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RELATIONSHIP OF RISK AND RETURN IN FORMING A FINANCIAL INVESTMENT PORTFOLIO

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Abstract:

This article discusses the effective organization of investment activities in the economy, accelerating the expansion of our economic capabilities, and employing our internal capabilities and reserves.

INTRODUCTION: There are many ways for investors to invest in corporate assets, and managing financial risks is essential to creating a safe and profitable portfolio for investors. A lower level of risk ensures a return of income, while a higher level of risk increases the probability of losing an investment or situation. Therefore, it is very important for investors to study the risk and return and characteristics of each asset before investing.

The selection or creation of a short list of assets should be correlated with risk and return. The term risk is the occurrence of an unpleasant, unexpected probability. From an economic point of view, risk is the result of getting less than the expected result, risk can be divided into many types based on its characteristics and nature, thus it has different effects on investment income.

LITERATURE ANALYSIS: The formation of an investment portfolio has been relevant for all periods and times, that is why many articles and theses have been written by economists on this topic. For example, in her article (Designing a Portfolio Based On Risk and Return of Various Asset Classes 2017) by Rashmi Soni, every investor's dream is to maximize returns with minimal risk. Since this is practically impossible, the goal is to optimize risk and return. Different asset classes perform differently at different times. Performance is influenced by business as well as other local and global macroeconomic indicators. Raw materials, real estate, gold, and other commodities are said to have yielded very high returns in the past, but have fallen in recent times. The stock market has provided good returns for a long time, but is highly volatile and therefore full of risks. Risk-free investments such as fixed, in turn, fall into the category of low-risk low-return.

In addition, N. Pederson, Sebastien Page, Fei He expressed such opinions in their articles (Asset allocation: Risk models for alternative investments 2014). Often, a lack of market information leads investors to mistakenly believe that they represent alternative asset classes and strategies. This article offers solutions for measuring market risk in alternative and illiquid investments. The authors describe how to estimate the impact of risk factors when available asset return series are available (due to the difficulty of obtaining market-based estimates). They show that alternative investments are subject to the same risk factors that produce stock and bond returns. This article offers solutions for measuring market risk in alternative and illiquid investments. We describe how to estimate the impact of risk factors when available asset return series are available (due to the difficulty of obtaining market-based estimates). They considered that alternative investments are subject to the same risk factors that generate returns on stocks and bonds. Thomas M. Idrozek, M. Kowara in their articles (Factor-Based Asset Allocation vs. Asset-Class Based Asset Allocation 2013) consider the superiority of risk factor-based asset allocation over traditional asset class-based asset allocation.

The authors used an idealized model capable of precise mathematical processing and optimizations based on different periods of historical data to show that no single approach is inherently superior to the other. While the authors appreciate the role of risk models in portfolio management, they urge caution against unfounded claims of their dominance. The article examines the issue of relative superiority of asset allocation based on the risk factor over traditional, asset class-based asset allocation.

RESEARCH METHODOLOGY: First of all, we will determine specific goals and objectives. These can be as follows. Study the basic theoretical foundations of risk and return in investment portfolios, analyze historical data to understand past trends in risk and return, investigating the interaction between risk and

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return of diversification strategies, assessing the role of different asset classes in portfolio construction.

Research Design: The general approach to be used in the study, such as quantitative analysis, qualitative analysis, or a combination of both, the suitability of the chosen research design to address the research objectives, any hypotheses to be tested or questions to be answered. we define the research questions.

Data Collection: Historical financial market data (eg, stock prices, bond yields, market indices), economic indicators, and macroeconomic variables. We describe the literature and research reports on investment theory and portfolio management, and methods for data collection, reliability, and validity.

The prime objective of making investment in any security is either to yield income on that investment in the form of dividend/interest or appreciation in the investment value. Return is the motivating force and the principal reward in the investment. A rate of return on investment provides a basis of comparison among given alternative investment opportunities. There are two types of returns, commonly discussed under investment management, first, realized return and second, expected return.

Total return = Income+ Change in Pricep of Investment (+, -)

$$\text{Return} = \frac{\text{Income}}{\text{Price paid for security}} + \frac{\text{Change in price of security over a period}}{\text{Price paid for security}}$$

$$\text{Or, Return} = \frac{D_1}{P_0} + \frac{(P_1 - P_0)}{P_0}$$

Where,
R(%) = Rate of return, i.e., yield
D_1 = Dvidend received at the end of year, denoted by 1
P_0 = The value of investment made in year
P_1 = The value of investment in year '1', to be considered as the year in which security will be realized/sold
If we give example about this formula then we can clear understand this phenomen.

Illustration: Mr.X extracts the price of shares in ABS Co.Ltd from Stock-Exchange Indices over the last nine years as given below.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Price	140	150	162	152	170	200	188	195	205

Compute the annual return (yield) for Mr.X if the has made investment in shares 2010 for a sum of 130$.

Solution:

Year	**Price**	$P_0 - P_1$	$\frac{(P_0 - P_1)}{P_0}$
2010	130	-	-
2011	140	10	7.69
2012	156	16	11.42
2013	162	6	3.84
2014	152	-10	-6.17
2015	170	18	11.84
2016	200	30	17.64
2017	188	-12	-6.00
2018	195	7	3.58
2019	205	10	5.12

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Illustration: Mr.X submits you the details on dividend and value of shares in PQR Co.Ltd. for a period of ten year starting frpm 2010

Year	Price	Dvidend
2010	135	15
2011	175	18
2012	210	20
2013	180	32
2014	190	20
2015	200	14
2016	215	14
2017	220	8
2018	200	16
2019	220	20

Solution:

Year	Price	$P_0 - P_1$	$\frac{(P_0 - P_1)}{P_0}$	Dvidend	$\frac{D_1}{P_0}$	Total return
2011	175	10	7.69	18	13.33	21.02
2012	210	35	20.00	20	11.43	31.43
2013	180	-30	-14.29	32	15.24	0.95
2014	190	10	5.56	20	11.11	16.67
2015	200	10	5.26	14	7.37	12.63
2016	215	15	7.50	14	7.00	14.50
2017	220	5	2.33	8	3.72	6.05
2018	200	-20	-9.09	16	7.27	-1.82
2019	220	20	10.00	20	10.00	20.00

From the above results, it can be concluded that in first two years total return was very good but in third year it was declined substantially. A steady recovery and increase have been observed in years from 2014-2016 followed by decline in 2017 and 2018. The company regain its position nearly which it had eight years back.

Standart Deviation: Standart Deviation measures the variation in actual return the expected average return. A low value of standart deviation indicates actual return likely to be close to average return, on the other hand, a high value of standart deviation shows lesser possibility of actual return close to average return.

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The standart deviation (SD) is symbolized with sigma, 'σ'. The statistical formula to calculate standart deviation is:

$$SD = \sqrt{\frac{\sum_{i=1}^{N}\left(X_i - \bar{X}_l\right)^2}{N}}$$

Where, $X_i = Actual\ return\ on\ investment\ \bar{X}_l = Average\ return, and$
N= Number of observations

Illustration: The expected returns of last five years are provided below. Compute expected risk on these returns

Year	Return
1	50
2	70
3	80
4	100
5	90

Solution:

Year	Return (X_i)	$(X_I - \overline{X})$	$(X_i - \bar{X})^2$
1	50	-28	784
2	70	-8	64
3	80	2	4
4	100	22	484
5	90	12	144
	Mean =78		1480

SD = $\sqrt{\frac{1480}{10}}$ = 17.20%

Thus, the variance in expected return is 17.20%

RESULTS AND CONCLUSION: Risk-Return Tradeoff: The most fundamental relationship in finance is the risk-return tradeoff, which states that higher returns are generally associated with higher levels of risk. Investors demand a premium for bearing higher levels of risk. Therefore, when constructing an investment portfolio, investors must consider their risk tolerance and desired rate of return.

Diversification: Diversification is a strategy that aims to mitigate risk by spreading investments across various assets. By diversifying, investors can reduce the overall risk of their portfolio without necessarily sacrificing returns. This principle highlights the importance of asset allocation in portfolio construction.

Risk Metrics: Various metrics are used to measure the risk of investments, such as standard deviation, beta, and Value at Risk (VaR). These metrics help investors assess the level of risk associated with each investment and make informed decisions about portfolio allocation.

Efficient Frontier: The efficient frontier represents the optimal combination of risk and return for a given set of investments. Portfolios that lie on the efficient frontier offer the highest expected return for a given level of risk or the lowest level of risk for a given expected return. Modern portfolio theory (MPT) suggests that investors should aim to construct portfolios that lie on or near the efficient frontier to achieve the best risk-return tradeoff.

Investor Preferences: The relationship between risk and rate in portfolio formation also depends on investor preferences and objectives. Some investors may prioritize capital preservation and opt for lower-risk investments with correspondingly lower returns. Others may have a higher risk tolerance and seek higher returns, even if it means accepting greater volatility and potential losses.

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Time Horizon: The relationship between risk and rate can vary depending on the investor's time horizon. Investors with longer time horizons may be more willing to tolerate short-term fluctuations in pursuit of higher long-term returns, while those with shorter time horizons may prioritize capital preservation.

IN CONCLUSION, the relationship between risk and rate is a critical consideration in the formation of a financial investment portfolio. Investors must strike a balance between risk and return based on their risk tolerance, investment objectives, and time horizon. Diversification and the efficient frontier play crucial roles in optimizing the risk-return tradeoff, enabling investors to construct portfolios that align with their preferences and goals.

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