Using the Capital Asset Pricing Model (CAPM) to Measure Stock Market Sector Risk

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Problem of Interest

- Determine stock market sector risk compared to S&P 500
- Help with portfolio allocation

Capital Asset Pricing Model (CAPM)

- $R_{i,t} = \alpha + \beta_{m,t} + \varepsilon_t$

- Where $R_{i,t}$ is the monthly return of the industry, α is a constant, $_{m,t}$ is the monthly return, ε_t is white noise (not accounted for), and β is the beta coefficient

Approach

- ETFs representing sectors
- Monthly data
- Past 5 years
- Converted to change rate due to nonstationary
- Ran CAPM with each sector compared to S&P 500
- Wald Test to determine if beta coefficient is significantly different than that of the market (1)

Results

Sector Name	Beta	Significance Level	Risk Level
Basic Materials	1.25	0.0289	High
Consumer Discretionary	1.15	0.0728	Medium
Consumer Staples	0.56	0.0004	Low
Financials	0.66	0.4002	Medium
Healthcare	0.91	0.4240	Medium
Industrial Goods	1.05	0.5477	Medium
Energy	1.11	0.5759	Medium
Technology	1.08	0.4336	Medium
Utilities	0.05	0.0000	Low
Transportation	1.09	0.5043	Medium

Conclusion

- Low Risk= Consumer Staples, Utilities
- High Risk= Basic Materials
- Diversification