

**Model Score: 58.0**

**Daily Change: -3.0**

**Stance: Risk-On**

Last Investment: SPY, 539.62, 2024-06-12

Last Updated: 2024-06-27 18:16

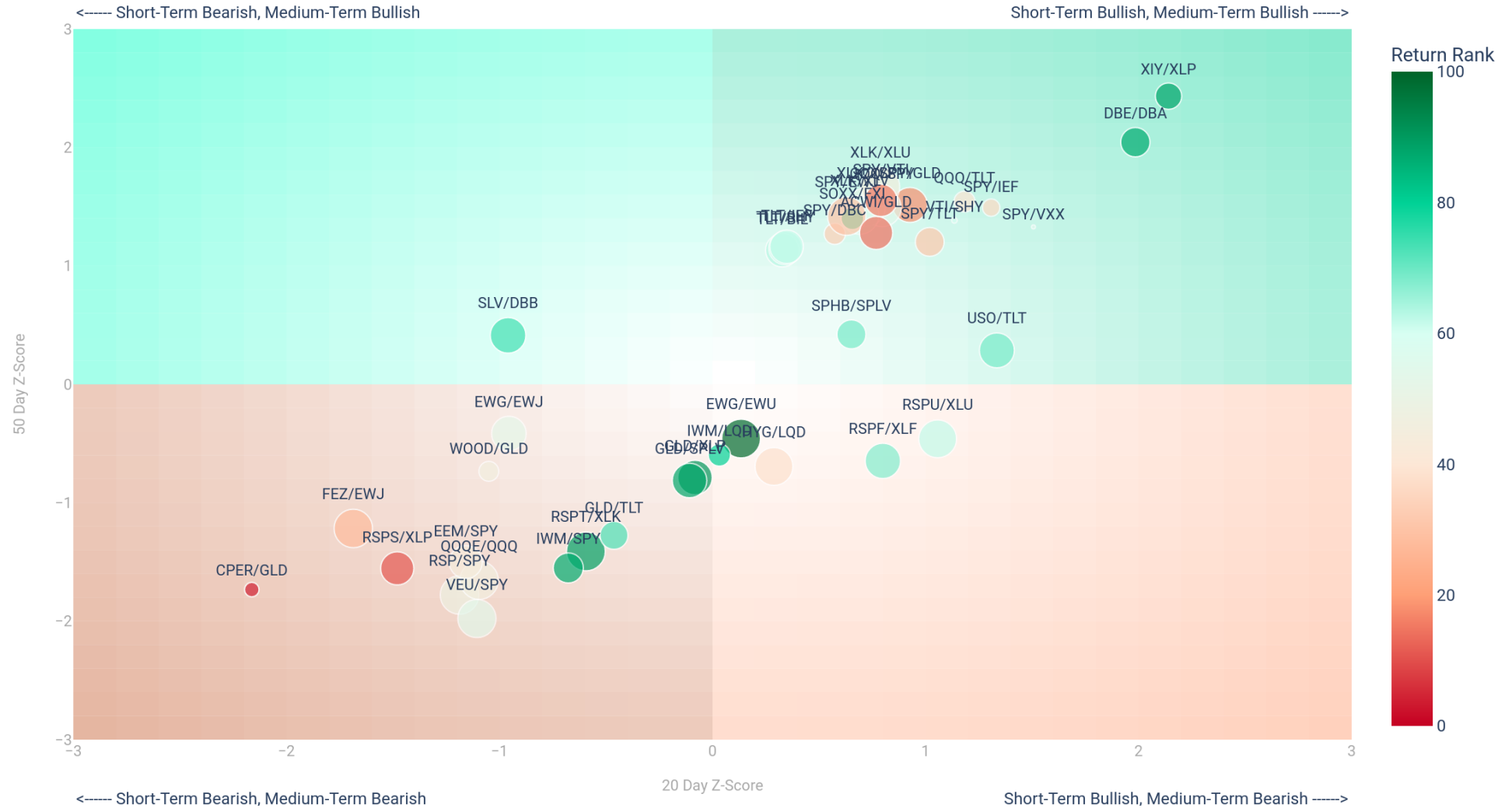
Model v1.04 (April 29, 2024)

June 27, 2024

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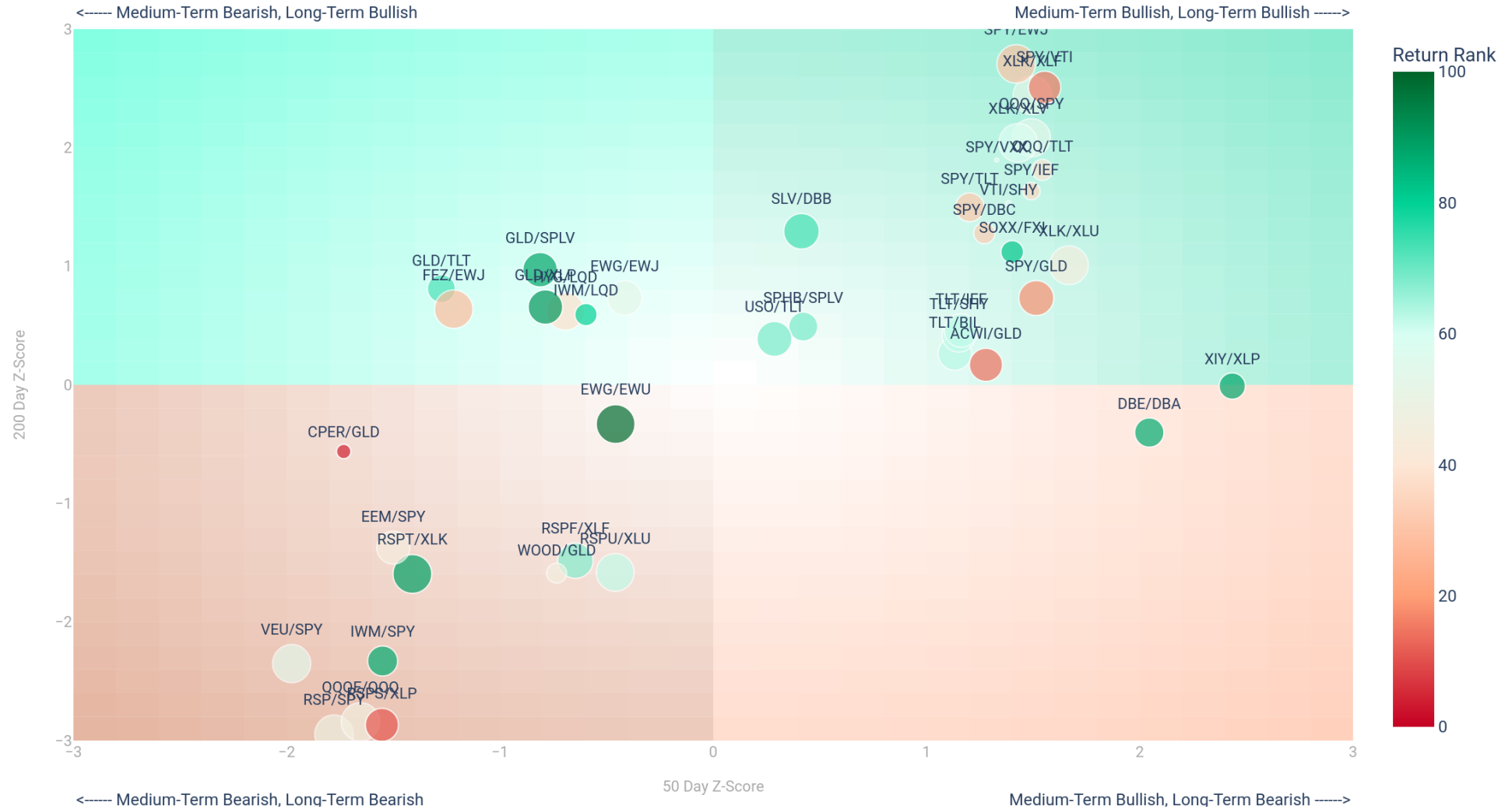


## Ratio Spread Short to Medium Term Summary



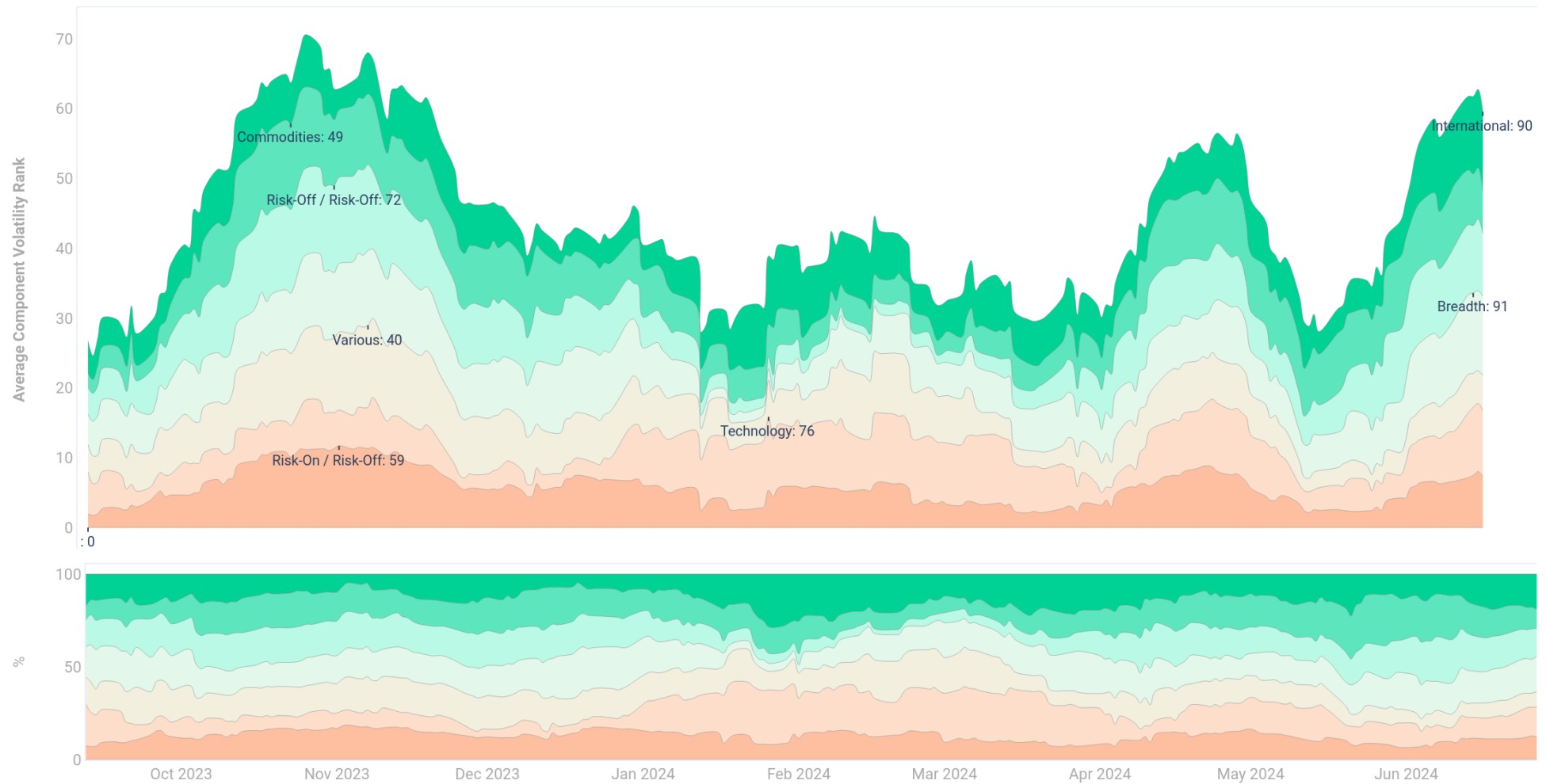


## Ratio Spread Medium to Longer Term Summary





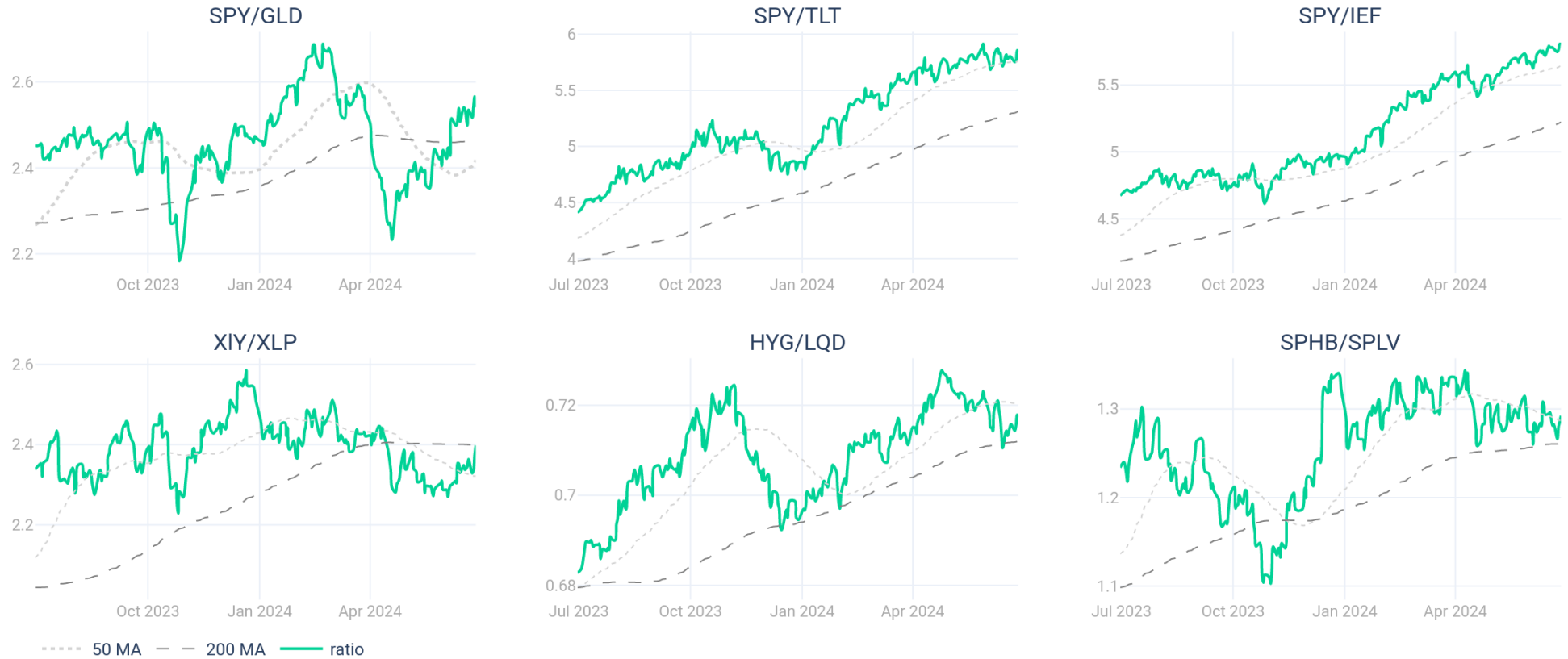
## Risk-On / Risk-Off Volatility Attributions



- The current spread ratio average volatility 100 day percent rank is (68.07%).
- The average trend is exhibiting higher than normal volatility.



## Risk-On to Risk-Off Ratios



| Ratio     | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|-----------|-------------|-----------------|------------|------------|-------------|
| SPY/GLD   | 18          | 81              | 0.93       | 1.51       | 0.73        |
| SPY/TLT   | 31          | 55              | 1.02       | 1.2        | 1.5         |
| SPY/IEF   | 36          | 20              | 1.31       | 1.49       | 1.63        |
| XIY/XLP   | 88          | 46              | 2.14       | 2.43       | -0.01       |
| HYG/LQD   | 38          | 95              | 0.29       | -0.69      | 0.62        |
| SPHB/SPLV | 69          | 56              | 0.65       | 0.42       | 0.49        |



## Technology Ratios

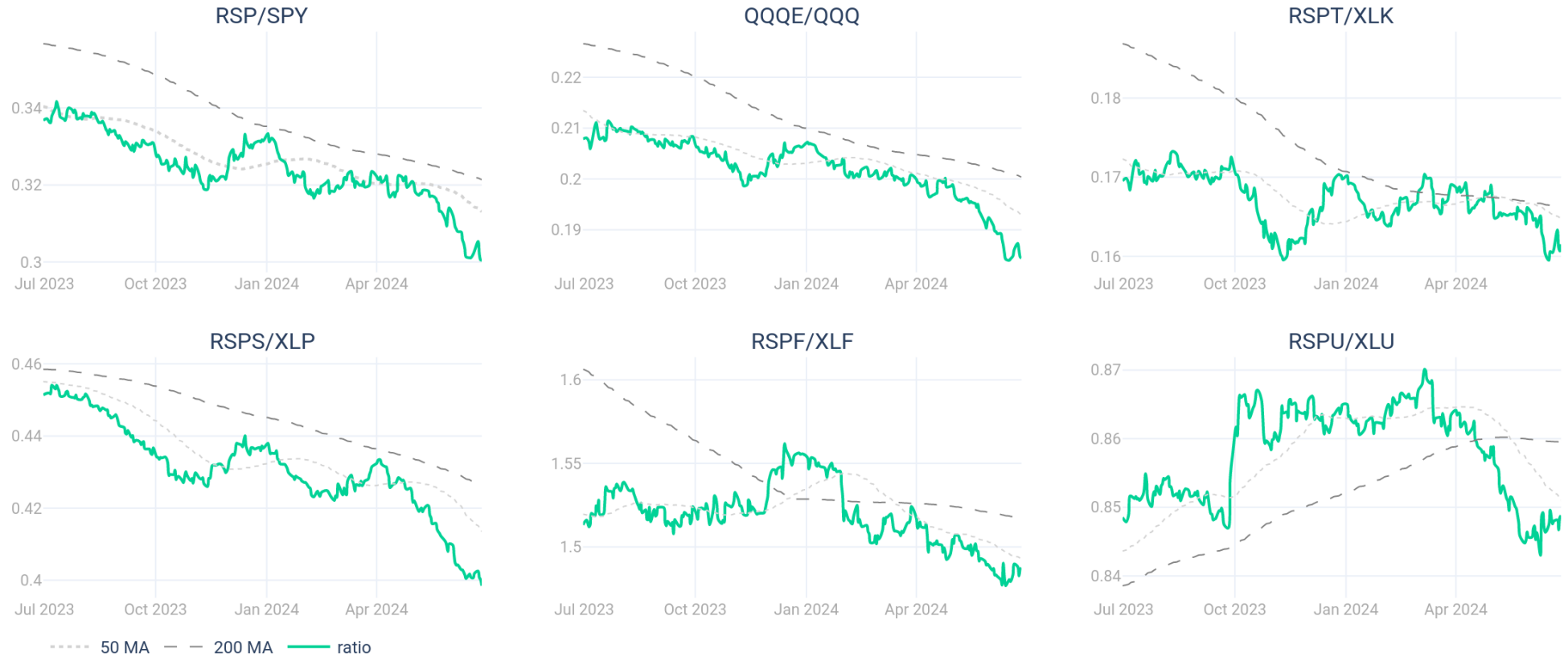


----- 50 MA    - - - 200 MA    — ratio

| Ratio    | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|----------|-------------|-----------------|------------|------------|-------------|
| QQQ/SPY  | 54          | 96              | 0.8        | 1.49       | 2.08        |
| QQQ/TLT  | 39          | 29              | 1.18       | 1.54       | 1.81        |
| XLK/XLF  | 53          | 98              | 0.72       | 1.5        | 2.44        |
| XLK/XLV  | 59          | 98              | 0.69       | 1.43       | 2.04        |
| XLK/XLU  | 45          | 99              | 0.79       | 1.67       | 1.01        |
| SOXX/FXI | 82          | 34              | 0.66       | 1.4        | 1.12        |



## Equal Weight to Cap Weight



| Ratio    | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|----------|-------------|-----------------|------------|------------|-------------|
| RSP/SPY  | 48          | 98              | -1.19      | -1.78      | -2.95       |
| QQQE/QQQ | 46          | 97              | -1.1       | -1.65      | -2.84       |
| RSPT/XLK | 89          | 100             | -0.59      | -1.41      | -1.59       |
| RSPS/XLP | 11          | 73              | -1.48      | -1.55      | -2.87       |
| RSPF/XLF | 68          | 83              | 0.8        | -0.65      | -1.48       |
| RSPU/XLU | 62          | 95              | 1.06       | -0.46      | -1.58       |



## Risk-off to Risk-off

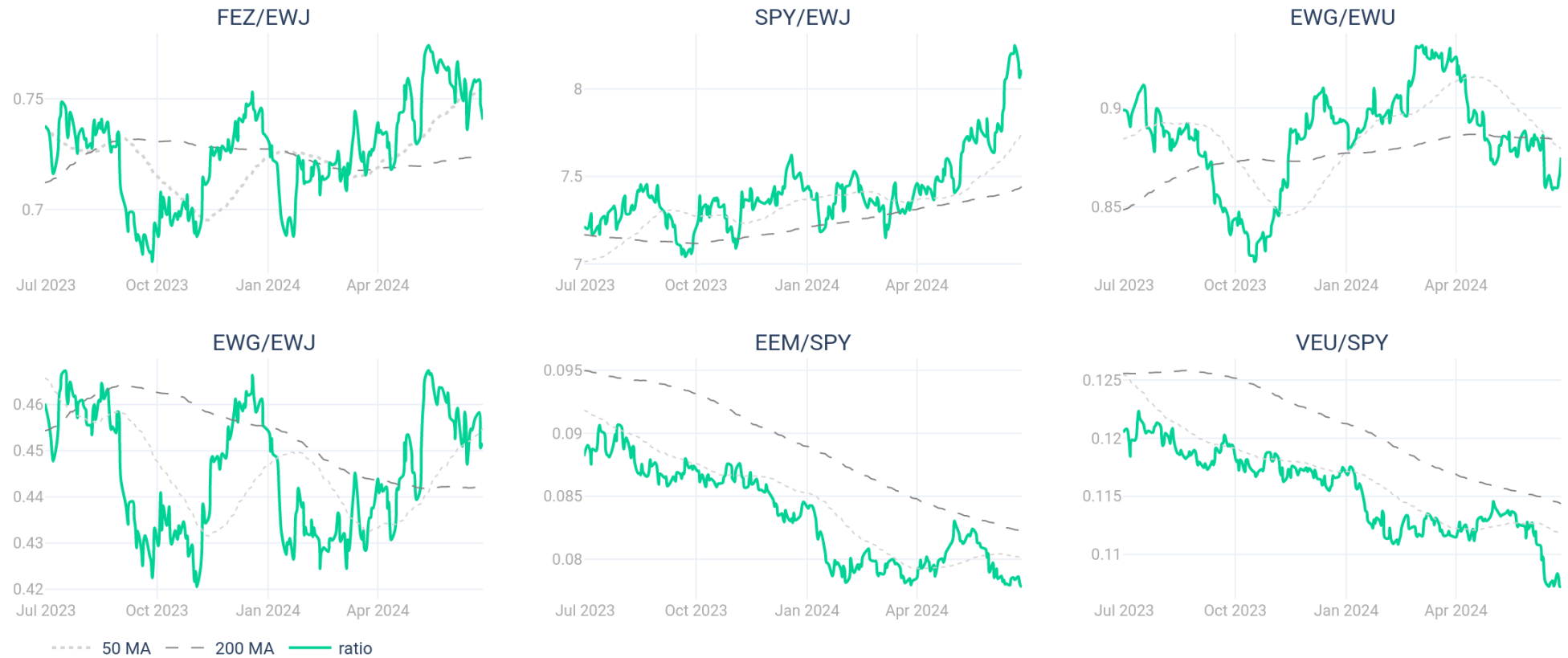


| Ratio    | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|----------|-------------|-----------------|------------|------------|-------------|
| GLD/TLT  | 73          | 52              | -0.46      | -1.27      | 0.81        |
| GLD/XLP  | 91          | 79              | -0.08      | -0.79      | 0.66        |
| GLD/SPLV | 88          | 79              | -0.11      | -0.81      | 0.97        |
| TLT/BIL  | 63          | 74              | 0.33       | 1.13       | 0.26        |
| TLT/SHY  | 62          | 74              | 0.34       | 1.15       | 0.42        |
| TLT/IEF  | 62          | 74              | 0.35       | 1.16       | 0.46        |





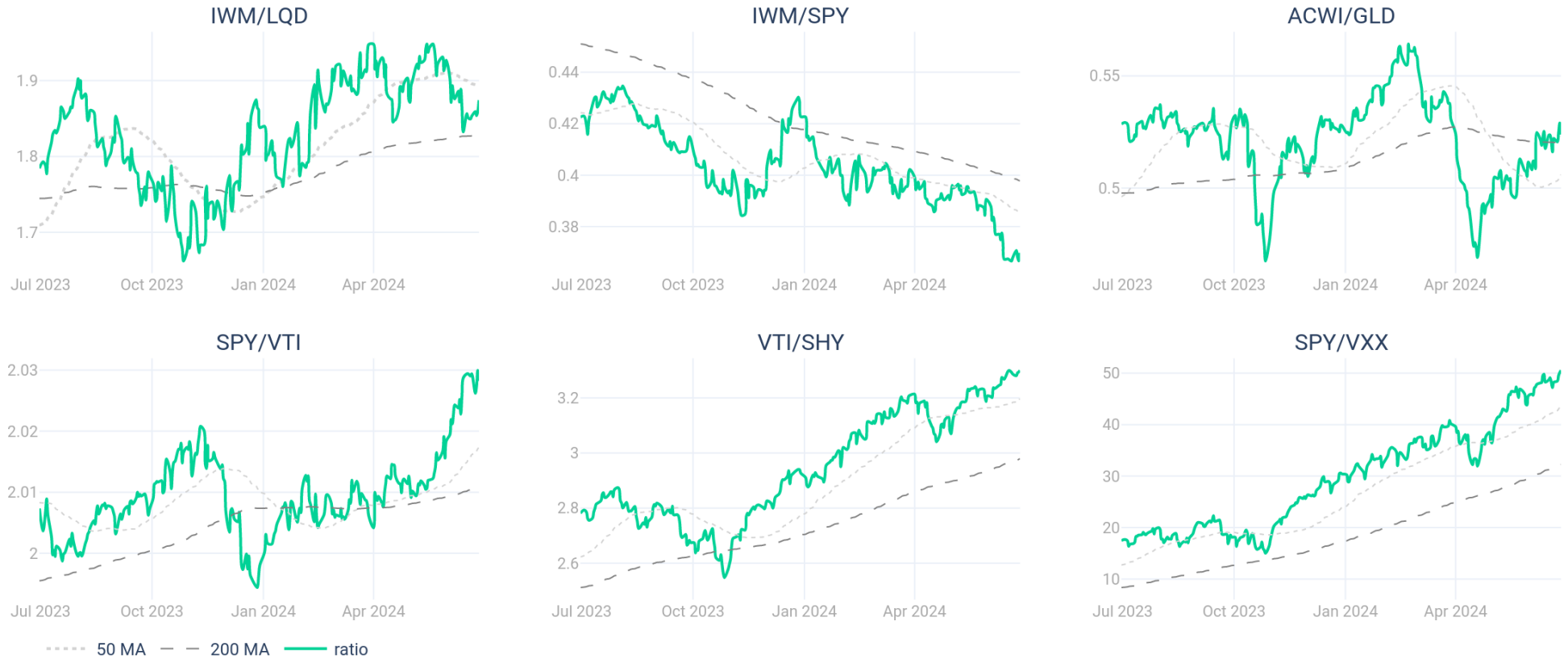
## International Ratios



| Ratio   | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|---------|-------------|-----------------|------------|------------|-------------|
| FEZ/EWJ | 28          | 98              | -1.69      | -1.22      | 0.64        |
| SPY/EWJ | 30          | 98              | 0.63       | 1.42       | 2.71        |
| EWG/EWU | 99          | 100             | 0.13       | -0.46      | -0.33       |
| EWG/EWJ | 53          | 79              | -0.96      | -0.42      | 0.73        |
| EEM/SPY | 44          | 72              | -1.16      | -1.5       | -1.37       |
| VEU/SPY | 54          | 96              | -1.11      | -1.98      | -2.35       |



## Various



| Ratio    | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|----------|-------------|-----------------|------------|------------|-------------|
| IWM/LQD  | 80          | 33              | 0.03       | -0.6       | 0.59        |
| IWM/SPY  | 87          | 60              | -0.68      | -1.55      | -2.33       |
| ACWI/GLD | 14          | 73              | 0.77       | 1.28       | 0.17        |
| SPY/VTI  | 15          | 70              | 0.79       | 1.55       | 2.51        |
| VTI/SHY  | 60          | 2               | 1.14       | 1.38       | 1.53        |
| SPY/VXX  | 54          | 1               | 1.51       | 1.33       | 1.9         |



## Commodities



| Ratio    | Return Rank | Volatility Rank | Z-Score 20 | Z-Score 50 | Z-Score 200 |
|----------|-------------|-----------------|------------|------------|-------------|
| SPY/DBC  | 33          | 30              | 0.57       | 1.27       | 1.28        |
| WOOD/GLD | 46          | 26              | -1.05      | -0.73      | -1.59       |
| CPER/GLD | 4           | 14              | -2.16      | -1.73      | -0.56       |
| USO/TLT  | 69          | 81              | 1.33       | 0.29       | 0.39        |
| DBE/DBA  | 87          | 57              | 1.98       | 2.04       | -0.4        |
| SLV/DBB  | 74          | 84              | -0.96      | 0.41       | 1.29        |



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## Appendix

### Ratio Spread Summary Scatterplots

There are two ratio spread summary scatter plot pages. The first page compares the short term trend to the medium term trend via a 20 day Z-Score (standard deviations from the 20 day moving average) compared to the 50 day Z-Score. The second compares the medium term trend (50 day Z-Score) to the long term trend (200 day Z-Score).

#### The Quadrants

The quadrants are color coded to identify the regime a ratio is priced in. The South West quadrant denotes the most bearish quadrant - on both of the Z-scores being compared it implies they are likely both below their respective moving averages. For example if we are looking at the short to medium term comparison and a ratio falls in the bottom left most quadrant, it would imply the ratio is both below the 20-day and 50-day moving averages.

Similarly, the North-East Quadrant would indicate the most bullish quadrant, on both timeframes being compared the ratios are trading over their respective moving averages.

The North-West and South-East quadrants are more neutral, where the two trends being compared are not necessarily aligned.

#### Bubble Size

The bubble size acts as a 100 day volatility rank of the 21 day realized volatility of a given ratio. The smallest bubble size will be pin sized indicating a 1st percentile volatility rank, ie. the lowest volatility now, compared to the last 100 days. The largest bubble size should indicate a 100% rank, ie. the highest volatility now compared to the last 100 days.



### Bubble Color

The bubble color provides one additional layer of insight by ranking the 1 day return to the last 100 days of 1 day returns. Deep blues will indicate highly ranked returns and deep reds the most negative returns.

These scatter plots allow us to quickly synthesize how and where aggregate Risk-On and Risk-Off ratios are trading.



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### **Risk-On / Risk-Off Volatility Attributions**

The Volatility Attributions tells us on any given day whether or not trends are stable for a group of ratios by calculating an average component volatility rank. The chart then provides an attribution of each ratio group to the total average component volatility rank. Each color on the chart represents that contribution, through time. This enables us to see on any given day if a particular ratio is exhibiting high or low volatility relative to the other ratio groups.



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**Risk On to Risk Off Ratios**

Displays risk assets and their relationship to risk off (defensive) assets. The ratios listed are S&P500 to Gold (SPY/GLD), S&P500 to long term Bonds (SPY/TLT), S&P500 to medium term Bonds (SPY/IEF), Consumer Discretionary to Consumer Staples (XLY/XLP), High Yield Bonds to Investment Grade Bonds (HYG/LQD), and High Beta Stocks to Low Volatility Stocks (SPHB/SPLV).

**Technology Ratios**

Displays Technology indices and sectors relative to other indices and sectors. When Technology is outperforming, this is a Risk-On indication. The ratios listed are Nasdaq 100 to S&P500 (QQQ/SPY), Nasdaq 100 to long term Bonds (QQQ/TLT), Nasdaq 100 to US Financials (QQQ/XLF), Nasdaq 100 to Healthcare (XLK/XLV), Semi Conductors to S&P500 (SOXX/SPY), and Semi Conductors to China large cap stocks (SOXX/FXI).

**Equal Weight to Cap Weight**

Displays how the average component of a universe as performing relative to indices that are calculated based on a market capitalization weighting. When equal weight is underperforming this \* can \* be a risk-off indication as it indicates weakness internally. The ratios shown include equal weight S&P500 to S&P500 (RSP/SPY), Equal Weight Nasdaq 100 to Nasdaq 100 (QQQE/QQQ), Equal Weight Technology to Technology (RSPT/XLK), Equal Weight Consumer Staples to Consumer Staples (RSPS/XLP), Equal Weight Financials to Financials (RSPF/XLF) and Equal Weight Utilities to Utilities (RSPU/XLU).



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**Risk Off to Risk Off**

Shows how risk-off assets are performing relative to one another, it helps answer which risk-off assets are preferred by the market at any given time. The ratios shown include Gold to long term Bonds (GLD/TLT), Gold to Consumer Staples (GLD/XLP), Gold to Low Volatility Stocks (GLD/SPLV), long term Bonds to 1-3 month Treasury Bills (TLT/BIL), long term Bonds to 1-3 year Treasury Bonds (TLT/SHY), and long term Bonds to 7-10 year Treasury Bonds (TLT/IEF).

**International**

Compares various country and international ETFs. The ratios covered include Euro Stoxx 50 to Japan (FEZ/EWJ), S&P500 to Japan (SPY/EWJ), Germany to UK (EWG/EWU), Germany to Japan (EWG/EWJ), Emerging Markets to S&P500 (EEM/SPY), and All World ex. US to S&P500 VEU/SPY.

**Various**

The ratios shown on this page include Small Cap stocks to Investment Grade Bonds (IWM/LQD), Small Cap stocks to S&P500 (IWM/SPY), all World developed and emerging markets to Gold (ACWI/GLD), S&P500 to Total Stock Market (SPY/VTI), Total Stock Market to 1-3 year Bonds (VTI/SHY) and S&P500 to short-term volatility futures (SPY/VXX).

**Commodities**

This page shows various relationships centered around commodities, the numerator is a proxy for the risk-asset while the denominator is meant to be a proxy for the risk-off asset. The ratios shown are S&P500 to commodity index (SPY/DBC), Timber and Forestry companies to Gold (WOOD/GLD), Copper to Gold (CPER/GLD), Oil to long term Bonds (USO/TLT), Copper to Wheat (CPER/WEAT), and Copper to Corn (CPER/CORN).





## Summaries Table

The Summaries table is meant to highlight changes and anomalies in the various ratios tracked. The return rank is the daily return on the ratio ranked on a 100 day basis. The volatility shows the 21 day realized volatility of each ratio ranked on a 100 day basis. The Z-scores put the ratios in context of the timeframes tracked - 20 days, 50 days, and 200 days. A "Z-Score 20" at or above two would simply indicate that the ratio is priced above the upper 20-day Bollinger Band. Likewise, a ratio at or below -2 would indicate it is priced below the lower Bollinger Band (i.e. 2 standard deviations above or below the 20 day moving average of the ratio). This can help us quickly identify and track very strong or weak trends in the ratios report. The summary tables are color coded from red to white to blue. Deeper red indicates larger negative changes and Z-scores, deeper blue indicates larger positive changes and Z-scores. White shading indicates small changes or neutral Z-scores.