



FINANCIAL STABILITY INSTITUTE

BANK FOR INTERNATIONAL SETTLEMENTS

Risk-based Frameworks and Processes for Solvency and Supervision

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Risk-based Solvency and Supervision

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Risk-based framework

- Principles typically define the desired outcome but not exactly how to achieve it (not necessarily vague - the outcome can be quite precise)
- Still room for rules - predictability (legal risk) and level playing field
- Focus on:
 - main risks (frequency and impact)
 - risk governance and management practices
- Looks at the possibility of failure and its impact on the
 - policyholders
 - financial system
- Room for more flexibility, adaptable to the situation, possibility of reacting to new phenomena in a timely manner
- Risk of subjectivity and non-equal treatment in the application



Definition of risk

- No standard definition of *risk* that is consistently used
- Risk represents at the same time
 - company's opportunity to create value for its owners
 - threat to its ability to deliver on the promises made to clients and owners
- Could be described as an unexpected event, ie a deviation (positive or negative) from an expected outcome



Risk classification

- **Insurance risk:** Inherent uncertainties as to the occurrence, amount and timing of insurance liabilities
- **Market risk:** Adverse variation in costs or returns resulting from a change in market price or rate
- **Credit risk:** Default or movement in credit standing of issuers of securities, counterparties or other debtors to whom the insurer is exposed (e.g. reinsurers)
- **Operational risk:** Inadequate or failed internal processes, people and systems or risks resulting from external events (eg legal risk)
- **Liquidity risk:** Insufficient availability of liquid assets to meet obligations as they fall due or available but only at excessive cost
- And there is **group risk, concentration risk**, etc.....
- Not to forget about **model risk**



Risk assessment

- Risk identification
 - Identification of hazardous events
 - Identification of harmful incidents (scenarios) resulting from such an event
- Risk quantification
 - Estimation of the likelihood/probability of this scenario
 - Assessment of the vulnerability of the exposed
 - Estimation of the impact/loss



Risk management

- Risk assessment provides the basis for risk management, which considers:
 - risks that could be taken
 - available options
 - associated trade-offs in terms of costs, benefits, and risks
 - impacts current management decisions could have on future options
- Not about eliminating risk but choosing the risks the firm is willing to take, managing them well
- Finding the right balance between the opportunity to take risk and create value for the firm and the threat risk poses to the survival of the firm



Core risk behaviours and attitudes

- **Risk detection:** Understand and identify risks and opportunities
- **Risk attitude:** Determine what type of risks to avoid and which to accept – aligned with corporate strategy
- **Risk tolerance:** Within the attitude, determine which risks to be avoided or accepted in relation to available capital, concentration of risks etc – limits of acceptable levels
- **Risk appetite:** Within the tolerance, steer towards the risks with the highest return
- **Risk responsiveness:** Preparing for shifts in market dynamics, supervisory change, changing customer preferences etc
- **Risk prevention:** Preventing risks from occurring
- **Risk recovery:** Correcting or reacting to risks that have occurred



Risk management components

- **Quantification of risk** (pillar 1)
 - Systematic determination of total risk and the contributions of individual risk sources
- **Risk governance** (pillar 2)
 - Clearly defined risk management processes, including the organisation, roles and responsibilities
 - Common understanding of the risk management function and the basis for implementing and monitoring risk management policies
- **Disclosure** (pillar 3)
 - Transparency, leading to proper behaviour, promoting mutual understanding, trust, and discipline in taking risks
 - Confidence in the risk management organisation



Quantification of risk

- Essential part of risk management
- Different models for quantifying risk but the most widely used is a group of models called Value at Risk (VaR)
- Developed by quantitative experts but it's most selling feature is that it can be understood by non-experts
- Typically expressed as a single number, eg amount in \$ resulting from 99 % VaR – does not express the most you could loose, rather the least you could loose 1 % of the time
- Measures the boundaries of risk in a portfolio (or combined portfolios) over short durations, assuming a “normal” market



Limits to quantitative models

- Theoretical concepts not easily adaptable to a complex real world - numbers amount to an educated guess
- VaR does not measure fat tails or liquidity risk
- Historical data may not reflect the future
- Risk measurement tools may provide a comforting sense of precision: expensive and complex models, and measured in precise amounts of money
- Assessment procedures could exacerbate excessive risk taking rather than just failing to measure risk
- Widely spread reliance on vendor models could have systemic risk implications if not tailored to the individual risk profiles
- Risk is linked to uncertainty and non-knowledge
- Need to be aware of the different levels of non-knowledge



Qualitative assessment of risk

- One important shortcoming of quantitative risk models is the inability to capture extreme events or tail risk
- Powerful and sophisticated computers cannot judge the subtle nuances that experience provide (cannot be programmed - not possible to use “autopilot” all the time)
- Modelling techniques need to be supplemented with more qualitative judgement and measures, such as scenario analysis and stress testing
- Scenario analysis is a process of analysing possible future events by considering alternative possible outcomes (scenarios)
- These are stress tested by using specific algorithms to determine the expected impact on a portfolio’s return should such a scenario occur



Thinking in scenarios

- Structured thinking about rare and adverse events that can potentially threaten the solvency
- Intuitive and accessible way to discuss with the board and senior management
- Strategic decisions and risk management arrangements should be influenced by the outcome
- Not sufficiently robust or embedded in senior management decisions - assumptions too favourable, impacts too small and management actions too optimistic
- Consider scenarios in which events occur simultaneously rather than in isolation
- Use *reverse stress testing* – work from scenarios most likely to affect the viability of the firm’s current business models to identify tail risks and improve awareness of vulnerabilities
- Test controls and contingency plans against the assessed resilience of the organisation to internal and external shocks (update regularly)



Risk governance

- One aspect of corporate governance - should be embedded in the overall framework
- Improve the performance and conformance of companies for the benefit of shareholders, policyholders and other stakeholders
- Separation of duties and oversight (ultimately board and senior management)
- Board approval and oversight of the company's implementation of its risk strategy, taking account of the long-term financial interests and safety
- Appropriate risk management systems and internal control infrastructures to the external risk landscape and risk profile
- Risk management policy outlining how risks are to be managed, strategically and operationally. Should cover: terminology, risk appetite, board and committee structures, responsibilities, compliance, behavioural expectations etc (not too long and complicated - needs to be properly implemented to be effective)



Risk culture

- Absence of supportive culture undermines the most sophisticated of risk management and corporate governance frameworks
- Combination of behaviours and rules in an organisation “the way we do things around here”
- Defines the firm’s dealing with risk and common understanding of it (clear limits and responsibilities)
- Promote trust between management and employees (bad news travel slowly if fear of retribution)
 - Potential risks should be discussed openly and people should not be afraid to voice concern or raise issues to management
 - Incentives should be in place to promote openness and align the long-term interests of the firm with the interest of the employees
- The board and senior management should accept that appropriate risk management can put limits to their options when setting the risk appetite



Disclosure and transparency

- “What you see is what you get – what you don’t see gets you”
- Markets are vulnerable to reputational risk – discipline promotes financial stability
- Market discipline is an important incentive for adherence to rules and principles
- Relevant to the cost and volume of funding – rewards good and punishes bad behaviour
- Promotes good corporate governance structures, risk management practices and internal control
- Information should be complete, relevant and comprehensible



Enterprise Risk Management

- Process of identifying, assessing, measuring, monitoring, controlling and mitigating risks
- Integrated risk management - combining all risks and every step of the risk management process for a holistic view of risk and their effects on the solvency
- Fully integrated with capital management - overall risk appetite defined to reflect the company's risk tolerance (amount of available risk capital)
- Linked with the strategic planning and decision taking (strategy dependent on available capital and vice versa)
- Typically adopts a total balance sheet approach
- Applies to the whole group, where relevant
 - Consistent models in all companies otherwise inconsistent capital allocation



Aligning capital with risk

- Capital is needed to mitigate risk (not appropriate for all risks)
- Closer alignment can provide an incentive for better risk management
- Standardised solvency requirements that are proportionate to risk
- Allow the use of internal capital models, where appropriate
- Liabilities to remain covered by assets, over a defined period to a specified level of safety (eg regulatory VaR)
- Have more than one level triggering supervisory intervention (eg SCR/PCR and MCR), the lowest capital level resulting in the most severe supervisory action
- Total balance sheet approach
 - Recognition of interdependencies between assets, liabilities, capital requirements and capital resources
 - Capital resources regarded as difference between assets and liabilities on the basis of their economic valuation



Regulatory capital requirements

- Technical provisions: to meet liabilities as they fall due (all commitments arising over the life-time of the portfolio) - expected losses according to best estimate
- Regulatory capital or solvency margin: to ensure that obligations will continue to be met in adverse circumstances - “unexpected” losses = in addition (over 1 year)
- Additional buffer suggested in light of the financial crisis, taking the form of a contingency reserve



Quality of capital resources

- Loss absorbency under going-concern (availability and permanency) – main function
- Loss absorbency under winding-up (subordination and priority)
- The quality can be regulated in different ways
 - categorise into tiers (quality classes)
 - rank capital elements
- The quality of corresponding assets is also important and can be regulated in different ways
 - investment incentives through risk-weighting
 - catalogue of admissible asset (risk-based)



Market valuation and mark-to-model

- Market value needs reliable, observable market prices in deep and liquid markets (mark-to-market)
- Reasonable proxies or alternative approaches are needed where market values are not readily available (mark-to-model)
- Mark-to-model would always be used for technical provisions - determine whether hedgeable or not
 - Hedgeable: use the value of replicating portfolios (cash-flows or expected cash-flows through liquid instruments)
 - Non-hedgeable: use best estimate + risk margin
- Asset and liability matching is important



Mark-to-market and bubbles

- Even if there is a market, book values can be inflated by financial euphoria (speculative bubble): increases in values are taken as justification for further increases in a continuous feedback loop
- Parties whose remuneration is based on the market value of instruments may take disproportionate risks and be interested in inflating the value of the instruments further (in unregulated, opaque markets, two parties may even use different models allowing both to show a profit)
- Pro-cyclical:
 - Creation of false “wealth effect” prompts people to take high risks
 - When errors come to light, there is a loss of the value of assets, forcing companies to raise capital and sell assets at the worst moment
- Market values get “unpopular” when there are dramatic falls in the value of “toxic” or illiquid assets and the solvency is endangered – requests for “softened” impact of fair value (“write-down not related to actual losses”)



Financial stability and systemic risk

- Characteristics of systemically important financial institutions (G20, IMF, FSB, BIS):
 - **Size:** Positive for insurance (diversification), liquidity risk being less than in banking (pre-paid premiums and no short-term borrowed money)
 - **Interconnectedness:** Through reinsurance but also equity holdings and other investments
 - **Substitutability:** Disruptions or failures usually have short term effects, new insurers/reinsurers moving into the region to create capacity
- **Time** has been added by the IAIS: Insurance risks usually play out over a longer time horizon, which should be taken into consideration
- Insurance is susceptible to systemic risk generated in other sectors
- May generate or amplify systemic risk, eg life insurers reacting to downturns in equity markets
- Changing nature of insurance business and contagion effects related to groups could make insurers more systemically vulnerable



Risk-based supervision on a micro-level

- Identify significant business areas
- Disaggregate into most important inherent risks
- Grade the risks, eg *high, above average, moderate or low*
- Evaluate effectiveness of controls, eg *strong, acceptable, needs improvement and weak*
- Evaluate *net risk* by combining the two levels of risk
- Determine a risk rating of the institution based on the evaluations
- Establish a multi-year supervisory plan (1-4 year cycles)
- Use the risk rating as a basis for supervisory action
- Update risk rating regularly



Macro-prudential supervision and pro-active crisis management

- Assess the system as a whole - supplement to the individual firm and group level focus
- Evaluate and address risks building up in the financial markets (risks transferred out of the balance sheet do not disappear from the system)
- Keep up with financial innovation/*engineering*
- *Systemically important/too big to fail/too interconnected to fail*
 - Assess importance and interconnectedness
 - Parts of the chain may not be regulated (eg SPVs or hedge funds)
- Simplify complicated structures? – Extra charges?
- *Living wills* – contingency plans (stay in going-concern or wind-down quickly and effectively in times of stress)
- Take the systemic ramifications of regulatory actions into account



Supervisory tool-box

- Analyse publicly available information (micro/macro, benchmarking etc) – market discipline is important (comes at a cost – balance): *ICP 11) Market analysis*
- Require (regularly/*ad hoc*) and analyse company specific information (also prospective), ie financial condition, regulatory compliance etc: *ICP 12) Reporting to supervisors and off-site monitoring*
- Verify information, meet with key functionaries, assess management, governance, control etc: *ICP 13) On-site inspection*
- Cooperate and share information (confidentiality): *ICP 5) Supervisory cooperation and information sharing*
- Informal tools - capacity and standing to communicate with companies
- React against identified shortcomings (solvency or other) choosing from an array of measures: *ICP 14 and 15) Preventive and corrective measures, enforcement and sanctions*
- Closing down the company: *ICP 16) Winding up*
- Guarantee schemes and other protection measures



Supervisory infrastructure, staff and procedures

- Supervisory body with adequate power, legal protection, financial resources, operational independence and accountability
- Well-functioning external infrastructure, eg legal system, efficient financial markets, sound standards and good experts, available data etc
- Skilled staff with investigative and analytical qualities, and integrity
- Established scope and procedures for staff
 - Guidance supplemented by personal judgements
 - Structured framework for decision making being part of a sound governance structure - responsibility/accountability (supervisory judgements may be challenged by financial institutions)
 - Internal transparency: best practice needs comparison



Harmonisation and supervisory cooperation

- Regulation is the responsibility of national regulators and the first line of defence against market instability
- Problems are predominantly national, fiscal resources of individual countries are used for bail-outs and national legal systems are needed for sanctions and enforcements
- Solutions have to be customised to individual problems but can spill over from one entity or country to another
- Minimum harmonisation of what is considered essential, leaving some room for national judgement
- Intensified cooperation on implementation and enforcement, and management of crisis situations (colleges of supervisors)