Corporate Finance, Module 7, “Risk and Return”

Readings for the Fourteenth Edition (2022) of the Brealey, Myers, Allen, and Edmans text

(The attached PDF file has better formatting.)

The sections in this posting are for the *fourteenth* edition of the Brealey, Myers, Allen, and Edmans text. You may also use the seventh through thirteenth editions; final exam problems can be answered from any edition.

{The Brealey, Myers, Allen, and Edmans textbook is excellent. We say to read certain sections and to skip others. This does not mean that certain sections are better; it means that the homework assignments and exam problems are based on the sections that you must read for this course. Some of the skipped sections are fascinating, but they are not tested.}

The introduction on page 190 summarizes the key concepts. We differentiate between unique risk, which is diversifiable, and market risk, which is not diversifiable.

The Capital Asset Pricing Model (CAPM) posits that the excess return of a project is proportional to its beta.

- The excess return is the return minus the risk-free rate.
- The beta is the covariance of the security’s return (or project’s return) with the market return divided by the variance of the market return.

Modern portfolio theory says that systematic risk warrants a higher return. The CAPM says what the higher return should be for each security.

Read Section 8.1 Market risk is measured by beta, which reviews modern portfolio theory. Brealey, Myers, Allen, and Edmans give a summary so that they can discuss corporate financing (equity vs debt). They are teaching how to finance a company, not how to structure an investment portfolio. But the two subjects are intertwined, so they must review modern portfolio theory.

Know the definition of β in formula 8.1 and the derivation of market risk in formula 8.2. Know the relation at the top of page 227: “The beta of a portfolio is the weighted average of the betas of the individual stocks within that portfolio.”

Focus on the section “we introduce borrowing and lending” on pages 195-197; know the Sharpe ratio at the bottom of page 196. The Sharpe ratio is often tested on the final exam.

Read section 8.2, “the relation between risk and return.” Know the meaning of the *security market line* (Figure 8.3 on page 229) and the formula for the expected risk premium for common stocks in equation 8.3 on page 228. The review of the CAPM is clear, and the subsection on pages 229-230 (“What if a stock did not lie on the security market line?”) is essential for the theory.

Section 8-3 “Does the CAPM Hold in the Real World?” is optional. Although the theory is good, the CAPM hasn’t fared well from empirical testing (though it has done better than anything else). The final exam does not test this section, and no homework assignments are drawn from it. But after reading about the CAPM, it is worthwhile hearing the cautions against adopting it uncritically.

Skip section 8-4 “Some Alternative Theories”; the Fama–French three-factor model is used by some investment analysts, but it is not used in this textbook.

Question: I have heard that the CAPM is not supported by the evidence, but behavioral finance and arbitrage pricing theory better explain stock returns.

Answer: It is true that the CAPM has not fared as well in empirical research as had once been expected. But the competing theories mentioned above don’t even suggest how to price stocks. The arbitrage pricing theory

says that several factors explain stock returns, not just the covariance with market returns. But it doesn't tell us what these other factors are; we can't use the theory to explain stock returns and we can't test the theory. Behavioral finance suggests that investors are not perfectly rational, but it is vague about how investors make decisions. It discusses many qualitative items that may indeed have an effect. But it does not suggest how to quantify the effects, so we can't use it to price stocks and we can't even test the theory.

The Fama/French three factor model has been used for insurance pricing and fair values of unpaid losses by academics, though not by working actuaries. You may encounter the Fama/French model in your actuarial career, but this course focuses on the CAPM. The judgment in the textbook is correct: "This Fama–French APT model is not widely used in practice to estimate a company's cost of equity. The model requires three betas and three risk premiums instead of one beta and one market risk premium in the CAPM. Also the three Fama–French betas are not as easy to predict and interpret as the CAPM beta, which measures market risk, and there's a logical reason for why investors should be compensated for bearing market risk. The logic for using Fama–French risk factors is sometimes elusive."

The *key takeaways* at the end of chapters are good reviews of the material. The problems at the end of each chapter is useful for checking that you understand the material.

Review end of chapter problems 1, 3, 4a,b,c, 6, 7 .

Illustrative test questions, problems, and homework assignments are shown separately on the discussion forum.