



A Factor-Mimicking Portfolio Weighting Model for the Information Technology Sector: An Empirical Analysis of Information Technology Portfolio Returns

Kevin McLeeson, Cameron Beachler, and Hayden Gray

Davis Center for Portfolio Management

Advisor: Dr. Bob Dean and Dr. Tony Caporale

Study Objective:

Hypothesis test; personal consumption expenditure and revenue per share are priced-in risk factors

Portfolio Characteristics

1. S&P 500 Sector: XLK
2. No. of Stocks
 - 1) Top Ten (by market value)
 - 2) Next ten
 - 3) Top 20
3. State economic variable: PCE
4. Factor loading: Revenue Per Share (RS)
5. Size: Large Cap
6. Style: Growth
7. Strategy: Buy and Hold
8. Regression period (2009-2019)
9. Period of Analysis
 - 1) 2009-2019
 - 2) 2009-2020
 - 3) 2009-2021

Portfolio Weighting Model (RS):

1st Iteration

- Step 1. $RS_i(t) = A + B(PCE_t)$
- Step 2. $W_i(t) = B_i / \sum B_i$
- Step 3. $D_i(t) = W_i(t) * 1,000,000$
- Step 4. $SHRS_i(t) = D_i(t) / P_i(t)$
- Step 5. $MV_i(t+1) = SHRS_i(t) * P_i(t+1)$
- Step 6. $PV(t+1) = \sum MV_i(t+1)$

2nd Iteration

- Step 7. $MV_i(t+2) = SHRS_i(t) * P_i(t+2)$
 - Step 8. $PV(t+2) = \sum MV_i(t+2)$
- Total iterations: 11

First Ten			
	Model	SPY Return	Alpha
2009-2019	1316%	288%	873%
2009-2020	2108%	347%	1665%
2009-2021	2983%	443%	2540%

Next Ten			
	Model	SPY Return	Alpha
2009-2019	741%	288%	453%
2009-2020	1166%	347%	819%
2009-2021	1803%	443%	1360%

First Twenty			
	Model	SPY Return	Alpha
2009-2019	1025%	288%	737%
2009-2020	1582%	347%	1235%
2009-2021	2337%	443%	1894%

Conclusion:

- 1) RS is a priced-in risk factor (alpha for all models)
- 2) PCE is a latent priced-in risk factor
- 3) Top Ten model generated the highest alpha
- 4) There is a size effect (Next Ten had lower alpha)