



A Portfolio Weighting Model for the Real Estate Sector with firm revenue growth the factor weight: An empirical analysis of portfolio returns, 2009-2022.

By: Paul Waweru & Katie Hatstrup
 Davis Center for Portfolio Management
 Advisors: Dr. Bob Dean and Dr. Jon Fulkerson

Study Objective:

Hypothesis Tests:

1. Determine if revenue growth factor model outperforms an equal weight model
2. Determine if revenue growth is a priced in risk factor

Portfolio Characteristics:

1. Sector : XLRE
2. # of Stocks:10
3. State Economic Variable: Consumer Spending (PCE)
4. Loading Factor: Revenue Per Share
5. Size: Large Cap
6. Strategies: (1) Buy and Hold
(2) Adjustable Shares
7. Regression Period: 2009-2019
8. Period of Analysis
 - (1) 2009-2019
 - (2) 2009-2020
 - (3) 2009-2021
 - (4) 2009-2022

Portfolio Weighting Model (RS):

Investment Strategy: Constant Share Model

1st Iteration:

- Step 1. $R_{si}(t) = A_i + B_i(PCE_t)$
- Step 2. $W_{li}(t) = B_i / \sum B_i$
- Step 3. $D_i(t) = W_{li}(t) * 1,000,000$
- Step 4. $SHR_{Si}(t) = D_{li}(t) / P_i(t)$
- Step 5. $MV_i(t+1) = SHR_{Si}(t) * P_i(t+1)$
- Step 6. $PV(t+1) = \sum MV_i(t+1)$

2nd Iteration

- Step 7. $MV_i(t+2) = SHR_{Si}(t) * P_i(t+2)$
- Step 8. $PV(t+2) = \sum MV_i(t+2)$

Total Iterations: 11

Constant Share Model			
Years	Model Comulative Retrurn	SPY Cumlative Return	Alpha
2009-2019	832%	258%	574%
2009-2020	977%	315%	662%
2009-2021	1137%	427%	710%
2009-2022	1178%	323%	629%

Constant Share Model			
Years	Model Comulative Retrurn	Equal Weight Cumulative Return	Alpha
2009-2019	832%	590%	242%
2009-2020	977%	832%	145%
2009-2021	1137%	977%	160%
2009-2022	1178%	1137%	41%

Adjustable Share Strategy			
Years	Model Comulative Retrurn	SPY Cumlative Return	Alpha
2009-2019	981%	258%	723%
2009-2020	1188%	315%	873%
2009-2021	1608%	427%	1182%
2009-2022	2254%	323%	1932%

Findings:

1. CS model outperforms SPY
2. CS model outperforms EW model
3. AS model outperforms SPY
4. AS model outperforms EW model