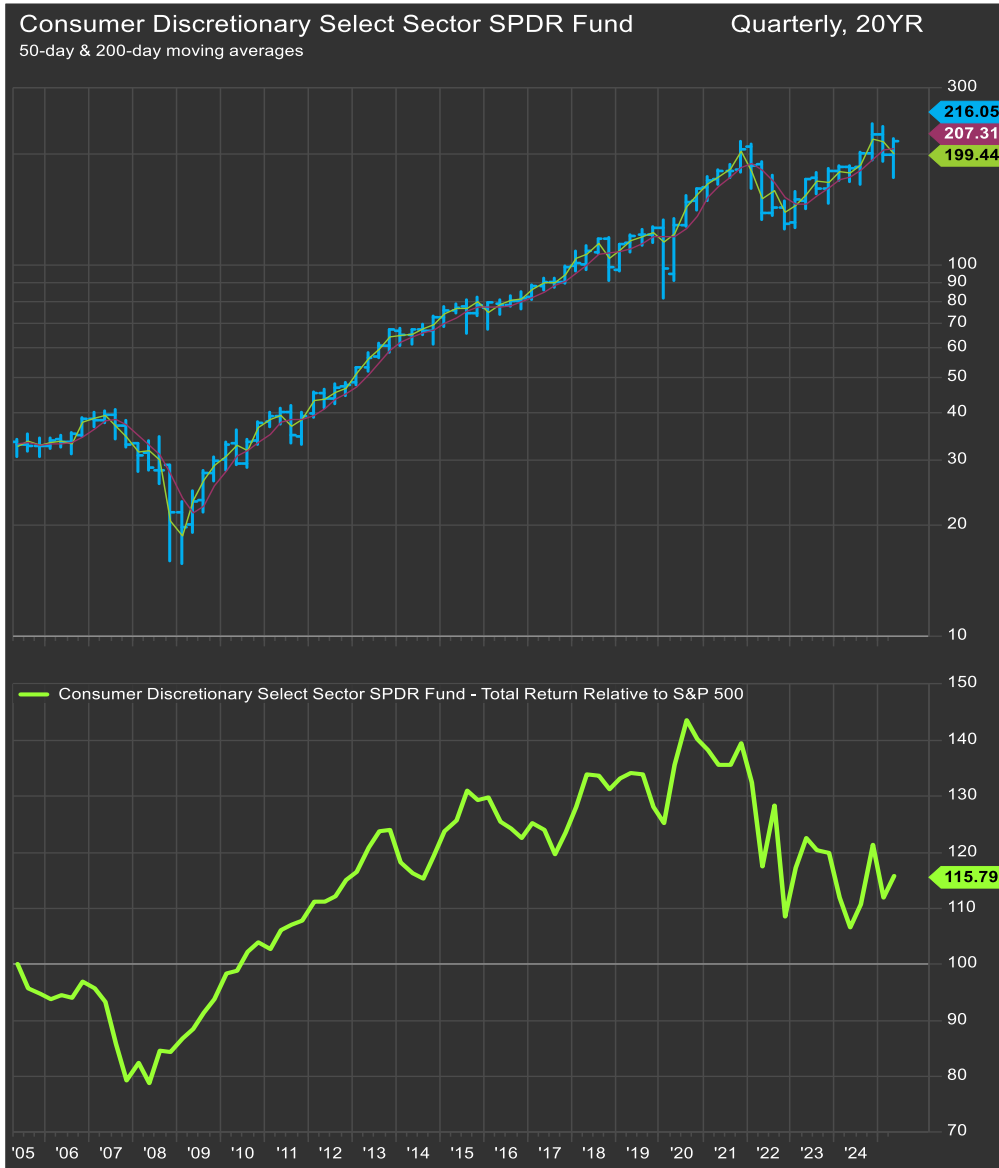


ETFSector.com

Research Study: Intermediate-term Momentum Consumer Discretionary Sector

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Momentum Indicator Study Details



ETFSector.com Intermediate-term Momentum Indicator

Construction:

- Indicator Value = (1M (Trailing) Excess Total Returns * 0.2) + (3M Excess Total Returns * 0.5) + 6M Excess Total Returns * 0.3)
- Binning Values by groups of 5
- Averaging coincident 1, 3, 6 and 12-month coincident excess total return vs. reference security by bin

Study Securities:

- Sector Proxy: XLY
- Reference Security: SPY

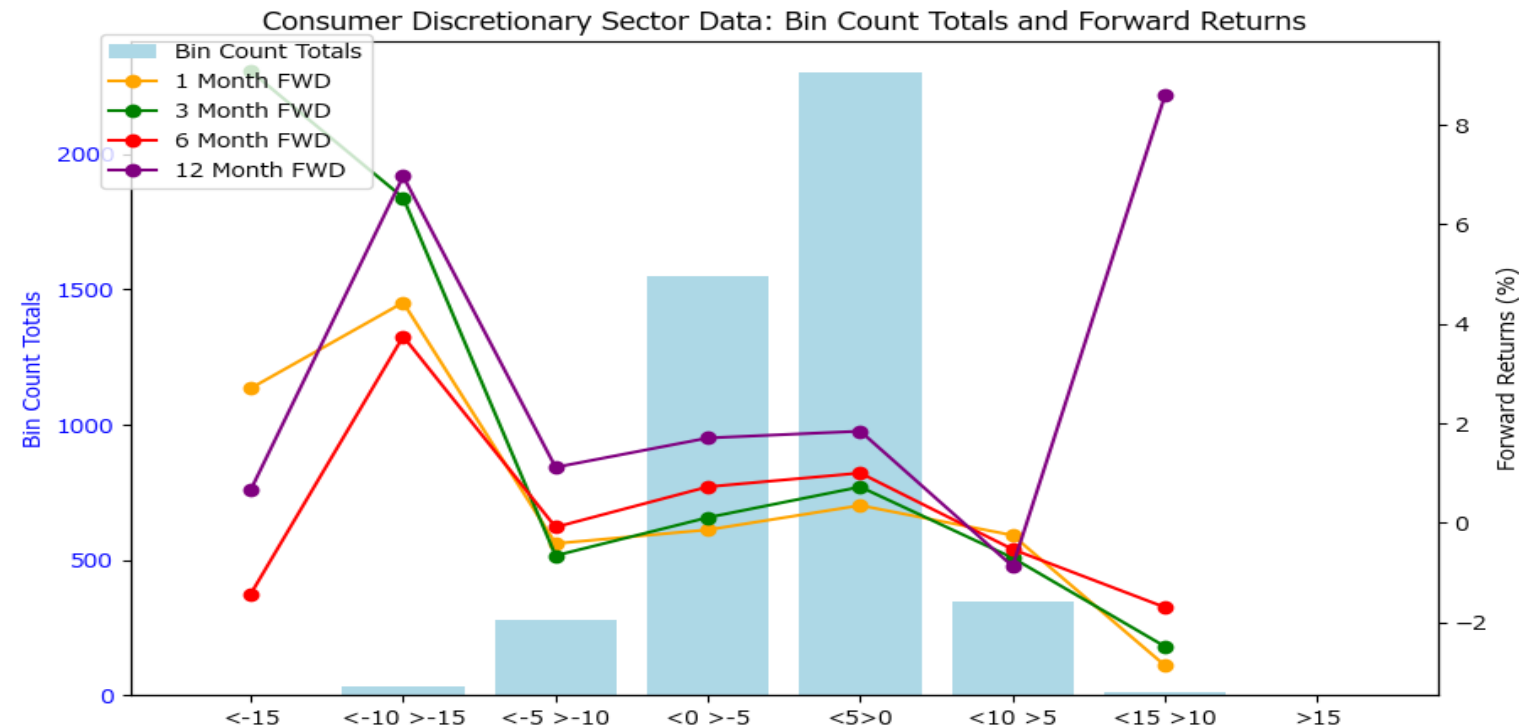
Look Back Period:

- 20 years (Chart)

Objective:

- Insight into the behavior of sector level momentum using a momentum calculation that emphasizes 3-month excess returns
- Identifying historical levels that coincided with positive excess returns

Momentum Indicator Study: Notable Results

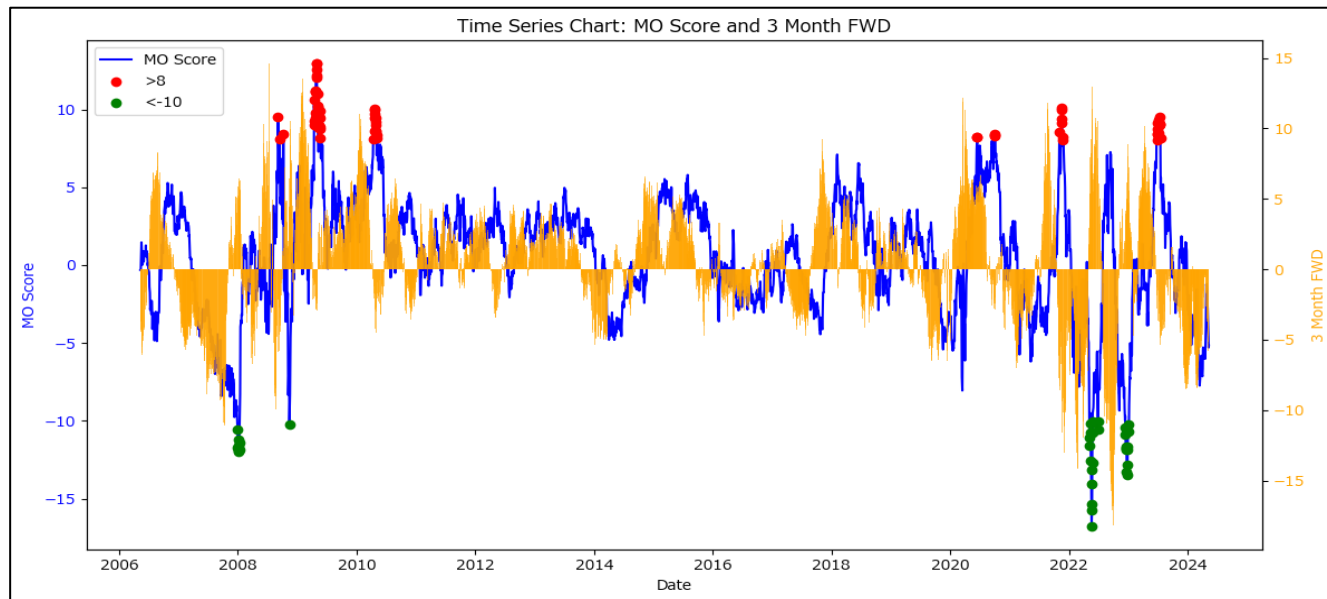
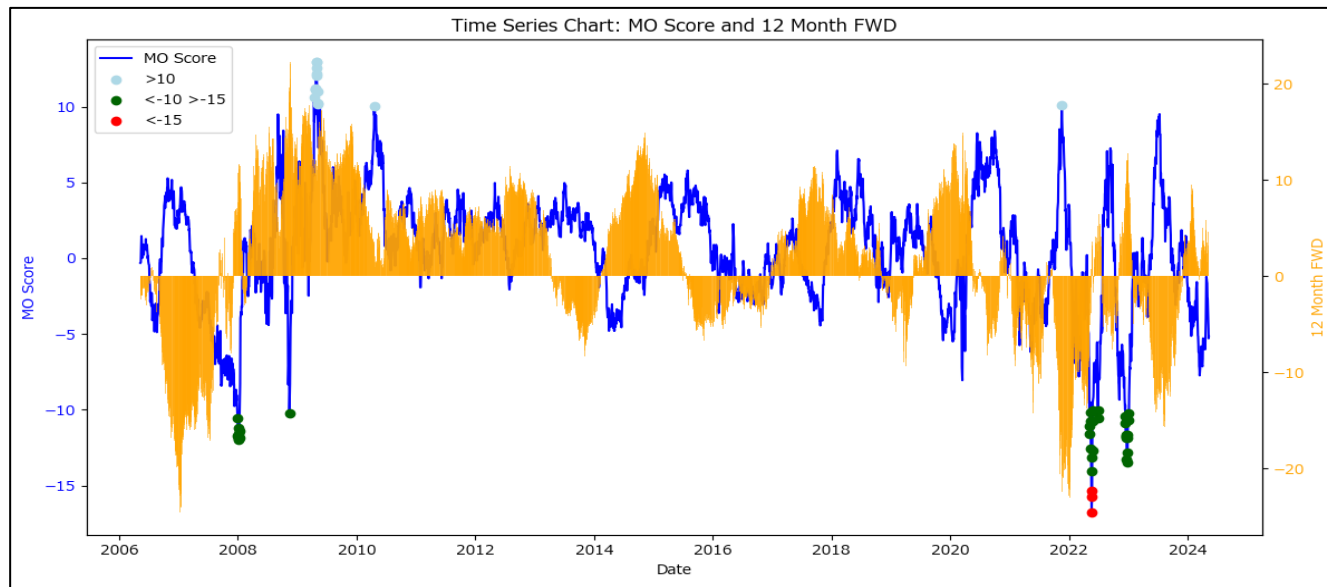


Key Takeaways:

- Potential alpha opportunities are highest at extreme low levels
- While extreme low scores have produced high average FWD returns over 1, 3, 6 and 12-month timeframes, the sector is notable for a lack of positive momentum readings with less than 5% of the study readings above the 5 level and only 2 readings above the 10 level
- Scores with Values >-5 coincide with flat to negative forward excess returns on average
- *Based on this research the Consumer Discretionary Sector is on a neutral/constructive signal with a Mo Score of 1.66 which coincides with modestly above average forward returns in our 20yr study period*

Bin	Observations	Avg_1_Month_FWD	Avg_3_Month_FWD	Avg_6_Month_FWD	Avg_12_Month_FWD
<-15	3	2.705714753	9.07129768	-1.424817792	0.667854756
<-10 >-15	35	4.42789001	6.531963836	3.74732048	6.962183253
<-5 >-10	281	-0.413719593	-0.656140531	-0.084487452	1.118241886
<0 >-5	1548	-0.137792459	0.109290533	0.726449963	1.706689488
<5 >0	2300	0.351707704	0.723656697	1.00248203	1.843745568
<10 >5	349	-0.247631826	-0.701819562	-0.530366239	-0.871845259
<15 >10	14	-2.865657971	-2.483238407	-1.695631722	8.593633417

Momentum Indicator Study: Insights & Strategy Tips



Insights on the Research:

- **Values <-15** coincided with high average excess returns over 1 and 3 month periods but lagging returns over longer time frames
- **Values <-10 and >-15** the strongest signals across 1, 3, 6 and 12 month time frames
- **Values > 10** produced high 12 month excess returns, but negative returns over shorter periods
- An optimized strategy might find a slightly lower level that captures a stronger sell signal more frequently...the chart (bottom, left) shows **values >8 as a potential sell strategy plotted against coincident 3-month excess returns in the sample data**
- **Strategy Tips**
- Alpha is typically generated at extreme oversold conditions and those conditions are episodic
- Considering the plotted data we would look to test our signal at the -4 level and lower and construct a 1-3 month mean-reversion strategy around it