



FIN 366: INVESTMENTS
CAPM AND MULTIFACTOR MODELS
CRITICAL THINKING & CONCEPTUAL QUESTIONS

1. How does one determine if a stock has a positive or negative alpha?
2. Explain how the index model and the CAPM are related. Why is there no alpha in the CAPM?
3. Often, investment professionals calculate “CAPM betas” and “CAPM alphas” of securities by running regressions of a stock’s excess return on the market’s excess return. Explain why these are technically “index model betas and alphas”.
4. How (in theory) are alphas eliminated when investors buy and sell positive and negative alpha stocks?
5. An implication of zero alphas means there is no reward for unsystematic risk. What source of risk offers reward? Why?
6. What is the market risk premium? How does it differ from the expected return of the market?
7. By the CAPM, what do we need in order to compute the expected return on a stock?
8. What is the formula for the expected return of a stock by the CAPM?
9. How do we estimate the expected return for the market?
10. Can you draw and label the SML?
11. Where would you find under- and over-valued stocks on the SML graph?
12. What is the value of the “beta of the market portfolio” and why is it always the same?
13. What is included in the market portfolio for the CAPM?
14. What is the optimal risky portfolio by the CAPM? Is it a passive or active portfolio?
15. Why might investors in practice arrive at different optimal risky portfolios than what the CAPM suggests? (Hint: Do all investors have the same constraints? The same universe of stocks they wish to invest in?)
16. If every investor held the market portfolio and no one conducted investment analysis, what might happen to market efficiency?
17. What does the CAPM predict about the relationship between beta and stocks returns? Historically, has this prediction come true?
18. What are “quintiles” of stocks as used when computing the performance of low and high beta stocks? What about when computing the performance of small and large stocks and value vs. growth stocks?
19. What assumptions does the CAPM make regarding the “homogeneity” of investors? Why are these assumptions necessary?
20. In what way do multifactor models improve the CAPM with regard to systematic risk measures?

21. If we compute a stock's expected return using either CAPM or Fama-French, why don't we include the stock's alpha (that we obtain by regression) in our calculations?
22. Why does the Fama-French 3-factor model specifically consider size and value?
23. If small stocks and value stocks have historically outperformed large and growth stocks, why don't we always just hold small and value stocks?
24. What is, for example, $E(r_{SMB})$ or $E(r_{HML})$? Where can you obtain these measures?
25. As we add more factors to the CAPM, what generally happens to alphas we calculate? What does this imply about securities' true "risk-adjusted return"?
26. As we add more factors to the CAPM, what happens to the R-squared? What does this imply about the multifactor model's "fit" relative to the CAPM?
27. Morningstar presents alphas on their website for different mutual funds. Are these CAPM or Fama-French alphas? What model is likely most appropriate for this setting?
28. What anomalies do the UMD, CMA, and RMW attempt to account for in multifactor models? What motivates the addition of these models to the Fama-French multifactor model?
29. What do positive and negative "loadings" on different factors in the multifactor model imply about a stock or security's "exposure" to those sources of systematic risk?
30. If a stock has a large positive SMB beta, does it mean it is a small stock? If a stock has a large positive HML beta, does it mean it is a value stock?
31. **CHALLENGE** A mutual fund manager achieves high alpha over the course of a year. As a result, the manager's fund experiences large **inflows** of money in the subsequent year. Thousands of new investors think she will continue to be an excellent manager and generate alpha in the future. How might this large inflow of capital to her fund make it challenging for her to generate alpha in subsequent periods?
32. **CHALLENGE** Value stocks have outperformed growth stocks over a long period of time. What are some arguments as to why they are riskier than growth stocks (which explains why they've performed well)?
33. **CHALLENGE** What are **smart beta ETFs**? How do they achieve "exposure" to some of the factors we've talked about?

