LISBOA SCHOOL OF ECONOMICS & MANAGEMENT

Corporate Investment Appraisal

Masters in Finance

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Fall Semester

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Problem Set 11: Risky Debt

1. Present an estimate of the value of debt of a company with the following features:

- Stock Price: 15
- Stock Volatility: 60%
- Debt Par: 360
- Bankruptcy cost rate: 0%
- Maturity of Debt: 6 months
- Risk free rate: 3%

2. Consider the following application of the debt valuation model of Anderson and Sundaresan (1996), with just two periods (to simplify, consider 2 years). Company LM uses a technology such that the present value of its asset (at t=0) is $V_0=90$. This value evolves annually according to a binomial process with u=1.25 and d=1/u. The project generates annual cash flows (f_t) proportional to its present value, i.e., $f_t = 0.2V_t$. The risk free interest rate is 4% in both years of analysis (from t=0 to t=1, and from t=1 to t=2). There is a fixed cost of liquidation of the company, estimated as K=55. Suppose that the company issued debt at t=0, and that this debt contract requires an annual debt service in t=1 and t=2 of $CS_1=CS_2=15$. In t=1 and t=2 the owner/manager chooses the effective debt service to the creditor. If the debt service lies below the contracted amount, the creditor may accept it (and the game continues) or he may liquidate the firm.

(a) What is the debt service that the owner-manager of LM should offer at t=1 and at t=2? Explain.

(b) If I told you that the amount of money borrowed at t=0 was 20, would that seem credible to you? Explain why.