



Is Return on Assets (ROA) a Priced-In-Risk Factor? An Empirical Study of Sector Returns with ROA the Principal Loading Factor, 2009-2021

Name: Trenton Zoeller and Isabella Abreu

Davis Center for Portfolio Management

Advisor: Dr. Bob Dean and Dr. Tony Caporale

Study Objective:

Developed portfolio weighting models for 4 S&P 500 sectors with ROA as the weighting factor.

Hypothesis: Test the hypothesis that ROA is a priced-in-risk factor: it generated alpha over the broad market

Portfolio Characteristics:

1. Sectors : XLY, XLV, XLI, XLK
2. # of Stocks: 10
3. Large Cap
4. Style: Growth or Value
5. Strategy: Buy and Hold
6. Timeframe: 2009-2021

Portfolio Weighting Model (ROA):

1st Iteration

Step 1. $W_{ij} = ROA_{ij} / \text{Sum } ROA_{ij}$

Step 2. $D_{ij} = W_{ij} * 1,000,000$

Step 3. $SHRS_{ij}(t) = D_{ij}(t) / P_{ij}(t)$

Step 4. $MV_{ij}(t+1) = SHRS_{ij}(t) * P_{ij}(t+1)$

Step 5. $PV_{ij}(t+1) = \text{Sum } MV_{ij}(t+1)$

Step 6. $MV_{ij}(t+2) = SHRS_{ij}(t) * P_{ij}(t+2)$

Step 7. $PV_{ij}(t+2) = \text{Sum } MV_{ij}(t+2)$

Step 8. $MV_{ij}(t+3) = SHRS_{ij}(t) * P_{ij}(t+3)$

Step 9. $PV_{ij}(t+3) = \text{Sum } MV_{ij}(t+3)$

Cumulative Returns						
ROA Models	2009-2019	Rank	2009-2020	Rank	2009-2021	Rank
XLK	1201.42%	1	1693.29%	1	2132.75%	1
XLY	805.40%	2	1007.46%	2	1159.29%	2
XLV	358.35%	3	444.69%	3	598.58%	3
XLI	297.87%	4	325.50%	5	365.33%	5
SPY	288.42%	5	346.78%	4	443.17%	4

Alpha						
ROA Models	2009-2019	Rank	2009-2020	Rank	2009-2021	Rank
XLK	913.00%	1	1346.51%	1	1689.57%	1
XLY	516.98%	2	1007.46%	2	716.12%	2
XLV	69.92%	3	97.91%	3	155.41%	3
XLI	9.45%	4	-21.28%	4	-77.84%	4

Conclusion:

1. XLK, XLY, XLV outperformed in all 3 periods
2. XLI out performed in the first period
3. ROA is a priced-in-risk factor