



Sector Portfolio Weighting Models with ROIC/WACC the Factor Loading: An Empirical Analysis of Returns, 2009-2021

By: Mary Stitzel and Nora Jackson

Davis Center for Portfolio Management

Advisors: Dr. Bob Dean and Dr. Tony Caporale

Study Objective:

Develop portfolio weighting models for 6 S&P 500 sectors with ROIC / WACC as the principal loading factor

Determine if portfolio weighting models outperform the broad market S&P 500 ETF SPY
Period of Analysis: 2009-2021

Portfolio Structure:

1. Sectors: XLY, XLP, XLK, XLF, XLV, XLI
2. 10 Stock Portfolios (concentrated)
3. Size: Large Cap
4. Style: Growth or Value
5. Strategy: Buy and Hold

Model Algorithm:

1. $W_{ij} = \text{ROIC} / \text{WACC}_{ij} / \text{Sum ROIC} / \text{WACC}_{ij}$
2. $D_{ij} = W_{ij} * 1,000,000$
3. $\text{SHRS}_{ij}(T) = D_{ij} / P_{ij}(T) \quad T = B2009$
4. $MV_{ij}(T+1) = \text{SHRS}_{ij}(T) * P_{ij}(T+1)$
5. $PV_j(T+1) = \text{Sum } MV_{ij}(T+1)$

	ROIC/WACC Model		
	Sector Cummulative Returns		
	2009-2019	2009-2020	2009-2021
Consumer Discretionary (XLY)	1347%	1752%	2061%
Consumer Staples (XLP)	182%	205.42%	272.63%
Tech (XLK)	1673%	1673.40%	2143.54%
Financials (XLF)	241%	238.26%	375.78%
Healthcare(XLV)	416.22%	534.95%	729.19%
Industrials (XLI)	288.57%	308.75%	367.57%
SPY	288%	347%	443%

	ROIC/WACC Model		
	Alpha		
	2009-2019	2009-2020	2009-2021
Consumer Discretionary (XLY)	1059%	1405%	1618%
Consumer Staples (XLP)	-106%	-141.58%	-170.37%
Tech (XLK)	1385%	1326.40%	1700.54%
Financials (XLF)	-47%	-108.74%	-67.22%
Healthcare(XLV)	128.22%	187.95%	286.19%
Industrials (XLI)	0.57%	-38.25%	-75.43%
SPY	288%	347%	443%

Conclusion:

1. XLY, XLK, XLV outperform SPY over all 3 time periods
2. XLP, XLF underperform SPY over all 3 time periods
XLI underperformed SPY in 2 out of 3 time periods
3. XLY, XLK, XLV outperformed during COVID-19 period 2009-2020, 2009-2021
4. ROIC/WACC model showed outperformance of growth sectors and underperformance of value sectors