Title: A Smart Beta Portfolio Weighting Model for the SPDR Healthcare Sector

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- **Study Purpose**:

Determine if a factor weighting model
Based on return/risk can outperform the market

- **Weighting Factor**: 1/Cov
- **Weighting Strategy**: Maximize return/risk
- **Test Universe**: XLV Sector, Top 20 Stocks
- **Performance Period**: 2009-2016
- **Factor Model**:
  1. MEPSi= (EPSi (t-2))+ (EPSi (t-1))+ (EPSi (t))/ n=3)
  2. Sdi= Sqrt(Sum (EPSi-MEPSi)2/N=3
  3. 1/Covi(t)= MEPSi/ Sdi
  4. Wi(t)= (1/Covi(t))/ Sum (1/Covi(t))
  5. Di(t)= Wi(t)*1000000
  6. SHRi(t)= Di(t)/ Pi(t)
  7. Mvi(t+1)= SHRi(t)*Pi(t+1)
  8. PV(t+1)= Sum (Mvi(t+1))
- **Terms**:
  1. EPSi= Earnings Per Share
  2. MEPSi= 3-yr moving average
  3. SDi= Standard Deviation
  4. Wi= Stock Weight
  5. Di= Dollars Invested
  6. Mvi= Market Value
  7. PV= Portfolio Value
  8. i= ith stock (1-20)
  9. T= time in years
  10. 1000000= original investment
- **Conclusions**:
  1. Model outperforms both XLV and SPY from 2009-2016
  2. Annually model outperforms SPY 5/8 years
  3. Annually model outperforms XLV 4/8 years
  4. In 2011 Model outperformed SPY but not XLV
  5. In 2015 a negative year for both SPY and XLV, Model had positive returns and positive Alpha

Table 1

Cumulative Returns 2009-2016

Portfolio	Return	Model Alpha/XLV	Model Alpha/SPY
1/Cov Model	243.05%	74.20%	68.35%
XLV	168.85%		
SPY	174.70%		

Table 2

Annual Returns

Year	1/Cov Model	SPY	Alpha
2009	18.28%	29.65%	-11.37%
2010	1.49%	19.82%	-18.34%
2011	11.97%	2.05%	9.91%
2012	25.05%	14.00%	11.05%
2013	50.27%	19.02%	31.24%
2014	21.97%	11.94%	10.04%
2015	9.34%	-2.87%	12.21%
2016	1.85%	17.45%	-15.61%

Table 3

Annual Returns

Year	1/Cov Model	XLV	Alpha
2009	18.28%	19.25%	-0.97%
2010	1.49%	1.28%	0.21%
2011	11.97%	13.01%	-1.04%
2012	25.05%	19.86%	5.19%
2013	50.27%	30.41%	19.85%
2014	21.97%	26.77%	-4.80%
2015	9.34%	-6.30%	15.64%
2016	1.85%	6.09%	-4.25%