A Quantitative Approach to Selecting Industry Groups within Sectors for Investment: The Case for Relative Strength and Capture Ratio Analysis

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A Quantitative Approach to Selecting Industry Groups for Investment: The Case for Relative Strength

By: Rachel Kilbury and Christine Ferry
Advisors: Dr. Robert Dean and Dr. Elizabeth Gustafson

Study Objectives:
• Determine the alpha potential for relative strength analysis in industry group selection
• Develop a Relative Strength Portfolio weighting model that favors undervalued Industry groups

Study Design:
• Period of Analysis: 2008-2012
• Data- Monthly Prices
  + S&P
  + S&P Sectors
  + S&P Industry Groups
• Data Sets
  + Sectors
    • Healthcare
    • Consumer Discretionary
  + Industry Groups
    • Homebuilders- XHB
    • Pharmaceuticals- XPH
    • Retail- XRT
    • Biotechnology - XBI
  + Dollar Investment
    • $1,000,000

<table>
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<tr>
<th>Study Objectives:</th>
<th>Industry Group Portfolio</th>
<th>Returns of Industry Groups</th>
<th>Returns of Portfolio vs. S&amp;P</th>
<th>Portfolio Weighting Model:</th>
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Conclusions:
For the time period 2008-2012:
• 1/RS model significantly outperformed the S&P 500 (99%)
• XBI (Biotech) had the highest returns (202%)
• 1/RS portfolio weighting model worked well in the highly volatile market 2008-2012

Portfolio Weighting Model:
\[ RS_i = \frac{P_i}{P_S} \]
\[ W_i = \frac{1}{RS_i} \]
\[ DV_i = W_i \times 1,000,000 \]
\[ Shares = \frac{Dv_i}{P_i} \]
\[ PV_i = 1,000,000 \]
\[ PV_{t+n} = \sum_{i=1}^{4} Shares \times PV_{it+n} \]
\[ Return = \frac{PV_{t+n}}{PV_t} \]
\[ P_i = Price of Industry (i) \]
\[ P_S = Price of S&P \]
\[ RS_i = Relative Strength of Industry (i) \]
\[ W_i = Weight of Industry Group (i) \]
\[ DV_i = Dollar Investment in Industry Group (i) \]
\[ Shares = Number of Shares in Industry Group (i) \]
\[ PV_{t} = Portfolio (t) \]
\[ Return = Percentage Change in Value \]
\[ t = time period \]