

## FIN325 - Homework 6

Due : April 27th by midnight, on canvas, pdf only

### Problem 1 (20pts)

Consider a corporation whose expected EBIT is \$10M each year and for ever. Depreciation equals investment. The tax rate on EBIT is 30%. The corporation has only one piece of debt, a fully amortizing 30-year bond with fixed yearly payments and an interest rate of 10%. After the bond expires, the corporation plans to remain debt-free. Investors would require a 15% return from an unlevered investment in this corporation. The market value of the corporation is \$51M. What is the face value of the debt? Use an APV approach given the fact that the capital structure is not stable.

### Problem 2 (20pts)

The following table shows recent quarterly data for overall debt and the market value of equity for corporation X.

Quarter	$D$	$E$
1	10.1	6.0
2	11.9	7.0
3	14.1	8.0
4	14.9	8.3
5	15.0	8.7
6	14.0	8.6

Corporation X has a target capital structure  $(\frac{D}{V})^*$  where  $V = D + E$ . Use a regression approach to jointly estimate  $(\frac{D}{V})^*$  and the quarterly speed of adjustment towards  $(\frac{D}{V})^*$ .

### Problem 3 (20pts)

A corporation has the option to prepay (call) a bond with 4 years to maturity, \$50M in remaining principal, a 10% yearly rate, fixed and YEARLY payments. It can replace this bond with a 4 year bond with the same remaining payment structure. Prepayment penalties are \$750,000. The corporation faces a tax rate of 30% on its EBIT. How low must the yearly rate on the new bond be to justify calling the old bond (ignoring the option value of waiting to refi but taking into account the loss in interest tax shield)?

**Problem 4 (20pts)**

A corporation has the following portfolio of debt liabilities on its books. All are fixed rate coupon bonds with yearly payments. What is the current market value of the corporation's total debt? What are the corporation's WACR, WAMR and WARM?

Maturity (years)	Face (M)	Rate (contract)	Rate (market)
1	100	1.90%	2.50%
2	100	2.25%	2.60%
3	0	NA	2.65%
4	230	2.50%	2.70%
5	120	4.25%	3.25%

**Problem 5 (20pts)**

A lease-vs-buy analysis for a two year project yielded the following unlevered FCFF for years 0, 1, and 2, respectively, in \$k: (+5000, -500, -5500). Instead of leasing the corporation can finance the entire purchase of the facility at a rate of 6%. Its tax rate on EBIT is 30%. Calculate the NPV of this lease-vs-buy option using an equivalent-loan approach. (Show your loan-equivalent table,)