

EXAM 6 – CANADA, FALL 2013

24. (2.5 points)

a. (1 point)

Describe two reasons that almost all property-casualty insurers are rated by rating agencies compared to a small percentage of companies from other industries.

b. (0.75 point)

Capital standards are different among the rating agencies. Identify the capital model used by the following:

- i. A. M. Best
- ii. Moody's
- iii. Standard & Poor's

c. (0.75 point)

Fully describe the capital model used by one of the rating agencies in part b. above.

c)

Line of business diversification
Geographic diversification

Examiner's report:

For part a), candidates struggled to get full credit on this question. Many candidates tried to guess the answer or answered by listing some of the MSA ratios.

For part b), the majority of the candidates managed to get full credit. Many candidates failed to include the Other Comprehensive Income in the formula, which resulted in a small point deduction.

For part c), candidates performed generally well on this question.

Question 24

Answer key:

a. Two of the following:

- 1) Unrated insurers: in other industries, most firms with no debt have no rating. But almost all insurers are rated, except for new firms. It is less expensive to pay for a rating than to demonstrate financial strength individually to others.
- 2) Reliance by consumers and third parties: Independent agents use ratings to select insurers, and insurers use ratings to select reinsurers. Agents might be sued for providing insurance from a financially weak insurer. Reinsurance officers at primary insurers must evaluate the ability of reinsurers to pay obligations years in the future. They rely on commercial ratings, and an unrated reinsurer might not even be considered.
- 3) Efficiency: Evaluating financial solidity requires expertise and extensive data. Most agents, underwriters, and even some regulators do not have the time, experience, or resources of the rating agencies to thoroughly research the financial condition of all insurers.

b.

A. M. Best uses the expected policyholder deficit method/ EPD method. Risk-based was given full mark for this question.

Moody's and Fitch use stochastic cash flows to model economic capital.

S&P focuses on principles-based models/internal capital models and ERM practices.

c.

Expected policyholder deficit method:

A.M. Best retains the RBC structure of independent risk categories with a covariance adjustment.

Best uses a 1% EPD ratio for all sources of risk. In financial terms, the charge for each risk is the amount of capital such that the cost of a put option offsetting the risk is 1% of policyholder reserves. In conventional insurance terms, the EPD is the pure premium for unlimited aggregate excess-of-loss reinsurance. The EPD ratio is the EPD divided by the market value of held reserves.

Stochastic cash flow capital models:

Moody's and Fitch use stochastic cash flow models to examine the accumulated cash flows of assets vs insurance liabilities. Asset returns are based on interest rate generators and random walk simulations of equity returns. The interest rates and simulations are arbitrage free. The rating agency stochastic models use either value at risk or tail value at risk measures. A 99% VaR is the capital needed to remain solvent at the 99th percentile of the aggregate loss distribution. A 99% TVaR is the average capital needed to remain solvent in the 1% worst scenarios.

Principles-based models/internal capital models:

S&P focused on evaluating insurers' enterprise risk management systems and internal capital models. It bases capital requirements on a weighted average of its own formula and the client's economic capital model. S&P reasons that well-managed insurers evaluate their capital needs more accurately than a rating agency can. Insurers examine distributions of reserve development using extensive data bases and sophisticated reserving methods. They can assess value at risk, tail value at risk, and expected policyholder deficit better than a rating agency can using public data.

(full points for describing any one of the models above)

Actual candidate answer for full marks:

a)

- agents are wary about P&C insurers that are not rated because they could hide financial difficulties
- getting a rating is efficient because the cost of a rating is much less than making the proof of financial situation to each party individually

b)

i) a ratio approach based on the risk based capital approach of regulators

ii) stochastic approach based on TVAR

iii) a qualitative approach using the insurer own internal capital model

c)

AM best is a ratio of adjusted available to net capital required where net capital is

Square root $(b1^2 + b2^2 + b3^2 + (0.5b4)^2 + (0.5b4+b5)^2 + b6^2) + b7$

- B1 : Fixed income
- B2 : Equity
- B3 : Interest rate risk
- B4 : Credit risk
- B5 : Loss and lae
- B6: Net premium written
- B7 : Business risk

Square root is used to reduce covariance among risk as it is unlikely they will happen simultaneously

Examiner's report:

For part a), the majority of candidates managed to get full credit. Some candidates gave very similar answers for the two elements.

For part b), a common mistake was that candidates mixed up the different models. Most of the candidates got partial credit on this question.

For part c), most of the candidates answered by describing the BCAR. A little less than half of the candidates managed to get full credit on this question.

Question 25

Answer key:

- (a) Investment income = $75 + 200 + 125 = 400$

Since CCC is classified as Held for Trading, the gain or loss needs to be recognized immediately. Thus, the investment income = $400 + (2,900 - 3,000) = 300$

- (b) AAA – recorded as amortized value = 1,800

BBB – recorded as market value = 7,500

CCC – recorded as market value = 2,900

- (c) AOCI = $7,500 - 7,000 = 500$

- (d) For Held for Maturity, the discounted incurred loss would remain the same as it is discounted using the book yield, which is not impacted by the market interest rate. The investment income would remain the same as the unrealized gain/loss is not recognized. Thus, no impact due on Net Income.

For Available for Sale, the discounted incurred loss would increase due to the decrease in discount rate. The investment income would stay the same as the unrealized gain/loss is not recognized. Thus, the Net Income would decrease.

For Held for Trading, the discounted incurred loss would increase due to the decrease in discount rate. The investment income would increase as the market value of the bond will be higher. The impact of Net Income depends on which effect is higher.

Actual candidate answer for full marks:

a.

$$75 + 200 + 125 + (2900 - 3000) = 300$$

b.

AAA 1800

BBB 7500

CCC 2900

c.

$$\text{AOCI} = 7500 - 7000 = 500$$

d.

AAA: no impact. Asset is measured at amortized value and discount rate is based on book yield which doesn't change either