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Zacks Asset Allocation: Part 2

Part One: A Review of Risk & Return Tradeoffs
Part Two: Zacks ETF Model Returns, Incorporating Risk

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ZACKS Pro

Part One: A Review of Risk & Return Trade Offs

What broad current conditions should traders and investors be made aware of?

A Review of Risk – Return Trade Offs

What is Return and How is it Measured? *What is the Risk – Return Trade Off?*

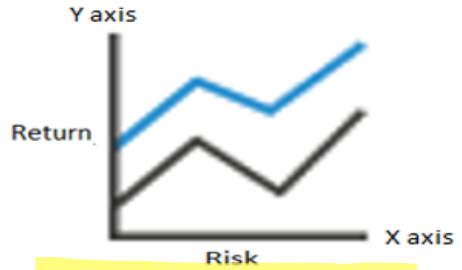
Review of Risk, Return and Risk - Return TradeOff

What is Return and how is it measured : Generally Return on Investment is defined as the Dollar amount an Investor has realized over and above his Initial Invesment/Principal amount. Measured by the expression : Return = {[(P1 - P0 + (D/I)] / P0} * 100. P1 refers to Realized Dollar Amount, P0 refers to Principal Amount and (D/I) refer to Dividends/Interest Amount Received. Further when {P1 + (D/I)} > P0, Return is Positive / Profitable, and {P1 + (D/I)} < P0, Return is Negative / Loss OR Decrease in Prinicipal Amount and when {P1 + (D/I)} = P0, Loss of Time value of Money. When the Investment is in Stocks, we receive Dividends and when the Investment is in Bonds, we receive periodic Interest / Coupon Payments. However on a Real-Time basis, the Returns % number is also affected by other charges and taxes. For example, there are Brokerage Charges, Securities Transaction charges (Paid to Stock Exchanges and Regulatory Authorities), Taxes on Capital Gains, Dividends Tax and eventually Income Tax.

What is Risk and how is it measured : Risk is defined as the degree of Uncertainity associated with the (1) cash inflows when the Investment is Liquidated AND/OR (2) Cash inflows as per Legal Obligation. For Stocks, Risk is receiving "Liquidation" Amounts which is More / Less, then the Invested Amount and Dividends (if any). For Bonds, in addition to Principal Amount payment, the Interest/Coupon payments and there Timing also adds to Risk. Risk is most often measured by Standard Deviation as observed in the set of Expected Returns from the specific type of Investment made. Standard Deviation is defined as the amount of spread or dispersion expressed as the difference between Individual data points (i.e. Expected Returns) and their Mean/Average value. Larger this value on either side of the mean, more the spread/dispersion and larger the standard deviation value, within the set of Expected Returns and more Riskier the Investment is.

What is Risk - Return Trade Off?

Risk - Return Trade Off generally refers to the Compromise / TradeOff made by an Investor based on his/her Expectations of Returns Versus his Risk Preference profile. This can be referenced in the Right hand side picture. The magnitude of Risk which is an Independent variable is plotted on the X axis and Return (in %) as a dependent variable is plotted on the Y - axis. The X-axis, inherently shows the "Timeline" nature of investments. So as an Investor expects higher returns or have higher expectations of returns, the Risk increases proportionally. And this applies vice - versa. The Risk - Return chart is in turn a function of Individual Investors : Age, Education, Earnings, Social Context and Macro-Economic variables. The Timeline nature of Risk on X axis as it extends indefinitely towards right, indicates that, the magnitude of Risk increases based on the Investment Horizon of the Investor and the "Going Concern" nature of the Instrument itself.



Risk - Return TradeOff Image

Source : Zacks Investment Research

Alternative Measures for Portfolio Returns and Risks - 1

Quintile, Information Coefficient, Information Ratio. *The difference between a Sortino Ratio & Sharpe Ratio*

Alternative Measures for Asset OR Portfolio Returns and Risk - 1

Other Measures for Portfolio Returns	
Quintile / Decile Returns	A Quintile is measured as 5 Equal Portions/Buckets of the Total number of elements present in the Sample/Universe. That is, each part measures 1/5th or 20% of the Total number of elements. Each of these elements are ordered/Indexed based on an important charateristic of the data set. For example, 500 companies in S&P500 Index are ordered by Market Capitalisation, equally into 5 buckets so that each of the buckets have 100 companies and ordered by Market Capitalisation from lowest to highest, i.e. in the Ascending order or in the Descending order, which is reverse of Ascending order. Similarly a Decile is measured as 10 Equal Portions/Buckets of the Total number of elements present in the Sample/Universe. That is, each part measures 1/10th or 10% of the Total number of elements. This ordering of elements in each of the buckets allows to study and measure the distribution of the specific characteristic within the buckets and in relation to the overall Sample/Universe size.
Information Coefficient	Information Co-efficient (IC) measures the Correlation between the Forecasted numerical value and its Actual/Realized value, as made by an Analyst or a Portfolio Manager. And is related to the Analyst/Portfolio Managers' "Skill" and its "Application". IC takes values of 1, 0 and -1. 1 indicating perfect linear match between the Forecast and Actual value, 0 indicating no linear match and -1 indicating that Analyst making un-matchable forecasts.
Information Ratio	Information Ratio (IR) is measured as a Ratio of Alpha (α) to Sigma (б). Alpha refers to the excess return that is generated over and above the Benchmark/Index return. And Sigma indicates the Standard Deviation measure of the Returns Distribution. Most of the Analysts/Portfolio Managers strive to generate "Alpha" returns as it is attributed to PM s skill which directly affects compensation issues.

Alternative Measures for Asset OR Portfolio Risk - 2

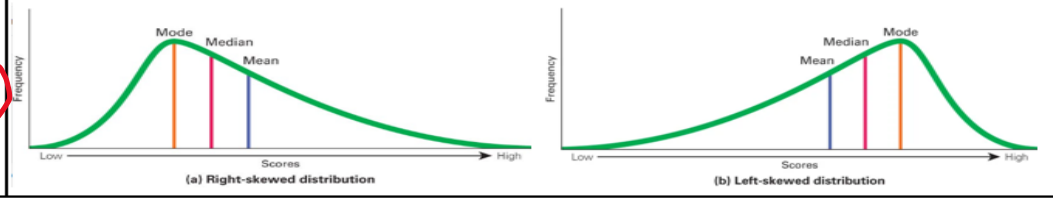
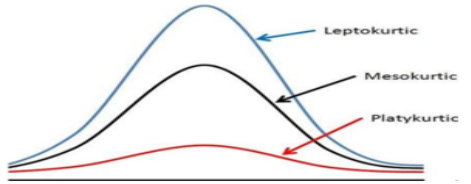
Sortino Ratio & Sharpe Ratio	Sortino Ratio is measured as a Ratio of Risk Adjusted returns to Negative Required rates of return generated. That is, it penalizes only those set of generated negative returns and those returns less then a pre-determined rate. Sharpe Ratio is measured as Ratio of Risk Adjusted returns and the Standard deviation of the Asset returns. Sharpe Ratio does not differeniate between Negative and Positive returns generated. Risk Adjusted returns is defined as difference between : Mean of Asset Returns less the Risk-free rate.

Source : Zacks Investment Research

Alternative Measures for Portfolio Returns and Risks - 2

Skewness/Kurtosis, Tracking Error, Draw-down

Alternative Measures for Asset OR Portfolio Risk - 2

Other Measures of Portfolio Risk	
Skewness / Kurtosis	The terms "Skew" or "Skewed" conveys the idea of data being in deviation as compared to "Symmetrical" characteristic of a Normal Distribution. And it means that the data lacks Symmetry or is Asymmetrical about its Average or Mean and is Skewed either on the Right OR Left hand side. Right Skewed distribution is referred to as Positively Skewed as in Image (a) and Left Skewed distribution is also referred to as Negatively Skewed distribution as in Image (b) below. Because of the high density of data elements at the Right and Left sides, the measures of Central tendency : Mean, Median and Mode stack up as shown in the Images (a) and (b). The expression applied to calculate "Skew"ness is given in the last image. Skewness is the third moment measure and along with Kurtosis which is the fourth moment measure. That is, these four moment measures are most of the time sufficient to understand intuitively the overall characteristics of the Random variables' distribution curve. Kurtsosis is defined as measure of "Tailed-ness" of the distribution curve in comparison to Bell-shaped OR Mesokurtic "Normal" Distribution. That is, how heavy/dense, the tails of a distribution are. Platykurtic curves indicate that they are more flatish then Normal curves and Leptokurtic indicates that they are more peaked then Normally distributed curves. Kurtosis indicates how far the "Outliers/Rare events" are from the mean and the Probability of their occurance.
Skewness / Kurtosis Charts	**Skewed Distributions and Measure of Skewness**  $\tilde{\mu}_3 = \frac{\sum_i^N (X_i - \bar{X})^3}{(N-1) * \sigma^3}$ $\tilde{\mu}_3$ = skewness N = number of variables in the distribution X_i = random variable $\bar{X}$ = mean of the distribution σ = standard deviation **Types of Kurtosis** 
Tracking Error	Portfolios are generally managed "Actively" or "Passively" by Portfolio Managers. The term Tracking Error applies more to Portfolios managed "Actively". That is, where the Portfolio Manager is trying to Replicate/Track, a pre-determined Benchmark/Index in order to incorporate in the Portfolio, the important and defining Characteristics/Features of the Benchmark/Index, with an objective of generating Excess "Alpha" Returns. And to minimize the deviation(s)/differences (errors) in tracking of the Benchmark/Index versus the resultant Returns. Deviation(s) are an inherent aspect of Active management and most often involve costs of different types which generally increase the overall expenses of administering the Portfolio, which in turn reduces the magnitude of the Excess returns that are "Attributed" to the Portfolio Managers' Skill and Insights.
Draw - Down	In Financial Markets, Troughs denoted by Falls/Decrease and Peaks denoted by Highs/Increase in Intrinsic Value of different tradable Instruments is a Normal feature. And Draw-downs generally refer to fall in Intrinsic value of an Asset or a Portfolio. Draw-down Risk is defined as the amount of time that is required to re-coup the Largest Decrease in Value between the most recent Relative Peak (High) and a Trough (Low).

Source : Zacks Investment Research

Types of Broad Risks and Their Brief Descriptions

Natural Events, Economy, Business Continuity, Technology, Politics, Labour Market, Financial Risk

Types of Risks and their Brief Description

Different Types of Risk and their Brief description :	
Natural Events	Risk from Natural Events which have hazardous and destructive characteristics for mankind and these are not man-made. These can be events related to Atomospheric, Hydrologic, Geologic and Seismic phenomena. Earthquakes, Volcanic Eruptions, Floods, Blizzards, Tsunamis, Cyclones, Wildfires and Pandemics, all of these are Natural Hazards and the Risk faced is very high.
Economy	Economic events like Recessions, Unemployment, Inflation and Regulatory changes can be substantial to be considered as Economic Risks.
Business Continuity	Permanence of Business or Going concern issues. Products and Services with falling demand due to efficient product substitues and paradigm shifts/changes in distribution channels on the demand and supply side.
Technology	Technological Advancements, Game changing disruptions and In-ability to Adapt to rapidly changing and evolving situations. We can include Internal and External Cybersecurity issues, Digital Innovation and Transformation.
Politics	Generally referred to as Geo-Political Risks. These arise as Countries interact with each other and include Trade Relationships, Security Treaties, Climate changes, Territorial disputes and Supply Chains / sharing of Natural Resources. Ideological Basis of Goverance mechanisms, choice and disputes.
Labour Market	Risks involving Unsafe Jobs, Wage Inequality resulting in huge societal disparities in terms of Assets owned. Vulnerable economic groups like women and youth without sufficient skill-sets to compete and inaccessibility to resources and enabling infrastructure.
Financial Risk	Financial Risk comes in various forms and related to Market Risk, Credit Risk, Operational Risk and Valuation Risk.

Source : Wikipedia.com & Zacks Investment Research

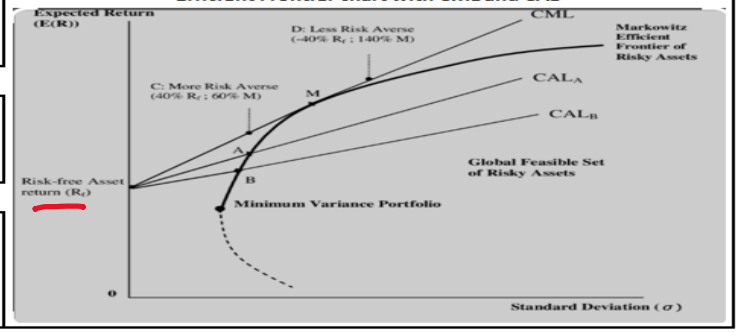
A Brief Review of the Efficient Frontier, the Capital Market Line (CML) and the Capital Allocation Line (CAL).

Investing Philosophy, Options/Choices Available, Efficient Frontier Defined

Brief Review of Efficient Frontier, Capital Market Line (CML) and Capital Allocation Line (CAL)

What is an Efficient Frontier?	
Investing Philosophy	Investment(s) means postponing current consumption in expectation of increasing future consumption. And Investment(s)/Investing can be through purchase of different types of Financial Assets as Stocks, Bonds, Commodities, Real Estate, Bullion and Forex. Each of these Financial Assets/Asset Classes has its own Risk and Return Characteristics and substantial differences. In this context, a Portfolio can consist of Assets purchased from within a single Asset class or Assets purchased across Asset Classes in order to Optimize future consumption. Since Risk and Return go hand in hand, higher the returns - higher the risk and vice versa.
Options/Choices available	In order to strike a balance between Risk and Return, an Investor tries to optimize current OR future consumption based on the options available. Apart from current consumption or postponing it by Investing, an option available is to borrow at a lower rate and invest the borrowings for higher returns in the future, whenever such a scenario presents itself. The investor can exercise all these options/choices in terms of investing in a Portfolio.
Efficient Frontier Defined	Portfolios while optimizing the Risk - Return balance, should incorporate all possible scenarios of investment choices available to the investor. Since different financial assets have their own Risk - Return characteristics, and different options available an investor can generate many Portfolios by combining different Asset classes. Off these many Portfolios, those which maximize Return and minimize Risk OR minimize Risk for a given level of Return, can be viewed as Optimal Portfolios. A plot of these Optimal Portfolios, with Risk measured by Standard deviation of Returns on X - axis and Expected Returns on Y- axis is referred to as an Efficient Frontier.
Plot of an Efficient Frontier with CML - Capital Market Line and CAL - Capital Allocation Line	Capital Market Line is a Tangential straight line plot to the Efficient Frontier with its intercept on the Y-axis at the point denoting a Return from a Risk-Free asset. That is, the CML represents a set of Optimal Portfolios with Higher Returns and Minimum Risk and simultaneoulsy investing in a Risk-free asset. Capital Allocation Line is a plot which conveys the amount of Risk to bear by an investor to generate a specific return with the Portfolio consisting of both the risky Market Portfolio and the Risk-free asset. The slope of CAL is measured as a ratio of Unit change of Return to Unit change in Risk.

Efficient Frontier chart with CML and CAL



Source : ResearchGate for the Image of Efficient Frontier & Zacks Investment Research

Part Two: Zacks ETF Model Portfolio Returns, Incorporating Risk

What broad current conditions should traders and investors be made aware of?

Annual Returns by Class, Correlation Coefficient Matrix, Variance-Covariance Matrix, and Zacks ETF's Model Portfolio Performance Tables

From May 2019 to December 2023

Annual Returns, Financial Metrics, Correlation Coefficient and Variance - CoVariance Tables for the Zacks ETFs Model Portfolios from May' 19 to Dec' 23 - 1

Annual Returns : Zacks ETFs Model Portfolios, from 05/01/19 to 12/31/23				
Year	Conservative	Moderate	Aggressive	Income
2019 (From May' 19 to Dec' 19)	7.27%	8.17%	9.86%	7.73%
2020	12.15%	13.48%	15.38%	4.45%
2021	10.50%	14.95%	24.78%	11.31%
2022	-12.07%	-14.00%	-18.29%	-6.45%
2023	13.01%	15.69%	21.12%	8.50%

Correlation Coefficient Matrix from May' 19 to Dec' 23

Versus	Conservative	Moderate	Aggressive	ETF Income
Conservative	1.000	0.992	0.965	0.956
Moderate		1.000	0.990	0.958
Aggressive			1.000	0.943
ETF Income				1.000

Variance - Covariance Matrix from May' 19 to Dec' 23

	Conservative	Moderate	Aggressive	ETF Income
Conservative	8.482	10.556	15.069	8.580
Moderate		13.338	19.387	10.786
Aggressive			28.772	15.586
ETF Income				9.494

Zacks ETFs Model Portfolios Performance from 05/01/19 to 12/31/23				
Metrics	Conservative	Moderate	Aggressive	Income
Start Balance	10000	10000	10000	10000
End Balance	13210	14038	15652	12714
End Balance (Inflation adjusted)	10896	11579	12910	10487
CAGR	6.15%	7.54%	10.08%	5.28%
CAGR (Inflation Adjusted)	1.86%	3.19%	5.63%	1.02%
Standard Deviation (in %)	10.09%	12.65%	18.58%	10.67%
Best Year	13.01%	15.69%	24.78%	11.31%
Worst Year	-12.07%	-14.00%	-18.29%	-6.45%
Max., Drawdown	-16.36%	-18.96%	-24.50%	-13.71%
Sharpe Ratio	0.41	0.44	0.43	0.31
Sortino Ratio	0.71	0.71	0.68	0.46

Source : Zacks Investment Research

A variance-covariance matrix is a square matrix that contains the variances and covariances associated with several variables. The diagonal elements of the matrix contain the variances of the variables and the off-diagonal elements contain the covariances between all possible pairs of variables.

Charts for Zacks ETF Model Portfolio's Monthly Returns

From May 2010 to December 2023

Charts for Zacks ETFs Model Portfolios Monthly Returns (chart 1), Portfolios formed by Assigning Weights to Zacks ETFs Model Portfolios (chart 4), Tables for Weights assigned (Table 1) and Portfolio Metrics (Table 2) - 2

chart 1

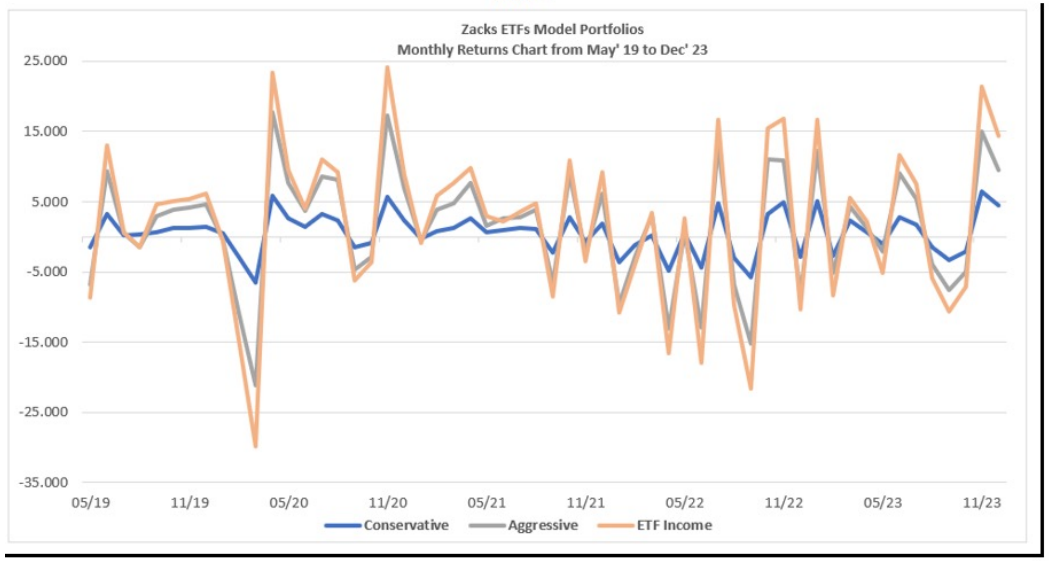


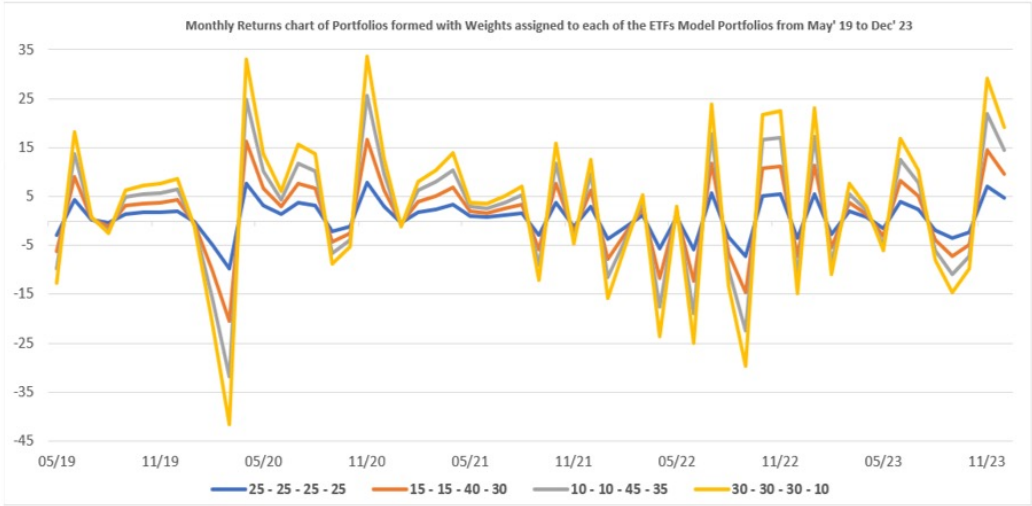
Table 1

Weights in %	Conservative	Moderate	Aggressive	ETF Income
25 - 25 - 25 - 25	25.0	25.0	25.0	25.0
15 - 15 - 40 - 30	15.0	15.0	40.0	30.0
10 - 10 - 45 - 35	10.0	10.0	45.0	35.0
30 - 30 - 30 - 10	30.0	30.0	30.0	10.0

Table 2

Metrics for Portfolio of ETFs Model Portfolios	25 - 25 - 25 - 25	15 - 15 - 40 - 30	10 - 10 - 45 - 35	30 - 30 - 30 - 10
Cumulative Returns in %	39.11	41.69	42.22	41.54
Annualized Returns in %	7.330	7.753	7.840	7.728
Standard Deviation in % (as stdev.p)	3.708	4.005	4.097	3.853
Annualized Std.,Deviation in %	12.846	13.875	14.192	13.348

chart 2



Source : Zacks Investment Research

Thank You for Attending!

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