

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.

For Research Inquiries: research@etfg.com or (412) 407-4444

Green Diamond Reward Scores: North America Small Cap ETFs						
Month	Year	Top 6 Long	Top 3 Long	Neutral 6	Neutral 3	Benchmark
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%

Green Diamond Reward Scores: North America Small Cap ETFs						
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%
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%

Green Diamond Reward Scores: North America Small Cap ETFs						
Month	Year	Top 6 Long	Top 3 Long	Neutral 6	Neutral 3	Benchmark
January	2017	-1.16%	-1.02%	0.06%	0.41%	-0.42%
February	2017	1.62%	1.07%	-0.22%	-0.31%	2.64%
March	2017	-0.06%	-0.29%	0.03%	-0.03%	-0.26%
April	2017	0.93%	1.29%	-0.18%	0.05%	1.15%
May	2017	-2.31%	-2.29%	-0.06%	-0.04%	-1.97%
June	2017	3.43%	3.97%	0.36%	0.94%	3.37%
July	2017	0.83%	0.95%	-0.01%	-0.07%	0.42%
August	2017	-1.71%	-1.84%	0.10%	0.06%	-1.26%
September	2017	7.58%	8.79%	0.56%	1.24%	6.05%
October	2017	1.01%	0.70%	-0.02%	-0.26%	0.73%
November	2017	3.04%	3.56%	-0.03%	0.19%	2.94%
December	2017	-1.16%	-2.33%	-0.33%	-1.06%	-0.77%
January	2018	1.70%	2.07%	-0.36%	0.13%	2.56%
February	2018	-4.32%	-3.79%	-0.19%	0.21%	-3.84%
March	2018	0.96%	0.33%	-0.31%	-0.30%	0.98%

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	12.28%	12.71%	0.26%	1.11%	13.06%
2018	-1.76%	-1.48%	-0.86%	0.04%	-0.41%
Total	95.73%	91.04%	8.04%	8.11%	91.80%
Annualized	12.99%	12.49%	1.42%	1.43%	12.57%
Ann. St Dev	14.34%	14.27%	2.31%	2.73%	13.60%
Sharpe	0.906	0.876	0.61	0.523	0.924

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

Disclaimer

Assumptions, opinions and estimates constitute our judgment as of the date of this material and are subject to change without notice. ETF Global LLC ("ETFGlobal") and its affiliates and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively ETFGlobal Parties) do not guarantee the accuracy, completeness, adequacy or timeliness of any information, including ratings and rankings and are not responsible for errors and omissions or for the results obtained from the use of such information and ETFGlobal Parties shall have no liability for any errors, omissions, or interruptions therein, regardless of the cause, or for the results obtained from the use of such information. ETFGlobal PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, SUITABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. In no event shall ETFGlobal Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the information contained in this document even if advised of the possibility of such damages.

ETFGlobal ratings and rankings are statements of opinion as of the date they are expressed and not statements of fact or recommendations to purchase, hold, or sell any securities or to make any investment decisions. ETFGlobal ratings and rankings should not be relied on when making any investment or other business decision. ETFGlobal's opinions and analyses do not address the suitability of any security. ETFGlobal does not act as a fiduciary or an investment advisor. While ETFGlobal has obtained information from sources they believe to be reliable, ETFGlobal does not perform an audit or undertake any duty of due diligence or independent verification of any information it receives

ETFGlobal keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of ETFGlobal may have information that is not available to other ETFGlobal business units. ETFGlobal has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process. ETFGlobal may receive compensation for its ratings and certain analyses. ETFGlobal reserves the right to disseminate its opinions and analyses. At times, ETFGlobal's public ratings and analyses are made available on its Websites, www.etfg.com (free of charge) and may be distributed through other means, including via ETFGlobal publications and third party redistributors.

This material is not intended as an offer or solicitation for the purchase or sale of any security or other financial instrument. Securities, financial instruments or strategies mentioned herein may not be suitable for all investors. Any opinions expressed herein are given in good faith, are subject to change without notice, and are only correct as of the stated date of their issue. Prices, values, or income from any securities or investments mentioned in this report may fall against the interests of the investor and the investor may get back less than the amount invested. Where an investment is described as being likely to yield income, please note that the amount of income that the investor will receive from such an investment may fluctuate. Where an investment or security is denominated in a different currency to the investor's currency of reference, changes in rates of exchange may have an adverse effect on the value, price or income of or from that investment to the investor.

The information contained in this report does not constitute advice on the tax consequences of making any particular investment decision. This material does not take into account your particular investment objectives, financial situations or needs and is not intended as a recommendation of particular securities, financial instruments or strategies to you nor is it considered to be investment advice. Before acting on any recommendation in this material, you should consider whether it is suitable for your particular circumstances and, if necessary, seek professional advice.