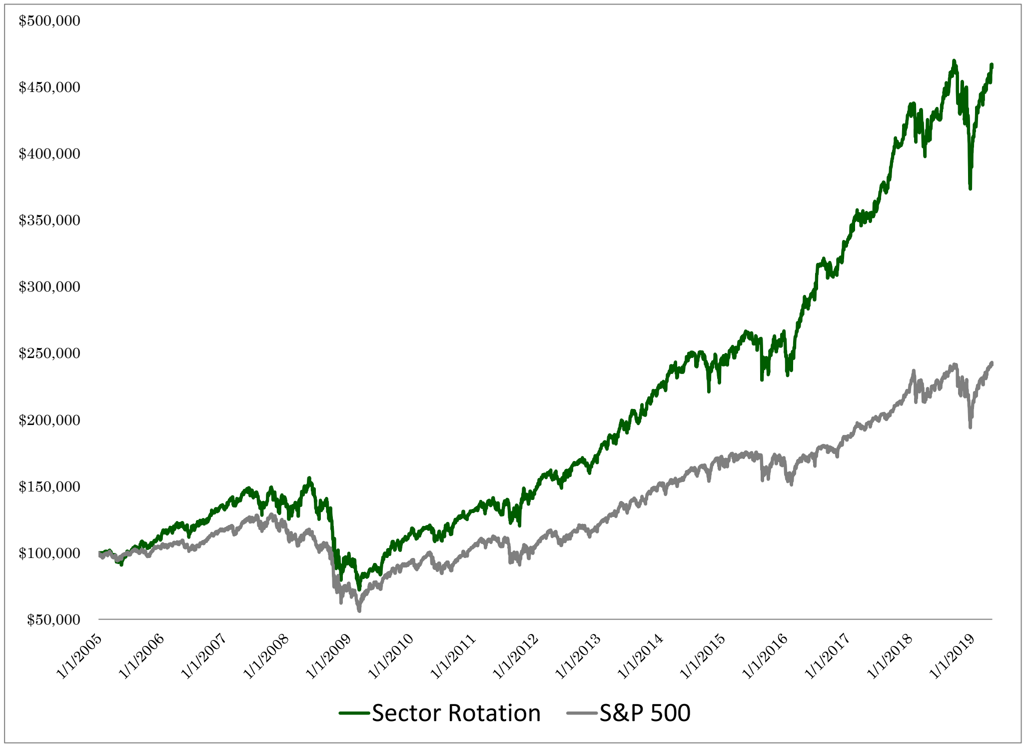


	Annualized Return	Annualized Volatility	Beta	Sharpe Ratio	Maximum Drawdown
Adaptive Trend	12.5%	10.3%	0.47	0.97	14.1%
S&P 500	8.9%	15.3%	1	0.42	56.6%

Provided charts, data, and descriptions are a result of a back test using historical market data. No representation is being made that the use of this strategy or any system or data will generate profits. The results do not represent actual results and actual results may significantly differ from the theoretical returns being presented.

Please see complete disclosure for additional information.

Thrasher Analytics holds the belief, resulted from an in-depth examination of the performance of the primary S&P sectors, that they historically cycle through periods of strength and weakness. In order to move towards capturing the alpha from this rotation, a mean-reversion model is deployed with a monthly rebalance of the lowest scoring sectors. Using proprietary methods of systematic technical analysis, Thrasher Analytics sector rotation model focuses on equity sectors that are most heavily showing signs of volatility and trend exhaustion and likely to be exposed to a positive shift in investor sentiment. By pairing this mean reversion approach towards sectors with the Adaptive Trend Model for the broad index, a layer of risk management can be achieved through strategy diversification.



	Annualized Return	Annualized Volatility	Beta	Sharpe Ratio	Maximum Drawdown
Sector Rotation	12.7%	15.9%	0.96	0.64	53.9%
S&P 500	7.5%	14.8%	1	0.34	56.6%

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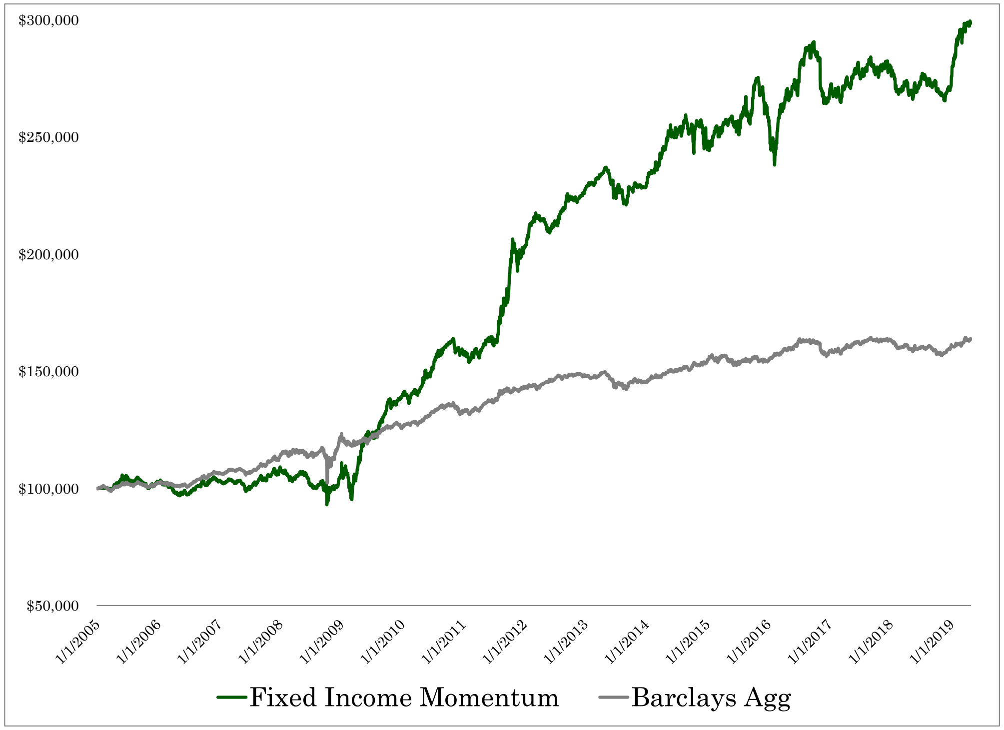
If equities are the speedboats in the sea of financial markets then fixed income securities are the tanker ships. While stocks can move violently in both directions, Thrasher Analytics research has shown that fixed income markets historically show consistent trends. Because of the tanker-like movements displayed by bonds, a quarterly rebalance method is used for the Thrasher Analytics Fixed Income Momentum Model, with a pursuit focusing on the strongest performing corners of the fixed income market. By evaluating the risk adjusted momentum of both long- and short-term momentum, the Fixed Income Momentum Model also incorporates a proprietary indicator that acts as a throttle of the momentum score of each fixed income ETF. This indicator penalizes those ETFs that have moved too high and too fast in short-term trading while still allowing overall positive momentum to be the guiding principle of the model.



	Annualized Return	Annualized Volatility	Beta	Sharpe Ratio	Maximum Drawdown
Fixed Income Momentum	8.3%	8.2%	1.04	0.7	14.9%
Barclays Agg	3.6%	3.7%	1	0.29	11.0%

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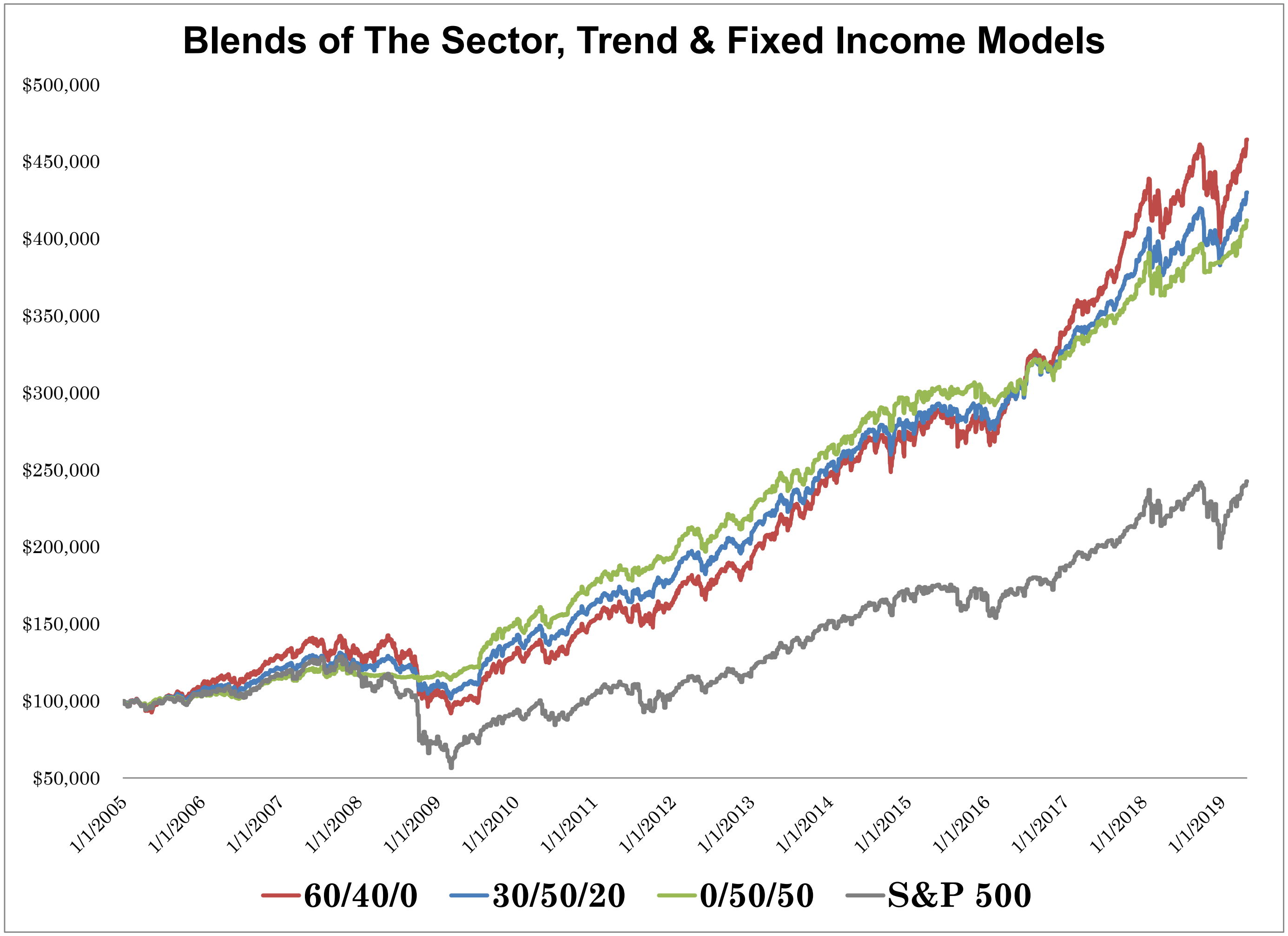
The concept of diversification is not new to financial markets. While many market participants focus on the diversification of the underlying holdings. This procedure is can be vastly skewed during periods of high market turmoil, in which correlations across asset classes tend to historically rise. Thrasher Analytics believes in diversifying in strategy styles. By using multiple investment philosophies, specifically trend following, mean-reversion, and momentum, a blended model is created that has the ability to adapt to changing market environments and volatility. For example, when equity markets show a strong trend preference, the adaptive S&P 500 trend following component benefits but if there's a shift favoring a range-bound market the sector rotation strategy based on mean-reversion should provide favorable performance.



The above chart shows examples of blending the sector, trend, and fixed income models . Ranging from an all equity approach of 60% in sector rotation, 40% trend and 0% in fixed income; 30% in sector rotation, 50% in trend, and 20% in fixed income; 0% in sector rotation, 50% in trend, and 50% in fixed income.

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Trend (weekly)	Sector Rotation (monthly)	Fixed Income Momentum (quarterly)
Positive	XLRE	JNK
	XLU	AGG
	XLV	

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Back tested performance is NOT an indicator of future actual results. The results reflect performance of a strategy not [historically] offered to investors and do NOT represent returns that any investor actually attained. Back tested results are calculated by the retroactive application of a model constructed on the basis of historical data and based on assumptions integral to the model which may or may not be testable and are subject to losses.

Back tested performance is developed with the benefit of hindsight and has inherent limitations. Specifically, back tested results do not reflect actual trading or the effect of material economic and market factors on the decision-making process. Since trades have not actually been executed, results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity, and may not reflect the impact that certain economic or market factors may have had on the decision-making process. Further, back testing allows the security selection methodology to be adjusted until past returns are maximized. Actual performance may differ significantly from back tested performance.

The models, results, and data shown assumes that the markets were sufficiently liquid to permit the types of trading used in the model. A $6.95 per trade transaction fee was assumed during the back tested period but the results give no consideration to the effect of taxes of any kind. Because the trades assumed in Thrasher Analytics' presentations have not actually been executed, the results shown may have under- or over-compensated for the impact, if any, of certain market factors such as lack of liquidity or the ability to obtain the execution prices that have been assumed. The models developed and presented by Thrasher Analytics LLC require an historical period of data for parameter estimation prior to the actual commencement of the period shown in the model and in the back tested results. No representation is being made that any account will or is likely to achieve profit or loss similar to those shown in this or any other content produced by Thrasher Analytics LLC.

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