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Background:
A large number of investment managers use a top-down approach in selecting a portfolio of stocks. This approach involves a two-step process. First, the managers have to determine the sectors of the economy to overweight or underweight. Then they have to select the stocks within the sectors to invest in. Overweighting or underweighting sectors is typically based on the manager’s analysis and judgments concerning present and future macroeconomic conditions in the economy in which they are investing. Stock selection is based either on fundamental or technical analysis or a combination of the two.

Purpose:
The purpose of this study is to develop and evaluate a quantitative approach to sector weighting based on relative valuation measures. It is hoped that sector weighting based on relative valuation modeling will result in improved expected returns for top-down investment strategies.

Model Specification:
\[ R_S = f \left( \frac{EPS_S}{EPS_{SPX}}, \frac{E/P_s}{E/P_{SPX}}, \frac{B/M_s}{B/M_{SPX}}, \frac{CF/P_s}{CF/P_{SPX}}, \frac{S/P_s}{S/P_{SPX}}, \frac{NPM_s}{NPM_{SPX}}, ROE_s/ROE_{SPX}, DY_s/DY_{SPX} \right) \]

Sectors:
- SPCCS – Consumer Discretionary
- SPCNS – Consumer Staples
- SPENS – Energy
- SPF – Financial
- HCX – Health Care
- SPIN – Industrials
- SPBMS – Materials
- SPCSS – Telecommunications
- SPUT – Utilities

Factor Weights:
\[ F_1, F_2, ..., F_8 \]

Factor Weights:EPS_S/EPSPX= F_1
(E/P)_S/(E/P)SPX= F_2
(B/M)_S/(B/M)SPX= F_3
(CF/P)_S/(CF/P)SPX= F_4
(S/P)_S/(S/P)SPX= F_5
NPM_S/NPM_SPX= F_6
ROE_S/ROE_SPX= F_7
DY_S/DY_SPX= F_8
\[ \sum F = TFW_S \]

Conclusion:
In conclusion, this model uses the S&P 500 Index to determine the relative value of each of the S&P 500 sectors against the S&P 500 as a whole. In doing this, it systematically finds a way to give a percentage weight that should be put into each S&P 500 sector. By weighting these sectors objectively and without human judgment, we have found that this model provides greater expected returns than the S&P 500.

Year | SPX | Model | Spread |
--- | --- | --- | --- |
1999 | 19.53% | 13.78% | -5.75% |
2000 | -10.14% | 8.62% | 18.76% |
2001 | -13.04% | -11.85% | 1.20% |
2002 | -23.37% | -21.45% | 1.92% |
2003 | 26.38% | 22.78% | -3.60% |
2004 | 8.99% | 13.02% | 4.03% |
2005 | 3.00% | 4.79% | 1.79% |
2006 | 13.62% | 16.44% | 2.82% |
2007 | 3.53% | 8.49% | 4.96% |
2008 | -38.49% | -37.23% | 1.26% |
2009 | 23.45% | 21.68% | -1.77% |
2010 | 12.78% | 12.19% | -0.59% |
2011 | 0.00% | 2.06% | 2.07% |
1999-2011 | 2.31% | 37.51% | 35.20% |

Using the sector’s earnings, valuation, profitability, and risk measures and comparing those same measures to the S&P 500 as a whole, the model was able to identify which sectors were undervalued or overvalued at the end of each year. Using the portfolio where I treated the sectors like a stock and invested more in the undervalued sectors, the portfolio made 37.51% compared to the S&P’s 2.31%. This shows the effectiveness of looking at the overall value of a sector from an objective, quantifiable view.