

EXAM 6 – UNITED STATES, FALL 2015

19. (5.25 points)

The following information is available as of December 31, 2014 for a U.S.-domiciled multinational insurance company (all figures are in millions of dollars):

- IFRS Assets: \$800
- Total Adjusted Capital: \$335
- Minimum Capital Requirement (MCR): \$200
- The following Risk Based Capital Charges:

R ₀	\$26
R ₁	\$78
R ₂	\$104
R ₃	\$78
R ₄	\$260
R ₅	\$156

- R₃ and R₄ have been adjusted for reinsurance recoverables.
- The risk free rate is 0.75%, and the illiquidity premium is 0.25%.
- The cost of capital above the risk-free rate is 6%.
- Capital is assumed to be held until the end of the period.
- The following table provides the one-year value at risk (VaR) model results:

Percentile	VaR
95.0%	\$200
99.0%	\$300
99.5%	\$350
99.9%	\$400

- The following table provides the expected liability payment schedule, with all payments occurring mid-year:

Year	Payment
2015	\$200
2016	\$100
2017	\$50
Total	\$350

a. (1.5 points)

Calculate the Authorized Control Level, and describe the resulting actions of both the regulator and the company under the RBC Model Act.

b. (2.75 points)

Determine the actions of the regulator based on the calculations underlying Solvency II quantitative capital requirements.

c. (1 point)

Describe two differences between RBC and Solvency II that could result in different levels of regulatory action.

CONTINUED ON NEXT PAGE

SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 19				
TOTAL POINT VALUE: 5.25			LEARNING OBJECTIVE: C2 / C3	
SAMPLE ANSWERS				
Part a: 1.5 points				
$RBC = R_0 + \sqrt{R_1 + R_2 + R_3 + R_4 + R_5}$ $RBC = 26 + \sqrt{78^2 + 104^2 + 78^2 + 260^2 + 156^2} = \365 $Authorized\ Control\ Level\ (ACL) = 0.5 * RBC = 0.5 * 365 = 182.5$ $RBC\ Ratio = \frac{Total\ Adjusted\ Capital}{ACL} = \frac{335}{182.5} = 183.6\%$				
Company Action Level is triggered (from 150% to 200%)				
The state department of insurance is not required to take action				
The company must submit a plan of action to the insurance commissioner of the domiciliary state explaining how the company intends to obtain the needed capital, or to reduce its operations or risks to meet the RBC standards.				
Part b: 2.75 points				
$Assets = Free\ Surplus + Solvency\ Capital\ Requirement\ (SCR) + Risk\ Margin + Best\ Estimate\ Liabilities$				
Solvency Capital Requirement = one-year 99.5% Value at Risk (VaR)=350				
Risk Margin and Best Estimate Liabilities are calculated based on the fair value of claims liabilities and risk margin with the following adjustments:				
<ul style="list-style-type: none"> • R-i=6%; i=risk free rate +illiquidity margin • Required Capital = SCR at each point in time 				
	Total	2015	2016	2017
Payments in Period	350	200	100	50
Payment Duration		0.5	1.5	2.5
Discount Rate (i)		1%	1%	1%
PV of Payment	346.30	199.01	98.52	48.77
Required Capital (SCR)		350	350	350
Risk Cost of Capital		6%	6%	6%
Cost of Capital in Period		21.0	21.0	21.0
Duration		1.0	2.0	3.0
Discount Rate (i)		1.0%	1.0%	1.0%
Associated Risk Margin	61.76	20.79	20.59	20.38
Best estimate liabilities	346.30			
Risk margin	61.76			
Solvency capital requirement	350.00			
Total required assets	758.06			
IFRS Assets = 800 which is > 758.06				
Therefore, no regulatory intervention required.				

SAMPLE ANSWERS AND EXAMINER'S REPORT

Part c: 1 point

- Solvency II uses IFRS assets, while RBC is based on SAP values. This causes differences in the asset valuation. For example, IFRS has different standards for a risk transfer to be considered reinsurance.
- Required capital under Solvency II is based on the 99.5% VaR, while RBC is not based on modeled results.
- Reserves are not discounted under RBC, while Solvency II discounts reserves and adds a risk margin.
- Solvency II can be tailored to individual companies (ORSA), while RBC uses the same set of formulas for all companies.
- RBC does not consider many risks which Solvency II does. These risks include:
 - Interest rate risk
 - Catastrophe risk
 - Operational risk
- RBC has four action levels based on the RBC ratio, while Solvency II has two quantitative requirements (SCR and MCR).
- Solvency is principle based, while RBC is rule based.
- Solvency II requires more disclosures and is more transparent, therefore increasing market discipline and potentially leading to less regulatory action. Calculations underlying a company's RBC are confidential, even though the RBC formula results are available to the public.

EXAMINER'S REPORT

Parts a and c asked candidates to demonstrate knowledge of RBC and Solvency II. Part b was challenging, as it required execution of a complex Solvency II capital calculation.

Part a

Candidates were expected to calculate the authorized control level and RBC ratio, identify the appropriate action level, and describe the required actions for the regulator and the company. Common errors included not properly identifying the Company Action Level or the company or regulatory actions to take. Some candidates made calculation errors.

Part b

Candidates were expected to calculate the present value of liabilities, add a risk margin, determine if the company has any free surplus over the technical provisions and SCR and explain whether any regulatory action is necessary. Common errors included:

- Not accounting for risk margin at all
- Incorrectly calculating the discount rate
- Not correctly comparing IFRS assets to required assets (or, equivalently, not correctly comparing required capital to held capital)
- Incorrectly identifying the Solvency Capital requirement (for example, as 99% VaR)
- Failing to identify the required capital as being equal to the SCR

Most candidates failed to identify the required capital. Other measures of required capital were accepted if candidates stated the assumptions they used.

Part c

Candidates were expected to describe two differences between RBC and Solvency II that could result in different regulatory actions. The most common error was not providing a complete

SAMPLE ANSWERS AND EXAMINER'S REPORT

answer – for example, describing one aspect of Solvency II but not describing how it differed from RBC.