

Q1: Under the assumption $r_D = r_E = r_A$, derive that the value of the tax shield is $V_D(1 - \frac{(1-t_c)(1-t_d)}{1-t_p})$, where V_D is the market value of the debt, t_c the tax rate for corporate profit, t_d that for dividend, and t_p is the personal tax chargeable for interest income.

Q2: Assume that Midco Industries wants to boost its stock price. The company currently has 20 million shares outstanding with a market price of \$15 per share and no debt. Midco has had consistently stable earnings, and pays a 35% tax rate. Management plans to borrow \$100 million on a permanent basis and they will use the borrowed funds to repurchase outstanding shares. After announcing the news of share repurchasing, what is the share price? How much shares can be repurchased?

Q3: . In a two-date economy, firm W's current asset expects to generate cash flow £100 million at the future date if the good state occurs and £15 million if the bad state occurs. Each state will occur with probability one half. Currently the firm has 10 million shares and no debt outstanding. The corporate tax rate is 20%. The firm now is considering issuing debt to repurchase 4 million shares. Suppose the potential debt holders and current shareholders are all risk neutral and the risk free rate is 0.

(a) What is the share price before the firm announces the deal of issuing debt to repurchase 4 million shares?

(b) Will the share price change with the announcement?

(c) Find the market value and the face value of the debt.