



INDIVIDUAL CAPITAL ASSESSMENT (ICA)

A GUIDE TO THE ICA PROCESS FOR INSURERS

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1. Foreword

This Guide to the ICA Process for Insurers is intended to complement the FSA's new Handbook material¹ on ICA, which came into effect on 31 December 2006.

It is structured around the nine main requirements set out by the FSA under three 'sub-principles for ICAS', which may be summarised as:

- 1) The firm's assessment of the adequacy of its capital resources
- 2) Comparability to a 99.5% / 1 year probability that the value of the firm's assets will exceed the value of their liabilities
- 3) Model methodology : documenting the firm's reasoning and judgement underlying the ICA assessment

This Guide provides a commentary to these requirements. It has been prepared by the Association of British Insurers (ABI), in conjunction with the International Underwriting Association (IUA), the Investment & Life Assurance Group (ILAG), Lloyd's and the Lloyd's Market Association (LMA).

¹ As set out in CP 06/16 (issued September 2006), PS 06/14 (issued December 2006) and the Prudential Requirements for Insurers (Amendment) Instrument approved by the FSA Board on 15 December 2006

1.1 Status of the Guide and implementation

This Guide is intended to provide advice to companies in developing their ICA submission. It describes a variety of established approaches companies currently use to meet the ICA requirements, as well as emerging thinking in the industry on how to prepare the ICA. Accordingly, the Guide does not try to suggest a one-size-fits-all approach to ICA, since the range of risks captured and the narrative provided in the ICA submission will depend upon the specific circumstances of the firm and the nature of the business it is writing.

The Guide is not a replacement for the FSA's own rules and guidance for ICA. Whilst the FSA were consulted during the development of this document, this Guide does not constitute guidance from the FSA, and the advice and approaches outlined here are not binding on firms. In the event of conflict between the Guide and the FSA Handbook, the FSA's Handbook text prevails. Ultimately, interpretation of the law is a matter for the courts.

Instead, this Guide complements the FSA's ICA rules and guidance with advice on the approaches that firms may wish to use in meeting the FSA's requirements. Firms are not bound to follow this advice and there may be circumstances where it is appropriate to adopt different techniques.

This Guide has been published by the leading trade bodies for the insurance industry to draw together in a single document a wide range of advice and good practice that has been developed for ICA.

This Guide also provides an opportunity for the industry to share with the FSA, in an open and transparent way, emerging good practice. Through our dialogue with firms, and with the FSA, we can record and disseminate information relating to potential concerns or obstacles that firms may face in preparing their ICA along with, we hope, suggestions as to how these might be overcome.

1.2 Definition of terms

The terms used in this document will normally have the same meaning as they would have in the appropriate section of the FSA Handbook to which our advice refers. Where FSA do not provide a definition, and unless we provide our own specific definition, then it should be assumed that a term or word is being used with its normal, natural meaning relevant to the context of the sentence.

1.3 Period for comment and publication of final version

We first published this Guide on 25 September 2006 as a draft for comment, with a deadline of 31 October to receive those comments. We have incorporated appropriate revisions based on this feedback. This final draft has been approved for publication by the ABI's Board and the

other sponsoring associations, to complement the FSA's new rules and guidance for ICA which came into effect on 31 December 2006.

1.4 Review and update of the Guide

We believe this Guide provides a more appropriate place than the FSA Handbook to publish good practice for ICA, offering greater flexibility to record and update our advice on the ICA process. Accordingly, we intend to review the Guide at least annually, in consultation with firms, trade associations and the FSA, to ensure it remains appropriate and up to date. In doing so, we will draw upon the experience of firms in applying the FSA's new rules and guidance for ICA, and of the FSA in reviewing the ICA assessments.

2. FSA's 'ICA sub-principles'

Sub-Principle 1 : Methodology of capital resources assessment (INSPRU 7.1.15R)

Where a firm is carrying out an assessment of the adequacy of its overall financial resources in accordance with GENPRU 1.2, the assessment of the adequacy of the firm's capital resources must:

- (1) reflect the firm's assets, liabilities, intra-group arrangements and future plans;*
- (2) be consistent with the firm's management practice, systems and controls;*
- (3) consider all material risks that may have an impact on the firm's ability to meet its liabilities to policyholders; and*
- (4) use a valuation basis that is consistent throughout the assessment.*

Sub-Principle 2 : ICA submitted to FSA : confidence level (INSPRU 7.1.42R)

Where the FSA requests a firm to submit to it a written record of the firm's assessments of the adequacy of its capital resources carried out in accordance with INSPRU 7.1.15R, those assessments must include an assessment comparable to a 99.5% confidence level over a one-year timeframe that the value of assets exceeds the value of liabilities, whether or not this is the confidence level otherwise used in the firm's own assessments.

Sub-Principle 3 : Documenting ICAs submitted to the FSA (INSPRU 7.1.49R)

The written record of a firm's individual capital assessments carried out in accordance with INSPRU 7.1.15R submitted by the firm to the FSA must:

- (1) in relation to the assessment comparable to a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities, document the reasoning and judgements underlying that assessment and, in particular, justify:*
 - (a) the assumptions used;*
 - (b) the appropriateness of the methodology used; and*
 - (c) the results of the assessment; and*
- (2) identify the major differences between that assessment and any other assessments carried out by the firm using a different confidence level.*

3. Advice and guidance material

FSA ICA SUB-PRINCIPLE 1.1 [INSPRU 7.1.15R]

Where a firm is carrying out an assessment of the adequacy of its overall financial resources in accordance with GENPRU 1.2, the assessment of the adequacy of the firm's capital resources must reflect the firm's assets, liabilities, intra-group arrangements and future plans.

Context and FSA Guidance

FSA Guidance explains that the capital assessment should reflect both the insurer's desire to fulfil their business objectives and its responsibility to meet its liabilities to policyholders. Accordingly, the capital assessment should demonstrate that the firm holds sufficient capital to be able to make planned investments and take on new business (within an appropriate planning horizon). It should also ensure that if the firm had to close to new business it would be able to meet its existing commitments. Similarly, for closed firms, the capital assessment should demonstrate that the firm can meet its existing liabilities.

The definition of 'new business' is important in this context. FSA Guidance explains that where an obligation exists on the insurer to renew an insurance contract, this business should be considered as part of the firm's existing liabilities, and not treated as new business. This would include multi-year general insurance contracts and the exercise of options by long-term policyholders.

In *GENPRU 1.2.30R – 1.2.41G* FSA set out a number of review requirements relating to the key areas of risk described in the ICA. FSA guidance states that firms should carry out these assessments at least annually, or more frequently if changes in the business, strategy, nature or scale of its activities or operational environment suggest that the current level of financial resources is no longer adequate.

Industry Guidance

Below we discuss three points: review and update of the ICA, the treatment of new business where there is no obligation to renew, and allowing for a notice period before an underwriting agent employed by the firm stops writing new business.

Review and update of the ICA

FSA's rules and guidance, in particular *GENPRU 1.2.40G*, make clear that the ICA should be updated at least annually and more frequently when other changes demand it. We would suggest that the senior management of firms think about their ICA whenever a major strategic decision is made, to consider whether any new course of action will affect the assumptions made in the ICA. Accordingly, it may be sensible to include review of the ICA within the business

planning cycle. The frequency with which the formal ICA is renewed and re-published would depend on the materiality of any changes made to the business plan. It would also depend on whether there was any significant divergence between actual experience and those assumptions originally made in the business plan, but only those changes or divergences that are substantial would suggest the need for a new ICA in advance of the annual review.

The ICA process should form an integral part of the board's management of risk within the organisation. Clear records and documentation² of the ICA process will help to demonstrate how this has been achieved.

New Business

FSA Guidance makes explicit an expectation that insurance contracts, including an obligation on the insurer to renew, should be treated as part of existing liabilities. However, where there is no such obligation, we would suggest that firms treat as new business the renewal of all policies where there is no express legal or contractual obligation on the firm to renew.

Capital should be held to cover all planned underwriting activity. New business should always be assumed to increase the aggregate net capital requirement. A one-year time period may be considered reasonable in most circumstances, although a firm might consider less than one year of new business if it can justify the assumption that it could react to emerging experience more rapidly, for example by increasing premium rates, reducing volumes, changing business mix or raising further capital.

In some circumstances, it may be appropriate to consider more than one year of new business. For example, the firm may be unable or unwilling to change its new business strategy in the light of adverse experience. Alternatively, a firm may consider several years' new business to help understand risks that cannot otherwise be captured easily in the capital model. Examples of such risks include trends in market profitability, risks that will only be known after the balance sheet date, and uncertainty over management actions. Firms should justify their rationale for the selection of their new business period, with reference to the nature of the firm.

Use of underwriting agents

Where a firm has delegated authority to an underwriting agent to take on new business, we suggest that the firm would need to consider how a closure to new business might be achieved. Specifically, the firm may need to allow appropriately for the new business that may be written by the underwriting agent during the notice period under the contract between the insurer and the underwriting agent. The firm would also need to consider any penalties due on early termination.

² For example, version numbers and dates at which Boards have accepted the ICA should be recorded in the ICA document

FSA ICA SUB-PRINCIPLE 1.2 [INSPRU 7.1.15R]

Where a firm is carrying out an assessment of the adequacy of its overall financial resources in accordance with GENPRU 1.2, the assessment of the adequacy of the firm's capital resources must be consistent with the firm's management practice, systems and controls.

Context and FSA Guidance

FSA Guidance explains that whilst the firm's capital assessment should reflect the firm's ability to react to events as they occur, there are a number of constraints on a firm's ability to take 'management actions'.

Industry Guidance

Below we discuss two points, constraints on management actions – especially relating to employment of staff and, the run-off of liabilities and how this might be modelled.

Constraints on Management Actions

Firms need to take a realistic and practical assessment of the scope to take management actions. For example, whilst the firm may have the legal authority to make workers redundant, it must consider how to maintain an effective business operation. The firm needs staff to meet its commitments to customers³, for example to handle claims and make payments.

Similarly, the firm may have the right to alter pay and benefits for employees or contract workers, but if the firm cannot maintain competitive remuneration workers will leave, often in an unpredictable fashion, which may jeopardise the effective running of the business. There may also be a number of management actions that a firm could take to reduce the overall cost of the pension scheme obligation at a time of stress, but the firm will need to be able to explain its choice of assumptions about the method and timing of funding for any emerging deficit.

For life firms in particular, it may be necessary to consider the likely impact of management actions against the commitments made in its Principles and Practices of Financial Management (PPFM) documents. (See also advice under principle 3.1 in this Guide).

Modelling the run-off of liabilities

A firm's capital assessment would normally reflect the circumstances in which it might expect the existing liabilities to be discharged. Factors typically taken into account in this part of the assessment include :

- a) closure to new business;

³ Including the obligations deriving from FSA's High Level Principle 6 : 'Treating Customers Fairly'

- b) the management of the run-off (e.g. out-sourcing, commutations, transfer of portfolio);
- c) the costs that can be removed if new business is no longer being written;
- d) the one-off costs that might be associated with removing these new business costs;
- e) the loss of economies of scale if new business is no longer written;
- f) the possible changes in the asset portfolio;
- g) other management actions that might be taken to reduce costs or to minimise risks, while not reducing the protection of policyholder liabilities, or conflicting with TCF; and
- h) any constraints on moving capital from ring-fenced funds such as with-profits funds.

FSA ICA SUB-PRINCIPLE 1.3 [INSPRU 7.1.15R]

Where a firm is carrying out an assessment of the adequacy of its overall financial resources in accordance with GENPRU 1.2, the assessment of the adequacy of the firm's capital resources must consider all material risks that may have an impact on the firm's ability to meet its liabilities to policyholders.

Context and FSA Guidance

FSA Guidance indicates that the firm's capital assessment should demonstrate, to the required level of confidence, that the firm's liabilities to policyholders will be paid. The assessment should also consider all material risks that may arise before these liabilities are met.

Industry Guidance

We have advice for firms on the method for assessing such changes in longer-term risks, taking account of the requirement for a defined level of confidence in meeting policyholder liabilities. We also describe a number of the primary, generic risk types that may feature in the firm's capital assessment. Naturally, the range of risks captured in the assessment and the extent of any supporting narrative and analysis will depend upon the specific circumstances of the firm and the nature of the business it is writing.

Assessing risk and demonstrating the required level of confidence in meeting policyholder liabilities

We consider that a value-at-risk (VaR) approach or the use of sudden changes in conditions may provide a suitable method to meet the FSA's requirement to demonstrate that policyholder liabilities will be met to the required level of confidence.

For example, the risk of a fall in the value of assets could be quantified as either:

- (i) a sudden change in conditions with a revaluation of the assets and liabilities on a best estimate basis (consistent with a return to more benign conditions); or
- (ii) a fall in the value of assets over an extended period.

In this context, it is helpful to refer to FSA Guidance (INSPRU 7.1.31G) which indicates that firms may exclude from their capital assessment risks which have an immaterial effect on the firm's financial position or only occur with an extreme probability.

Major risk types pertinent to ICA

In *GENPRU 1.2.30R* FSA provide a list of generic risk types that may be relevant to a firm's ICA, depending on the size and nature of its business.

Drawing on this list, we discuss below many of the major risks firms are likely to consider in their capital assessment. Not all of these risks will be relevant to every firm, but it is likely that many will. We also set out advice on the approaches that may be used to analyse these risks and describe factors that firms may wish to take into account in assessing the adequacy of their capital resources:

Insurance Risk

Insurance risk typically refers to fluctuations in the timing, frequency and severity of insured events, relative to the expectations of the firm at the time of underwriting. Insurance risk may also refer to fluctuations in the timing and amount of claim settlements. For general insurance business, examples of insurance risk include variations in the amount or frequency of claims or the unexpected occurrence of multiple claims arising from a single cause. For life insurance business, examples include variations in the mortality and persistency rates of policyholders, or the possibility that guarantees could acquire a value that adversely affects the finances of a firm and its ability to treat all its policyholders fairly, whilst adhering to the firm's contractual obligations. More generally, insurance risk includes the potential for expense overruns relative to pricing or provisioning assumptions.

It may also be appropriate to consider the extent to which variations in insurance costs may arise as a result of catastrophe events, including both risk and event losses; the cost of reinstatement premiums any possible reinsurance exhaustion; unexpected claim types including latent liabilities, court awards, contract disputes; trends in costs over a period of time; and the effect of loss ratios being higher than planned (in other words, worse than would be suggested by analysing historic loss ratio experience and volatility).

Consideration might also be given to the extent to which competitive pressures can limit the firm's ability to charge adequate premiums for renewals and new business.

In deciding whether, and to what extent, a firm allows for new business in its capital assessment it may also be appropriate to consider changes in the volume and mix of new business. Some further areas to consider in developing Insurance Risk scenarios might include:

Underwriting Risk, (General and Life):

- the adequacy of the firm's pricing, taking the insurance premium cycle into account and the high level of uncertainty in pricing in new or emerging markets;
- the uncertainty of claims experience;
- the dependence on intermediaries for a disproportionate share of the premium income;
- geographical or jurisdictional concentrations;
- the appropriateness of policy wordings;
- the risk of mis-selling, for example, the number of complaints or disputed claims; and

- the tolerance for expense reserve variations or variations in expenses (including indirect costs).

Underwriting Risk (General):

- the length of tail of the claims development and latent claims; and
- the effects of rapid growth or decline in the volume of the underwriting portfolio.

Underwriting Risk (Life):

- the uncertainty of future investment returns;
- the effects of rapid growth or decline in the volume and nature of new business written; and
- the ability of firms to adjust premium rates or charges for some products.

Reserving and Claims Risks (General and Life)

- the frequency and size of large claims;
- possible outcomes relating to any disputed claims, particularly where the outcome is subject to legal proceedings;
- the ability of the firm to withstand catastrophic events, increases in unexpected exposures, latent claims or aggregation of claims;
- the possible exhaustion of reinsurance arrangements, both on a per risk and per event basis;
- social and societal factors driving an increase in the propensity to claim and to sue; and
- other social, economic and technological changes.

Reserving and Claims Risks (General):

- the adequacy and uncertainty of the technical claims provisions, such as outstanding claims, IBNR and claims handling expense reserves;
- the adequacy of other underwriting provisions, such as the provisions for unearned premium and unexpired risk reserves;
- the appropriateness of catastrophe models and underlying assumptions used, such as possible maximum loss (PML) factors used;
- unanticipated legal judgements and legal change with retrospective effect specifically with regard to the claims reserves; and
- the effects of inflation.

Reserving and Claims Risks (Life):

- the adequacy and sensitivity of the mathematical reserves to variations in future experience, including:
 1. the risk that investment returns differ from those assumed in the reserving assumptions;
 2. the risk of variations in mortality, morbidity and persistency experience and in the exercise of options under contracts;

3. the rates of taxation applied, in particular where there is uncertainty over the tax treatment; and
- unanticipated legal judgements and legal change with retrospective effect specifically with regard to the impact on mathematical reserves.

Credit Risk

Credit risk typically refers to any risk in an insurer's ability to recover money owed by third parties. This includes all counterparties, including reinsurance firms, intermediaries, policyholders, banks and issuers of investments.

We suggest that firms should not only consider default, but also partial impairment, delay in settlement and the risk that credit ratings may be downgraded or credit spreads widen within the time horizon of the assessment (which may reduce the value of the debt instrument). Other relevant considerations include the risks arising from concentration of relationships with individual counterparties, lack of contract certainty and contract disputes.

These risks can emerge not only in connection with external parties but may also arise within a group.

Some further areas to consider in developing the credit risk stress tests and scenario analyses might include:

- the adequacy of the reinsurance programme and whether it is appropriate for the risks selected by the firm and adequately takes account of the underwriting and business plans;
- the collapse of a reinsurer or several reinsurers on the firm's reinsurance programme and the subsequent impact this may have on the firm's outstanding reinsurance recoveries and IBNR recoveries;
- the prospect of reinsurance rates increasing substantially or reinsurance being unavailable;
- any existing or possible future disputes relating to reinsurance contracts on a pessimistic basis, to the extent that they are not already reflected in the value attributed to the reinsurances;
- greater losses from bad debts than anticipated;
- deterioration in the extent and quality of collateral; and
- guarantees given by the insurer of the performance of others, whether under contracts of insurance or otherwise.

Market Risk

Market risk typically refers to the risk that arises from fluctuations in the values of or income from assets, from interest rates or exchange rates.

It will usually be appropriate to consider both increases and decreases in the market value of different asset classes, taking into account the possibility that opposing movements in the value of different asset classes may be more onerous than movement of all values in the same direction.

It may be inappropriate to assume that matching of liabilities or the use of hedging strategies can completely eliminate exposure to market risks. Firms may need to allow for the potential costs of replacing short-term hedges or the costs associated with rebalancing their portfolio of assets where (perhaps under stressed conditions) there is a material risk that the matching / hedging strategy may have a flaw or the individual instruments may be subject to default.

Firms may also need to consider their exposure to changes in the shape of yield curves, which can produce quite different results to a parallel shift.

Firms with assets or liabilities in currencies other than sterling may also need to allow for shifts in asset values relative to liability values arising from currency fluctuations.

Some further areas to consider in developing the market risk scenario might include:

- the possibility of a severe economic or market downturn or upturn leading to adverse interest rate movements affecting the firm's investment position;
- unanticipated losses and defaults of issuers;
- price shifts in asset classes, and their impact on the entire portfolio;
- inadequate valuation of assets;
- the direct impact on the portfolio of currency devaluation, as well as the effect on related markets and currencies;
- the extent of any mismatch of assets and liabilities, including reinvestment risk;
- the impact on the portfolio value of a dramatic change in the spread between a market index of interest rates and the risk-free interest rates; and
- the extent to which market moves could have non-linear effects on values, such as derivatives.

Liquidity Risk

Liquidity risk typically refers to the risk that a firm reaches a position where, although total assets exceed the value of liabilities, the firm does not have sufficient financial resources available in cash to enable it to meet its obligations as they fall due, or can secure such resources only at prohibitive cost.

When assessing liquidity risk, a firm would usually consider the extent of mismatch between assets and liabilities and the value of assets held in highly liquid, marketable forms that may be realised should unexpected cashflows lead to a liquidity problem. This may include consideration of the effect on cashflows of the exercise of options by policyholders and the consequent rapid disposal of assets that may mean that best prices cannot be achieved. Where the firm has to rely on finance facilities to provide liquidity, firms may need to consider the cost and continuity of this finance.

Some further areas to consider in developing the liquidity risk scenario might include:

- any mismatching between expected asset and liability cash flows;
- the inability to sell assets quickly;
- the extent to which the firm's assets have been pledged;
- the cash-flow positions generally of the firm and its ability to withstand sharp, unexpected outflows of funds via claims, or an unexpected drop in the inflow of premiums; and
- the possible need to reduce large asset positions at different levels of market liquidity, and the related potential costs and timing constraints.

Operational Risk

Operational risk can be defined as the risk of an incident occurring which leads to or could lead to the actual outcome of a business process to differ from the expected outcome due to inadequate or failed processes, people, systems, or external factors.

Examples of some issues that a firm might want to consider include:

- the likelihood of fraudulent activity occurring that may impact upon the financial or operational aspects of the firm;
- the technology risks that the firm may be exposed to regarding its operations. For example, risks relating to both the hardware systems and the software utilised to run those systems;
- the reputation risks to which the firm is exposed. For example, the impact on the firm if the firm's brand is damaged resulting in a loss of policyholders from the underwriting portfolio;
- the marketing and distribution risks that the firm may be exposed to. For example, the dependency on intermediary business or a firm's own sales force;
- the impact of legal risks. For example a non-insurance related legal action being pursued against the firm;
- the management of employees - for instance: withdraw of goodwill by dissatisfied staff, staff strikes, fraud or other acts which could give rise to a loss of reputation;
- the resourcing of key functions including risk management, ensuring there are a sufficient number of staff with an appropriate mix of skills in areas such as underwriting, claims handling, accounting, actuarial and legal expertise.

A firm may consider that investigation of operational weaknesses and corrective action is a better response than holding capital and may believe that a certain degree of operational risk is within its pre-defined risk tolerance. However, until the firm accurately identifies and corrects any deficiencies it should consider capital as an interim response to the risk.

It is often the case that operational loss data is limited for an individual firm or even for the insurance industry as a whole⁴. So it is unlikely to be appropriate

⁴ However, ABI's ORIC initiative is seeking to address this, see : <http://www.abioric.com/>

to rely solely on the firm's own experience when assessing the capital impact of operational risk.

Along with the application of tools specific to the individual firm, industry and sector data as well as expert judgement will always be required when assessing and managing operational risk. Firms will need to document their underlying thinking, to explain how the capital calculations relate to the firm's day-to-day risk management approach. Consideration may also need to be given to the management of previous loss events both from within the firm and externally.

Where risks are identified which overlap with operational risk (e.g. expenses) firms would typically want to ensure that these risks are included in one of the categories of the assessment (and not missed or double counted).

Firms would also normally want to ensure that their assessment of operational risk capital relates to their own business, systems and controls and management, rather than simply rely on applying a loading to other elements of its risk capital, premium income or provisions. Set out below are some of the key issues raised by the FSA in the context of operational risk :

Cross-cutting risks (e.g. mis-selling)

It is important to consider the broad economic context and likely changes in financial markets. Unplanned or unexpected costs may arise in a number of different ways, for example from possible mis-selling, either from past business or from future new business. The firm should also be aware of the possibility that outstanding projects and risk mitigation programmes may not be completed on time or may not deliver the expected benefits.

Specific risks (e.g. outsourcing)

It should not generally be assumed that an outsourcing arrangement isolates the firm from all risks, even if contractual terms place obligations on the outsourcer in this area. Where a firm has outsourced aspects of its business it should be able to justify the extent to which it has assumed that outsourcing reduces the risk of increases in future expenses by reference, for example, to the credit rating of the outsourcer and relevant contractual factors.

Where outsourcing services are provided by a company within the same group, the firm should consider both the risks that the group company is taking and the extent to which capital to mitigate these risks is likely to come from the insurer's own resources. Where the service company does not hold capital of its own or does not have the right to call on additional capital when required, then typically the capital for the outsourcer's risks should be held by the insurer.

Group Risk

Group risk typically refers to the risks a firm is exposed to as a member of a group. In many cases, being a member of a group can provide significant

advantages in terms of financial strength, technical expertise and management experience. However, there may be group risks external to the individual entity that may deplete or divert financial resources held by the individual firm to meet liabilities arising from the parent or another entity in the group.

Accordingly, entities that are members of a group may need to consider, within their entity specific ICA:

- i) The accumulation of risk arising from one counterparty where several different entities within the group may undertake separate transactions with the same counterparty (e.g. significant investments in a third party by several members of the group or multiple reinsurance contracts across the group with a single reinsurer); and
- ii) The risk that reputation damage to one firm will have knock-on effects to other entities within the group (i.e. brand failure).

FSA guidance (INSPRU 7.1.22G – INSPRU 7.1.24G) provides further specific recommendations on the treatment of intra-group capital arrangements.

Other potential risks include :

Pension Schemes

Where a material deficit has arisen, it would normally be appropriate to allow for a realistic assessment of the additional costs of reducing the deficit as part of the firm's ICA. The costs should take into account senior management's views of the suitable time period and contribution rates that the firm can practically make. The regulatory constraints currently applying, and realistically expected to apply in the future, should also be considered.

Indeed, it may be appropriate to take into account the risks associated with a defined benefit scheme which covers the employees of a service company used by the firm, to the extent that the costs of operating the service function is met from the fees paid by the insurer.

Many of the risks affecting the pension scheme will be common to the risks affecting the firm's insurance business, so the firm would need to be able to justify any significant differences in the assumptions and scenarios used for the pension scheme as compared to its insurance business.

Tax considerations

A firm will need to be able to explain the key tax assumptions made and the extent to which it is taking credit within its assessment for tax assets.

While it will often be impractical to model with precision the tax regime that applies to the firm, the ICA should include an allowance for the material features of the tax regime, since these may have a significant impact on the capital requirements. Surplus assets not required to meet the firm's ICA should

normally be shown on the balance sheet net of any tax⁵ that would arise on the realisation of unrealised gains or recognition of unrecognised profits, such as the valuation of in-force business or release of reserving margins.

In the extreme loss events being considered in the ICA, there may be opportunities for firms to realise tax assets that would not be recognised in normal circumstances. Where such credit is taken, firms should consider the possibility of permanent impairment of tax assets or material reductions in their value, for example, owing to timing issues or dependency on profit streams outside the business, which may not emerge in those stressed circumstances.

⁵ Or if assets are shown gross then an appropriate deferred tax liability should be established

FSA ICA SUB-PRINCIPLE 1.4 [INSPRU 7.1.15R]

Where a firm is carrying out an assessment of the adequacy of its overall financial resources in accordance with GENPRU 1.2, the assessment of the adequacy of the firm's capital resources must use a valuation basis that is consistent throughout the assessment.

Context and FSA Guidance

FSA Guidance suggests that the valuation approach should not contain margins for risk nor should the approach be optimistic. The guidance indicates that firms should carry out a broad reconciliation of the key parts of any balance sheet used in the capital assessment with any corresponding entry from audited results.

Industry Guidance

We believe this is a useful validation and cross-reference. It will help firms to identify:

- the main differences in methodology;
- any changes in the underlying assumptions; and
- different regulatory constraints such as the admissibility rules, explicit valuation margins and discounting for anticipated investment returns.

Valuation of assets and liabilities

The valuation of traded assets would normally be based on the actual market price⁶ of the portfolio of assets at the relevant valuation date. For most insurance liabilities and some assets there is no liquid market with published price data, so the market price is more difficult to determine. In these cases, the valuation would normally be based on the firm's best estimate of:

- i) the realisable value of the assets on the open market; and
- ii) an expected present value of the liabilities, allowing for the time value of money.

Where a firm is unable to use a realistic approach as described, there are alternatives that may be used, such as valuations derived from company accounts. In such cases, the firm would need to demonstrate that this valuation could reasonably be expected to result in total available resources no greater than would be calculated under a realistic approach.

Examples of such evidence would include :

⁶ Typically the bid price

- i) demonstration that the liability valuation approach makes less allowance for the time-value of money than it would under a realistic valuation; and
- ii) demonstration that the book value of traded assets is no higher than the market value of the same assets.

Inclusion of dividends

A firm would normally include, within its capital assessment, at least an allowance for future dividend payments to the extent that these have been declared and represent a current liability. Likewise, declared dividend payments to be received from intra-group companies may also be included in the ICA

FSA ICA SUB-PRINCIPLE 2 [INSPRU 7.1.42R]

Where the FSA requests a firm to submit to it a written record of the firm's assessments of the adequacy of its capital resources carried out in accordance with INSPRU 7.1.15R, those assessments must include an assessment comparable to a 99.5% probability over a one-year timeframe that the value of assets exceeds the value of liabilities, whether or not this is the confidence level otherwise used in the firm's own assessments.

Context and FSA Guidance

In this principle the FSA define a criteria against which they will judge capital assessments. Their Guidance makes clear that firms are not bound by the 99.5% / 1 year test, but that the firm should be able to justify its choice of a longer time horizon and explain how the confidence interval chosen by the firm is comparable to the 99.5% / 1 year standard.

Industry Guidance

Whilst the FSA have a clear interest in establishing a common point of reference for ICA assessments across the industry, a firm's management will determine their own risk appetite and select a risk measure they consider appropriate to the on-going management of their business.

FSA have emphasised that the capital assessment should be owned by the firm and driven by business need, rather than engineered as a tool of regulatory compliance. It is the use and ownership by all parts of the business of this assessment that make it a valuable mechanism for managing and controlling risk and hence to determine the appropriate level, quality and allocation of capital.

FSA ICA SUB-PRINCIPLE 3.1 [INSPRU 7.1.49R (1)]

The written record of a firm's individual capital assessments carried out in accordance with INSPRU 7.1.15R submitted by the firm to the FSA must in relation to the assessment comparable to a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities, document the reasoning and judgements underlying that assessment and, in particular, justify the assumptions used.

Context and FSA Guidance

FSA Guidance provides a clear link between this sub-principle and the requirements in *GENPRU 1.2*, that a firm must maintain its own assessment of the adequacy of its financial resources. In essence, this requires a firm to document the reasoning and judgements underlying its ICA, justifying the assumptions and methodology used, and to explain any major differences between its ICA and the firm's own assessment, where this is different from the ICA.

FSA set out a number of requirements covering :

- (i) the choice of assumptions;
- (ii) the evidence required to support these assumptions; and
- (iii) the regular review of assumptions.

We set out below some further advice on these points.

Industry Guidance

The main categories of assumptions firms may need to consider are:

- Expected outcomes for the key risks;
- Variability and/or possible extreme outcomes for the key risks;
- The way that the risks aggregate, in particular assumptions about lack of correlation or dependency between risks; and
- The way that the business responds to the risk factors, including the actions of management, policyholders and other stakeholders whose behaviour can affect the firm's financial position.

Specific justification of each *individual* assumption would not usually be required, but a firm would normally document the approach it has used to derive sets of similar assumptions.

To illustrate the point we set out a number of examples below:

Examples for life insurers :

- i) When setting a best estimate lapse assumption, a firm would normally consider an analysis of its lapse experience over recent years showing variation by:
- type of contract;
 - length of the contract term or duration of contract since issue⁷;

Firms would not necessarily assume that all contracts experience a rise or fall in lapse experience if variation in experience would be more onerous, but the assumptions used should be appropriate to the circumstances of the firm. Firms will also want to consider :

- how fluctuations in recent experience are dealt with in determining best estimate assumptions for future experience; and
 - the relevance and reliability of the data from which the experience analysis has been drawn.
- ii) When considering the best estimate assumption for future expenses for each homogeneous risk group, a firm would typically prepare an analysis of expenses across the business, and then consider direct expenses allocated to each specific risk group. Future expenses such as renewal and other maintenance expenses would reflect the expected ongoing expense levels required to manage the in-force business (including investment in systems required to support that business and allowing for future inflation). Overheads must be covered by the business and may be allocated between new and in-force business to reflect current business plans and future expectations. All expected expense overruns, including holding company operating expenses, overhead costs and development costs such as those incurred in start-up operations, would also need to be allowed for.

Examples for non-life insurers :

- i) When considering the effect of the underwriting cycle, a firm would normally explain how their ICA reflects the external pressures of lower premium rates and in particular the risk that premium rates will be lower than those anticipated in their business plan.
- ii) when assessing claims variability, firms would normally analyse their underwriting risk split by attritional, large and catastrophe claims. This split should enable firms to apply the results for other business decision purposes, for instance, to evaluate and construct a suitable reinsurance programme.

Use of Prudent Assumptions

⁷ or other risk classification as appropriate to a firm's business

Wherever a firm has used an assumption that it regards as prudent (i.e. would tend to give a higher capital requirement than the corresponding best estimate assumption), it should distinguish between:

- i) a loading intended to compensate for parameter or model error; and
- ii) prudence intended to address another concern, for example, a known weakness elsewhere in the ICA.

Where a firm believes areas of prudence in the ICA could compensate for other areas of optimism, it should quantify the impact and the extent to which one offsets the other.

While it is acceptable for firms to use prudent assumptions to compensate for a more approximate modelling approach, this prudence should not also be taken as compensation for areas of optimism elsewhere in the model.

Evidence to support the choice of assumptions

FSA Guidance makes clear that firms need to be able to support their choice of assumptions, whether through the use of data or by expert judgement. In addition to the Guidance provided by the FSA, we would suggest that firms may wish to consider the following points :

- i) Where possible and appropriate, mathematical assumptions are justified by the use of back-testing.
- ii) Where a scenario generator has been used, the rationale for choosing the particular statistical distribution should be explained, particularly where limited data is used to calibrate models that make use of the 'distribution tail'.
- iii) Firms demonstrate how they have satisfied themselves that the calibration of their model is appropriate and suited to their business.
- iv) Firms should consider different periods of historical market data as part of the overall calibration process. This helps to justify the final selection of assumptions, and to understand likely parameter estimation error.

Regular review of assumptions

FSA Guidance indicates that firms should regularly review the key parameters underpinning the model. We set out below some suggestions covering the nature and scope of this review.

The review of the parameters may include a degree of back-testing. The nature and extent of this back-testing would depend on the nature of each assumption. Some assumptions, such as the expectation of certain distributions, may be derived entirely from one year's experience; for these assumptions, comparison of the most recent year's experience with previous expectations can help inform future capital assessments.

For other assumptions, most commonly those relating to the variance of a distribution and/or stressed outcomes, the relative importance of one year's experience is much more limited.

For all assumptions, it may be appropriate to consider how emerging experience might change the firm's view of the assumptions to be used.

The selection of parameters in the calibration of the firm's capital assessment carries some uncertainty, even where a substantial quantity of data is available. The most common source of uncertainty is a lack of credible and relevant data on which to base the main assumptions. Firms will need to understand the strength and reliability of the information available both for the best estimate assumptions and for the risk distributions and dependencies assumed in the calculation of the ICA. A firm might also need to consider the potential risk of selecting the wrong value for a parameter and the impact that this might have on their capital assessment.

In addition, appropriate weighting may need to be given to the greater uncertainty attaching to new business, new or changed products and changes in administration and distribution.

Management Actions

Management actions are likely to underpin many of the assumptions in the model and so it may be necessary to describe in some detail the extent of any significant management actions assumed, and the extent to which these management actions have been used in the past, or since the previous assessment.

As part of the practical process of building models, firms may usefully include dynamic rules within a stochastic model to quantify the impact of management actions. Firms will typically want to consider whether the nature and magnitude of the actions within the model have been carefully tested as part of the model validation process and that the impact of the primary management actions for key scenarios has been considered by senior management before signing off the overall results. This will help to ensure that senior management has a clear understanding of the management actions the ICA assumes they will take. As a key aspect of management control it is vital that the assumed management actions are not obscured within the complexities of a model.

Firms will want to ensure that the quantification of all significant management actions, whether calculated within a stochastic model or as a separate exercise, appropriately reflects the stressed environment that will apply when the action is taken. In such circumstances there are likely to be a greater number of constraints than would be the case in normal conditions. Care is also required when management actions or stresses are considered in combination, for example:

- i) If more than one management action could be used as a mitigant of the same stress, the assessment should normally allow for the combination that would actually be used;

- ii) The assessment should normally consider the combined effect of using several management actions simultaneously, which may be different from the result achieved when each is used individually; and
- iii) If the same management action could be used in different circumstances as a mitigant of more than one type stress, care will be required to ensure that the effect of that management action is not double-counted.

Firms will also, typically, need to consider the potential reaction of other stakeholders in the business, including policyholders, reinsurance partners, outsourcers and providers of capital, to any management actions that the firm takes. The financial implications of any potential actions taken by these stakeholders would usually be taken account of within the assessment.

FSA ICA SUB-PRINCIPLE 3.2 [INSPRU 7.1.49R (1)]

The written record of a firm's individual capital assessment, as carried out in accordance with INSPRU 7.1.15R submitted by the firm to the FSA must in relation to the assessment comparable to a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities, document the reasoning and judgements underlying that assessment and, in particular, justify the appropriateness of the methodology used.

Context and FSA Guidance

FSA Guidance [INSPRU 7.1.65G – 7.1.67G] provides further explanation of the 'appropriateness requirement' for the methodology used in the capital assessment. The Guidance indicates firms should apply a methodology that allows them to quantify the financial effect of material risks, to the required confidence level. The methodology should also reflect the nature of the firm's business and be consistent with the way in which the firm identifies and manages risk.

FSA also provide Guidance on the use of stress tests, aggregation and scenario testing.

We have some advice for firms that may assist them in fulfilling these requirements.

Industry Guidance

Proportionality and Model Sophistication

As with all statistical models, a balance needs to be struck between the homogeneity of individual model components, for example types of business or types of loss, and the credibility of any data or analysis available for each component.

As FSA guidance indicates, larger firms would be expected to take a more sophisticated approach to capital modelling than smaller firms. However, a more sophisticated approach does not automatically imply that the firm's model should be a fully-integrated, simulation-based model office. Increased sophistication *does* typically imply both a greater number of individual risk components and a deeper analysis of each risk component.

Approaches to identifying Financial Risk

In identifying financial risk, firms will typically use either:

- i) a **'balance sheet' approach**, meaning that they measure capital requirements with reference to the variability in the value of assets and liabilities at different time points; or

- ii) a **'cashflow' or 'run-off' approach**, meaning that they measure capital requirements from the projected cashflows arising from the business.

In some cases it may be appropriate to use a combination of these approaches. When calculating future balance sheet values, firms may use simulation models with transformed probability assumptions ('risk neutral' models).

Where a firm uses a balance sheet approach and a time horizon of more than one year, then actual balance sheet assessments at future dates could result in a position where assessed liabilities exceed assets even if, after this balance sheet date, the business would later be able to meet all its policyholder liabilities (due to favourable experience after one or more of the interim balance sheet dates during the projected time horizon). Such a position, where a firm's liabilities exceed the value of assets, is unlikely to provide confidence in the financial position of the firm and could result in a winding up of the business and a requirement to buy-out some, or all, of the remaining policyholder liabilities. Accordingly, it may be appropriate for the firm to set their capital requirements so as to ensure that assets exceed assessed liabilities on a balance sheet basis at all future balance sheet dates.

Where a firm is using a 'run-off' or cashflow approach, the firm would normally select a time horizon long enough to project the discharge of all, or a significant proportion of, the policyholder obligations. If the time horizon is not sufficient to project the discharge of all obligations, then an appropriate approximation should be made at the end of the time horizon to allow for the assumed cost of the residual liability.

Whether using a 'balance sheet' or a 'run-off' approach, firms would normally want to be able to demonstrate that the value of assets will exceed the value of liabilities on a continuous basis. However, a sensible and pragmatic alternative is to calculate an assessment at regular intervals, for example annual future balance sheets. More frequent balance sheet checks may be considered where this is appropriate to the business.

Aggregation, Stress Tests and Scenario Investigations

Aggregation of risks can be achieved in a number of ways: from relatively simple mathematical combinations to simulation models that replicate the relationships between all risks and the overall capital requirement.

Stress tests and scenario analysis are both useful and powerful tools:

Stress testing, quantifying the effect of a change on a single parameter, is useful for understanding the potential impact of individual risks in isolation.

Scenario testing, quantifying the effect of a change on multiple parameters, is useful for considering the combined effect of a number of risks and the cumulative impact of several different mitigating actions all occurring at the same time.

In *GENPRU 1.2.42R*, FSA require firms to undertake stress and scenario analyses for each of the major sources of risk identified in its ICA. Stress testing can also provide a useful link between the risk register (or other risk identification tool) and the complete capital model. Stress tests may be deterministic but they are often developed with probability distributions in mind.

In designing scenarios, firms should consider potential cause and effect relationships between risks. Such relationships may be better modelled using deterministic relationships rather than relying on statistical correlations.

Assumptions about the Aggregation of Risk

Firms will typically use one or a combination of the following approaches to assessing the aggregate risk:

- i) the '**correlation matrix**' approach: deterministic stress tests applied to individual risks, aggregated using a mathematical approach to allow for diversification between risks;
- ii) the '**scenario**' approach: deterministic scenario tests applied to combinations of risks; and
- iii) the '**stochastic**' approach: simulation models that consider a collection of risks together and test their inter-dependencies and interactions directly.

Firms may also choose to use a correlation matrix to combine the results of both deterministic stress tests and the output from stochastic models.

Correlation Matrix

Firms may wish to consider the possibility that each risk is correlated with every other. In many models this could result in a large number of parameters and so it may not be practicable to correlate every risk with every other. In such cases firms may want to identify the most material correlations and pay less attention to those where the outcome is less sensitive. However, where an assumption of less than one is assumed implicitly or explicitly, the firm will need to be able to explain that assumption.

It may be appropriate to use a number of correlation matrices to aggregate similar types of risk and then use a final high-level matrix to aggregate the capital amounts from each of the broad risk areas. However, firms will want to be satisfied that this does not result in missing out interactions between individual risks across categories.

Firms may find it necessary to invest a considerable amount of time establishing which correlations are most important to their business and selecting and challenging these key assumptions. Often there is very little or no data available and firms will need to use general reasoning.

Where the correlation assumptions have been derived indirectly, firms may need to consider a number of scenarios and possible 'cause and effect' event chains to satisfy themselves that their correlation assumptions are appropriate.

They may also need to consider the external factors that can influence the experience of several risks at once: for example economic factors or the behaviour of the law courts.

When presenting an ICA, firms will typically be expected to provide a full commentary on the selection of correlation assumptions, including the sources of data where relevant, the external factors considered and a discussion of the rationale for the final selection of each parameter to include any adjustments for non-linearity.

Scenario approach

Firms that do not consider combination scenarios as inputs to their capital assessments are likely to need strong arguments to justify this approach.

One reason why the aggregation of individual scenarios may prove inadequate without adjustment is that some risk events may combine to give much heavier losses than implied even by the sum of the impacts of the individual risk scenarios. This 'non-linearity' of risk impacts can increase the importance of certain combinations of risks dramatically.

For example, there may be several unconnected risks, each of which in isolation can be successfully mitigated by the same mechanism (for example by raising prices). However, where each of these risks occurs together, this mechanism may not be able to fully mitigate the cumulative impact of all of these risks. This outcome may only be revealed when these combinations of losses are tested. Alternatively, the impact of one risk may be exacerbated by the impact of another. Discretionary policyholder behaviour is often a factor in such cases, while in others the interaction can be accidental.

It is generally easy to predict the direction of the effect on capital of a single risk (for example a fall in equity values leading to a fall, rather than a rise, in capital). However, when more than one risk is considered, these simple relationships can break down and it is far more difficult to predict which combinations of risk losses give rise to an overall loss of the expected magnitude. Assuming that the risks are not fully correlated, firms may find it is reasonable to test combination scenarios where the individual impact of each risk is lower than the appropriate percentile for that risk in isolation. However, in selecting combination tests, firms will want to consider the likely to need to demonstrate that they have considered the impact of different combinations of the main risks identified in their ICA to satisfy themselves that they are making a reasonable estimate of the required confidence level for their ICA.

Stochastic Models

Whilst firms may rely on third parties for aspects of their modelling and assumptions (for example economic scenario generators), the firm remains responsible for the reliability of the underlying assumptions – this responsibility cannot be passed on to a third party. Where a firm uses proprietary components within its overall ICA it may be asked to explain how it has satisfied itself that these components are suitable for its business, including the choice of any discretionary assumptions and inputs with those components.

A firm using a stochastic model incorporating several risks may be able to spend relatively less effort identifying the important combinations of risk events, but will still need to ensure that the assumed relationships between risks and their respective impacts on the business are appropriate.

Aggregation of Risk under Extreme Conditions

In their capital assessment firms will need to give reasonable consideration to the possibility that one risk event may increase the likelihood of other risk events. This may be the result of factors external or internal to the firm. Under a 'correlation matrix' approach, firms may choose to use 'correlation' assumptions that are intended to be stronger than might be expected or observed in normal circumstances. Under a 'scenario' approach, firms may investigate more closely the cause-and-effect relationships between risk events. Using a stochastic model, firms may be able to do both, perhaps employing more sophisticated mathematical techniques to model the effect of the dependencies.

FSA ICA SUB-PRINCIPLE 3.3 [INSPRU 7.1.49R (1)]

The written record of a firm's individual capital assessment, as carried out in accordance with INSPRU 7.1.15R submitted by the firm to the FSA must in relation to the assessment comparable to a 99.5% confidence level over a one year timeframe that the value of assets exceeds the value of liabilities, document the reasoning and judgements underlying that assessment and, in particular, justify the results of the assessment.

Context and FSA Guidance

FSA guidance indicates that firms should consider the full range of possible outcomes (not only those below the 99.5%/1yr confidence level), however unlikely any one single outcome might be, to ensure capital is set to provide appropriate protection against all but the most extreme losses. FSA also suggest that checks should be made as to the reasonableness of the outcomes, with consideration given to a range of scenarios that could give rise to the scale of loss envisaged in the capital assessment⁸.

Industry Guidance

We have some advice on how these reasonableness checks might be achieved:

- test the scenarios for plausibility, for example by comparison with actual historical events;
- consider how well the scenarios represent the extreme probabilities that the capital assessment is intended to address; and
- ensure that a reasonable range or permutation of scenarios is identified to allow for the possibility of more extreme aggregate losses that are still within the required confidence level for the capital assessment.

Such analysis is important for checking the reasonableness of risk assumptions – particularly assumptions about the way that risks and prospective management actions aggregate.

⁸ For example, through a combination of connected events that might separately be beyond the 99.5%/1year probability assuming each risk event were considered in isolation.

FSA ICA SUB-PRINCIPLE 3.4 [INSPRU 7.1.49R (2)]

The written record of a firm's individual capital assessments as carried out in accordance with INSPRU 7.1.15R submitted by the firm to the FSA must identify the major differences between that assessment and any other assessments carried out by the firm using a different confidence level.

Context and FSA Guidance

FSA guidance indicates that whilst a firm is required to submit an assessment comparable to a 99.5% probability over a one-year time horizon that the value of assets exceeds liabilities, it may be the case that for its own assessment the firm will use a different confidence level. For example, this may be because the firm :

- has a different view of its capital adequacy
- is seeking to meet the demands of ratings agencies to secure a given rating
- seeks to distinguish itself from competitors when describing its financial strength to policyholders

Where the firm does use a different confidence level, the FSA require the submission of a comparison between the firm's own assessment and the prescribed 99.5% confidence level. This would include any major differences in the definition of assets or liabilities, the management actions used, the risks considered or the valuation methodology.

Industry Guidance

FSA make clear that firms only need to make this comparison where they have chosen to adopt a separate confidence level.

Whether a firm chooses to use a separate confidence level in its own assessment will depend on many factors, including those listed in the FSA Guidance (see INSPRU 7.1.53G). Firms will want to ensure that they have a clear and logical explanation that reconciles these differences.

Whilst the FSA's Guidance confirms that a firm's own assessment, which applies a different confidence level, will not be part of the submission to the FSA, the FSA wish to understand the connections between the two.

Firms will want to ensure that the FSA has a clear understanding of the reasons for the different confidence levels being applied in the two assessments. This should reduce the risk that the ICA assessment becomes perceived by the FSA as divorced from the day-to-day management of the business, which may give the regulator concern and prompt further responses from the FSA.

ANNEX 1 : ICA FOR SMALLER FIRMS

This annex provides a qualitative example of how a small firm could undertake its stress and scenario analysis without this being disproportionate to the size and complexity of its business, in accordance with GENPRU 1.2. There are likely to be other approaches that are equally appropriate and the approach we describe is provided for the purposes of advice and illustration. We do not give any quantitative guidance as we believe this would be impractical given the diverse nature of each firm's individual circumstances.

The areas discussed are not exhaustive and it is likely that in practice a firm will need to consider a range of other issues.

The scenarios that the firm generates as part of its analysis should aim to reflect the degree of risk in a variety of areas. How extreme these scenarios are will influence the ultimate level of capital required by the firm. The firm should not necessarily develop scenarios based on the current trading or economic conditions, but on possible trading or economic conditions that could occur during the next three to five years.

In addition to examining its event scenarios, a firm should also be able to meet any individual risk (however unlikely) that it has accepted (or proposes to accept through its business plan) from policyholders. It therefore should analyse its exposures and ensure that it has sufficient capital or available reinsurance to cover its largest individual risks and accumulations.

Worked example

Background

The firm used for this example is an insurer carrying on general insurance business within a large group, writing predominantly personal lines, household and motor policies of approximately £25m gross written premium. This business has a reasonable geographical spread, sourced significantly from within the United Kingdom. The firm has purchased appropriate reinsurance cover from a variety of reinsurers and has a demonstrated record of utilising this cover. Its settlement pattern for claims averages three years, however, there is a small element of the account with longer tail liability claims. The firm's investments and IT support are outsourced.

Insurance risk

The risk of incorrect or inaccurate pricing of business over the scenario period can be addressed by examining typical uncertainties within the pricing basis and the volatility of claims experience.

In examining the adequacy of its pricing, the firm establishes its underwriting and claims trend over a ten-year base period by reviewing profit and loss accounts (particularly underwriting profit). In particular it examines the following:

- (i) the volatility of losses in a particular line of business;
- (ii) whether the loss ratio exceeded 100% in any line of business; and
- (iii) whether the deferred acquisition cost (DAC) amount had been written down; e.g. whether an unexpired risk provision (URP) was necessary.

The firm also examines whether its premiums over the last ten years have been:

- (i) reasonably stable;
- (ii) responsive enough to changes in claim exposures (so that profitability is maintained);
- (iii) providing adequately for contingencies (such as major losses e.g. hail, earthquake etc);
- (iv) encouraging loss control (through the use of deductibles, no claim bonuses etc);

The firm also reviews its method of pricing. The firm considers and performs:

- (i) a review of acceptable rates, e.g. premiums being charged by competitors for similar products;
- (ii) an examination of whether there have been any difficulties in the past with delegated authorities in relation to pricing including the ability and experience of staff members setting or recommending premium prices;
- (iii) an examination of whether the firm has the appropriate mechanisms in place regarding premium rate changes (that is, who makes these decisions, frequency, and on what basis?); and
- (iv) a benchmark price assessment (e.g. the ability to provide adequate competitive premium rates). For example, indicative rates being determined through the use of industry statistics, competitor statistics and the firm's own analysis for all classes.

Other factors the firm would consider are:

- (i) changes in environment (e.g. legislation, social, economic etc);
- (ii) changes in policy conditions and deductibles; and
- (iii) impact of market segments (e.g. the effects of different claim frequencies and costs impacting the price charged).

Having completed its analysis, the firm makes the following assumptions to define its underwriting risk:

- (i) claims costs. The firm assumes these are X% higher than in the premium basis;
- (ii) claims inflation. The firm assumes a X% claims inflation over the scenario period, compared to Y% in the pricing basis;
- (iii) policy expenses (fixed and variable) are X% higher than anticipated in the pricing basis;

- (iv) reinsurance charges are X% higher than anticipated in the pricing basis; and
- (v) investment income is X% lower than anticipated in the pricing basis.

As a result of the above analysis on a per risk basis, the firm considers that capital of between £X and £Y would cover the possibility of material deviations to projected results.

Allowing for catastrophes

The allowance for catastrophic events within the insurance risk scenario should reflect both the severity and the frequency of these events.

After considering the catastrophe reinsurance programme it may be clear that the upper limit is set at a level unlikely to be breached e.g. a 1 in 200 year event. Thus, for the purposes of the capital assessment, it would not be necessary to assume losses in excess of this retention.

However, it may be determined that there is possible exhaustion of free reinstatements or of horizontal cover in total. For example, if there were a significant chance of three catastrophic losses in any one period but the reinsurance allowed only one free reinstatement, then the assessment may be to hold two retentions and the entire gross loss for the third event.

As a result of the above analysis, the firm considers it appropriate to hold capital sufficient to absorb three catastrophic losses: one European windstorm of £X, one UK flood of £Y, and one large man made explosion of £Z.

The reinsurance structure in place allows for X number of reinstatements at full premium.

Deterioration of reserves

The firm considers the adequacy of its claims reserves by focussing on the liability valuation.

The liability valuation may contain a range of answers that might indicate possible reserve variability. Also, the valuation will contain areas where judgement has been applied and assumptions formulated which are subjective. These areas are considered and stressed as appropriate.

The firm also reviews the historic level of claims reserves and subsequent level of settlements to help determine the size of any historic levels of under and over reserving.

Reinsurance arrangements are considered and the extent to which these arrangements protect against reserve deterioration is assessed.

For unearned premium, where losses have yet to occur, the firm considers that the level of uncertainty is greater and considers similar factors to those relating to underwriting risk in addition to those discussed above.

As a result of the above analysis, the firm considers it appropriate to apply a X% loading to the outstanding claims provision, a Y% loading to the unearned premium provision and Z% to all other liability values. The firm considers that capital of between £X and £Y would adequately cover reserve deterioration.

Credit risk

Credit risk relates to the risk of default by counterparties. The firm believes its exposure to credit risk results from financial transactions with counterparties including issuers, debtors, borrowers, brokers, policyholders, reinsurers and guarantors.

When assessing credit risk the firm makes an assessment of the creditworthiness of counterparties to the assets of the firm.

The assessment includes an evaluation of the credit risk associated with loans and investment portfolios; the quality of on and off balance sheet assets; the ongoing management of the loans and investment portfolios; as well as loss provisions and reserves.

The firm believes its exposure to credit risk also arises due to its exposure to its reinsurers. In this regard, the firm uses the credit ratings assigned to particular counterparties as a measure of credit risk, most notably Standard & Poor's, Moody's Investors Service and AM Best's (particularly for reinsurers).

When forming an opinion on credit risk the firm considers:

Reinsurance

The firm's strategy is to manage its concentration risk in reinsurance by setting limits for the lead and subsidiary reinsurers. In this case the firm chooses to limit exposure to a single lead reinsurer to less than 30%, with other participants holding no more than 15%⁹. In all cases, the panel of reinsurers would need to meet a specified minimum rating. The firm has no prior experience of disputes, and their working relationship with the panel may be excellent, and thus the firm does not envisage any future difficulties arising in this regard.

Bond default rates could then be used to assess a likely credit risk figure for reinsurance recoveries (including IBNR recoveries).

The firm considers that capital of between £X and £Y would cover reinsurance defaults, with no additional allowance for disputes.

⁹ These limits are purely illustrative and in determining its approach a firm would need to consider their own circumstances, including the nature of their insurance liabilities and the quality and availability of reinsurance cover

Overseas financial institutions and banks

The firm investigates its business relationships with overseas financial institution counterparties including banks, and decides no additional allowance is required.

Quality of counterparties and trends in counterparty risk

The firm assesses the level and age of debtors, focussing particularly upon unpaid premiums, especially those greater than three months old, and reviews the level and trend of contingent liabilities. For example, the firm estimates that the credit risk scenario equates to taking a 10% reduction in the asset value of debtors, based on bond default rates and age of debt.

The firm considers that capital of between £X and £Y would cover credit risk to counterparties.

Off-balance sheet transactions

The firm investigates any unfunded commitments, credit derivatives, commercial or standby letters of credit. Where these exist the possibility of a loss on these instruments is considered in relation to the requirement of the credit risk scenario.

The firm considers that no additional capital is necessary.

Market risk

Market risk encompasses an adverse movement in the value of the assets as a consequence of market movements such as interest rates, foreign exchange rates, equity prices, etc. which is not matched by a corresponding movement in the value of the liabilities.

In examining possible market risks, the firm considers its sensitivity to market risk by evaluating the degree to which changes in interest rates, foreign exchange rates, equity prices, or other areas can adversely affect the firm's earnings or capital.

The firm believes its assets and liabilities are approximately matched e.g. there are no large unmatched or unhedged currency positions; short tail business is backed by cash/fixed interest assets of suitable term and long tail business is backed by assets affording an appropriate hedge for inflation, which may include shares and property. If mismatching does exist this should be allowed for within the estimate.

In developing the scenario the firm estimates the effect of an X% increase in interest rates on bond values.

Similarly, the firm estimates the effect on equity values of a major recession to estimate the possible reduction in the value of equity capital¹⁰. Also, it uses a

¹⁰ The firm should also consider any effect on the value of its liabilities

suitable equity index to determine the size of historical falls in equity values and indicate possible future falls.

Counterparty risk might be allowed for by assuming one or several major corporate bond holding defaults.

For all investments, the stability of trading revenues should be examined to determine the volatility of investment.

From the above analysis, the firm considers that capital of between £X and £Y would be appropriate to protect it against adverse movement in market risk.

Liquidity risk

When assessing liquidity risk, the firm considers the extent of mismatch between assets and liabilities and the amount of assets held in a highly liquid, marketable form should unexpected cashflows lead to a liquidity crunch.

The price concession of liquidating assets is a prime concern when assessing liquidity risk and is built into the scenario.

In examining the liquidity risk, the firm examines the following:

Marketability, quality and liquidity of assets

The firm considers the assets held and makes an assessment regarding the quality and liquidity of these assets. Even though the assets matched the liabilities, residual risk remains given that timings are uncertain and there is a possibility that assets will be realised at unfavourable times. This is allowed for by assuming a 2.5% reduction in the market value of assets at realisation compared to the current market value.

The firm considers that capital of between £X and £Y would cover timing risk to counterparties.

Reliance on new business income

The firm relies partially upon new business cash flows to meet current liabilities as they fall due. The firm analyses the sensitivity of future cash flow projections and new business assumptions and considers the effect of a reduced level of new business.

The firm finds that it did not have immediate alternatives in place in case these expected new business cash flows were reduced. In this regard, it considers that these sources should be stressed by X%.

The firm considers that capital of between £X and £Y would cover possible effects of adjusting the asset portfolio to switch to more liquid assets.

The firm also examines the volatility and cost of on- and off-balance sheet funding sources. The firm is satisfied that no concerns need to be raised and that there should not be any impact on its liquidity position.

The firm believes it is well placed to manage unplanned changes in funding sources as well as react to changes in market conditions that affect its ability to quickly liquidate assets with minimal loss. The firm assesses that it has reasonable access to money markets and other sources of funding such as lines of credit.

The firm has no previous problems or delays in meeting obligations (or accessing external funding).

Overall, from the above analysis, the firm considers that capital of between £X and £Y would be necessary to withstand the effects of deterioration in liquidity.

Governance Risk

Governance risk relates to the risk associated with the board and/or senior management of the firm not effectively performing their respective roles.

The existence and level of directors and officers insurance in place is investigated compared to known incidence of claims of this type.

The firm assesses whether the current level of governance is appropriate for the firm, and the likelihood that the firm's practices may result in the board and/or senior management not adequately undertaking their roles. The cost of altering and strengthening the current board structure is considered.

In this regard, the firm makes an assessment that it may be reliant on only a few senior executives, and may be exposed if they experience any misadventure.

The firm considers that capital of between £X and £Y would cover governance risk.

Strategic Risk

Strategic risk arises from an inability to implement appropriate business plans and strategies, make decisions, allocate resources or adapt to changes in the business environment.

The firm therefore assesses the prudence and appropriateness of its business strategy in the context of the firm's competitive and economic environment. In particular the assumptions, forecasting and projections are assessed considering the possibility of a fundamental market change due, for example, to higher numbers of competitors, changes in sales channels, new forms of insurance or changes in legislation. This review includes whether the reinsurance programme is appropriate for the risks selected by the firm and whether it adequately takes account of the underwriting and business plans of the firm generally.

The firm considers the likelihood of a fundamental strategic shift too remote to include within the scenario given the maturity of the market in which they operate.

Operational risks

In reviewing the operational risk exposures, the firm has examined its administration, compliance, event, fraud, governance, strategic and technological risks.

Administration

The firm considers the risk of error or failure associated with the administrative aspects of the operation of its business. In this regard, the firm considers likelihood of financial loss and reputation harm due to failure or errors occurring and the likely size of these losses.

None of the firm's administration is out-sourced to service providers.

In undertaking the assessment, the firm considers the history of failure or error from transaction processing or control within the firm. Exception reports are produced on a quarterly basis. Past reports highlighted past administrative deficiencies. The biggest event in the past 10 years related to a situation where claim-handling staff shared access codes to the claims administration system. This resulted in an overpayment to some clients.

The firm also examines the nature and extent of centralised and decentralised functions within the firm. Three branches report regularly to the central office and an appropriate system is in place to record financial information, handle complaints etc.

The firm also reviews the segregation of duties between staff. It is satisfied that an adequate segregation of duties between underwriting claims and payments divisions exist in terms of acceptance, authorisation and payments. It is also satisfied that sufficient interaction between the front, middle and back offices exist in terms of financial control and risk management. For example, it is confident that its guidelines for accepting risks are adequate and that any breach would be picked up by exception reporting.

The firm also investigates the level of staff expertise and training to administer its product range/services.

The firm considers that capital of between £X and £Y would cover the risk of future administration issues.

Compliance Risk

The firm believes its main compliance risk relates to the risk of non-adherence to legislative and internal firm requirements.

An investigation into compliance over the last 10 years finds no history of non-compliance with firm policy and control systems nor have there been any reported areas of non-compliance with legislation or other requirements.

Regulatory reforms including corporate and consumer law are considered and it is assumed that expenses costs will rise as a result of developments in the

next 5 years. As a result an additional X% of premium income was assumed for the expense ratio.

The firm considers that capital of between £X and £Y would cover the risk of future compliance issues.

Event risk

Event risk relates to risks associated with the potential impact of significant events (e.g., financial system crisis, major change in fiscal system, natural disaster) on the operations of the firm.

The definition of event risk is not intended to cover events that are directly associated with products and services offered, for example, events which may directly impact on the general insurance business.

The firm concludes that no additional specific allocation is required.

Fraud Risk

Fraud risk relates to the risk associated with intentional misappropriation of funds, undertaken with the objective of personal benefit at the expense of the firm.

In assessing fraud risk, the firm considers the possibility of fraudulent acts occurring within the firm and the extent of controls which management has established to mitigate such acts.

The firm examines fraud issues over a period of 10 years and finds one major incident where it was subject to a fraudulent activity. This involved fraudulent payments being made by a member of staff which resulted in a loss for the firm of £Xm. Based on this previous incident and allowing for improvements in controls, the company assessed a financial figure that it believes is consistent with the probability for this scenario.

The firm considers that capital of between £X and £Y would cover the risk of future fraud.

Technology Risk

The firm considers the risk of error or failure associated with the technological aspects (IT systems) of its operations. Specifically, technology risk refers to both the hardware systems and the software utilised to run those systems.

In relation to the firm's information systems, the firm assesses the past reliability and future functionality and believes them to be adequate. It does not have any future plans to either replace its systems or make major systems modifications.

Concerning business continuity management and disaster recovery planning (and testing of plans), the firm reviews these plans regularly and tests them quarterly. A full back-up site exists with full recovery capabilities. Costs

associated with utilising the site and associated business interruption insurance was estimated.

The firm considers that capital of between £X and £Y would cover technology risk.

Group risk

The size of the group risk element within operational risk will depend on the ownership structure of the firm and how it is funded by the parent.

The firm considers the likelihood and financial consequences of both insolvency and credit downgrading of its parent. Given the firm shares the parent's name there is a large risk of association.

The firm considers it within the scope of the scenario to allow for a single downgrade of the parent's credit rating from AA to A. It does not believe the chance of insolvency great enough to allow for directly.

The firm estimates the effect on its business plan and profit margins of the downgrade. It estimates the amount of business lost and the increase in marketing costs required to maintain the client base. It also allows for a change in the pricing basis to incorporate a reduced profit margin (with knock on impacts on the business volume and loss ratios).

From the above analysis, the firm considers that capital of between £X and £Y would be required to cover group risks.

Overall assessment

After individually assessing each risk area, the firm considers the capital that it has estimated might be absorbed under each scenario. In aggregate the range of capital absorbed is between £X and £Y. It considers how many of these scenarios might reasonably occur within a period and the extent to which it could replace capital within that period. It takes into account scenarios which might reasonably be linked, the difficulty with which capital might be replaced if the scenarios occurred, and the changes in strategy which might need to be adopted if the scenarios occurred.

The firm decides that the worst realistic combination of circumstances that might arise would absorb capital of between £A and £B.

ANNEX 2 : FURTHER READING

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