

INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS



GUIDANCE PAPER ON THE STRUCTURE OF REGULATORY CAPITAL REQUIREMENTS

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1. Introduction

1. Since its inception in 1994, the IAIS has developed a number of principles, standards and guidance papers to help promote the development, globally, of well-regulated insurance markets. Central to this objective is the development of a common framework for insurance supervision that establishes a common structure within which standards and guidance on insurance solvency assessment may be developed. Insurer solvency takes a central position in risk management by insurers and in insurance supervision. Consideration of the standards and guidance that should apply to the determination of regulatory capital requirements, therefore, contributes towards the development of the IAIS framework for insurance supervision.

2. A sound solvency regime is essential to the supervision of insurance companies; regulatory capital requirements are a fundamental part of a solvency regime. Insurers face uncertainty both as underwriters of risk and as general business enterprises. In addressing this uncertainty, both insurers and supervisors recognise that an insurer's capital functions as a shock absorber against unforeseen losses. Sufficient capital is critical to an insurer's ability to meet its obligations to policyholders and creditors and to finance future growth in its business.

3. The *IAIS Insurance core principles and methodology* (Oct 2003) provide a globally-accepted framework for the regulation and supervision of the insurance sector. Insurance core principle (ICP) 23 states that:

“the supervisory authority requires insurers to comply with the prescribed solvency regime. This regime includes capital adequacy requirements and requires suitable forms of capital that enable the insurer to absorb significant unforeseen losses.”¹

4. The IAIS Framework for insurance supervision² identifies the main elements in a regulatory and supervisory regime, comprising both quantitative (financial) and qualitative (governance and market conduct) components. The framework for insurance supervision

¹ ICP 23: Capital adequacy and solvency.

² *IAIS Framework for insurance supervision* (Oct 2005).

emphasises the interdependence of the quantitative and qualitative aspects in the assessment of insurer solvency.

5. This guidance paper provides guidance on the 15 principles-based requirements for a solvency regime in relation to regulatory capital requirements as set out in the *Standard on the structure of regulatory capital requirements*. The aim of the guidance paper is to support the enhancement, improved transparency and comparability and convergence of the assessment of insurer solvency internationally. The pre-conditions in a particular supervisory regime, among other factors, will determine the specifics of effective supervision within that regime, including the specific requirements of the solvency regime in relation to regulatory capital requirements.

6. This guidance paper addresses the structure of regulatory capital requirements in a supervisory regime for solvency assessment. While the broader issues in relation to capital resources are identified to establish the context of the solvency assessment process, the requirements regarding the nature and quality of capital resources are not covered in depth in this paper but will be the focus of a separate standard and guidance paper.

7. To a significant extent the detailed requirements in relation to capital resources depend on the valuation of assets and liabilities in the solvency regime. Therefore, further guidance on capital resources will be advanced within the IAIS in the broader context of developing standards and guidance on the valuation of assets and liabilities for solvency purposes. In this regard, the IAIS has issued a position paper³ on the key concepts in regard to the valuation of technical provisions, which reflects a market-consistent valuation approach.

8. This guidance paper focuses on the insurer as a single entity. Where an insurer is a member of a group of companies, it is recognised that the solvency regime should consider the appropriate determination of regulatory capital requirements and capital resources at both a solo and group level. The issues of group-wide supervision, including the consideration of group impacts on the solo solvency assessment of insurers which are part of a group, are not within the scope of this paper and are the subject of separate IAIS work⁴.

2. Regulatory Capital Requirements

Requirement 1

A total balance sheet approach should be used in the assessment of solvency to recognise the interdependence between assets, liabilities, regulatory capital requirements and capital resources and to ensure that risks are appropriately recognised.

9. The overall financial position of an insurer should be based on consistent measurement of assets and liabilities and explicit identification and consistent measurement of risks and their potential impact on all components of the balance sheet. In this context, the IAIS uses the term total balance sheet approach to refer to the recognition of the interdependence between assets, liabilities, regulatory capital requirements and capital resources. A total balance sheet approach should also ensure that the impacts of relevant

³ The *Summary of IAIS positions on the valuation of technical provisions* (Oct 2007) is a summary of previously stated IAIS positions on this topic.

⁴ The IAIS Insurance Groups and Cross-sectoral Issues Subcommittee (IGSC) will advance further work on group-wide supervision. The IGSC and the Solvency and Actuarial Issues Subcommittee are also developing a joint Issues paper on group-wide solvency assessment.

material risks on an insurer's overall financial position are appropriately and adequately recognised⁵.

10. The assessment of the financial position of an insurer for supervision purposes addresses the insurer's technical provisions, required capital and available capital resources. These aspects of solvency assessment (namely technical provisions and capital) are intrinsically inter-related and cannot be considered in isolation in a solvency regime.

11. Technical provisions and capital have distinct roles, requiring a clear and consistent definition of both elements. **Technical provisions** represent the amount that an insurer requires to fulfil its insurance obligations and settle all commitments to policyholders and other beneficiaries arising over the lifetime of the portfolio⁶. In this guidance paper, the term **regulatory capital requirements** refers to financial requirements that are set as part of the solvency regime and relates to the determination of amounts of capital that an insurer must have in addition to its technical provisions.

12. Technical provisions and regulatory capital requirements should be covered by adequate and appropriate assets, having regard to the nature and quality of those assets. To allow for the quality of assets, supervisors may consider applying restrictions or adjustments (such as quantitative limits, asset eligibility criteria or 'prudential filters') where the risks inherent in certain asset classes are not adequately covered by the regulatory capital requirement. To a large extent this issue is related to the valuation of assets for solvency purposes, and will therefore be further advanced within the IAIS in the broader context of developing standards and guidance on the valuation of assets and liabilities for solvency purposes.

13. **Capital resources** may be regarded very broadly as the amount of the assets in excess of the amount of the liabilities. Liabilities in this context includes technical provisions and other liabilities (to the extent these other liabilities are not treated as capital resources - for example, liabilities such as subordinated debt may under certain circumstances be given credit for regulatory purposes as capital). Assets in this context may include contingent assets.

14. In considering the quality of capital resources the supervisor should have regard for their characteristics, including the extent to which the capital is available to absorb losses (including considerations of subordination and priority), the extent of the permanent and/or perpetual nature of the capital and the existence of any mandatory servicing costs in relation to the capital. This will be covered further by the standard and guidance paper on capital resources.

⁵ It is noted that the total balance sheet approach is an overall concept rather than implying use of a particular methodology.

⁶ This includes costs of settling all commitments to policyholders and other beneficiaries arising over the lifetime of the portfolio of policies, the expenses of administering the policies, the costs of hedging, reinsurance and of the capital required to cover the remaining risks.

3. Establishing regulatory capital requirements

Requirement 2

Regulatory capital requirements should be established at a level such that the amount of capital that an insurer is required to hold should be sufficient to ensure that, in adversity, an insurer's obligations to policyholders will continue to be met as they fall due.

15. An insurer's board of directors and senior management have the responsibility to ensure that the insurer has adequate and appropriate capital to support the risks it undertakes. Capital serves to reduce the likelihood of failure due to significantly adverse losses incurred by the insurer over a defined period, including declines in the value of the assets and/or increases in the obligations of the insurer, and to reduce the magnitude of losses to policyholders in the event that the insurer fails.

16. From a regulatory perspective, the purpose of capital is to ensure that, in adversity, an insurer's obligations to policyholders will continue to be met as they fall due. Regulators should ensure that regulatory capital requirements are established at the level necessary to support this objective.

17. In the context of its own risk and solvency assessment (ORSA)⁷, the insurer would generally be expected to consider its financial position from a going concern perspective (that is, assuming that it will carry on its business as a going concern and continue to take on new business) but may also need to consider a run-off and/or winding-up perspective (e.g. where the insurer is in financial difficulty). The determination of regulatory capital requirements may also have aspects of both a going concern and a run-off or winding-up perspective. In establishing regulatory capital requirements, therefore, supervisors should consider the financial position of insurers under different scenarios of operation.

18. Requiring insurers to maintain adequate and appropriate capital enhances the safety and soundness of the insurance sector and the financial system generally, while not increasing the cost of insurance to a level that is beyond its economic value to policyholders or unduly inhibiting an insurer's ability to compete in the marketplace. There is a balance to be struck between the level of risk that policyholder obligations will not be paid with the cost to policyholders of increased premiums to cover the costs of servicing additional capital.

4. Solvency control levels

Requirement 3

The solvency regime should include a range of solvency control levels which trigger different degrees of intervention by the supervisor with an appropriate degree of urgency.

Requirement 4

The solvency regime should ensure coherence between the solvency control levels established and the associated corrective action that may be at the disposal of the insurer and/or the supervisor. Corrective action may include options to reduce the risks being taken by the insurer as well as to raise more capital.

⁷ Refer to the IAIS *Standard and Guidance paper on enterprise risk management for capital adequacy and solvency purposes* (Oct 2008) for more discussion on the own risk and solvency assessment (ORSA).

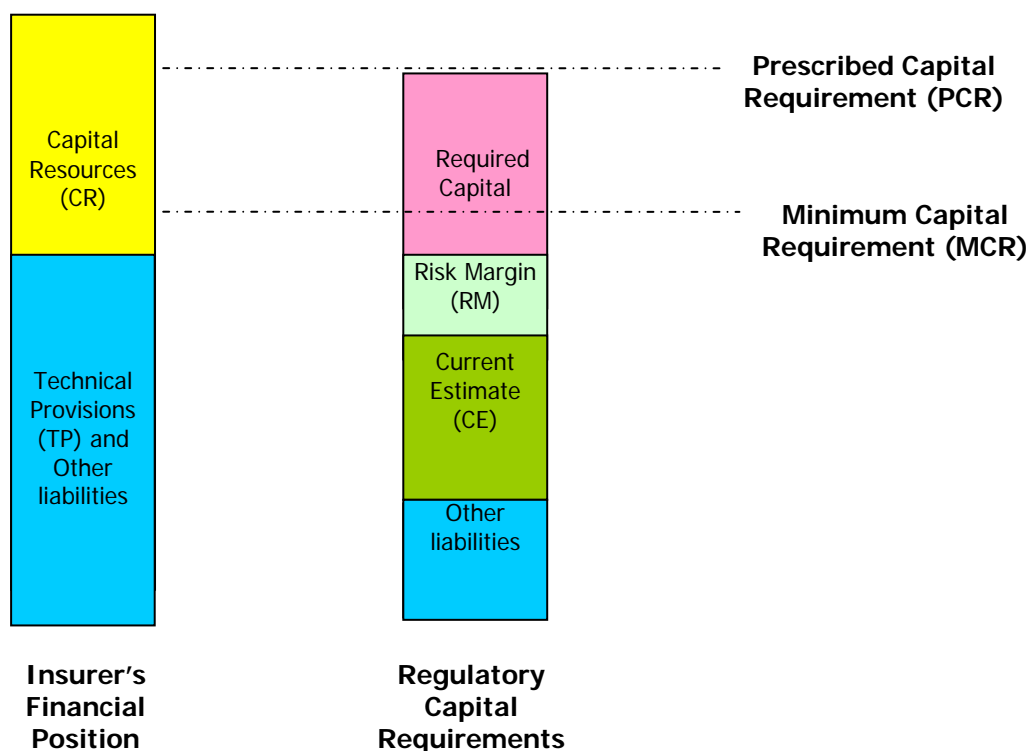
19. The IAIS *Principles on capital adequacy and solvency* paper states that:
 “insurance regulatory authorities have to establish a control level, or a series of control levels, that trigger intervention by the authority in an insurer’s affairs when the available solvency falls below this control level. The control level may be supported by a specific framework or by a more general framework providing the supervisor a latitude of action.”

A supervisor’s goal in establishing control levels is to safeguard policyholders from loss due to an insurer’s inability to meet its obligations.

20. The solvency control levels provide triggers for action by the insurer and supervisor. Hence they should be set at a level that allows intervention at a sufficiently early stage in an insurer’s difficulties so that there would be a realistic prospect for the situation to be rectified in a timely manner with an appropriate degree of urgency. At the same time, the reasonableness of the control levels should be examined in relation to the nature of the corrective measures. The risk tolerance of the regulatory regime will influence both the level at which the solvency control levels are set and the intervention actions that are triggered, reflecting the balance to be struck between protecting policyholders and the impact on the effective operation of the insurance industry of unduly onerous levels and costs of regulatory capital requirements.

21. Figure 1 below illustrates the concept of solvency control levels in the context of establishing regulatory capital requirements:

Figure 1: Solvency Control Levels and Regulatory Capital Requirements



5. Regulatory capital requirements as triggers for supervisory intervention

Requirement 5

The regulatory capital requirements in a solvency regime should establish a solvency control level which defines the level above which the supervisor would not require action to increase the capital resources held or reduce the risks undertaken by the insurer. This is referred to as the Prescribed Capital Requirement (PCR).

Requirement 6

The PCR should be defined such that assets will exceed technical provisions and other liabilities with a specified level of safety over a defined time horizon.

Requirement 7

The regulatory capital requirements in a solvency regime should establish a solvency control level which defines the supervisory intervention point at which the supervisor would invoke its strongest actions, if further capital is not made available. This is referred to as the Minimum Capital Requirement (MCR).

Requirement 8

The solvency regime should establish a minimum bound on the MCR below which no insurer is regarded to be viable to operate effectively.

22. A range of different intervention actions should be taken by a supervisor depending on the event or concern that triggers the intervention. Some of these triggers will be linked to the level of an insurer's capital resources relative to the level at which regulatory capital requirements are set.

23. In broad terms, the highest regulatory capital requirement (referred to as the Prescribed Capital Requirement or PCR in Figure 1) will be set at the level at which the supervisor would not require action to increase the capital resources held or reduce the risks undertaken by the insurer⁸. However if the insurer's capital resources were to fall below the level at which the PCR is set, the supervisor would require some action by the insurer to either restore capital resources to at least the PCR level or reduce the level of risk undertaken (and hence the required capital level).

24. The regulatory objective to ensure that, in adversity, an insurer's obligations to policyholders will continue to be met as they fall due will be achieved without intervention if technical provisions and other liabilities⁹ are expected to remain covered by assets over a defined period, to a specified level of safety. As such, the PCR should be determined at a level such that the insurer is able to absorb the losses from adverse events that may occur over that defined period and ensure that technical provisions remain covered at the end of the period.

25. The Minimum Capital Requirement (MCR in Figure 1) represents the supervisory intervention point at which the supervisor would invoke its strongest actions, if further capital is not made available¹⁰. Therefore, the main aim of the MCR is to provide the ultimate safety net for the protection of the interests of policyholders.

⁸ Note that this does not preclude the supervisor from intervention or requiring action by the insurer for other reasons, such as weaknesses in the risk management or governance of the insurer. Nor does it preclude the supervisor from intervention when the insurer's capital resources are currently above the PCR but are expected to fall below that level in the short term.

⁹ To the extent these liabilities are not treated as capital resources.

¹⁰ Note that this does not preclude such actions being taken by the supervisor for other reasons, and even if the MCR is met or exceeded.

26. These actions could include stopping the activities of the insurer, withdrawal of the insurer's license, requiring the insurer to close to new business and run-off the portfolio, transfer of the portfolio to another insurer, arranging additional reinsurance, or other specified actions. This position is different to the accounting concept of insolvency as the MCR would be set at a level in excess of that at which the assets of the insurer were still expected to be sufficient to meet the insurer's obligations to existing policyholders as they fall due. The PCR cannot be less than the MCR, and therefore the MCR may also provide the basis of a lower bound for the PCR, which may be especially appropriate in cases where the PCR is determined on the basis of an insurer's internal model approved for use in determining regulatory capital requirements by the supervisor¹¹.

27. A solvency regime should establish a minimum bound on the MCR below which no insurer is regarded to be viable to operate effectively. For example, a market-wide nominal floor¹² may be applied to the regulatory capital requirements, based on the need for an insurer to operate with a certain minimal critical mass and consideration of what may be required to meet minimum standards of governance and risk management. Such a nominal floor might vary between lines of business or type of insurer and is particularly relevant in the context of a new insurer or line of business.

28. A solvency regime may include additional solvency control levels between the level at which the supervisor takes no intervention action from a capital perspective and the strongest intervention point (that is, between the PCR and MCR levels). These control levels would be set at levels that correspond to a range of different intervention actions that may be taken by the supervisor itself or actions which the supervisor would require of the insurer according to the severity or level of concern regarding adequacy of the capital held by the insurer. These additional control levels may be formally established as part of the solvency regime with explicit intervention actions linked to particular control levels. Alternatively, these additional control levels may be structured less formally, with a range of possible intervention actions available to the supervisor depending on the particular circumstances. In either case the possible triggers and range of intervention actions should be appropriately disclosed by the supervisor¹³.

29. Possible intervention actions include:

- measures that are intended to enable the supervisor to better assess and/or control the situation, either formally or informally, such as increased supervision activity or reporting, or requiring auditors or actuaries to undertake an independent review or extend the scope of their examinations
- measures to address capital levels such as requesting capital and business plans for restoration of capital resources to required levels, limitations on redemption or repurchase of equity or other instruments and/or dividend payments etc
- measures intended to protect policyholders pending strengthening of the insurer's capital position, such as restrictions on licenses, premium volumes, investments, types of business, acquisitions, reinsurance arrangements etc
- measures that strengthen or replace the insurer's management and/or risk management framework and overall governance processes
- measures that reduce or mitigate risks (and hence required capital) such as requesting reinsurance, hedging and other mechanisms

¹¹ Refer to the IAIS *Standard and Guidance paper on the use of internal models for regulatory capital purposes* (Oct 2008).

¹² In this context, a market-wide nominal floor may, for example, be an absolute monetary minimum amount of capital required to be held by an insurer in a jurisdiction.

¹³ See ICP 4 – Supervisory Process - The supervisory authority conducts its functions in a transparent and accountable manner.

- refusing, or imposing conditions on, applications submitted for regulatory approval such as acquisitions or growth in business.

30. In establishing the respective control levels, consideration should be had for these possibilities and the scope for an insurer with capital at this level to be able to increase its capital resources or to be able to access appropriate risk mitigation tools from the market.

6. Approaches to determining regulatory capital

Requirement 9

The solvency regime should be open and transparent as to the regulatory capital requirements that apply. It should be explicit about the objectives of the regulatory capital requirements and the bases on which they are determined.

Requirement 10

In determining regulatory capital requirements, the solvency regime should allow a set of standardised and, if appropriate, other approved more tailored approaches such as the use of (partial or full) internal models.

31. Transparency of the solvency regime is required to facilitate its effective operation. It also supports the enhancement, improved transparency and comparability and convergence of the assessment of insurer solvency internationally.

32. When establishing solvency control levels, and in particular the levels at which PCR and MCR are established, it is recognised that views about the level that is acceptable may differ from jurisdiction to jurisdiction and by types of business written and will reflect, amongst other things, the extent to which the pre-conditions for effective supervision exist within the jurisdiction and the risk tolerance of the particular solvency regime. The IAIS recognises that jurisdictions will generally establish a solvency regime which acknowledges that a certain level of insolvencies may be unavoidable, and that establishing an acceptable threshold may facilitate a competitive marketplace for insurers and avoid inappropriate barriers to market entry.

33. The criteria used by the supervisor to establish solvency control levels should be transparent. This is particularly important where legal action may be taken in response to an insurer violating a control level. In particular, given that the MCR represents the supervisory intervention point at which the supervisor would invoke its strongest actions, the approach for determining the MCR should generally be simple and readily explainable to a court when seeking enforcement of supervisory action.

34. Supervisors may need to consider different solvency control levels for different situations of operation of the insurer - such as an insurer in run-off or an insurer operating as a going concern. These different scenarios and considerations are discussed in more detail in paragraphs 38 to 40.

35. In addition, the supervisor should consider the allowance for management discretion and future action in response to changing circumstances or particular events. In allowing for management discretion, supervisors should only recognise actions which are practical and realistic in the circumstances being considered¹⁴.

36. Other considerations in establishing solvency control levels include:

¹⁴ The supervisor should carefully consider the appropriateness of allowing for such management discretion in the particular case of the MCR.

- the way in which the quality of capital resources is addressed in the solvency regime
- the coverage of risks in the determination of technical provisions and regulatory capital requirements and the extent of the sensitivity or stress analysis underpinning those requirements
- the relative levels of the MCR and PCR (for example the extent to which the MCR is set at a conservative level)
- the powers of the supervisor to set and adjust solvency control levels within the regulatory framework
- the accounting and actuarial framework that applies in the jurisdiction (in terms of the valuation basis and assumptions that may be used and their impact on the values of assets and liabilities that underpin the determination of regulatory capital requirements)
- the comprehensiveness and transparency of disclosure frameworks in the jurisdiction, and the ability for markets to exercise sufficient scrutiny and impose market discipline
- policyholder priority and status under the legal framework relative to other creditors in the jurisdiction
- overall level of capitalisation in the insurance industry in the jurisdiction
- overall quality of risk management and governance frameworks in the insurance industry in the jurisdiction
- the development of capital markets in the jurisdiction and its impact on the ability of insurer's to raise capital
- the balance to be struck between protecting policyholders and the impact on the effective operation of the insurance industry and considerations around unduly onerous levels and costs of regulatory capital requirements.

37. The solvency regime may develop separate approaches for the determination of different regulatory capital requirements, in particular for the determination of the MCR and the PCR. For example, the PCR and MCR may be determined by two separate methods, or the same methods and approaches may be used but with two different levels of safety specified. In the latter case, for example, the MCR may be defined as a simple proportion of the PCR, or the MCR may be determined on different specified target criteria to those specified for the PCR.

38. The PCR would generally be determined on a going concern basis, i.e. in the context of the insurer continuing its operations. On a going concern basis, an insurer would be expected to continue to take on new risks during the established time horizon. Therefore, in establishing the regulatory capital level to provide an acceptable level of solvency, the potential growth in an insurer's portfolio should be considered.

39. Capital should also be capable of protecting policyholders if the insurer were to close to new business. Generally, the determination of capital on a going concern basis would not be expected to be less than would be required if it is assumed that the insurer were to close to new business. However, this may not be true in all cases, since some assets may lose some or all of their value in the event of a winding-up or run-off, for example, because of a forced sale. Similarly, some liabilities may actually have an increased value if the business does not continue (e.g. claims handling expenses).

40. Usually the MCR would be constructed taking into consideration the possibility of closure to new business. It is, however, relevant to also consider the going concern scenario in the context of establishing the level of the MCR, as an insurer may continue to take on new risks up until the point at which MCR intervention is ultimately triggered. The supervisor should consider the appropriate relationship between the PCR and MCR, establishing a sufficient buffer between these two levels (including consideration of the basis on which the MCR is generated) within an appropriate continuum of solvency control levels, having regard for the different situations of business operation and other relevant considerations.

41. It should be emphasised that meeting the capital requirements of a solvency regime should not be taken to imply that further financial injections will not be necessary under any circumstances in future.

42. Regulatory capital requirements may be determined using a range of approaches, such as standard formulae, or other approaches, more tailored to the individual insurer (such as partial or full internal models), which are subject to approval by the supervisor¹⁵. Regardless of the approach used, the principles and concepts that underpin the objectives for regulatory capital requirements described in this guidance paper apply, and should be applied consistently by the supervisor to the various approaches. The approach adopted for determining regulatory capital requirements should take account of the nature and materiality of the risks insurers face generally and, to the extent practicable, should also reflect the nature, scale and complexity of the risks of the particular insurer.

43. Standardised approaches, in particular, should be designed to deliver capital requirements which reasonably reflect the overall risk to which insurers are exposed, while not being unduly complex. Standardised approaches may differ in level of complexity depending on the risks covered and the extent to which they are mitigated or may differ in application based on classes of business (e.g. life and non-life). Standardised approaches should be proportionate to the nature, scale and complexity of the risks that insurers face and should include approaches that are feasible in practice for insurers of all sizes, including small and medium sized insurers, taking into account the technical capacity that insurers need to manage their businesses effectively.

44. By its very nature a standardised approach may not be able to fully and appropriately reflect the risk profile of each individual insurer. Therefore, where appropriate, a solvency regime should allow the use of more tailored approaches subject to approval. In particular, where an insurer has an internal model (or partial internal model) that appropriately reflects its risks and is integrated into its risk management and reporting, the solvency regime should allow and encourage the use of such a model to determine more tailored regulatory capital requirements¹⁶. The use of the internal model for this purpose would be subject to prior approval by the supervisor based on a transparent set of criteria and would need to be evaluated at regular intervals. In particular, the supervisor would need to be satisfied that the insurer's internal model is, and remains, appropriately calibrated relative to the target criteria established for the solvency regime¹⁷.

45. The supervisory regime should also be clear on whether an internal model may be used for the determination of the MCR. In this regard, supervisors should take into account the main objective of the MCR within the regime (i.e. to provide the ultimate safety net for the protection of policyholders), and the ability of the MCR to be defined in a sufficiently objective and appropriate manner to be enforceable (refer to paragraph 33).

¹⁵ A more tailored approach which is not an internal model might include, for example, approved variations in factors contained in a standard formula or prescribed scenario tests which are appropriate for a particular insurer or group of insurers.

¹⁶ It is noted that the capacity for a supervisory regime to allow the use of internal models will need to take account of the sufficiency of resources available to the supervisor.

¹⁷ Refer to the IAIS *Standard and Guidance paper on the use of internal models for regulatory capital purposes* (Oct 2008) for more discussion on this topic.

6.1 Risks to be addressed

Requirement 11

The solvency regime should be explicit as to where risks are addressed, whether solely in technical provisions, solely in regulatory capital requirements or if split between the two, the extent to which the risks are addressed in each. The regime should also be explicit as to how risks and their aggregation are reflected in regulatory capital requirements.

46. The solvency regime should address all relevant and material categories of risk - including as a minimum underwriting risk, credit risk, market risk, operational risk and liquidity risk. This should include any significant risk concentrations, for example, to economic risk factors, market sectors or individual counterparties, taking into account both direct and indirect exposures and the potential for exposures in related areas to become more correlated under stressed circumstances.

47. The assessment of the overall risk that an insurer is exposed to should address the dependencies and interrelationships between risk categories (for example, between underwriting risk and market risk) as well as within a risk category (for example, between equity risk and interest rate risk). This should include an assessment of potential reinforcing effects between different risk types as well as potential “second order effects”, i.e. indirect effects to an insurer’s exposure caused by an adverse event or a change in economic or financial markets conditions¹⁸. It should also consider that dependencies between different risks may vary as general market conditions change, and may significantly increase during periods of stress or when extreme events occur. Where the determination of an overall capital requirement takes into account diversification effects between different risk types, the insurer should be able to explain the allowance for these effects and ensure that it considers how dependencies may increase under stressed circumstances.

48. Any allowance for reinsurance in determining regulatory capital requirements should consider the possibility of breakdown in the effectiveness of the risk transfer and the security of the reinsurance counterparty and any measures used to reduce the reinsurance counterparty exposure. Similar considerations would also apply for other risk mitigants, for example derivatives.

49. The solvency regime should be explicit as to where risks are addressed, whether solely in technical provisions, solely in regulatory capital requirements or if split between the two, the extent to which the risks are addressed in each. The regime should also clearly articulate how risks are reflected in regulatory capital requirements, specifying and publishing the level of safety to be applied in determining regulatory capital requirements, including the established target criteria of the solvency regime (refer to paragraph 52).

50. The IAIS recognises that some risks, such as liquidity risk and operational risk, are less readily quantifiable than the other main categories of risks. Operational risk, for example, is diverse in its composition and depends on the quality of systems and controls in place. The measurement of operational risk, in particular, may suffer from a lack of sufficiently uniform and robust data and well developed valuation methods. Jurisdictions may choose to base regulatory capital requirements for these less readily quantifiable risks on some simple proxies for risk exposure, and/or stress and scenario testing. For particular risks (such as liquidity risk), holding additional capital may not be the most appropriate risk mitigant and it may be more appropriate for the supervisor to require the insurer to control

¹⁸ For example, a change in the market level of interest rates could trigger an increase of lapse rates on insurance policies.

these risks via exposure limits and/or qualitative requirements such as additional systems and controls.

51. However, the IAIS envisages that the ability to quantify some risks (such as operational or liquidity risk) will improve over time as more data becomes available or improved valuation methods and modelling approaches are developed. Further, although it may be difficult to quantify risks, it is important that an insurer nevertheless addresses all material risks in its own risk and solvency assessment.

6.2 Calibration of regulatory capital requirements

Requirement 12

The supervisor should set out appropriate target criteria for the calculation of regulatory capital requirements, which should underlie the calibration of a standardised approach.

Requirement 13

Where the supervisory regime allows the use of approved more tailored approaches such as internal models for the purpose of determining regulatory capital requirements, the target criteria should also be used by those approaches for that purpose to ensure broad consistency among all insurers within the regime.

52. The level at which regulatory capital requirements are set will reflect the risk tolerance of the supervisory regime. Reflecting the IAIS's principles-based approach, this guidance paper does not prescribe any specific methods for determining regulatory capital requirements. However, the IAIS's view is that it is important that individual jurisdictions set appropriate target criteria (such as risk measures, confidence levels or time horizons) for the regulatory capital requirements specified in their solvency regime. Further, each jurisdiction should outline clear principles for the key concepts for determining regulatory capital requirements, considering the factors that a supervisor should take into account in determining the relevant parameters as outlined in this guidance paper.

53. Where a supervisory regime allows the use of other more tailored approaches to determine regulatory capital requirements, the target criteria established should be applied consistently to those approaches. In particular, where a regime allows the use of internal models for the determination of regulatory capital requirements, the supervisor should apply the target criteria in approving the use of an internal model by an insurer for that purpose. This should ensure broad consistency among all insurers, and a similar level of protection for all policyholders, within the solvency regime.

54. With regards to the choice of the risk measure and confidence level to which regulatory capital requirements are calibrated, the IAIS notes that some solvency regimes currently set a confidence level for regulatory purposes which is comparable with a minimum investment grade level. Some examples include a 99.5% VaR calibrated confidence level over a one year timeframe¹⁹, 99% TVaR over one year and 95% TVaR over the term of the policy obligations²⁰.

¹⁹ This is the confidence level required by insurers in the UK when undertaking their Individual Capital Assessment and is the level expected in Australia for those insurers that seek approval to use an internal model to determine their MCR. It is currently envisaged in the European Solvency II project as the level for the calculation of the risk-based Solvency Capital Requirement.

²⁰ Refer to the IAIS *Issues paper on asset-liability management* (Oct 2006) for a description of the risk measures VaR and TVaR.

55. In regards to the choice of an appropriate time horizon, the determination and calibration of the regulatory capital requirements needs to be based on a more precise analysis, distinguishing between:

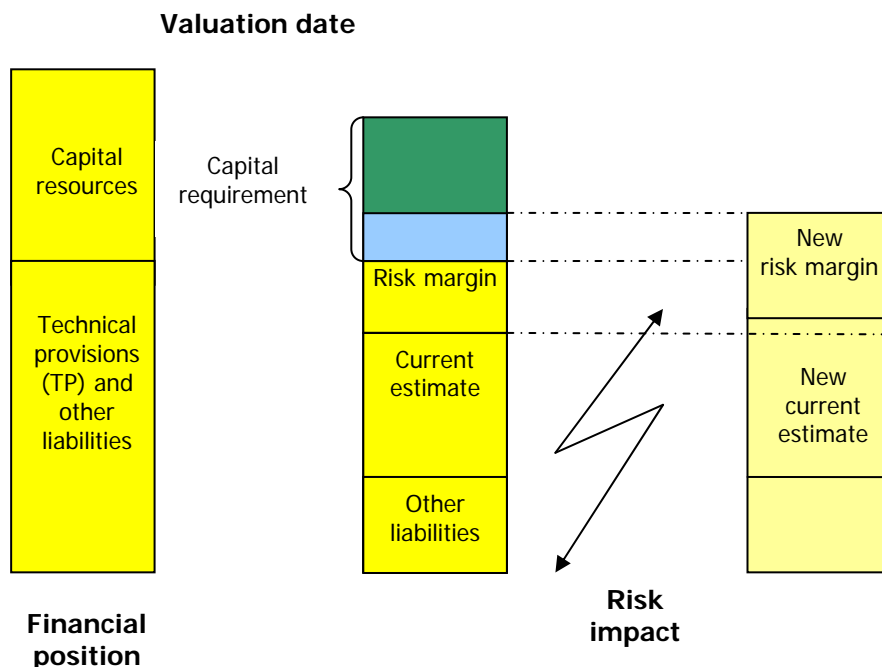
- the period over which a shock is applied to a risk – the ‘shock period’; and
- the period over which the shock that is applied to a risk will impact the insurer – the ‘effect horizon’.

56. For example, a one-off shift in the interest rate term structure during a shock period of one year has consequences for the discounting of the cash flows over the full term of the policy obligations (the effect horizon). A judicial opinion (e.g. on an appropriate level of compensation) in one year (the shock period) may have permanent consequences for the value of claims and hence will change the projected cash flows to be considered over the full term of the policy obligations (the effect horizon).

57. The impact on cash flows of each stress that is assumed to occur during the shock period will need to be calculated over the period for which the shock will affect the relevant cash flows (the effect horizon). In many cases this will be the full term of the insurance obligations. In essence, at the end of the shock period, capital has to be sufficient so that assets cover the technical provisions (and other liabilities) re-determined at the end of the shock period. The re-determination of the technical provisions would allow for the impact of the shock on the technical provisions over the full time horizon of the policy obligations.

58. Figure 2 below (a schematic illustration from the Structure Paper) summarises key aspects relevant to the determination of regulatory capital requirements:

Figure 2: Illustration of Determination of Regulatory Capital Requirements



59. For the determination of the technical provisions, an insurer is expected to consider the uncertainty attached to the policy obligations, that is, the likely (or expected) variation of future experience from what is assumed in determining the current estimate, over the full period of the policy obligations. As indicated above, regulatory capital requirements should be calibrated such that assets exceed the technical provisions (and other liabilities) over a

defined shock period with an appropriately high degree of safety. That is, the regulatory capital requirements should be set such that the insurer's capital resources can withstand a range of predefined shocks or stress scenarios that are assumed to occur during that shock period (and which lead to significant unexpected losses over and above the expected losses that are captured in the technical provisions).

6.3 Procyclicality

60. In a risk-based solvency regime, there is a risk that an economic downturn will trigger supervisory interventions that exacerbate the economic crises, thus leading to an adverse "procyclical" effect. For example, a severe downturn in share markets may result in a depletion of the capital resources of a major proportion of insurers. Under a risk-based solvency regime, this in turn may force insurers to sell shares and to invest in less risky assets in order to decrease their regulatory capital requirements. A simultaneous massive selling of shares by insurers could, however, put further pressure on the share markets, thus leading to a further drop in share prices and to a worsening of the economic crises.

61. However, the system of solvency control levels required by the *Standard on the Structure of Regulatory Capital Requirements* enables supervisors to introduce a more principles-based choice of supervisory interventions in cases where there may be a violation of the PCR control level and this can assist in avoiding exacerbation of procyclicality effects: supervisory intervention is able to be targeted and more flexible in the context of an overall economic downturn so as to avoid measures that may have adverse macro-economic effects.

62. It could be contemplated whether under a risk-based solvency regime further explicit procyclicality-dampening measures would be needed. This may include allowing a longer period for corrective measures (such as, in response to systemic issues) or allowance in the design of a risk-based solvency regime for the calibration of the regulatory capital requirements to reflect procyclicality dampening measures. Overall, when such dampening measures are applied, an appropriate balance needs to be achieved to preserve the risk sensitivity of the solvency regime; it can be expected that a risk-sensitive solvency regime based on current information will normally limit the potential for procyclical developments.

63. In considering the impacts of procyclicality, the influence of external factors (for example, the influence of credit rating agencies) should be given due regard. The impacts of procyclicality also heighten the need for supervisory cooperation and communication.

6.4 Calibration and measurement error

64. The risk of measurement error inherent in any approach to determine capital requirements should be considered²¹. This is especially important where there is a lack of sufficient statistical data or market information to assess the tail of the underlying risk distribution. To mitigate model error, quantitative risk calculations should be blended with qualitative assessments, and, where practicable, multiple risk measurement tools should be used. To help assess the economic appropriateness of risk-based capital requirements, information should be sought on the nature, degree and sources of the uncertainty surrounding the determination of capital requirements in relation to the established target criteria.

65. The degree of measurement error inherent, in particular, in a standardised approach depends on the degree of sophistication and granularity of the methodology used. A more sophisticated approach has the potential to be aligned more closely to the true distribution of

²¹ Measurement error occurs when the calculated risk capital charge will not accurately reflect the "true" requirement on the basis of the insurer's underlying risk distribution and the target criteria. Measurement error can be due to model error (i.e. when an inappropriate model is used) or parameter error (i.e. the parameters used in the model are mis-specified).

risks across insurers. As the sophistication of a standardised approach increases, the outcomes generated would be expected to converge on the target criteria. However, increasing the sophistication of the standardised approach implies higher compliance costs for insurers and validating the calculations would require more intensive use of supervisory resources. The calibration of the standardised approach therefore needs to balance the trade-off between risk-sensitivity and implementation costs.

66. For the calibration of a standardised approach, it is also important to achieve a consistent interplay with the more tailored approaches such as internal models, which can be expected to reflect more closely individual insurer risk profiles and carry a smaller measurement error than a standardised approach. When calibrating the standardised approach, the supervisory regime should consider whether a certain degree of caution should be built into the setting of individual assumptions and parameters in order to reflect the measurement error inherent in the modelling. Under such an approach, there would also be a clear incentive for insurers to improve the quality of the measurement of their risks by developing an internal model (which would then produce capital requirements that would, on average, be lower than the requirement determined by the standardised approach).

7. Supervisory Review

Requirement 14

The solvency regime should be designed so that any variations to the regulatory capital requirement imposed by the supervisor are made within a transparent framework, are proportionate according to the target criteria and are only expected to be required in limited circumstances.

67. As has already been noted, a standardised approach, by its very nature, may not be able to fully and appropriately reflect the risk profile of each individual insurer. In cases where the standardised approach established for determining regulatory capital requirements is materially inappropriate for the risk profile of the insurer, the supervisor should have the flexibility to increase the regulatory capital requirement calculated by the standard approach. For example, some insurers using the standard formula may warrant a higher PCR if they are undertaking higher risks, such as new products where credible experience is not available to establish technical provisions, or if they are undertaking significant risks that are not specifically covered by the regulatory capital requirements.

68. Similarly, in some circumstances when an approved more tailored approach is used for regulatory capital purposes, it may be appropriate for the supervisor to have some flexibility to increase the capital requirement calculated using that approach. In particular, where an internal model or partial internal model is used for regulatory capital purposes, the supervisor may increase the capital requirement where it considers the internal model does not adequately capture certain risks. This may arise, for example, even though the model has been approved where there has been a change in the business of the insurer and there has been insufficient time to fully reflect this change in the model and for a new model to be approved by the supervisor.

69. In addition, a supervisory regime may also be designed to allow the supervisor to decrease the regulatory capital requirement for an individual insurer where the standardised requirement materially overestimate the capital required according to the target criteria. However, such an approach may require a more intensive use of supervisory resources due to requests from insurers for consideration of a decrease in their regulatory capital requirement. Therefore, the IAIS appreciates that not all jurisdictions may wish to include

such an option in their solvency regime. Further, this reinforces the need for such variations in regulatory capital requirements to only be expected to be made in limited circumstances.

70. Any variations made by the supervisor to the regulatory capital requirement calculated by the insurer should be made in a transparent framework and be proportionate in terms of the target criteria. The supervisor may, for example, develop criteria to be applied in determining such variations and appropriate discussions between the supervisor and the insurer may occur. The design of the solvency regime should be such that variations in regulatory capital requirements following supervisory review from those calculated using standardised approaches or approved more tailored approaches should be expected to be made only in limited circumstances.

71. In the context of its overall enterprise risk management framework, an insurer should perform its ORSA and have risk and capital management processes in place to monitor and manage the level of its financial resources relative to its economic capital²² and the regulatory capital requirements set by the solvency regime. In undertaking the ORSA, the insurer would be expected to have considered the extent to which the regulatory capital requirements (in particular, any standardised formula) adequately reflect its particular risk profile. In this regard, the ORSA undertaken by an insurer can be a useful source of information to the supervisor in reviewing the adequacy of the regulatory capital requirements of the insurer and in assessing the need for variation in those requirements. (Refer to section 3 in the IAIS *Guidance paper on enterprise risk management for capital adequacy and solvency purposes* (Oct 2008).)

72. Further, in the context of its ORSA, an insurer should clearly distinguish between current capital needs and its projected future financial position, having regard for its longer-term business strategy and in particular new business plans. Therefore, the insurer should be aware of its financial position, on a going concern basis, relative to its overall solvency needs (including regulatory capital requirements) and should be able to demonstrate an ability to manage its risks over the longer term under a range of plausible adverse scenarios. Again, such information can be an important tool in the supervisory review. Where appropriate in the context of the particular supervisory regime, the supervisor may also require an insurer to undertake periodic, forward-looking continuity analysis and modelling of its ability to meet regulatory capital requirements under various conditions.

8. Supervisory reporting and public disclosure²³

Requirement 15

The solvency regime should be supported by appropriate public disclosure and additional confidential reporting to the supervisor.

²² Economic capital is used in this paper in the same sense as applied in IAIS *Standard and Guidance paper on enterprise risk management for capital adequacy and solvency purposes* (Oct 2008).

²³ Further detail on reporting and disclosure can be found in the following IAIS standards:

- *Standard on disclosures concerning technical performance and risks for non-life insurers and reinsurers* (Oct 2004)
- *Standard on disclosures concerning investment risks and performance for insurers and reinsurers* (Oct 2005)
- *Standard on disclosures concerning technical risks and performance for life insurers* (Oct 2006).

73. Insurers should be required to publicly disclose appropriate qualitative and quantitative information about risk exposures and the components that make up their regulatory capital requirements. Such disclosure increases the ability of the financial markets and consumers to make judgments about dealing with a particular insurer and encourages insurers to adopt sound risk management policies and practices.

74. The supervisory regime should specify which solvency information should be made public to enhance market discipline and provide strong incentives for insurers to conduct their business in a safe, sound and efficient manner which treats policyholders fairly. It is appropriate that commercially sensitive information (such as trade secrets, proprietary information or information that, if disclosed, may have adverse effects on the insurer) not be publicly disclosed.

75. In most instances, the supervisor will require additional confidential reporting by the insurer of information relevant to its regulatory capital requirements. Supervisors should not unduly require such further information where it is already publicly disclosed unless it clearly supports effective supervision. However, information provided to the supervisor which is subject to confidentiality will support and foster openness on commercially sensitive issues between the supervisor and the insurer.