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- **Study Purpose**
  - Determine if a 2 factor concentrated portfolio weighting model for the healthcare sector can outperform the S&P 500 and its sector counter part, XLV.

- **Factor Weights**
  - Sales Growth
  - Relative Price Change

- **Test Sector**
  - Healthcare (XLV)

- **Portfolio Sizes**
  - 10 Stocks
  - 20 Stocks

- **Investment**
  - $1,000,000 (10 Stocks)
  - $2,000,000 (20 Stocks)

- **Analysis Period → 2009-2017**

- **Model Construction**
  - \( S_i(t) = A_i + B_i(T) \)
  - \( W_{it} = \frac{B_i}{\sum B_i} \)
  - \( D_{it} = W_{it} \times (1 \text{ MM or } 2 \text{ MM}) \)
  - \( \text{SHRS}_{it} = D_{it} / \text{Pt} \)
  - \( \text{MV}(t+1) = \text{SHRS}_i(t) \times \text{P}(t+1) \)
  - \( \text{PV}(t+1) = \sum \text{MV}(t+1) \)
  - \( \Delta \text{SHRS}_i(t+1) = \text{SHRS}_i(t+1) \times \left( \frac{\text{P}(t+1)}{\text{Pt}} / \sum \left( \frac{\text{P}(t+1)}{\text{Pt}} \right) \right) \)
  - \( \text{SHRS}_i(t+1) = \text{SHRS}_i(t) + \Delta \text{SHRS}_i(t+1) \)
  - \( \text{MV}(t+2) = \text{SHRS}_i(t+1) \times \text{P}(t+2) \)
  - \( \text{PV}(t+2) = \sum \text{MV}(t+2) \)

- **Nomenclature**
  - \( i = \text{ith} \)
  - \( t = \text{time in years} \)
  - \( s = \text{Revenue per year} \)
  - \( A, B = \text{equation parameters} \)
  - \( D = \text{Dollars Invested} \)
  - \( W = \text{stock weight} \)
  - \( \text{SHRS} = \text{Shares Held} \)
  - \( P = \text{Price per Share} \)
  - \( \text{MV} = \text{Market Value} \)
  - \( \text{PV} = \text{Portfolio Value} \)
  - \( \Delta \text{SHRS} = \text{Shares Added} \)
  - \( \frac{\text{P}(t+1)}{\text{Pt}} = \text{Relative Price Change} \)

### Findings
- **10 stock portfolio outperforms SPY:** Alpha = 1068.55%
- **20 stock portfolio outperforms SPY:** Alpha = 900.65%
- **10 stock portfolio outperforms XLV:** Alpha = 1073.02%
- **20 stock portfolio outperforms XLV:** Alpha = 905.12%
- Increasing size of portfolio (increased diversification) slightly reduces alpha
- Increasing size of portfolio reduces cumulative returns
- 10 stock portfolio cumulative return was 1308.89% while 20 stock portfolio cumulative return was 1140.99%
- 10-20 Stock portfolios outperform SPY and XLV in 2011 and 2015, flat to down-market years