

# 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