

Scalp:

Quiz A for 1:00 Class: 3/4/13

Name Key

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
12=33
10=30
6=25

Assume you own all of the stock in an unlevered firm with a market value of \$100,000. The firm is considering whether or not it should issue \$40,000 of risk-free debt paying an interest rate of 3% and use the proceeds to repurchase \$40,000 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 30%. 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 30%, but also assume that the personal tax rate on interest income is 40% and that the personal tax on equity income is 25%. 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

$\Rightarrow V^L = V^U = 100,000$

$V_{stock} = 100,000 - 40,000 = 60,000$

wealth = stock + cash = 60,000 + 40,000 = 100,000

Key \Rightarrow value of firm does not change as leverage changes

b. Rises by 12,000 = 112,000 - 100,000

$\Rightarrow V^L = V^U + T_c D = 100,000 + .3(40,000) = 112,000$

$V_{stock} = 112,000 - 40,000 = 72,000$

wealth = stock + cash = 72,000 + 40,000 = 112,000

Key \Rightarrow corporate taxes fall as firm issues debt

c. Rises by 5000 = 105,000 - 100,000

$\Rightarrow V^L = V^U + T^* D$

$T^* = 1 - \frac{(1-T_c)(1-T_e)}{1-T_e} = 1 - \frac{(1-.3)(1-.25)}{1-.4} = .125$

$\Rightarrow V^L = 100,000 + .125(40,000) = 105,000$

$V_{stock} = 105,000 - 40,000 = 65,000$

wealth = stock + cash = 65,000 + 40,000 = 105,000

Key \Rightarrow As issue debt + repurchase stock, personal taxes rise since $T_e < T_c$