

## ERM Case Study

### Introduction and Recommendations

*We have summarized this text and have tried to point out things to keep in mind. As you go through the case study you should also think about what sorts of questions could be asked and jot down ideas. This is actually an exercise that you should do when approaching any material on the syllabus.*

*A copy of the case study will be provided to you during the exam, so there is no need to memorize. You should be familiar enough with the content of the case study so you can quickly look up information.*

*This summary will cover the entire case study but keep in mind that you will only need to review sections which are specific to your extension. You have enough reading already so don't read more than you have to!*

*This case study contains an incredible amount of information. Since you will be given this during the exam there is no point in restating all of the information, rather this summary below is essentially commentary on that information and things to think about as you read.*

#### 1) Lyon Corporation of Canada

*No matter what track you are on it is important to read this section to gain an understanding of the parent company.*

- a) Overview
  - i) This is a multi-national corporation so be ready to think of risks that are applicable for that type of a firm!
- b) Mission Statement
  - i) The mission statement tells us that Lyon is not afraid to buy/sell a business unit
- c) Structure
  - i) When developing an ERM program one of the first things to consider is setting objectives in light of the various stakeholders. A key stakeholder to consider is the Lyon family which a portion of the parent company.
  - ii) Since a good portion of Lyon corporation is publicly owned, shareholders are a key stakeholder too
- d) Simple Life
  - i) Simple has 4 products (details to come later)
  - ii) *What other products could Simple develop? What would be a good strategic fit?*
  - iii) Located on Boston, MA, USA
- e) AHA Health
  - i) Located on CA, USA
  - ii) Sells group health and LTC
- f) Pryde P&C
  - i) Located in Omaha, NE, USA
  - ii) Writes commercial and personal lines
  - iii) *It is good to think about the risks applicable to the current product and other products that the company could develop*

- g) Helios
  - i) Ladies and Gentleman, WE HAVE FOUND THE LOST CITY OF ATLANTIS!!!!
  - ii) Note that Helios is likely subject to EU Solvency II since it uses the Euro

*Very little information about Helios is in the case study beyond high level description and some numbers in financial statements.*

- h) Lyon Board of Directors
  - i) Overview
    - (1) 4 of the 12 board members represent the Lyon family
    - (2) It is good to be familiar with the names given in the case study. You don't want to waste time on exam day trying to figure out who Andrew, Patrick, or Tomas are.
    - (3) The case study also gives some background on each person. Once again it is important to be familiar with all of these details, but no need to memorize.
  - ii) Mandate of the Board
    - (1) The board's responsibility is to monitor management
    - (2) The board will approve strategic goals, review operations, and provide oversight of financial reporting
    - (3) Management then runs the company and day to day activities
  - iii) Executive Committee
    - (1) Members of the executive committee include:
      - (a) R. Tomas Lyon III ( Chairman)
      - (b) R. Tomas Lyon IV
      - (c) Patrick Lyon
      - (d) Jeremy Orr
      - (e) John Ritchie

*Looking at the background of these people on the prior pages they don't have anyone technical on this committee. Take some time to assess the backgrounds of each of the committees as well as representation of the Lyon Family on these committees.*

- iv) Audit Committee – the job of this committee is to review financial statements and disclosures
  - v) Compensation Committee – this committee will approve compensation arrangements
  - vi) Related Party and Conduct Review Committee – this committee will review and approve transactions with related parties
  - vii) Governance and Nominating Committee – this committee will monitor corporate governance procedures
  - viii) Code of Conduct and Business Ethics – the code of conduct is supposed to support a culture of integrity
- i) Credit Rating
    - i) Credit Rating = A-
    - ii) Tailwind → Pryde's financial results
    - iii) Headwinds → Weaken capital position of Simple and failed acquisition at AHA health
  - j) Oversight of Lyon Companies
    - i) There are a lot of "heads" and "chiefs" at this company
    - ii) Each of the subsidiaries has a board and an executive team

2) Lyon Corporation (Corporate) Functions and Oversight

a) SLIC Report to Corporate

i) SLIC -- Company Summary

(1) Capitalization and Investments

- (a) SLIC current does not have any long-term debt, expect for two 15-year surplus notes. \$50 million was issued at 9.5% in 2001 and \$35 million at 7.75% in 2006.
- (b) When RBC ratio is greater than 400% and economic capital ratio is greater than 110%, then SLIC will distribute capital to its parent company
- (c) Heavy allocation to fixed income assets
- (d) Assets are segmented by product line

(2) Risk Policies

- (a) Credit risk à exposure limits to issuers and sectors as well as average credit quality targets
- (b) Market risk
  - (i) Term, UL, and SPIA duration match within 0.50
  - (ii) VA block dynamically hedges delta and rho
- (c) Liquidity risk
  - (i) Uses stress testing and assumes that there will be regulatory intervention in an extreme crisis
- (d) Operational risk à the CRO produces a monthly report

(3) SLIC Risk Management Committee

- (a) The company recently decided to hire a CRO
- (b) Once the CRO is hired the risk management committee will be disbanded

*Disbanding the risk committee appears to be shortsighted by the company and is something to possibly comment on during the exam.*

ii) SLIC – Initial Product Report

(1) Level Premium Term Insurance

- (a) SLIC has both fully underwritten and simplified issue term insurance
- (b) SLIC has had high sales but mixed experience
- (c) SLIC has developed a predictive model to study mortality experience
- (d) SLIC participates in SOA industry studies

(2) Variable Annuity

- (a) SLIC's variable annuities always include a GMDB
- (b) In addition to the GMDB, the customer can choose a GMAB or GMWB
- (c) Simple wants to be a “fast follower” which means that ANYTHING the competition does, they will copy (exposes the company to risk)
- (d) Proposed product improvements
  - (i) SLIC plans to add new fund families over the next six months
  - (ii) SLIC is considering adding a ratchet to their GLB and GMDB
- (e) Aggressive timeline for implementation of VA GMxB will expose Simple to operational risk

(3) Universal Life

- (a) SLIC offers accumulation UL and a secondary guarantee UL product
- (b) Minimum guaranteed rate of 3% on both products
- (c) Third party administrators (TPA) are good for lowering expenses, but the expose the company to operational risk
- (d) Experience

- (i) SLIC does not have a mortality study for UL
- (ii) USING TERM MORTALITY for a UL product does not make sense!!!
- (e) New Indexed UL à developing this product would make SLIC more consistent with the market
- (f) Investment strategy is trending toward more risky assets. This will increase capital requirements and volatility.
- (4) Single Premium Immediate Annuity
  - (a) Higher levels of mortality improvement will lead to deteriorating experience for an SPIA product
  - (b) Investment strategy is trending toward more risky assets. This will increase capital requirements and volatility.
- b) AHA Report to Corporate
  - i) AHA – Company Summary
    - (1) Operations
      - (a) AHA works with various external vendors and business partners. This exposes the company to operational risk.
      - (b) The study note says they are diligent about collecting data
      - (c) An actuary makes the underwriting decisions!!!
    - (2) Risk Management
      - (a) No official CRO (this is actually not that uncommon for a health company but this is something to comment on as a weakness on exam day)
      - (b) Their incentive compensation plan does not include risk management!
    - (3) Healthcare Reform & Other Regulatory Issues
      - (a) Health Care reform is putting stress on AHA and they are understaffed
    - (4) Other Initiatives
      - (a) AHA is considering purchasing Eureka,, a small health insurance company in NY
  - ii) AHA – Initial Product Report
    - (1) AHA cross sells dental with its group medical
    - (2) LTC block is small and the company is interested in hedging exposure
- c) Pryde Report to Corporate
  - i) Pryde -- Company Summary
    - (1) Exited Markets
      - (a) The company experimented with new markets but has since exited that business
      - (b) These new markets lead to poor earnings
    - (2) Risk and Capital Analysis
      - (a) A consulting firm built an internal capital model and their assessment was Pryde’s current capital levels were sufficient
    - (3) Pryde – Initial Product Report
      - (a) Commercial lines include:
        - (i) Commercial Multi-Peril (“CMP”)
        - (ii) Workers Compensation
      - (b) Personal lines include:
        - (i) Personal Automobile
        - (ii) Personal Property
      - (c) Reinsurance
        - (i) Pryde has both quota share and excess of loss reinsurance

d) Corporate Financial Statements

*It's good to review these financial statements as you might be asked to pull information on exam day.*

e) Rating Agency Report

*Once again, good to review this. This mimics what rating agencies do in practice. One deficiency that this company has is undeveloped risk management. In order to improve their credit rating they may need to prove to the rating agency they have best-in-class ERM.*

f) Corporate ERM Department

i) Economic Capital modeling à each business unit is doing things differently!

(1) SLIC

(a) Internal model

(b) 99.5<sup>th</sup> VaR is the risk metric

(c) Models interest rate, equity and credit risk

(d) Possible improvements

(i) Insurance risk modeling

(ii) Operational risk

(iii) EC SHOULD CONSIDER ALL RELEVANT RISKS!

(2) AHA à very few details are provided for AHA's EC model. It appears to be focused on insurance risk

(3) Pryde

(a) Model build by consultants

(b) Key metric is RAROC (risk adjusted return on capital)

(c) 99.4<sup>th</sup> VaR is the risk metric

(d) Considers aggregation and diversification of risk

ii) Strategic Risk Analysis

(1) Risk Appetite

*This can be tested in multiple ways. The SOA could ask you to critique this risk appetite statement. One obvious flaw is that an organization should have more than one risk appetite statement. It should also consider different drivers of risk. Having hard and soft limits are good.*

*You might also need to reference this on exam day. You could be presented with a situation that might cause a breach.*

*In regard to risk limits, corporate needs tighter control over these. Having a central risk function will help.*

(2) Risk Culture à currently ERM is not a part of the corporate culture and that needs to change

(3) Merger and Acquisition

(a) The parent company does not pursue acquisitions

(b) AHA is currently pursuing an acquisition (Eureka)

(c) One pitfall of the current approach is that a specific acquisition may be a good strategic fit for the business unit but may not be the right decision for the corporation in total.

3) Simple Life Insurance Company (SLIC)

a) Overview

- i) This company primarily sells term life, but is trying to rebrand itself as a multi-product carrier
- ii) The market is shifting (baby boomers are aging) so they are trying to retool their product portfolio to attract more customers

*Be ready for an exam question that focuses on risks of new products or expanding a business. What other products could Simple introduce to attract more customers?*

b) Board of Directors – *once again, it is good to be familiar with names*

c) Officers

- i) A CRO is not listed as an officer!
- ii) The company currently doesn't have a CFO!

d) Employee Benefits

- i) Company provides typical benefits plus a DB pension plan

e) Capitalization

- i) The company has two surplus notes but besides that the remaining capital is equity (*you might be asked to calculate the cost of capital*)
- ii) Internal capital requirement is the greater of 400% RBC and 110% of economic capital
- iii) Capital allocation scheme
  - (1) This is a simple/easy way to allocate capital (just use the regulatory formula at the product level)
  - (2) The pitfall is that there is no way to allocate back diversification benefit to the products

f) Investment Policy and Strategy

- i) Like most corporations there are a lot of stakeholders in setting the investment strategy
- ii) There are four asset segments – one for each of the products

g) Specified Risk Policies

i) Credit Risk

- (1) There are exposure limits to specific issuers and sectors
- (2) Investment department monitors compliance with exposure limits

*Does this make sense? This is like the investment department policing itself. This might be done better by a central risk function.*

(3) Credit Scoring Method  $\Rightarrow$  each portfolio has a credit quality score goal, but this system has serious flaws:

- (a) Scores are a linear function of credit rating  $\Rightarrow$  credit risk and credit rating do not have a linear relationship! Credit risk increases at an increasing rate as credit rating declines.
- (b) Subcategories are ignored  $\Rightarrow$  this is just a bad idea. This will encourage the investment department to load up on “-” ratings to improve return without deteriorating the score.

*The case study uses confusing language to describe the credit scoring system. The thing to keep in mind is that since AAA = 1 and AA = 2 then a LOWER score is a good thing.*

ii) Market Risk

- (1) Simple duration matched A&L with a 0.50 tolerance
- (2) The company is exposed to non-parallel yield curve shifts
- (3) GMxB hedging
  - (a) Hedge positions are updated on a fixed schedule → they should consider updating based on market movements
  - (b) There is a six week lag in hedging – depending on the economic environment that could be a very long time!
  - (c) The company only hedges delta and rho, so they are exposed to movements in other Greeks

iii) Liquidity Risk

- (1) Scenario testing for liquidity risk is fine, but there are more situations which could cause a liquidity crisis
- (2) Overall, there needs to be more analysis done for liquidity risk

iv) Operational Risk

- (1) CRO is responsible for this risk

*One thing to notice is the major risks that are missing from the risk policy. What about strategic risk, reputational risk, or insurance risk? More needs to be specified for operational risk.*

h) Economic Capital Model

i) Risk metric is 99% one-year VaR

ii) The model quantifies:

- (1) Interest rate risk
- (2) Equity price risk
- (3) Credit risk

iii) There are a lot of flaws in the quantification of risk

- (1) Data used to calibrate interest rate model is insufficient. The bond market has been a “bull market” since 1994. Need a longer historical period to capture risk.
- (2) Using only 10-year treasury will ignore changing credit spreads
- (3) Stochastic approach to interest rate and equity is good
- (4) Credit risk modeling assumes that bonds are sold when they go below a certain credit rating → this is different than reality where the bond portfolio is managed to a specified credit score. This can overstate credit risk since in reality the company could hold on to a downgraded security and it might recover. The model will lock in losses!
- (5) Operational risk is estimated to be 10% of FVL → should have a more robust method

*Once again there are major sources of risk that are not considered in the EC model. All of the risk use stochastic modeling, which is fine, but stress testing is common for harder to quantify risks.*

iv) Stress Testing

- (1) Each stress test is applied to the economic conditions as of the valuation date

*This brings up an interesting point. Should stress testing be modified based on the current economic conditions? What if the economy is in recession, should the stress test be the same as if the economy is in expansion?*

*Another thing to think about – we are not told that these stress test target anything. Do these represent the 99.5<sup>th</sup> percentile?*

(2) Stress testing is done for interest rate risk, credit risk, and equity risk

i) Risk Management Committee

i) The company just hired a CRO and is creating an independent ERM department

ii) Note there are a lot of questions that could be asked – what should be the CRO's first tasks? What risk frameworks should the CRO consider?

j) Product Distribution → Simple uses independent brokers

k) Product Descriptions

i) Term Insurance with Level Premium

(1) Many features of these term products are consistent with the market

(2) These products are heavily reinsured which will limit insurance risk. Secure term's expense allowance is very high!

(3) A predictive model has been developed to assist in pricing

(4) Simple is reviewing both mortality and lapses

(5) Review of pricing is being postponed → not a good idea in a dynamic environment!

ii) Variable Annuity with GMAB

(1) Only returning premium is good from a risk perspective but independent brokers can find better terms for their clients

(2) Dollar for dollar withdrawals should not be allowed!

(a) Under these schemes a policyholder can withdraw most the account value and get a "free" benefit.

(b) Example

(i) Guaranteed amount 15,000, AV = 10,000

(ii) Customer withdraws 9,999

(3) Guaranteed amount = 5,001, AV = 1

(4) Proposed improvements

(a) The fund families which marketing wants to add may increase the volatility → this will increase the cost of hedging

(b) A ratchet will increase the cost of the guarantee any will likely increase hedging cost

(c) Aggressive timeline for implementation of VA GMxB will expose Simple to operational risk



### iii) Universal Life

*This product won't always pass IRS 7702 but don't worry about that for this exam. This product wouldn't get approved many state insurance department either, but let's ignore that.*

- (1) This UL contract is consistent with plain vanilla products sold in the US
- (2) Full medical underwriting for all contracts is atypical. Usually there is tiered underwriting depending on how much face amount is requested (e.g., 25K might be GI or simple questionnaire)
- (3) Given the 3% guaranteed rate and 2% spread, the company needs to earn 5% after default cost and investment expense. This is challenging in today's markets.
- (4) Internal systems
  - (a) The company is exposed to operational risk due to the admin system
  - (b) Keep in mind that it is a large undertaking for a term life company to develop a UL product
- (5) Using term mortality for a UL product is inappropriate!
- (6) Changes to the investment strategy **à** know that this is more risky than what you'll normally see in a life insurer's general account. This will increase capital requirements and volatility.
- (7) New EIUL Product
  - (a) Simple wants to purchase a customized option/derivative to hedge market risk
  - (b) The pricing of this product is full of untested assumptions:
    - (i) Quarterly purchasing of hedge
    - (ii) Allocation of fixed vs. index account

### iv) Single Premium Immediate Annuity

- (1) This product has some serious pricing issues:
  - (a) 10% margin in the premium BUT this is eaten away by 5% commission
  - (b) This leaves 5% margin for profit and expenses. Since mortality improvement has been better than expected, this product might not be profitable.
  - (c) 4% interest rate assumption will likely not allow the company to earn much money on spreads
  - (d) The company is exposed to both market risk and insurance risk
  - (e) There could be a lot of risk management questions asked about this product!

### l) Balance Sheets

- i) A&L look normal for these products
- ii) Keep in mind that reserve requirements for term products are much lower than UL and annuities
- iii) Be ready to pull numbers from these tables on exam day!

### m) Income Statement – be ready to pull numbers on exam day!

### n) Portfolio Summary – once again, be ready to pull numbers from these tables on exam day

### o) Historical Market Data – you may need to pull correlation between different assets

- p) SLIC Disaster and Business Continuity Program
  - i) This section is actually pretty funny because this stuff happens in real life
  - ii) The only thing that is missing is a corporate task force to study the use of acronyms within the company
  - iii) Be prepared for an operational risk question that uses this information
  - iv) What happens if the coffee shop closes?
  
- q) SLIC Salaried Pension Plan
  - i) Pension Plan - Benefit Provisions and Financial Information
    - (1) Be prepared to quickly reference this information on exam day
  
  - ii) Statement of Funding Policies and Procedures – Simple Life
    - (1) Allocation of Responsibilities
      - (a) The company will select an actuarial consultant
      - (b) The actuarial consultant will review the pension plan and report to management
    - (2) Funding Policy Principles → the goal of the plan is to fully fund benefits and limit volatility
    - (3) Management of Risks
      - (a) Valuation assumptions are best estimate + PAD
      - (b) The actuarial consultant will monitor emerging experience and make adjustments as necessary
      - (c) Plan provisions are managed to mitigate economic risks (i.e., funded status is a concern for plan sponsors)
    - (4) Funding Target → goal is to have a funded ratio of 100%
    - (5) Funding Risks
      - (a) Three key risks:
        - (i) Demographic risks
        - (ii) Economic risks
        - (iii) A/L mismatch risk
  
    - (6) Statement of Investment Policies and Procedures – Excerpts

*You are given the table of contents of the plan documents, but only excerpts are given in the case study.*

- (7) Investment Risk → born by the company (pension benefits do not vary based on investment performance)
- (8) Allocation of Responsibilities
  - (a) Management will act on behalf of the company to select fund managers, trustee, and actuarial consultant
  - (b) All of the listed responsibilities are typical
- (9) Investment Objectives
  - (a) The theme of the investment objectives is to maintain a healthy funded ratio

*On exam day you might have to choose between various investment choices and you need to keep the objectives of the stakeholders in mind.*

- (10) Rate of Return Objectives

- (a) These seem aggressive (exceed benchmark by 1%)
- (11) Asset Allocation Guidelines à once again, be ready to reference these numbers on exam day
- (12) Passive Management Objectives à the goal of passive management is to match a benchmark
- (13) Rebalancing à pretty loose rebalancing requirements “when it deems rebalancing is appropriate”
- (14) Related Party Transactions

*It is interesting that this is in the case study. Perhaps they could have an exam question where someone in the Lyon family is requesting special treatment or lending of funds.*

- (15) Appendix - Economic Data
  - (a) Once again, be ready to reference these numbers on exam day
  - (b) You are given the KRD for the liabilities so you might have to do A/L matching

- 4) Health Insurance Companies
  - a) Background
    - i) AHA is a large health insurance company
  - b) Employee Benefits

*The case study has stated that benefits do not continue after employees leave the company about 5 times now so perhaps that is something to keep in mind!*

- i) Given the statement above you can assume that there is no COBRA, portability, or conversion
- c) Product Lines
  - i) AHA sells in 15 states – both large and small group
  - ii) AHA has LTC **à** be ready for an LTC question! Remember that product has an implicit interest rate guarantee.
- d) Product Structure **à** most of these medical coverages include dental
- e) Provider Networks & Medical Management
  - i) Uses third parties to manage network, prescription drug plans, and dental
  - ii) Don't worry about the funny names – just focus on the content
- f) Operations
  - i) AHA has structured operations, third party claims system, and good data management
- g) Management/Culture
  - i) AHA doesn't appear to have a good ERM culture (aggressive management, risk takers, etc.)
  - ii) AHA does not have a CRO
- h) Healthcare Reform & Other Regulatory Issues
  - i) In general, regulation is not covered in this exam. One big exception of that is HCR. Be prepared to discuss pros and cons of things like MLR.
  - ii) Keep in mind that you can reference this document during the exam, so there is no need to memorize state specific details mentioned here.
- i) Statutory and Economic Capital
  - i) Statutory Capital
    - (1) The authors of the case study have mentioned allocation of statutory capital across business units a couple of times – be ready to get capital at the total company level and allocate capital to a business unit or product

*It doesn't appear that the capital allocation is reflecting diversification benefit on a statutory basis.*

- (2) 600% RBC ratio is VERY HIGH
- ii) Economic Capital
  - (1) EC is calculated at the 99<sup>th</sup> percentile
  - (2) Any excess capital above 700% RBC is distributed back to the parent company

*The case study goes out of its way to reiterate this point: “assets backing the liabilities on an economic basis are not the same as the assets allocated on a statutory basis.”*

*While this is likely just a clarifying comment, it is important to note that this is always going to be true in just about every situation. Statutory assets are often held at book value. By definition, assets on an economic basis are held at market value.*

- j) Going Forward
  - i) AHA is interested in purchasing a block of LTC contracts as well as Eureka (More details to come later)
  - ii) AHA is working to understand and implement the affordable care act. They might need to pull out of some states.
  
- k) Eureka Insurance Company
  - i) Employee Benefits à provides benefits to employees while they are employed but not after
  - ii) Product Lines à large group and LTC markets in the state of New York
  - iii) Product Structure
    - (1) The product structure is similar to AHA
    - (2) LTC is a closed block
  - iv) Provider Networks & Medical Management à once again, don't worry about the funny names
  - v) Operations
    - (1) Eureka has a “home grown” claims system
    - (2) Payment errors are a routine operational failure
    - (3) Data is mainly stored at the group level (so not a lot of employee data)
  - vi) Management/Culture
    - (1) More conservative management
    - (2) Eureka also does not have CRO
    - (3) Generous incentive plan for management
  - vii) Affordable Care Act & Other Regulatory Issues à management has decided to outsource the work of complying with the ACA
  - viii) Statutory and Economic Capital
    - (1) Eureka complies with statutory requirements and does not have a EC model
    - (2) No capital allocation scheme
  
- l) AHA Financial Statements
  - i) There are a lot of numbers in this section. You should be familiar enough with the financial statements to be able to quickly look up information on exam day.
  - ii) Since they are giving you the experience by state, be ready for a minimum loss ratio question!
  
- m) Financial Statements for Eureka
  - i) There are a lot of numbers in this section. You should be familiar enough with the financial statements to be able to quickly look up information on exam day.
  
- n) Correspondence
  - i) Memorandum - Bigger Actuarial Consulting - LTC Acquisition
    - (1) There are a few things which you should notice:
      - (a) Size of the block of business would double the in-force block for AHA
      - (b) This products have cash values (not typical, will introduce different risks)

- (c) The current owner has never filed for a rate increase (many LTC companies have had to file for rate increases due to misestimating initial pricing)
- ii) AHA Internal Memorandum - Confidential - Active Choice Acquisition
  - (1) This memo ties in nicely with the HCR study notes
  - (2) High broker fees and admin costs will put strain on pricing given minimum medical loss ratios
- iii) AHA Internal Memorandum - Confidential - Pension Plan Funding à nothing notable in this memo
- iv) AHA E-Mail - Underwriting Procedural Changes

*Does it make sense for the marketing department to do underwriting? Probably not, sounds like an operational risk which could lead to insurance risk.*

- v) AHA E-Mail - New Claims Administration Update
  - (1) This could be an operational disaster. Not being able to pay claims for two weeks could hurt relationships with policyholders and providers.
- vi) Active Choice E-Mail – Missing Data for Calculation of Risk Adjusters
  - (1) Nothing notable here
- vii) Active Choice E-Mail – Rate Filing
  - (1) This email discusses regulatory and compliance risk
- viii) Active Choice E-Mail – Sales Conference
  - (1) Nothing notable in this email
- ix) Active Choice E-Mail – ACA Product and Network Changes
  - (1) This email discusses regulatory risks that Active Choice is exposed to
- o) AHA Salaried Pension Plan
  - i) Pension Plan - Benefit Provisions and Financial Information
    - (1) Once again, you should be familiar enough with the financial statements to be able to quickly look up information on exam day
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iv) Appendix: Economic Data

- (1) Once again, be ready to reference these numbers on exam day
- (2) You are given the KRD for the liabilities so you might have to do A/L matching

5) Pryde Property & Casualty

a) Overview

- i) Pryde sells both commercial and personal lines
- ii) Licensed in all 50 states

b) Employee Benefits

- i) Typical employee benefits
- ii) No retirement plan

c) Production à they use both independent brokers and career agents

d) Major Lines of Business

- i) The products Pryde sells includes:
  - (1) Commercial MultiPeril
  - (2) Workers Compensation
  - (3) Personal Automobile
  - (4) Personal Property
- ii) It doesn't appear that Pryde is overly concentrated in any of their products

- e) Regional Spread → business is spread throughout the country, with the largest concentration of business in CA
- f) Exited Markets
  - i) Pryde has experimented with other markets but these efforts have been unsuccessful
- g) Financial Statements
  - i) Keep in mind that none of this needs to be memorized. You do need to be able to quickly reference this data on exam day.
- h) Underwriting Results
  - i) These tables show deteriorating financial performance
  - ii) The case study references a natural disaster but loss ratios show consistent increase
- i) Investment Income → once again you need to be familiar with this information so you can reference it on exam day.
- j) Catastrophe Exposure → reinsurance is used to mitigate Cat Risk
- k) Reinsurance → we are only told that they use high quality reinsurers
- l) Property Risks → this section details the reinsurance arrangements. Note that the excess of loss is at the policyholder level and the catastrophic coverage appears to be at the block level.
- m) Casualty Risks → this provides more information on reinsurance treaties
- n) Statutory Capital → similar allocation scheme as other companies discussed in the case study. Pryde targets a 350% RBC ratio.
- o) Total Available Capital
  - i) This section is saying that if you want an accurate measurement of total capital you will need to look at economic values, not statutory values
  - ii) This could be important in both qualitative and quantitative exam questions
- p) Rating Agency Review
  - i) Pryde has a rating of A-
  - ii) The company is facing both headwinds and tailwinds
  - iii) Increasing loss ratios are a headwind
- q) Economic Capital Model
  - i) This section discusses the cost/benefit analysis of holding more or less capital
  - ii) If you hold less capital, this will increase performance measures BUT you are exposed to more risk
  - iii) If Pryde has over 400% RBC ratio then it will give extra funds to their parent company



- r) Appendix
  - i) Consultant's Report- Executive Summary
    - (1) Two risk metrics were used
      - (a) 99.4% VaR
      - (b) CTE
    - (2) The tables in this section detail the financial performance of the different products and niches
    - (3) Observations
      - (a) Pryde economic capital benefits from diversification effect
      - (b) Pryde has a capital in excess of EC (that is a good thing!)
  - ii) Consultant's Report - Background, Terminology, Considerations
    - (1) Degree of Protection à this section discusses the tradeoff between having too much and too little capital
    - (2) Time Horizon Considerations of Capital Needs à the consultants are suggesting a one-year time horizon
      - (a) The illustrations don't provide any new information
    - (3) Uncertainty vs. Volatility
      - (a) Many texts and study notes on the syllabus have discussed different types of risk, so there is nothing new here
    - (4) Consideration of Risk Transfer à once again this is all fluff and nothing new. ERM should consider both reinsurance and offsetting risks
    - (5) Correlation and Diversification à diversifications benefit should be reflected

## Review Question

Q: Lyon Corporation has just hired a CRO. What should be the CRO's first five steps in her new position?

*This question is pretty wide open so there are a lot of correct answers to this question.*

A:

### 1) Create a Central Risk Function and Adopt an ERM Framework

ERM needs to be consistent across the enterprise. It should be dynamic, nimble and forward looking. ERM should not only manage risk but also assess opportunity.

The CRO should adopt the Partnership model where the CRF works together with the business units to take acceptable levels of risk.

Aspects of other ERM frameworks should be considered for example rating agency models or the Chapman model.

### 2) Common Risk Language

In order for ERM to be effective there needs to be a common risk language. It is especially important at Lyon due to the fact that the company has a diverse set of business units that are geographically separated. Different cultures will define risks differently.

### 3) Risk identification and classification

All significant risks should be identified and classified into a risk register. Different tools should be used to identify risk such as SWOT analysis or PEST. Risks should be classified as long term/short term, high severity/low severity, etc.

These risks should be clearly communicated to the various stakeholders to ensure everyone is on the same page.

### 4) ERM Culture

ERM culture needs to start at the top, with the CEO. He needs to publically support ERM and back a change in culture at Lyon where risk management is integrated into decision making. ERM also needs to be bottom up.

Risk metrics should be developed and clearly communicated. These risk metrics need to be embedded into management decision making and strategic objectives of the company.

### 5) Economic Capital Model

The economic capital model needs work. Below is a short list of improvements.

- Needs to quantify all material risk
- Use combination of stochastic modeling and stress testing
- Aggregate risk across business units
- Assumptions should be based on company experience to the extent it is credible and supplemented with industry data
- Various risk metrics should be considered including VaR and CTE. Time horizon and probability levels should be considered in light of stakeholder objectives and regulatory environment.