

ETFG Green Diamond Reward Scores: Daily Selection

Background: With the explosive growth of Exchange-Traded-Products (ETPs), many firms now use ETPs to execute their trading or investment strategies more than ever before. 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. Although the ETFG Reward and Risk Ratings were not intended as short-term trading indicators, our analysis demonstrates that value exists via daily portfolio selection.

Note: While it may be tempting to view the discussed methodology as a stand-alone strategy, 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 to 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 long portfolio which hold ETPs with similar Reward scores. Since our models are updated daily, this creates the need to perform daily portfolio rebalancing as scores and selections change. For the purposes of this exercise, all portfolios are flat at the close (no positions are held overnight) and do not include the impact of transaction costs, although we have estimates for this expense.

For the ETFG Green Diamond portfolios, a long position is assumed for each group of green diamond rated ETPs. Each day we calculate three, separate, portfolios for the 7, 8 and 9 Green Diamond Reward Rated ETPs respectively. These daily portfolios are also equally weighted.

Calculation: The calculation for the daily, long position performance is:

$$\frac{(\text{Closing Price} - \text{Opening Price})}{\text{Opening Price}}$$

Daily performance calculates the arithmetic average of the performance of all 7, 8, 9 Green Diamonds that were traded on that day. If an ETP did not trade that day, it is excluded from the day's calculation.

Monthly returns are calculated by geometrically linking the daily returns for every trading day in the month.

$$(1+r_1)*(1+r_2)*...*(1+r_n)-1 \text{ where:}$$

r = return on "n" day
n = number of trading days in the month

Cumulative returns are then calculated geometrically using the same formula as above except substituting the monthly return for "r" instead of using the daily returns. To make the returns more comparable, annualized returns are calculated using the following formula:

$$R^{(1/(n/12))}-1 \text{ where:}$$

R = 1+ Cumulative return
n = number of monthly returns

Annualized standard deviation is calculated to enable the comparison between risk adjusted returns as raw return numbers do not always provide the complete picture and investors have different risk tolerances. To calculate the risk measure, the standard deviation of the monthly returns is multiplied by the square root of 12.

The tables below reflect summary statistics for the 3 portfolios. It is important to note that trading costs are not included.

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

ETFG Green Diamond Reward Ratings							
Period		Monthly Performance			Average Count		
Month	Year	7	8	9	7	8	9
August 15,	2012	0.73%	0.59%	0.70%	281	210	50
September	2012	1.73%	2.55%	3.75%	296	198	33
October	2012	-3.29%	-3.30%	-3.52%	296	165	24
November	2012	-0.96%	-0.91%	-0.43%	292	154	25
December	2012	2.35%	2.49%	4.29%	137	43	9
January	2013	2.39%	2.36%	1.88%	142	53	11
February	2013	-1.87%	-1.75%	-1.41%	180	74	17
March	2013	2.11%	2.70%	3.86%	145	73	15
April	2013	-1.65%	-1.01%	0.68%	81	25	4
May	2013	0.45%	0.29%	4.43%	86	25	4
June	2013	-2.75%	-3.43%	-2.52%	93	26	4
July	2013	0.75%	1.56%	0.62%	141	46	7
August	2013	-0.59%	-1.20%	-2.10%	85	24	4
September	2013	2.30%	2.19%	-1.28%	112	40	8
October	2013	1.62%	2.17%	-3.63%	137	56	12
November	2013	-0.43%	-1.27%	-2.57%	141	45	7
December	2013	-0.35%	0.24%	-1.25%	120	38	7

ETF Green Diamond Reward Ratings – Cont.								
Period		Monthly Performance			Average Count			
Month	Year	7	8	9	7	8	9	
January	2014	-3.79%	-3.17%	-4.94%	118	40	6	
February	2014	1.90%	0.48%	1.69%	97	30	6	
March	2014	-2.80%	-1.76%	-0.67%	140	49	9	
April	2014	-2.79%	0.10%	-2.01%	133	46	12	
May	2014	-0.03%	1.23%	1.09%	93	30	9	
June	2014	2.25%	1.83%	1.20%	141	46	6	
July	2014	-1.04%	0.01%	-0.50%	145	49	9	
August	2014	0.70%	0.05%	1.28%	98	32	7	
September	2014	-2.89%	-2.90%	2.02%	114	30	4	
October	2014	0.54%	-0.41%	-1.35%	132	57	11	
November	2014	-0.58%	-1.32%	-0.52%	136	49	8	
December	2014	-2.81%	-2.64%	1.55%	108	27	4	
January	2015	-2.95%	-7.71%	1.30%	76	15	3	
February	2015	-1.40%	-5.58%	5.11%	77	15	3	
March	2015	-1.10%	-0.46%	-0.02%	122	33	6	
April	2015	0.51%	2.14%	2.49%	131	65	15	
May	2015	-1.69%	-2.38%	-2.67%	123	50	9	
June	2015	-1.80%	-3.12%	-4.11%	135	60	9	
July	2015	-2.20%	-3.75%	-10.37%	104	27	3	
August	2015	-2.21%	-0.84%	-3.73%	166	59	9	
September	2015	-3.64%	-6.19%	-13.74%	89	26	3	
October	2015	3.64%	4.86%	3.17%	149	53	14	
November	2015	0.35%	1.00%	-5.15%	110	29	6	
December	2015	-2.71%	-4.85%	-7.40%	118	32	6	
January	2016	-4.64%	-6.36%	-10.78%	87	37	10	
February	2016	4.57%	3.00%	2.38%	93	36	11	
March	2016	7.74%	8.99%	8.11%	70	22	5	
April	2016	2.11%	3.70%	2.36%	95	40	9	
May	2016	-2.56%	-2.95%	-5.11%	82	28	6	
June	2016	2.22%	1.52%	2.44%	91	30	10	
July	2016	1.59%	3.28%	2.86%	174	54	11	
August	2016	-0.83%	-1.04%	-0.26%	146	29	4	
September	2016	0.68%	0.20%	1.07%	160	43	7	
October	2016	-2.92%	-4.98%	-3.92%	72	13	2	
November	2016	0.78%	3.20%	-0.72%	98	21	5	
December	2016	-1.87%	-2.02%	-3.22%	126	22	5	

ETFG Green Diamond Reward Ratings – Cont.								
Period		Monthly Performance			Average Count			
Month	Year	7	8	9	7	8	9	
January	2017	0.52%	-0.09%	0.21%	91	13	2	
February	2017	0.64%	0.87%	0.53%	105	23	5	
March	2017	-0.25%	0.44%	0.47%	136	21	4	

Green Diamond Risk Ratings				Green Diamond Correlation				Green Diamond R ²			
Red Diamond Rating	7	8	9	Rating	7	8	9	Rating	7	8	9
Total Performance*	-12.31%	-17.54%	-31.16%	Correlation (ACWI)	0.93	0.68	0.77	R ² (ACWI)	0.87	0.46	0.60
Standard Deviation (Monthly)	2.42%	3.01%	4.17%	Correlation (AGG)	0.03	0.09	0.03	R ² (AGG)	0.00	0.01	0.00
Annualized Return*	-2.82%	-4.12%	-7.82%	Correlation (DJP)	0.32	0.22	0.26	R ² (DJP)	0.10	0.05	0.07
Annualized Standard Deviation*	8.37%	10.42%	14.46%	Correlation (GLD)	0.24	0.25	0.15	R ² (GLD)	0.06	0.06	0.02
Return/Risk*	-0.34	-0.40	-0.54	Correlation (SPY)	0.94	0.67	0.75	R ² (SPY)	0.88	0.45	0.56

*Reflects no transactions costs and spans inception (8/15/12) 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 ("ETFG") and its affiliates and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively ETFG 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 ETFG 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. ETFG 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 ETFG 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.

ETFG 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. ETFG ratings and rankings should not be relied on when making any investment or other business decision. ETFG's opinions and analyses do not address the suitability of any security. ETFG does not act as a fiduciary or an investment advisor. While ETFG has obtained information from sources they believe to be reliable, ETFG does not perform an audit or undertake any duty of due diligence or independent verification of any information it receives

ETFG 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 ETFG may have information that is not available to other ETFG business units. ETFG has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process. ETFG may receive compensation for its ratings and certain analyses. ETFG reserves the right to disseminate its opinions and analyses. At times, ETFG'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 ETFG 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.