International Actuarial Association
Association Actuarielle Internationale

IAA Risk Book

ERM Insights from Failures and Near Failures

Insurance Regulation Committee

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ERM Insights from Failures and Near Failures

This Risk Book chapter has been developed and approved by the Insurance Regulation Committee of the IAA

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Version

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Introducing the IAA Risk Book

The actuarial profession has contributed significantly to the development of risk management tools and processes, in insurance, pensions and related industries. Actuarial skills are also increasingly being applied in new and developing areas of knowledge.

Actuarial practice continues to improve the understanding, measurement and communication of risk and risk events and their implications through the development of tools and increasingly processes to manage the future uncertainty of risks in a sustainable and transparent way. These tools and processes trace, manage and mitigate the acceptance and transmission of the uncertain outcomes of risks.

The Risk Book is intended to provide high-quality reference materials to support a better understanding of the risks and inherently uncertain future outcomes that need to be managed when delivering financial services products – whether they involve insurance, investments or retirement incomes, or more broadly. The Risk Book is written to be accessible to a wide range of readers, many of whom may not be actuaries or experts in the areas discussed but may be decision-makers in those areas. Consequently, the Risk Book should provide insight into the ideas and concepts behind actuarial topics and concepts. It is therefore focused on being descriptive rather than being formal and mathematically precise.

All the Risk Book chapters are publicly available on the IAA website and are periodically updated. See www.actuaries.org and follow the path to '*Publications*' and then to '*Risk Book*'. A discussion of their structure and relationships is provided in the Chapter: *Introduction – Using the Risk Book*.

The Risk Book is intended to be a dynamic and evolving resource, updated over time, reflecting new areas where actuarial expertise can add value, experience and advances, and topics of current interest and importance. It is electronically distributed to support ongoing updates. Risk Book chapters will be reviewed periodically at least every 5 years and more frequently if significant changes or developments occur.

The development and maintenance of the Risk Book is managed by the Risk Book Editorial Board of the IAA Insurance Regulation Committee.

Many people, mostly actuaries, have contributed to the Risk Book. Contributors are listed on the website.

To submit comments or questions about this Risk Book chapter, or to report any problems with the website, please email riskbookcomments@actuaries.org. To express interest in becoming involved with the Risk Book please go to the website and provide the requested information.

1 Overview

1.1 Background

Much can be learned from situations where inadequate Enterprise Risk Management (ERM) processes have led to a company being in trouble and perhaps failing. There are often common themes or control failures which can be used to help in establishing risk management and actuarial frameworks in other companies.

1.2 Aim of chapter

Studying these examples can help organizations better identify their own weaknesses and then take steps to avoid similar instances of distress. These examples can also be instructive to involved stakeholders such as company boards and insurance supervisors. While the circumstances of each situation reviewed may initially seem to be unique, there are common themes and indicators that can provide warning signs.

1.3 Relevance to actuaries

This topic is relevant to actuaries because actuaries often have an important role to play in avoiding distressed situations and failures as outlined in this chapter.

1.4 Executive summary

Key observations/findings from the chapter include:

- Inadequate ERM may lead to increased supervision, regulatory intervention, reorganization of the company or even insolvency. Companies can become distressed due to various causes, but these cases share the common characteristic that the company's risk management processes did not operate appropriately. [Section 2]
- Examining specific cases shows that each had its own proximate causes, and generally a combination of factors ultimately led to the organization's distressed situation or failure. Most of the case studies involved some aspect of management incompetence, often enabled by an inappropriate organizational culture, then exacerbated by external factors. [Section 3]
- Regulation and supervision vary by jurisdiction, and the supervisor has a strong influence on how the situation plays out. [Section 3]
- ERM as a discipline came into prominence in the early 2000s. The cases examined prior to that time often reflected a lack of understanding of rigorous risk management. Considering both the increased appreciation of ERM that exists today and regulatory requirements that require more robust risk analysis, those distressed situations may have been better addressed had they occurred currently. [Section 3]
- Commonalities exist across organizations in terms of leading indicators of impending problems and the types of activities that can lead to those problems. Many of these are activities require significant actuarial involvement. [Section 4]

- Insurers and involved stakeholders may learn from the experiences of these companies and institute controls to avoid similar mis-steps. A strong governance function and supportive company ERM culture may avert significant problems by addressing issues when they are still manageable. The actuary has a significant role to play. *[Section 5]*

2 Summary

This chapter takes a broad approach to illustrating what can be considered inadequate ERM. As described, a distressed corporate position is considered ERM-related if it is believed that appropriate risk management policies and practices could have averted the situation.

Actual corporate failures can most easily be recognized when there is public evidence that an organization is unable to meet its obligations to clients (policyholders), creditors or supervisory authorities without some type of support. Such evidence can include one or (typically) more of the following:

- Increased levels of supervision and/or regulatory intervention;
- Legal matters before the courts or in the press;
- Adverse policyholder behaviour (e.g., surrenders/withdrawals);
- Private capital infusion;
- Government bailout;
- Insolvency; and
- Policyholder protection scheme involvement.

More difficult to recognize and study are situations that do not result in external and public intervention. An organization that recognizes an impending crisis early enough can implement internal remediation measures; for example, exiting a line of business or reducing asset portfolio risk.

One goal of this chapter is to provide actuaries, as well as other involved stakeholders, with insights that may help them recognize, address and avoid potential distressed situations. The focus of the chapter is primarily on the insurance industry but the insights are more generally applicable.

3 Case studies

This section describes several examples of financial groups and insurance companies that have been in distressed situations, including some failures, which are attributable to inadequate ERM. While specific details of each situation are included to provide context, the focus on the lessons learned is intended to be universal.

No inference should be drawn that a particular jurisdiction mentioned in this chapter is more prone to failures due to the locations of the companies reviewed. However, the range of jurisdictions included suggests the issues identified are endemic and not restricted to particular jurisdiction. Examples were also selected partly based on the availability of witnesses able to document their observations.

3.1 HIH (Australia)

3.1.1 Company background

HIH, the second largest non-life or "general" insurer in Australia at the time of its collapse in 2001, had its origins in an underwriting agency formed in 1968. Following numerous corporate acquisitions and restructures, it listed on the Australian Stock Exchange (ASX) in 1992, the first general insurer to be floated in Australia. HIH expanded into the U.S. (1996) and UK (1997) – both expansions were ill-fated decisions. One of the 1968 founders, Ray Williams, led the company and was the Group CEO up until the last months before its actual collapse.

Following the collapse of HIH, since its failure had a wide-ranging impact on many Australians, with much personal hardship, the prime minister established a Royal Commission to investigate this failure in August 2001. An outcome of this and a review of the failure led to the key observation that the failure of a major non-life insurer can present a systemic risk, at least at a national level. The following assessments, and those in the following HIH subsections of this document, can be traced back to the Royal Commission's findings. These include:

- Some local and international takeover and restructure transactions (initiated with global names such as Winterthur, QBE and Allianz), along with creative use of reinsurance and questionable accounting policies (e.g. goodwill), hid the catastrophic underlying financial problems.
- In some key transactions prior to the failure, Winterthur (concerned about HIH's financial position) divested its 51% stake in the company in August 1998, and HIH acquired the large Australian insurer FAI in September 1998.
- As of June 2000, HIH had considerable market share of some classes of insurance – professional indemnity (35%) and travel (28%) – and significant shares in other long-tail liability classes.
- HIH's consulting actuary had worked closely with the company for 20 years and was almost entirely reliant on HIH for income. Management exerted inappropriate influence on the actuary and did not always accept the actuary's recommendations. The actuary adopted unrealistic assumptions and failed to include a prudential margin, contrary to local common market practice and sound accounting policy. The actuary's reports were not routinely made available to the board or audit committee. With respect to the business HIH acquired in the US, it appears HIH may have ignored the advice from two firms of U.S. actuaries and a regulator that the business was grossly under-reserved.

3.1.2 Company failure

The signs of HIH's predicament emerged through 2000:

- Westpac, its banker, appointed Ernst & Young to audit HIH in October 2000.
- Several board members, including Williams, resigned during the final months of 2000.
- HIH failed to file its December 2000 regulatory returns on time.
- The ASX suspended trading in HIH shares on March 1, 2001.
- The board put HIH in provisional liquidation in March 2001 (formal liquidation in August 2001).

HIH had debts of AUD 5.3 billion at the time of its collapse after restatement of asset and liability values by the regulator, and was Australia's largest corporate failure to date.

It has also been suggested that at the time of the FAI acquisition, both FAI and HIH were insolvent.

3.1.3 Actions taken

Apart from establishing the Royal Commission, the federal government announced financial support through the HIH Scheme. The Scheme provided for payments (in many cases 100% of claims) to the many claimants left stranded. This scheme ran for over 10 years.

Regulatory (prudential) reforms which had been planned were fast tracked. Audit independence requirements were strengthened. The government also instigated tort law reform and medical indemnity insurance reform.

Executives and directors of HIH were convicted and served prison time. The consulting actuary was subject to disciplinary sanction (membership suspended) by the Institute of Actuaries of Australia (February 2005).

APRA, the Australian Prudential Regulation Authority, banned several members of senior management, directors and advisers (including the consulting actuary in September 2004) from future roles in insurance.

3.1.4 Lessons learned

- Under-pricing and under-reserving resulted in "a spiral that could not continue indefinitely".[1] The observation of this in HIH, a substantial ASX-listed participant in the market, illustrates that market leaders can get things terribly wrong.
- Corporate governance is critical. The corporate culture of HIH led directly to poor decision making. "There was blind faith in a leadership that was ill-equipped for the task. There was insufficient … independence of mind"[2] in the organization. The board was unduly influenced by and failed to monitor senior management, paid too little attention to strategy and transactions, and maintained poor stewardship over excessive remuneration and expenses.
- Numerous ill-fated international ventures, and the failed takeover of FAI, compounded further by dubious goodwill accounting treatment of the acquisitions with no audit qualification, preceded the failure. The board gave scant consideration to these warning signs and acted without appropriate due diligence. Where there are significant transactions, actuaries and other risk managers should analyze the risks involved and communicate these clearly to the board.
- Auditing was inadequate – the auditor was insufficiently skeptical and arguably not independent. (The board chair and two other directors were ex-partners of Arthur Andersen, the external auditor. Arthur Andersen also provided extensive non-audit services.)
- APRA failed to take strong, timely supervisory action in the lead-up to the failure.
- The board and audit committee were not given access to actuarial reports or actuaries.

[1] Royal Commission into the Failure of HIH Insurance, Report by the Royal Commissioner the Honourable Justice Owen, April 2003.
[2] Ibid.

- The Royal Commission found that the consulting actuary was not objective (being a personal friend of the CEO), was unduly influenced by management and used unrealistic assumptions.

3.2 Chiyoda Mutual Life Insurance Company (Japan)

3.2.1 Company background

Chiyoda Mutual Life (CML) was founded in 1904 as the second oldest mutual life insurer in Japan. CML was one of the Big 5 life insurance companies before World War II. After the war, CML dropped to a mid-size life insurance company, mainly due to lags in distribution and product strategies. In 1978, the CEO announced a "three-year revival strategy", and in 1982 the next CEO took over the strategy in an attempt for CML to again become one of the major life insurance companies. The sales agents focused on selling savings products, especially group pension plans and single-premium saving products, to increase their top-line sales with high immediate impact.

To secure high yields for these products, CML invested in risky assets without due consideration to asset/liability management (ALM). Japan experienced a bubble economy in the late 1980s, in which real estate and stock prices were greatly inflated. After the bubble economy collapsed, CML was plagued by bad debts and failed in 2000.

3.2.2 Company failure

The assessments below and in the following CML subsections of this document are supported by the Report of Financial Institution Failure Cases published by the Japanese Financial Services Agency, the regulatory responsible for overseeing financial systems.

High crediting rates of interest and high-dividend-paying products resulted in rapid growth, which led to CML ranking 8th among Japanese life insurance companies in terms of premiums in 1989. The majority of the company's bad debts were generated between 1988 and 1990 when a close confidant of the CEO was assigned as the executive officer of the investment department. To meet the high crediting rates of interest, investments were made in risky assets, including loans to mortgage companies and non-banks as well as investments in stocks, corporate investment funds and structured bonds. The investment head was responsible for approving the loans and may have considered his department as its own profit centre rather than taking a broader corporate perspective. In addition to the high level of risky assets, it is not clear that CML was implementing ALM appropriately.

Risky investments by the senior manager of the investment department went unchecked. The CEO was experienced in sales and was not familiar with investments. Thus, he relied on the senior manager's investment decisions. If employees of the investment department expressed an opinion in opposition to the senior manager, they tended to be removed from their roles. There was no governance to stop the inappropriate actions of the senior manager. In 1993, when Japanese life insurance companies provided disclosures as to the amount of bad debt being held, the amount of CML's bad debts was enormous. CML tried to restructure the company, but in vain.

3.2.3 Actions taken

CML filed for bankruptcy with liabilities of 2.94 trillion yen in 2000. At that time, CML's policyholders were largely protected by reserves and an industry safety net, but the amounts assured for certain

insurance products, such as endowments, could be lower than promised as a consequence of assumed interest rate reductions.

3.2.4 Lessons learned

- Inappropriate conduct by senior managers close to the CEO went unchecked by the company's internal checks and balances.
- The importance of ALM was not acknowledged, nor was ALM used to control risk.
- Risk governance did not address the issue of investment in risky assets. There should be a proper system of checks and balances to ensure any risky investment decisions are made prudently in the context of an overall ERM framework.
- It is important to know your business. CML management should have more prudently adapted to the changing external environment.
- The actuaries could have done more to make their voices heard.

3.3 Mutual Benefit Life Insurance Company (U.S.)

3.3.1 Company background

Mutual Benefit Life (MBL) was chartered in 1845 and existed as a well-respected insurer for 145 years. Its primary market was selling life insurance to upper-class clients, along with other product lines such as group and individual annuities, group life and disability insurance. At the time of its failure in 1991, its collapse was the largest ever of an American insurer, involving $13.8 billion of assets.

3.3.2 Company failure

MBL was taken into receivership for rehabilitation by the New Jersey Department of Banking and Insurance on July 16, 1991. A liquidation order was issued in 1993, and, after liabilities and assets were disbursed to other entities, MBL was liquidated and dissolved on June 14, 2001.

The immediate triggers for the failure were real estate losses in an overheated market. MBL put $5.1 billion – nearly 40% of its assets – into a portfolio of mortgage loans and properties, much of which eventually went sour. As the rating agencies downgraded MBL due to the losses in the portfolio, and the public became aware of these facts, a run by policyholders ensued. While some policies had surrender charges built into the contract, they were only intended to cover disintermediation risk in a high-interest-rate environment. Given the lower-interest-rate environment at the time, policyholders were able to get their funds without a charge. As a result, MBL had insufficient liquid assets to meet withdrawal requests even though it remained technically solvent.

3.3.3 Actions taken

Once MBL entered rehabilitation with the New Jersey Insurance Department, death claims, health/accident claims and annuity benefits continued to be paid, but all other withdrawals were stopped. The state life and health insurance guaranty associations helped arrange for several existing insurers to assume the various blocks of business. By 1998, individual life had been assumed by American General, and both individual and group annuity business by SunAmerica, and the remaining lines of business were transferred to other insurers.

3.3.4 Lessons learned

- MBL was seen as a conservative, blue-chip company. The idea that it could fail, based on the panic of policyholders, was a wake-up call to the rest of the industry.
- Investment diversification was not yet universally recognized as a priority for a sound investment strategy, and asset/liability matching was still in its early stages.
- Contracts were structured to protect against certain types of risks – for example, disintermediation due to market rates – but the risk of a policyholder run due to reputation risk was not recognized.
- Even though in this case the state guaranty associations worked together to protect MBL policyholders, the process highlighted questions about the adequacy of the safety net of state guaranty funds and the non-uniformity of guaranty fund provisions across states.
- MBL's woes also shone a harsh light on the insurance company rating system that was supposed to aid consumers in evaluating the soundness of insurers. Until a few days before seizure, Mutual Benefit maintained a top A+ rating from AM Best, a leading U.S. insurance industry rating agency.
- ERM was not yet a well-developed discipline for insurers at the time of the MBL failure. The company had no overriding risk strategy to integrate its investment portfolio and its policyholder obligations. As was typical during this time period, actuaries were focused primarily on the liability side of the balance sheet.

3.4 Equitable Life Assurance Society (UK)

3.4.1 Company background

Founded in 1762, Equitable Life (ELAS) was one of the oldest UK insurers. It was a mutual and primarily sold with-profits policies. Its leadership had a philosophy of managing the society with a low expense ratio, and held limited free reserves over and above the policy liabilities and funds for future and terminal bonuses. Consequently, it had a reputation for providing good returns to policyholders and, prior to its demise, grew very rapidly in the 1990s. A good proportion of the business consisted of deferred pension annuities which had a guaranteed minimum annuity rate (GAR) at vesting. ELAS adopted a number of strategies in order to improve its regulatory solvency position. This allowed it to keep declaring attractive bonuses.

Toward the end of 1998, ELAS's solvency position was becoming strained. The company agreed with the supervisory authority to offset a proportion of statutory reserves by a reassurance arrangement valued at approximately £800 million. However, it was subsequently learned that there was a side-letter between ELAS and its reinsurer which could have undermined the value of the reinsurance cover. This was not disclosed to the supervisor at the time.

3.4.2 Reason for stressed position

ELAS had a bonus philosophy whereby it would reduce the level of terminal bonuses for GAR policyholders, from the higher figure shown on the GAR policyholders' annual bonus notices to a lower figure so as to equalize the benefits as far as possible with those policies without GARs. However, GAR policyholders started complaining that they were receiving lower terminal bonuses than they were

entitled to (as falling interest rates and increasing longevity made the GARs more valuable). ELAS took a test case on its approach to the High Court, which found in its favour. However, in July 2000 the UK's highest court, the House of Lords, ruled that it was unlawful for ELAS to exercise discretion in this manner, adding £1.5 billion to ELAS's liabilities.

3.4.3 Actions taken

ELAS stopped selling new business and sold off some of its subsidiaries and other assets not needed to back the liabilities. It then cut the discretionary benefits on all policies and reached a compromise agreement with the GAR policyholders, approved in the High Court, under which their policy values were increased and the GAR benefits removed.

The regulator subsequently found the Appointed Actuary to be not fit and proper to perform his role due to not disclosing the existence of the reinsurance side-letter to the regulator. He was barred from holding such a role for 10 years.

Subsequently, in 2008 the Ombudsman found that the supervisory authorities had failed to monitor and challenge ELAS in accordance with the rules and supervisory responsibilities in place at the time, and compensation was paid to policyholders who had sustained losses under their policies. By 2019 the funds had partly run off, and unit costs were rising. At that point it was decided to distribute the surplus to the remaining policies, which were then converted into unit-linked policies and transferred to another company, allowing ELAS to be wound up.

3.4.4 Lessons learned

- There was little independent thought in the management and the ELAS board to challenge the valuation and management approach, and, as a mutual, no shareholder scrutiny.
- For a long period, the CEO was also the Appointed Actuary, which undermined the best practice of the Appointed Actuary having independence from the CEO in order that the board receive an independent actuarial view.
- Actuaries should at all times be open and honest with supervisory authorities.
- The actuarial techniques for valuing options were not well developed and the company had no effective ALM strategy for matching its investment portfolio to its policyholder obligations.
- In particular, risk management was not developed, and little preparation was made for the possibility of falling interest rates.
- The supervisor was ill-resourced, and the regulatory reports not detailed.

3.5 Independent Insurance (UK)

3.5.1 Company background

Independent Insurance (II) was a non-life insurer formed in the UK in 1986 by Michael Bright, offering personal lines, motor and commercial insurance. When premiums started to tumble in the early-1990s recession, II moved into the more lucrative and riskier business of commercial and industrial insurance. Despite a "soft market", II's market share grew until it became the UK's ninth largest insurance company by the end of the 1990s with a market capitalization of £900 million.

3.5.2 Company failure

Some analysts said at the time that the company was maintaining only a fraction of the reserves it needed to cover these huge insurance liabilities, but Bright, who served as CEO and Chairman, brushed any criticism aside. Its 2000 accounts showed it had made profits of £22 million, but the analysts also alleged that these should have recorded a loss of "at least £180m".

After some supervisory investigation, it was discovered that case estimates were being controlled such that revisions upward were not entered into the systems unless they were paid, and revisions downward were entered immediately. New claims for which information was missing were held off the system. By not entering the information onto the system, II kept its external actuaries, auditors, reinsurers, regulators and shareholders in the dark. The dominance of the CEO led to a culture of fear in the organization, which meant that the internal actuaries and risk managers did not share any concerns with the external parties.

During 2000, claims developments became too strong and a large aggregate reinsurance contract was entered into to bring the net claims reserves down. On investigation, this reinsurance had additional schedules that significantly reduced the cover available, but the reductions were not reflected in the accounts.

3.5.3 Actions taken

In 2001, II was declared insolvent, 2,000 staff lost their jobs, and half a million policyholders had to find alternative cover and became creditors. The industry compensation scheme paid approximately £400 million in respect of protected policyholders. Ultimately, other creditors received a payout of 14.5% of their obligations in 2017.

The auditors admitted some negligence. It appears that they had failed to follow up on the actuaries' concerns that reinsurers were writing contracts that appeared to be obviously loss making.

CEO Michael Bright and two other executives were prosecuted and sent to prison in 2007.

3.5.4 Lessons learned

- Strong opinionated CEOs can lead to poor company practices and culture. The board had failed to challenge senior management.
- Actuaries and risk managers need to call out unreasonable behaviour by senior management or the board, particularly if this leads to significant under-reserving or under-capitalization. In the extreme, this could mean whistleblowing to their professional body and/or the supervisory authority.
- Auditors and supervisors need to challenge results that look too good to be true:
    - Under-pricing and under-reserving go hand in hand – there needs to be a focus on both, including the feedback loop.
    - Capital assessment processes need to reflect appropriately reserve volatility, including uncertainty in the best estimate.
    - It is critical to check the foundations of all data, not just the projections – check significant contracts, systems, reserve estimation processes, data flows, etc.

3.6 Executive Life Insurance Company (U.S.)

3.6.1 Company background

Executive Life Insurance Company (ELIC) grew from a small California life insurance company in the 1970s to the largest life insurance company in California in 1990, with assets of $10.5 billion and over 300,000 policyholders. In combination with its New York affiliate, Executive Life of New York, the holding company First Executive had combined assets exceeding $19 billion. ELIC sold insurance, annuities, structured settlements and guaranteed investment contracts (GICs). Policyholders flocked to the company due its high ratings and the generous rates of return offered on its policies.

3.6.2 Company failure

ELIC was placed into conservatorship by the state of California on April 11, 1991. As the company reached insolvency, the Insurance Commissioner feared a run on the company by policyholders, and he put its assets and insurance policies up for auction. Some policyholders experienced significant losses on their policies due to delays in payments and reductions in benefits, though part of the loss was made up for by state insurance guaranty funds.

ELIC's failure was primarily due its over-sized investment in junk bonds, representing over 60% of its insurance assets. The company had a strong relationship with the brokerage firm Drexel Burnham Lambert, having involvement in 90% of the broker's underwritings. The collapse of the junk bond market beginning in late 1989 led to gigantic write-downs in the ELIC portfolio, which in turn triggered a policy redemption rush.

3.6.3 Actions taken

Following the takeover of ELIC in 1991, the California Insurance Commissioner solicited bids for the assets of the company, primarily the junk bonds, and for the insurance and annuity policies. Altus, a subsidiary of Credit Lyonnais, bought the assets, and a new California insurance company, Aurora National Life Assurance, set up by Altus and other investors, took over the policies. It was subsequently determined that the real owner of the new insurer was a French government-owned bank that could not legally own a California insurer, resulting in numerous legal suits which were not settled until 2019. Aurora National Life was taken over by Swiss Re in 2001 and later sold to Reinsurance Group of America in 2014.

3.6.4 Lessons learned

- ELIC was a high-flying company offering returns that were too good to be true. The insurance-buying public, and particularly regulators, auditors and rating agencies, should have been more skeptical.
- Aggressive management practices, including a high-profile leader and too-close ties to an aggressive investment broker, over-rode rational investment decisions.
- A significant portion of ELIC's products were targeted to sophisticated investors or broker/agents who did not do appropriate due diligence.
- Rating agencies at the time were apt to accept financial statements at face value and did not dig sufficiently to evaluate company management.

- While ERM was not a prevalent concept at the time, it is clear that even basic risk management was not a priority for ELIC management.

3.7 AMP (Australia)

3.7.1 Company background

AMP was founded in 1849 as the Australian Mutual Provident Society, offering life and savings insurance, pensions (superannuation) and other ancillary financial services, including banking and advisory services. For many years it was one of the largest life insurance and pension providers in Australia. The company continues to operate (at the time of writing - early 2023), although in a diminished form.

This discussion focuses on the discharge of duties of actuaries and trustees and board governance for two of the operating entities within the AMP Group, namely AMP Superannuation Limited (ASL) and NM Superannuation Proprietary Limited (NM).

3.7.2 Reasons for stressed position

A Royal Commission into Misconduct in the Australian Banking, Superannuation and Financial Services Industry was established by the Australian government on December 14, 2017. Its findings revealed significant misconduct and unfair treatment of AMP customers spanning a number of years, possibly decades. As a consequence, the company's share price fell to its lowest in six years, and its reputation was severely tarnished.

The Royal Commission findings revealed the following governance failures:

- Criminal misconduct, including misleading the corporate regulator ASIC, by the AMP Board of Directors;
- The board tampering with independent reviews of the scandal;
- Conflicts of interest between the boards representing the ASL and NM pension funds and the AMP Group Holding Board, which did not operate independently; and
- A non-compliant risk acceptance culture, including breaches of the obligation of the trustee to act in the best interests of the beneficiaries.

3.7.3 Actions taken

The Australian Regulation Prudential Authority (APRA) issued compliance orders and imposed licensing conditions on AMP in the wake of the Royal Commission findings:

- Conduct, Culture and Ethics: AMP was required to renew and strengthen its board. The existing board members as well as the CEO and the General Council resigned. A new board of directors was appointed in June 2018.
- Culture, Governance and ERM Framework: AMP was required to make significant changes to its business practices. Areas identified for improvement include management of conflicts of interest, governance and risk management practices, breach remediation processes, addressing a poor risk culture and strengthening accountability. Remediation actions are in

progress. It will take almost a decade to resolve with a cost to the company (including compensation) of more than AUD 1 billion.

- Independent Monitoring/Oversight: AMP was required to engage an external expert to report on remediation and compliance with the new directions and conditions.
- Enterprise-wide Risk Management and Compliance Framework: AMP established a "comprehensive review" of the company's regulatory reporting and governance process. This includes working constructively with the government, regulators and advisers to ensure that the outcomes are clear and simple and meet the best interests of customers.
- Incentive Alignment to Risk-Taking: The remuneration structure was reviewed in 2018 to align risk-taking behaviours and incentives for executives and the board.

3.7.4 Lessons learned

The inquiry by the Royal Commission has been a catalyst for change across the financial services sector. The lessons learned were not confined to AMP, as other Australian banking and insurance institutions were also found guilty by the Royal Commission to various extents.

- Group and Subsidiary Boards Governance: For groups that use matrix management structures, governance can be particularly problematic. APRA stated that financial institutional groups with complex structures and vertical and horizontal service integration should also recognize the need for subsidiary boards to perform independent oversight and facilitate risk management to the benefit of their customers/members.
- Governance, Risk Management Culture and Remuneration: AMP management and the board were not decisive in taking accountability for historical conduct-related issues, could not explicitly articulate risk management appetites at any point and were not incentivized to fix problems. Their target objective was primarily to maximize shareholder value, whatever it took.
- Ineffectiveness of the ERM Framework: The AMP case has evidenced the absence of risk management controls that could have flagged where a customer was being charged for a service they had not received or had not required. It also highlighted a widespread inherent issue of the Australian financial services industry (including its actuaries): the failure to upgrade processes, systems and controls to more transparent designs.
- Regulatory Enforceability: Institutional misconduct appeared to be widespread. The situation was exacerbated by the failings of the corporate regulator, ASIC, and the insurance regulator, APRA. The Royal Commission highlighted that "When misconduct was revealed, it either went unpunished or the consequences did not meet the seriousness of what had been done."

3.8 American International Group (U.S.)

3.8.1 Company background

American International Group (AIG) had its roots in a small insurance company established in China in 1919. The company grew globally through expansion and acquisitions, eventually being incorporated as AIG in 1967. While initially an umbrella organization for life and general insurance companies, AIG went on to expand into diverse financial products and investments.

From the 1970s up through the early 2000s, AIG continued remarkable growth, increasing its international distribution network, investing in diverse ventures, and acquiring additional life, annuity and retirement savings providers.

The AIG Financial Products Corporation (AIGFP) was formed as a subsidiary of AIG in 1987. It focused on derivatives transactions and various capital markets investment and financial risk management products.

3.8.2 Reason for stressed position

Beginning in 2005, AIG began taking on riskier investments in the form of subprime mortgages, mortgage-backed securities and credit default derivatives. Through a combination of arrogance (believing it had knowledge and skills that others lacked) and an over-reliance on its financial models, AIG, primarily within AIGFP, felt comfortable making financial guarantees with respect to system-wide investment risks.

As the mortgage market began falling in 2007 and the financial crisis began in 2008, cash calls on AIGFP's credit derivatives resulted in enormous losses. The losses at AIGFP were sufficient to essentially bankrupt the entire AIG operation. The AIG insurance subsidiaries themselves were not insolvent but fell under the AIG umbrella. Company leadership went through multiple changes during the period from 2005 to 2009, due to the regulatory and accounting issues, the excess risk-taking and the general dissatisfaction of the board with company leadership.

3.8.3 Actions taken

In late 2008, AIG received a $180 billion bailout from the U.S. government, which assumed control of the company at that point. The government was concerned that the failure of AIG would endanger other major financial firms that were trading partners of AIG, an example of the "too big to fail" philosophy that guided certain actions during the financial crisis. AIG was bailed out to maintain the financial integrity of its trading partners and avoid severe disruption of the financial system.

One government report placed the blame for AIG's near failure on the sales of credit default swaps without setting up reserves or hedging the risk. A contributing factor was likely the deregulation of some forms of derivatives trading, which eliminated government oversight and margin requirements, as well as a lack of transparency in how such swaps are reported on the balance sheet.

Regulators from the U.S. and other jurisdictions were involved in the supervision of the main issues and did not coordinate their responses sufficiently.

In order to start repaying its debt to the U.S. federal government, AIG began divesting – that is, selling off – some of its subsidiaries in 2009–2010. In 2012, the U.S. Treasury offered 188.5 million shares of AIG stock to the public in order to reduce its ownership of the company. AIG continued to sell off assets and in 2012 repaid $205 billion to the U.S. government.

3.8.4 Lessons learned

- AIG's culture had a primary focus on growing the balance sheet. As a result, the company allowed a single operation to make bets that were big enough to bring down the entire enterprise.

- The arrogant culture at AIG, reflected by its leadership, manifest in a presumption that AIG understood financial products better than other firms and then pushing the boundaries on accounting practices and risk-taking.
- The company lacked a centralized risk control structure to oversee and instill common practices in its wide-ranging businesses.
- AIG did not appropriately measure risk and did not set aside sufficient capital and reserves to cover the risks it took. It took risks that it did not understand.
- The controversial concept of "too big to fail" saved AIG from bankruptcy but created a precedent for bailouts that may have led to more risk-taking by other entities.
- Involved supervisory authorities (i.e., including those within and across jurisdictions) need to closely coordinate their ongoing supervision and crisis management of insurers and insurance groups.

3.9 Penn Treaty (U.S.)

3.9.1 Company background

Penn Treaty Network America Insurance Company and its subsidiary, American Network Insurance Company (collectively known as Penn Treaty), primarily sold long-term care insurance (LTC). Penn Treaty was a relatively small insurer, with about $1 billion of assets in 2009, making it the 10th largest LTC carrier at the time.

3.9.2 Company failure

Penn Treaty was declared insolvent and went into court-supervised rehabilitation in 2009, with the administration of policies and claims then placed under the supervision of the Pennsylvania Insurance Commissioner. Despite its small size, Penn Treaty became the largest health insurance failure in the U.S. in recent history. Its liabilities, once they were valued fairly, were worth over $4.6 billion, almost $4 billion more than the value of the assets at that time.

The fundamental cause of the insolvency was the under-pricing of the LTC products. When Penn Treaty began selling LTC, it was a relatively new product, and there existed minimal actuarial experience to support long-term assumptions as to the incidence of future claims, the amount of benefits that would be paid out and the percentage of policyholders who would lapse. With claim payments due potentially 50 years or more into the future, predicting investment returns was also difficult.

It took time for actual experience data to emerge. As Penn Treaty began to recognize that its experience was far worse than the initial pricing assumptions, the company increased reserves, which led to the liabilities growing to exceed assets. There was no way to recoup the losses caused by the initial insufficient premiums. Even if future premiums to policyholders were increased, an action that was permitted under LTC contracts, the required increase would have been impossibly large.

3.9.3 Actions taken

After the Pennsylvania Insurance Commissioner took over the company in 2009, Penn Treaty entered an eight-year rehabilitation period. During that time many policyholder claims were paid at their full value. This served to substantially deplete the company's assets, leaving many policyholders who had

not yet become disabled with insufficient funds to support their policies. With no way to recover from the losses, in March 2017 Penn Treaty was placed in liquidation by the State of Pennsylvania.

State guaranty funds covered about $3.3 billion of the liability costs. Caps on the benefits provided by guaranty funds resulted in some policyholders not receiving full benefits. In the U.S., the guaranty fund system requires that other companies writing insurance in the same product line as the failed insurer, in this case the health insurance line, contribute funds to cover the policyholders in their state up to the amount of the benefit cap. Some insurers, particularly those who did not write LTC business at all, objected to the requirement to pay, and legal actions by those insurers contributed to the length of the rehabilitation period.

3.9.4 Lessons learned

- Penn Treaty's failure was primarily a failure of pricing, a fundamental actuarial function. Any investment into a new product with no track record must include an evaluation of the risks if assumptions turn out to be wrong. Penn Treaty accepted more risk than it could support by not recognizing the insufficiency of the data and the size of the bets it was taking.
- Penn Treaty may have been the most visible failure, but many other large and reputable insurers also incurred significant losses in the LTC market. Most are no longer writing LTC policies.
- There may be implications for the U.S. guaranty fund system, in terms of insurer liabilities for other company insolvencies and the level of caps on policyholder benefits.

3.10 Confederation Life (Canada)

3.10.1 Company background

The Confederation Life Insurance Company (Confed), a mutual life insurance company founded in 1871, was the fourth largest Canadian insurance company at the time of its insolvency in 1994. It was a financial conglomerate with operations in Canada and branch operations in the U.S., the UK and Bermuda, and assets of CAD 19.4 billion. It was the largest Canadian failure at the time. Confed had a AAA rating from Standard & Poor's and an A+ rating from AM Best.

Confed issued life insurance policies, individual annuities, group health policies, structured settlement (payout) annuities and group GICs.

Confed entered operations throughout the U.S. via a branch operation through the state of Michigan. As a branch it was required to maintain assets in a U.S. trust sufficient to cover its U.S. liabilities. It had $8 billion in U.S. branch assets.

3.10.2 Company failure

The CEO drove a rapid expansion policy to expand the company's size and operations. This included a trust company in Canada, equity real estate investments in Canada and the U.S., and a bank in the UK.

The company increased the sales of new business by crediting high interest rates and high non-forfeiture benefits when compared to its competitors. It generated these higher rates by investing in real estate, including mortgages to condominium developers in Canada.

New liability valuation rules were introduced in Canada in 1992 by the Canadian Institute of Actuaries (CIA), which required appropriate margins for adverse deviations to be held in liabilities. Confed's reserves were much lower than its peers in three areas:

- The margins in its individual life insurance liabilities were a fraction of those held by peers and lower than required by Canadian actuarial standards.
- The provisions for mortgage defaults were insufficient based on the company's own experience.
- The liabilities for its block of structured settlement annuities contained insufficient provision for mismatch risk.

ERM and ALM were new to the industry at the time and were not a part of Confed's culture. In 1992 the CIA had also introduced a requirement for the Appointed Actuary to perform financial condition testing using 10 prescribed scenarios. The Appointed Actuary only provided a one-page report that was limited in its identification and assessment of potential risks.

The external events that precipitated the failure of the company were the significant decrease in Canadian interest rates in the early 1980s, burgeoning mortgage loan losses (in Canada and the U.S.) and a deterioration in Canadian real estate values. Because the company had not practised proper ALM, Confed experienced cash flow problems in Canada. To alleviate the problem, the company transferred several hundred million dollars of cash out of the U.S. trust account and substituted notes from the Canadian parent operations. This was not permitted by the rules of the U.S. trust but was not noticed by the Michigan Insurance Commissioner.

Confed was a mutual company and there was no route available at the time to become a stock company and raise capital.

The Canadian Office of the Superintendent of Financial Institutions (OSFI) was aware of Confed's difficulties and was in communication with the company's board, but was disregarded. At the time, OSFI could not take over a company until capital was exhausted.

In early 1994 a large Canadian insurance company explored the possibility of buying Confed, but declined after doing due diligence. Other large Canadian insurance companies also declined to provide Confed any support.

On August 11, 1994, Confed was found to be insolvent, and the board turned over the company to the Canadian and U.S. supervisory authorities.

3.10.3 Actions taken

KPMG was named the liquidator of Confed. The liquidation was complex due to the international nature of Confed. In the U.S., a rehabilitator was retained by the National Association of Life and Health Life Insurance Guaranty Associations (NOLHGA) to address the U.S. interests. In Canada, CompCorp (now known as Assuris), the non-profit organization responsible for protecting Canadian policyholders from loss of coverage, worked closely with the liquidator and OSFI.

Confed was kept operating and its divisions were, over time, sold to other Canadian companies and thus continued to operate. In spite of large write-downs of real estate values, most Canadian and U.S.

policyholders were made whole. However, payouts for some group GIC policies were delayed until after their maturity dates, and U.S. insurance contracts were restructured.

The Appointed Actuary was disciplined and removed as a member of the CIA.

There were more difficulties in the U.S., where the notes from the Canadian parent were worthless. After negotiations, the Canadian liquidator transferred half the value of the notes to the U.S. rehabilitator.

3.10.4 Lessons learned

- The corporate oversight structure of a company is key to governing strategy and risk. In the case of Confed, its mutual structure culture and its historical conservative nature deterred the board from taking proper proactive control over the dominating CEO and management of the company.
- The company's expansion into other geographies and financial services firms lacked suitable controls and experienced staff.
- OSFI lacked the power to intervene before the company's capital was exhausted. Subsequently, the regulator's authority was expanded, and OSFI instituted a risk-based Supervisory Framework in 1999.
- The liquidation process suggested the Appointed Actuary did not properly inform senior management, the board and OSFI of Confed's weakening financial strength due, in part, to under-reserving relative to its peers and not recognizing the full economic impact of its ALM and asset default losses.
- OSFI and the CIA learned the importance of coordinating their efforts for the common goal of policyholder protection.
- The actions of the external auditor were found to have provided insufficient notice of the decline of the company.
- There should be regular communication between supervisory authorities in the jurisdictions in which an insurance company operates.
- In disaster scenario planning, do not expect the different jurisdictions to do what is best for the entire company. They may focus on "making whole" the policyholders (citizens) in their own jurisdictions. Associated practical issues include the location of company assets and its computer (including liability valuation) systems and data files.

4 Causes of insurance company ERM failures

4.1 Research review

The authors examined recent papers covering the topics of insurer insolvencies, failures and near misses. This material, along with the specific case studies reviewed, helped to inform our summary of the indicators of distressed situations and failures, which follow. Papers examined are listed in the Further reading section below

4.2 Internal drivers of corporate distress or failure

Most distressed situations and failures arise from multiple causes. The external environment and markets can contribute to severe corporate problems, as discussed in the following section, but all organizations within the industry face a similar market environment. What distinguishes the companies that get into severe difficulties, or fail, from those that succeed is more often the internal factors unique to each company.

The most common internal risk factors can be summarized in two categories:

- Management and staff expertise and due care; and
- Inadequate governance and risk management.

The Sharma report and the subsequent EIOPA paper noted below provide clear evidence of the importance of appropriate governance, risk management and robust internal processes. While a specific issue may trigger a failure, the underlying weaknesses establish the precondition for that failure and the consequent fragility of the entity. Implicit in this is the importance of appropriate internal corporate culture from the top down to all employees.

4.3 Management and staff expertise and due care

Incompetent management can encompass a range of issues, summarized as management and staff lacking the necessary skills and experience to do their jobs appropriately or not exercising appropriate due care in performing their duties. It can also involve poor demonstration of the professional qualities needed to complete their jobs with integrity and in the best interests of their clients. Lack of competence by actuaries can become clear (for example) through pricing inadequacy, setting of insufficient technical provisions, inadequately accounting for market risk or investing in inappropriate assets relative to the liabilities.[3]

Senior management of a company can demonstrate a lack of professionalism through exerting pressure on staff to attain a desired level of sales or earnings, providing insufficient staff or resources to complete assignments in a competent manner, and creating an authoritarian atmosphere that discourages dissenting opinions.

Another type of incompetence is evidenced by willfully negligent management who focus exclusively on growth, profits or their personal remuneration through various risky or even fraudulent means. Such behaviour is often abetted by the inadequate governance discussed in the next section.

4.4 Inadequate governance and risk management

An effective ERM function encompasses development of an appropriate culture within the organization, from the board level on down, as well as instituting a formal control structure to support risk analysis and management. The research review and analysis of individual case studies indicates that the lack of a consistent and effective governance structure was a determining or contributing factor in a majority of the cases.

[3] See the Risk Book chapter on asset/liability management.

Examples of inadequate risk management include the lack of an effective three-lines-of-defense model,[4] insufficient or inappropriate risk appetite statements, and/or insufficient monitoring, reporting and control of risks across the organization. The end results of these inadequacies can include, for example, inadequate pricing, technical provisions evaluation and capital levels, non-standard accounting to disguise actual results and the inability to detect outright fraud. In fact, technical provisions evaluation risk and investment/ALM risk feature highly among the most frequently reported primary causes of both failures and near failures.

There are also examples above where, at some levels in the organization, the risks were known but either the board and/or senior management were not sufficiently aware of the risks or they chose to ignore them. Actuaries and risk managers need to communicate risk assessments effectively and, if they are ignored, flag their concerns externally; for example, with their professional body and/or the supervisory authority.

4.5 Environmental/external causes

As previously noted, failures typically result from a chain of causes. Companies are clearly affected by external events and conditions, to a greater or lesser extent based on their product lines and asset exposures. Such events may be foreseeable to some degree, although often the potential frequency and impact is not adequately recognized.

The internal factors discussed in the previous section leave a company in a weakened position to respond to external conditions. Such companies are more likely to struggle or fail than companies without these internal risk factors.

The following external conditions have had the greatest potential to challenge a company's risk management and financial position.

- Economic conditions. In recent years, low interest rates have put pressure on product margins. In several of the earlier failures, credit risk created the problem as investments unexpectedly defaulted. The 2008 global financial crisis severely disrupted the balance sheets of many financial firms, particularly in the banking and the life insurance and annuity businesses.
- Market risk. Risks inherent in certain market assets used to support liabilities and volatility in asset returns create a risk primarily in life insurers. Products offered by life insurance companies have increasingly included some guarantee of market performance. In many of the early product offerings the costs of the guarantees and options were not evaluated appropriately, and companies found themselves taking on significantly more market risk than contemplated. As mentioned above, investment/ALM risk features highly among the most frequently reported primary causes of both failures and near failures.
- Catastrophe and climate risk. Predicting and modelling the risk of catastrophes has always been difficult for insurers. Major hurricanes have strained capital resources for a number of property and casualty insurers. Recent years have seen an uptick in wildfires, windstorms and flooding, a trend which may continue due to global climate change. In the coming years it will

[4] One common definition of the three-lines-of-defense model is (1) management control, (2) risk and control monitoring and (3) independent assurance, such as through internal audit.

be increasingly important for insurers to incorporate such risks in their governance and risk management.

- Pandemic risk. The Covid-19 event is still too recent at this writing to allow for measurement of the ultimate financial effect on insurers – partly because of the impact of so-called "long Covid" but also the indirect impact on people who have not had timely diagnosis and treatment for other conditions, as well as the unknown psychological effects of lockdowns, etc. The pandemic has hurt the financial results for some insurers and improved results for others. Even though insurers have begun modelling pandemic scenarios, the actual experience going forward may well likely differ significantly from the model results. One of the lessons learned from Covid-19 is how inter-connected the global economy has become, and that insurer risk management should be alert to this reality.

4.6 Leading indicators to warn of potential future problems

The reviews of prior failures and near misses identified indicators that may predict the start of a downward spiral to a distressed situation, or even failure. The company's board, auditor, regulators and other stakeholders, such as rating agencies, should generally pay attention to the following:

- Rapid growth in sales or in a specific asset class;
- Entry into a new market, or investing in risky assets, if the firm does not have the relevant expertise and experience;
- Insufficient liquidity, evaluated as potential short-term liquidity needs vs sources available; and/or
- Insufficient technical provisions or capital buffers for the risks assumed.

Most jurisdictions have requirements in place to measure capital on a risk-adjusted basis, with defined levels for increasing regulatory intervention. However, these requirements are sometimes based on industry-average assumptions of the risks. Companies, actuaries and supervisors need to be alert to the specific exposures of their company. Many supervisory authorities also require reports of an insurer's liquidity under both normal and stressed scenarios.

5 High-level lessons learned and the actuarial role

Common themes emerged from the case studies presented and the additional research. These are summarized below:

- The culture of an organization is a determining factor in its success or failure. While the risk management framework and control structure set by senior management is very important in determining how the organization weathers challenges, it must be supplemented by a supportive and reinforcing culture within the company.
- The board has a critical role to play. The board needs to have an appropriate skill set to provide legitimate oversight, and an appropriate mindset to challenge management. Conflicts of interest can be created by appointing former executives or advisers to a board and may be highly damaging.

- A strong-willed or aggressive CEO can run roughshod over a non-engaged board and the company's management team and may avoid or overcome any risk controls that are theoretically in place.
- Problems can result from technically incompetent staff who lack the skills and experience necessary for their roles (e.g., pricing risks, valuing reserves, investing appropriately).
- Under-pricing and under-reserving can lead to a dangerous spiral. Pricing and reserving need to be coordinated; there must be a feedback loop. Capital assessments must reflect reserve volatility and uncertainty in estimates.
- Rating agencies and auditors may not always perform sufficient independent analysis and procedures to refute the company's views of the situation.
- Supervisory practice is important in detecting instances of potential or emerging ERM failure through effective questioning and challenging of the governance, risk management and control practices throughout an insurer. Supervisory cooperation and coordination among involved supervisors is also important in avoiding and minimizing the impact of ERM failures.
- The actuary has an important role to play in avoiding distressed situations and failures:[5]
    - Providing technical aptitude and competence in areas such as pricing, valuation/reserving and capital projections;
    - Modelling of product and investment risks, stress testing and scenario development;[6]
    - Abiding by professionalism codes and withstanding pressure from overly aggressive management;
    - Ensuring appropriate peer review processes are established;
    - Being a source of unbiased evaluation of risks and controls;
    - Communicating findings and concerns clearly and with authority; and
    - Influencing the risk management culture of the company as a member of senior management.
- Actuaries who find themselves facing situations that might be driving a company toward failure could consider steps to address the situation, such as:
    - Provide educational material to the board concerning the risks the company is facing, including results of stress testing and scenario models, the potential range of results to illustrate the uncertainties involved in the models and assumptions, and options for risk mitigation actions.
    - Obtain access to key board members in order to openly raise concerns.
    - Seek out like-minded allies within the company to present a united position to the board or senior management.
    - Discuss the situation with the external auditors.
    - Report concerns to regulators and/or to an appropriate professional body.

[5] See the Risk Book chapter on actuarial function.
[6] See the Risk Book chapter on appropriate applications of stress and scenario testing.

6 Further reading

Readers who wish to investigate the topic in more detail may find the following papers of interest:

- CEIOPS (Conference of the Insurance Supervisory Services of the Member States of the European Union) – Report on the Prudential Supervision of Insurance Undertakings (the Sharma report) (2002).
- EIOPA (European Insurance and Occupational Pensions Authority) – Failures and Near Misses in Insurance (2018);
- Actuarial Review of Insurer Insolvencies and Future Preventions (2018) – Casualty Actuarial Society/CIA/Society of Actuaries study, which is summarized in the Joint Risk Management Section Newsletter, August 2018;
- Andrew Brown and Bimal Balasingham's paper to the Actuaries Institute 2013 Actuaries Summit on leadership and life insurance failures;
- Dr. David Millhouse's PhD thesis on systemic and cyclical failure in Australian financial services (2019);
- Royal Commission into the Failure of HIH Insurance – Report by the Royal Commissioner the Honourable Justice Owen, April 2003, Volume I: A Corporate Collapse and its Lessons;
- Hayne Royal Commission Report on Misconduct in the Banking, Superannuation and Financial Services Industry in Australia (2019);
- The Geneva Association – U.S. and Japan Life Insurers Insolvencies Case Studies (2015)
- Nobuyasu Uemura (Nikkei Inc.) paper – The Failure Without Management: Truths behind the Seiho Crisis in the Heisei Era (2008);

IAA Risk Book

ERM Insights from Failures and Near Failures

Website: See www.actuaries.org and follow the path to 'Publications' and then to 'Risk Book'

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