

WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY?

GROUP OF ANSWER CHOICES A. ZERO RATE OF RETURN.

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INTRODUCTION TO ZERO-BETA SECURITIES

IN THE WORLD OF FINANCE AND INVESTMENT, UNDERSTANDING THE RELATIONSHIP BETWEEN RISK AND RETURN IS FUNDAMENTAL. AMONG THE VARIOUS TYPES OF SECURITIES, ZERO-BETA SECURITIES OCCUPY A UNIQUE POSITION DUE TO THEIR DISTINCTIVE RISK PROFILE. THE QUESTION "WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY?" OFTEN ARISES AMONG STUDENTS, INVESTORS, AND FINANCIAL ANALYSTS. TO ANSWER THIS COMPREHENSIVELY, WE NEED TO DELVE INTO THE CONCEPTS OF BETA, THE CAPITAL ASSET PRICING MODEL (CAPM), AND THE CHARACTERISTICS THAT DEFINE ZERO-BETA SECURITIES.

UNDERSTANDING BETA AND ITS SIGNIFICANCE

WHAT IS BETA?

BETA IS A MEASURE OF A SECURITY'S SENSITIVITY TO SYSTEMATIC RISK, WHICH IS THE RISK INHERENT TO THE ENTIRE MARKET OR MARKET SEGMENT. IT QUANTIFIES HOW MUCH A SECURITY'S RETURNS MOVE IN RELATION TO THE OVERALL MARKET RETURNS.

- BETA OF 1: THE SECURITY'S PRICE TENDS TO MOVE IN LINE WITH THE MARKET.
- BETA GREATER THAN 1: THE SECURITY IS MORE VOLATILE THAN THE MARKET.
- BETA LESS THAN 1: THE SECURITY IS LESS VOLATILE THAN THE MARKET.
- BETA OF 0: THE SECURITY'S RETURNS ARE UNCORRELATED WITH THE MARKET.

SIGNIFICANCE OF BETA IN INVESTMENT DECISIONS

BETA PLAYS A CRUCIAL ROLE IN PORTFOLIO MANAGEMENT AND RISK ASSESSMENT. IT HELPS INVESTORS UNDERSTAND HOW ADDING A PARTICULAR SECURITY AFFECTS THE OVERALL RISK-RETURN PROFILE OF THEIR PORTFOLIO. HIGH-BETA SECURITIES TEND TO OFFER HIGHER POTENTIAL RETURNS BUT COME WITH INCREASED RISK, WHEREAS LOW OR ZERO-BETA SECURITIES ARE LESS RISKY.

ZERO-BETA SECURITIES: DEFINITION AND CHARACTERISTICS

WHAT IS A ZERO-BETA SECURITY?

A ZERO-BETA SECURITY IS AN ASSET THAT HAS A BETA OF ZERO. THIS IMPLIES THAT ITS RETURNS ARE NOT CORRELATED WITH THE MOVEMENTS OF THE MARKET INDEX. SUCH SECURITIES ARE CONSIDERED TO BE FREE FROM SYSTEMATIC RISK, ALTHOUGH THEY MAY STILL BE SUBJECT TO UNSYSTEMATIC (COMPANY-SPECIFIC) RISK.

CHARACTERISTICS OF ZERO-BETA SECURITIES

- NO MARKET RISK: SINCE THEIR RETURNS ARE UNCORRELATED WITH THE MARKET, THEY ARE NOT AFFECTED BY MARKET FLUCTUATIONS.
- UNCORRELATED RETURNS: THEIR PERFORMANCE DOES NOT DEPEND ON THE OVERALL MARKET TRENDS.
- POTENTIAL FOR DIVERSIFICATION: THEY CAN BE USED TO DIVERSIFY A PORTFOLIO BY OFFSETTING SYSTEMATIC RISK.
- EXAMPLES: CERTAIN GOVERNMENT BONDS, RISK-FREE ASSETS LIKE TREASURY BILLS, OR SPECIFIC FINANCIAL INSTRUMENTS DESIGNED TO HAVE NO MARKET CORRELATION.

THE CAPITAL ASSET PRICING MODEL (CAPM) AND ZERO-BETA SECURITIES

OVERVIEW OF CAPM

THE CAPM IS A FOUNDATIONAL MODEL IN FINANCE THAT DESCRIBES THE RELATIONSHIP BETWEEN EXPECTED RETURN AND SYSTEMATIC RISK (BETA). THE FORMULA FOR CAPM IS:

$$E(R_i) = R_f + \beta_i (E(R_M) - R_f)$$

WHERE:

- R_f = RISK-FREE RATE
- β_i = BETA OF SECURITY i
- $E(R_M)$ = EXPECTED RETURN OF THE MARKET PORTFOLIO

APPLYING CAPM TO ZERO-BETA SECURITIES

SINCE A ZERO-BETA SECURITY HAS $\beta = 0$, SUBSTITUTING INTO THE CAPM FORMULA YIELDS:

$$E(R_{\text{zero}}) = R_f + 0 \times (E(R_M) - R_f) = R_f$$

THIS INDICATES THAT THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS EQUAL TO THE RISK-FREE RATE.

EXPECTED RETURN OF A ZERO-BETA SECURITY

KEY INSIGHT

BASED ON THE CAPM, THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS SIMPLY THE RISK-FREE RATE. THIS IS BECAUSE, WITH NO SYSTEMATIC RISK, THE SECURITY SHOULD NOT COMMAND A RETURN PREMIUM ABOVE THE RISK-FREE RATE.

IMPLICATIONS FOR INVESTORS AND PORTFOLIO MANAGERS

- RISK-FREE RATE AS EXPECTED RETURN: INVESTORS SHOULD EXPECT A RETURN EQUAL TO THE RISK-FREE RATE FOR ZERO-BETA SECURITIES.
- USE IN PORTFOLIO CONSTRUCTION: ZERO-BETA SECURITIES SERVE AS PROXIES FOR RISK-FREE ASSETS IN PORTFOLIO OPTIMIZATION.
- ARBITRAGE OPPORTUNITIES: IF A ZERO-BETA SECURITY OFFERS A RETURN HIGHER THAN THE RISK-FREE RATE, IT MAY INDICATE

WHY IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY EQUAL TO THE RISK-FREE RATE?

INTUITIVE EXPLANATION

SINCE ZERO-BETA SECURITIES ARE UNCORRELATED WITH THE MARKET, THEY DO NOT PROVIDE A RISK PREMIUM TYPICALLY ASSOCIATED WITH TAKING ON MARKET RISK. INVESTORS ARE COMPENSATED FOR BEARING SYSTEMATIC RISK, WHICH ZERO-BETA SECURITIES LACK; THEREFORE, THEIR EXPECTED RETURN ALIGNS WITH THE RISK-FREE RATE.

MARKET EQUILIBRIUM PERSPECTIVE

IN A WELL-FUNCTIONING MARKET, THE RETURN ON ASSETS REFLECTS THE AMOUNT OF SYSTEMATIC RISK THEY CARRY. ZERO-BETA SECURITIES, WITH NO SYSTEMATIC RISK, SHOULD THEREFORE EARN THE RISK-FREE RATE TO MAINTAIN EQUILIBRIUM.

ADDITIONAL CONSIDERATIONS AND EXCEPTIONS

REAL-WORLD DEVIATIONS

WHILE THEORY SUGGESTS THAT THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS THE RISK-FREE RATE, REAL-WORLD FACTORS CAN CAUSE DEVIATIONS:

- DEFAULT RISK: EVEN GOVERNMENT BONDS, CONSIDERED RISK-FREE, HAVE MINIMAL DEFAULT RISK.
- LIQUIDITY PREMIUMS: ASSETS WITH LOW LIQUIDITY MAY OFFER HIGHER RETURNS.
- MARKET ANOMALIES: BEHAVIORAL BIASES AND MARKET INEFFICIENCIES CAN LEAD TO DEVIATIONS FROM THEORETICAL EXPECTATIONS.

OTHER TYPES OF SECURITIES AND THEIR EXPECTED RETURNS

- HIGH-BETA SECURITIES: EXPECTED TO YIELD HIGHER RETURNS TO COMPENSATE FOR ADDED SYSTEMATIC RISK.
- NEGATIVE-BETA SECURITIES: MAY PROVIDE RETURNS INVERSELY CORRELATED WITH THE MARKET, OFTEN EARNING A RETURN BELOW THE RISK-FREE RATE.

SUMMARY AND CONCLUSION

IN CONCLUSION, THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS EQUAL TO THE RISK-FREE RATE. THIS FUNDAMENTAL INSIGHT STEMS FROM THE PRINCIPLES OF THE CAPM, WHICH LINKS EXPECTED RETURN TO SYSTEMATIC RISK MEASURED BY BETA. ZERO-BETA SECURITIES, WITH THEIR UNCORRELATED RETURNS, DO NOT EARN A RISK PREMIUM FOR MARKET RISK, MAKING THEIR EXPECTED RETURN EQUIVALENT TO THE RISK-FREE RATE.

UNDERSTANDING THIS RELATIONSHIP IS VITAL FOR INVESTORS AIMING TO CONSTRUCT DIVERSIFIED PORTFOLIOS, HEDGE AGAINST MARKET VOLATILITY, OR IDENTIFY ARBITRAGE OPPORTUNITIES. ALTHOUGH REAL-WORLD FACTORS CAN CAUSE MINOR

DEVIATIONS, THE CORE THEORETICAL PRINCIPLE REMAINS A CORNERSTONE OF MODERN PORTFOLIO THEORY.

FINAL NOTE

WHEN FACED WITH MULTIPLE-CHOICE QUESTIONS ABOUT THE EXPECTED RETURN OF A ZERO-BETA SECURITY, THE CORRECT ANSWER ALIGNS WITH THE STATEMENT: ZERO RATE OF RETURN, OR MORE PRECISELY, THE RISK-FREE RATE. RECOGNIZING THIS FUNDAMENTAL CONCEPT ENHANCES ONE'S GRASP OF INVESTMENT RISK MANAGEMENT AND ASSET PRICING MODELS.

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FREQUENTLY ASKED QUESTIONS

WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY ACCORDING TO THE CAPITAL ASSET PRICING MODEL (CAPM)?

THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS EQUAL TO THE RISK-FREE RATE, WHICH IS OFTEN CONSIDERED TO BE ZERO OR VERY CLOSE TO ZERO IN MANY MODELS.

WHY DOES A ZERO-BETA SECURITY HAVE AN EXPECTED RETURN OF ZERO OR CLOSE TO ZERO?

BECAUSE IT HAS NO SYSTEMATIC RISK (BETA OF ZERO), THE SECURITY'S EXPECTED RETURN ALIGNS WITH THE RISK-FREE RATE, RESULTING IN A RETURN CLOSE TO ZERO IN A SIMPLIFIED CONTEXT.

IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY ALWAYS ZERO, OR CAN IT VARY?

IN THEORY, THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS EQUAL TO THE RISK-FREE RATE, WHICH CAN BE ZERO OR A POSITIVE VALUE DEPENDING ON THE ECONOMIC ENVIRONMENT; THUS, IT CAN VARY BUT IS GENERALLY CONSIDERED LOW OR ZERO IN SIMPLIFIED MODELS.

HOW DOES THE CONCEPT OF ZERO-BETA SECURITIES HELP IN PORTFOLIO DIVERSIFICATION?

ZERO-BETA SECURITIES PROVIDE DIVERSIFICATION BENEFITS BECAUSE THEIR RETURNS ARE UNCORRELATED WITH THE MARKET, HELPING TO REDUCE OVERALL PORTFOLIO RISK WITHOUT ADDING MARKET RISK.

IN THE PROVIDED ANSWER CHOICES, WHAT DOES 'A. ZERO RATE OF RETURN' IMPLY ABOUT THE EXPECTED RETURN OF A ZERO-BETA SECURITY?

IT IMPLIES THAT THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS ZERO, ALIGNING WITH THE IDEA THAT SUCH SECURITIES HAVE NO SYSTEMATIC RISK AND THUS OFFER NO EXPECTED EXCESS RETURN OVER THE RISK-FREE RATE.

ADDITIONAL RESOURCES

EXPECTED RETURN OF A ZERO-BETA SECURITY: AN IN-DEPTH ANALYSIS

UNDERSTANDING THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS A FUNDAMENTAL ASPECT OF MODERN PORTFOLIO THEORY AND CAPITAL ASSET PRICING MODELS (CAPM). THIS CONCEPT PLAYS A PIVOTAL ROLE IN HOW INVESTORS ASSESS RISK AND DETERMINE APPROPRIATE COMPENSATION FOR HOLDING VARIOUS SECURITIES. IN THIS ARTICLE, WE EXPLORE THE UNDERLYING PRINCIPLES, THEORETICAL FOUNDATIONS, AND PRACTICAL IMPLICATIONS OF THE EXPECTED RETURN OF ZERO-BETA SECURITIES. WE WILL ANALYZE THE QUESTION: WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY? AND INTERPRET THE OPTIONS AVAILABLE, WITH A FOCUS ON THE CORRECT UNDERSTANDING WITHIN FINANCIAL THEORY.

INTRODUCTION TO BETA AND ITS SIGNIFICANCE IN ASSET PRICING

WHAT IS BETA?

BETA (β) IS A MEASURE OF A SECURITY'S SYSTEMATIC RISK—THE PORTION OF ITS TOTAL RISK THAT IS ATTRIBUTABLE TO MARKET-WIDE FACTORS. IT QUANTIFIES HOW MUCH A SECURITY'S RETURNS MOVE RELATIVE TO THE OVERALL MARKET. A BETA OF 1 INDICATES THAT THE SECURITY'S RETURNS TEND TO MOVE IN TANDEM WITH THE MARKET, WHILE A BETA LESS THAN 1 SUGGESTS LESS VOLATILITY THAN THE MARKET, AND A BETA GREATER THAN 1 INDICATES HIGHER VOLATILITY.

SIGNIFICANCE IN ASSET PRICING MODELS

IN THE CONTEXT OF THE CAPITAL ASSET PRICING MODEL (CAPM), BETA SERVES AS A KEY VARIABLE IN DETERMINING THE EXPECTED RETURN OF A SECURITY:

$$E(R_i) = R_f + \beta_i (E(R_M) - R_f)$$

WHERE:

- $E(R_i)$ IS THE EXPECTED RETURN OF THE SECURITY,
- R_f IS THE RISK-FREE RATE,
- $E(R_M)$ IS THE EXPECTED RETURN OF THE MARKET PORTFOLIO,
- β_i IS THE BETA OF THE SECURITY.

THIS FORMULA IMPLIES THAT THE EXPECTED RETURN IS A FUNCTION OF THE RISK-FREE RATE PLUS A RISK PREMIUM PROPORTIONAL TO THE SECURITY'S SYSTEMATIC RISK.

UNDERSTANDING ZERO-BETA SECURITIES

DEFINING ZERO-BETA SECURITIES

A ZERO-BETA SECURITY IS A HYPOTHETICAL OR ACTUAL SECURITY THAT EXHIBITS ZERO SYSTEMATIC RISK—MEANING ITS RETURNS ARE UNCORRELATED WITH THE OVERALL MARKET. THE BETA OF SUCH A SECURITY IS ZERO ($\beta = 0$). BECAUSE IT DOES NOT CO-MOVE WITH THE MARKET, IT PROVIDES A UNIQUE PERSPECTIVE ON RISK AND RETURN.

THEORETICAL IMPORTANCE IN CAPM

WITHIN THE FRAMEWORK OF CAPM, ZERO-BETA SECURITIES ARE ESPECIALLY IMPORTANT BECAUSE THEY FORM THE FOUNDATION FOR THE ZERO-BETA MODEL—A VARIATION OF THE CAPM THAT RELAXES SOME ASSUMPTIONS AND PROVIDES A MORE FLEXIBLE APPROACH TO ESTIMATING EXPECTED RETURNS. THE PRESENCE OF A ZERO-BETA SECURITY ALLOWS INVESTORS TO CONSTRUCT PORTFOLIOS THAT ARE RISKLESS WITH RESPECT TO MARKET MOVEMENTS, AND ITS EXPECTED RETURN OFFERS INSIGHT INTO THE RISK-FREE RATE AND MARKET EQUILIBRIUM.

THE EXPECTED RETURN OF A ZERO-BETA SECURITY

THE CORE QUESTION

THE CENTRAL QUESTION IS: WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY? THE INTUITIVE ANSWER MIGHT BE THAT SINCE IT BEARS NO SYSTEMATIC RISK, ITS RETURN SHOULD BE MINIMAL OR EVEN ZERO. HOWEVER, FINANCIAL THEORY SUGGESTS A MORE NUANCED ANSWER ROOTED IN THE PRINCIPLES OF THE CAPM.

ANALYZING THE CHOICES

IN MANY MULTIPLE-CHOICE FORMATS, THE OPTIONS MIGHT INCLUDE:

- A. ZERO RATE OF RETURN
- B. THE RISK-FREE RATE
- C. THE MARKET RETURN
- D. THE EXPECTED RETURN OF THE MARKET

THE CORRECT THEORETICAL ANSWER ALIGNS WITH OPTION B: THE RISK-FREE RATE.

THEORETICAL JUSTIFICATION FOR THE EXPECTED RETURN OF A ZERO-BETA SECURITY

ACCORDING TO THE CAPM AND MODERN PORTFOLIO THEORY, THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS EQUAL TO THE RISK-FREE RATE (R_f). HERE'S WHY:

1. NO SYSTEMATIC RISK: SINCE THE SECURITY'S RETURNS ARE UNCORRELATED WITH THE MARKET, IT HAS NO SYSTEMATIC RISK PREMIUM.
2. RISK PREMIUM AND EXPECTED RETURN: THE CAPM STATES THAT ONLY SYSTEMATIC RISK COMMANDS A RISK PREMIUM. FOR A SECURITY WITH ZERO SYSTEMATIC RISK, THE RISK PREMIUM IS ZERO.
3. RISK-FREE RATE AS A BENCHMARK: THE RISK-FREE RATE IS THE RETURN ON AN INVESTMENT WITH NO RISK OF DEFAULT OR SYSTEMATIC RISK. BECAUSE A ZERO-BETA SECURITY IS UNCORRELATED WITH MARKET FLUCTUATIONS, ITS EXPECTED RETURN SHOULD BE EQUIVALENT TO THE RISK-FREE RATE, ASSUMING MARKETS ARE IN EQUILIBRIUM.

MATHEMATICALLY, IF WE REWRITE THE CAPM FOR A ZERO-BETA SECURITY:

$$E(R_0) = R_f + 0 \times (E(R_M) - R_f) = R_f$$

THIS EQUATION CLEARLY INDICATES THAT THE EXPECTED RETURN OF A ZERO-BETA SECURITY IS THE RISK-FREE RATE.

IMPLICATIONS AND PRACTICAL CONSIDERATIONS

REAL-WORLD APPLICABILITY

WHILE ZERO-BETA SECURITIES ARE LARGELY THEORETICAL CONSTRUCTS, THEY PROVIDE ESSENTIAL INSIGHTS INTO ASSET PRICING AND PORTFOLIO MANAGEMENT:

- BENCHMARKING: ZERO-BETA SECURITIES SERVE AS BENCHMARKS FOR RISKLESS INVESTMENTS.
- PORTFOLIO CONSTRUCTION: INVESTORS MAY COMBINE ZERO-BETA SECURITIES WITH RISKY ASSETS TO ACHIEVE DESIRED RISK-RETURN PROFILES.
- RISK MANAGEMENT: UNDERSTANDING THE EXPECTED RETURN OF ZERO-BETA SECURITIES HELPS IN HEDGING AND DIVERSIFICATION STRATEGIES.

LIMITATIONS AND ASSUMPTIONS

THE THEORETICAL CONCLUSION RELIES ON ASSUMPTIONS SUCH AS MARKET EFFICIENCY, INVESTOR RATIONALITY, AND THE VALIDITY OF CAPM. REAL-WORLD DEVIATIONS—LIKE MARKET FRICTIONS, TAXES, AND BEHAVIORAL BIASES—CAN LEAD TO DISCREPANCIES.

CONCLUSION: CLARIFYING THE ANSWER TO THE QUESTION

IN SUMMARY, THE EXPECTED RETURN OF A ZERO-BETA SECURITY, UNDER THE ASSUMPTIONS OF THE CAPM AND MODERN PORTFOLIO THEORY, IS EQUAL TO THE RISK-FREE RATE. THIS CONCLUSION UNDERSCORES THE FUNDAMENTAL PRINCIPLE THAT ONLY SYSTEMATIC RISK COMMANDS A RISK PREMIUM, WHILE ASSETS UNCORRELATED WITH THE MARKET OFFER RETURNS COMPARABLE TO A RISKLESS INVESTMENT.

THEREFORE, THE CORRECT ANSWER TO THE QUESTION "WHAT IS THE EXPECTED RETURN OF A ZERO-BETA SECURITY?" IS:

- B. THE RISK-FREE RATE

THIS UNDERSTANDING IS CRITICAL FOR INVESTORS AND FINANCIAL ANALYSTS ALIKE, PROVIDING A BENCHMARK FOR RISK ASSESSMENT AND PORTFOLIO OPTIMIZATION.

FINAL THOUGHTS

THE CONCEPT OF ZERO-BETA SECURITIES NOT ONLY ENRICHES OUR THEORETICAL UNDERSTANDING BUT ALSO INFORMS PRACTICAL INVESTMENT STRATEGIES. RECOGNIZING THAT THEIR EXPECTED RETURN IS THE RISK-FREE RATE ALLOWS INVESTORS TO BETTER GAUGE THE RISK-RETURN TRADE-OFF AND CONSTRUCT DIVERSIFIED PORTFOLIOS ALIGNED WITH THEIR RISK APPETITE. AS MARKETS EVOLVE AND NEW FINANCIAL INSTRUMENTS EMERGE, THE FOUNDATIONAL PRINCIPLES SURROUNDING ZERO-BETA SECURITIES CONTINUE TO SERVE AS GUIDING BENCHMARKS IN FINANCIAL ANALYSIS AND DECISION-MAKING.

NOTE: WHILE THE ABOVE DISCUSSION IS ROOTED IN CLASSICAL FINANCIAL THEORY, REAL-WORLD APPLICATIONS MAY INVOLVE COMPLEXITIES THAT SLIGHTLY ALTER THESE IDEALIZED OUTCOMES. NONETHELESS, THE CORE PRINCIPLE REMAINS A CORNERSTONE OF ASSET PRICING.

What Is The Expected Return Of A Zero Beta Security Group Of Answer Choices A Zero Rate Of Return

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