Upside/Downside Capture Ratios and S&P 500 Sector Returns in Volatile Markets

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Upside/Downside Capture Ratios and S&P 500 Sector Returns in Volatile Markets
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Purpose:
The purpose of this study is to determine if Capture Ratios can predict the future returns of S&P 500 sectors.

Research Approach:
Data Requirements:
• Monthly returns for 10 S&P 500 sectors (2007-2012)

Period of Analysis:
• Calculation Period – 2007-2010
• Forecasting Period – 2011-2012

Model Specification:
\[
\begin{align*}
\text{UCR}_t &= \frac{R_{st}}{R_{mt}} - 1 \quad \text{For } R_{st} > 0, \text{ For } R_{mt} > 0 \\
\text{DCR}_t &= \frac{R_{st}}{R_{mt}} - 1 \quad \text{For } R_{st} < 0, \text{ For } R_{mt} < 0 \\
\text{UCR}_{st} &= \sum_{t=1}^{n} \text{UCR}_t \\
\text{DCR}_{st} &= \sum_{t=1}^{n} \text{DCR}_t
\end{align*}
\]
Where:
• \( R_{st} \) = Return to sector at time \( t \)
• \( R_{mt} \) = Return to market at time \( t \)
• UCR = Upside capture ratio
• DCR = Downside capture ratio
• \( \text{UCR}_{st} \) = Average upside capture ratio
• \( \text{DCR}_{st} \) = Average downside capture ratio
• \( \text{UCR}/\text{DCR} \) = Ratio of Upside to Downside

Regression Results:

<table>
<thead>
<tr>
<th>Return Period</th>
<th>( R^2 )</th>
<th>a</th>
<th>b</th>
<th>T-stat</th>
<th>Independent Variable</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/31/10-4/30/11</td>
<td>0.0275</td>
<td>0.1062</td>
<td>-0.0229</td>
<td>-0.4753</td>
<td>UCR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0000</td>
<td>0.0752</td>
<td>0.0000</td>
<td>0.0007</td>
<td>UCR</td>
<td>HCX</td>
</tr>
<tr>
<td></td>
<td>0.1283</td>
<td>0.0237</td>
<td>0.0315</td>
<td>0.9399</td>
<td>UCR</td>
<td>HCX, SPENS</td>
</tr>
<tr>
<td></td>
<td>0.3995</td>
<td>0.0121</td>
<td>0.0455</td>
<td>1.8237</td>
<td>UCR</td>
<td>HCX, SPENS, SPFN</td>
</tr>
<tr>
<td>4/30/11-9/30/11</td>
<td>0.4673</td>
<td>0.0238</td>
<td>-0.1645</td>
<td>-2.6492</td>
<td>DCR</td>
<td></td>
</tr>
<tr>
<td>9/30/11-2/28/12</td>
<td>0.4150</td>
<td>-0.0384</td>
<td>0.1822</td>
<td>2.3822</td>
<td>UCR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.4383</td>
<td>-0.0943</td>
<td>0.2235</td>
<td>2.3372</td>
<td>UCR</td>
<td>HCX</td>
</tr>
<tr>
<td>1/1/11-2/28/12</td>
<td>0.2958</td>
<td>-0.1701</td>
<td>0.1520</td>
<td>1.8330</td>
<td>UCR/DCR</td>
<td></td>
</tr>
</tbody>
</table>

Estimating Equations:
• \( R_{st+1} = a + b*\text{UCR}_t \)
• \( R_{st+1} = a + b*\text{DCR}_t \)
• \( R_{st+1} = a + b*(\text{UCR}/\text{DCR}) \)
Where \( a, b = \) Regression Parameters
\( t+1 = 12/30/11 \) – 4/30/11 (UCR)
\( t+1 = 4/30/11 \) – 9/30/11 (DCR)
\( t+1 = 9/30/11 \) – 2/28/12 (UCR)
\( t+1 = 1/1/11 \) – 2/28/12 (UCR/DCR)

Conclusion:
12/31/10 – 4/30/11: Upswing Period
• \( R^2 \) is quite low and the b coefficient is statistically insignificant except for the model that excludes HCX, SPENS, and SPFN. This model is significant at the 90% confidence level and the b coefficient has the right sign.

4/30/11 – 9/30/11: Downswing Period
• \( R^2 \) is moderately low and the b coefficient is statistically significant at the 95% confidence level. The b coefficient has the right sign.

9/30/11 – 2/28/12: Upswing Period
• \( R^2 \) is moderately low and the b coefficient is statistically significant at the 95% confidence level. The b coefficient has the right sign.

1/1/11 – 2/28/12: Trading Range Period
• \( R^2 \) is low and the b coefficient is significant at the 90% confidence level. The b coefficient has the right sign.

Sector List:
• SPCCS – Consumer Discretionary
• SPCNS – Consumer Staples
• SPENS – Energy
• SPFN – Financial
• HCX – Health Care
• SPIN – Industrials
• SPHTI – Information Technology
• SPBMS – Materials
• SPCSS – Telecommunications
• SPUT – Utilities