Assignment

Please answer each of the following three questions.

Question 1

The common stock and debt of Northern Sludge are valued at $50 million and $30 million, respectively. Investors currently require (or equivalently, expect) a 16% return on the firm's common stock and 8% on its debt.

a) What is Northern Sludge's expected return on assets? (Hint: use the "unlevering" formula on p. 33 of LN 4 remembering the definition of the unlevered cost of capital from p. 9)

b) Suppose Northern Sludge issues $10 million of common stock and uses the proceeds to retire (i.e., buy back) debt. Thus, the market value of the debt goes down to $20 million. Assume MM Proposition I holds, so the market value of the firm overall remains unchanged. What is the effect of this debt buyback on the expected return of Northern Sludge's common stock? (Hint: use the "relevering" formula on p. 37 of LN 4 remembering that you've already computed the firm's unlevered cost of capital in Question 1a).

Question 2

Compute the PV of the interest tax shields generated by the following three debt issues. In each case the debt is risk free while the corporate tax rate is 35%.

a) A $1,000 one-year loan at the risk-free rate of 8%. Interest is paid at the end of the year.

b) A five-year loan of $1,000 at the risk-free rate of 8%. Assume interest is paid annually at the end of each of the five years while the principal is paid back at maturity (after five years).

c) A $1,000 debt perpetuity at the risk-free rate of 8%. Interest is paid annually at the end of each year. (The principal is never paid back in a debt perpetuity.)

Question 3

Calculate the WACC for Federated Junkyards of America, using the following information.

- Debt: $75,000,000 (book value). The debt is currently trading at 90 percent of par (=book) value. The expected return on debt is 9 percent.
- Equity: 2,500,000 shares selling at $42 per share. The expected rate of return on Federated's stock is 18 percent.
- Taxes: The corporate tax rate is $T = 0.35$.