



Making the CAS an Exemplary Non-Profit ERM Organization by Developing Best Practices and an ERM Program

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CAS ERM Best Practices Implementation Task Force

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Executive Summary

Background

At its September 2004 meeting, the CAS Board of Directors discussed how the CAS could become an example of ERM best practices. The Board requested that the Executive Council (EC) study the issue and make recommendations.

In November 2004, the Board established a task force to recommend a process under which the CAS could become an example of ERM best practices within the non-profit arena. The task force issued a report on August 10, 2005.

CAS ERM Best Practices Implementation Task Force

The Board authorized a task force to:

- Develop and implement an ERM Program for the CAS that reflects best practices,
- Prepare an article by the Executive Director for publication in the trade press and
- Prepare a report for the Board.

The task force developed an ERM program for the CAS. The following are the program's key steps that would make the CAS an exemplary ERM organization:

1. Identify key risks and opportunities facing the CAS in the foreseeable future.
2. Prioritize risks and opportunities.
3. Aggregate risks and opportunities reflecting correlations between them and using models as appropriate.
4. Assign responsibility for managing the risks and opportunities to the appropriate vice president/staff director team.
5. Design risk mitigation processes. Develop opportunity strategies. Implement processes and strategies.
6. Monitor progress toward mitigation of risk and growth through opportunities.
7. Review the ERM program annually and update as appropriate.

The task force prepared an article by the Executive Director for publication in the trade press. (The article was submitted to the press but not published.)

The Task Force prepared this report for the Board.

The Task Force made the following recommendations to the CAS Board:

1. The Board accept the report of the ERM Task Force.
2. The Board establish a standing ERM committee that reports to the Board. The committee will work with CAS staff to implement and enhance the CAS ERM program. (A representative of each executive area should participate in the standing ERM Committee.)
3. The Board dismiss the ERM Best Practices Task Force with thanks for its efforts.

(At its September 2006 meeting, the Board approved these recommendations.)

Overview

The Centennial Goal of the CAS is that it be globally recognized as a leading resource in educating casualty actuaries and conducting research in casualty actuarial science. CAS members are to be recognized as leading experts in risk evaluation.

We have recommended a process by which the CAS can become an exemplar organization and provided an outline of best practices which will lead to that result.

We believe that by following the roadmap laid out in our report, the CAS will enhance its position in the ERM area, and help its members become more successful in the field. We believe the process laid out herein can be taken to other organizations and used to help them implement best ERM practices.

The task force has been honored to be chosen for this important task. We are available to discuss ways the findings can be used to further the goals of the actuarial profession.

CAS ERM Program

Introduction

Two primary roles of casualty actuaries are developing rates for various lines of insurance and setting adequate reserves to ensure the ability to pay future claims. These roles involve the uncertainty of future costs – major risks to insurers, reinsurers, and consultants’ other clients. Since these are the major risk exposures of property-casualty insurers, casualty actuaries have been active in enterprise risk management (ERM) even before it had been so named. In keeping with current developments, the CAS has begun to formalize its own ERM activity.

In 2005, the CAS Board of Directors appointed the Enterprise Risk Management Committee for CAS with the charge to “implement an ERM process at the CAS.” The Committee membership is made up of both staff and CAS members. Because of the CAS members’ daily familiarity with risk, the Board encouraged the Committee to publish the results of its ERM process to serve as an example for other professional organizations.

ERM has many definitions. The one adopted by the CAS is, “a process by which significant risks are identified, prioritized, integrated, aggregated, analytically modeled, dynamically monitored, and updated for the purpose of optimizing organization results.”

Inherent in the ERM process is that identified exposures can represent risks, or opportunities or both. For the CAS, and for all not-for-profit organizations, there will be two major categories of exposures: those that are germane to the operations of the organization (operational) and those that are germane to the profession (strategic).

The ERM program being implemented by the committee includes the following steps:

1. Identify key risks and opportunities facing the CAS in the foreseeable future.

Based on work done by the CAS Long Range Planning Committee in 2005 and other inputs, the ERM Task Force identified nine strategic risks and eleven strategic opportunities. The task force also identified sixteen operational risks and six operational opportunities. (Brief descriptions/comments on each risk/opportunity are included in Appendix 1.)

These risks and opportunities are specific to the CAS. However, many of the strategic risks and opportunities are applicable to all not-for-profit organizations, such as the future credibility of the profession, competition from new entrants and other professions, international expansion, new areas of research, and regulation of the profession. The operational risks and opportunities are faced by all businesses and include such things as pension plan funding, adequate financial controls, operational malfeasance, web site liability, and catastrophes. While not exhaustive, this could be used to start a “check list” for other organizations as they perform their own reviews.

2. Prioritize risks and opportunities.

The task force first assigned the identified risks to frequency/severity categories (high frequency/high severity, etc.). While this approach highlighted the high severity risks, it did not immediately lead to a clear prioritization. As a second step, the task force members individually ranked the identified risks and opportunities from high to low priority. All rankings were then compiled into a single database and discussed by the task force to develop a mathematical value in the aggregate for each. The higher the value, the more important the item is considered to be to the future of the CAS either in the positive or the negative. For instance, while a natural catastrophe has a low probability of occurring, it generally has the greatest potential for the highest severity of damage or harm. The appropriate risk management technique is to have an-up-to-date and tested Disaster Recovery Plan in place for the office location. (See Appendix 2 - Averages and Ranking of Averages).

Based on the developed mathematical values and perceived manageability, the task force selected the three top risks and opportunities in each of the strategic and operational categories, or a total of fourteen (due to two ties), for immediate further attention. In addition to the top fourteen selected, the Task Force selected Catastrophe Risk as a risk that needs immediate attention. Although the frequency is low for a catastrophic risk, the severity is very high. The remaining risks and opportunities were assigned to Year Two or Year Three analysis. A few items, where the chance of occurrence was deemed extremely remote due to already existing internal controls, were deferred but will be monitored on an ongoing basis. Others, such as fully insurable and adequately covered property and liability risks, were likewise deferred and will be monitored (See Appendix 2 - Highest Priority and Program Year). The highest priority risks and opportunities that were to be addressed in the first year were further analyzed with the results presented in Appendix 3.

3. Aggregate risks and opportunities reflecting correlations between them and using models as appropriate.

To improve the prioritization it is necessary to develop an objective quantification of risks and opportunities. This also facilitates the aggregation of risks and opportunities. The combined effect of two risks interacting is not necessarily the same as the sum of the effects of each risk in isolation. Sometimes diversification mitigates the effects of multiple risks and sometimes multiple risks reinforce each other. When the peak and trough of ocean waves coincide, the ocean appears calm, but when peak and peak coincide waves can be severe. The phrase “perfect storm” has been used to describe the aggregation of correlated risks. In some cases, the only way to understand the interaction of multiple risks is to create corresponding actuarial models.

However, as a practical matter, it is not always necessary that all combinations of risk be mathematically modeled. What is necessary is that ERM deliberations consider the interaction of the various risks that are identified (See Appendix 4 – ERM Quantification & Aggregation of Risks and Opportunities).

4. Assign responsibility for managing the risks and opportunities to the appropriate vice president/staff director team.

The CAS volunteer and staff organizational structures are designed to complement and support each other. Each vice president on the Executive Council is responsible for a number of committees and task forces. Each CAS staff department director is “partnered” with a vice president. The risks and opportunities arise out of either external developments or internal organizational activities, and every individual external and internal issue is the responsibility of one or more members of the Executive Council. Thus, mapping the twelve above-mentioned risks and opportunities is a relatively straight-forward process. A representative of each executive area should participate in the standing ERM Committee (See Appendix 5 - Mapping of Highest Priority Risks and Opportunities to the CAS Volunteer and Staff Structure).

5. Design risk mitigation processes. Develop opportunity strategies. Implement processes and strategies.

Like nearly all not-for-profit organizations, the CAS has a strategic plan, a long-range goal, and a number of interim goals. During the annual planning process, vice presidents develop their goals in support of long-range and interim goals, committees and task forces set goals to support the vice presidential initiatives, and staff sets goals to partner with the volunteers. Usually vice presidents and staff hold planning sessions with committee and task force chairs to assess progress made on current goals, plan future direction, and brainstorm new opportunities. During these sessions, each group will analyze the risks and opportunities mapped to their area of operations. We are working to develop a culture of infusing ERM into our decision and planning processes. It is anticipated that future planning will automatically incorporate ERM strategies, and that this enhanced method of managing the environment in which we operate will become institutionalized.

The planning process should be tied to the budgeting process in order to anticipate costs that will be incurred to mitigate losses (such as increased insurance premiums due to purchasing higher D & O liability limits) or identify future income streams from identified opportunities (such as an increase in exam revenue from additional candidates entering the profession due an upturn in credibility and prestige).

One risk mitigating tool that should be developed and adopted is a crisis communication plan. Adopting a crisis communication plan will allow a quick, efficient and effective response in the event there is an adverse public event that could negatively impact the reputation, credibility, value and/or operations of the CAS.

6. Monitor progress toward mitigation of risk and growth through opportunities.

Executive Council members, committee and task force chairs and staff all complete and post to the CAS Web Site quarterly “Cycle Reports,” which are also provided to the Board. These reports display progress toward completing goals. It is anticipated that the ERM monitoring process will be incorporated into the Cycle Reports.

It is critical, however, that the ERM process and results be reviewed as a whole at a senior level on a regular basis. Without such a holistic review, there is a danger that the process will degenerate into “silos” of individual risks/opportunities, and potential interactions will be missed. This is an integral part of “enterprise” risk management. The new standing ERM Committee that will be appointed by the Board will monitor the progress on risk mitigation and opportunity optimization on an enterprise basis. It will also address risks and opportunities not covered by other areas.

7. Review the ERM program annually and update as appropriate.

The ERM program, once institutionalized, will become part of the annual planning and budgeting process and report to the Board. The new standing ERM for CAS Committee that will be appointed by the Board, the Executive Council and ultimately the Board will review the process and update it as appropriate.

Conclusion

Given a holistic vision and definition of ERM, the CAS can become an exemplar organization by identifying and quantifying its key risks and opportunities, putting them in a framework that allows for applying robust analytical procedures, and establishing measures of success that can be measured against various actions and events that can arise.

This report provides an ERM process that uses all these essential ingredients. Combined with an appropriate monitoring and reporting process, this ERM structure will provide a model for other non-profit organizations.

ERM processes are evolving and will become more complex and sophisticated over time. For most not-for-profit organizations, it will not be necessary to engage in extensive mathematical modeling. The steps outlined in this report provide a solid ERM method that will be manageable to implement and maintain.

The benefits of the heightened awareness of the operating environment, of events that could have a negative impact, situations that could provide unanticipated opportunities, and the interrelation of the cumulative effects of these will enable organizations to position themselves to move quickly and confidently into the future. The task force recommends implementing such a process with an annual update to reflect the dynamic times confronting the CAS. It also recommends that the CAS take its best practice model to other non-profit organizations to show leadership in the area of ERM implementation.

To realize this objective, ongoing activity will be needed to structure and monitor the process. We would be pleased to work with CAS leadership to maintain the momentum needed.

Appendix 1 Key Risks & Opportunities

Step 1: The Task Force identified the following key risks and opportunities facing the CAS in the foreseeable future. Descriptions and/or comments have also been provided.

Strategic Risks/Opportunities	Descriptions/Comments
International coordination	This is a significant opportunity, but will require more member involvement and work with the IAA, etc. The CAS VP International is monitoring.
Academic interaction	Increasing ties to the academic community has potential for great opportunity if properly managed. The LRPC is involved. ERM-II is also engaged.
Actuarial credibility	The credibility of the profession depends on many factors. The perception of bad reserve estimates has been a concern. The lack of leadership/management qualities is another. A CAS task force is involved.
Expanded roles in areas like ERM	This is considered a significant opportunity. The task force realizes it will require better public relations in terms of perceptions about our skills. The VP ERM and the VP Communications are involved.
Competition from other professions	MBAs, risk managers, CFAs, etc., are making the case that they can do many of the things we feel uniquely qualified to do. We need to face this challenge. The LRPC is engaged.
Technology	We need to keep up with the many technological advances (neural networks, agent models, etc.). The LRPC is involved.
Research	Actuaries need to be made aware of advances underway in areas such as modeling. The Dynamic Risk Modeling Committee is involved.
New products	Actuaries need to monitor new products (derivatives, etc.) coming out of the financial markets. CAS Research is involved.

Other organizations	There are a number of organizations (NAIC, AICPA, RIMS, COIL, etc.) whose activities influence our work. We need to work with them as appropriate to advance our role in ERM.
Scope of work	The definition of actuarial work product is a critical component of the scope of work we perform.
Education	The syllabus and the nature of basic and continuing education will be significant factors in determining the actuarial role.
Actuarial role	The perception of leadership and management qualities of casualty actuaries will be a key factor in the role actuaries play, as will perception of skill levels.
Insolvencies	Insolvencies in all areas of insurance (not just property-casualty) will affect perceptions of casualty actuaries.
Regulation	Casualty actuarial work will be increasingly influenced by regulatory activity.
Finite risk	The AAA practice note on risk transfer testing shows this issue is not going away.
Operational Risks/Opportunities	
Number of students	The supply of students has been relatively constant.
Volunteerism	Many CAS members participate.
Employers support	Employers have generally continued to support CAS activities. Alternative funding is being studied.
Legal liabilities	Policies are in force.
Event cancellation	Hotel contracts address this.

Credit and liquidity risk	Annual dues and fees provide an adequate cash flow.
Economy and market demand	The strength of the economy will affect employer demand for actuaries.
Pension plan investments	The CAS is part of a sixteen-employer plan managed by Towers Perrin. A Board study was done, and the Compensation Committee reviews it regularly.
Governance practices	SOX best practices are followed.
Codes of ethics	The CAS has a Code of Conduct and disciplinary procedures.
Financial controls	The Audit Committee monitors this regularly. The CAS has received a clean audit opinion for several years.
Operational malfeasance	Policies are in place.
Catastrophes/extreme events/IT disasters/terrorism	The potential high severity requires that this be addressed.
Insured risks	Hazard insurance applies.
Web site	This has become an important communication medium.
Stolen exam questions/lost completed exam	Admissions has policies.
Hedging	Investment Committee addresses.

Appendix 2 -- Rankings of Strategic and Operational Risks and Opportunities

Step 2: Prioritize risks and opportunities.

STRATEGIC RISKS & OPPORTUNITIES		Averages	Ranking of Averages	Highest Priority (Year 1)	Develop Program in
SR-1	Actuarial credibility	1.857	1	X	
SR-2	Competition from other professions	3.286	2	X	
SR-3	Technology	7.143	7		Year 2
SR-4	Insolvencies	6.571	6		Year 2
SR-5	Other organizations	6.429	5		Year 3
SR-6	Scope of work	3.429	3	X	
SR-7	Actuarial role	3.286	2	X	
SR-8	Regulation	5.429	4		Year 3
SR-9	Finite risk	7.571	8		Year 3
SO-1	International expansion	5.857	5		Year 2
SO-2	Academic interaction	6.714	7		Year 3
SO-3	Expanded roles in areas like ERM	2.714	1	X	
SO-4	Technology	6.286	6		Year 2
SO-5	Research	4.714	3	X	
SO-6	New products	5.286	4		Year 2
SO-7	Other organizations	9.429	10		Year 3
SO-8	Scope of work	4.571	2	X	
SO-9	Education	7.286	8		Year 3
SO-10	Actuarial role	4.714	3	X	
SO-11	Regulation	8.429	9		Year 3

<u>OPERATIONAL RISKS & OPPORTUNITIES</u>		Averages	Ranking Of Averages	Highest Priority	Develop Program in
				(Year 1)	
OR-1	Declining number of students	3.429	2	X	
OR-2	Diminished volunteerism	2.571	1	X	
OR-3	Employers support	3.571	3	X	
OR-4	Legal liabilities	4.143	4		Year 2
OR-5	Event cancellation	8.286	8		Year 2
OR-6	Stolen exam questions	7.571	5		Year 2
OR-7	Credit, liquidity risk	11.857	13		Year 3
OR-8	Economy and market demand	8.857	9		Year 3
OR-9	Pension plan investments	11.714	12		Year 3
OR-10	Governance practices	9.571	10		Year 3
OR-11	Code of ethics	8.143	7		Year 2
OR-12	Financial controls	12.429	14		Year 3
OR-13	Operational malfeasance	13.571	15		Year 3
OR-14	Catastrophes/extreme events/etc.	8.000	6	X	
OR-15	Insured risks	11.714	12		Year 3
OR-16	Use of hedging	10.571	11		Year 3
OO-1	Increasing number of students	1.429	1	X	
OO-2	Web site	3.286	4	X	
OO-3	Employers support	2.714	2	X	
OO-4	Economy and market demand	2.857	3		Year 3
OO-5	Pension plan investments	5.714	6		Year 3
OO-6	Use of hedging	5.000	5		Year 3

Appendix 3 -- Task Force Analysis of the Highest Priority Strategic and Operational Risks and Opportunities

Step 2: The Task Force identified the following risks and opportunities as the highest priority to be addressed during the first year and provided additional commentary below.

Strategic Risks and Opportunities

Strategic Risk--Actuarial Credibility

As an organization of actuarial professionals, a key purpose of the CAS is “to promote and maintain high standards of conduct and competence for the members” (CAS Constitution). The high standards contribute to the professional reputation of actuaries and the resulting success of its members. The failure of even a few members to perform up to the high professional standards could weaken the reputation of the actuarial profession and reduce the demand for and the perceived value of actuaries.

The adverse development of insurer reserves, particularly that occurring in 2002-2003, resulted in substantial criticism of insurers. The CAS responded by establishing a Task Force on Actuarial Credibility to identify and address the critical issues affecting actuarial credibility. After the task force completed its report, the Board adopted it and established the Task Force for Enhancing the Reputation of the Actuary to implement changes to CAS-led activities.

In the U.K. the Penrose Report and the Morris Review also criticized actuaries. As a result of these three criticisms, the Academy established the Critical Review of the U.S. Actuarial Profession Task Force (CRUSAP) to identify the challenges and opportunities facing the actuarial profession and will make recommendations to the profession for addressing emerging and future developments.

The CAS has been and should continue to be active in the two active task forces to ensure the continued credibility of the actuarial profession. As the profession is responsible for maintaining its own high standards, the CAS should explore the effectiveness of its disciplinary process, including the ABCD. This should be done on a summarized basis excluding personally identifiable information.

As loss reserving has been the basis of criticism in the past, the CAS should consider researching a number of insurers with substantial loss reserving shortfalls to determine as much as possible the cause for the shortfall. The depersonalized findings could provide valuable training scenarios for actuaries. This should be done continuously to identify arising issues that need to be addressed and make actuaries aware of the ongoing oversight process. The failure to address this issue successfully could endanger the actuarial profession’s role in providing loss reserve opinions and the overall credibility of the actuarial profession.

Another factor that could affect actuarial credibility is the effectiveness of the CAS continuing education requirements. Actuaries who have not kept up with practice improvements may fall short of the high professional standards of the CAS. The CAS and the Academy are studying various aspects of this issue.

Strategic Risk--Competition from Other Professions

Casualty actuaries have always enjoyed a unique position in the property-casualty insurance industry. Over the years their skills have been found useful beyond that industry, and they have become involved in quantitative analyses of business issues in a wide range of organizations.

At the same time, members of other professions have noticed the rather privileged position of actuaries, and have attempted to perform work normally reserved for casualty actuaries. Financial analysts, operations researchers, risk managers, life actuaries, economists, statisticians, and general mathematicians are just examples of professionals who sometimes overlap with our own.

It should be noted that the CAS and SOA are working together to increase actuarial visibility in the ERM area.

The Casualty Actuarial Society can help mitigate the risk of this encroachment on the profession by showing the unique perspective and skill set required to do work such as loss reserving, rating, reinsurance analysis, DFA, ERM, etc. Training in credibility theory, loss distributions, advanced modeling, reserving, rating, reinsurance, etc. and experience in applying this knowledge to real world problems are just examples of the unique value casualty actuaries bring to their work.

Strategic Risk and Opportunity--Scope of Work

Casualty actuaries must find a balance between broadening their field enough to provide interesting and rewarding work and keeping it narrow enough so as not to fall in the trap of working outside their area of expertise.

As issues like ERM, DFA, data mining, catastrophe modeling, financial modeling, strategy, etc., become more critical in business applications, actuaries will be faced more and more with challenges of scope. How the CAS responds to this challenge will be a large determinant in the success of the profession in keeping its scope manageable.

Strategic Risk and Opportunity--Actuarial Role

The actuarial role is significantly affected by the public perception. One area of concern is the understanding of the value actuaries can play in management decision making.

Historically there has been a perception that actuaries are “back room” people who work with arcane models but do not understand business issues. Others must interpret their results for the general public.

This image has been exacerbated by a few actuaries who embody that role. As issues like ERM, financial analysis, strategic vision, and quantitative management become more important, actuaries will need to demonstrate their ability to play a valuable role in business decision-making.

The CAS will have a major role in facilitating the transition to a more management-oriented profession.

Strategic Opportunity--Expanded Role in ERM and Other Areas

The treatment of risk has been gradually evolving beyond insurance to include a variety of alternative risk mechanisms. It has also been expanding toward a holistic treatment of risk. This includes the consistent treatment of all risks and opportunities including the correlations (common dependencies) between them. With all of these expansions, risk management is becoming a senior management function.

While some of the related ERM functions would undoubtedly be handled by other professionals, actuaries could be well positioned to measure risks on a consistent basis, deal with correlations, and eventually build models to bring everything together.

The CAS has taken many steps to advance the role of the actuary in ERM: developing the Centennial Goal, creating a new vice president position for ERM, jointly sponsoring the Risk Management Section with the SOA, and sponsoring the ERM-II (Enterprise Risk Management Institute International). However, CAS members are still not aware of ERM and its potential opportunities and more must be done to communicate and educate them.

The CAS must continue to pursue research to address unsolved ERM issues to establish the value of actuaries in ERM and then promote that value to the rest of the world. As actuaries will likely be members of ERM teams, the CAS should work with other involved professionals to develop complementary partnerships to provide ERM solutions.

Strategic Opportunity--Research

The CAS has identified research as one of its highest priorities. A leading purpose of research is to develop solutions to emerging issues and problems. The results of the research can be transmitted to CAS members who can then incorporate it into their work products.

Operational Risks and Opportunities

Operational Risk--Declining Number of Candidates

A declining number of candidates (those registered and sitting for CAS examinations) could weaken the CAS in numerous ways. Fewer candidates and actuaries would be working in the insurance industry, which would reduce the CAS' (and its members') role in quantifying and managing risk.

Fewer candidates would lead to fewer CAS members, which would also lead to fewer volunteers. This could endanger one of the CAS's current goals to become recognized globally as a leading resource in educating casualty actuaries and conducting research in casualty actuarial science. (The ability to attract sufficient volunteers has been identified by the ERM for CAS Committee as another high priority operational risk, which would be addressed as a separate item in this report.)

Fewer candidates would lead to fewer CAS members outside of North America, which would reduce the international role and influence of the CAS (and its members).

The following table shows the number of candidates taking CAS upper-level exams (5-9) from 2001 to 2006.

Number of Students Taking CAS Upper-Level Exams (5-9)

Year	CAS Candidates	% Change
2001	2,323	-
2002	2,200	-5.29%
2003	2,106	-4.27%
2004	2,214	+5.13%
2005	2,445	+10.43%
2006	2,757	+12.76%
2007	3,117 (<i>proj.</i>)	+13.58%

Fiscal Year 2007 Baseline

It is current CAS practice to set exam-related fees so that the exam function (revenue source) contributes to the annual CAS net income (to offset the large number of unpaid volunteer hours to support the Admissions process). The FY 2007 budget includes net income of \$486,965 from the exam function.

The projected FY 2007 cost to support the exam administration function is \$1,655,732. The majority of these costs is for office allocation and fixed expenses. The variable expenses are mostly related to printing and are not directly proportional to the number of exam registrants (due to the basic set up costs for each printing job). For this reason, we conservatively assume that projected FY 2007 exam expenses would remain roughly constant for the scenarios of declining students. This assumes that decreases in variable costs would be approximately offset by annual CPI increases.

FY 2007 projected revenue from exam fees only is \$1,806,465 with projected net income of \$486,965.

Financial Implications—Pessimistic Case: CAS Students Decrease By 50%

This scenario is highly improbable and therefore only serves as an upper bound on exam fee considerations. (A decline in students of this magnitude could severely endanger the CAS and the U.S. property-casualty actuarial profession.) Assuming the exam function expense remains at the FY 2007 level (\$1,655,732), exam fees would have to be increased significantly to generate enough revenue to at least approximately break even (for this function under the pessimistic scenario).

On average, exam fees would need to be increased \$525 (from \$525 to \$1,050, or 100%). This would generate \$1,635,900 from 1,558 registrants (down 50%).

Financial Implications—Most Probable Case: CAS Candidates Decline 5% Annually

Again assuming that exam administration expenses remain constant, exam fees would have to be increased sufficiently to generate \$1,655,732 to achieve a break even net income (for this function under the most probable scenario).

On average, exam fees would need to be increased \$35 (or 6.67%). This would generate \$1,658,160 from 2,961 registrants (down 5%).

Operational Opportunity—Increasing Number of Candidates

By increasing the number of candidates, the CAS would benefit in many ways. More candidates and actuaries would

- Work in the risk management business (not just more working in the insurance business). This would improve the ability of the CAS to compete with many other professionals for the most important responsibilities/careers in quantifying hazard, strategic, financial, and operational risks.
- Develop improved methods for evaluating hazard, strategic, financial, and operational risks. These new candidates would also help evaluate new/evolving risk transfer mechanisms.

In addition, the increase in the number of candidates would lead to

- Increases in CAS membership, and thus more volunteers. In turn, increased volunteerism would help the CAS become globally recognized as the pre-eminent resource in educating casualty actuaries and conducting research in casualty actuarial science.
- Increases in numbers of CAS members outside of North America, which would expand the international roles and responsibilities of the CAS (and its members).

The task force considered the remote possibility that a significant increase in the number of candidates could overwhelm the demand for actuaries and decrease salaries. However, the task force discounts this possibility because of the limited supply of technical students entering the risk management field.

Operational Risk--Erosion of Employer Support

CAS membership and related activities are currently, and have been historically, supported in large part by employers. According to the 2003 Membership Survey, 89% of the respondents indicated that their employers pay their dues, and 93% indicated that their employers pay for meeting/seminar fees. These percentages are only down slightly from 1998, the last time the membership was surveyed.

In addition to the obvious negative financial impact that would result if employers were to stop, or drastically reduce, their support for CAS dues and meeting/seminar fees, it is also very likely that volunteerism would diminish significantly. Ability to attract sufficient volunteers has been identified by the ERM for CAS Committee as another high priority operational risk which will be addressed as a separate item in this report. This section of the report will focus on the adverse financial implications if employers were to stop supporting CAS membership and related activities.

Employers, in most cases, have recognized the profession's qualifications standards requiring twelve hours of continuing education annually and have reimbursed their employees for continuing education fees and related travel expenses in support of this standard.

Attendance trends for CAS members attending CAS meetings and seminars are reviewed annually by the Executive Council and Board of Directors. While a significant decline in meeting/seminar attendance will certainly have a potential negative financial impact on CAS, there has been no significant change in absolute attendance numbers over the past several years. Total attendance at CAS meeting and seminars in 1997 was 3,789. There was a temporary drop in 2001 (attributed to the events of September 11, 2001) to 3,288, but since then annual attendance has rebounded (3,723 in 2005). Despite the absolute attendance being steady, overall attendance as a percentage of the membership has declined over time as the membership grows.

Financial Implications—Pessimistic Case: Employers withdraw all financial support of CAS seminars and only grant time for local seminars

This could correlate with very poor economic conditions resulting in reduced demand for insurance. This is considered to be a severe and highly improbable/impractical scenario that would essentially shut down the CAS continuing education program as it exists today. To mitigate this risk, CAS would need to offer continuing education programs exclusively in regional major actuarial centers, which would still exclude a large segment of the membership. CAS would also be forced to develop alternative means of presenting continuing education (online courses, self-study materials, etc.) at reasonable costs that could be borne by individual members.

The financial impact to the CAS would be significant. At the very least, it is assumed that revenues from seminars and their alternatives would no longer contribute to CAS net income. Those events held would be scheduled / located to just break even on direct costs in order to offer the widest possible selection of continuing education opportunities. Alternative means to generate additional income to offset lost net income would be explored (membership dues increases, cost and service reductions, etc.).

Financial Implications—Most Probable Case: Employers limit CAS members to only one continuing education event per year at company expense

If employers were to limit employees to only one continuing education event per year, overall annual attendance would decline. Current annual attendance figures suggest that, on average, about 25% of meeting attendees attend more than one event during the year. Considering actual attendance of 3,723 for 2005, if people were allowed to attend only one event during the year, the attendance for 2005 would be reduced by about 465 ($3,723 \times 0.25 / 2$). With an average registration fee of \$600, the financial impact would be a loss of \$279,000 in revenue. After recognizing the savings of variable costs, this would translate to approximately \$140,000 of net loss to the bottom line.

To adjust for reduced total attendance under this scenario, the CAS could take steps involving all or some of the following:

- Reduce/consolidate the number of continuing education offerings to those most desired/supported by the membership and candidates.
- Increase registration fees, which are currently considered to be below market prices.
- Scale back or eliminate social activities at meeting/seminars.
- Increase seminar marketing emphasis.
- Review policies for geographic distribution of seminar sites and consider more cost-effective site selections.
- Partner with Regional Affiliates to offer more geographically oriented opportunities.
- Investigate alternative continuing education delivery mechanisms (online courses, self-study, etc.) to reduce travel related expenses (including time).

By combination of the above measures an equilibrium point could be reached between the number offerings and at what fee such that CAS could derive, perhaps reduced, but sufficient seminar net income to otherwise offset other CAS expenses.

While there is no strong indication of an erosion of the current environment of employer support for CAS activities, this is worth monitoring.

The CAS Board and Executive Council, as well as individual program committees, should continue monitoring annual attendance figures. The membership should continue to be surveyed periodically about employer support.

Operational Opportunity--Increasing Employer Support

It appears that CAS members currently enjoy a high level of support from employers. This statement is supported by the following:

- Employers pay dues for almost 90% of the respondents.*
- Employers pay seminars/meeting fees for 93% of the respondents.*
- CAS enjoys very high volunteer rate among its membership (about 34%). This is accomplished with limited reimbursements from the CAS.

*According to the 2003 Membership Survey

Although CAS members currently enjoy a high level of support from employers, this relationship should be cherished and nurtured. Increased employer support will translate into:

- Lower meeting/seminar fees. If the number of attendees regularly exceed the break-even threshold, fees can be kept low.
- Lower exam fees. A significant part of the examination process is currently done by CAS volunteers whose services are estimated at over \$2,200,000.
- Increased volunteerism, which will support lower fees.

The current high level of employer support can be cherished and nourished by:

- Utilizing the senior CAS leadership/chief actuaries network to inform senior management in the industry of the importance and historical recognition of the benefits of actuarial continuing education.
- Formally recognizing and thanking employers who are supportive of CAS activities.
- Surveying employers who do not support CAS activities to see if we can learn why.

The CAS Board and Executive Council, as well as individual program committees, should continue monitoring annual attendance figures.

Volunteer metrics should be reviewed as a measurement of employer support.

The membership should continue to be surveyed periodically about employer support.

Operational Risk--Diminished Volunteerism

Volunteerism is the lifeblood of the Casualty Actuarial Society. The CAS is very dependent upon its membership's ability to volunteer and to support CAS operations, generate revenue, and meet future goals.

The projected income in the CAS budget is heavily supported by the ability to generate revenue through administering examinations and providing continuing education. A decrease in volunteerism presents a clear operational risk as regards the financial solidity of the CAS.

In terms of achieving our goals, the Centennial Goal, adopted by the Board in 2003 (modified in 2007) is:

The CAS will be recognized globally as a leading resource in educating casualty actuaries and conducting research in casualty actuarial science. CAS members will advance their expertise in pricing, reserving and capital modeling, and leverage their skills in risk analysis to become recognized as experts in the evaluation of enterprise risks, particularly for the property and casualty insurance industry.

A decrease in volunteerism is a clear operational risk in terms of meeting the Centennial Goal.

In fact, the LRPC Subcommittee to Review the Threats/Opportunities to achieving the Centennial goal made the following conclusion:

The subcommittee concluded that Volunteerism *per se* permeates the entire Centennial Goal. It is the motive force that drives any success the CAS might have in achieving the various SAM goals. In other words, it is an “energy” that will drive all other SAM goals.

So it is widely recognized that decreasing volunteerism, or even failing to make strides towards increasing the volunteerism rate, presents an operational risk in terms of revenue generation, operating the CAS, and achieving the Centennial Goal.

Operational Opportunity--Web site

Web sites have become an important communication medium. The web site was recently updated. The CAS should explore additional ways to use its web site. For example, it may be possible to provide a variety of continuing education opportunities.

Operational Risk - Catastrophe

The purposes of the Casualty Actuarial Society (CAS) are to advance the body of knowledge of actuarial science applied to property, casualty and similar risk exposures, to establish and maintain standards of qualification for membership, to promote and maintain high standards of conduct and competence for the members, and to increase the awareness of actuarial science. CAS operates under a set of specific policies, procedures and bylaws that are in place to assure that CAS’s daily operations occur in as efficient and professional a manner as possible. The chains of command, as well as communications during normal operations are clearly spelled out and documented.

However, in a time of crisis and/or disaster, the guidelines for normal daily operations may not be appropriate, effective, or, in the worst case scenario, possible. It is for that reason that a contingency plan must be in place. Without this plan, a crisis situation may lead to irreparable damage to the organization and/or its staff members. Failure to respond responsibly to a crisis situation could have broad-reaching ramifications.

The CAS faces risk to its operations from both “man made” and “acts of nature” catastrophic events. Catastrophe risk is viewed as a moderate frequency and high severity risk to the CAS. The primary tool for responding to a catastrophic event is the “Disaster: Recovery, Communication and Management Plan” developed and maintained by Staff. The purpose of this plan is to assist staff, board members and management in making quality decisions during such a time. It will assist management in ensuring the continuation of the various activities and services provided by CAS.

In terms of leading indicator reports, Staff provides regular Cycle Reports to both the Executive Council (EC) and the Board regarding potential developments, changes to and tests of the Plan. The Plan is tested at least annually and reported on quarterly. The Plan

is reviewed periodically at CAS staff meetings and is included as a part of new employee orientations.

Appendix 4 -- ERM Quantification & Aggregation of Risks and Opportunities

Step 3: Aggregate risks and opportunities reflecting correlations between them and using models as appropriate. Much more work on risk quantification and integration has to be done as part of the implementation process.

Analytics

To apply analytical techniques to a framework, the importance of each element in the framework must be quantified and assigned a value. This quantification is dynamic and probabilistic in the sense that the factors can be changed in the course of performing the analysis.

Certain analytical approaches will provide more optimal results than others. Optimal results are those that move the organization toward fulfilling its long-term goals while allowing short-term goals to be reached.

As an example, increasing international participation in CAS activity may result in gradual growth in members and revenue whereas the impact of one exogenous catastrophic event could be immediate and severe. A more sophisticated approach might assign frequency and severity measures to each risk and opportunity.

Once a value framework is superimposed on a risk/opportunity framework, analytical techniques can be evaluated as to their effectiveness. Analytical techniques will quantify impacts of various risks, opportunities, and actions under a variety of scenarios. Analytical techniques can be segmented into various categories like data organization, correlation, aggregation, simulation, and allocation.

Models

Analytical approaches used in ERM analysis vary widely. It is still very early in the evolution of analytical structures for ERM quantification. Insurance programs and captives for hazard risk, hedging and derivative strategies for financial risk, six sigma for operational overview, and a variety of planning models for strategic structures are examples.

Advanced analytical approaches that may find their way into ERM analysis include dynamic financial analysis, regression analysis, fuzzy logic, Bayesian decision making, logistic regression, systems dynamics, extreme value theory, partial least squares, multi-fractals, power laws, phase space, complexity, neural networks, cluster correlations, agent-based models, data mining and visualization, and cellular automata. In some cases, the analytical approach may be based on organized judgment similar to the ranking process.

Examples

Examples of possible decisions that can be made more effectively with such a process in place would include:

1. Spending \$10,000 on an initiative to improve international exposure of CAS programs.
2. Developing a seminar series that will expand the scope of actuarial knowledge.
3. Improving the hazard insurance program to cover the 90th percentile of key hazard risks.
4. Organizing the investment portfolio to be further out in the risk area of the efficient portfolio.
5. Realigning the CAS operational structure to match up with the ERM framework.
6. Investing in academic research to expand the boundaries of actuarial mathematics.

Quantification

Once numerical values are determined probabilistically, they should be applied to some measure of relevance to the entity. For the CAS, quantifying risk/opportunity should consider the following:

- Assets
- Liabilities
- Surplus
- Revenue
- Expense
- Income
- Members

For each identified risk/opportunity, maximum potential long-term and short-term range of impact can be calculated by applying an index to a financial or plan figure. For example, the range of probable loss arising from a loss of professional credibility might be expressed as revenues for the CAS. That will be correlated with other events, so a combined index can be calculated to give a long- and short-range impact of a professional credibility event.

Appendix 5 - Mapping of Highest Priority Risks and Opportunities to the CAS Volunteer and Staff Structure

Step 4: The task force assigned responsibility for managing the highest priority risks and opportunities to the appropriate vice president/staff director team.

Risk/Opportunity		Board/VP(s)	Committee(s)	Staff
SR-1	Actuarial credibility	Board	Actuarial Credibility Task Forces	Executive Director
SR-2	Competition from other professions	Board	Long Range Planning	Executive Director
SR-6	Scope of work	Research & Development	Research Committees	Director of Research and Communications
SR-7	Actuarial role	Board	Long Range Planning	Executive Director
SO-3	Expanded roles in areas like ERM	Risk Integration, Research & Development, Professional Education	Research and Professional Education Committees	Director of Research and Communications, Director of Meeting Services
SO-5	Research	Research & Development	Research and Professional Education Committees	Director of Research and Communications
SO-8	Scope of work	Research & Development	Research Committees	Director of Research and Communications
SO-10	Actuarial role	Board	Long Range Planning	Executive Director
OR-1	Declining number of students	Admissions, Marketing & Communications	Admissions, Candidate Liaison, Minority Recruiting, Career Encouragement, University Relations	Director of Admissions, Director of Research and Communications
OR-2	Diminished volunteerism	Marketing & Communications	Volunteer Resources	Director of Finance and Operations
OR-3	Employers support	Marketing & Communications	Volunteer Resources	Director of Finance and Operations
OR-14	Catastrophe	Administration	Finance Committee	Director of Finance and Operations
OO-1	Increasing number of students	Admissions, Marketing & Communications, International	Admissions, Candidate Liaison, Minority Recruiting, Career Encouragement, University Relations	Executive Director, Director of Admissions, Director of Research and Communications
OO-2	Web site	Administration	Online Services	Director of Research and Communications
OO-3	Employers support	Marketing & Communications	Volunteer Resources	Director of Finance and Operations

Key

SR-Strategic Risk

SO-Strategic Opportunity

OR-Operational Risk

OO-Operational Opportunity