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Does active management work? Evidence from equity sector funds

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Abstract

This study presents considerable evidence that equity sector mutual funds, the nine Fidelity Select Portfolios here, have provided better after-expense returns against broader market ETF, SPY, and their peer sector ETFs, the nine Select Sector SPDR Funds, over the sample period 1999–2010. Not only do they achieve higher nominal returns over the 12 years, except for few sector mutual funds, some of the funds also generate higher risk-adjusted returns measured by Sharpe Ratio and α from various asset pricing models. More important, none of the sector mutual funds generates a significant negative α for the sample period no matter that asset pricing model is used. The results suggest that actively managed sector funds be considered by individual investors and/or their financial planners for mutual fund selection.

JEL classification: G11; G12

Keywords: Mutual fund performance; Active mutual fund management; Sector investing

1. Introduction

The mutual fund industry has seen tremendous growth in the past few decades. The 2013 Investment Company Institute fact book shows that 44.4% of U.S. households owned mutual funds in 2012, up significantly from 4.6% in 1980 and 23.4% in 1990, modestly down from 48.6% in 2000. Bulk of individual's mutual fund assets, $5.4 trillion out of $11.1 trillion, are invested in equities. Individual accounts hold 90.3% of total equity mutual fund assets ($5.9 trillion). With the expansion of Defined Contribution Plan assets, almost threefold from $1.7

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trillion in 1995 to $5.1 trillion in 2012, knowledge in equity mutual funds becomes more and more important for individual investors.

Today many retirement savings plans offer a broader range of investment vehicles for individual investors. Sector funds appear on the investment menu for many plan participants. Do they deserve individual investors' attention? How is their historical performance against their benchmarks? Should financial planners recommend such mutual funds to their clients? Using sector funds with the longest history, the Fidelity Select Portfolios and the Select Sector SPDR Funds, this article tries to answer these questions for individual investors and/or their financial planners.

Once investors decide to allocate their assets to the U.S. public equity market, they must evaluate possible ways to implement the allocation in their subportfolios. There are two dimensions of this implementation. The first one is indexing or not: Do investors want to passively invest so that their returns closely track selected indexes and at the same time investors pay less fees and experience less turnover? Or do investors want to actively manage their subportfolios either in-house or through external fund managers? Sullivan and Xiong (2012) estimate that $1.2 trillion out of $3.5 trillion assets in the U.S. equity mutual funds and ETFs was passively managed as of September 2010; equity index mutual funds and equity ETFs split the share of passively managed equity index funds.[1]

The second dimension of this implementation is whether to make allocation decisions at the sector level: Do investors want to further divide stocks by sector/industry and set up weight limits to these groups? Or do investors not care about sector issues at all. Porter (1985) and McGahan and Porter (1997) make a strong case for sector investing: They demonstrate that a company's performance is influenced by the growth and structure of its industry. In addition, Groysberg et al., (2011) show that forecasted industry growth is the most important explanatory variable when analysts construct their forecasts on companies.

In this article, I examine the performance of actively managed equity sector funds and their passively managed counterparties to assist investors in their decisions in implementing equity sector asset allocations. The research question I try to answer is: When an investor wants to use external fund managers to allocate assets among U.S. equity sectors, are sector index funds a better choice than actively managed funds or vice versa?

Two parallel analyses regarding equity sector fund performance are provided in this article. One is their performance against a broad U.S. equity market index fund, which tests the Efficient Market Hypothesis (EMH). This analysis serves as a general empirical study on U.S. equity market efficiency. The other is sector mutual funds' performance against sector index funds, which tests EMH in a smaller territory: equity sector. It is arguable that using a broad equity market index is not appropriate when evaluating a sector fund because it has a much smaller universe of securities from which to choose. An index for the same sector would be more appropriate when used as a benchmark. In reality, this is what many actively managed funds do: they select an index that best matches their investment universe as their benchmark.

2. Sector mutual funds and ETFs

A variety of equity sector funds have been introduced to the market place during the past several decades. These sector funds allow investors to custom tailor asset allocations to fit

their particular investment needs or goals. Like their broad equity market counterparties, index sector funds emerged later than actively managed sector funds. Two groups of sector funds with the longest history in each category are used in this study: the Fidelity Select Portfolios and the Select Sector SPDR Funds. In addition, SPDR S&P 500 ETF is used as an investable benchmark for the study.

2.1. Fidelity select portfolios

The Fidelity's Web site[2] listed 38 mutual funds under its Stock Funds/Sector Funds category at the time of writing this article. The inception date of the earliest three sector funds (Energy, Healthcare, and Technology) is July 14, 1981. I identified nine broader sector funds based on fund prospectus: Select Consumer Discretionary Portfolio (FSCPX), Select Consumer Staples Portfolio (FDFAX), Select Energy Portfolio (FSENX), Select Financial Services Portfolio (FIDSX), Select Health Care Portfolio (FSPHX), Select Industrials Portfolio (FCYIX), Select Materials Portfolio (FSDPX), Select Technology Portfolio (FSPTX), and Select Utilities Portfolio (FSUTX).[3] The above funds match nine sector index funds that are described later. These sector mutual funds were started between July 1981 and March 1997. Most of the other funds listed are narrower focused industry funds.

According to Fidelity's fund prospectuses, these funds seek capital appreciation, invest in domestic and foreign issuers, normally invest primarily in common stocks, and invest at least 80% of assets in securities of companies principally engaged in the selected sector. In other words, these funds are actively managed. Fidelity Management & Research Company is the fund's manager.

The Fidelity Select Portfolios have an expense ratio between 0.80% (Healthcare) and 1.41% (Materials) as of February 29, 2012. The portfolio turnover rate is between 35% (Consumer Staples) and 384% (Financial Services). The funds have net assets between $0.28 billion (Consumer Discretionary) and $2.50 billion (Energy).[4] Fidelity charges a Short-Term Redemption Fee, 0.75%, when money is withdrawn from a sector fund within 30 days of purchase to reduce short-term mutual fund trading.[5] All these sector funds are open to new investors.

2.2. Select Sector SPDR Funds

The Select Sector SPDR Trust was organized as a Massachusetts business trust on June 10, 1998. State Street Global Advisors serves as the fund manager. The Trust consists of nine separate investment portfolios (each a "Select Sector SPDR Fund") incepted in December 1998: The Consumer Discretionary Select Sector SPDR Fund (XLY), The Consumer Staples Select Sector SPDR Fund (XLP), The Energy Select Sector SPDR Fund (XLE), The Financial Select Sector SPDR Fund (XLF), The Health Care Select Sector SPDR Fund (XLV), The Industrial Select Sector SPDR Fund (XLI), The Materials Select Sector SPDR Fund (XLB), The Technology Select Sector SPDR Fund (XLK), and The Utilities Select Sector SPDR Fund (XLU). These sector funds seek to provide investment results that, before expenses, correspond generally to the price and yield performance of publicly traded equity securities of companies in certain "Select Sector Indexes": The Consumer Discretionary

Select Sector Index, The Consumer Staples Select Sector Index, The Energy Select Sector Index, The Financial Select Sector Index, The Health Care Select Sector Index, The Industrial Select Sector Index, The Materials Select Sector Index, The Technology Select Sector Index, and The Utilities Select Sector Index.

Each stock in the S&P 500 is allocated to one and only one Select Sector Index. The combined companies of the nine Select Sector Indexes represent all of the companies in the S&P 500. That is, the Select Sector SPDR Funds unbundle the S&P 500.[6] These passively managed sector funds use a replication strategy, attempting to track the performance of an unmanaged index of securities.

According to Select Sector SPDR Fund Annual Report, the ratio of expenses to average net assets is 0.19% for each individual fund as of September 30, 2011. The turnover rate is between 3.20% (Utilities) and 13.86% (Materials). The funds have net assets between $1.64 billion (Materials) and $6.64 billion (Utilities).[7]

2.3. SPDR S&P 500 ETF

The SPDR S&P 500 ETF (SPY) is an exchange traded fund designed to generally correspond to the price and yield performance of the S&P 500 Index. Utilizing a full replication approach, the Trust owns all 500 securities of the S&P 500 Index in their approximate market capitalization weight. The fund was incepted on January 22, 1993. The portfolio has an expense ratio of 0.09%, a turnover rate of 3.72%, and $80.87 billion net assets as of September 30, 2011.[8]

Both equity mutual funds and ETFs are pooled investments that represent ownership in a basket of stocks. However, ETFs can be traded like individual stocks. They are also shortable, marginable, and optionable. Index ETFs normally have lower fees by eliminating many of the operating, research, and transaction expenses incurred by active money managers. They also provide greater transparency: one can get a holding list more frequently than with mutual funds. For example, Fidelity Select Portfolios publish monthly holdings whereas the Select Sector SPDRs update their online information daily.

3. A first look at equity sector funds: raw returns

My analysis starts in January 1999 and ends in December 2010,[9] since the earliest price data available for Select Sector SPDR Funds is mid-December 1998. I downloaded price and dividend data from Yahoo!Finance Web site.[10] Monthly, annual, and 12-year holding period return is calculated for each fund as:

$$R_{i,t} = \frac{P_{i,t} + D_{i,t}}{P_{i,t-1}} - 1, \tag{1}$$

where $R_{i,t}$ is the return for fund i during period t, $P_{i,t}$ is the price for fund i at the end of period t, $P_{i,t-1}$ is the price for fund i at the end of period $t - 1$, and $D_{i,t}$ is the total dividend/cash distribution of fund i during period t.

The purpose of this study is to assist investors implement asset allocations at the sector level, therefore, I use fund price instead of fund Net Asset Value to calculate fund return. This return is net of expenses and is attainable. As argued by Jones and Wermers (2011), I compare actively managed sector mutual fund performance to their passive alternative and not to the index itself. For the same reason, I use SPY as an investable broad U.S. equity market benchmark.

3.1. Twelve-year return

Which group of funds generates higher returns during the sample period? The results are summarized in Table 1. In the rest of the article, I use MF to represent Fidelity Select Portfolios, ETF to represent Select Sector SPDR Funds, and SPY to represent the SPDR S&P 500 ETF for easier reference.

Panel A of Table 1 lists the 12-year (1999–2010) holding period return for the 19 funds. The highest return is 295.2% for the Energy MF and the lowest return is −17.4% for the Technology ETF, and the return for SPY is 20.8%. Seven of nine MFs, except for the Utilities and Consumer Discretionary MF, have a higher return than that of their ETF counterparties; the average outperformance is 51.2%. When SPY is used as the benchmark, eight out of nine MFs (except Utilities) and seven out of nine ETFs (except Financial and Technology) outperform. The average MF holding period return across all sectors is 109.2% versus 58.0% for ETFs, and the difference is significant at the 5% level using one-tailed *t* test. Results are slightly different when I compound annual holding period returns through the 12 years. Panel B of Table 1 shows that the only underperforming MF against SPY is Financial, not Utilities. The same seven MFs beat peer ETFs with an average outperformance of 63.3%. The average MF 12-year return with annual compounding across all sectors is 127.6% versus 64.3% for ETFs, and the difference is also significant at the 5% level using one-tailed *t* test. These results show that on average sector MFs outperform their ETF counterparties for the whole sample period.

None of the nine MFs suffers a loss during the sample period; however, the Financial and Technology ETFs generate a negative return under both calculation methods. The tech bubble in early 2000s and the financial crisis in 2008 contribute to the negative 12-year return for these two sectors. Although sector ETFs mimicked their benchmark indexes during these bear markets, it seems sector MF managers made the right decisions against trend changes. Fig. 1 shows that the annual return for the Technology MF is 119.07%, −28.18%, and −31.70% for the year 1999, 2000, and 2001, whereas the annual return for its peer ETF is 65.13%, −41.89%, and −23.34%, respectively. The annual return for the Financial MF is −13.42%, −49.83%, and 23.71% for the year 2007, 2008, and 2009, whereas the annual return for its peer ETF is −18.89%, −54.06%, and 16.98%, respectively.

3.2. Average annual return

Seven out of nine MFs (except for Utilities and Consumer Discretionary) outperform their peer ETFs when measured with average annual holding period return depicted in Fig. 2. An interesting finding in Fig. 2 is that the ranking of performance is different for MFs and ETFs. Energy MF has the highest average annual return of 18.3%, followed by Materials (17.0%),

Table 1 Twelve-year return, 1999–2010

Sector	MF	ETF	MF beats ETF	Difference	MF beats SPY	ETF beats SPY
A: Holding period return						
B	287.6%	105.1%	Yes	182.5%	Yes	Yes
E	295.2%	221.3%	Yes	73.9%	Yes	Yes
F	23.4%	−8.0%	Yes	31.4%	Yes	No
I	125.9%	62.1%	Yes	63.8%	Yes	Yes
K	73.5%	−17.4%	Yes	90.9%	Yes	No
P	82.0%	26.4%	Yes	55.7%	Yes	Yes
U	20.6%	41.3%	No	−20.7%	No	Yes
V	50.4%	36.2%	Yes	14.2%	Yes	Yes
Y	24.0%	55.0%	No	−30.9%	Yes	Yes
Average fund return	109.2%	58.0%	*p*-value average MF return higher than average ETF return	0.022		
SPY		20.8%				
B: Return with annual compounding						
B	325.9%	118.7%	Yes	207.2%	Yes	Yes
E	354.3%	243.2%	Yes	111.0%	Yes	Yes
F	8.4%	−13.7%	Yes	22.0%	No	No
I	148.8%	67.8%	Yes	81.0%	Yes	Yes
K	70.5%	−16.2%	Yes	86.7%	Yes	No
P	111.2%	31.6%	Yes	79.6%	Yes	Yes
U	25.7%	51.8%	No	−26.1%	Yes	Yes
V	67.6%	37.4%	Yes	30.1%	Yes	Yes
Y	36.4%	58.4%	No	−21.9%	Yes	Yes
Average fund return	127.6%	64.3%	*p*-value average MF return higher than average ETF return	0.015		
SPY		23.9%				

Note: B represents the Materials sector; E represents the Energy sector; F represents the Financial sector; I represents the Industrials sector; K represents the Technology sector; P represents the Consumer Staples sector; U represents the Utilities sector; V represents the Healthcare sector; Y represents the Consumer Discretionary sector; and SPY represents the SPDR S&P 500 Trust. Holding period return in Panel A is calculated by adding ending price and all dividends paid in 12 years then divided by beginning price. Return with annual compounding in Panel B is calculated by compounding annual holding period returns for each individual fund.

Technology (14.9%), Industrials (11.5%), Consumer Staples (7.7%), Healthcare (6.3%), Utilities (4.7%), Consumer Discretionary (4.6%), and Financial (3.4%). In the ETF group, Energy (13.8%) and Materials (9.7%) are still ranked first and second, whereas Financial (1.9%) is again at the bottom. However, the other six sectors are ranked differently. Fig. 2 also shows that for the Materials, Industrials, Technology, and Consumer Staples sector, MF average annual holding period returns are higher than that of corresponding ETFs at the 1% or 5% significance level using one-tailed *t* test.

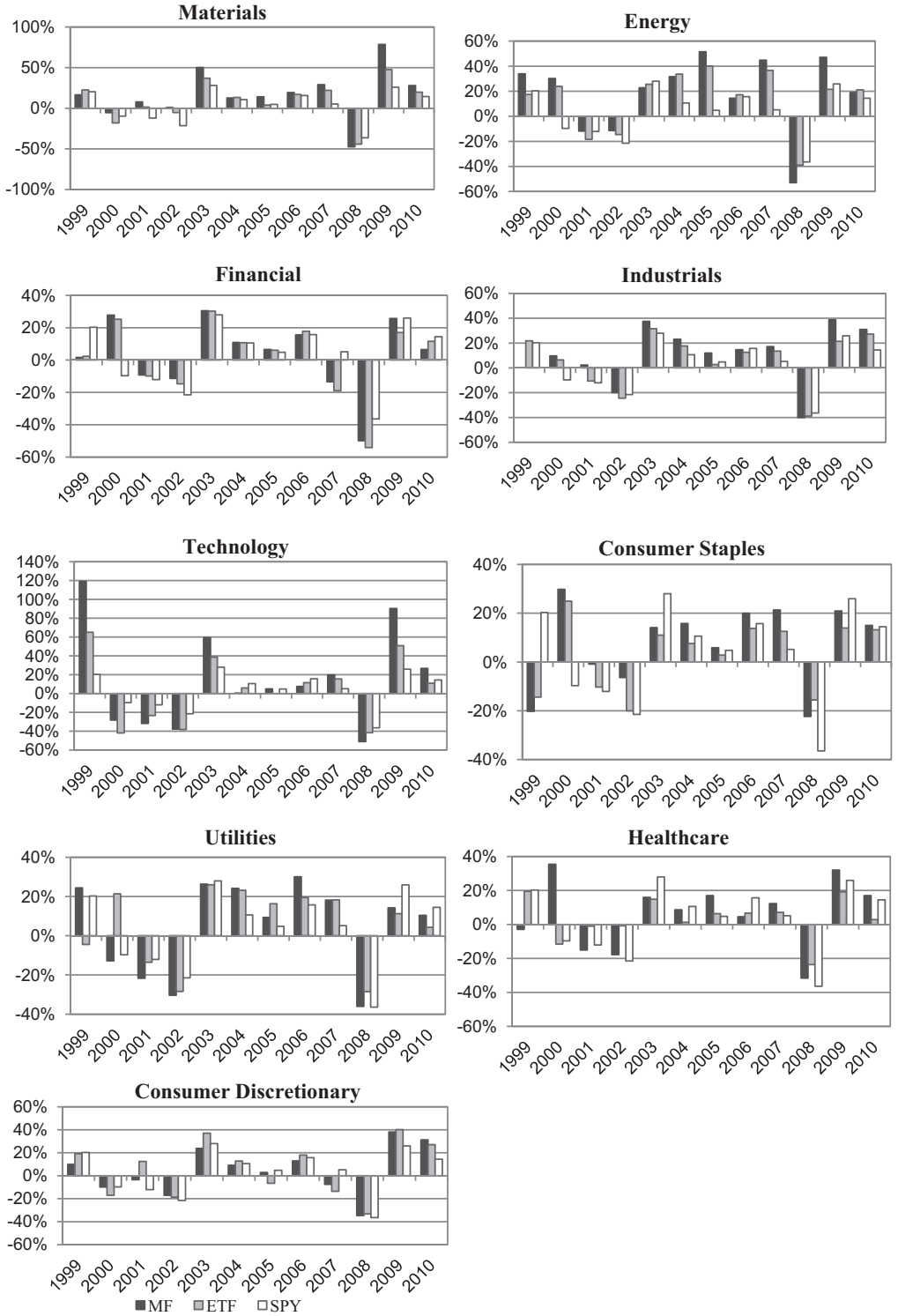
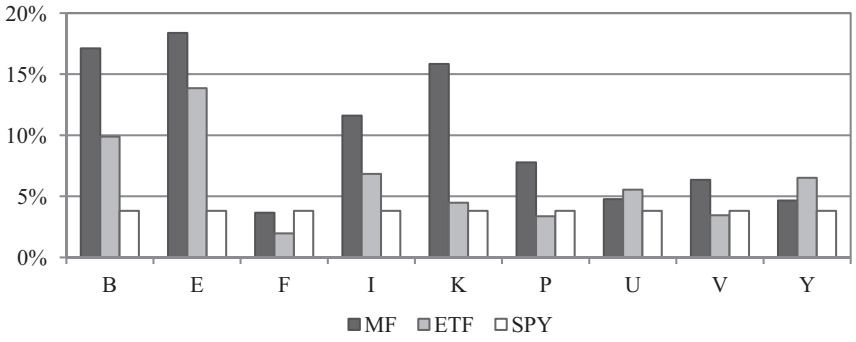


Fig. 1. Annual holding period return.



P-value
Average MF annual holding period return higher than average ETF annual holding period return

B	E	F	I	K	P	U	V	Y
0.012	0.082	0.092	0.002	0.046	0.013	0.430	0.300	0.222

Fig. 2. Arithmetic mean of annual holding period return. B represents the Materials sector; E represents the Energy sector; F represents the Financial sector; I represents the Industrials sector; K represents the Technology sector; P represents the Consumer Staples sector; U represents the Utilities sector; V represents the Healthcare sector; Y represents the Consumer Discretionary sector; and SPY represents the SPDR S&P 500 Trust.

When annual holding period return is compared between MFs and ETFs, for the same sector, Table 2 shows that seven out of nine MFs (except Utilities and Consumer Discretionary) generate a higher return in seven or more years in the 12 year sample period. The average number of years of outperforming is 7.9 and the percentage of years of outperforming is 66%. Using SPY as the benchmark, on average in 7.4 out of 12 years MFs beat SPY (62% of years); only in 6.4 years does the ETF group beat SPY (54% of years).

Table 2 Annual return comparison, 1999–2010

Sector	MF beats ETF		MF beats SPY		ETF beats SPY	
	Number of years	% of years	Number of years	% of years	Number of years	% of years
B	9	75%	10	83%	9	75%
E	7	58%	9	75%	7	58%
F	9	75%	6	50%	7	58%
I	10	83%	9	75%	7	58%
K	8	67%	6	50%	4	33%
P	10	83%	9	75%	5	42%
U	6	50%	6	50%	6	50%
V	7	58%	7	58%	5	42%
Y	5	42%	5	42%	8	67%
Average	7.9	66%	7.4	62%	6.4	54%

Note: B represents the Materials sector; E represents the Energy sector; F represents the Financial sector; I represents the Industrials sector; K represents the Technology sector; P represents the Consumer Staples sector; U represents the Utilities sector; V represents the Healthcare sector; Y represents the Consumer Discretionary sector; and SPY represents the SPDR S&P 500 Trust. Total number of years: 12.

Table 3 Summary statistics of monthly return (%)

	Maximum	Minimum	Mean	Median	*SD*	Skewness	Kurtosis	*N*	Sharpe Ratio
A: Raw return									
MF	31.446	−28.379	0.695	1.014	6.316	−0.238	2.738	1289	
ETF	24.768	−26.198	0.468	0.796	5.982	−0.255	1.762	1296	
SPY	9.935	−16.519	0.260	0.741	4.652	−0.485	0.594	144	
Overall	31.446	−28.379	0.564	0.897	6.081	−0.246	2.326	2729	
B: Excess return									
MF	31.016	−28.769	0.474	0.759	6.321	−0.229	2.696	1289	0.075
ETF	24.628	−26.198	0.245	0.533	5.985	−0.246	1.730	1296	0.041
SPY	9.925	−16.599	0.038	0.526	4.660	−0.454	0.535	144	0.008
Overall	31.016	−28.769	0.342	0.652	6.085	−0.236	2.288	2729	0.056

3.3. Decomposition of 12-year holding period return

What portion of that 12-year holding period return is contributed by capital gains? What portion is contributed by dividend yield (regular dividend and special cash distribution)?

There are four MFs (Financial, Utilities, Healthcare, and Consumer Discretionary) and two ETFs (Financial and Technology) have negative capital gains during the period. The SPY has a capital gains yield of 2.0%. Actually, only three MFs (Materials, Energy, and Industrials) have a higher capital gains yield than dividend yield. That number is five for ETFs (Materials, Energy, Industrials, Healthcare, and Consumer Discretionary). The SPY has a dividend yield of 18.8%. With 2.0% capital gains yield from SPY, the 12-year sample period is pretty flat. The S&P 500 price index has two peaks, 1552.87 on March 24, 2000 and 1576.09 on October 17, 2007, and two troughs, 768.63 on October 10, 2002 and 666.79 on March 6, 2009. This range provides a good testing field for performance analysis.

After examining 12-year returns and average annual returns, I find that most sector MFs outperform both their ETF peers and SPY for most years during the 1999–2010 sample period. The exceptions are the Utilities and Consumer Discretionary MF.

4. A closer look at equity sector funds: risk adjusted returns

Before drawing a conclusion on sector MFs' performance, one must investigate the risk dimension of the returns. Here, I look at risk adjusted returns that incorporate both total risk and systematic risk based on monthly holding period returns.

Table 3 summarizes statistics of both monthly holding period returns and excess returns, which are calculated as monthly holding period return minus monthly 1-month T-bill rate. Panel A shows the maximum monthly holding period return is 31.446% (Technology MF, February 2000) and the minimum monthly return is −28.379% (Technology MF, February 2001). Because sector funds focus on specific investment areas, it is expected that both sector MFs and ETFs have a higher volatility when compared to a broader market benchmark. That

Table 4 Individual fund Sharpe ratio, January 1999 through December 2010

Fund	Mean excess return	*SD*	Sharpe Ratio	MF SR higher than ETF	MF SR higher than SPY	ETF SR higher than SPY
BBB	1.030	6.786	0.152	Yes	Yes	
XLB	0.555	6.760	0.082			Yes
EEE	1.100	7.390	0.149	Yes	Yes	
XLE	0.853	6.504	0.131			Yes
FFF	0.035	6.224	0.006	Yes	No	
XLF	−0.089	6.886	−0.013			No
III	0.669	6.157	0.109	Yes	Yes	
XLI	0.314	5.868	0.054			Yes
KKK	0.671	10.126	0.066	Yes	Yes	
XLK	−0.015	8.069	−0.002			No
PPP	0.367	3.728	0.098	Yes	Yes	
XLP	0.042	3.709	0.011			Yes
UUU	0.066	5.021	0.013	No	Yes	
XLU	0.184	4.671	0.039			Yes
VVV	0.224	4.175	0.054	Yes	Yes	
XLV	0.093	4.280	0.022			Yes
YYY	0.112	4.896	0.023	No	Yes	
XLY	0.272	5.899	0.046			Yes
SPY	0.038	4.660	0.008			
Average MF SR			0.074			
Average ETF SR			0.041			
p-value average MF SR higher than average ETF SR			0.020			

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively. XLB, XLE, XLF, XLI, XLK, XLP, XLU, XLV, and XLY represent the Select Sector SPDR ETFs for these nine sectors, respectively. SPY represents the SPDR S&P 500 Trust.

is true as shown in Table 3. The sector MFs have the widest span of monthly returns (59.825%), followed by sector ETFs (50.966%); both are much higher than that of SPY (26.454%). The standard deviation for sector MF, ETF, and SPY is 6.316%, 5.982%, and 4.652%, respectively. All fund returns are negatively skewed. These characteristics are similar in excess returns as presented in Panel B.

The group Sharpe Ratio is 0.075, 0.041, 0.008, and 0.056 for the MFs, ETFs, SPY, and overall funds, respectively. The sector MF group has the highest Sharpe Ratio. These small but positive Sharpe Ratios reflect the flat U.S. equity market during the sample period.

4.1. Sharpe Ratio

Does the Sharpe Ratio comparison between each pair of sector funds echo the group Sharpe Ratio results in Table 3? Table 4 shows that for the full sample period, January 1999 through December 2010, seven out of nine sector MFs have a higher Sharpe Ratio than that of their peer ETFs, except for the Utilities and Consumer Discretionary MF. The Materials

and Energy MF have the highest Sharpe Ratios, 0.152 and 0.149, respectively; whereas the Financial and Technology ETF have a negative Sharpe Ratio for the same period. The average MF Sharpe Ratio across all sectors is 0.074 versus 0.041 for sector ETFs, and the difference is significant at the 5% level using one-tailed t test.

When the sample period is divided into two equal-length subperiods, the results are slightly different.[11] For the first half sample period, from January1999 through December 2004, the Healthcare MF does not have a higher Sharpe Ratio than its peer ETF. For the second half sample period, from January 2005 through December 2010, the Energy MF does not have a higher Sharpe Ratio, but the Consumer Discretionary MF does outperform its peer ETF. Subsample analysis also shows that the significant higher MF average Sharpe Ratio for the whole sample period is mainly because of higher MF average Sharpe Ratio in the second half sample period, which is significant at the 1% level, whereas the p-value is greater than 5% for the first half sample period.

Table 4 also compares Sharpe Ratio between individual sector funds and SPY. Only the Financial MF underperforms SPY for the full sample period, whereas both the Financial and Technology ETF underperform SPY for the same time period. Using total risk as the measurement, I find that most sector MFs outperform their peer ETFs. Sector MFs also have a higher number of funds outperform SPY.

4.2. Performance against S&P 500 ETF

Systematic risk is always the part of risk that gets more attention because many argue that unsystematic risk can be diversified away at a relatively low cost.[12] CAPM has been the standard model to test fund performance. I modify the model by replacing excess market return with excess SPY return because an investable benchmark makes more sense for comparing attainable returns:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i(R_{SPY,t} - R_{f,t}) + \varepsilon_{i,t} \quad (2)$$

where $R_{i,t}$ is the return of fund i in month t, $R_{f,t}$ is the return of one-month T-bill in month t, $R_{SPY,t}$ is the SPY return in month t, and $\varepsilon_{i,t}$ is an error term.

Table 5 shows that the Materials MF generates a 0.988% monthly abnormal return (11.856% annually) and the Energy MF generates a 1.064% monthly abnormal return (12.768% annually) during the sample period, significant at the 1% and 5% level, respectively. The Industrial ETF has a significant α of 0.672% at the 1% level. All βs are significant at the 1% level. Both MFs and ETFs for the Materials sector, the Financial sector, the Industrials sector, and the Technology sector have a β greater than 1. All other funds have a β less than 1 except for the Consumer Discretionary ETF. The average Adjusted R^2 is 0.563 for the MFs and 0.555 for the ETFs.

For the first half sample period, none of the αs is significant at the 5% level. The average Adjusted R^2 declines to 0.438 for the MFs and 0.461 for the ETFs. The average Adjusted R^2 are higher for the second half sample period: 0.719 for the MFs and 0.692 for the ETFs. The Materials MF, the Consumer Staples MF, and the Industrials ETF generate 0.940%, 0.495%, and 0.543% monthly abnormal returns, respectively, from January 2005 through December 2010, at the 5% level.

Table 5 One factor model results using SPY excess return, January 1999 through December 2010

Fund	α			β			Adjusted R^2
	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	
BBB	0.988	0.362	2.727***	1.121	0.078	14.379***	0.590
XLB	0.512	0.347	1.475	1.145	0.075	15.321***	0.620
EEE	1.064	0.491	2.164**	0.962	0.106	9.086***	0.363
XLE	0.821	0.436	1.882	0.834	0.094	8.880***	0.352
FFF	−0.005	0.309	−0.018	1.074	0.067	16.126***	0.644
XLF	−0.134	0.345	−0.387	1.183	0.074	15.921***	0.638
III	0.272	0.230	1.183	1.164	0.052	22.589***	0.789
XLI	0.672	0.242	2.782***	1.112	0.050	22.444***	0.778
KKK	0.606	0.522	1.162	1.711	0.112	15.228***	0.617
XLK	−0.071	0.359	−0.197	1.466	0.077	18.977***	0.715
PPP	0.349	0.248	1.407	0.485	0.053	9.092***	0.363
XLP	0.025	0.256	0.097	0.451	0.055	8.186***	0.315
UUU	0.035	0.278	0.127	0.807	0.060	13.463***	0.557
XLU	0.165	0.339	0.486	0.497	0.073	6.807***	0.240
VVV	0.202	0.268	0.755	0.574	0.058	9.950***	0.406
XLV	0.066	0.223	0.296	0.718	0.048	14.963***	0.609
YYY	0.078	0.209	0.374	0.903	0.045	20.058***	0.737
XLY	0.231	0.256	0.902	1.082	0.055	19.611***	0.728

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively. XLB, XLE, XLF, XLI, XLK, XLP, XLU, XLV, and XLY represent the Select Sector SPDR ETFs for these nine sectors, respectively. SPY represents the SPDR S&P 500 Trust.

***Significant at the 1% level.

**Significant at the 5% level.

Fama-French three-factor model is also modified by replacing excess market return with excess SPY return:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i(R_{SPY,t} - R_{f,t}) + h_i HML_t + s_i SMB_t + \varepsilon_{i,t} \quad (3)$$

where HML (High minus Low) is the average return on two value portfolios minus the average return on two growth portfolios and SMB (Small minus Big) is the average return on three small portfolios minus the average return on three big portfolios (Fama and French 1993). The data are downloaded from Kenneth R. French Data Library.[13]

Results in Table 6 show that over the full sample period two sector MFs (Materials and Technology) have a positive α at the 5% level. None of the ETFs has a significant α at the 5% level. All βs are significant at the 1% level with the same above/below 1 β distribution as in Table 5. HML is not significant for the Healthcare MF and ETF, and it is significantly negative for three funds (Technology MF and ETF, and Utilities MF). The SMB, size factor, is the least significant factor of the three: only seven out of 18 funds have a significant coefficient.

During the first half sample period, none of the MFs or ETFs generates a positive α at the 5% level. Fewer HML and SMB coefficients are significant. During the second half sample

Table 6 Three factor regression results using SPY excess return, January 1999 through December 2010

Fund	α			β			HML			SMB			Adjusted R^2
	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	
BBB	0.719	0.340	2.117**	1.145	0.072	15.901***	0.504	0.093	5.396***	0.137	0.091	1.500	0.656
XLB	0.327	0.330	0.990	1.174	0.070	16.750***	0.430	0.091	4.736***	0.040	0.089	0.448	0.672
EEE	0.925	0.497	1.861	0.982	0.105	9.314***	0.314	0.137	2.299**	0.036	0.134	0.266	0.379
XLE	0.733	0.438	1.675	0.861	0.093	9.273***	0.296	0.120	2.457**	−0.041	0.118	−0.351	0.378
FFF	−0.209	0.247	−0.845	1.124	0.052	21.422***	0.595	0.068	8.747***	−0.036	0.066	−0.540	0.783
XLF	−0.352	0.265	−1.326	1.243	0.056	22.085***	0.687	0.073	9.412***	−0.071	0.071	−0.990	0.796
III	0.373	0.205	1.818	1.172	0.043	27.337***	0.454	0.056	8.057***	0.177	0.055	3.204***	0.856
XLI	0.118	0.212	0.555	1.133	0.045	25.200***	0.338	0.058	5.793***	0.047	0.057	0.830	0.820
KKK	0.614	0.271	2.262**	1.565	0.058	27.183***	−1.014	0.075	−13.580***	0.650	0.073	8.903***	0.901
XLK	0.126	0.224	0.564	1.386	0.047	29.197***	−0.804	0.062	−13.057***	0.184	0.060	3.061***	0.894
PPP	0.239	0.215	1.113	0.522	0.046	11.461***	0.390	0.059	6.609***	−0.065	0.058	−1.124	0.544
XLP	0.051	0.231	0.219	0.492	0.049	10.034***	0.250	0.064	3.936***	−0.208	0.062	−3.355***	0.467
UUU	0.175	0.279	0.627	0.800	0.059	13.528***	−0.224	0.077	−2.924***	−0.095	0.075	−1.270	0.577
XLU	0.139	0.314	0.442	0.545	0.067	8.188***	0.360	0.086	4.173***	−0.190	0.084	−2.257**	0.381
VVV	0.174	0.276	0.630	0.579	0.058	9.905***	0.069	0.076	0.909	0.005	0.074	0.065	0.402
XLV	0.156	0.227	0.688	0.726	0.048	15.086***	−0.059	0.062	−0.947	−0.118	0.061	−1.931	0.614
YYY	−0.183	0.187	−0.980	0.902	0.040	22.762***	0.322	0.051	6.268***	0.243	0.050	4.832***	0.800
XLY	0.031	0.246	0.125	1.090	0.052	20.855***	0.309	0.068	4.553***	0.146	0.066	2.199**	0.760

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively. XLB, XLE, XLF, XLI, XLK, XLP, XLU, XLV, and XLY represent the Select Sector SPDR ETFs for these nine sectors, respectively. SPY represents the SPDR S&P 500 Trust.

***Significant at the 1% level.

**Significant at the 5% level.

period, three sector MFs (Materials, Industrials, and Consumer Staples) have a significant positive α. The Financial ETF generates a significant negative α at the 5% significance level.

The four-factor model is modified by replacing excess market return with excess SPY return:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i(R_{SPY,t} - R_{f,t}) + h_i HML_t + s_i SMB_t + m_i MOM_t + \varepsilon_{i,t} \quad (4)$$

where MOM (momentum) is the average return on the two high prior return portfolios minus the average return on the two low prior return portfolios (see Carhart 1997). The data are downloaded from Kenneth R. French Data Library.

The results presented in Table 7 resemble those from the three-factor model. Table 7 shows that over the full sample period the same two sector MFs (Materials and Technology) have a positive α at the 5% level. For the momentum factor, MOM, only five out of 18 funds have a significant coefficient.

Generally speaking, more often, sector MFs generate significant higher αs than peer ETFs no matter whether a one-factor, three-factor, or four-factor model is adopted when SPY is used as the proxy for market portfolio. All fund returns are sensitive to the overall equity market movements as the β coefficients for excess SPY return are all significant at the 1% level. Fund returns are less sensitive to the value/growth factor, the size factor, and the momentum factor in the order of listing. The findings on performance against SPY are not consistent with EMH. They support the argument by Kacperczyk, Sialm, and Zheng (2005) that more sector/industry concentrated funds perform better.

4.3. Sector mutual fund performance against sector index funds

Let us examine MF performance against peer ETF within each sector. Excess return of peer ETF is used as the independent variable for the one-factor model:

$$R_{MFj,t} - R_{f,t} = \alpha_j + \beta_j(R_{ETFj,t} - R_{f,t}) + \varepsilon_{j,t} \quad (5)$$

where $R_{MFj,t}$ is the return of MF of sector j in month t, and $R_{ETFj,t}$ is the return of ETF in the same sector j in month t.

Table 8 reports that three sector MFs (Materials, Industrials, and Technology) generate significant positive αs, 0.506%, 0.446%, and 0.689%, respectively, during the full sample period. That is equivalent to annualized outperformance of 6.072%, 5.352%, and 8.268%, respectively. Subsample analysis shows that none of the sector MFs outperforms in the first half sample period, whereas the Materials and the Industrials MF outperform in the second half sample period. All βs are positive and significant at the 1% level.

Which model can explain most of the return variances of sector funds? I summarize the Adjusted R^2 for the four models in Table 9.

Most of the time, adding HML and SMB does increase the Adjusted R^2 when using SPY as the benchmark. Only one out of 18 regressions for the full sample period suffers a slight decrease of explaining power, 0.004. Adding MOM, however, does not increase Adjusted R^2 across the board. Over the full sample period, the average Adjusted R^2 across all funds is 0.559, 0.649, 0.653, and 0.764 for the one/three/four-factor model using SPY and one-factor

Table 7 Four factor regression results using excess SPY return, January 1999 through December 2010

Fund	α			β			HML			SMB			MOM			Adjusted R^2
	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	
BBB	0.706	0.341	2.072**	1.171	0.081	14.504***	0.515	0.095	5.431***	0.128	0.092	1.387	0.042	0.058	0.717	0.655
XLB	0.316	0.332	0.953	1.196	0.079	15.214***	0.440	0.092	4.764***	0.032	0.090	0.359	0.035	0.057	0.627	0.67
EEE	0.878	0.494	1.778	1.077	0.117	9.198***	0.356	0.138	2.586**	0.003	0.134	0.024	0.152	0.084	1.804	0.389
XLE	0.684	0.433	1.582	0.961	0.103	9.362***	0.339	0.121	2.814***	−0.075	0.117	−0.643	0.159	0.074	2.159**	0.394
FFF	−0.188	0.246	−0.763	1.080	0.058	18.513***	0.576	0.069	8.402***	−0.021	0.067	−0.315	−0.070	0.042	−1.658	0.786
XLF	−0.319	0.261	−1.221	1.177	0.062	18.988***	0.658	0.073	9.037***	−0.048	0.071	−0.677	−0.106	0.045	−2.381**	0.802
III	0.370	0.206	1.796	1.178	0.048	24.318***	0.456	0.057	7.990***	0.174	0.056	3.116***	0.009	0.035	0.253	0.855
XLI	0.132	0.212	0.623	1.104	0.050	21.992***	0.325	0.059	5.513***	0.057	0.057	0.996	−0.046	0.036	−1.273	0.821
KKK	0.610	0.273	2.235**	1.575	0.065	24.350***	−1.010	0.076	−13.295***	0.647	0.074	8.751***	0.015	0.047	0.316	0.900
XLK	0.159	0.218	0.728	1.319	0.052	25.462***	−0.833	0.061	−13.680***	0.207	0.059	3.496***	−0.107	0.037	−2.868***	0.899
PPP	0.222	0.214	1.039	0.555	0.051	10.942***	0.405	0.060	6.788***	−0.076	0.058	−1.316	0.054	0.037	1.469	0.548
XLP	0.035	0.231	0.153	0.523	0.055	9.558***	0.264	0.064	4.102***	−0.219	0.063	−3.504***	0.050	0.039	1.277	0.469
UUU	0.158	0.279	0.565	0.834	0.066	12.628***	−0.209	0.078	−2.692***	−0.107	0.076	−1.417	0.056	0.048	1.170	0.578
XLU	0.114	0.313	0.365	0.595	0.074	8.029***	0.382	0.087	4.386***	−0.208	0.085	−2.450**	0.081	0.053	1.514	0.387
VVV	0.145	0.273	0.530	0.638	0.065	9.855***	0.095	0.076	1.243	−0.015	0.074	−0.207	0.094	0.047	2.023**	0.415
XLV	0.163	0.228	0.716	0.712	0.054	13.181***	−0.065	0.063	−1.030	−0.113	0.062	−1.829	−0.023	0.039	−0.592	0.612
YYY	−0.176	0.187	−0.941	0.889	0.044	19.986***	0.316	0.052	6.053***	0.248	0.051	4.873***	−0.022	0.032	−0.695	0.799
XLY	0.063	0.242	0.262	1.024	0.057	17.848***	0.280	0.067	4.150***	0.168	0.066	2.568**	−0.106	0.041	−2.569**	0.769

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively. XLB, XLE, XLF, XLI, XLK, XLP, XLU, XLV, and XLY represent the Select Sector SPDR ETFs for these nine sectors, respectively. SPY represents the SPDR S&P 500 Trust.

***Significant at the 1% level.

**Significant at the 5% level.

Table 8 One factor model results using peer ETF excess return, January 1999 through December 2010

Fund	α			β			Adjusted R^2
	Estimate	*SE*	*t*-value	Estimate	*SE*	*t*-value	
BBB	0.506	0.196	2.588**	0.943	0.029	32.566***	0.881
EEE	0.167	0.167	0.998	1.095	0.026	42.875***	0.927
FFF	0.113	0.137	0.820	0.872	0.020	43.574***	0.929
III	0.446	0.158	2.815***	1.004	0.027	36.969***	0.909
KKK	0.689	0.306	2.249**	1.170	0.038	30.712***	0.868
PPP	0.332	0.175	1.895	0.831	0.047	17.529***	0.681
UUU	−0.064	0.316	−0.204	0.710	0.068	10.480***	0.432
VVV	0.166	0.269	0.618	0.623	0.063	9.901***	0.404
YYY	−0.095	0.160	−0.595	0.764	0.027	28.011***	0.845

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively.

***Significant at the 1% level.

**Significant at the 5% level.

model using peer ETF, respectively. On average, peer ETF benchmarking provides the best model fit for fund returns. This result is similar with Dellva, DeMaskey, and Smith (2001) and Kaushik, Pennathur, and Barnhart (2010).

Table 9 Adjusted R^2 comparison for different models, January 1999 through December 2010

Fund	1-Factor model (SPY)	3-Factor model (SPY)	4-Factor model (SPY)	1-Factor model (Peer ETF)
BBB	0.590	0.656	0.655	0.881
XLB	0.620	0.672	0.670	
EEE	0.363	0.379	0.389	0.927
XLE	0.352	0.378	0.394	
FFF	0.644	0.783	0.786	0.929
XLF	0.638	0.796	0.802	
III	0.789	0.856	0.855	0.909
XLI	0.778	0.820	0.821	
KKK	0.617	0.901	0.900	0.868
XLK	0.715	0.894	0.899	
PPP	0.363	0.544	0.548	0.681
XLP	0.315	0.467	0.469	
UUU	0.557	0.577	0.578	0.432
XLU	0.240	0.381	0.387	
VVV	0.406	0.402	0.415	0.404
XLV	0.609	0.614	0.612	
YYY	0.737	0.800	0.799	0.845
XLY	0.728	0.760	0.769	

Note: BBB, EEE, FFF, III, KKK, PPP, UUU, VVV, and YYY represent the Fidelity Select Portfolio mutual funds for the Materials sector, the Energy sector, the Financial sector, the Industrials sector, the Technology sector, the Consumer Staples sector, the Utilities sector, the Healthcare sector, and the Consumer Discretionary sector, respectively. XLB, XLE, XLF, XLI, XLK, XLP, XLU, XLV, and XLY represent the Select Sector SPDR ETFs for these nine sectors, respectively. SPY represents the SPDR S&P 500 Trust.

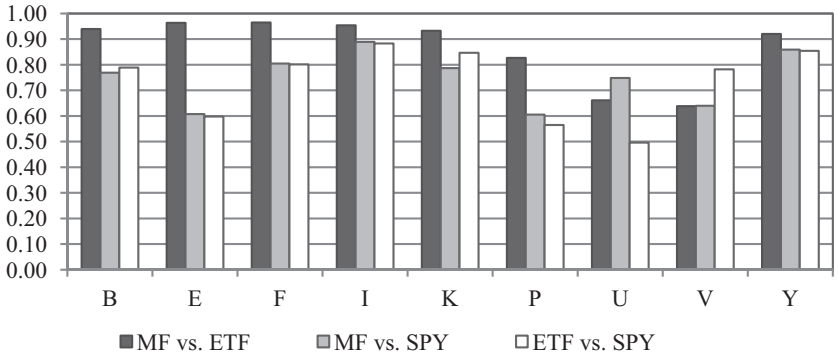


Fig. 3. Monthly return correlation between funds, 1999–2010. B represents the Materials sector; E represents the Energy sector; F represents the Financial sector; I represents the Industrials sector; K represents the Technology sector; P represents the Consumer Staples sector; U represents the Utilities sector; V represents the Healthcare sector; Y represents the Consumer Discretionary sector; and SPY represents the SPDR S&P 500 Trust.

Comparing the Adjusted R^2 of one-factor model with peer ETF to that of one-factor model with SPY, I find that seven out of nine MF regressions using peer ETF have a higher explanation power for the full and first half sample periods with the exceptions of the Utilities sector and the Healthcare sector. All nine MF regressions improve their Adjusted R^2 for the second half sample period using peer ETF benchmark.

Unlike previous research on sector mutual fund performance, this article is one of the first that provides detailed analysis on individual sector funds. Zheng and Tower (2005), for example, examine performance of asset-weighted and equal-weighted Fidelity sector fund portfolios and find that they performed less well than corresponding indexes. Dellva, DeMaskey, and Smith (2001) only list number of sector funds in their analysis. Kaushik, Pennathur, and Barnhart (2010) report sector aggregate performance results. For individual investors and/or their financial planners, however, it is important to examine individual sector fund performance and allocate their assets accordingly.

4.4. Changing dynamic

Do MF and ETF in the same sector move together? Are they highly correlated with the general market index? Pairwise correlation is charted in Fig. 3. In all but two cases (Utilities and Healthcare) the correlation between MF and ETF in the same sector, the black bar, is the highest compared with the correlation between MF/ETF and SPY. Six sectors have a correlation between MF and ETF higher than 0.9 (Materials, Energy, Financial, Industrials, Technology, and Consumer Discretionary), whereas the other three sectors have a correlation of 0.827 (Consumer Staples), 0.661 (Utilities), and 0.638 (Healthcare). An interesting find was that these three sectors are often considered defensive sectors. Common factors in one sector appear to affect the returns of the MF and ETF in this sector more than that of general factors affecting the overall equity market. The returns of MFs and ETFs in the same sector tend to go hand-in-hand.

The regression results during different sample periods discussed earlier, however, hint that

the correlation might not be stable throughout the whole sample period. Fig. 4 plots 36-month rolling correlation for the nine sectors.

Consistent with the results in Fig. 3, for most of the sample period, in all but two sectors (Utilities and Healthcare), the correlation between MF and ETF in the same sector, the black line, is the highest compared with the correlation between MF/ETF and SPY. The Industrial sector, the Technology sector, and the Consumer Discretionary sector have the most consistent correlation among three pairs of correlation plotted, MF versus ETF, MF versus SPY, and ETF versus SPY. The three lines are close to each other with the black one on the top.

However, the Utilities sector and the Healthcare sector show great time varying correlation. The lines cross each other and the spread is huge. For example, for the Healthcare sector, the correlation between the ETF and SPY was the highest (0.864 vs. 0.127 and 0.189) for the first 36 months, January 1999 through December 2001, but it turns out to be the lowest (0.817 vs. 0.931 and 0.869) for the last 36 months, January 2008 through December 2010.

A noticeable phenomenon is that the correlations tend to converge overtime. Almost all sectors have tighter correlation spreads moving into the end of the sample period. The correlation between the MF/ETF and SPY, the gray dashed line and the black dotted line, almost overlap for most of the sectors during the last quarter of the chart period.

This changing dynamic explains why regression based results are sensitive to sample period selection. The open question is whether the correlation convergence will continue into the future. If yes, the diversification benefit one can enjoy through sector investing may diminish overtime.

5. Discussion

5.1. Benchmarking

The Fidelity Select Portfolios cited both the S&P 500 and a MSCI U.S. IM sector 25/50 Index in the "Management's Discussion of Fund Performance" section of the Annual Reports. However, the earliest ETFs based on the MSCI U.S. IM sector 25/50 Indexes were launched in January 2004 by Vanguard, which is five years later than the Select Sector SPDR Funds. The price correlation between these two ETFs in the same sector ranges from 0.975 to 0.999, with seven out of nine above 0.99, for the period from 2004 through 2010. This high correlation justifies the use of the Select Sector SPDR Funds as benchmarks for performance evaluation.

One obvious explanation of the results that sector MFs outperform their peer ETFs somehow is that these actively managed mutual funds can invest outside of the S&P 500 basket. They can invest in foreign issuers as the prospectuses of the Fidelity Select Portfolios state. Domestically they can invest in any stock that is not in the S&P 500 index, mainly smaller capitalization stocks. They also only "normally … invest at least 80% of assets in securities of companies principally engaged in the selected sector," which gives them some wiggle room across sector borders.

However, it is hard to imagine they deviate very far from their benchmark. Only eight out

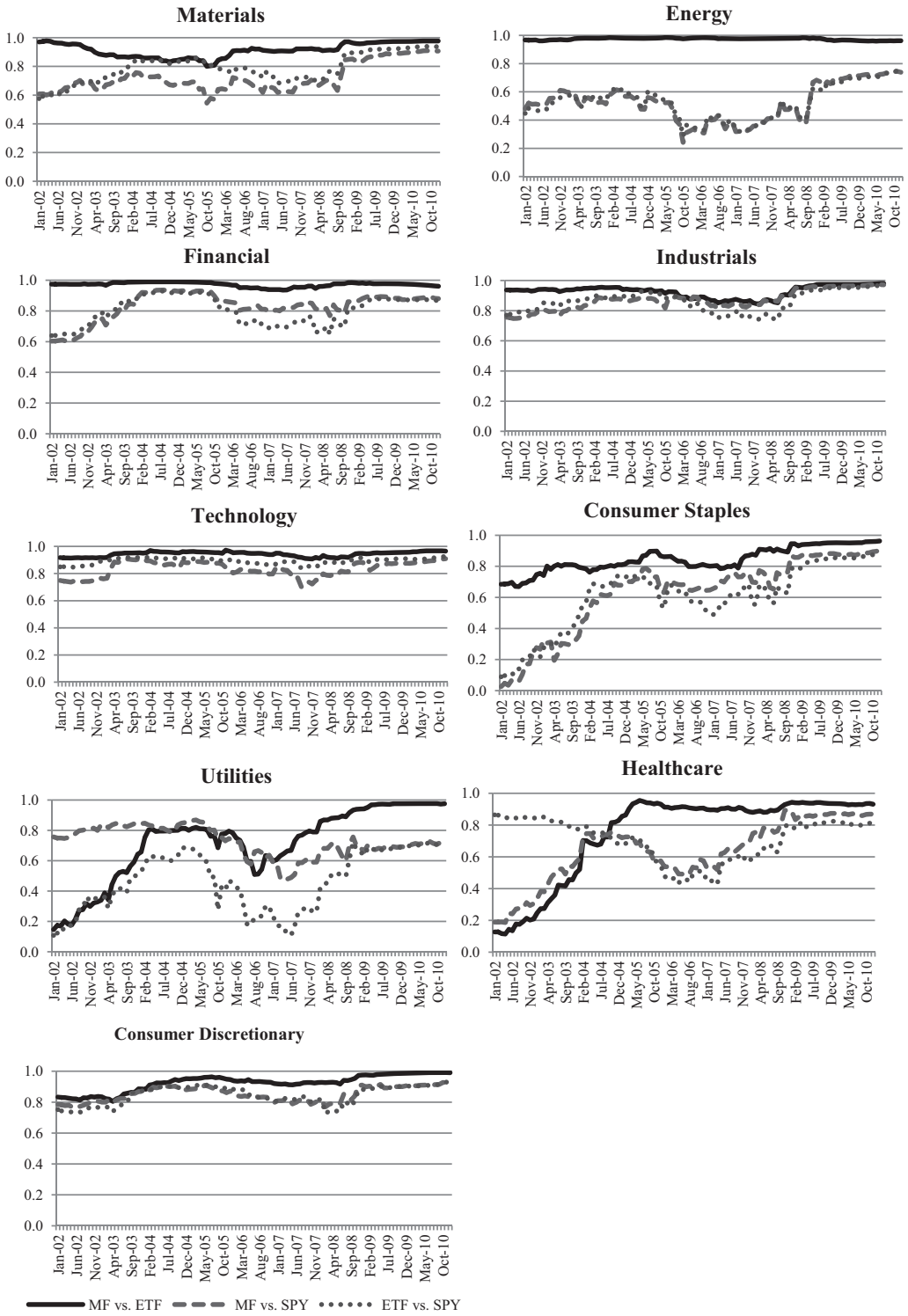


Fig. 4. Thirty-six months rolling correlation between funds.

of 90 stocks of the top 10 holdings of the Fidelity Select Portfolios at the end of September 2012 are not in the S&P 500 index.[14] Half of that eight are foreign stocks. Seven out of the eight has a weight between 1.59% and 4.05% of corresponding sector MFs; the other one weights 13.66%.[15] The top weighted index stocks also make the backbone of the sector mutual funds. The number of stocks in the top 10 holdings of both sector MFs and ETFs varies from three to seven. Seven out of top 10 holdings of the Materials, Industrials, and Healthcare MF are also in the ETF top 10 list, and the top 10 holdings make up between 46% and 64% of these three mutual funds. That number is six for the Consumer Staples and Consumer Discretionary MF, five for the Energy and Technology MF, four for the Utilities MF, and three for the Financial MF. The top 10 holdings make up between 29% and 68% of the funds in these six sectors.

5.2. Fidelity

Fidelity had been the largest mutual fund family that mainly provides actively managed mutual funds for several decades. Pozen and Hamacher (2011) argue that Fidelity, among several other fund families, has two characteristics that contribute to its success in the U.S. mutual fund business: dedication primary to asset management and control by investment professionals. The Fidelity fund family has maintained top market shares in the past decade: 10.2%, 11.8%, and 11.3% in year 1990, 1995, and 2010, respectively. It was No. 1 in 1990 and 1995, but passed by Vanguard (12.1%) in 2010. Fidelity's stock is effectively controlled by members of its funding family, which relieves the short-term performance pressure from public shareholders to increase quarterly earnings. They also stated that Fidelity can develop compensation programs that promote top performance. Fidelity's Megellan Fund has long been used as an evidence to defy EMH (see Kochman and Badarinathi 1993 and Marcus 1990). Fidelity's large size can also potentially gain an insider edge as Golec (2007) shows some evidence on informed trades made by Fidelity funds.

The large size of Fidelity's assets under management can provide economy of scale for securities research, which aids the key element of active management: security selecting. Unlike passive managers, who often do little on stock selection, active managers can beat their benchmark by overweighting future winners, underweighting future losers, or some combination of both. They also have the freedom of holding cash. Focusing on only one sector, sector fund managers can potentially gain growing knowledge and experience dealing with stocks in that sector, which could help their performance.

Elton, Gruber, and Green (2007) explain why funds may be more similar inside than outside fund families: Portfolio managers within families are likely to have access to the same research analysis produced either by internal analysts or by a particular set of external research firms; Portfolio managers may begin the security selection process with an economic forecast that is shared by other fund managers within the firm. It is not a surprise that Fidelity sector funds as a group can outperform when the shared research and macro view work well.

6. Conclusion

This article is one of the first that reports detailed analysis on individual equity sector fund performance. It also contributes to the literature by adding evidence of active equity management outperformance. I find considerable evidence that sector mutual funds, the nine Fidelity Select Portfolios here, have provided better after-expense returns against broader market ETF, SPY, and their peer sector ETFs, the nine Select Sector SPDR Funds, during the sample period 1999–2010. Not only do they achieve higher nominal returns over the 12-year period except for few sector MFs, some of the funds also generate higher risk-adjusted returns measured by Sharpe Ratio[16] and α from various asset pricing models. None of the sector MFs generates a significant negative α for the full sample period no matter which asset pricing model is used. That is, the sector MFs do not underperform SPY or peer ETFs measured by α.

The Materials and the Technology sector MF stand out in the analysis. The Materials MF beats its peer ETF and SPY across the board for the full sample period: second highest 12-year return, highest Sharpe Ratio, and significant positive αs in all four regression models. The annualized abnormal return of the Materials sector MF is 11.856%, 8.628%, and 8.472% against SPY and 6.072% against XLB using factor models. The Technology MF also beats both SPY and peer ETFs on 12-year return, Sharpe Ratio, and most regression-based measures. It generates annualized abnormal return of 7.368% and 7.320% against SPY using the three-factor and four-factor models, and 8.268% against XLK. The Energy MF outperforms on 12-year return, Sharpe Ratio, and one-factor model against SPY with an annualized abnormal return of 12.768%. The Industrials MF outperforms on 12-year return, Sharpe Ratio, and one-factor model against XLI with an annualized abnormal return of 5.352%.

The Utilities and Consumer Discretionary MF have the weakest results. They do not beat their peer ETFs measured by 12-year return and Sharpe Ratio, however, they do not underperform when asset pricing models are adopted.

Many researches have showed that on average active managers do not add value after fees and expenses (e.g., Barras, Scaillet, and Wermers 2010). Some argue that the value of active management lies in making market more efficient by improving asset allocation (Jones and Wermers 2011). Xiong et al. (2010) document that both asset allocation and active management are critical to performance. The need for active managers to set the price was emphasized by a large index fund manager: "Passive management is a free-ride strategy; it piggybacks on active management. You need to have active managers out there, and they need to be paid."[17] This article, however, presents evidence on outperformance of equity sector funds. If one considers active managers together are playing a zero-sum game, this study finds some of the winners.

For individual investors who are interested in sector investing, this study shows that actively managed mutual funds can be a good candidate for sector allocation. Most of these mutual funds do a better or equivalent job measured by both nominal return and total/systematic risk adjusted return, after higher expenses and fees. The bottom line is that they do not underperform when measured with α from asset pricing models, at least during the sample period. This study also provides evidence for financial planners when they help their

clients select mutual funds. It may be appropriate for financial planners to recommend sector mutual funds to their clients who have risk appetite for sector investing.

Notes

1 Most ETFs, although not all, are passively managed to track a specific index, such as the S&P 500.
2 https://www.fidelity.com/.
3 Because Telecommunication stocks are covered in the Technology Select Sector SPDR Fund, I do not consider Telecommunication a separate sector.
4 Fidelity Select Portfolio Annual Report, February 29, 2012.
5 Fidelity Select Portfolio Prospectuses.
6 However, all nine Select Sector SPDRs are diversified funds with respect to the Internal Revenue Code. As a result, each Sector Index is modified so that an individual security does not comprise more than 25% of the index. Source: http://www.sectorspdr.com/.
7 Select Sector SPDRs Annual Report, September 30, 2011.
8 SPDR S&P 500 ETF Trust Annual Report, September 30, 2011.
9 The available price data for Fidelity Select Industrials Portfolio starts on July 8, 1999.
10 http://finance.yahoo.com/.
11 Subsample period results are discussed but not reported throughout the article. Results are available upon request.
12 For example, Ross, Westerfield, and Jordan, *Corporate Finance*, 9th ed., 2010, McGraw-Hill.
13 http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.
14 From Fidelity and Sector Spider Web sites.
15 British American Tobacco PLC ADR represents 13.66% of the Fidelity Select Consumer Staples Portfolio as of September 28, 2012.
16 Eling (2008) shows that choosing a performance measure is not critical to fund evaluation and the Sharpe Ratio is generally adequate.
17 Frank J. Fabozzi, Sergio M. Focardi, and Caroline Jonas, 2010, *Investment Management after Global Financial Crisis*, Research Foundation Publications, CFA Institute, page 26.

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