



# Dealing with Predictable Irrationality – Actuarial Ideas to Strengthen Global Financial Risk Management

The recent developments in global financial markets have raised serious questions about the management and oversight of the financial services industries, at both the “micro” level for individual entities and at the “macro” level for the system as a whole.

Actuaries are experienced in both measuring and managing risk; although they cannot prevent irrational behaviour, actuarial methods can mitigate its impact and reduce uncertainties. The International Actuarial Association (IAA), representing the global actuarial profession, sees many lessons being learned from this crisis and is suggesting potential reforms, improvements and solutions applicable across the financial services sector. The IAA also believes that the tools and methodologies being developed in the emerging field of Enterprise Risk Management (ERM) will become increasingly important to all financial market participants and their regulatory supervision in the future. The actuarial profession has an important contribution to make in this regard. The concept of ERM is briefly explained at the end of this note.

Necessary initiatives, consistent with the declaration of the G20 on 15 November 2008, include strengthening transparency and accountability, enhancing sound regulation, promoting integrity in financial markets, reinforcing international co-operation and reforming international financial institutions. While supporting such initiatives, this will not be enough, in our view, to prevent future financial crises without additional measures being taken. These include:

At a “macro” or systemic level:

## **I. Introduction of more counter-cyclical regulatory arrangements**

Existing prudential regulatory arrangements need to become more dynamic and counter-cyclical rather than pro-cyclical. This would include developing approaches that would see regulators transparently changing capital requirements for market participants (not just interest rates) when early warnings appear of market “bubbles” emerging. For example, capital “shock-absorbers” could be put in place to gradually deflate market bubbles before they burst. This would provide the capacity to allow “draw downs” of such capital during periods of subsequent market stress rather than having to enforce tougher capital requirements at such times.

## **II. Creation of Country Chief Risk Supervisor role**

Risk management and co-operation between national jurisdictions should be improved through the creation, possibly within each country’s central bank, of a “Country Chief Risk Supervisor” role. The functions of this role would include:

- a) developing an agreed risk appetite policy for key market-wide risk indicators
- b) monitor and manage risk indicators within that appetite,
- c) publicly reporting macro risk indicators, and
- d) facilitating risk identification and communication with appropriate decision-makers, at both the national and international levels.

This would provide a framework to better manage risks and overcome the geographic and industry silos that allow inconsistencies and gaps to critically weaken current risk management protocols.

At a “micro” or individual regulated entity level:

### **III. Application of comprehensive risk management concepts**

The risk management framework of any entity providing financial or insurance guarantees (including banks), should include key concepts currently applied by leading insurer regulators that use a “control cycle” approach to the measurement and management of risk. This approach includes:

- a) incorporating allowance for extreme event “outliers”,
- b) specific financial condition reporting (beyond just accounting)
- c) an independent sign-off on liability and loan loss provisioning for regulatory purposes by professionals (such as actuaries) who are subject to professional codes of conduct and disciplinary processes.

### **IV. Improved risk governance**

Improved risk governance processes being adopted by all financial market participants so that risk indicators are more consistently measured, applied, stress tested and transparently reported. The underlying concepts of such governance should be applied by all financial market participants (consistent with principles outlined in a recently released IAA paper on Enterprise Risk Management).

Further details on the actuarial profession’s perspective on these concepts are set out below.

## **1. Need for a dynamic risk sensitive framework to avoid underpricing of risk**

The current financial market crisis demonstrates that a principles-based, comprehensive and risk-sensitive regulatory framework is essential to the stability of the financial services industries. For example, the general absence of appropriate risk-sensitive capital charges for sub-prime related lending and for Collateralised Debt Obligations (CDOs) was a major contributor to the current crisis. In most jurisdictions, traditional regulatory approaches did not identify or lessen these critical risk concentrations<sup>1</sup>. Both the failure to identify the real risks and

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<sup>1</sup> Australia provides a notable exception based on initiatives taken by the Australian Prudential Regulation Authority (APRA) in 2003/4 to stress test the ability of all banks to withstand a 30% fall in housing values.

to expose the inadequate capital support for accepting such risks, led to their under-pricing and to the current results.

Differences between regulatory regimes also created arbitrage opportunities and hindered efforts for greater industry transparency, contributing to an increased risk of instability and crises.

Consequently, we favour an approach to regulation, consistent with risk governance as defined in (iv) above, that is dynamic and responsive across all prudentially regulated industries (e.g. banking, insurance, and pension funds) and across national jurisdictions. This approach must be capable of tracking measures of risk in unregulated financial sectors as well, so that emerging systemic risk can also be monitored and managed as outlined earlier in this note.

## 2. Risk modelling and inadequate risk measures

The current crisis has reinforced the conclusion that, although risk models are useful tools, risk management is much more than just models. Risk models must be embedded in appropriate risk governance and entity-wide risk culture. This includes a clearly defined and communicated risk appetite for the entity, clear roles and responsibilities for risk and corresponding limits on risk taking, complemented with stress and scenario testing. The modelling assumptions and their results need to be transparent, understood and regularly debated by management and regulators. In our view, this process is most appropriately facilitated using control cycle techniques, applied by independent professionals such as actuaries.

In many institutions (particularly in banks and hedge funds) there has been an excessive focus on “Value at Risk” measures that only measure a **minimum** amount of loss arising from a given low probability event, rather than the level of losses **expected** to arise from the event. This major weakness points to the use of better risk measures (such as “Tail Value at Risk”) and the use of “fat-tailed” non-normal distributions to avoid systematically underestimating real risk exposures.

One key insight regarding some models is that, although mathematically convenient, they are not sufficiently sensitive to extreme or “outlier” events or to changes in exposure to systemic risk. This effectively invalidates the value of such models in anticipating extreme events they are meant to expose.

## 3. Risk Culture and Remuneration Incentives

Remuneration and other incentive structures should not distort the proper evaluation of risks – including those that are underpriced by the market – especially where the regulatory “loopholes” or prudential inadequacies open the door for underpricing. Accordingly, the IAA supports, in principle, the concept of increasing the capital requirement for any market participant with remuneration incentives which focus excessively on short term results.

There is no substitute for a deep understanding of the risks involved in a business and for developing and monitoring the “risk culture” of the people working in the enterprise. Without these crucial steps, human behaviour and mis-aligned remuneration incentives can militate against timely reporting of risk-critical information. Such delays can be enormously damaging because they prevent management from taking corrective action to respond to emerging risks before they become too onerous or unwieldy.

#### 4. Valuation of Illiquid liabilities and the use of Risk Margins in accounting

A traditional skill of the actuarial profession is the valuation of insurance and pension liabilities. Insurance liabilities are usually not traded in liquid financial markets, but are fulfilled over the lifetime of an obligation. Approaches developed and refined by actuaries over many years using market consistent techniques to value these illiquid liabilities may be usefully applied to valuing liabilities and assets for other financial institutions where trading has ceased to exist in current market conditions.

The International Accounting Standards Board (IASB) has recognised the merit of such actuarial techniques in their deliberations on a new international accounting standard for insurance. This incorporates the concept of a “risk margin,” building upon prudential requirements for the insurance industry currently operating in Australia and Canada.

The IAA is presently finalising a detailed research paper on the use of risk margins and financial modelling techniques in the measurement of insurance liabilities. The IAA considers that this concept could be extended to accounting for non-traded banking assets and liabilities to build better prudential and risk reporting frameworks. Done appropriately, similar concepts may allow banks and other prudentially regulated institutions to improve the transparency of the risk of financial instruments issued or purchased by those entities.

This concept can also be extended to consider risks on a holistic basis, especially where risks may be contingent or where accounting treatments allow a risk to be “off balance sheet”, even where it may not really be fully “off risk”.

#### 5. Recognising that the objectives of risk [or prudential] reporting and general purpose financial reporting are different

When reporting risk measures of financial market participants there is a need to apply a total balance sheet approach, which evaluates on a consistent basis:

- a) the amount of capital required to support the assets and liabilities of the business (given all of its commitments and obligations to stakeholders) and
- b) the actual capital available from time to time after excluding all interests that are not at “arms length”.

This is very different to general purpose financial reporting because the focus in general purpose financial reporting is on:

- a) what actually happened in the past period rather than what could happen in future periods and
- b) the assessment of a single number for reported profit, which does not recognise the various sensitivities in the values of both assets and liabilities that would more usefully be measured in ranges.

More effective assessment and communication of the consequences of uncertainty is needed. For example, proper understanding of the value of some assets and liabilities can only be provided through the use of ranges of their potential future value. Consistent risk measures and sensitivity testing, which reflect the potential of those values to change in the future, should also be utilized. This enhanced basis for a prudential reporting framework is the foundation needed for a dynamic capital management framework that can be used to manage and mitigate systemic risk.

## 6. Need for a “Control Cycle” approach such as used by the actuarial profession

Risk management is as much about preparing for what has not happened as it is for understanding and preparing for a repetition of what has been experienced in the past. Stress tests and scenario planning can be used to address such problems, especially when they are related to systemic change. Consequently, these tools need to become increasingly important and commonly used.

Actuaries actively use the concept of a “control cycle” especially when managing long term risks that cannot be traded easily (due to the nature of many insurance and pension liabilities). This concept should be applied more widely to improve the modelling of financial markets and capital requirements for financial market participants.

Simply, this concept involves

- a) modelling of expected results,
- b) measurement of actual results,
- c) determination, in both quantitative and qualitative terms, of an understandable explanation of the differences between the expected and actual results, and
- d) use of those findings to recalibrate and strengthen the model.

Done appropriately, this type of feedback loop improves the capacity to take action– before a financial disaster. A modelling and management process that uses this kind of professional discipline is more likely to succeed when placed under stress. All too often, current capital markets activity is based on daily procedures that can lose sight of the bigger picture involving the longer term, whole market risks, shifts in fundamental risk parameters, systemic risks and/or unexpected correlations between events, whether extreme or not.

## 7. Independence and role of the Risk Function in prudentially regulated entities

In view of the huge market value losses experienced by certain financial institutions, the IAA believes that risk management must be viewed as integral to the operation of the business and should not be seen just as a cost or regulatory requirement. We anticipate both management and regulators will seek to further strengthen their risk management functions, resulting in growing professional responsibilities for actuaries, risk officers and their teams.

Given the role of risk management, it is important that risk teams have the freedom and the capability to take an objective view that may differ from management's based on full and unrestricted access to the same information. This preferably should be built on a culture of mutual understanding and respect between line management and the risk function across an entity. Where differing views arise on material matters, this must be reported to the board and be transparent to the prudential regulator.

This can be further enhanced by enforceable professional codes of ethics and minimum standards of training for key individuals within the risk management function such as the professional and disciplinary standards already required by the IAA for the actuarial profession.

## 8. International prudential regulation needs to be less "silo" driven

The IAA believes that the current crisis reinforces the case for regulation which is more internationally co-ordinated, principle-based and risk-sensitive. While the impact of the current crisis still needs to be fully evaluated, we remain confident that the basic principles of Enterprise Risk Management (ERM) remain valid.

In our view the crisis has reinforced the necessity for effective and integrated supervision of major international financial groups. Whilst this is politically difficult, it has become clear that there is a need to supervise holding companies of international financial services groups in a manner similar to other group entities. Proper group supervision would also stimulate improved communication between group holding companies, their subsidiaries and regional regulators.

## What is Enterprise Risk Management (ERM)?

There is no universally accepted definition of ERM. However it is generally accepted that ERM is underpinned by the following principles:

- ERM is concerned with all risks faced by an organisation
- ERM is concerned with creating value for the owners/stakeholders of an organisation whilst ensuring that promises made to clients & customers are met.

More specifically,

- ERM is concerned with the totality of systems, structures and processes within an entity that define risk appetite and identify, assess, treat, monitor, report and/or communicate all internal and external sources of risk that could impact on the entity's operations
- ERM implies a common risk management "language" across the operations of the entity
- ERM involves systematic organisation of and coordination between risk functions i.e. specialist risk "silos" operating in isolation from each other are inconsistent with ERM principles
- ERM includes both the management of "downside" as well as "upside" risks
- ERM seeks to quantify all risks but acknowledges that not all risks can be measured in currency/financial terms
- ERM is concerned with both behaviours (the risk management culture) and risk control processes
- ERM involves holistic consideration of risk information relating to past events (e.g. losses), current performance (e.g. risk indicators) and future outcomes (e.g. the risk profile or risk assessment).

ERM is a logical response to growing complexity, uncertainty and ambiguity associated with 21<sup>st</sup> century life. We encounter risk when-ever we pursue our goals. Hence good management in all aspects of life must incorporate risk management.

Some risks are beyond our control but many can and should be managed – this means identifying our capacity and willingness to bear risk and then assessing, mitigating and, if necessary, eliminating or transferring risks we do not wish to bear.

Risk exposures involve a complex interplay of dynamic external influences and (unpredictable) human behaviour that often overwhelm traditional or "siloesd" risk management practices commonly adopted prior to the evolution of ERM. Moreover, the importance of the risk management culture in an organisation is inextricably linked with effective ERM practices.

The terms "risk" and "risk management" are commonly viewed through a lens of avoiding "bad" things happening and limiting the downside. Whilst understandable, the more enlightened view emerging is one of connecting risk to value maintenance and creation. This includes, for example, the empowerment of people to exploit opportunities. Indeed, the ability to anticipate and react to an opportunity can be as important as readiness for a potentially significant disruptive event.

Effective ERM is also linked with strategic planning. When ERM is integrated into a planning cycle key decisions (e.g., growth of business, acquisitions, innovations) are made on a risk-adjusted basis and fully informed by the ERM process. Similarly, end-of-year performance measurement is conducted on a risk-adjusted basis, to complete the full cycle of value creation.



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