

## **Green Diamond Reward Scores: North American Small Cap ETFs**

**Background:** With the explosive growth of Exchange-Traded-Products (ETPs), more firms than ever use ETPs to execute their trading and investment strategies. Research and analytics providers have historically coupled return and risk factors to achieve a holistic view of investment products.

We believe that a quantitative scoring system which independently gauges reward and risk provides more flexibility and precision in modeling ETPs.

**Note:** While it may be tempting to view the discussed methodology as stand-alone, it is certainly not. This paper demonstrates the value and potential Alpha within our quantitative model and more specifically, the ETFG Green Diamond Reward Ratings. Clearly, there exist many methods to apply these underlying ratings in creating various trading and investing strategies.

**Summary:** ETFG maintains two quantitative models to score ETPs for Reward and Risk respectively – these scores are generated daily by the ETFG Quant model.

- **ETFG Green Diamond Reward** ratings combine both Behavioral and Fundamental analysis to score equity-based ETPs that are not levered, inverse or have less than one year of history. All of the individual factor scores are weighted and combined to create a raw score. This raw score is then scaled from 1 to 10, with 10 being the highest (most reward) score and 1 being the lowest.

**Methodology:** As a quantitative-based firm, we are constantly analyzing the performance of our models in various ways over a multitude of timeframes. This paper reviews the strategy of creating a portfolio of ETFs that invest in Domestic Small Cap Equities. Specifically, two sets of portfolios are tested and compared to a buy and hold strategy of investing in iShares Russell 2000 ETF (IWM). Returns do not include transaction costs or borrow rates where applicable.

**Long-Only Portfolios:** Two long-only strategies (Long 6 and Long 3) are created by selecting the top scoring Small Cap ETFs as measured by their ETF Global® Green Diamond Score. Both portfolios are rebalanced and reconstituted on a monthly basis according to their month end Green Diamond Scores. The “Long 6” strategy selects the 6 highest scoring Small Cap ETPs, while the “Long 3” selects the 3 highest scoring Small Cap ETPs.

**Market Neutral Portfolios:** Two market neutral strategies (Neutral 6 and Neutral 3) are created by combining two sets of portfolios. The Neutral 6 combines the monthly returns of the “Long 6” portfolio with the returns of a “Short 6” portfolio. The “Short 6” is similar in construction to the “Long 6” except it shorts the 6 lowest scoring products as measured by their ETF Global Green Diamond Score. The Neutral 3 combines the monthly returns of the “Long 3” portfolio with the returns of a “Short 3” portfolio. The “Short 3” is similar in construction to the “Long 3” except it shorts the 6 lowest scoring products as measured by their ETF Global Green Diamond score.

**Conclusion:** A monthly rotation strategy that invests in the highest scoring Domestic Small Cap ETFs outperforms a buy and hold strategy on both an absolute return basis and a risk-adjusted return basis. A significant gain the Sharpe Ratio can be achieved by creating a market neutral strategy that takes long positions in the highest scoring products, while shorting the products with the lowest scores.

Sophisticated traders can use the net exposure to the underlying constituents of the products to create a pure equity market neutral strategy that may further enhance the return profile of the strategy.

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<b>Green Diamond Reward Scores: North America Small Cap ETFs</b>						
<b>Month</b>	<b>Year</b>	<b>Top 6 Long</b>	<b>Top 3 Long</b>	<b>Neutral</b>	<b>Neutral</b>	<b>Benchmark</b>
October	2012	-2.75%	-2.92%	-0.70%	-0.18%	-2.17%
November	2012	0.86%	0.73%	0.44%	0.99%	0.55%
December	2012	3.45%	3.35%	0.60%	0.85%	3.62%
January	2013	6.41%	6.45%	0.58%	-0.57%	6.24%
February	2013	1.07%	1.19%	0.24%	-0.38%	1.00%
March	2013	4.65%	4.85%	0.94%	0.83%	4.66%
April	2013	-0.58%	-0.31%	-0.24%	-0.06%	-0.35%
May	2013	3.49%	4.49%	-1.16%	-0.41%	3.93%
June	2013	-2.53%	-2.90%	-1.05%	-1.16%	-0.82%
July	2013	7.36%	7.39%	0.13%	0.19%	7.33%
August	2013	-1.86%	-1.37%	0.61%	1.18%	-3.16%
September	2013	6.12%	6.16%	0.82%	1.21%	6.49%
October	2013	2.88%	2.82%	-0.40%	-0.52%	2.42%
November	2013	1.75%	2.45%	-0.48%	-0.76%	3.96%
December	2013	2.21%	2.40%	0.56%	0.38%	2.02%

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Month	Year	Top 6 Long	Top 3 Long	Neutral 6	Neutral 3	Benchmark
January	2014	-2.94%	-2.45%	0.11%	0.28%	-2.77%
February	2014	4.74%	4.63%	-0.20%	-0.46%	4.78%
March	2014	0.93%	0.36%	0.56%	0.36%	-0.75%
April	2014	-2.96%	-3.77%	-0.54%	-0.42%	-3.75%
May	2014	0.41%	0.38%	0.00%	0.02%	0.79%
June	2014	5.43%	5.68%	0.34%	0.06%	5.27%
July	2014	-4.83%	-4.54%	0.38%	0.28%	-6.05%
August	2014	4.59%	4.87%	0.28%	0.30%	4.83%
September	2014	-4.39%	-4.40%	0.66%	0.56%	-5.93%
October	2014	4.50%	5.07%	1.48%	1.42%	6.59%
November	2014	1.52%	1.66%	1.08%	0.65%	0.11%
December	2014	2.52%	1.93%	1.32%	0.83%	2.89%
January	2015	-2.67%	-2.34%	1.38%	0.88%	-3.28%
February	2015	5.80%	5.55%	0.01%	0.03%	5.95%
March	2015	0.86%	1.48%	-0.58%	-0.23%	1.77%
April	2015	-1.58%	-2.00%	-1.61%	-1.69%	-2.56%
May	2015	0.83%	2.09%	-0.13%	0.54%	2.24%
June	2015	0.26%	-0.45%	0.11%	-0.12%	0.78%
July	2015	-0.14%	-0.58%	1.76%	2.67%	-1.10%
August	2015	-5.21%	-5.78%	0.16%	0.17%	-6.31%
September	2015	-4.37%	-3.89%	-0.38%	0.00%	-4.94%
October	2015	6.70%	6.40%	0.54%	0.08%	5.62%
November	2015	2.31%	2.53%	-0.30%	-0.47%	3.26%
December	2015	-5.02%	-5.13%	-0.32%	-0.21%	-5.03%

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Month	Year	Top 6 Long	Top 3 Long	Neutral 6	Neutral 3	Benchmark
January	2016	-7.17%	-7.61%	1.09%	1.49%	-8.58%
February	2016	-3.57%	-4.71%	0.42%	-1.14%	-0.22%
March	2016	15.10%	10.55%	1.42%	0.78%	8.01%
April	2016	1.73%	2.28%	0.17%	0.79%	1.67%
May	2016	-1.15%	-2.84%	-1.51%	-2.50%	2.24%
June	2016	-0.18%	-0.02%	0.08%	-0.04%	-0.02%
July	2016	5.83%	6.03%	0.31%	0.08%	5.30%
August	2016	2.11%	2.50%	0.42%	0.63%	1.78%
September	2016	1.10%	1.07%	0.34%	0.26%	0.80%
October	2016	-5.76%	-5.55%	-0.95%	-0.88%	-4.98%
November	2016	12.66%	13.45%	0.12%	0.86%	11.51%
December	2016	2.01%	2.06%	-0.44%	-3.28%	2.46%
January	2017	-1.16%	-1.02%	0.06%	0.41%	-0.42%

Summary					
	Top 6	Top 3	6 Combo	3 Combo	IWM
2012	1.47%	1.06%	0.34%	1.66%	1.93%
2013	35.04%	38.56%	0.52%	-0.12%	38.70%
2014	9.09%	8.96%	5.59%	3.96%	5.04%
2015	-3.01%	-2.91%	0.60%	1.62%	-4.48%
2016	22.40%	16.15%	1.45%	-0.36%	20.10%
2017	-1.16%	-1.02%	0.06%	0.41%	-0.42%
Total	75.39%	70.29%	8.76%	7.53%	69.64%
Annualized	13.84%	13.07%	1.96%	1.76%	12.97%
Ann. St Dev	15.39%	15.10%	2.55%	2.96%	14.71%
Sharpe	0.900	0.865	0.768	0.594	0.882

\*Reflects no borrowing or transaction costs and spans inception (9/30/12) through current date

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