**Background**

It is the second quarter of 2024. You are a consulting actuary engaged by Great Insurance, a multinational general insurer headquartered in Malaysia, to examine the feasibility of extending its existing reinsurance treaty structure for Malaysia’s business to cover the general insurance business of a foreign branch that the company will acquire in a neighboring country, the Eastern Republic. The Eastern Republic has a similar economy, population size, climate, and insurance regulation as Malaysia.

The soon-to-be-acquired entity in Eastern Republic has been relying on an intra-group reinsurance arrangement with its Head Office to manage its insurance exposure, but the arrangement will be commuted upon the sales of the company by the end of 2024. Details in relation to the existing reinsurance arrangement have not been made available to you, except for some information on past facultative reinsurance cessions to external reinsurers.

The entity underwrites general insurance business in only two lines of business, i.e. Property and Motor. It commands a sizable share of Property business particularly in the industrial segment and is looking to grow its personal Motor business aggressively in the coming years through its internet channel. The entity is targeting a 10% and 20% p.a. growth on its Property and Motor portfolios respectively over the next few years.

**Preliminary Round**

For the preliminary round, you are required to examine the existing reinsurance arrangement of Great Insurance or whatever alternative structure that may be deemed appropriate for the entity’s **Property portfolio** only. You were also informed that insurance entities in Eastern Republic are governed by a relatively simple local capital requirement as compared to Malaysia, based on the following formula:

The minimum regulatory threshold is 120%.

For this exercise, you may assume that:

1. Underwriting Profit after Tax = Net Written Premium – Net Claim Incurred – Net Commission – Management Expense – Tax.
2. All premiums written to-date are fully earned and all claims incurred to-date are fully developed.
3. Gross Commission = 20% x Gross Written Premium for Property class.
4. Management Expense = 15% x Gross Written Premium for Property class.
5. Tax rate is 24% of Underwriting Profit Before Tax.
6. Where relevant, the required rate of return on shareholders’ capital is 12%.
7. To simulate past years’ or future years’ CAR, Admittable Assets as at each year-end positions would be affected only by the Underwriting Profit after Tax of the current underwriting year.
8. For this round only, Motor portfolio would not incur any capital requirement. Admittable Asset would not be affected by the profit or loss arising from the Motor portfolio.

You may consider the following steps for this exercise:

1. Perform an analysis on the gross claim experience before any reinsurance for a better understanding of the portfolio. This may include a review of the portfolio’s loss ratio, premium mix by segments or claim trends etc. Your analysis may be performed on an underwriting year basis or accident year basis, wherever appropriate.
2. Apply the Great Insurance Malaysia’s current reinsurance arrangement to the entity’s past five years’ claim experience to examine if the existing arrangement is appropriate.
3. Propose whatever changes or alternative structure deemed necessary for the entity, with the general objectives of maximizing long-term returns, minimizing short-term volatilities in underwriting profits and maintaining a CAR above the regulatory threshold.

For this round, you are provided with the following information:

1. Breakdown of gross and facultative written premium by sum insured band, type of occupancy type and hazard level for past 5 years (2019-2023) for Property business.
2. Listing of claims for past 5 years (2019-2023) for Property business.
3. Existing reinsurance structure of Great Insurance Malaysia.
4. Admittable Asset of the entity as at 31 December 2023 is $500,000,000 Eastern Dollar (ED).

You may also assume that the impending acquisition will have no impact on the entity’s insurance operation, capital structure and adequacy.

**Final Round**

For the final round, you are required to consider both the **Property and Motor portfolios** of the entity. For this round, you are provided with the following information in addition to the information provided in the previous round:

1. Statement of underwriting performance for Motor business over the past 5 years.
2. Listing of large claims above $500,000 ED for past 5 years (2019-2023) for Motor business.

Additionally, you must also consider how the expected future business growth of 10% and 20% p.a. for these two classes may affect the adequacy of your proposed reinsurance arrangement, and how your proposal may affect the business or underwriting strategy of the entity moving forwards.

**Judging Criteria**

Each submission shall be graded based on the following criteria each on a scale of 1 (Poor) to 5 (Excellent).

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Description** | **Weight** |
| Basic Reinsurance Knowledge | Understanding of basic reinsurance concepts including the purpose and quantitative workings of different reinsurance arrangements. | **10%** |
| Portfolio Review | Exploratory data analysis using MS Excel and R for better understanding of each portfolio’s past underwriting performance and how reinsurance may be applied given the specific characteristics of the portfolio, taking into consideration of the company’s overall financial circumstances. | **15%** |
| Reinsurance Modelling | Appropriateness and robustness of reinsurance model developed in MS Excel or R, which may range from a deterministic scenario testing approach to the more sophisticated stochastic techniques. | **25%** |
| Business Proposal | Quality and practicability of business proposal based on the results of portfolio review and reinsurance model above. | **20%** |
| Programming | Overall quality, accuracy, and readability of coding in R or MS Excel. | **20%** |
| Communication | Quality of deliverables and/or speaker’s presentation. | **10%** |