**Scale:**

43 = 50
42 = 49
40 = 48
36 = 46
32 = 45
30 = 44
28 = 43
26 = 42
22 = 40
20 = 39
18 = 38
16 = 37
15 = 36
14 = 35
13 = 34
12 = 33
10 = 30
6 = 25

**Quiz B for 1:00 Class: 3/4/13**          Name __Key__

Assume you own all of the stock in an unlevered firm with a market value of $200,000. The firm is considering whether or not it should issue $60,000 of risk-free debt paying an interest rate of 2% and use the proceeds to repurchase $60,000 of your shares. Note: Some calculations are necessary to answer each of the following.

a. Assume that markets are perfect. What is the value of your stock after the debt issue/share repurchase? How much has your wealth changed because of the debt issue/share repurchase? What key issue drives this result?

b. Assume that instead of markets being perfect, the corporate tax rate is 45%. What is the value of your stock after the debt issue/share repurchase? How much has your wealth changed as a result of the debt issue/share repurchase? What key issue drives the difference between your answers in a. and b.?

c. Assume (as in part b) that the corporate tax rate is 45%, but also assume that the personal tax rate on interest income is 50% and that the personal tax on equity income is 15%. What is the value of your stock after the debt issue/share repurchase? How has your wealth changed as a result of the debt issue/share repurchase (relative to if the firm does not have a debt issue/share repurchase)? What key issue drives the difference between your answers in a. and b.?

**Wall Street Journal Questions are on the back of this page.**

a. Not affected

$$\Rightarrow V^L = V^U = 200,000$$

$$V_{stock} = 200,000 - 60,000 = 140,000$$

$$Wealth = stock + cash = 140,000 + 60,000 = 200,000$$

Key ⟹ value of firm does not change as leverage changes

b. Rises by 27,000 = 227,000 − 200,000

$$V^L = V^U + T_c B = 200,000 + .45(60,000) = 227,000$$

$$V_{stock} = 227,000 - 60,000 = 167,000$$

$$Wealth = stock + cash = 167,000 + 60,000 = 227,000$$

Key ⟹ corporate taxes fall as firm issues debt

c. Rises by 3900 = 203,900 − 200,000

$$V^L = V^U + T^* B$$

$$T^* = 1 - \frac{(1-T_c)(1-T_e)}{(1-T_i)} = 1 - \frac{(1-.45)(1-.15)}{(1-.5)} = .065$$

$$\Rightarrow V^L = 200,000 + .065(60,000) = 203,900$$

$$V_{stock} = 203,900 - 60,000 = 143,900$$

$$Wealth = stock + cash = 143,900 + 60,000 = 203,900$$

Key ⟹ As issue debt & repurchase stock, personal taxes rise since $T_e < T_i$