

## Session 9a: Post class test solutions

1. **From lowest to highest:** Grocery store, discount retailer, department store, high end department store, luxury retailer.
2. **b. It will decrease the beta.** Outsourcing the cost will reduce the fixed costs of the firm and by doing so will reduce the exposure of earnings to all types of risk (including macro risk). That will lower the beta.
3. **a. 1.12.** First, unlever the regression beta using the debt to equity ratio during the period of the regression:  
Unlevered Beta =  $1.06 / (1 + (1-.4) (.10)) = 1.00$   
Then relever using the D/E ratio today:  
Levered Beta =  $1.00 (1 + (1-.40) (500/2500)) = 1.12$
4. **c. 0.75.** The debt to equity ratio for the firm currently is 40% (40/100). The unlevered beta for the firm, using the current levered beta of 0.93 is:  
Unlevered beta =  $0.93 / (1 + (1-.4)(.40)) = 0.75$
5. **b. 1.232.** To get to this answer, start by taking the weighted average of the betas of the two firms (which are also unlevered), since neither firm has any debt:  
Unlevered beta for combined firm =  $1.2 (1000/1500) + 0.9(500/1500) = 1.10$   
After the merger, the firm will have \$250 million in debt and \$1250 million in equity, giving it a debt to equity ratio of 20% and a beta of 1.232.  
Levered Beta =  $1.10 (1 + (1-.4) (.20)) = 1.232$