



A Smart Beta Approach to Portfolio Weighting: Modeling Health Care Stocks (2014)

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Study Objectives

Determine market outperformance:

- stocks weighted by fundamentals
- a concentrated portfolio

Research Approach

- Determine portfolio weights based on relative value
- Use the following firm characteristics to determine portfolio weights:
 - Price to Earnings (P/E)
 - Price to Book (P/B)
 - Price to Sales (P/S)
 - Price to Cash Flow (P/CFL)
 - Expected Earnings Growth (EG)
- Use the Top 10 holdings in the health care sector ETF (XLV) as the concentrated portfolio
- Original Investment: \$5,000,000

Portfolio Weighting Model

$$(1) r_{ij} = \frac{\sum (P_i/E_i)}{P_i/E_i}$$

$$(5) \frac{S_{it} = DVI_{it}}{P_{it}}$$

$$(2) R_{ij} = \sum r_{ij}$$

$$(6) DVI_{i(t+1)} = S_{it} \times P_{i(t+1)}$$

$$(3) W_{ij} = \frac{R_{ij}}{\sum R_{ij}}$$

$$(7) PV_{t+1} = \sum_{i=1}^N DVI_{i(t+1)}$$

$$(4) DVI_{it} = W_{ij} \times 5,000,000$$

Table 1: Multi Factor Weightings (W_{ij})

2014 Multi-Factor Portfolio	Weighting
JNJ US Equity	9.93%
PFE US Equity	11.49%
MRK US Equity	11.35%
GILD US Equity	6.66%
AMGN US Equity	9.81%
BMJ US Equity	6.13%
ACT US Equity	11.02%
UNH US Equity	20.47%
CELG US Equity	6.47%
BIIB US Equity	6.67%

Table 2: Performance Results

Portfolio Performance	Return	Alpha/DOW	Alpha/XLV
Multi-Factor	25.80%	18.28%	2.46%
Price/Book	24.38%	16.86%	1.04%
Price/Earnings	23.32%	15.80%	-0.02%
Price/Sales	28.93%	21.41%	5.59%
Price/Cash Flow	23.52%	16.00%	0.18%
Expected EPS Growth	28.84%	21.32%	5.50%
DOW Return	7.52%		
XLV Return	23.34%		

Conclusion

- Fundamentally weighted model outperforms DOW and XLV except P/E
- Concentrated portfolio outperforms DOW and XLY
- P/S best factor