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An Empirical Analysis of the Relationship Between S&P Sector Price Movements and Industrial Production

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An Empirical Analysis of the Relationship Between S&P Sector Price Movements and Industrial Production 2001-2012

Study Objective

Determine if S&P sector prices covary directly with Industrial Production

Research Approach

- Method of Analysis: Univariate Regression

Model Specification

$$SPY_t = a + b (IP_t)$$

$$S_{it} = a + b (IP_t)$$

Where:

- SPY= S&P 500 ETF
- S_{it} = Price of the i th sector
- IP_t = U.S. Industrial Production
- a, b = Model Parameters
- t = Time period in Months

Time Periods Analysed

- 2001-2012
- 2003-2007
- 2009-2012

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Hypothesis

- Slope coefficient (b) is > 0 and statistically significant

Conclusions

- For the 2001-2012 period all slope coefficients have right sign and are significant ($T > 2$). R2's range from .19 - .71.
- For the 2003-2007 period slope coefficients have right sign and are statistically significant. R2's range from .17 - .91.
- For the 2009-2012 period slope coefficients were positive and statistically significant. R2's range from .62 - .93.
- Summary: Regressions support hypothesis that sector prices covary directly with U.S. Industrial Production

Regression Results

| Industrial Production vs Sectors (12/31/2001 - 12/31/2012) | | | | |
|--|-----------|--------|---------|----------|
| Sector | Intercept | Slope | T-Stat | R-Square |
| SPY | -224.5510 | 3.6732 | 18.1715 | 0.7160 |
| XLY | -58.7013 | 0.9779 | 9.6753 | 0.4168 |
| XLP | -15.3127 | 0.4404 | 5.6460 | 0.1957 |
| XLE | -182.7999 | 2.5115 | 8.2261 | 0.3406 |
| XLF | -68.3772 | 0.9773 | 7.0691 | 0.2761 |
| XLV | -25.9868 | 0.6123 | 11.4698 | 0.5011 |
| XLI | -74.1976 | 1.1189 | 16.0294 | 0.6623 |
| XLB | -70.7814 | 1.0879 | 10.8863 | 0.4750 |
| XLK | -30.8707 | 0.5630 | 8.3209 | 0.3458 |
| XLU | -69.6027 | 1.0722 | 13.0920 | 0.5668 |
| IYZ | -47.7606 | 0.7539 | 13.5990 | 0.5854 |

| Industrial Production vs Sectors (3/31/2009 - 12/31/2012) | | | | |
|---|-----------|--------|---------|----------|
| Sector | Intercept | Slope | T-Stat | R-Square |
| SPY | -183.3226 | 3.3120 | 13.8136 | 0.8126 |
| XLY | -113.8051 | 1.6304 | 20.7290 | 0.9071 |
| XLP | -50.2553 | 0.8686 | 19.0174 | 0.8915 |
| XLE | -97.4795 | 1.7537 | 7.7622 | 0.5779 |
| XLF | 2.2205 | 0.1348 | 3.0131 | 0.1710 |
| XLV | -49.2896 | 0.8932 | 12.2938 | 0.7745 |
| XLI | -61.4320 | 1.0172 | 12.3095 | 0.7750 |
| XLB | -23.7683 | 0.6285 | 6.4386 | 0.4851 |
| XLK | -47.5836 | 0.7841 | 15.4705 | 0.8447 |
| XLU | -28.9732 | 0.6654 | 16.3088 | 0.8581 |
| IYZ | -19.8582 | 0.4476 | 8.7279 | 0.6339 |

| Industrial Production vs Sectors (3/31/2003 - 3/31/2007) | | | | |
|--|-----------|--------|---------|----------|
| Sector | Intercept | Slope | T-Stat | R-Square |
| SPY | -271.7450 | 4.1422 | 20.4947 | 0.8994 |
| XLY | -50.7088 | 0.8820 | 11.3422 | 0.7324 |
| XLP | -29.0549 | 0.5521 | 14.2260 | 0.8115 |
| XLE | -355.2927 | 4.2027 | 26.6355 | 0.9379 |
| XLF | -68.5062 | 1.0451 | 15.9249 | 0.8436 |
| XLV | -18.7473 | 0.5237 | 9.9833 | 0.6795 |
| XLI | -89.6979 | 1.2629 | 23.4392 | 0.9212 |
| XLB | -101.9166 | 1.3818 | 17.9752 | 0.8730 |
| XLK | -24.0828 | 0.4713 | 8.9116 | 0.6282 |
| XLU | -139.1807 | 1.7785 | 25.0708 | 0.9304 |
| IYZ | -69.4206 | 0.9860 | 14.8073 | 0.8235 |