Investment Policy Statement for Reed Shankwiler

Singh Advisors

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Portfolio Management

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Table of Contents

Scope & Purpose

This Investment Policy Statement (IPS) is crafted for Reed Shankwiler, a successful financier and businessman in his middle age, who intends to invest his $1 million in a manner that aligns with his financial goals, risk tolerance, and investment horizon. Reed's journey to amassing this significant capital stems from his dedication, business acumen, and strategic foresight in various ventures. With a deep understanding of market dynamics and a keen sense of opportunity, Reed now seeks to diversify his portfolio to ensure sustained growth and security for his future.

Reed's investment philosophy is guided by a balanced approach and moderately aggressive style aiming to maximize returns while managing risks effectively. This IPS will serve as a comprehensive guide to achieving these objectives, laying out a strategic blueprint for asset allocation, risk management, and performance evaluation.

Singh, as the financial advisor to Reed Shankwiler, is responsible for overseeing updates to the Investment Policy, including gathering insights from Reed's appointed tax and legal advisors. The Advisor's duties include: Proposing a suitable asset mix, assessing and picking securities, executing the strategy via trades and adjustments, and tracking portfolio results and deviations to implement required modifications. Singh will monitor the adherence to the Investment Policy Statement (IPS) and will promptly inform Reed Shankwiler of any need for updates or any discrepancies in the policy's implementation. Reed Shankwiler holds the responsibility for approving the IPS and any future amendments to it.

Singh Advisors, in its role as advisor to Reed Shankwiler, acts as a fiduciary, ensuring that all advice and decisions are made in the best interests of Reed Shankwiler. Singh Advisors also upholds its commitment to the highest standards of professional conduct.

By their acknowledgment, Reed Shankwiler and Singh Advisors confirm their receipt of this document and their agreement with its contents, underscoring their commitment to a transparent and collaborative investment management process.

Governance: Roles & Responsibilities

As the financial advisor to Reed Shankwiler, Singh is entrusted with the crucial role of approving the investment policy and any modifications thereof. Singh, in their advisory capacity, will provide guidance on the formulation of the Investment Policy Statement (IPS), recommend timely revisions based on evolving market conditions, and ensure consistent monitoring and reporting of the portfolio's performance on at least a monthly basis.

Singh is tasked with the ongoing oversight of Reed Shankwiler's investment requirements, including keeping abreast of investment and economic trends that could influence the IPS. Singh will propose necessary updates to the IPS and conduct a thorough review with Reed Shankwiler at minimum on an annual basis.

Reed Shankwiler grants Singh the exclusive authority to appoint or dismiss individuals or entities responsible for managing the investment assets. Before engaging any external investment managers, Singh is required to transparently disclose to Reed Shankwiler any compensation or benefits received from these managers.

Annually, Singh will evaluate the asset allocation of Reed Shankwiler's Investment Accounts, suggesting adjustments for Reed’s approval. The asset allocation strategy, detailed in Appendix of the IPS, will cover specific investment U.S. large cap equities in the Energy and the specific sector of Oils & Gas. This evaluation will consider the potential returns and interrelationships among various asset types, while also factoring in the effects of inflation and changes in tax rates. As Reed Shankwiler's investment advisor, Singh utilizes the financial statements provided by the designated brokerage as a foundation for ensuring that the risk profile of Reed Shankwiler's portfolio aligns with the established risk management policies, detailed in Appendix of the IPS. Singh is responsible for identifying any deviations from the acceptable risk parameters and implementing corrective measures promptly. Singh will provide Reed Shankwiler with a quarterly report detailing any risk variances observed in the preceding quarter, ensuring transparency and adherence to the risk management framework.

Investments, Return & Risk Objectives

The investment strategy outlined by the Investment Policy Statement (IPS) is designed to augment Reed Shankwiler's income from work. The investor prefers for natural resource related companies and seeks to invest into Oil & Gas sector.

The primary objective is to grow the principal amount invested over time. This growth is expected to come from equities, which historically provide higher returns than fixed-income securities. Reed Shankwiler expects a minimum return of 8%.

The financial plan that has been implemented has its investments in the investors preferred sector and seeks to maximize the returns within one year. We expect that the portfolio will provide a return of 17.81%. The management fees of 1%, inflation being 3.15%.

Given the preference of the client the entirety of the portfolio will concentrate on one sector of Oil & Gas, but the selection of the securities and its allocation is left up to the manager. All the securities are U.S large-cap equities. The benchmark set has been Vanguard Energy Index, VDE. Even the SPY500 will be kept in mind to understand the market return but VDE will be used as the benchmark. Large cap blue chip stocks ExxonMobil, Chevron, ConocoPhillips, Phillips 66 and EOG Energy will be the initial investments.

An investment grade bond ETF will be added to the portfolio to reach an optimal balance that will help minimize risk and give exposure to the bond market.

The client’s portfolio demonstrates an equity expected return of 26.53%, reflecting an aggressive stance towards capital appreciation. This allocation aligns with our client's willingness to accept higher volatility in exchange for potential capital gains.

Reed Shankwiler is aware that risk embodies the unpredictability of future returns. Therefore, Reed Shankwiler aims to earn returns that match the level of risk undertaken in the portfolio.

Based on the Risk Assessment interview with Reed Shankwiler, the financial advisor understands that an absolute loss in the 12-month period of more than 20 percent is intolerable. At that threshold, therefore, policies and procedures to minimize risk of further loss should be implemented.

Asset Allocation & Investment Philosophy

Capital allocation refers to the distribution of financial resources among various investment options or projects. It's a strategic decision that determines the weightings of risk-free and risky assets within a portfolio. The investor has opted for a capital allocation strategy that emphasizes higher returns while maintaining a buffer against volatility. The investor has also specified a preference for the Energy sector and wishes to invest in Oil & Gas industry.

The capital allocation showcases a mix of 59.52% invested in the optimal risky portfolio and 40.48% in investment grade Bonds. This prudent blend seeks to exploit the growth potential of equities while leveraging the stability offered by low risk securities like the bond index.

Equity holdings will be Large cap blue chip stocks ExxonMobil, Chevron, ConocoPhillips, Phillips 66 and EOG Energy. The biggest holdings will be EOG energy at 29% and ExxonMobil at 27% followed by Conoco and Chevron each at 19% and then Phillips 66.

Given the short term and high expected return nature of the portfolio the investor does not wish to include risk-free bonds. AGG, which is an investment grade bond ETF will be able to stabilize the portfolio giving exposure to majority holdings government bonds and high rated corporate bonds.

The optimal risky portfolio is highly weighted towards equities, with an expected return of 26.53% and a standard deviation of 38.04%, signifying a higher risk but also the possibility for higher returns. In contrast, bonds provide lower expected returns of 14.22% but with a significantly lower standard deviation of 16.01%, contributing to portfolio stability and income generation. The negative correlation coefficient between bonds and equities (-0.1503) illustrates the benefits of diversification within the asset classes, potentially lowering overall portfolio risk. Performance measures such as the Sharpe ratio (0.5660 for the overall portfolio) are utilized to ensure the equities selected contribute to an optimal risk-adjusted return profile. This means each equity investment is expected to add value to the portfolio, contributing to the overall investment objective without disproportionately increasing risk.

Equity selection involves choosing individual stocks or equity funds based on specific criteria such as financial health, growth potential, industry trends, and risk factors and here the preference of the investor has been crucial.

The Energy sector has experienced notable volatility, with revenues hitting record highs in 2022 after a sharp fall in 2020 due to the COVID-19 pandemic. The outbreak disrupted economic activities on a large scale and prompted a reassessment of global energy use patterns. Despite these hurdles, the sector has demonstrated resilience, achieving a compound annual growth rate (CAGR) of 9.6% to reach $5.3 trillion over the last five years. ExxonMobil, Chevron, ConocoPhillips, EOG Resources have all have an upside of over 6%. With the price of a barrel of oil at $86, the firms will make a hefty profit if the price seems to keep up. Even a 10% drop in this oil will still mean that the firms make a profit. Given the macro trend of the industry and the geopolitical tension in the Middle East and Eastern Europe, the price of Oil will continue to remain high for the foreseeable future.

The investor has strategically chosen a mix that seeks to balance the potential for high returns with a degree of capital preservation, tailored to their unique financial objectives and risk appetite. Through this approach, the investor aims not just for growth but also for sustainability and resilience against market uncertainties, especially in the short term.

Risk Management & Performance Evaluation

Risk management and performance evaluation are essential components in portfolio management. In the provided financial models, we can deduce a comprehensive approach to evaluating performance and managing risk, tailored to a modern portfolio. The standard deviation of returns is a primary measure used to assess the risk of the portfolio. It quantifies the variability of returns around the expected return, with a higher standard deviation indicating greater risk. Equities in the portfolio show a higher standard deviation (38.04%) compared to bonds (16.01%), reflecting their higher risk profile. That is to be expected as the equity market is always riskier than fixed income. The standard deviation of 0.3804 is lower than that of the benchmark Index which is at 0.3938.

This is another metric indicating the sensitivity of the portfolio's returns to market movements. The beta of the active portfolio is 0.9455 relative to the benchmark index VDE. It shows that the movement is closely related to the movement of the index. Only EOG Energy and ConocoPhillips have a beta higher than one and reflect the volatility but also a potential upside.

The benchmark used here is the Vanguard Energy Index Fund against which the performance of the portfolio will be compared. This index is primarily made of, as the name suggests, Energy sector.

Rebalancing would involve selling some equities to reinvest in other assets to maintain the balance. As discussed the advisor will seek to remain within the parameters as discussed above of Return and Risk.

One of the primary risk management strategies evident in the portfolio is diversification across asset classes, as shown in the asset allocation pie charts. The portfolio's assets are spread across equities and risk-free T-Bills, minimizing unsystematic risk. As discussed above, the Bond ETF itself is able to provide much of the exposure to government T-bills. Blackrock’s IShare’s Core US Aggregate Bond has government bondholding of over 60% and the rest is in investment grade corporate bonds which minimizes risk. This Bond ETF will give exposure to risk minimizing government bonds.

The biggest proponent of performance measure will be the return itself. The portfolio's Sharpe ratio of 0.5660 indicates the excess return – or risk premium – per unit of deviation from the risk-free rate. A higher Sharpe ratio is preferable, indicating a more attractive risk-adjusted return.

These are performance metrics that compare the risk-adjusted performance of the portfolio to the VDE Index. The Treyor Measure is 0.2277 higher than that of the Index, it adjusts the portfolio's performance for market risk. Jensen's Alpha is 0.0760 which indicates the portfolio's ability to earn above-average returns for a given level of market risk.

The Information Ratio is 0.1787, which measure assesses the active return of the portfolio (the return in excess of the benchmark) relative to the amount of active risk taken by the portfolio manager.

The Capital Asset Pricing Model (CAPM) value of 0.1893 (or 18.93%) for our portfolio represents the expected return, based on the risk associated with the investment relative to the overall market. It incorporates the risk-free rate, the sensitivity of the portfolio's returns to market movements (beta), and the excess return of the market above the risk-free rate. In this case, the market return is given as 0.1973 (or 19.73%). When the portfolio's CAPM is slightly below the market return, it implies that, according to CAPM, the portfolio is expected to perform modestly under the market. This underperformance could be due to a variety of factors, including a lower beta, indicating less market risk exposure, or simply a conservative investment strategy.

The Capital Market Line (CML), with a value of 0.1923 (or 19.23%), illustrates the risk-return profile for efficient portfolios that have been optimized to include a combination of the market portfolio and the risk-free asset. This line serves as the benchmark for the highest expected return one can achieve for a given level of risk. Since our portfolio's CAPM is very close to the CML, it suggests that the portfolio is nearly optimized for risk-adjusted returns, assuming it lies on the efficient frontier. This proximity indicates a well-balanced portfolio in terms of its risk-return trade-off.

In sum, the portfolio is evaluated through a mixture of volatility assessments, performance metrics against benchmarks, and ongoing rebalancing to align with the investor's risk tolerance and investment objectives.

Appendix

Asset Classes Allocation Analysis: Optimal Complete Pf Model

Capital Allocation > Asset Classes Allocation > Security Selection

Securities	Expected Return	Standard Deviation	Corr. Coefficient B,E	Covariance B,E
Bond Pf (B)	14.22%	16.01%	-0.1503	-0.0092
Equity Pf (E)	26.53%	38.04%		
T-Bill	5.00%	0.00%		

Risky Asset Portfolio: Weights				Reward to Variability
Bond weight	Equity weight	Expected Return	Standard Deviation	(Sharpe ratio)
1.0	0.0	0.1422	0.1601	0.5761
0.9	0.1	0.1545	0.1434	0.7290
0.8	0.2	0.1668	0.1388	0.8419
0.7	0.3	0.1791	0.1474	0.8760
0.6	0.4	0.1915	0.1673	0.8456
0.5	0.5	0.2038	0.1949	0.7888
0.4	0.6	0.2161	0.2276	0.7297
0.3	0.7	0.2284	0.2634	0.6773
0.2	0.8	0.2407	0.3012	0.6332
0.1	0.9	0.2530	0.3403	0.5965
0.0	**1.0**	**0.2653**	**0.3804**	**0.5660**
A. Minimum Variance Portfolio of Risky Assets		**Expected Return**	**Min. Standard Deviation**	***Sharpe Ratio***
1.00	0.00	0.1422	**0.1601**	0.5761 ***short-not allowed***
B. Optimal Risky Portfolio, Maximum of Sharpe ratio		**Expected Return**	**Standard Deviation**	***Max. of Sharpe Ratio***
0.00	1.00	0.2653	0.3804	**0.5660** ***short-not allowed***

C. Optimal Complete Portfolio with U w/ Risk-Free Asset	
Weight y: Optimal Risky Portfolio	59.52%
Weight (1-y): Risk-Free Asset	40.48%
Bond weight in the Optimal Complete Pf	0.00%
Equity weight in the Optimal Complete Pf	59.52%
E(rc): expected return of the Overall Complete pf	0.1781
σ c: SD of Overall Complete pf	0.2264
Sharpe Ratio (Max. Slope of CAL)	0.5660

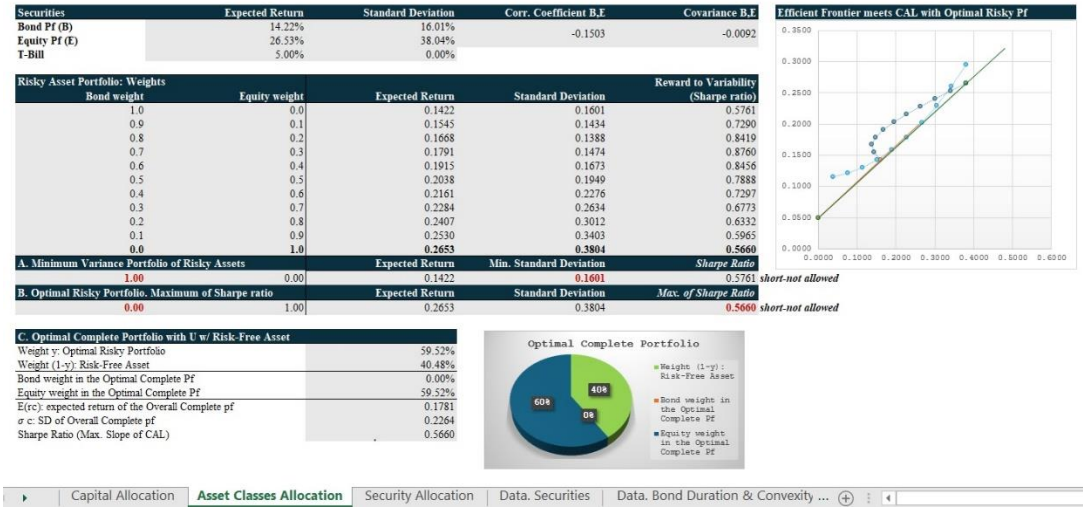


Figure 1

Capital Allocation. Optimal Captial Allocation using Maixum Utility

Capital Allocation > Asset Classes Allocation > Security Selection

Risky Pf (P) only	
rf: rate of return of risk-free asset	5%
E(Rp): expected return of risky pf	26.53%
p: SD of risky pf	38.04%

Complete Pf (C). Risk free + Risky Pf	
y: weight of risky pf	59.52%
1-y: weight of risk free asset	40.48%
E(rc): expected return of the Complete pf	17.81%
σ c: SD of Complete pf	22.64%
Slope: Capital Allocation Line (Sharpe)	0.5660
Risk Tolerance Score	75
Risk Aversion Index (A: 1~20)*	2.5
Utility at the risk aversion level	11.41%

*Bear (1~5), Normal (1~10), Bull (1~20)

$$y^* = \frac{E(r_p) - r_f}{A\sigma_p^2}$$

$$\text{Max } U = E(r_C) - 1/2A\sigma_C^2 = r_f + y[E(r_p) - r_f] - 1/2Ay^2\sigma_p^2$$

W of risky pf: y	E(rc) on CAL	σ c	Utility	E(rc) on Indiff. (11.41%)
Max U	17.81%	22.64%	11.41%	17.81%
0.1	7.15%	3.80%	6.97%	11.59%
0.2	9.31%	7.61%	8.58%	12.13%
0.3	11.46%	11.41%	9.83%	13.04%
0.4	13.61%	15.22%	10.72%	14.30%
0.5	15.77%	19.02%	11.24%	15.93%
0.6	**17.92%**	**22.82%**	**11.41%**	17.92%
0.7	**20.07%**	**26.63%**	**11.21%**	20.27%
0.8	**22.22%**	**30.43%**	**10.65%**	22.98%
0.9	24.38%	34.24%	9.73%	26.06%
1.0	26.53%	38.04%	8.44%	29.49%

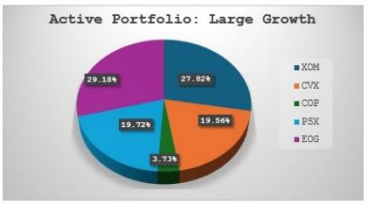
Figure 2

Panel E. Macro Forecast and Alpha Forecasts	VDE	XOM	CVX	COP	PSX	EOG
Adjusted Alpha	0.0000	0.0595	0.0373	0.1015	0.1126	0.0897
Beta	1.0000	0.8261	0.7848	1.0863	0.9392	1.1534
Total Equity Risk Premium *E(R)*	0.1473	0.1812	0.1529	0.2615	0.2510	0.2596
Adjusted Market risk premium =	0.1473					

Panel F. Active Portfolio			Active Pf	XOM	CVX	COP	PSX	EOG
Residual Variance of each security	$\sigma^2(e)$			0.0170	0.0151	0.2159	0.0453	0.0244
Initial position of each security	$w_i(0) = \alpha_i/\sigma^2(e)$		12.5999	3.5047	2.4640	0.4702	2.4841	3.6768
Scaled initial position of each security	w_i		1.0000	0.2782	0.1956	0.0373	0.1972	0.2918
Squared scaled initial position of each security	$[w_i(0)]^2$			0.0774	0.0382	0.0014	0.0389	0.0852
Alpha of the Active Pf	α_A		0.0760					
Residual Variance of Active Pf	$\sigma^2(e_A)$		0.0060					
Active Pf information ratio (APIR)	$\alpha_A / \sigma^2(e_A)$		12.5999					
Index Pf information ratio (IPIR)	$E(R_M)/\sigma^2(M)$		0.9499					
Initial position in Active Pf (APIR/IPIR)	$w_A(0)$		13.2648					
Beta of the Active Pf	β_A		0.9455					

$$w_A^* = \frac{w_A^0}{1+(1-\beta_A)\times w_A^0}$$

Panel G. Optimal Risky Portfolios	Overall Risky Pf	VDE	Active Pf	XOM	CVX	COP	PSX	EOG
w*(Optimal Pf): Short not allowed	1.0000	0.0000	1.0000	0.2782	0.1956	0.0373	0.1972	0.2918
Beta	0.9455	1.0000	0.9455					
Risk Premium	0.2153	0.1473	0.2153					
Standard Deviation	0.3804	0.3938	0.3804					
Sharpe Ratio (*S*)	0.5660	0.3741	0.5660					
Performance Measures								
Treynor Measure (*T*)	0.2277	0.1473	0.2277					
Jensen Measure (α)	0.0760	0.0000	0.0760					
Information Ratio Measure (*IR*)	0.1787	0.0000	0.1787					
Overall Performance	0.2153	0.1473	0.2153					
CAPM	0.1893	0.1973	0.1893					
Ratio of total risk (*ep/em*)	0.9659	1.0000	0.9659					
CML	0.1923	0.1973	0.1923					
Selectivity (%)	0.0760	0.0000	0.0760					
Diversification Effect (%)	-0.0030	0.0000	-0.0030					
Net Selectivity (%)	0.0790	0.0000	0.0790					
net Risk Premium of Pf	0.1393	0.1473	0.1393					



Capital Allocation | Asset Classes Allocation | **Security Allocation** | Data. Securities | Data. Bond Duration & Convexity ...

Figure 3

Calculate the approximate price change for a AGG using only its D* and using D* and Convexity

AGG has the following characteristics:		
Maturity	8.43	
Coupon ($100 par)	3.26%	
Yield to maturity	4.92%	
Coupon (frequency)	Semiannual	
Convexity (C)	**0.59**	
Current Bond Price	**$88.66**	=PV(C7/2,C5*2,-C6/2*100,-100)
Modified Duration (D*)	**6.11975**	=MDURATION(DATE(2000,1,1),DATE(2007,1,1),C6,C7,2)

Changes in YTM	**YTM down 100bps**	
with D* only	-6.1197%	=-C11*1%
Bond Price change	83.2319	=C10*(1+C14)
with D* and Convexity	**-6.1168%**	=C14+1/2*C9*-1%^2
Bond Price change	**83.2345**	=C10*(1+C16)

$$\frac{\Delta P}{P} = -D^* \Delta y$$

$$\frac{\Delta P}{P} = -D^* \Delta y + \frac{1}{2} \times \text{Convexity} \times (\Delta y)^2$$

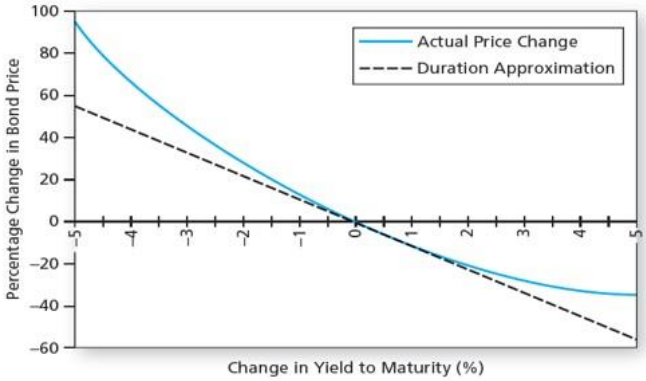


Figure 4

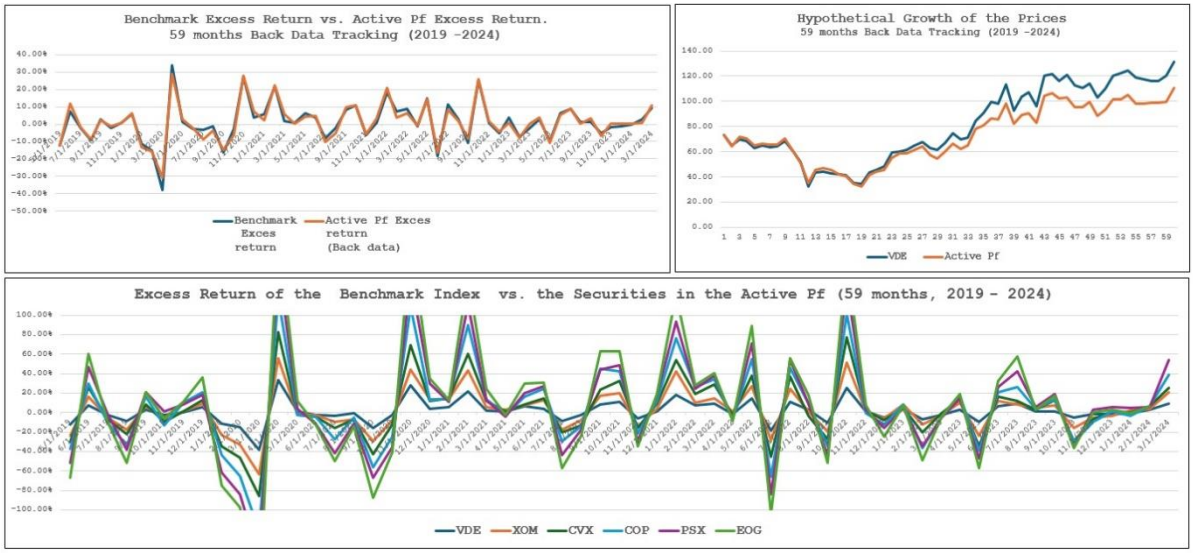


Figure 5

Panel 2. Correlation and Covariance Matrixs in the Security Index Model

Correl (via Index)	VDE	XOM	CVX	COP	PSX	EOG
SPDR	1.0000					
XOM	0.9283	1.0000				
CVX	0.9292	0.8625	1.0000			
COP	0.9394	0.8720	0.8729	1.0000		
PSX	0.8667	0.8045	0.8053	0.8142	1.0000	
EOG	0.9457	0.8778	0.8787	0.8884	0.8196	1.0000

Covariance (via Index)	VDE	XOM	CVX	COP	PSX	EOG
SPDR	0.1551					
XOM	0.1281	0.1228				
CVX	0.1217	0.1005	0.1106			
COP	0.1685	0.1392	0.1322	0.2074		
PSX	0.1457	0.1203	0.1143	0.1457	0.1821	
EOG	0.1789	0.1478	0.1404	0.1943	0.1680	0.2307

Government

Correl of Residuals	VDE	XOM	CVX	COP	PSX	EOG
SPDR						
XOM		1.0000				
CVX		0.1920	1.0000			
COP		(0.0935)	(0.2057)	1.0000		
PSX		0.1113	0.0915	(0.0478)	1.0000	
EOG		(0.0621)	(0.1706)	0.1850	(0.0984)	1.0000

Figure 6

Data. Security Index Model

Corr $(r_i,$

Panel 1. Risk & Return Parameters in the Security Index Model

Estimates annualized		T-bill	VDE	XOM	CVX	COP	PSX	EOG	AGG
Expected excess return		0.0500	0.1473	0.1371	0.1035	0.2305	0.1929	0.1703	-0.0866
SD of Excess Return		0.0000	0.3938	0.3505	0.3326	0.4554	0.4268	0.4804	0.1601
Sharpe Ratio			0.3741	0.3913	0.3113	0.5061	0.4519	0.3545	-0.5411
SD of Residuals (e)			0.0000	0.1303	0.1230	0.4646	0.2129	0.1562	
SD of Systematic component			0.3938	0.3253	0.1230	0.1161	0.3699	0.4543	
Covariance			0.1551	0.1281	0.1217	0.1685	0.1457	0.1789	
Alpha (Non-market risk premium in the index model)			0.0000	0.0154	-0.0121	0.0705	0.0545	0.0003	
Adjusted Alpha (a x avg. Market PE / Stock PE)			0.0000	0.0100	-0.0073	0.0423	0.0436	0.0003	
Alpha in CAPM (10 yrs market premium)			0.0000	0.0923	0.0613	0.1690	0.1408	0.1044	
Adjusted Alpha in CAPM (a x avg. Market PE / Stock PE)			0.0000	0.0595	0.0373	0.1015	0.1126	0.0897	
Beta			1.0000	0.8261	0.7848	1.0863	0.9392	1.1534	
Correlation with Index			1.0000	0.9283	0.9292	0.9394	0.8667	0.9457	-0.1774
R Squared (Market Determination)			1.0000	0.8617	0.8633	0.8825	0.7511	0.8943	
1-R Squared (Firms Specific)			0.0000	0.1383	0.1367	0.1175	0.2489	0.1057	
Pf Style.	Value / Blend / Growth			Value	Value	Value	Value	Value	Credit - Investment Grad
	Small / Medium / Large		Large Growth	Large	Large	Large	Large	Large	Duration - medium 8 yea
	Sector (industry)			Energy	Energy	Energy	Energy	Energy	Issuers - Mixed, Corpora
	Themes			Oil & Gas	Oil & Gas	Oil & Gas	Oil & Gas	Oil & Gas	Sector
Stock Info.	Current Stock Price (as of March 29)		131.70	116.24	157.74	127.28	163.34	127.84	
	EPS (TTM)			8.89	11.36	9.06	15.48	13.01	
	PE Ratio (TTM) 8.4400		8.44	13.08	13.89	14.05	10.55	9.83	
	1y Forward Dividend ($)			3.80	6.52	3.58	4.20	3.64	
	1y Forward Dividend Yield (%)			3.27%	4.13%	2.81%	2.57%	2.85%	
	1y Target Est. (Consensus)			124.73	176.34	136.04	160.08	138.34	
	1y Target return `			7.30%	11.79%	6.88%	-2.00%	8.21%	
Active Pf Weights* (Index model)			0.0000	0.2782	0.1956	0.0373	0.1972	0.2918	

Figure 7

Index Portfolio Model. VDE + Active Portfolio (Large Growth)

Panel A. Risk Parameters of Pf A (annualized)	VDE	XOM	CVX	COP	PSX	EOG
Beta	1.0000	0.8261	0.7848	1.0863	0.9392	1.1534
SD of Excess Return	0.3938	0.3505	0.3326	0.4554	0.4268	0.4804
SD of Residual (e), Firm specific Component	0.0000	0.1303	0.1230	0.4646	0.2129	0.1562
SD of Systematic Component	0.3938	0.3253	0.3091	0.4278	0.3699	0.4543
Correlation with the Market Index	1.0000	0.9283	0.9292	0.9394	0.8667	0.9457

Panel B. Correlation Matrix	VDE	XOM	CVX	COP	PSX	EOG
VDE	1.0000					
XOM	0.9283	1.0000				
CVX	0.9292	0.8625	1.0000			
COP	0.9394	0.8720	0.8729	1.0000		
PSX	0.8667	0.8045	0.8053	0.8142	1.0000	
EOG	0.9457	0.8778	0.8787	0.8884	0.8196	1.0000

Panel C. The Index Model Covariance Matrix	VDE	XOM	CVX	COP	PSX	EOG
VDE	0.1551					
XOM	0.1281	0.1228				
CVX	0.1217	0.1005	0.1106			
COP	0.1685	0.1392	0.1322	0.2074		
PSX	0.1457	0.1203	0.1143	0.1457	0.1821	
EOG	0.1789	0.1478	0.1404	0.1943	0.1680	0.2307

Panel D. Correlation of Residuals in Pf A	VDE	XOM	CVX	COP	PSX	EOG
VDE						
XOM		1.0000				
CVX		0.1920	1.0000			
COP		(0.0935)	(0.2057)	1.0000		
PSX		0.1113	0.0915	(0.0478)	1.0000	
EOG		(0.0621)	(0.1706)	0.1850	(0.0984)	1.0000

Figure 8

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