A Stock Has An Expected Return Of 11.85 Percent, Its Beta Is 1.08, And The Risk-free Rate Is 3.9 Percent.

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Introduction

Understanding the expected return of a stock, its beta coefficient, and the risk-free rate is fundamental in investment decision-making and portfolio management. These metrics provide insights into the stock's risk profile, its relationship with the overall market, and the potential return investors might anticipate given the associated risks. In this article, we explore what an expected return of 11.85%, a beta of 1.08, and a risk-free rate of 3.9% imply for investors, how they relate through financial models such as the Capital Asset Pricing Model (CAPM), and their significance in portfolio construction and risk assessment.

Fundamental Concepts and Definitions

Expected Return

Expected return is the weighted average of possible returns, reflecting the mean outcome an investor anticipates based on current information. It accounts for both the potential gains and the probabilities of those gains, serving as a benchmark for evaluating whether a stock is a suitable investment relative to its risk.

Beta Coefficient

Beta measures a stock's sensitivity to movements in the overall market. A beta of 1 indicates that the stock's price tends to move in line with the market, whereas a beta greater than 1 suggests higher volatility. Specifically:

- Beta < 1: The stock is less volatile than the market.
- Beta = 1: The stock moves proportionally with the market.
- Beta > 1: The stock is more volatile than the market.

Risk-Free Rate

The risk-free rate represents the return on an investment with zero risk, typically associated with government treasury bonds. It serves as the baseline for assessing other investments, as it embodies the minimum return an investor expects without bearing any risk.

Applying the Capital Asset Pricing Model (CAPM)

The CAPM Formula

The CAPM provides a framework to estimate the expected return of a security based on its systematic risk:

$$ \text{Expected Return} = R_f + \beta (R_m - R_f) $$

Where:

- $ R_f $: Risk-free rate
- $ R_m $: Expected return of the market portfolio

Given:
- $ R_f = 3.9\% $
- Expected return of stock, $ R_i = 11.85\% $
- $ \beta = 1.08 $

We can rearrange to solve for the expected market return $ R_m $.

Calculating the Implied Market Return

Using the CAPM formula:

$$ 11.85\% = 3.9\% + 1.08 (R_m - 3.9\%) $$

Solving for $ R_m $:

$$ 11.85\% - 3.9\% = 1.08 (R_m - 3.9\%) $$

$$ 7.95\% = 1.08 (R_m - 3.9\%) $$

$$ R_m - 3.9\% = \frac{7.95\%}{1.08} \approx 7.36\% $$

$$ R_m = 7.36\% + 3.9\% = 11.26\% $$

This implies the expected market return is approximately 11.26%. Interestingly, the stock’s expected

return exceeds the market’s average expected return, hinting at its higher risk profile, which is consistent with its beta.

Implications of the Given Data

Risk-Return Tradeoff

The expected return of 11.85% relative to the risk-free rate of 3.9% suggests a risk premium of about 7.95%. The risk premium compensates investors for bearing systematic risk associated with the stock's market sensitivity.

Understanding Beta's Role

The beta of 1.08 indicates slightly higher volatility than the market. This means the stock is expected to:

1. Experience somewhat larger price swings compared to the overall market.
2. Offer a higher expected return to compensate for the additional risk.

Assessing the Stock's Performance Relative to the Market

The calculated implied market return (~11.26%) being close to the stock’s expected return (11.85%) suggests the stock is fairly priced relative to its risk, assuming the CAPM holds true.

Investment Decision-Making Using These Metrics

Valuation and Portfolio Optimization

Investors can use the expected return and beta to:

- Determine whether the stock offers adequate compensation for its risk.
- Compare it against other investment opportunities with similar risk profiles.
- Incorporate it into diversified portfolios to balance risk and return effectively.

Calculating the Stock’s Alpha

Alpha measures the deviation of actual returns from those predicted by CAPM:

$$ \alpha = R_i - [R_f + \beta (R_m - R_f)] $$

Given the data:
- $R_i = 11.85\%$
- $R_f = 3.9\%$
- $R_m = 11.26\%$
- $\beta = 1.08$

Calculate the expected return based on CAPM:

$$ R_{CAPM} = 3.9\% + 1.08 \times (11.26\% - 3.9\%) = 3.9\% + 1.08 \times 7.36\% \approx 3.9\% + 7.95\% = 11.85\% $$

The expected return aligns exactly with the CAPM prediction, indicating a zero alpha and suggesting the stock is fairly valued.

Limitations and Considerations

Assumptions of the CAPM

While CAPM provides a useful framework, it relies on assumptions such as:

- Investors are rational and risk-averse.
- Markets are efficient, with all information available.
- No transaction costs or taxes.
- Investors can borrow and lend at the risk-free rate.

In real-world scenarios, these assumptions may not hold perfectly, affecting the accuracy of expected return estimates.

Market Conditions and Estimation Errors

The actual market return, risk premium, and beta can fluctuate over time. Estimations based on historical data may not fully capture future risks or returns.

Conclusion

The given data—an expected return of 11.85%, a beta of 1.08, and a risk-free rate of 3.9%—offer valuable insights into the risk-return landscape of the stock. Utilizing the CAPM framework, investors can interpret these figures to make informed decisions, evaluate whether the stock offers adequate compensation for its systematic risk, and incorporate it into their portfolios to optimize risk-adjusted returns. While these metrics provide a solid foundation, it is essential to consider market dynamics, assumptions underlying models, and potential deviations in actual performance. In essence, understanding these key financial indicators empowers investors to navigate the complex world of securities with greater confidence and strategic insight.

Frequently Asked Questions

How is the expected return of 11.85% for the stock calculated using the Capital Asset Pricing Model (CAPM)?

Using CAPM, the expected return is calculated as Risk-Free Rate + Beta (Market Return - Risk-Free Rate). Given the data, if we assume the market return, the calculation aligns with the expected return of 11.85%.

What does a Beta of 1.08 indicate about the stock's volatility relative to the market?

A Beta of 1.08 suggests that the stock is slightly more volatile than the overall market, meaning it tends to move 8% more than the market in either direction.

How does the risk-free rate of 3.9% influence the expected return of the stock?

The risk-free rate provides the baseline return for an investment with no risk. The stock's expected return of 11.85% includes a risk premium over this baseline, compensating investors for market risk.

If the market's expected return is estimated at 10%, is the stock's expected return of 11.85% justified by its Beta and the CAPM model?

Yes, using CAPM with a Beta of 1.08 and a market return of 10%, the expected return would be approximately 3.9% + 1.08(10% - 3.9%) ≈ 11.85%, which matches the given expected return.

What are the implications for investors considering this stock given its Beta and expected return?

Investors should recognize that the stock offers a higher expected return than the risk-free rate, reflecting its increased risk (Beta of 1.08). It may be suitable for those seeking slightly above-market risk-adjusted returns.

How can changes in the market's expected return impact the stock's expected return based on its Beta and the CAPM framework?

Since the expected return depends on the market return, an increase in market expectations would increase the stock's expected return proportionally, given its Beta, while a decrease would lower it accordingly.

Additional Resources

A Stock Has An Expected Return Of 11.85 Percent, Its Beta Is 1.08, And The Risk-free Rate Is 3.9 Percent

In the realm of investment analysis, understanding the relationship between risk and return is fundamental. The provided parameters—a stock with an expected return of 11.85%, a beta of 1.08, and a risk-free rate of 3.9%—offer a compelling case study to explore the application of core financial theories, particularly the Capital Asset Pricing Model (CAPM), and to evaluate what these figures imply for investors. This article delves into the significance of these metrics, their interrelations, and the broader context within which they operate, providing a comprehensive examination suitable for both academic and professional audiences.

Understanding the Core Metrics: Expected Return, Beta, and Risk-Free Rate

Before analyzing the implications of these figures, it is essential to clarify what each metric represents and how they interconnect within the framework of modern portfolio theory.

Expected Return

The expected return of 11.85% signifies the anticipated annualized profit an investor might expect from holding this stock, based on historical data, analyst forecasts, or probabilistic models. It embodies the compensation for taking on the specific risks associated with the stock and the broader market.

Beta: Measuring Systematic Risk

Beta, a measure of a stock’s sensitivity to market movements, quantifies the systematic risk relative to the overall market. A beta of 1 indicates that the stock's price tends to move in tandem with the market; a beta greater than 1 suggests higher volatility, and less than 1 indicates lower volatility compared to the market.

- Beta of 1.08 implies that the stock is slightly more volatile than the market, meaning if the market rises or falls by 1%, the stock is expected to move by approximately 1.08% in the same direction.

Risk-Free Rate

The risk-free rate, at 3.9%, typically reflects the return on a riskless asset—such as government treasury bonds—serving as the baseline for evaluating risk premiums. It provides a foundation upon which to assess additional risk premiums demanded by investors for taking on market risk.

Applying the Capital Asset Pricing Model (CAPM)

The CAPM offers a theoretical framework to understand the expected return of a security based on its systematic risk:

$$ \text{Expected Return} = R_f + \beta (R_m - R_f) $$

Where:

- $ R_f $ = Risk-free rate (3.9%)

- $ R_m $ = Expected market return

- $ \beta $ = Beta of the stock (1.08)

Given the expected return of 11.85% and the beta of 1.08, we can reverse-engineer the implied market return and compare it with typical market expectations.

Calculating the Implied Market Return

Rearranging the CAPM formula:

$$ R_m = R_f + \frac{R_i - R_f}{\beta} $$

Plugging in the known values:

$$ R_m = 3.9\% + \frac{11.85\% - 3.9\%}{1.08} $$

$$ R_m = 3.9\% + \frac{7.95\%}{1.08} $$

$$ R_m \approx 3.9\% + 7.36\% $$

$$ R_m \approx 11.26\% $$

This calculation suggests that, based on the given expected return and beta, the implied expected market return is approximately 11.26%. This figure aligns reasonably well with historical equity market returns, which typically range between 8% and 12%, depending on the period and measurement method.

Implications for Investors

- The stock's expected return slightly exceeds the implied market return, indicating it offers a modest risk premium.

- Given its beta of 1.08, the stock carries marginally higher market risk, and its expected return compensates accordingly.

- The alignment with typical market expectations suggests that the stock might be fairly valued or slightly undervalued, depending on other qualitative factors.

Risk-Return Tradeoff and Investment Decision-Making

Investors constantly balance the desire for higher returns against their tolerance for risk. The metrics here provide a snapshot of this tradeoff.

Assessing the Risk Premium

The market risk premium—the excess return over the risk-free rate demanded by investors—can be estimated as:

$$ R_m - R_f \approx 11.26\% - 3.9\% = 7.36\% $$

This premium reflects the compensation investors require for bearing systematic risk, as represented by the beta.

Expected Return Relative to Beta

The stock's risk-adjusted expected return can be evaluated by considering whether the 11.85% expected return adequately compensates for its systematic risk:

- Sharpe Ratio for the stock:

$$ \text{Sharpe Ratio} = \frac{R_i - R_f}{\sigma_i} $$

While the stock's volatility (σ_i) isn't directly provided here, beta offers a proxy for

systematic risk, but total risk includes unsystematic factors. A more comprehensive analysis would involve total volatility measures.

- Treynor Ratio:

$$ \text{Treynor Ratio} = \frac{R_i - R_f}{\beta} $$

$$ \approx \frac{11.85\% - 3.9\%}{1.08} \approx \frac{7.95\%}{1.08} \approx 7.36\% $$

This coincides with the market risk premium, reinforcing that the stock's expected return aligns proportionally with its systematic risk.

Market Context and Broader Implications

While quantitative metrics are vital, understanding their context within broader market conditions and investor expectations is equally important.

Market Environment and Historical Trends

- The implied market return (~11.26%) suggests an environment of optimistic growth, perhaps reflecting economic expansion, low interest rates, or favorable corporate earnings forecasts.

- The risk-free rate of 3.9% indicates a relatively low-yield environment, which has been characteristic of many developed economies in recent years, driven by accommodative monetary policies.

Valuation and Comparative Analysis

- Comparing these figures with industry peers can help assess whether the stock offers a compelling risk-return profile.

- If similar stocks have lower expected returns or beta, the stock might be undervalued or possess unique attributes.

- Conversely, if the market expects higher returns elsewhere, the stock might be less attractive.

Limitations and Caveats

- Model Assumptions: CAPM assumes market efficiency, rational investors, and homogenous expectations—all of which may not hold perfectly.

- Estimations and Data Quality: The expected return is based on forecasts, which are inherently uncertain and subject to revision.

- Unsystematic Risks: Company-specific factors, strategic shifts, or macroeconomic shocks could alter the expected return.

Concluding Perspectives: A Holistic View

The interplay between a stock's expected return, beta, and the risk-free rate provides critical insights into its risk profile and attractiveness. The calculated implied market return (~11.26%) suggests a market environment where investors are compensated adequately for systematic risk, aligning with historical norms.

For investors contemplating this stock, several considerations emerge:

- The stock's beta of 1.08 indicates slightly higher volatility, demanding a commensurate return, which appears to be offered.

- The expected return of 11.85% surpasses the implied market return, hinting at potential undervaluation or favorable company-specific prospects.

- The current macroeconomic environment—with low risk-free rates—further emphasizes the importance of evaluating whether the expected return justifies the inherent risks.

In sum, analyzing these metrics within the broader market context underscores the importance of integrating quantitative models with qualitative judgment. While CAPM provides a foundational framework, prudent investors should also consider factors such as company fundamentals, industry trends, macroeconomic shifts, and geopolitical risks before making investment decisions.

Ultimately, the figures discussed serve as a valuable starting point for deeper due diligence, offering a snapshot of the risk-return landscape that can inform strategic portfolio positioning and risk management strategies.

Note: All calculations and interpretations are based on the provided data and standard financial theories. Actual investment decisions should incorporate comprehensive analysis and personalized risk assessments.

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