Session 8: Post Class tests

1. You are trying to estimate a beta for Sosa Inc., a Brazilian retail firm. The stock is widely traded and 20% of the shares are held by global investors, who account for 60% of the trading on the stock. It has also depositary receipts listed in the US, which are dollar denominated and liquid. Which of the following regressions would you use to estimate the beta?
   a. The local listing against the Bovespa, the Brazilian equity index
   b. The ADR, against the S&P 500
   c. The ADR, against the MSCI, a global equity index
   d. The local listing against an index of Brazilian retailers
   e. None of the above

2. You have run a regression of monthly returns for Cyprus Industries, a publicly traded chemical company, against the S&P 500 and obtained the following:
   • \( \text{Returns}_{\text{Cyprus}} = -0.15\% + 1.80 \times \text{Returns}_{\text{S&P 500}} \quad R^2 = 35\% \)
   • The average annual risk free rate during the period 3.60%.

   On a market-adjusted, risk-adjusted basis, how well did Cyprus do during this time period?
   a. About 1.08% better than expected
   b. About -1.80% worse than expected
   c. About 1.08% worse than expected
   d. About 1.80% better than expected
   e. None of the above

3. In the Cyprus Industries regression above, the R-squared was 35%. Now assume that Cyprus decides to acquire a technology company of roughly equal size, with an R-squared of 15%. Assuming that you run a regression of Cyprus in a couple of years, which of the following would you expect to see happen to the R-squared of the combined company?
   a. It will be lower than 15%
   b. It will be approximately 25% (halfway between 15% and 35%)
   c. If will be between 15% and 25%
   d. It will be higher than 25%

4. Staying with the Cyprus Industries analysis, assume that the standard error on your regression beta is 0.30. Which of the following estimates would provide a range for the “true” beta with 95% confidence?
   a. 1.20-2.40
   b. 1.50-2.10
   c. 1.65-1.95
   d. 0.90-2.70
   e. None of the above

5. You are trying to gauge whether there is a relationship between the management of a firm and the Jensen’s alpha that you compute for the firm. Which of the following is the best indicator that management has done a good job?
a. Firm has positive Jensen’s alpha
b. Firm has negative Jensen’s alpha
c. Firm has positive Jensen’s alpha; Average Jensen’s alpha for the sector is negative
d. Firm has positive Jensen’s alpha; Average Jensen’s alpha for the sector is positive
e. None of the above
Session 8: Post class test solutions

1. **c. The ADR against the MSCI index.** If we stay true to the notion that beta measures risk as perceived by the marginal investor, the marginal investor here is a global investor. Hence, the index that makes the most sense is a global index. While you could regress the local listing returns against the MSCI, the MSCI is a dollar index and ADR returns are a little better suited, since it is in dollar terms as well.

2. **b. About 1.08% better than expected.** Start by estimating the Jensen’s alpha, in monthly terms since the regression is in monthly terms. The monthly riskfree rate is 0.30% (3.6%/12) and Jensen’s Alpha = -0.15% - 0.30% (1-1.80) = +0.09%. Multiplying by 12, you get 1.08%. You could also get a more accurate answer by compounding. (1.0009)^{12} - 1 = 1.01085 or 1.085%.

3. **c. Higher than 25%.** If there were no diversification benefits (i.e., the firms were perfectly correlated), the R-squared would fall halfway between the R-squared of the two firms. However, a chemical company and a technology company are unlikely to move together in unison. Hence, there should be less firm specific risk in the combined firm after the merger, resulting in a higher R-squared for the firm.

4. **a. 1.20-2.40.** For 95% confidence, you would need to add/subtract two standard errors from the point estimate. In this case, that would mean adding 0.60 (2*0.30) to 1.80, yielding 2.40 and subtracting 0.60 from 1.80, resulting in 1.20.

5. **c. Firm has positive Jensen’s alpha; Average Jensen's alpha for sector is negative.** A positive Jensen’s alpha is good, but it may be entirely the result of factors external to the firm. Thus, if the entire sector does well, it is possible that even badly managed firms in the sector do well (and have positive Jensen’s alpha).