Financial Markets and Management

MiM

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Fall Semester

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Problem Set 3: Cost of Equity & Cost of Debt

GUIDELINE TO SOLUTIONS

1. **Estimate the Equity Cost of Capital (r_E)**

   Suppose that MCDONALD'S stock has a beta of 0.35. If the riskless interest rate is 4% and the expected return of the market portfolio is 9%, what is MCDONALD'S's cost of equity?

   According to the CAPM:

   $\qquad$ 4% + 0.35 × (9%-4%) = 5.75%

2. **Estimate the Cost of Debt (r_D)**

   In mid-2009, Company XYZ had 5-year bonds outstanding in the market, with BBB rating and yield to maturity of 4.25%. If the annual probability of these bonds defaulting is 1.5%, and the expected loss in case of default is 40%, what is your estimate of the expected return for these bondholders?

   Considering ytm y=4.25%, probability of default p=0.015 and expected loss L=40%:

   y-p × L= 4.25% − 1.5%(.40) = 3.65%

3. **Estimate the Cost of Debt (r_D)**

   In mid-2009, Company ZZZ had issued 5-year bonds, with rating CCC and yield to maturity of 17.5%. In the same period, US Treasury bonds with the same

maturity had a yield of 3%. Suppose that the risk premium of the market portfolio is 5%, and that you are convinced that ZZZ's bonds have a beta of 0.3. If the expected loss in these bonds in case of default is 60%, what is the annual default probability consistent with the presented yield to maturity?

According to the CAPM:

$R_d = 3\% + .3(5\%) = 4.5\%$

According to the adjusted yield, we would reach an implied probability of default:
$4.5\% = y - pL = 17.5\% - p(.60)$
$p = (17.5\% - 4.5\%)/.60 = 21.666\%$