

BAYLOR UNIVERSITY
HANKAMER SCHOOL OF BUSINESS
DEPARTMENT OF FINANCE, INSURANCE & REAL ESTATE

Risk Management
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Problem Set 9

Name: _____

Consider two firms which differ with respect to risk and financial leverage. Firm 1 owns assets worth $V(F_1) = \$10,000,000$, and has issued zero coupon bonds with a face value of $B_1 = \$4,500,000$. On the other hand, Firm 2 owns assets worth $V(F_2) = \$25,000,000$, and has issued zero coupon bonds with a face value of $B_2 = \$15,000,000$. The standard deviation for Firm 1's assets is $\sigma_1 = 40\%$, whereas the standard deviation for Firm 2's assets is $\sigma_2 = 50\%$. Assume that both firms will be liquidated one year from today and that the rate of interest is 3%.

1. What is the fair market value for the bonds issued by Firm 1? What is the dollar value of Firm 1's limited liability put option? What is the yield to maturity, credit risk premium, and the risk neutral probability of default for Firm 1's bonds?
2. What is the fair market value for the bonds issued by Firm 2? What is the dollar value of Firm 2's limited liability put option? What is the yield to maturity, credit risk premium, and the risk neutral probability of default for Firm 2's bonds?
3. Suppose an insurer offers the shareholders of both firms a credit enhancement scheme which will make their bonds riskless. What are the fair premiums for Firm 1 and Firm 2? What impact will this insurance have upon the probability of default and the yields to maturity for these bonds?