Assignment 2 - MAT1856S/ APM466S

Mathematical Theory of Finance

Due April 1, 2010 (no penalties for late submission until April 23)

Consider a rating system with two solvency states (A and B) with the following transition probability matrix:

$$\begin{pmatrix} 0.8 & 0.1 & 0.1 \\ 0.1 & 0.7 & 0.2 \\ 0 & 0 & 1 \end{pmatrix}$$

and a company, rated B, with \$100M in assets and \$90M in liabilities.

Calculate, draw a graph, and explain the derivation of the default probabilities as a function of time, for up to 5 years, according to each of the following two models:

1. A markov model for credit state migration.
2. The Merton model

To get full marks, the time increments must be done semi-annually.