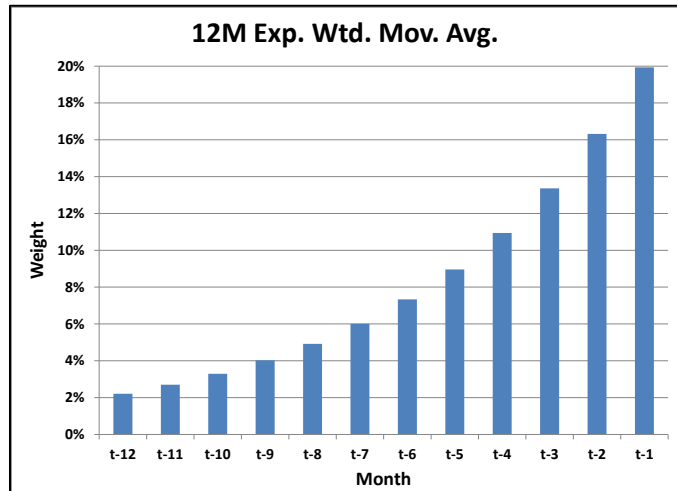


Trend-Following with Alternative ETFs

Factor Definition

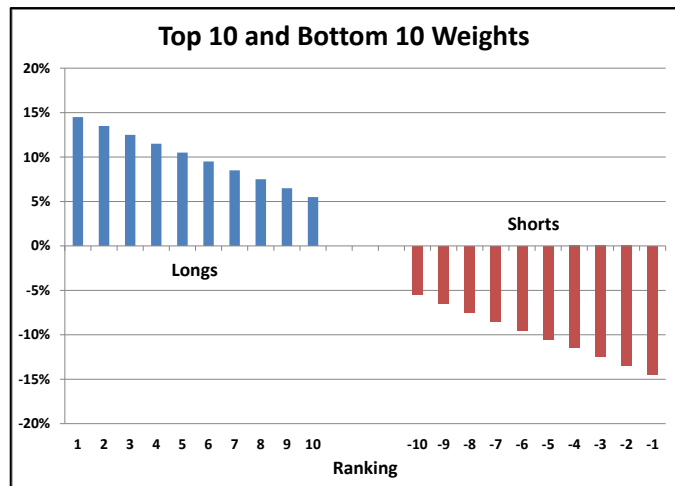
The purpose of this article is to present the results of a simple one factor trend-following return model—twelve month exponentially-weighted moving average return—as applied to a highly liquid universe of alternative ETFs. Although in practice I use a variety of momentum, value, fundamental, and economic factors in forecasting ETF returns, for purposes of this article the expected return for an ETF is simply the exponentially-weighted average return over the trailing twelve months (weights shown at right).



I published a more detailed description of the trend-following model methodology in an introductory article, “[Trend-Following with ETFs](#)”. This article will focus on the application of that model to alternative ETFs. Two other articles in this series focus on its application to [sector and industry ETFs](#) and [international ETFs](#).

Portfolio Construction Rules

Two methods of implementing the trend-following model are presented: long-only and long/short. Long positions are the same for the long side of the long/short portfolio and the long-only portfolio. The long-only portfolio simply omits the shorts. The long/short portfolio may have up to ten long positions and ten short positions. In most months, however, the number of either longs or shorts is likely to be reduced because of the trailing return of the U.S. stock market, which tends to affect all U.S. ETFs to some extent. That is, if the market has been up, the portfolio is likely to have fewer shorts (ETFs with a negative trend), and if it has been down, it is likely to have fewer longs (ETFs with a positive trend).



Portfolio weights are based upon expected return. The ETF with the highest expected return gets a long weight of 14.5%, the next highest a long weight of 13.5%, and so on down to a long weight of 5.5%, at which point 100% of capital has been invested long. Short weights are a mirror image of this methodology. The ETF with the lowest negative return gets a short weight of 14.5% and so on (as shown in the graph above).

In the trend-following model, all long positions must have a positive expected return and all short positions must have a negative expected return. Long positions may sum to less than 100% and short positions may sum to less than 100%.

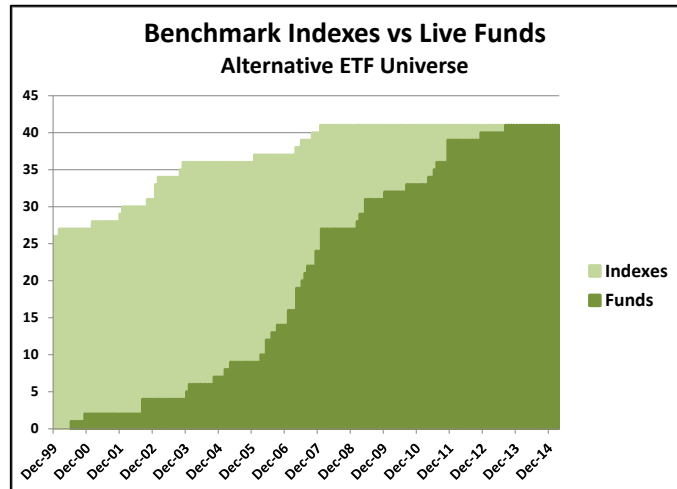
Universe Definition

My full International ETF universe currently contains 134 ETFs. In practice, the various transaction cost and borrowing cost inputs into my portfolio construction process generally prevent me from using the most illiquid of these. My purpose here is to keep things simple, so have culled down my full universe into a highly liquid alternative ETF universe that currently contains only 41 constituents, each with more than \$1 billion in current assets under management, as shown in the table below.

Alternative ETF Universe Constituents					
Asset Class	Investment Focus	Index Name	Fund Name	Fund Ticker	Fund AUM (\$M)
1 Commodities	Oil Futures	S&P GSCI Crude Oil T Ret	IPATH S&P GSCI CRUDE OIL TR	OIL	1,122
2 Commodities	Physical Gold	London Gold Market Fixing Ltd	ISHARES GOLD TRUST	IAU	6,394
3 Commodities	Physical Silver	LBMA Silver Price - Price/US C	ISHARES SILVER TRUST	SLV	5,314
4 Commodities	Broad Commodity	BBG Commodity TR	IPATH DOW JONES-UBS COMMDTY	DJP	1,264
5 Commodities	Commodity Roll/Trend	DBIQ OptYld Comdty Ix ER	POWERSHARES DB COMMODITY IND	DBC	3,054
6 Dollar Debt	Bank Loans	SPLSTAUSLevLn 100	POWERSHARES SENIOR LOAN	BKLN	5,793
7 Dollar Debt	Convertible Bonds	BC US Conv 500MM Face Liquidit	SPDR BARCLAYS CONVERTIBLE SE	CWB	2,902
8 Dollar Debt	Corp Bonds - S/T	Barclays US Corporate 1-5 year	VANGUARD S/T CORP BOND ETF	VCSH	9,897
9 Dollar Debt	Corporate Bonds	iBoxx \$ Liquid Investment Grad	ISHARES IBOXX INVESTMENT GRA	LQD	22,700
10 Dollar Debt	EM Gov't/Corp \$ Debt	JPMorgan Emerging Markets Bond	ISHARES JP MORGAN USD EMERGI	EMB	4,821
11 Dollar Debt	Floating Rate Debt	Barclays US FRN < 5 yrs Total	ISHARES FLOATING RATE BOND E	FLOT	3,227
12 Dollar Debt	High Yield Bonds	Barclays VLI: High Yield Total	SPDR BARCLAYS HIGH YIELD BD	JNK	11,931
13 Dollar Debt	MBS	Barclays US MBS Index Total Re	ISHARES MBS ETF	MBB	6,646
14 Dollar Debt	Mortgage REITs	FTSE NAREIT AllMrtgCapTR	ISHARES MORTGAGE REAL ESTATE	REM	1,215
15 Dollar Debt	Municipal Bonds - HY	BarCap Municipal Custom HY Com	MARKET VECTORS HI YLD MUNI	HYD	1,584
16 Dollar Debt	Preferred Stock	S&P Preferred Stock TR	ISHARES US PREFERRED STOCK E	PFF	13,161
17 Dollar Debt	TIPS	Barclays US Treasury Inflation	ISHARES TIPS BOND ETF	TIP	13,840
18 Dollar Debt	TIPS - S/T	Barclays US Treasury TIPS 0-5	VANGUARD SHORT-TERM TIPS	VTIP	1,711
19 Dollar Debt	Treasuries - L/T	Barclays U.S. Treasury: 20+ Ye	ISHARES 20+ YEAR TREASURY BO	TLT	6,576
20 Non-Dollar Debt	Devel Gov't Bonds	Barclays Global Treasury ex-U.	SPDR BARCLAYS INTL TREASURY	BWX	1,730
21 Non-Dollar Debt	EM Gov/Corp Bonds	JPM Government Bond Index Emer	MARKET VECTORS EMERGING MARK	EMLC	1,132
22 US Equity	Buybacks	NASDAQ Buyback AchvTR	POWERSHARES BUYBACK ACHVERS	PKW	2,988
23 US Equity	Dividend Growth	NASDAQ DividendAchvSelTR	VANGUARD DIVIDEND APPREC ETF	VIG	20,622
24 US Equity	Dividend Yield	DJ US SELECT DIVIDEND IX	ISHARES SELECT DIVIDEND ETF	DVY	14,957
25 US Equity	High Quality	MSCI USA Quality Gr \$	ISHARES MSCI USA QUALITY FAC	QUAL	1,227
26 US Equity	Low Volatility	S&P 500 Low VolatilityTR	POWERSHARES S&P 500 LOW VOLA	SPLV	5,146
27 US Equity	Low Volatility	MSCI USA Minimum Volatility Da	ISHARES MSCI USA MINIMUM VOL	USMV	4,882
28 US Equity	Mega Cap	S&P 100 TR 4 JAN 1988	ISHARES S&P 100 ETF	OEF	4,401
29 US Equity	MLPs	ALERIAN MLP INDEX	JPMORGAN ALERIAN MLP INDEX	AMJ	5,489
30 US Equity	Momentum	Dorsey Wright Tech Lead	POWERSHARES DWA MOMENTUM POR	PDP	1,896
31 US Equity	Real Estate - US	MSCI US REIT INDEX	VANGUARD REIT ETF	VNQ	28,835
32 US Equity	Small Cap	S&P US 600 SC TR	ISHARES CORE S&P SMALL-CAP E	IJR	16,289
33 US Equity	VIX - ST	S&P 500 VIX Short-Term Futures	IPATH S&P 500 VIX S/T FU ETN	VXX	1,262
34 Intl/Glbl Equity	Devel Mkts - Div Yld	DJ EPAC SelDivTr	ISHARES INTERNATIONAL SELECT	IDV	4,543
35 Intl/Glbl Equity	Devel Mkts - Low Vol	MSCI EAFE Minimum Volatility I	ISHARES MSCI EAFE MINIMUM VO	EFAV	2,297
36 Intl/Glbl Equity	Devel Mkts Equity	FTSE GPVAN033 TR USD	VANGUARD FTSE DEVELOPED ETF	VEA	25,520
37 Intl/Glbl Equity	Devel Mkts Small Cap	MSCI Daily TR Net Small Cap EA	ISHARES MSCI EAFE SMALL-CAP	SCZ	4,336
38 Intl/Glbl Equity	Emrg Mkts Equity	FTSE GPVAN030 TR USD	VANGUARD FTSE EMERGING MARKE	VWO	46,311
39 Intl/Glbl Equity	Emrg Mkts Low Volatility	EM MinVol D NTR USD	ISHARES MSCI EMERGING MARKET	EEMV	2,431
40 Intl/Glbl Equity	Emrg Mkts SC Div Yld	WisdomTree EM SC TR	WISDOMTREE EM SMALL CAP	DGS	1,494
41 Intl/Glbl Equity	Real Estate - Int'l	DJGblsctxUSRESIN	SPDR DJ INTERNATIONAL REAL E	RWX	5,244

Limiting the universe to ETFs with more than \$1 billion in assets under management helps ensure that the strategies could be readily implemented with low transaction costs and reasonable short borrowing costs for a long/short implementation.

My historical simulations all begin on December 31, 2002, which provides over twelve years of historical returns. Instead of requiring that all ETF constituents have live fund returns for that entire time period, where available I included pro-forma returns for earlier time periods based upon the fact that all of the ETFs are index funds tied to benchmark indexes. Where live fund returns were available, I used them, but for prior periods I used the following formula to estimate pro-forma ETF performance:

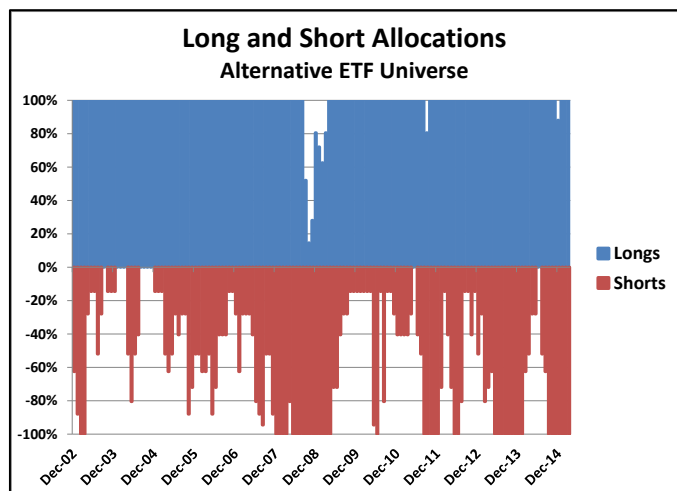


Benchmark index return – expense ratio = pro-forma fund return.

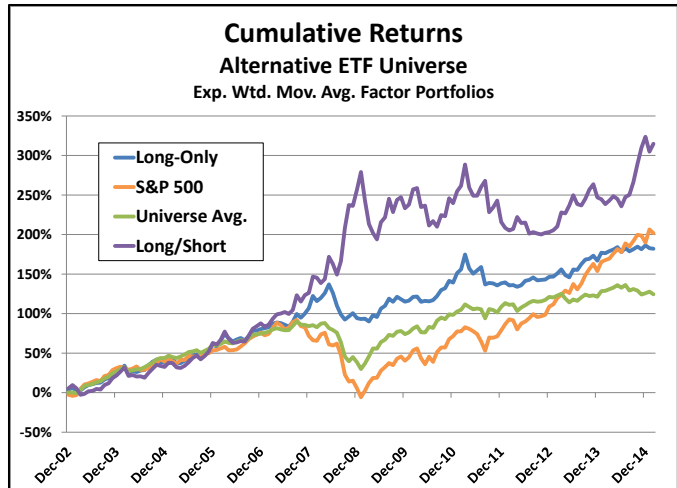
The graph above illustrates the number of “live” ETFs available (dark green) back to December 31, 1999, and also depicts the availability of “pro-forma” ETF returns (light green) using the above formula.

Trend-Following Performance Results

The long and short allocations at each month-end during the test period are shown in the graph at right. Note the preponderance of long positions (in blue) for the bulk of the test period, and the relatively scant short positions (in red). I find it interesting how seldom the trend-following strategy cut back from 100% in long positions, and how frequently it had few short positions or none at all. It is also interesting that currently (as of March 31, 2015) both longs and shorts are 100%, perhaps indicating that recent returns have been fairly balanced as well as widely spread.



Cumulative returns for the trend-following strategy were very impressive for both the long-only portfolio (blue line at right) and the long/short portfolio (purple line). The equal-weighted average of the 41 constituents in the universe (green line) slightly underperformed the S&P 500 (orange line), probably due to the fact that many of the constituents are non-equity ETFs, particularly commodity and fixed-income ETFs. Consequently, the universe average is a much better basis of comparison than is the S&P 500. (By the way, although estimated transaction costs were subtracted for the long-only and long/short portfolios, no transaction costs were subtracted from the universe average portfolio. The long/short portfolio also had estimated borrowing costs subtracted.)

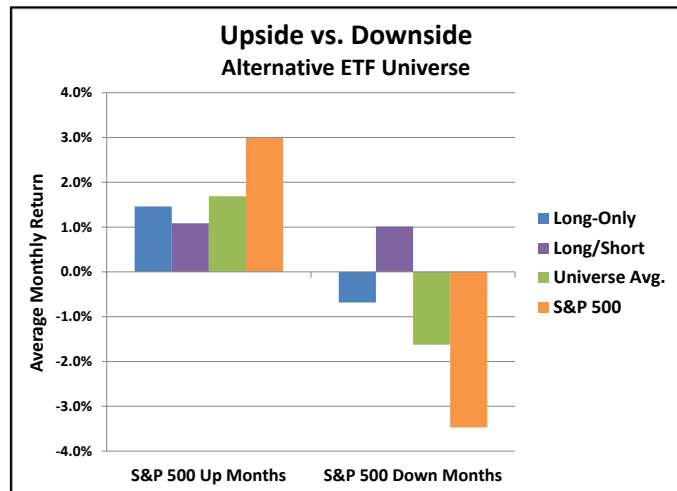


The table at right provides summary statistics on the long-only and long/short implementations of the trend-following strategy. The long-only portfolio nearly matched the compound return of the S&P 500, and vastly outperformed the universe average. Its beta and correlation to the S&P 500 were quite low, indicating the potential for substantial portfolio diversification benefits.

Alternative ETF Universe				
	Long-Only	Long/Short	Universe Average	S&P 500
<u>12/31/2002 - 3/31/2015</u>				
Annualized compound return	8.49%	11.67%	6.62%	9.05%
Annualized avg. monthly return	8.94%	12.74%	7.00%	10.03%
Annualized monthly std. dev.	9.48%	14.76%	8.73%	13.96%
Return/Risk	0.94	0.86	0.80	0.72
<u>Risk Statistics Relative to S&P 500</u>				
Beta	0.24	-0.27	0.53	1.00
Correlation	0.35	-0.26	0.85	1.00
R-Squared	0.12	0.07	0.72	1.00
<u>Annualized avg. monthly return</u>				
12/31/2002 - 12/31/2007	14.36%	16.90%	12.49%	12.61%
12/31/2007 - 12/31/2012	4.49%	7.73%	3.47%	3.83%
12/31/2012 - 3/31/2015	6.81%	14.65%	19.15%	1.59%

The long/short strategy did a terrific job of achieving stellar absolute returns, outpacing both the universe average and the S&P 500 for the full time period and in all three of the sub-periods. Although its standard deviation was somewhat higher, its extremely high return in all three sub-periods suggests that it may have had more upside volatility than downside volatility. Importantly, the long/short portfolio's returns were negatively correlated with the market, a rare and valuable characteristic. Its negative correlation with the market means that it could be combined with other more long-oriented investments (even a long S&P 500 position) to lower overall portfolio risk without sacrificing return.

On average, the long-only portfolio (blue bar) captured nearly all of the upside of the universe (green bar) during up market months, but suffered only about half of the downside exposure during down market months. The downside protection of the long/short portfolio (purple bar), however, was truly spectacular. Upside capture was about two-thirds of the universe average during rising market months, and it achieved roughly the same positive return during falling market months. This is exactly the kind of performance profile most sought by investors in alternative assets.



Summary and Conclusions

A trend-following strategy using the twelve month exponentially-weighted moving average return to forecast next month's return was extremely effective when applied to a universe of highly liquid alternative ETFs during the time 12+ years from December 31, 2002 to March 31, 2015. A long-only implementation slightly underperformed the S&P 500 for the full time period, but provided considerable downside protection during down market months. A long/short implementation provided returns consistently above the S&P 500 (including during three sub-periods), and the returns were negatively correlated with the market. This performance characteristic would have offered excellent diversification benefits when combined with other investments with more market risk.

Kevin Means, CFA
Principal
Select Alternative Investments LLC

May 22, 2015

SELECT ALTERNATIVE INVESTMENTS LLC

GENERAL DISCLAIMER

THIS DOCUMENT IS BEING PROVIDED ON A CONFIDENTIAL BASIS SOLELY TO ITS DIRECT RECIPIENT AND SHALL NOT BE REPRODUCED, QUOTED FROM OR DISTRIBUTED WITHOUT THE EXPRESS CONSENT OF SELECT ALTERNATIVE INVESTMENTS LLC AND IN ANY EVENT IS NOT INTENDED FOR PUBLIC USE OR DISTRIBUTION. THE INFORMATION CONTAINED HEREIN IS SUMMARY IN NATURE AND INCOMPLETE AND IS SUBJECT TO CHANGE OR ADDITION WITHOUT NOTICE. SUCH INFORMATION HAS BEEN PREPARED WITH REASONABLE CARE BUT DOES NOT CONSTITUTE ANY REPRESENTATION OR WARRANTY BY SELECT ALTERNATIVE INVESTMENTS LLC, THE INVESTMENT MANAGER OR ANY OF THEIR AFFILIATES. PAST INVESTMENT PERFORMANCE IS NO ASSURANCE OF FUTURE RESULTS. THERE ARE IMPORTANT MATTERS (INCLUDING RISK FACTORS, TAX CONSEQUENCES AND RELEVANT INVESTMENT CONSIDERATIONS) TO BE CONSIDERED IN CONNECTION WITH BECOMING A CLIENT THAT ARE NOT DISCUSSED HEREIN AND PROSPECTIVE CLIENTS ARE RESPONSIBLE FOR REVIEWING THE SAME WITH THEIR PERSONAL ADVISORS. PROSPECTIVE CLIENTS ARE NOT BEING SOLICITED AS SUCH IN ANY JURISDICTION IN WHICH SUCH SOLICITATION WOULD BE UNLAWFUL UNLESS AND UNTIL THE REQUIREMENTS OF THE LAWS OF SUCH JURISDICTION HAVE BEEN SATISFIED. THIS DOCUMENT IS NOT INTENDED FOR USE BY BROKER-DEALERS, MARKETERS OR OTHER THIRD PARTIES.