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NO NEED TO CHOOSE: ETFS EXCESS RETURN VERSUS RISK ADJUSTED EXCESS RETURN

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KEYWORDS

ETFs, passive investment, performance evaluation.

ABSTRACT

In this paper,Exchange Traded Funds (ETFs) performance estimated via excess return is compared with their performance estimated via risk adjusted excess return, both are measured relative to the underlying index performance. The analysis of88 ETFs in 2000-2012implies that there is a wide agreement between these two measures of ETFs performance. Previous research suggests that 1-R^2, as extracted from the regression of the ETFs return on their underlying index return,is a significant predictor of ETFs' risk adjusted excess return. The analysis results suggest that 1-R^2 also successfully identifies ETFs that achieve positive excess returns.

1. INTRODUCTION

The literature of mutual funds performance shows that fund's selectivity or active management positively affects fund's performance (Daniel, Grinblatt, Titman and Wermers, 1997, Brands, Brown and Gallagher, 2005, Kacperczyk, Sialm and Zheng, 2005, Kacperczyk and Seru, 2007, Cremers and Petajisto, 2009, Cremers, Ferreira, Matos and Starks, 2011, Ferson and Mo, 2012, and Amihud and Goyenko, 2012).Recent studies of hedge fund performance also find that fund's selectivity predicts better fund performance (see Titman and Tiu,2011, and Sun, Wang and Zheng, 2012).

Mutual funds and hedge fundsrequire, by definition, active investment management.On the other hand, another style of management associated withExchange Traded Funds (ETFs)is passive investment management.ETFs are funds that track indexes and are traded on stock exchanges. They have been around since the early 1980s, but it is only in recent years that they entered the mainstream.The main difference between ETFs and other types of funds is that ETFs do not try to outperform their corresponding index, but simply replicate its performance.

Active management is required even in passive investment management: though the stated objective of ETFs is to hit their benchmarks, previous research suggests that the tracking error in index fund performance is unavoidable (Frino and Gallagher, 2001, Elton, Gruber, Comer and Li, 2002, Blume and Edelen, 2004, Frino, Gallagher and Oetomo, 2005). Thus, the secondary objective of index managers is minimizing this divergence in performance from the underlying benchmark index. Ackert and Tian (2008) show that active trading leads to lower mispricing. Wong and Shum (2010) conclude that active portfolio management plays an important role in ETFs. Amihud and Goyenko (2012) propose to measure a mutual fund's selectivity by 1-R^2,

estimated by regressing the fund's returns on the returns of a benchmark model.[1]Garyn-Tal (2013) does the same for ETFs and finds that the low R-square funds have better performance.

The role of active management is also recognized by ETFs issuers. ProSharesdiscusses in its Prospectus, October 1, 2011, its ETFs investment objective: "The Fund does not seek to achieve its stated investment objective over a period of time greater than a single day." Among other Direxion's ETFs, Direxion Daily Mid Cap Bear 3x Shares (MWN) also discusses in its 2012 prospectus its investment objective: "The Fund … does not seek to achieve its stated investment objective over a period of time greater than one day." iShares S&P 500 Index Fund (IVV) states in its 2012 prospectus that its investment objective is: "… the Fund does not try to "beat" the index it tracks and does not seek temporary defensive positions when markets decline or appear overvalued. Indexing may eliminate the chance that the Fund will substantially outperform the Underlying Index but also may reduce some of the risks of active management…" However, it is also states inits prospectus that the fund might deviate from its indexing strategy: "The Fund generally invests at least 90% of its assets in the securities of the Underlying Index and in depositary receipts representing securities in the Underlying Index. The Fund may invest the remainder of its assets in certain futures, options and swap contracts, cash and cash equivalents, including money market funds advised by BFA or its affiliates, as well as in securities not included in the Underlying Index, but which BFA believes will help the Fund track the Underlying Index."

An interesting question is whether ETFs performance should be measured based on their excess return or based on their risk adjusted excess return, both are measured relative to their underlying index performance. The risk adjusted excess return performance measure takes into consideration and accounts for an ETF's risk via itslevel of exposure to its underlying index. The underlying assumption of the excess return performance measure is the expectation that the ETF's purpose is to hit the index it follows or at least not to underperform it, regardless of the ETF's risk or exposure to that index.

In this paper,an ETF's alpha is assessed based on 1) excess return, and based on 2) risk adjusted excess return,both are measured relative to theETF's underlying index performance. Then, these two measures of ETFs performance are analyzed and compared.

The data comprises 88 ETFs that follow main Russell and S&P indexes: Russell 3000, Russell 3000 Growth, Russell 3000 Value, Russell 1000, Russell 1000 Growth, Russell 1000 Value, Russell 2000, Russell 2000 Growth, Russell 2000 Value, Russell Midcap, Russell Midcap Growth, Russell Midcap Value, S&P 500, S&P 500 Growth, S&P 500 Value, S&P 400, S&P 400 Growth, S&P 400 Value, S&P 600, S&P 600 Growth, S&P 600 Value, S&P 1500. The sample period is 01/2000-03/2012.

First, the degree of consent between the ETFs excess returns and risk adjusted excess returns is documented, by examining whether positive (negative) excess returns also imply positive (negative) risk adjusted excess returns, and vice versa. The results imply that there is a wide

[1]Recent studies of hedge fund performance also use R^2 as a measure of fund strategy (see Titman and Tiu,2011, and Sun, Wang and Zheng, 2012).

agreement between these two performance measures - the excess return and the risk adjusted excess return - and that the extent of agreement is high. In addition, the correlations between the excess returns and the risk adjusted excess returns are assessed: these correlations vary between 0.39 and 0.97.

Rompotis (2011) concludes that the return superiority of ETFs strongly persists at the short-term level and that the performance of ETFs can be predictable. In this paper, the performance persistence implied by the ETFs excess return as well asthe performance persistence implied by the ETFs risk adjusted excess return are examined. The analysis results suggest that there is performance persistence, as implied by thecorrelations between the alphas and the out-of-sample alphas: these correlations vary between -0.622 to 0.406. On the other hand, this persistence does not outline an investment strategy in ETFs that earns a significant positive (risk-adjusted) excess return:ETFs that earn negative excess return (or risk adjusted excess return) in an evaluation period tend to earn a negative (risk adjusted) excess return in the following performance period as well.But, on the contrary, there is nosuch strong consistency between positive alphasacross periods.

In a recent paper, following Amihud and Goyenko (2012) and Ferson and Mo (2012),Garyn-Tal (2013)sortsETFs by the factor model R-square and finds that the low R-square funds have better performance.In this paper, the data is divided into deciles based on 1-R^2as extracted from the regression of the ETFs return on their underlying index return in an evaluation period. Then,the out of sample risk adjusted excess returns, as extracted from the following performance period's regression of the ETFs return on their underlying index return, are examined. In addition, the percentage of ETFs that earn positive excess return in that following performance period is also examined. The results suggest that 1-$R^2$is not only a significant predictor of ETFs' risk adjusted excess return (as previous research suggests), but it also successfully identifies ETFs that achieve positive excess returns: all the ETFs that earn positive excess return in the performance period are concentrated in the preceding evaluation period's highest 1-R^2decile,while all other ETFs included in lower deciles do not manage to beat their underlying index(based on the excess return performance measure). The results are consistent across 2000-2012 as well as across the sub-periods examined in this paper.

2. DATA

Monthly return data on 88 ETFs that follow main Russell and S&P indexes are collected: Russell 3000, Russell 3000 Growth, Russell 3000 Value, Russell 1000, Russell 1000 Growth, Russell 1000 Value, Russell 2000, Russell 2000 Growth, Russell 2000 Value, Russell Midcap, Russell Midcap Growth, Russell Midcap Value, S&P 500, S&P 500 Growth, S&P 500 Value, S&P 400, S&P 400 Growth, S&P 400 Value, S&P 600, S&P 600 Growth, S&P 600 Value, S&P 1500. The sample period is 01/2000-03/2012, though there are three ETFs that existed before 2000. The monthly return data is from http://finance.yahoo.com/. The S&P indexes monthly returns are taken from Standard and Poor indices web site: https://www.sp-indexdata.com/. The Russell indexes monthly returns are taken from Russell web site: http://www.russell.com/Indexes/. The risk free rateis estimated by the one-month Treasury bill rates,and is extracted from French web site:

http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/f-f_factors.html.

Data characteristics are reported in the appendix. There are 88 ETFs: 4 ETFs follow Russell 3000, 1 ETF follows Russell 3000 Growth, 1 ETF follows Russell 3000 Value, 4 ETFs follow Russell 1000, 4 ETFs follow Russell 1000 Growth, 4 ETFs follow Russell 1000 Value, 3 ETFs follow

Russell Midcap, 3 ETFs follow Russell Midcap Growth, 3 ETFs follow Russell Midcap Value, 9 ETFs follow Russell 2000, 4 ETFs follow Russell 2000 Growth, 4 ETFs follow Russell 2000 Value, 10 ETFs follow S&P 500, 3 ETFs follow S&P 500 Growth, 3 ETFs follow S&P 500 Value, 9 ETFs follow S&P 400, 3 ETFs follow S&P 400 Growth, 3 ETFs follow S&P 400 Value, 6 ETFs follow S&P 600, 3 ETFs follow S&P 600 Growth, 3 ETFs follow S&P 600 Value, and 1 ETF follows S&P 1500. Out of the 88 ETFs, 66 have a long position with respect to their underlying index – 50 are leveraged X1, 10 are leveraged X2 and 6 are leveraged X3. The remaining 22 ETFs have a short position with respect to their underlying index – 4 are leveraged –X1, 12 are leveraged -X2 and 6 are leverage -X3.

3. METHODOLOGY

An ETF's alpha is assessed based on 1) excess return, and based on 2) risk adjusted excess return, both are measured relative to the ETF's underlying index performance.

To assess the ETF excess return, the average monthly underlying index adjusted return is subtracted from the average monthly ETF return. To calculate the average monthly ETF return, the ETF returns are first calculated from the monthly total-return closing prices, and then the average over the monthly ETF total returns is taken. To calculate the average monthly underlying index adjusted return, the index returns are first calculated from the monthly total-return closing prices or values, and then the average over the monthly index total returns is taken. Next, the average monthly index total return is multiplied by the direction and leverage the ETF seeks to achieve (X3, X2, X1, -X1, -X2, -X3).

To assess the ETF risk adjusted excess return, a regression of the ETF monthly excess (of the risk free rate, $R_{f,t}$) return on their underlying index monthly excess (of the risk free rate,$R_{f,t}$) return is run, and the intercept of that regression is extracted. The regression equation for an ETF i is:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,1} * (R_{Index,t} - R_{f,t}) + \varepsilon_{i,t}. \quad (1)$$

All available ETFs with more than 15 return observations in a period are considered.

4. RESULTS

First, the degree of consent between the ETFs excess returns and their risk adjusted excess returns are examined. Table 1examines whether positive (negative) excess returns also implypositive (negative) risk adjusted excess returns, and vice versa.

Each ETF is classified by its excess return as either a good ETF (positiveexcess return) or a poor ETF (negative excess return). Then, each ETF is classified again by its risk adjusted excess return as either a good ETF (positive risk adjusted excess return) or a poor ETF (negative risk adjusted excess return). Then, the ETFs classifications are compared by dividing the ETFs observations into four groups: 1) ETFs that earn positive excess return as well as positive risk adjusted excess return, 2) ETFs that earn negative excess return as well as negative risk adjusted excess return, 3) ETFs that earn positive excess return and negative risk adjusted excess return, and 4) ETFs that earn negative excess return and positive risk adjusted excess return. The results are reported for 2000-2012, and also for foursub-periods: 2000-2007, 2000-2004, 2005-2007, and 2008-2012.

Table 1: Positive versus Negative Alphas

	Observations	Risk Adjusted Excess Return >0 Excess Return>0	Risk Adjusted Excess Return <0 Excess Return<0	Risk Adjusted Excess Return >0 Excess Return<0	Risk Adjusted Excess Return <0 Excess Return>0
2000-2012	88	5	71	7	5
2000-2007	36	4	27	1	4
2000-2004	27	5	21	1	0
2005-2007	36	4	27	1	4
2008-2012	88	8	69	7	4

The results imply thatthere is a wide agreement between the excess return and the risk adjusted excess return performance measures and thatthe extent of agreement is high. In 2000-2012, positive (negative) excess returns also imply positive (negative) risk adjusted excess returns, and vice versa, for 86% of the 88 ETFs observations.The 2000-2007, 2000-2004, 2005-2007, and 2008-2012 analysis yieldssimilar results: positive (negative) excess returns also imply positive (negative) risk adjusted excess returns, and vice versa, for 86% of the 36 ETFs observations in 2000-2007, for 96% of the 27 ETFs observations in 2000-2004, for 86% of the 36 ETFs observations in 2005-2007, and for 88% of the 88 ETFs observations in 2008-2012.

The correlations between the excess returns and the risk adjusted excess returns are also examined. Table 2 reports the correlations for 2000-2012, 2000-2007, 2000-2004, 2005-2007, and 2008-2012. These correlations vary between 0.39 and 0.97.

Table 2: Correlations between the Alphas

	Correlation (Risk Adjusted Excess Return, Excess Return) (P-value)
2000-2012	0.9618 (<.0001)
2000-2007	0.4235 0.010
2000-2004	0.9276 (<.0001)
2005-2007	0.3870 0.020
2008-2012	0.9725 (<.0001)

Next, the performance persistence implied by the ETFs excess returns and risk adjusted excess returns is examined. Table 3 reports the performance consistency across several evaluation and performance periods. For each of these two performance measures (alphas) - excess return and risk adjusted excess return - the ETFs observations are divided into four groups: 1) ETFs that earn positive alpha in the evaluation period as well as positive alpha in the following performance period, 2) ETFs that earn positive alpha in the evaluation period and negative alpha in the following performance period, 3) ETFs that earn negative alpha in the evaluation period and positive alpha in the following performance period, and 4) ETFs that earn negative alpha in the evaluation period as well as negativealpha in the following performance period. Panel A reports

the number of observations in each of the four groups for an evaluation period: 2000-2007 and a performance period: 2008-2012. Panel B reports the number of observations in each of the four groups for an evaluation period: 2000-2004 and a performance period: 2005-2007. Panel C reports the number of observations in each of the four groups for an evaluation period: 2005-2007 and a performance period: 2008-2012.

Table 3: Alphas Consistency

Panel A - Evaluation Period: 2000-2007, Performance Period: 2008-2012			Evaluation period	
			Positive Alpha	Negative Alpha
Performance Period	Risk Adjusted Excess Return	Positive Alpha	3	4
		Negative Alpha	2	27
	Excess Return	Positive Alpha	3	2
		Negative Alpha	5	26
Panel B - Evaluation Period: 2000-2004, Performance Period: 2005-2007			Evaluation period	
			Positive Alpha	Negative Alpha
Performance Period	Risk Adjusted Excess Return	Positive Alpha	2	1
		Negative Alpha	4	20
	Excess Return	Positive Alpha	1	1
		Negative Alpha	4	21
Panel C - Evaluation Period: 2005-2007, Performance Period: 2008-2012			Evaluation period	
			Positive Alpha	Negative Alpha
Performance Period	Risk Adjusted Excess Return	Positive Alpha	4	3
		Negative Alpha	1	28
	Excess Return	Positive Alpha	4	1
		Negative Alpha	4	27

The results reported in panel A imply that the extent of persistence is disappointing for both the excess return as well as the risk adjusted excess return performance measures. 93%-96% (87%-95%) of the ETFs that earn a negative (risk adjusted) excess return in the evaluation period also earn a negative (risk adjusted) excess return in the following performance period. However, among the ETFs that earn positive (risk adjusted) excess return in the evaluation period, only 20%-50% (33%-80%) of those ETFs also earn positive (risk adjusted) excess return in the following performance period.

The second methodology applied to examine the performance persistence implied by the excess return and by the risk adjusted excess return is via the correlations between each of these alphas in the evaluation period with the out of sample alphas in the following performance period. Table 4 reports the results for: 1) an evaluation period: 2000-2007 and a performance period: 2008-2012, 2) an evaluation period: 2000-2004 and a performance period: 2005-2007, and 3) an evaluation period: 2005-2007 and a performance period: 2008-2012.

Table 4: Correlations between the Alphas and Out-of-Sample Alphas

		Risk Adjusted Excess Return	Excess Return
Evaluation Period: 2000-2007 Performance Period: 2008-2012	Coefficient	0.351	-0.487
	P-value	0.036	0.003
Evaluation Period: 2000-2004 Performance Period: 2005-2007	Coefficient	-0.483	-0.622
	P-value	0.011	0.001
Evaluation Period: 2005-2007 Performance Period: 2008-2012	Coefficient	0.406	-0.461
	P-value	0.014	0.005

The correlations between the risk adjusted excess returns and out-of-sample risk adjusted excess returns vary between -0.483 to 0.406. Thus, the risk adjusted excess returns imply both performance persistence as well as performance reversion. The correlations between the excess returns and out-of-sample excess returns are more consistent and vary between -0.461 to -0.622. Thus, the excess returns imply that there exists wide performance reversion.

Next, the data is divided into deciles based on 1 minus R-square as extracted from the regression of the ETFs return on their underlying index return (equation [1]) in the evaluation period. Decile 0 includes the highest 1 minus R-square ETFs. Table 5 reports, for each decile, the following performance period's average risk adjusted excess return and 1 minus R-square as extracted from the following performance period's regression of the ETFs return on their underlying index return (equation [1]). Table 5 also reports, for each decile, the percentage of ETFs that earn positive excess return in that following performance period. Panel A divides the data into 5 deciles for an evaluation period: 2000-2007 and a performance period: 2008-2012. Panel B divides the data into 5 deciles for an evaluation period: 2000-2004 and a performance period: 2005-2007. Panel C divides the data into 5 deciles for an evaluation period: 2005-2007 and a performance period: 2008-2012.

Table 5: Out-of-Sample Alphas

Panel A - Evaluation Period: 2000-2007, Performance Period: 2008-2012				
	Period 1: 2000-2007	Period 2: 2008-2012		
Decile	1-R-Squared	1-R-Squared	Risk Adjusted Excess Return	%[Excess Return>0]
0	0.216	0.158	0.018%	71%
1	0.011	0.018	-0.229%	0%
2	0.008	0.008	-0.208%	0%
3	0.006	0.001	-0.023%	0%
4	0.005	0.001	-0.015%	0%
Panel B - Evaluation Period: 2000-2004, Performance Period: 2005-2007				
	Period 1: 2000-2004	Period 2: 2005-2007		
Decile	1-R-Squared	1-R-Squared	Risk Adjusted Excess Return	%[Excess Return>0]
0	0.101	0.068	-0.002%	40%
1	0.009	0.007	-0.025%	0%
2	0.007	0.008	-0.049%	0%
3	0.005	0.010	-0.050%	0%
4	0.003	0.012	-0.060%	0%
Panel C - Evaluation Period: 2005-2007, Performance Period: 2008-2012				
	Period 1: 2005-2007	Period 2: 2008-2012		
Decile	1-R-Squared	1-R-Squared	Risk Adjusted Excess Return	%[Excess Return>0]
0	0.195	0.158	0.018%	71%
1	0.014	0.015	-0.126%	0%
2	0.011	0.004	-0.111%	0%
3	0.008	0.009	-0.236%	0%
4	0.005	0.002	-0.017%	0%

Amihud and Goyenko (2012), Ferson and Mo (2012), and Garyn-Tal (2012) sort funds by the factor model R-square and find that the low R-square funds have better performance. The results in table 5suggest that 1-$R^2$is not only a significant predictor of ETFsrisk adjusted excess returns, but it also successfully identifies ETFs that achieve positive excess returns. As reported in panel A, the average monthly risk adjusted excess return in the 2008-2012 performance period is 0.018% for decile 0 (decile 0 includes the highest 1 minus R-squared ETFs. The R-squares are calculated at the 2000-2007 preceding evaluation period). On the other hand, the average monthly alpha is -0.229% for decile 1, -0.208% for decile 2, -0.023% for decile3, and -0.015% for decile4that includes the lowest 1 minus R-square ETFs. Moreover, all the ETFs that earn positive excess return in the performance period are concentrated in the preceding evaluation period's highest 1-R^2decile, decile 0: 71% of the ETFs included in decile 0 earn positive excess return in that following performance period. On the other hand, the ETFs included in deciles 1, 2, 3 and 4 do not manage to beat their underlying index based on the excess return performance measure.These results are also consistent across the sub-periods examined in panels B and C.

5. CONCLUSIONS

Researchers show that selectivity or active management positively affects mutual funds performance, hedge funds performance, and ETFs performance. An interesting question is whether ETFs performance should be measured based on the ETFs excess return or based on the ETFs risk adjusted excess return, bothare measured relative to the underlying index performance. The risk adjusted excess return performance measure takes into consideration and accounts for an ETF's risk via its level of exposure to its underlying index. The underlying assumption of the excess return performance measure is the expectation that the ETF's purpose is to hit the index it follows, or at least not to underperform it, regardless of the ETF's risk or exposure to that index.

In this paper,an ETF's alpha is assessed based on 1) excess return, and based on 2) risk adjusted excess return, both are measured relative to the ETF's underlying index performance. Then,these two measures of ETFs performance are analyzed and compared using monthly return data on 88 ETFs in 2000-2012.

The analysis results suggest that there is a wide agreement between the ETFs excess return and risk adjusted excess return and that the extent of agreement is high. The correlations between the excess returns and the risk adjusted excess returns vary between 0.39 and 0.97.In addition, there is persistence in ETFs performance, though this persistence does not outline an investment strategy in ETFs that earns a significant positive (risk-adjusted) excess return.

Following Amihud and Goyenko (2012) and Garyn-Tal (2013), the data is divided into deciles based on 1 minus R-square as extracted from the evaluation period's regression of the ETFs return on their underlying index return. Then, the out of sample risk adjusted excess returns, as extracted from the following performance period's regression of the ETFs return on their underlying index return, is examined. In addition, the percentage of ETFs that earn positive excess return in that following performance period is also assessed. The results suggest that 1-$R^2$is not only a significant predictor of ETFs' risk adjusted excess return (as previous research suggests), but it also successfully identifies ETFs that achieve positive excess returns: all the ETFs that earn positive excess return in that performance period are concentrated in the preceding evaluation period's highest 1-R^2 decile. On the other hand, all other ETFs included in lower deciles do not manage to beat their underlying index in that following performance period (based on the excess return performance measure). These results are consistent across 2000-2012 as well as across the sub-periods examined in this paper.

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Appendix

The following tablereports the characteristics of the data used in this paper. The data comprises88 ETFs that follow main Russell and S&P indexes: Russell 3000, Russell 3000 Growth, Russell 3000 Value, Russell 1000, Russell 1000 Growth, Russell 1000 Value, Russell 2000, Russell 2000 Growth, Russell 2000 Value, Russell Midcap, Russell Midcap Growth, Russell Midcap Value, S&P 500, S&P 500 Growth, S&P 500 Value, S&P 400, S&P 400 Growth, S&P 400 Value, S&P 600, S&P 600 Growth, S&P 600 Value, S&P 1500. The sample period is 01/2000-03/2012.

The table specifies, for each ETF, the ETF's symbol, the ETF's name, the inception date and it describes the benchmark that the ETF seeks to follow.

Symbol	Fund Name	Benchmark Details	Inception Date
IWB	iShares Russell 1000 Index Fund	Russell 1000	5/15/2000
VONE	Vanguard Russell 1000	Russell 1000	9/20/2010
IWF	iShares Russell 1000 Growth Index Fund	Russell 1000 Growth	5/22/2000
VONG	Vanguard Russell 1000 Growth	Russell 1000 Growth	9/30/2003
SFK	ProSharesUltraShort Russell1000 Growth	Russell 1000 Growth Short (-X2)	2/20/2007
UKF	ProShares Ultra Russell1000 Growth	Russell 1000 Growth X2	2/20/2007
BGZ	Direxion Daily Large Cap Bear 3x Shares	Russell 1000 Short (-X3)	11/5/2008
IWD	iShares Russell 1000 Value	Russell 1000 Value	5/2/2000
UVG	ProShares Ultra Russell1000 Value	Russell 1000 Value	2/20/2007
VONV	Vanguard Russell 1000 Value	Russell 1000 Value	9/30/2003
SJF	ProSharesUltraShort Russell1000 Value	Russell 1000 Value Short (-X2)	2/20/2007
BGU	Direxion Large Cap Bull 3x	Russell 1000 X3	11/5/2008
IWM	iShares Russell 2000 Index Fund	Russell 2000	5/22/2000
VTWO	Vanguard Russell 2000	Russell 2000	9/20/2010
IWO	iShares Russell 2000 Growth Index	Russell 2000 Growth	7/24/2000
VTWG	Vanguard Russell 2000 Growth	Russell 2000 Growth	9/30/2003
SKK	ProSharesUltraShort Russell 2000 Growth Index	Russell 2000 Growth Short (-X2)	2/20/2007
UKK	ProShares Ultra Russell2000 Growth	Russell 2000 Growth X2	2/20/2007
RWM	ProShares Short Russell2000	Russell 2000 Short	1/23/2007
TWM	ProSharesUltraShort Russell 2000	Russell 2000 Short (-X2)	1/23/2007
SRTY	ProSharesUltraPro Short Russell2000	Russell 2000 Short (-X3)	2/9/2010
TZA	Direxion Daily Small Cap Bear 3X Shares	Russell 2000 Short (-X3)	11/5/2008
IWN	iShares Russell 2000 Value Index	Russell 2000 Value	7/24/2000
VTWV	Vanguard Russell 2000 Value	Russell 2000 Value	9/20/2010
SJH	ProSharesUltraShort Russell2000 Value	Russell 2000 Value Short (-X2)	2/20/2007
UVT	ProShares Ultra Russell2000 Value	Russell 2000 Value X2	1/23/2007
UWM	ProShares Ultra Russell 2000	Russell 2000 X2	1/23/2007
TNA	Direxion Small Cap Bull 3x	Russell 2000 X3	11/5/2008
URTY	ProSharesUltraPro Russell2000	Russell 2000 x3	2/9/2010
IWV	Shares Russell 3000 Index	Russell 3000	5/22/2000

Symbol	Fund Name	Benchmark Details	Inception Date
VTHR	Vanguard Russell 3000 Index ETF	Russell 3000	9/20/2010
UWC	ProShares Ultra Russell3000	Russell 3000 (X2)	6/30/2009
TWQ	ProSharesUltraShort Russell3000	Russell 3000 Short (-X2)	6/30/2009
IWZ	iShares Russell 3000 Growth Index	Russell 3000 Growth	7/24/2000
IWW	iShares Russell 3000 Value Index	Russell 3000 Value	7/24/2000
IWR	iShares Russell Midcap Index Fund	Russell Midcap	7/17/2001
IWP	iShares Russell Midcap Growth Index Fund	Russell Midcap Growth	7/17/2001
UKW	ProShares Ultra Russell MidCap Growth	Russell Midcap Growth	2/20/2007
SDK	ProSharesUltraShort Russell MidCap Growth	Russell Midcap Growth Short (-X2)	2/20/2007
MWN	Direxion Daily Mid Cap Bear 3x Shares	Russell Midcap Short (-X3)	1/8/2009
IWS	iShares Russell Midcap Value Index Fund	Russell Midcap Value	7/17/2001
SJL	ProSharesUltraShort Russell MidCap Value	Russell Midcap Value Short (-X2)	2/20/2007
UVU	ProShares Ultra Russell MidCap Value	Russell Midcap Value X2	2/20/2007
MWJ	Direxion Daily Mid Cap Bull 3x Shares	Russell Midcap X3	1/8/2009
IVV	iShares S&P 500 Index Fund	S&P 500	5/15/2000
SPY	SPDRs S&P500	S&P 500	1/22/1993
VOO	Vanguard S&P 500	S&P 500	9/7/2010
IVW	iShares S&P 500 Growth Index	S&P 500 Growth	5/22/2000
SPYG	SPDR S&P 500 Growth ETF	S&P 500 Growth	1/22/1993
VOOG	Vanguard S&P 500 Growth Index ETF	S&P 500 Growth	9/7/2010
SH	ProShares Short S&P500	S&P 500 Short	6/19/2006
RSW	Guggenheim Inverse 2x S&P 500	S&P 500 Short (-X2)	11/5/2007
SDS	ProSharesUltraShort S&P 500	S&P 500 Short (-X2)	7/11/2006
SPXU	ProSharesUltraPro Short S&P500	S&P 500 Short (-X3)	6/23/2009
IVE	iShares S&P 500 Value Index	S&P 500 Value	5/22/2000
SPYV	SPDR S&P 500 Value ETF	S&P 500 Value	9/25/2000
VOOV	Vanguard S&P 500 Value Index ETF	S&P 500 Value	9/7/2010
RSU	Guggenheim 2x S&P 500	S&P 500 X2	11/5/2007
SSO	ProShares Ultra S&P 500	S&P 500 X2	6/19/2006
UPRO	ProSharesUltraPro S&P500	S&P 500 X3	6/23/2009
ISI	iShares S&P 1500 Index	S&P Composite 1500	1/20/2004
IJH	iShares S&P MidCap 400 Index	S&P Mid-Cap 400	5/22/2000
IVOO	Vanguard S&P Mid-Cap 400 Index ETF	S&P Mid-Cap 400	9/7/2010

Symbol	Fund Name	Benchmark Details	Inception Date
MDY	SPDR S&P MidCap 400	S&P Mid-Cap 400	5/4/1995
RWK	RevenueShares Mid Cap	S&P Mid-Cap 400	2/22/2008
SMDD	ProSharesUltraPro Short MidCap400	S&P Mid-Cap 400 (-X3)	2/9/2010
MYY	ProShares Short S&P MidCap 400	S&P Mid-Cap 400 Short	6/19/2006
MZZ	UltraShortMidCap 400 ProShares	S&P Mid-Cap 400 Short (-X2)	7/11/2006
MVV	ProShares Ultra MidCap400	S&P Mid-Cap 400 X2	6/19/2006
UMDD	ProSharesUltraPro MidCap400	S&P Mid-Cap 400 X3	2/9/2010
IJK	iShares S&P MidCap 400 Growth Index	S&P Mid-Cap 400 Growth	7/24/2000
IVOG	Vanguard S&P Mid-Cap 400 Growth Idx ETF	S&P Mid-Cap 400 Growth	9/7/2010
MDYG	SPDR S&P 400 Mid Cap Growth ETF	S&P Mid-Cap 400 Growth	11/8/2005
IJJ	iShares S&P MidCap 400 Value Index	S&P Mid-Cap 400 Value	7/24/2000
IVOV	Vanguard S&P Mid-Cap 400 Value Index ETF	S&P Mid-Cap 400 Value	9/7/2010
MDYV	SPDR S&P 400 Mid Cap Value ETF	S&P Mid-Cap 400 Value	11/8/2005
IJR	iShares S&P SmallCap 600 Index	S&P Small-Cap 600	5/22/2000
SLY	SPDR S&P 600 Small Cap ETF	S&P Small-Cap 600	11/8/2005
VIOO	Vanguard S&P Small-Cap 600 Index ETF	S&P Small-Cap 600	9/7/2010
SAA	ProShares Ultra SmallCap600	S&P Small-Cap 600 (X2)	1/23/2007
SBB	ProShares Short SmallCap600	S&P Small-Cap 600 Short	1/23/2007
SDD	ProSharesUltraShort SmallCap600	S&P Small-Cap 600 Short (-X2)	1/23/2007
IJT	iShares S&P SmallCap 600 Growth Index	S&P Small-Cap 600 Growth	7/24/2000
SLYG	SPDR S&P 600 Small Cap Growth ETF	S&P Small-Cap 600 Growth	9/25/2000
VIOG	Vanguard S&P Small-Cap 600 Gr Idx ETF	S&P Small-Cap 600 Growth	9/7/2010
IJS	iShares S&P SmallCap 600 Value Index	S&P Small-Cap 600 Value	7/24/2000
SLYV	SPDR S&P 600 Small Cap Value ETF	S&P Small-Cap 600 Value	9/25/2000
VIOV	Vanguard S&P Small-Cap 600 Value Idx ETF	S&P Small-Cap 600 Value	9/7/2010