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A Smart Beta Concentrated Portfolio Model For The Information Technology Sector: An Empirical Analysis, 2009-2017
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- Study Purpose:
  Develop a smart beta portfolio weighting model for the Information Technology sector that can outperform the S&P 500 and its sector counterpart, XLK.

- Factor Weights
  - Sales Growth
  - Relative Price Change

- Test Sector: Information Technology (XLK)

- Portfolio Size
  - 10 Stocks
  - 20 Stocks

- Original Investment
  - $1,000,000 (10 stocks)
  - $2,000,000 (20 stocks)

- Analysis Period: 2009-2017

- Model Construction:
  - \[ S_t = A_i + B_i(t) \]
  - \[ W_{it} = B_i / \sum B_i \]
  - \[ D_{it} = W_{it} \times (1,000,000/2,000,000) \]
  - \[ \text{SHRS}_{it} = \text{D}_{it}/\text{P}_{it} \]
  - \[ \text{MV}_{it+1} = \text{SHRS}_{it} \times \text{P}_{it+1} \]
  - \[ \text{PV}_{t+1} = \sum \text{MV}_{it+1} \]
  - 2\text{nd} Iteration
  - \[ \Delta \text{SHRS}_{it+1} = \text{SHRS}_{it+1} \times (\text{P}_{it+1}/\sum \text{P}_{it+1}/\sum \text{P}_{it}) \]

- Nomenclature:
  - \( S = \text{Revenue per Year} \)
  - \( t = \text{time (years)} \)
  - \( A, B = \text{equation parameters} \)
  - \( W = \text{stock weight} \)
  - \( D = \text{dollars invested} \)
  - \( \text{SHRS} = \text{shares held} \)
  - \( \Delta \text{SHRS} = \text{shares added} \)
  - \( \text{MV} = \text{market value} \)
  - \( \text{PV} = \text{portfolio value} \)
  - \( i = \text{ith firm} \)
  - \( \text{P}_{it+1}/\text{P}_{it} = \text{relative price change} \)

- Key Findings:
  - 10 and 20 stock portfolios outperform SPY, 2009-2017
  - 10 and 20 stock portfolios outperform XLK, 2009-2017
  - Risk/Reward favorable against SPY XLK
  - Rebound Reward favorable against SPY XLK
  - Cumulative years 2009-2010 and 2016-2017 show cumulative alpha of 51% and 129% respectively.
  - Cumulative alpha declines from 10-20 stock portfolio: tradeoff between concentration and diversification.
  - In 2011 and 2015, flat to down market years. The 10-20 stock portfolios outperform S&P and XLK.