Professionalism and the Enterprise Risk Management Practitioner

ASOP 46: Risk Valuation in Enterprise Risk

ASOP 47: Risk Treatment in Enterprise Risk Management

ASOP 55: Capital Adequacy Assessment

CAS Spring Meeting

May 13, 2020

Presenters

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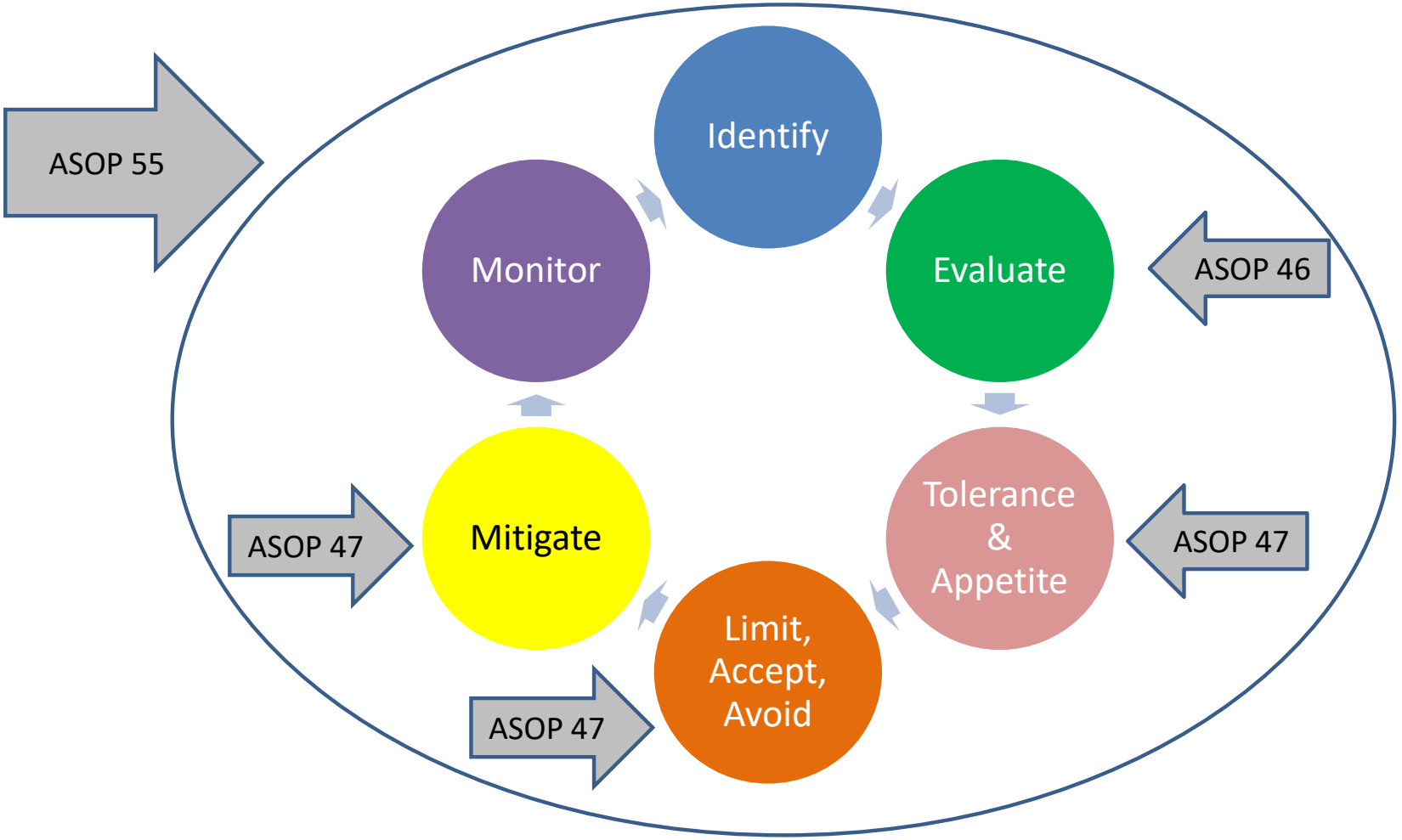
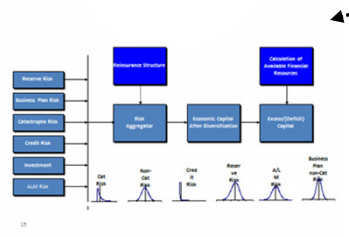
Enterprise Risk Cycle



ENTERPRISE RISK & CAPITAL MANAGEMENT GOVERNANCE PROCESS

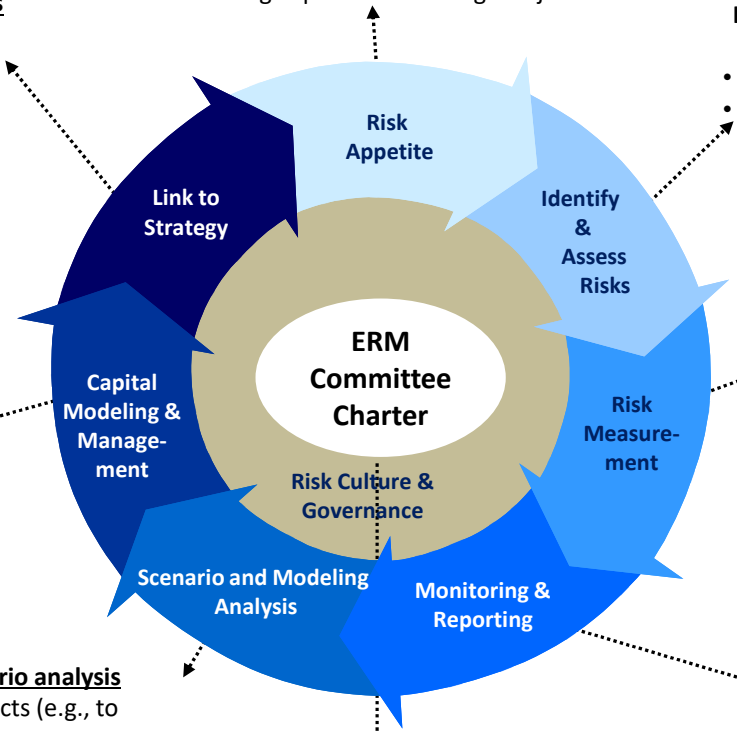
3 -5 Year Financial Pro-forma Forecasts
Strategic Business Plans

	Financial Targets/Goals ($000s)		
	2019	2020	2021
Balance Sheet			
Cash and Investments	158,034	165,011	175,177
Total Assets	179,584	187,513	199,064
Loss and LAE Reserves	71,655	70,107	70,308
Unearned Premium Reserves	18,168	18,401	19,518
Total Liabilities	100,924	99,447	100,926
Capital and Surplus	80,137	86,584	93,578
Returns	8%	8%	8%
Income Statement			
Gross Written Premium	49,853	53,753	58,760
Net Written Premium	47,609	51,334	56,116
Net Earned Premium	47,376	50,217	54,681
Loss and Loss Adjustment Expenses	(28,075)	(29,676)	(32,509)
Underwriting Expenses	(18,841)	(19,884)	(21,155)
Net Underwriting Gain /Loss	459	657	1,017
Operating Ratios			
Loss and LAE Ratio	59.3	59.1	59.5
Expense Ratio	39.6	38.7	37.7
Combined Ratio	98.8	97.8	97.2
BCAR Target	40	50	60
Target Best Rating	B++ (OP)	B++ (OP)	A- (OS)



- **Stress testing and scenario analysis**
- Assessing potential impacts (e.g., to capital, earnings, etc.)
- Economic Capital Modeling
- Assessing Impacts to BCAR, NAIC RBC, etc.

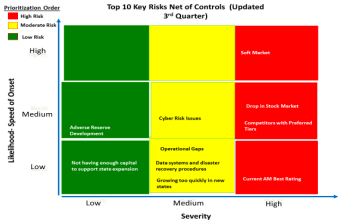
Establish Risk Appetite and Risk Tolerance for risk taking in pursuit of strategic objectives



Identify and assess significant key risks

- Discussion
- Pairwise Risk Surveys

Measure risks
Risk Map
Stochastic Modeling



Management Reports
Risk Register
Total Risk Exposure
Leverage Ratios
Own View- Economic Capital Modeling
3 -Year Forecasts
BCAR Score
NAIC RBC Score

Sound Risk Governance,

- Risk Awareness and Transparency
- ERM Report to Board,
- Advisement to Audit Committee, Investment Committee, Compliance Committee

Case Study Capital Model Review

You are a credentialed with 15 years of experience in reserving and pricing. Two weeks ago you were promoted to Director of the capital modelling unit. The unit is made up of three people with experience in the subject matter. Two have extensive experience but are not credentialed actuaries and one is a newly minted Fellow and has limited capital modeling experience.

Your team performs the capital modeling work for the organization. The model used was developed in-house by a credentialed Associate that retired three years ago and is now self-quarantined in an undisclosed location. Assumptions and scenarios used in the current model are consistent with prior years. They were developed based on interviews with management, documented risk appetites, risk profiles and risk tolerances from the Chief Risk Officer's report to the Board.

As the Director, you are expected to review results, assumptions and inputs to the model, provide feedback on the modelling approaches (e.g., stochastic, sensitivity, stress), and provide both verbal and written reports to Management.

You have had limited exposure to capital models. You were the recipient of capital information provided by this department in the past in your prior role as a pricing manager. You have attended an internal seminars given by the prior Director and attended a couple of ERM-focused meetings that described ERM and capital modelling in some detail.

You have reviewed the underlying assumptions being used and the historical documentation supporting these. You do not fully understand how the model results are used in the organization.

You must report to the Board in one week on the appropriateness of the capital adequacy assessment and the underlying assumptions and scenario and sensitivity testing. As part of that presentation, you must also give the Board its required annual training on capital modeling.

What is the best way to **identify** the **risks** associated with **the construction** of the capital model?

A. Review the historical documentation
B. Re-interview key stakeholders
C. Hire a private investigator to track down the original developer and then interview him
D. Talk to the CRO to get their perspective
E. Find what industry best practices identify as the risks

What is the best way to **identify** the **risks** associated with the **use of the capital model** outputs?

A. Interview management and business area heads to find out how they use it
B. Review Board Committee meeting minutes to see what uses are approved
C. Talk to the CRO to determine what they think proper use is
D. Talk to modeling team to learn what requests for model output they have received over the last two years
E. Find what industry best practices identify as acceptable use

Case Study Questions

1. What are potential problems that might arise and how would you handle those problems, given your role and those of the modeling team members?
2. You are not familiar with the programming language used. What additional requirements does this create in order for you to be able to review work? Are you able to validate the models without knowing the "guts"?
3. Can you place reliance on the other members of the team's work? How do you establish if they are "experts"?
4. Who on the team should be involved in formulating opinions on the model, assumptions, etc.? Should you engage outside experts to validate the model?
5. What role does the CRO play?
6. If you rely on summaries of model technicalities and results for your review, what risks does this present? How do you get comfortable with the results in this scenario?
7. What steps do you take to get comfortable that the model results are being used appropriately?

The ERM ASOPs

ASOP 46

ASOP 47

ASOP 55

Risk valuation in Enterprise Risk

ASOP 46

Professional Guidance: ASOP 46

1.1 Purpose

This actuarial standard of practice (ASOP) provides guidance to actuaries when performing professional services with respect to risk evaluation systems, including designing, developing, implementing, using, maintaining, and reviewing those systems.

1.2 Scope

This standard focuses on five aspects of risk evaluation: risk evaluation models, economic capital, stress testing, emerging risks, and other risk evaluations.

If the actuary departs from the guidance set forth in this standard in order to comply with applicable law (statutes, regulations, and other legally binding authority), or for any other reason the actuary deems appropriate, the actuary should refer to section 4.

2 Definitions

1. Economic Capital
2. Emerging Risk
3. Enterprise Risk Management
4. ERM Control Cycle
5. Organization
6. Risk
7. Risk Appetite
8. Risk Evaluation System
9. Risk Limit
10. Risk Management System
11. Risk Metric
12. **Risk Mitigation**
13. Risk Profile
14. Risk Tolerance
15. Scenario Test
16. Stress test

Professional Guidance: ASOP 46

Now that you have a risk universe for capital modeling, how do you **evaluate** the materiality of the risks?

A. Assume all risks are at an unacceptable level for your company
B. Check against the company's full risk universe to check for overlap
C. Self-quarantine and claim your internet is down
D. Check back with Management and business unit heads to get their views of materiality of the risks

3.1 Risk Evaluation

In performing services related to risk evaluation, the actuary should consider, or may rely on others who have considered, the following:

a. information about the financial strength, risk profile, and risk environment of the organization that is appropriate to the assignment – (flexibility, nature of risk, current and long-term risk, strategic goals, stakeholder interest, regulatory risk criteria, risk interaction, fungibility of capital, risk compared to competitors)

b. information about the organization's own risk management system, (tolerance, appetite, ERM control cycle, knowledge and experience of board regarding risk, execution of control cycle)

c. the relationship between the organization's financial strength, risk profile, and risk environment as identified in (a) above, and the organization's risk management system as identified in (b) above;

d. the intended purpose and uses of the actuarial work product

Professional Guidance: ASOP 46

3.2 Considerations Related to Risk Evaluation Models

In developing, reviewing, or maintaining models used in risk evaluation, the actuary should consider, or may rely on others who have considered, the following:

a. whether the models are fit for the purpose
   - Reproducible and adoptable, sophistication, usability, reliability, statistical limitations, qualify of the data, methodologies for verification , dependencies, cash flow, and discounting

b. whether the model assumptions are appropriate
   - Assumptions are supportable
   - Assumptions are regularly revisited
   - Assumptions reflect anticipated management actions

Professional Guidance: ASOP 46

3.3 Economic Capital Model

Within ERM programs, actuaries are often called upon for assistance in determining the economic capital of the organization.

3.3.1. Considerations Relating to an Economic Capital Model the actuary should consider the following:

a. the appropriateness of the selected time frame
b. the degree to which the economic capital model reflects the significant risks of the organization
c. the appropriateness of the method used to model each risk

Professional Guidance: ASOP 46

3.3 Economic Capital Model

3.3.2. Accounting Framework: The actuary's references to and reliance on accounting frameworks in an economic capital model

3.3.3. Methods In determining economic capital, the actuary should select a method or combination of methods where the input(s) to the method(s) and the results of the method(s) are consistent with the tasks and considerations

a. **Stress Test**
b. **Stochastic Models**
c. **References to Standards**

Professional Guidance: ASOP 46

3.3 Economic Capital Model

3.3.4. Assumptions The actuary should use professional judgment in the selection of assumptions…. the actuary should consider the following…

a. Historical data
b. Prices in marketplace
c. Opinions of other experts
d. Distribution fit
e. Ability to fit extreme values
f. Sensitivity to assumption changes
g. Internal consistency of assumptions
h. Consistency of application assumptions

Professional Guidance: ASOP 46

3.3 Economic Capital Model

3.3.5. Validation ….The actuary should devise appropriate tests of the distribution of outcomes calculated by the model … and the sensitivity of those distributions to changes in the assumptions and parameters. The actuary should also perform validation tests to determine whether the model results are reasonably consistent …..

Professional Guidance: ASOP 46

3.4 Stress and Scenario Testing

3.4.1. Considerations Relating to Stress and Scenario Tests The actuary should consider the following:

a. Similar or different degrees of adversity
b. Business plan in extreme events
c. Single or series of events with catastrophic results
d. Actions and reactions from stakeholders and markets may differ
e. Whether assumed interdependencies are appropriate
f. Non-quantifiable risk and possible financial impacts
g. Test may be hypothetical, **the Actuary does NOT need to validate the degree of realism**

Professional Guidance: ASOP 46

3.4 Stress and Scenario Testing

3.4.2. Methods- Approaches that may be used for stress and scenario testing include the following

a. Models of Single Subsystems of the Organization
b. Fully Integrated and Automated Forecasting Model

3.4.3. Assumptions- the actuary should form a perspective regarding the ways that the defined stress impacts upon various elements of the organization, including consideration of the following

a. Effect on other assumptions
b. Management Response
c. Regulatory Reactions
d. Risk Mitigation
e. Time Element

Professional Guidance: ASOP 46

3.4 Stress and Scenario Testing

3.4.4. Constructing Scenarios-

a. The actuary should consider whether the scenarios need to be developed with consideration of the many different elements of the broad environment that might change from the baseline simultaneous with the main event under consideration.

b. In addition, the actuary should consider the other effects upon the organization as described in items (a) through (e) of section 3.4.3

3.4.5 – Disclosure – refer to section 4.1.2

Professional Guidance: ASOP 46

3.5 Emerging Risk -the actuary should consider the following:

a. the potential impact of emerging risks across various time horizons; and

b. the potential secondary effects from an organization's assumed actions ...

3.6 Other Risk Evaluations

3.7 Specific Circumstances

3.8 Reliance on information or data from others

3.9 Documentation – refer to Section 4 and ASOP 41

Professional Guidance: ASOP 46

Professional Guidance: ASOP 46

4 Documentation

- Section 4.1 gives guidance on disclosures for Economic Capital Models, Stress Test, Emerging Risk, Changes in Systems, Assumptions, Risk Included, Model Validation

- Section 4.2 requires documentation of deviations from the standard based on ASOP 41 sections 4.2 – 4.4

Risk Treatment in Enterprise Risk Management

ASOP 47

You have the risks and their materiality. What is the best way to learn the Company view of acceptable risk and the reasoning behind the levels?

A. Read Board Committee meeting minutes for approvals of risk tolerance and appetite
B. Read the CRO report and talk to the CRO to learn what was recommended and assume it was approved
C. Search the Board Committee meeting minutes for related challenges and discussions
D. Assume they are correct and move on

Professional Guidance: ASOP 47

1.1 Purpose

This actuarial standard of practice (ASOP) provides guidance to actuaries when performing professional services with respect to risk treatment within a risk management system, including designing, implementing, using, maintaining, and reviewing those systems.

1.2 Scope

This standard focuses on four aspects of risk treatment: determining risk tolerance, choosing risk appetites, setting risk limits, and performing risk mitigation activities.

Definitions

1. Basis Risk
2. Counterparty Risk
3. Enterprise Risk Management
4. ERM Control Cycle
5. Organization
6. Risk
7. Risk Appetite
8. **Risk Limit**
9. Risk Management System
10. Risk Mitigation
11. Risk Profile
12. Risk Tolerance
13. Risk Treatment

Professional Guidance: ASOP 47

3.1 Risk Treatment

In performing services related to risk treatment, the actuary should consider, or may rely on others who have considered, the following:

a. information about the financial strength, risk profile, and risk environment of the organization that is appropriate to the assignment

b. information about the organization's own risk management system;

c. the relationship between the organization's financial strength, risk profile, and risk environment as identified in (a) above, and the organization's risk management system as identified in (b) above;

d. the intended purpose and uses of the actuarial work product

Professional Guidance: ASOP 47

3.2 Using models in Risk Treatment

An actuary may use models to provide support for risk treatment decisions, for example, the setting of specific risk tolerance or the selection of a risk mitigation strategy…. Such models are usually risk evaluation models and, as such, the actuary designing or implementing models for risk treatment purposes should refer to ASOP No. 46…

Professional Guidance: ASOP 47

3.3 Organizational Risk Parameters of Risk Tolerance, Risk Appetite, and Risk Limits.

In performing services related to these parameters …the actuary should consider…the following:

a. The financial and non-financial benefits associated with each planned, risk-taking activity and the aggregation of those activities
b. The degree of **concentration** of the risks of the organization
c. The opportunities available to mitigate breaches of risk limits and risk tolerance…
d. Regulatory or accounting constraints…
e. The relationships between the risk tolerance, risk appetite, and risk limits…
f. The historical volatility of the organization's results in context of its current risk profile

Professional Guidance: ASOP 47

What is the most important risk mitigation control for the model?

A. Independent third-party validation
B. Validation by the risk team
C. Testing outputs against prior runs or other models
D. Sensitivity testing

3.4 Risk Mitigation

In performing services related to risk mitigation, the actuary should consider….the following:

a. information relating to qualitative aspects of the organization….
    1. Resilience of the organization under duress caused by common fluctuations ..as well as from extreme adverse events
    2. operational capabilities of the organization needed to implement the risk mitigation strategy; and
    3. The potential risk to an organization's reputation as a result of the risk mitigation strategy

Professional Guidance: ASOP 47

3.4 Risk Mitigation

b. information relating to the cost of, potential effectiveness of, and constraints upon risk mitigation activities…

1. The availability of risk mitigation instruments
2. The counterparty credit risk
3. The nature and degree of the basis risk
4. The degree of confidence that the risk mitigation process can be maintained and repeated
5. The availability of data on current and future risk positions
6. The variability of outcomes **after** mitigation
7. The accounting treatment of gross and net positions
8. regulatory constraints on risk mitigation
9. the granularity of the modeling needed to capture effect

Professional Guidance: ASOP 47

3.5 Reliance on information or data from others – refer to ASOP 23 and 41

3.6 Documentation – refer to Section 4 and ASOP 41

4 Documentation

- Section 4.1 gives guidance on disclosures for Risk Treatment; Model Limitations; Risk Tolerance, Appetite, and Limits; Risk Mitigation; Changes in Process, and Assumptions
- Section 4.2 requires documentation of deviations from the standard based on ASOP 41 sections 4.2 – 4.4

Professional Guidance: ASOP 47

What is the best way to test that controls are effective and whether the model assumptions should be changed to reflect their shortcomings

A. Ask Internal Audit to test the risks and controls
B. Ask the external auditor to evaluate the effectiveness of the risks and controls
C. Perform a self-evaluation of if the controls are effective in reducing the identified risks
D. Ask the CRO if they have evaluated the risks and controls and what conclusions they drew

Capital Adequacy Assessment

ASOP 55

Professional Guidance: ASOP 55

1.1 Purpose

This actuarial standard of practice (ASOP or standard) provides guidance to actuaries when performing professional services with respect to an evaluation of the resiliency of an insurer through a capital adequacy assessment.

1.2 Scope

This standard to actuaries designing, performing, or reviewing a capital adequacy assessment.

2 Definitions

1. Adverse Capital Event
2. Capital
3. Capital Adequacy Assessment
4. Group
5. **Risk Appetite**
6. Risk Capital Target
7. Risk Capital Threshold
8. Risk Profile
9. Risk Tolerance
10. Valuation Basis

Professional Guidance: ASOP 55

3.1 General Considerations

the actuary should take into account the following

a. risk profile and capital
b. business and risk drivers
c. plans and strategies, including likelihood of successful execution
d. timing and variability of projected liability and asset related cash flows
e. timing and intensity of future calls on capital and the ability to replenish capital
f. existing and accessible resources, including affiliates. Examples include capital, data, computing power, and human resources

Professional Guidance: ASOP 55

3.1 General Considerations
the actuary should take into account the following

g. the effect on capital adequacy of changes in the risk profile

h. correlation of risks and events, concentration, diversification, and interdependence of risk

i. future economic conditions

j. parameter uncertainty

k. the methodology used to assess the adequacy of capital with the scope of the actuary's assignment.

Professional Guidance: ASOP 55

3.2 Additional General Considerations the actuary should consider the following

a. the insurer's definition of risk…

b. the insurer's risk appetite and risk tolerance, including any conflicts between the risk profile and the risk appetite

c. inconsistencies between the capital adequacy assessment and information contained in publicly released reports

d. prior capital adequacy assessments

f. management actions, including whether they can be executed in a timely manner

Professional Guidance: ASOP 55

When looking at a group, the actuary should consider the following EXCEPT

A. Intra-group transactions
B. Access to capital from the entities in the group
C. The organizational structure of the group
D. The degree to which the group manages capital adequacy

3.2 Additional General Considerations
the actuary should consider the following

e. if the insurer is part of a group, or the assessment is of a group
   1. **access to capital** from the entities in the group;
   2. **intra-group transactions**
   3. transfers of risks from the group to each individual entity
   4. transfers of risks from each entity to the group and **the degree to which the group manages capital adequacy** for each individual entity or primarily at the group level

Professional Guidance: ASOP 55

3.3 Valuation Bases Underlying a Capital Adequacy Assessment

When designing or reviewing a capital adequacy assessment, the actuary should review the selected valuation bases for assets and liabilities to determine whether they are consistent weather they are appropriate, consider the following:

A. criteria used by management for making risk and other financial decisions
B. any differences between the selected valuation bases and any mandated valuation bases;
C. the time horizon(s) considered by management in decision-making;
D. the characteristics and implications of the selected valuation bases; and
E. any restrictions on assets or capital that are not otherwise reflected in the valuation bases.

Professional Guidance: ASOP 55

3.4 Risk Capital Target or Risk Capital

When the actuary assists in the design of or the review of the appropriateness or applicability of risk capital target(s) or risk capital threshold(s), the actuary should take into account the following

a. the valuation bases
b. the principal's objectives for capital and reasons they could change
c. normal and adverse environments
d. the time horizon over which the capital is assessed
e. the methods used to aggregate results, including diversification benefits and the uncertainty of the interdependence among the risks
f. alignment with any existing risk appetite and risk tolerance.

Professional Guidance: ASOP 55

3.5 Additional Considerations Regarding Risk Capital Target or Risk Capital Threshold

When the actuary assists in the design of or the review of the appropriateness or applicability of risk capital target(s) or risk capital threshold(s), the actuary should consider the following:

a. the approach used to determine the "sufficient" level of capital
b. the relative merits of using a range for the risk capital targets versus a single number
c. whether the insurer will be able to access additional capital within the group when the insurer is part of a group
d. the risk capital targets or risk capital thresholds that are in use within the group
e. the relationship of risk capital targets or risk capital thresholds established by management to the current capital and risks of the insurer.

Professional Guidance: ASOP 55

3.6 Scenario Tests and Stress

When scenario tests and stress tests are included in a capital adequacy assessment, the actuary should follow applicable guidance for scenario testing and stress testing in ASOP No. 46 and ASOP No. 47 In addition, the actuary should consider the following

3.6.1 Types of Tests—Deterministic, Stochastic, Combination, Reverse

3.6.2 Level of Adversity - periods of normal volatility, plausible adverse conditions, and tail events

3.6.3 Sensitivity Testing—The actuary may use sensitivity testing as part of a capital adequacy assessment.

Professional Guidance: ASOP 55

3.7 Incorporating Management Actions

When management actions are incorporated into a capital adequacy assessment, the actuary should consider the following:

a. effectiveness and applicability of prior management actions, given changes between when such actions were taken and the projection period
b. feedback from board members or management
c. legal, regulatory, and execution timing requirements
d. experience, if available, of other insurers and non-insurance entities who took similar actions
e. expected reactions of regulators and other stakeholders.

Professional Guidance: ASOP 55

3.8 Insurers That Operate under More Than One Regulatory Regime

When the actuary is designing, performing, or reviewing a capital adequacy assessment of an insurer that individually or as part of a group operates under more than one regulatory regime, the actuary should take into account the following factors:

a. different regulatory regimes that might apply to different parts of the insurer or different entities of the group, including:
    1. cooperation and existence or non-existence of memorandums of understanding between regulators
    2. differing **requirements for capital**, scenario and stress tests, and financial reporting structures
    3. expected regulatory changes
    4. differing amounts of **regulatory oversight**
    5. impact of rules, restrictions, and time-lags on capital availability
    6. differing definitions of “insurance company” and “regulated entity”
    7. differing valuation bases
b. variations in **taxation** and approaches to litigation

Professional Guidance: ASOP 55

3.9 Additional Considerations Regarding Insurers That Are Part of a Group

When the actuary is designing, performing, or reviewing a capital adequacy assessment of an insurer that is part of a group, or the assessment is of a group, the actuary should consider the following, if applicable:

a. level of complexity and extent of information available across all entities in the group
b. levels of autonomy in selecting capital strategies for individual entities within the group
c. the impact of varying ownership interests, including the following:
    1. ownership splits, particularly between customers and shareholders
    2. shares listed on multiple stock exchanges
    3. ownership concentrations.

Professional Guidance: ASOP 55

3.10 Reliance on Data or Other Information Supplied by Others

When relying on data or other information supplied by others, the actuary should refer to the following ASOPs for guidance: ASOP No. 23, Data Quality; ASOP No. 41, Actuarial Communications; and ASOP No. 38, Using Models Outside the Actuary's Area of Expertise (Property and Casualty).

When relying on projections or supporting analysis supplied by others, the actuary should disclose the fact and the extent of such reliance.

Professional Guidance: ASOP 55

3.11 Documentation

The actuary should consider preparing and retaining documentation to support compliance with the requirements of section 3 and the disclosure requirements of section 4. When preparing such documentation, the actuary should prepare such documentation in a form such that another actuary qualified in the same practice area could assess the reasonableness of the actuary's work or could assume the assignment if necessary. …

In addition, the actuary should refer to ASOP No. 41, section 3.8, for guidance related to the retention of file material other than that which is to be disclosed under section 4.

Professional Guidance: ASOP 55

4.1 Required Disclosures in an Actuarial Report

When issuing an actuarial report to which this standard applies, the actuary should refer to ASOP Nos. 23, 41, 46, 47, and, if applicable, 38. In addition, the actuary should disclose the following in such actuarial reports, if applicable:

a. the businesses.. that are included or excluded .. in the assessment;
b. the key current and future business and risk drivers… in which the insurer operates
c. the key elements of business and risk management plans and strategies included…
d. timing and variability of projected liability-related and asset-related cash flows
e. future calls on capital, and the insurer's means and ability to replenish capital
f. correlation of risks and events, concentration of exposures, diversification benefits, and the uncertainty of the interdependence between risks
g. projections of future economic conditions
h. the selected valuation bases for assets and liabilities

Professional Guidance: ASOP 55

4.2 Additional Disclosures in an Actuarial Report

The actuary should include the following disclosures, when applicable, in an actuarial report:

a. the extent to which information regarding prior sources of capital was reflected in the capital adequacy assessment
b. how the insurer's risk management practices or processes, or the insurer's risk profile, risk appetite, or risk tolerance were reflected
c. any material differences between a prior capital adequacy assessment or relevant publicly available or internal reports and analyses
d. whether the actuary has considered any capital adequacy assessments performed at the group level and how that information has been used
e. a description of specific management actions, their impact on the capital adequacy assessment, and whether the actions could be effectively implemented in a timely manner

Professional Guidance: ASOP 55

4.2 Additional Disclosures in an Actuarial Report

The actuary should include the following disclosures, when applicable, in an actuarial report:

f. …if the actuary had a role in the design of or reviewed the risk capital targets or risk capital thresholds

g. a summary of the tests

h. a description of how operating under more than one regulatory regime is reflected in the capital adequacy assessment

i. if any material assumption or method was prescribed by applicable law (41 4.2);

j. reliance on other sources and thereby disclaims responsibility for any material assumption or method selected by a party other than the actuary (41 4.3)

k. the actuary has otherwise deviated materially from the guidance of this ASOP (41 4.4).

Professional Guidance: ASOP 55

Recommendations (Outside of the ASOPS)

1. Incentive compensation requires appropriate alignment with desired performance
2. Nobody should have the authority to make decisions without accountability.
3. *Do Not Assume we Can Get Rid of the Risk Tomorrow for the same Price as Today*
4. *Modeling and Management Must consider the Behavioral Decisions of people.*
5. *Risk Managers Must Question the Answers*

You have been recently assigned to manage the capital modelling unit.

You are expected to review results, assumptions and inputs to the model, provide feedback on the modelling approaches (e.g., stochastic, sensitivity, stress), and provide both verbal and written reports to management. You were in pricing and only used capital modeling in pricing in the past.

The model being used was developed in-house by an actuary that passed away three years ago.

Assumptions and scenarios used in the model are developed based on prior assumptions and scenarios, interviews the prior manager had with management, and documented risk appetites and risk tolerances from the Chief Risk Officer's report to the Board.

You have attended a few seminars internally and a couple conference sessions describing ERM and capital modelling.

You are comfortable with the theoretical underpinnings of the models but not well versed on how the model results are used in the organization.

The models make extensive use of programming language and you have limited-to-no experience in programming and coding.

Case Study 2

You are the appointed actuary for the company as well as the chief risk officer. You are putting up a prudent risk margin on indicated reserves in following with both your role as chief risk officer and appointed actuary. Company has agreed with your reserve margin. Company management, of which you are part of, has asked that you allocate your reserve margin to older years(i.e. prior to the last three accident years) as the company bonus plan considers the most recent three accident years in its determination of the company's profit bonus plan for management. You have been asked that you can put in the risk load as any way you see fit, but just allocate to prior years. It does not change the bottom line, the calendar year result, the balance sheet, and the capital position of the company. It is argued to you that it is irrelevant as to which accident years it is allocated to. Things even over time. You end up agreeing to the plan.

Thoughts?

Case Study 3

Case Study 4

You are the appointed actuary and chief risk officer for the company. You are putting up a prudent risk margin on indicated reserves. According to the Company's internal economic capital model, you assess that the company is well capitalized. The rating agency capital model is assessing less of a capital need than that indicated in your capital model. The rating agency has provided you high marks on your ERM program in deliberating its overall rating for the company and has asked that you share results of your economic capital model. Management has asked and suggested that you sharpen your assumptions in the Company's capital model so that it would convey more consistency with the rating agency model (lower capital need) in the interest of not causing any yellow flags under the rating renewal process. Management is arguing that there are a lot of uncertain parametrization in your model. No? You should be able to adjust accordingly. You assess that in your revising some of the parametrization, the required capital results can result in closer figures to the rating agency model. It will not affect company strategy, nor risk assessment. You reluctantly agree this will cause no harm. The re-parametrization is reasonable even though you like your original parametrization. You agree to the task to re-parametrize for rating agency disclosure purposes.

Thoughts?

Case Study 5

The management of your company has decided on a reinsurance structure that implies a risk retention that falls outside the Company's risk appetite statement. The decision is based on a cost cutting move to manage the cost of reinsurance placement. Management is disagreeing with your assessment of exposure to costs which would be otherwise covered by the reinsurance that has been displaced by the decision.

What is your next action?

You have built your economic capital model for use, among other reasons, to help you perform your "ORSA". You have tested your correlation assumptions across the various risks parameterized in your economic capital model.

You have concluded that your indicated capital requirement using an average correlation factor of .4 will provide evidence that you company is well capitalized. Your personal assumptions, reflecting a .5 average correlations factor deems that you are undercapitalized. The correlations were assumed with your best judgement but understand that it is subject to material parameter risk. Management has asked you to assume the .4 to support the Company's objective.

What do you do?

Case Study 6

Thank You

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