

PAK Exam Aid

Advanced Finance / ERM (AFE) Exam
Spring 2012 Edition



Mock Question Sample

- 24.** (10 points) XYZ Holdings, Inc. is interested in acquiring OK Life on 1/1/20X1. The XYZ managers are negotiating the deal with the managers in OK Life. To better assess the value of OK Life, the XYZ managers receive the following information from OK Life (all are year-end numbers):

OK Life's Cash Flow Projection (Assume A rating)

| Year | 20X0 | 20X1 | 20X2 | 20X3 | 20X4 |
|------------------------------|------|------|------|------|------|
| Statutory Profit | | 100 | 150 | 200 | 250 |
| Statutory Reserve | 300 | 350 | 410 | 450 | 480 |
| Tax Reserve | 290 | 335 | 390 | 430 | 470 |
| Existing Proxy DAC Tax Asset | 30 | 32 | 35 | 38 | 40 |
| Minimum Required Capital | 40 | 50 | 60 | 70 | 80 |

| | | | | |
|-----------------------|------|------|------|------|
| Credit Ratings | AAA | AA | A | BBB |
| Target Capital Ratios | 400% | 350% | 300% | 250% |

Other Information

- The yield curve is flat at 10%.
- The corporate tax rate is 30% per year.
- The excess capital is \$50 million in 20X0.

- (a) (7 points) Calculate the actuarial appraisal value.
- (b) (3 points) Calculate the value of inforce business, the adjusted book value, and the cost of capital.

24. Materials from FE-C179-11

| HP | Answer | | | | | | |
|-----|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------|
| (a) | Year | 20X0 | 20X1 | 20X2 | 20X3 | 20X4 | |
| 2 | Target Capital | 120 = 300% x 40 | 150 = 300% x 50 | 180 = 300% x 60 | 210 = 300% x 70 | 240 = 300% x 80 | |
| | | | 20X1 | 20X2 | 20X3 | 20X4 | |
| 2 | Statutory Profit | | 100 | 150 | 200 | 250 | |
| 2 | (+) Interest on Capital | | 120*0.1 = 12 | 150*0.1 = 15 | 180*0.1 = 18 | 210*0.1 = 21 | |
| 2 | Total Pre-Tax Statutory Earnings | | 112 | 165 | 218 | 271 | |
| | | | 20X1 | 20X2 | 20X3 | 20X4 | |
| 2 | Total Pre-Tax Statutory Earnings | | 112 | 165 | 218 | 271 | |
| 2 | (+) Stat Reserve Increase | | 350 - 300 = 50 | 410 - 350 = 60 | 450 - 410 = 40 | 480 - 410 = 30 | |
| 2 | (-) Tax Reserve Increase | | 335 - 290 = 45 | 390 - 335 = 55 | 430 - 390 = 40 | 470 - 430 = 40 | |
| 2 | (+) Proxy DAC Tax Asset Increase | | 32 - 30 = 2 | 35 - 32 = 3 | 38 - 35 = 3 | 40 - 38 = 2 | |
| | (-) Existing Proxy DAC Tax Asset Runoff | | 0 | 0 | 0 | 0 | |
| 2 | Taxable Income | | 119 | 172 | 221 | 263 | |
| 2 | Federal Income Tax (30.0%) | | 35.7 | 51.6 | 66.3 | 78.9 | |
| | | | 20X0 | 20X1 | 20X2 | 20X3 | 20X4 |
| 2 | Total Pre-Tax Statutory Earnings | | | 112 | 165 | 218 | 271 |
| 2 | (-) Federal Income Tax (30.0%) | | | 35.7 | 51.6 | 66.3 | 78.9 |
| 2 | After-Tax Earnings | | | 76.3 | 113.4 | 151.7 | 192.1 |
| 2 | (-) Increase in Capital | 120 | 150 - 120 = 30 | 180 - 150 = 30 | 210 - 180 = 30 | 240 - 210 = 30 | |
| 2 | Distributed Earnings | -120 | 46.3 | 83.4 | 121.7 | 162.1 | |
| 2 | $\text{Appraisal Value} = NPV(DE) = (50 + 120) + (-120) + \frac{46.3}{1.1} + \frac{83.4}{1.1^2} + \frac{121.7}{1.1^3} + \frac{162.1}{1.1^4} = 363.17$ | | | | | | |

...to be continued