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Relative Strength, Sector Weighting, and Sector Returns: A Portfolio Analysis for the Period 2008-2012

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Study Objectives
Evaluate relative strength analysis as a viable method for sector portfolio weighting
Develop a weighting model that favors undervalued sectors

Study Design
We analyzed a data set from the period 2008-2012. In our data set we used the sector spiders of the 10 S&P 500 sectors. Each sector spider is equivalent to one stock in our portfolio. Using these 10 spiders, we took our investment of $1,000,000 and allocated the funds amongst these sectors using relative strength analysis. We implemented a buy and hold strategy over the 5 year period and compared our portfolio to our benchmark, the S&P 500 index. We split our results up into 5 periods based on the performance of the markets.

Portfolio Weighting Model
\[
\begin{align*}
RS_{it} &= P_{it}/P_{st} \\
I/RS_{it} &= 1/(P_{st}/P_{it}) \\
W_{it} &= (I/RS_{it})/(\text{Sum } 1/RS_{it}) \\
DV_{it} &= W_{it} * 1,000,000 \\
\text{Shares}_{it} &= DV_{it}/P_{it} \\
\text{PV}_{itn} &= \text{Shares}_{it} * P_{itn} \\
\text{Return}_{it} &= (\text{PV}_{itn}/\text{PV}_{it})-1
\end{align*}
\]

Where:
\[
\begin{align*}
RS_{it} &= \text{Relative Strength of Sector i(t)} \\
P_{it} &= \text{Price of Sector i(t)} \\
P_{st} &= \text{Price of S+P} \\
I/RS_{it} &= \text{Inverse of S+P} \\
W_{it} &= \text{Portfolio Weight Assigned to Sector i(t)} \\
DV_{it} &= \text{Dollar Investment in Sector i(t)} \\
\text{PV}_{itn} &= \text{Actual Value of Portfolio} \\
\text{Shares}_{it} &= \text{Number of shares held in sector i(t)} \\
\text{Return}_{it} &= \text{Percent change in value of sector i(t)} \\
T &= \text{Time}
\end{align*}
\]

Conclusions
I/RS Model generated Alpha of 10.57% vs. S+P
Outperformance significant
I/RS model outperformed S +P in downswing period of 2008
Outperformed S+P in the rebound 09
Outperformed in the upswing period in 10
Underperformed in the trading range period 11
Outperformed in the trading range period 12