27. (3.5 points)

A primary insurance company is considering commuting a reinsurance contract that was placed ten years ago. The subject losses are currently valued as follows:

Gross Paid Losses	$4,000,000
Gross Reserves (Case + IBNR)	$5,000,000
Gross Discounted Reserves (Case + IBNR)	$3,500,000
Ceded Paid Losses	$500,000
Ceded Reserves (Case + IBNR)	$3,000,000
Ceded Discounted Reserves (Case + IBNR)	$2,000,000

The reinsurer's assumed losses are equal to the primary insurer's ceded losses. The discount rate used for tax calculations and the tax rate for both parties is as follows:

	Primary Insurer	Reinsurer
Average Discount Factor	0.850	0.800
Tax Rate	35%	20%

a. (2.5 points)

Calculate a mutually beneficial commutation price considering the combined economic impact of the ceded reserves, tax effects, and the commutation price itself.

b. (0.5 point)

Assuming a commutation price of $2,000,000, describe the directional impact, if any, of the commutation on the primary insurer's IRIS ratio 1.

c. (0.5 point)

Assuming a commutation price of $2,000,000, describe the directional impact, if any, of the commutation on the primary insurer's IRIS ratio 3.

END OF EXAMINATION

QUESTION 27

TOTAL POINT VALUE: 3.5 | **LEARNING OBJECTIVE: E1, C2**

SAMPLE ANSWERS

Part a: 2.5 points

Insurer's benefit = Commutation Price – Discounted Ceded Reserves + Tax Benefit
Lowest acceptable price = L
Net Benefit = 0 = L – 2M + (3M * 0.85 – L) * 0.35
Solve for L, 1.7M. Primary will commute if price is > 1.7M.

Reinsurer's benefit = - Commutation Price + Discounted Ceded Reserves – Tax Loss
Highest acceptable price = H
Net Benefit = 0 = -H + 2M – (3M * 0.8 – H) * 0.2
Solve for H, 1.9M. Reinsurer will commute if price is < 1.9M.

Any price between 1.7M and 1.9M will mutually benefit both parties.

Part b: 0.5 point

IRIS Ratio 1 = GWP / PHS
Surplus decreases because the price is less than the ceded reserves.
Thus, the ratio will increase.

Part c: 0.5 point

IRIS Ratio 3 = Change in NWP
There is no change to either prior or current NWP.
Thus, there is no change to the ratio.

EXAMINER'S REPORT

Candidates were expected to articulate the gain/loss to each party, and understand that each party is motivated to commute if income is > 0. Candidates were also expected to know the definitions of IRIS ratios 1 and 3, and to apply accounting concepts to correctly determine the directional impact of the deal.

Part a

Candidates struggled with part a. The paper from which the question was drawn provided a clear example for the tax component, but was less explicit about the other aspect of the deal (the existing ceded reserves).

Common errors included the following:

- Using gross financials instead of ceded
- Applying the discount rate to the wrong terms
- Setting equal the two parties' tax impact components only, and then solving
- Reversing the cash flows of the two parties (i.e., sign errors for terms)
- Calculation errors

Part b

Candidates were expected to know how the commutation would impact the calculation of IRIS ratio 1.

Common errors included the following:

- Not knowing the definition of IRIS Ratio 1
- Not understanding that Policyholder Surplus will decrease
- Stating that Gross Written Premium changes as a result of the commutation (it does not)

Part c

Candidates were expected to know how the commutation would impact the calculation of IRIS ratio 3.

Common errors included the following:

- Not knowing the definition of IRIS ratio 3
- Stating that Net Written Premium is impacted by the commutation (it is not)