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Understanding the dynamics of a stock's expected return, beta, and the risk-free rate is essential for investors aiming to make informed decisions. When a stock offers an expected return of 17 percent, with a beta of 1.35, and operates within an environment where the risk-free rate stands at 4 percent, it provides a compelling case study to explore how risk and return are interconnected in financial markets. This article delves into what these figures mean, how they influence investment strategies, and how the Capital Asset Pricing Model (CAPM) helps interpret such data.

Decoding Expected Return, Beta, and Risk-Free Rate

What Is Expected Return?

Expected return refers to the estimated profit or loss an investor anticipates from an investment over a certain period. It combines the probability-weighted outcomes of potential returns, serving as a benchmark to evaluate whether an investment is worth the risk.

- Significance: Provides a basis for comparing different investment opportunities.
- Calculation: Often based on historical data, forecasted earnings, or financial models like CAPM.
- In Our Scenario: An expected return of 17% suggests that, on average, investors anticipate earning 17 cents for every dollar invested, considering the risk involved.

Understanding Beta

Beta measures a stock's volatility relative to the overall market. A beta of 1 indicates that the stock's price moves in tandem with the market.

- Beta of 1.35: Indicates that the stock is 35% more volatile than the market.
- Implications: Higher beta stocks tend to have higher potential returns but also come with increased risk.
- Risk Considerations: Investors should assess whether they are comfortable with the heightened volatility associated with a beta of 1.35.

The Role of the Risk-Free Rate

The risk-free rate is the return on an investment with zero risk, typically represented by government treasury bonds.

- Given at 4%: Reflects the baseline return an investor can earn without taking any risk.
- Usage: Serves as a benchmark for assessing the additional risk premium required for riskier assets.
- Impact: The higher the risk-free rate, the higher the expected return investors will demand for taking on additional risk.

Applying the Capital Asset Pricing Model (CAPM)

What Is CAPM?

The Capital Asset Pricing Model (CAPM) is a fundamental financial theory that relates the expected return of an asset to its risk relative to the market.

- Formula: Expected Return = Risk-Free Rate + Beta × (Market Return - Risk-Free Rate)
- Purpose: Helps investors determine whether an investment offers a fair return given its risk level.

Calculating the Market Return

Given the data:

- Expected Return ($E[R]$) = 17%
- Beta (β) = 1.35
- Risk-Free Rate (R_f) = 4%

We can rearrange the CAPM formula to find the implied market return:

$$\text{Market Return } (R_m) = [E[R] - R_f] / \beta + R_f$$

Plugging in the values:

- $R_m = [(17\% - 4\%) / 1.35] + 4\%$
- $R_m = (13\% / 1.35) + 4\%$
- $R_m \approx 9.63\% + 4\%$
- $R_m \approx 13.63\%$

This suggests that, based on the expected return and beta, the implied market return is approximately 13.63%.

Interpreting the Results

The implied market return of roughly 13.63% exceeds the risk-free rate of 4%, aligning with investor expectations for risk premiums.

- Risk Premium: The excess return over the risk-free rate, in this case, about 9.63%, compensates investors for taking on market risk.
- Risk-Return Tradeoff: The higher the beta, the higher the expected return needed to justify the additional risk.

Implications for Investors

Evaluating the Stock's Attractiveness

Given the data, investors should consider several factors:

- Risk Tolerance: A beta of 1.35 indicates increased volatility, suitable for investors comfortable with higher risk.
- Return Expectations: An expected return of 17% is attractive, especially when compared to the implied market return.
- Market Conditions: The relatively high expected return might reflect anticipated market growth or specific company prospects.

Assessing the Investment Using CAPM

Investors can compare the expected return with the CAPM-derived return to determine if the stock is fairly valued:

- If the actual expected return (17%) exceeds the CAPM estimate based on current market conditions, the stock may be undervalued.
- Conversely, if it falls short, the stock might be overvalued or involve more risk than the return warrants.

Portfolio Diversification Considerations

Investors should not rely solely on a single metric but incorporate the following:

- Correlation with other assets
- Overall market trends
- Individual company fundamentals

Diversification helps mitigate risks associated with high-beta stocks.

Strategic Insights for Investors

Balancing Risk and Return

Understanding the interplay between beta and expected return allows investors to tailor their portfolios according to their risk appetite.

- High Beta Stocks: Suitable for aggressive investors seeking higher returns.
- Low Beta Stocks: Better for conservative investors prioritizing stability.

Using the Data for Investment Decisions

Investors can utilize the provided figures to:

- Identify Value Opportunities: If the stock's actual return exceeds CAPM estimates, it may be undervalued.
- Set Realistic Expectations: Recognize that higher expected returns often come with increased volatility.
- Adjust Portfolio Composition: Incorporate stocks with varying betas to balance risk and potential gains.

Conclusion

A stock with an expected return of 17 percent, a beta of 1.35, and a risk-free rate of 4 percent exemplifies the intricate relationship between risk and return in the financial markets. Applying models like CAPM helps investors quantify whether a stock's expected performance aligns with its inherent risk. Ultimately, understanding these metrics enables more strategic investment decisions, fostering portfolios that align with individual risk tolerance and return objectives. Whether you are a seasoned investor or just starting, grasping these concepts is vital for navigating the complexities of stock investing and building a resilient, profitable portfolio.

Frequently Asked Questions

What does a beta of 1.35 indicate about the stock's volatility compared to the market?

A beta of 1.35 suggests that the stock is 35% more volatile than the overall market, meaning it tends to experience larger price swings in response to market movements.

How is the expected return of 17% related to the stock's beta and the risk-free rate?

The expected return of 17% can be estimated using the Capital Asset Pricing Model (CAPM), which considers the risk-free rate, beta, and market risk premium to determine the appropriate compensation for the stock's risk.

What is the implied market risk premium based on the given data?

Using the CAPM formula: $\text{Expected Return} = \text{Risk-Free Rate} + \text{Beta Market Risk Premium}$, we can rearrange to find $\text{Market Risk Premium} = (\text{Expected Return} - \text{Risk-Free Rate}) / \text{Beta} = (17\% - 4\%) / 1.35 \approx 9.63\%$.

Is a 17% expected return attractive for investors given the risk level?

Yes, a 17% expected return is generally considered attractive, especially given the stock's higher beta, which implies higher risk and potential reward compared to less volatile investments.

How does the risk-free rate of 4% influence the stock's expected return in CAPM?

The risk-free rate serves as the baseline return; the stock's additional expected return of 17% reflects compensation for its market risk (beta), above the risk-free rate.

Can the expected return be used to assess whether the stock is undervalued or overvalued?

Yes, by comparing the expected return derived from CAPM with the stock's actual return or market price, investors can evaluate if the stock is undervalued or overvalued relative to its risk.

What assumptions are involved when applying CAPM to this stock's expected return?

CAPM assumes markets are efficient, investors are rational, there are no transaction costs, and the beta accurately measures market risk, among other idealized conditions.

How might changes in the market risk premium affect the stock's expected return estimate?

An increase in the market risk premium would raise the expected return, indicating higher compensation for risk, while a decrease would lower it, reflecting reduced market risk expectations.

Additional Resources

A stock has an expected return of 17 percent, its beta is 1.35, and the risk-free rate is 4 percent—these figures provide a compelling snapshot into the risk and return profile of this particular investment. Understanding what these numbers mean, how they relate to each other, and what they imply for investors is critical for making informed decisions in the financial markets. In this comprehensive guide, we'll break down these key concepts, explore how they interact, and demonstrate how to evaluate this stock's attractiveness based on fundamental financial principles.

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

Before diving into the analysis, it's essential to understand each component:

Expected Return (17%)

- Definition: The anticipated average return from an investment over a specified period, based on historical data, forecasts, or models.
- Implication: A higher expected return generally indicates higher potential profit but often accompanies increased risk.

Beta (1.35)

- Definition: A measure of a stock's volatility relative to the overall market.
- Interpretation:
 - Beta > 1: The stock is more volatile than the market.
 - Beta < 1: The stock is less volatile.
 - Beta = 1: The stock moves in tandem with the market.
- In this case: A beta of 1.35 suggests the stock tends to amplify market movements by 35%. If the market rises by 1%, this stock is expected to rise by approximately 1.35%, and vice versa.

Risk-Free Rate (4%)

- Definition: The theoretical return on an investment with zero risk, typically represented by government bonds like U.S. Treasury bills.
- Role: Serves as a baseline for measuring risk premiums and helps in constructing models like the Capital Asset Pricing Model (CAPM).

The Capital Asset Pricing Model (CAPM): The Bridge Between Risk and Return

CAPM is a foundational model used to determine the expected return of an asset based on its systematic risk, represented by beta. The formula:

$$\text{Expected Return (E[R])} = \text{Risk-Free Rate (Rf)} + \text{Beta } (\beta) \times \text{Market Risk Premium (E[Rm] - Rf)}$$

Where:

- E[Rm]: Expected return of the overall market
- E[R]: Expected return of the stock

Given the data:

- E[R] = 17%
- $\beta = 1.35$
- Rf = 4%

The key unknown here is the market risk premium (E[Rm] - Rf). This represents the additional return investors require for choosing the risky market over the risk-free asset.

Calculating the Implied Market Risk Premium

Rearranging the CAPM formula:

$$\text{Market Risk Premium} = (E[R] - R_f) / \beta$$

Plugging in our numbers:

$$\text{Market Risk Premium} = (17\% - 4\%) / 1.35 = 13\% / 1.35 \approx 9.63\%$$

This suggests that, based on the stock's expected return and beta, the implied market risk premium is approximately 9.63%.

What does this tell us?

- Investors expect to be compensated with roughly 9.63% above the risk-free rate for taking on the systematic risk associated with the market.
- The high expected return (17%) combined with a beta of 1.35 indicates that this stock is viewed as a relatively risky investment, but with attractive potential returns.

Is This Stock Fairly Valued? Applying the CAPM

Using the CAPM, we can check whether this stock might be undervalued or overvalued by comparing its expected return to the return predicted by the model.

Calculating the CAPM Expected Return

Assuming the market risk premium is approximately 9.63% (from above):

$$E[R] = R_f + \beta \times \text{Market Risk Premium}$$

$$E[R] = 4\% + 1.35 \times 9.63\% \approx 4\% + 13\% \approx 17\%$$

This matches the given expected return, indicating that the market's consensus aligns with the CAPM valuation.

Implication:

- The stock appears fairly valued relative to CAPM assumptions.
- If the actual return expectations rise above 17%, the stock might be undervalued.
- Conversely, if the expected return drops below this level, it might be overvalued.

Risk and Return Trade-offs: Should You Invest?

Understanding the risk-return profile helps investors determine whether the stock aligns with their risk tolerance and investment goals.

Risk Profile Based on Beta

- Beta of 1.35 suggests higher systematic risk.
- Investors requiring stability might shy away, favoring assets with lower beta.
- Aggressive investors seeking higher returns might find this stock appealing.

Return Expectations

- 17% expected return is attractive, especially compared to the risk-free rate of 4%.
- The risk premium (about 13%) signifies a significant reward for bearing market risk.

Investment Considerations:

1. Market Conditions: Is the market expected to grow or decline? A high beta stock can amplify gains or losses.
2. Economic Environment: During economic downturns, high-beta stocks tend to underperform.
3. Diversification: Including high-beta stocks can increase portfolio volatility, so balance is key.
4. Historical Performance: Past performance isn't indicative but can offer insights into volatility and return consistency.

Practical Steps for Investors

1. Assess Your Risk Tolerance

- Are you comfortable with higher volatility?
- Can you withstand potential declines in value during downturns?

2. Compare with Other Opportunities

- How does this stock's expected return and beta compare with alternatives?
- Are there undervalued stocks with lower risk profiles?

3. Perform Fundamental Analysis

- Review the company's financial health, earnings stability, growth prospects.
- Evaluate industry trends and competitive positioning.

4. Use the CAPM as a Benchmark

- Confirm whether the expected return aligns with your required rate of return based on your risk appetite.
- Adjust assumptions if your risk preferences differ from the market's general expectations.

5. Monitor Market Conditions

- Changes in interest rates, economic outlooks, or investor sentiment can impact beta and expected returns.

Limitations and Caveats

While these metrics provide valuable insights, they are not foolproof:

- CAPM assumptions: Market efficiency, rational investors, and homogenous expectations.

- Beta stability: Beta can fluctuate over time; a historical beta may not reflect future volatility.
- Market risk premium variability: The implied 9.63% is based on current assumptions and can change with economic outlooks.
- Expected return estimation: Forecasts are inherently uncertain and subject to change.

Final Thoughts

The combination of an expected return of 17 percent, a beta of 1.35, and a risk-free rate of 4 percent paints a picture of a relatively aggressive investment opportunity that promises higher-than-average returns but with commensurate risk. Using models like CAPM helps quantify this trade-off and assess whether the investment aligns with your financial goals and risk appetite.

Always remember: no single metric should dictate your decision. Instead, integrate these insights with comprehensive fundamental analysis, market research, and personal investment strategy. As markets evolve, so should your understanding and approach to risk and return.

In summary, understanding how expected return, beta, and risk-free rates interact allows investors to make more informed choices. Whether you're a seasoned professional or a retail investor, leveraging these concepts can enhance your ability to identify attractive opportunities and manage risk effectively in your portfolio.

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