

Higher Return from Investing in the Worst Performing Sector: Evidence from the S&P Ten Sectors

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Four investment strategies are tested using the S&P Ten Sector Indexes. At the end of each quarter, investing in the top performer of the quarter results in the lowest rate of return among the four strategies; investing in the bottom performer of the quarter and hold through the following two quarters results in the highest rate of return among the four strategies. This implies that investors should not chase the reported top performer.

INTRODUCTION

Investors and financial economists have been trying intensively to explore superior return opportunities, the most known findings include the January effect, first pointed out by Wachtel (1942), followed by Rozeff and Kinney (1976) who found that common stock returns in January are significantly larger than those in other months; the weekend effect, revealed by Cross (1973) and French (1980) that there are abnormally high average Friday returns and significantly negative average Monday returns in the U. S. stock market; the September phenomenon, reported by Gu and Simon (2007) that common stock returns, particularly stock of firms in the Dow Jones Industrial Average, exhibited apparently lower average returns in September than in other months; and value or growth stocks performances discussed by Basu (1977, 1983), Reinganum (1988) and Fama and French (1992) who show that value stocks perform better than growth stocks. However, market anomalies such as the January effect and weekend effect disappeared after they were well known (Gu, 2003, 2004). Hence, we need to explore other possible ways for exploring superior returns.

De Bondt and Thaler (1985) and Chopra, Lakonishok, and Ritter (1992) find stocks that have performed the worst in recent past tend to exhibit above-average future performance, while the best past performers seem to underperform the market in following periods. For example, the De Bondt and Thaler study examines the 35 worst performing and best performing stocks in the last five years and reveals that the “losers” outperform the winners by an average of 25 percent in the following three-year period. This tendency of well-performing stocks and poorly performing stocks in one period to experience reversals in the following period is the so called reversal effect. Morrin et al (2002) suggest that sizable group preferences for stocks could presumably cause such assets’ price levels to deviate from rational values, which implies that the deviated asset’s price will return to rational levels.

In this study we examine and analyze the quarterly performance of the 10 S&P sector indexes from the fourth quarter of 1989 to the fourth quarter of 2009, and test whether performance of sectors of firms also exhibit reversal effect. The reversal effect suggests that the stock market overreacts to relevant news. Extreme investment performance is reversed after the overreaction is recognized (Chopra, Lakonishok,

and Ritter (1992). Based on the reversal performance of the sectors over the time period, we develop and test a variety of investment strategies with the purpose of finding a strategy that would result in superior returns.

DATA AND METHODOLOGY

Data of the 10 S&P sectors' quarterly returns from the fourth quarter of 1989 to the fourth quarter of 2009 is provided by Morgan Stanley Smith Barney, Rochester, New York. The 10 sectors, their symbols and abbreviations are listed in Table 1.

TABLE 1
SYMBOL, NAME AND ABBREVIATION OF THE 10 SECTORS

Symbol	Index Name	Abbreviation
XLY	S&P 500 Consumer Discretionary (Sector)	CD
XLP	S&P 500 Consumer Staples (Sector)	CS
XLE	S&P 500 Energy (Sector)	E
XLF	S&P 500 Financials (Sector)	F
XLV	S&P 500 Healthcare (Sector)	H
XLI	S&P 500 Industrials (Sector)	I
XLK	S&P 500 Information Technology (Sector)	IT
XLB	S&P 500 Materials (Sector)	M
IYZ	S&P 500 Telecommunication Service (Sector)	T
IDM	S&P 500 Utilities (Sector)	U

There are 81 quarters in the period. The first eight quarters and the last eight Quarters of the ten sectors' performance in the sample period is exhibited in table 2. Performances of each of the 10 sectors over the 81 quarter period are reported in Table 3. The arithmetic average quarterly returns of the sectors are calculated based on the reported quarterly returns, not on values of the indexes, which implies equal weighs or equal amount of fund in each sector at the beginning of each quarter. As shown in the Table, Information Technology sector has the highest arithmetic average quarterly return, which is 3.31%, and Telecommunication Service sector has the lowest average quarterly return, 1.69%. Also, Information Technology sector performed the best for 18 out of the 81 quarters and the worst for 14 quarters; the Industrials sector performed the best for only 1 quarter and has never fallen to the bottom.

Information Technology is the most volatile sector in the sample period and has gained the largest returns, which is consistent to the theories in the literature that risk and return tend to be positively related. However, in contrast to the literature, risk and return do not always go hand in hand. For example, Financial, Materials, and Telecommunication Service sectors are more volatile than Healthcare, energy and Consumer Staples sectors but gained lower returns than the later ones, and the least volatile sectors, Energy and Consumer Staple did not exhibit the lowest return but above the median. In addition, the energy sector stocks offered the best coefficient of variation while the Telecommunication sector stocks showed the worst coefficient of variation in the period.

TABLE 3
PERFORMANCE OF THE 10 SECTORS

Symbol	Average Return	Top in Quarter	Bottom in Quarter	Standard Deviation	Coefficient of Variation
IT	3.31%	18	14	0.143	4.32
E	3.12%	11	12	0.082	2.64
H	2.92%	9	6	0.088	3.01
CS	2.81%	7	4	0.082	2.90
F	2.48%	7	12	0.123	4.95
I	2.42%	1	0	0.093	3.85
M	2.28%	10	6	0.101	4.41
CD	2.27%	3	2	0.099	4.38
U	2.17%	6	11	0.088	4.07
T	1.69%	9	14	0.108	6.41
	Total	81	81		

Assume investors are not able to select the sector that will perform the best in the future, we hypothesize that the best and worst performers reverse in following quarters. Based on this, we develop a variety of investment strategies, calculated the return from each strategy. Here we report four best ones of the strategies we have tried.

Strategy I

Invest \$1 in the top performer of each quarter and hold until the end of the period, i.e., from the fourth quarter of 1989 through the fourth quarter of 2009. The total amount of investment is \$80, the result is \$185.93. The geometric average annual rate of return is 8.02%.

For strategies I, II and III the geometric average quarterly return, i , is calculated using the equation below:

$$0 = \sum_{t=0}^{80} \frac{CF_t}{(1+i)^t} + \frac{CF_{80}}{(1+i)^{80}}$$

Where, CF represents cash flow. The effective annual rate of return is calculated as $(1+i)^4 - 1$

Strategy II

Invest \$1 in the bottom performer of each quarter and hold until the end of the period. The total amount invested is \$80, the result is \$190. The geometric average annual rate of return is 8.07%. There is no significant difference between strategy I and strategy II.

Strategy III

Invest \$0.1 in each of the 10 sectors every quarter, hold until the end of the sample period. This strategy results in \$197.99. The geometric average annual rate of return is 8.43%. The result of this

strategy is better than Strategies I and II, which may reflect the benefit of better diversification as equal amount is invested in each of the ten sectors each quarter.

Strategy IV

Invest each quarter in the bottom performing sector, hold through the following two quarters. The return is calculated as:

$$R_2 = 1 \times (1+r_1) \times (1+r_2) - 1$$

Where R_2 represents total return over the two-quarter holding period
 r_1 represents return in the first quarter, and
 r_2 represents return in the second quarter

The result from this strategy is an arithmetic average two-quarter return of 5.39% which is equivalent to an effective annual rate of 11.07%, the highest among the four strategies. An obvious reason is that the best performer of a quarter usually falls below the median in the following few quarters and the worst performer of a quarter usually rises above the median in the following few quarters.

The implication of the results of this study is that invest each quarter in the bottom sector, sell two quarters later, and earn the highest rate of return. Or simply buy the bottom performer and sell the top performer each quarter.

Time will prove whether this pattern will disappear after it is well known and widely used by investors. If the pattern will disappear because of trading activities of sophisticated investors this finding should help reduce the volatility of sector returns.

CONCLUSION

In this study we develop and test four investment strategies. The data set includes the S&P Ten Sector Indexes from 1989 through 2009. The results indicate that investing in the best performer of each quarter on the last day of the quarter results in the lowest rate of return among the four strategies; investing in the bottom performer of each quarter on the last day of the quarter brings better return; investing every quarter equal amount in each sector produces the second highest rate of return, and investing in the worst performer of the quarter on the last day of the quarter and hold through the following two quarters gains the highest rate of return among the four strategies. This implies that investors should not chase the reported top performer because the best performer of a quarter usually falls below the median or even to the bottom and the worst performer usually rise above the median or even to the top in the following couple of quarters. This pattern will be less prominent after it is well known. Further research is needed to find the reasons for the 10 sectors' performance fluctuations.

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TABLE 2
SAMPLE QUARTERLY PERFORMANCE OF THE 10 S&P SECTORS

	Sep-91	Jun-91	Mar-91	Dec-90	Sep-90	Jun-90	Mar-90	Dec-89
U	12.14% M	10.26% F	26.29% CS	15.71% E	4.78% H	19.03% IT	8.97% E	11.17%
F	9.83% CD	3.38% CD	22.00% F	14.37% U	-5.38% CS	16.30% I	2.01% U	8.42%
H	9.48% I	3.10% H	18.92% H	13.81% H	-8.21% IT	9.97% E	-0.81% T	7.91%
CS	8.27% H	-0.44% CS	17.83% U	11.20% T	-9.17% CD	6.64% CD	-1.43% H	6.19%
E	5.80% T	-0.87% I	15.87% M	10.39% CS	-9.44% I	5.15% M	-4.90% CS	5.77%
CD	4.53% F	-0.96% IT	14.73% IT	10.13% M	-14.59% F	4.71% CS	-5.39% I	-0.32%
IT	2.29% E	-2.81% M	9.68% CD	9.81% I	-20.47% E	1.08% H	-5.66% M	-0.92%
T	2.19% U	-2.84% E	6.59% I	8.30% IT	-21.93% U	0.67% U	-6.18% CD	-6.14%
I	0.31% CS	-4.02% U	4.46% T	4.18% CD	-23.96% M	-0.38% T	-8.21% F	-8.01%
M	0.10% IT	-8.41% T	3.89% E	-2.01% F	-26.70% T	-0.88% F	-9.76% IT	-8.33%
	Dec-09	Sep-09	Jun-09	Mar-09	Dec-08	Sep-08	Jun-08	Mar-08
IT	10.70% F	25.53% F	35.70% IT	4.30% T	-1.38% CS	4.80% E	17.31% CS	-2.21%
H	9.09% I	21.99% IT	19.72% M	-2.06% U	-10.92% F	0.80% U	7.97% M	-3.01%
CD	9.07% M	21.52% I	18.89% T	-7.13% H	-12.10% H	0.49% M	4.42% I	-3.94%
T	7.43% CD	19.31% CD	18.14% H	-8.00% CS	-12.83% CD	-0.65% IT	2.50% CD	-5.88%
M	7.36% IT	17.00% M	16.26% CD	-8.09% E	-20.61% I	-8.54% H	-1.24% E	-7.19%
U	7.26% CS	11.37% E	10.70% CS	-10.54% CD	-22.85% IT	-11.92% T	-4.13% U	-9.94%
E	5.58% E	10.13% U	10.18% U	-10.80% I	-23.92% T	-14.78% CS	-5.35% H	-11.52%
I	5.39% H	9.53% CS	9.81% E	-11.58% IT	-25.73% U	-18.01% CD	-7.80% T	-13.73%
CS	5.02% U	6.15% H	8.88% I	-20.88% M	-30.77% M	-22.47% I	-10.09% F	-13.96%
F	-3.32% T	5.58% T	3.42% F	-28.83% F	-36.92% E	-24.65% F	-18.32% IT	-15.19%