Session 5: Post Class tests

1. The standard approach to estimating betas is to run a regression of returns of an individual stock against returns on a market index. Which of the following is a problem with this approach?
    a. It yields an estimate with significant standard error.
    b. It is subject to estimation choices: different regression periods, return intervals and market indices.
    c. It will not yield a "good" estimate for the future, if a company's business mix has changed recently.
    d. It will not yield a "good" estimate for the future, if a company's financial leverage has changed over the regression period
    e. All of the above.
2. If you have to estimate a regression beta for a publicly traded US technology company, listed on the NASDAQ, whose largest stockholders are global mutual funds, which of the following will yield your best estimate of the regression beta?
    a. A regression of the stock returns against a technology stock index
    b. A regression of the stock returns against the NASDAQ
    c. A regression of the stock returns against the S&P 500
    d. A regression of the stock returns against the MSCI
    e. None of the above
3. One alternative to a regression beta is to use a sector-average beta or bottom-up beta. In computing this sector-average beta, you have to come up with a list of comparable firms. Assume that you are trying to compute the beta for a Argentine steel company. Which of the following is likely to yield the best estimate?
    a. A simple average of betas of 4 Argentine steel companies
    b. A simple average of betas of 12 Latin American steel companies
    c. A simple average of betas of 85 emerging market steel companies
    d. A market-cap weighted average of betas of 4 Argentine steel companies
    e. A market-cap weighted average of betas of 12 Latin American steel companies
    f. A market-cap weighted average of betas of 85 emerging market steel companies
4. One concern with using sector-average betas, even if you adjust for financial leverage, is that you are assuming that the operating leverage for your firm is similar to that of the other firms. Assume that 70% of the costs in your company are fixed costs, whereas only 50% of the costs in the average company in the sector are fixed costs. If the unlevered beta for the sector is 0.80, what would you expect the unlevered beta for your company to be?
    a. Higher than 0.80
    b. Lower than 0.80
    c. About 0.80
    Bonus: Can you estimate the operating-leverage corrected beta?
5. The CAPM beta is a measure of relative risk, but it comes with significant baggage (a belief in modern portfolio theory, a trust that stock prices are driven

by fundamentals, an assumption of liquidity). Assume that you want a measure of relative risk that is not dependent upon assumptions of diversified investors and credible stock prices. Which of the following would you use as your relative risk measure?

a. A ratio of standard deviation in your company's stock price to the average standard deviation across all stocks
b. An implied beta, backed out of current stock prices and expected future cash flows
c. A ratio of the standard deviation in your company's historical earnings to the average standard deviation in earnings of other companies in the market
d. The PE ratio for your firm, relative to the average PE ratio of other firms in the market (Low = Less risky)
e. None of the above

Session 5: Post class test solutions

1. **e. All of the above.** Regression betas can be dangerous as a result of each and every one of these. They can be most dangerous when they look good, since that can be accomplished by using a narrow market index.
2. **d. A regression of the stock returns against the MSCI.** If your marginal investors are globally diversified, they will measure risk against a global equity index.
3. **c. A simple average of betas of 85 emerging market steel companies.** For the law of large numbers to work in your favor, you want larger samples rather than smaller ones. Using weighted averages also undercuts the benefits of averaging, since it counts the larger firms more and the smaller firms less.
4. **a. Higher than 0.80**. Having higher fixed costs should increase your beta. If you want to work out by how much, here is what you would do:
    - Unlevered beta for business = Unlevered Beta/ (1+ FC/ VC)
    - Unlevered beta for business = 0.80 (1 + 50/50) = 0.40
    - Unlevered beta for company = 0.40 (1 + 70/30) = 1.33
5. **c. A ratio of the standard deviation in your company's earnings relative the average standard deviation in earnings of other companies in the market**. All of the other measures are price based, in one way or the other or build on traditional portfolio theory.