

## GN46: Individual Capital Assessment

### *Classification* Recommended Practice

**Purpose** The FSA Handbook of Rules and Guidance requires insurance companies and friendly societies, with certain exceptions, to carry out an *Individual Capital Assessment (ICA)*. The *ICA* is the regular assessment, required by the FSA in its Handbook, by a firm of the adequacy of its financial resources. The FSA Handbook also sets out *rules and guidance* to follow in carrying out an *ICA* and requires firms to take appropriate professional advice on financial and risk analysis for, inter alia, *ICAs*. The *actuarial function holder* is required to advise the firm's management on the risks that the firm runs in so far as they may have a material impact on, amongst other things, the capital needed to support the business. These provisions establish the role of actuaries in the calculation of an *ICA*. The FSA Handbook states that guidance notes such as this are important sources of evidence as to generally accepted actuarial practice. This note therefore provides additional guidance to insurers and Directive friendly societies on how to meet these requirements.

**Definitions** Terms defined by the FSA Handbook appear in italics when used in this document and have the same meaning.

### **Legislation or Authority**

The Financial Services and Markets Act 2000

The FSA Handbook of Rules and Guidance:

### **Application**

The establishment of *Individual Capital Assessment* in respect of *long-term insurance business* in accordance with the FSA rules and guidance.

<b>Version</b>	<b>Effective from</b>
1.0	31.12.04
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## **1 General**

- 1.1 Where a *firm* requires an actuary to produce work conflicting with the FSA Handbook and/or with this Guidance Note, the actuary may do so provided that the work clearly and unambiguously states that the actuary has done so under instructions and that the work does not conform to this Guidance Note. The adoption of such an *ICA* will create a situation where the actuary producing the work and/or the *actuarial function holder* will be required to report the matter to the FSA.

- 1.2 This GN is supplementary to;
- 1.2.1 the requirements of the FSA Handbook, including but not restricted to INSPRU and GENPRU;
  - 1.2.2 any individual guidance given by FSA;
  - 1.2.3 requirements contained in other Guidance Notes whether adopted by the Board for Actuarial Standards or retained by the Profession;
- and should not be used as a substitute for reference to such documents or guidance.
- 1.3 The information kept must be sufficient to enable a third party to assess independently the material factors involved in the calculation of the *ICA*.
- 1.4 If there are any doubts about the accuracy of the data, additional allowance must be made for the risk that the actual value of the liabilities will be greater, or the value of assets less, than that derived from the available data. If any potential data inaccuracy is material, any statement or report must make reference to this.
- 1.5 There may be other practices not set out in this Guidance Note that constitute generally accepted actuarial practice in this area and failure to comply with this note does not necessarily imply failure to follow generally accepted actuarial practice. If any aspect of this Guidance Note or of the FSA's guidance is not being complied with, the extent of non-compliance and the alternative adopted should be documented in the report on the *ICA*.

## **2 Involvement of Actuaries**

- 2.1 When carrying out an *ICA*, it is not necessarily appropriate for firms only to seek the advice of the *actuarial function holder*. In some risk areas, for example operational risk, it may be more appropriate to take the advice of a non-actuary expert. Expert actuarial advice from other actuaries may also be of assistance. However the *actuarial function holder* should be provided with the advice of any other expert consulted and the firm should request the *actuarial function holder's* advice on the total capital requirements of the firm. As far as possible, any actuarial calculations or advice should have regard to the consistency of approach with any other expert and any contingent risk emerging from the approach taken in other areas of an *ICA*.

## **3. The derivation of available capital**

- 3.1. Checks must be made to identify any barriers to the transfer of capital between funds that could create situations in which liability cash flows cannot be met as they fall due in each fund without breaching the firm's *PPFM* (if required to produce one), the duty to treat customers fairly or any other restrictions. It may be necessary (and often is) to perform a separate calculation of the *ICA* and available other capital on a fund by fund basis.
- 3.2 Where the firm's capital is not fully loss absorbent, for example the capital is not fully subordinated to all liabilities or is dated in nature, the firm may consider it appropriate to set aside a provision for repayment of capital.

## 4. Valuation of subsidiaries

- 4.1 Where a firm has one or more subsidiaries, the firm will need to consider the value to place on these assets in stressed conditions. For an insurance subsidiary, the value of its capital in excess of its *ICA* may be an appropriate value. For a non-insurance subsidiary, the value from a sale of the business given an environment consistent with the *ICA* for the firm may be more appropriate. The consistency of the method used to value the subsidiary with the method used to value the firm, and the consistency of the assumptions chosen with the stresses considered when calculating the firm's *ICA*, should be carefully justified.
- 4.2 Where a firm believes that there are diversification benefits between risks in two or more subsidiaries (or between risks within subsidiaries and within the firm) and that the capital between the firm and the subsidiaries is fungible in a stressed scenario, the capital required may be reduced. The firm should justify why the capital is fungible and where the benefit of diversification between group companies should be recognised.

## 5 Identification of Liquidity Considerations

- 5.1 Liquidity risk refers to the management of short-term cash flows rather than long-term asset/liability matching. Examples of liquidity risk arising from short-term cash flows that may be relevant for *long-term insurance business* include:
- contracts where a cancellation or an acceleration of cash-flows may occur in the event of, say, a ratings downgrade or breach of covenant
  - a commitment by a company with limited liquid assets of its own. For example, the ability to provide business continuity in the face of an operational event may depend on sufficient liquidity being provided to a service company
  - a significant short-term increase in voluntary terminations that would lead to difficulties in making payments to policyholders when due or whether it is reasonably foreseeable that sufficient of its assets could become unrealisable at prices or in quantities sufficient to meet its expected short-term cash flow needs
  - illiquid assets, in particular real estate held in unit-linked funds Liquid capital sufficient to bridge any reasonably foreseeable deficit should be held, mitigated by any guaranteed short-term borrowing facilities to which the firm has access.

## 6. Stress Testing and Scenario Analyses

- 6.1 *Scenario analyses* are usually carried out within the *ICA* for one of two purposes:
- 6.1.1 Scenarios may be generated which, for a given model, accurately reflect the selected confidence level for a number of risks when considered simultaneously. Consequently, such scenarios may be used to calculate the *ICA* or a component of it directly.
- 6.1.2 Scenarios may be used to give additional comfort as to the accuracy of an *ICA* calculated using other methods. Examples of potential weaknesses that may be

highlighted by *scenario analyses* include non-linearity in the way in which the required capital responds to multiple risks rather than single risks, double-counting of best-estimate profits or benefits from assumed management actions, constraints on the fungibility of capital between funds and group companies in stressed conditions and the impact of adverse scenarios on the tax position of the firm. In this use of *scenario analyses* more approximate methods may be acceptable for generating the scenarios for investigation.

6.2 *Stress testing* may be used to calculate the capital sufficient to meet the liabilities with a chosen level of confidence for a particular risk. To the extent that a firm is exposed to more than one risk, the results of *stress testing* for individual risks will need to be combined using an aggregation technique.

6.3 *Stress testing* and *scenario analyses* should be more detailed if the firm's capital strength is low or if its risk prevention and mitigation measures are not robust. A firm's capital strength is not known at a particular time until an *ICA* is carried out at that time. However, if a previous *ICA* has shown that a firm's available assets are significantly in excess of the sum of the required capital (or of any higher *ICG* set by FSA), and no significant changes to the firm's circumstances or external environment have occurred since that previous *ICA*, then it is reasonable to assume that the firm's capital position remains strong for this purpose. If less detailed *stress testing* or *scenario analyses* reveal a material deterioration in the capital position, more detailed tests must be carried out.

#### 6.4 Combinations of Risks

6.4.1 A key assumption in the calculation of the *ICA* is the method of aggregating the results of the effects of different risks for which the capital should provide. Where statistical distributions are fitted to different risks, forming the joint distribution, either in closed form or by Monte Carlo simulation, is an appropriate method of aggregation. Correlations, positive or negative, or dynamic deterministic relationships should be allowed for between variables (in either case of a magnitude justified by relevant historical observation or in accordance with any underlying economic or demographic model).

6.4.2 If statistical distributions are not fitted, or if the determination of a joint distribution is not possible, then more approximate methods of combination must be used. Where it is reasonable to assume that risks are largely independent and approximately normally distributed, then it may be appropriate to take the square root of the sum of the squares of the capital requirements for each individual risk as the aggregate capital requirement. Where risks are considered to be materially correlated or deterministically linked via a dynamic relationship, it is important not simply to add (or subtract) individually calculated capital requirements for each risk. Rather, the cumulative effect of the related stresses should be considered, which may be either more or less than the simple sum of the capital requirements.

6.4.3 Careful justification should be given to the appropriate correlations to assume between variables in the more extreme stresses relevant to *ICAs*. In some cases, it

may be appropriate to assume a higher correlation than that historically observed to reflect relationships which only come into play in more extreme stresses.

#### **6.5 Consideration of additional stress factors**

It is not appropriate to assume that any of the stresses prescribed for the calculation of the *RCM* will, either individually or in aggregate, necessarily satisfy part or all of the sourcebook requirements for the calculation of the *ICA* nor of this Guidance Note.

Factors which should be considered include:

- the firm may be exposed to different relative levels of risk than the model firm
- the firm may be exposed to risks not considered for the model firm
- the firm may contain different types or proportions of non-profit business than the model firm
- the range of possible management actions may be narrower or wider than for the model firm
- the economic or business environment may have changed from that which prevailed when the *RCM* stresses were first calibrated

#### **6.6 Confidence levels over a longer term than one year**

There is no scientific method of determining exactly the equivalent confidence level over a longer term to a 99.5% level over one year. Hence it will be necessary to justify any confidence level assumed for such a term and in particular one that is less than a  $(100-0.5N)\%$  confidence level for an assessment of the capital necessary using an N-year projection where N is:

- For a projection for a fixed number of years, that number of years;
- For a projection until all but an immaterial liability remains, an assessment of the term until all but 10% of the (undiscounted) liabilities have expired.

#### **6.7 Instantaneous stress tests**

It may be possible to justify an *ICA* based on instantaneous extreme adverse stresses, including an instantaneous worsening of the reserving basis rather than projecting the balance sheet forward over time. Similar considerations apply to this approach as to a one-year projection, and the instantaneous stress approach may be more conservative than a one-year projection. However, it will be important to document the basis for concluding that there are no path-dependent factors that may increase the capital requirement if a one-year projection approach had been used (for example, the effect of management actions) or, if there is such path-dependency, how it has been allowed for in adjusting the instantaneous stress test approach.

#### **6.8 Low probability risks**

There is no standard treatment for risks which, in isolation, have probabilities of occurrence lower than the confidence level chosen for the *ICA*. In some cases, it may be possible and appropriate to convert the risks into a continuous distribution either by considering the value changes (for example, decreasing the value placed on a reinsurance contract as the creditworthiness of the reinsurer declines rather than considering only the likelihood of default) or by considering portfolios of similar risks. However, this will not always be possible or appropriate.

## 6.9 Pension arrangements

Where stochastic modelling is used for the *long-term insurance liabilities* then the costs of funding pensions arrangements could be modelled in parallel using the same scenarios. However, this approach may be impractical for some firms. In this case it would be appropriate to:

- identify the scenarios that are generating the capital requirement for the *long-term insurance business* and consider the requirements for additional pensions funding that might arise in these scenarios; and
- consider which scenarios would generate the highest requirement for additional pensions funding and establish that these scenarios would not lead to a higher overall capital requirement when taking account of both the *long-term insurance business* and the pensions arrangements.

## 7. Stochastic Modelling

- 7.1 Where a firm uses stochastic techniques to assess the value of certain aspects of its *with-profits business*, it would normally be appropriate also to use stochastic techniques in its *ICA* to determine the value of certain aspects of its *with-profits business* in stressed scenarios.
- 7.2 When a stochastic model is being used to assess capital requirements, it is necessary to examine the more extreme outcomes generated and to consider whether they imply a sufficiently severe stress when considered in the light of current conditions and relevant historical experience.

## 8. Market Risk

- 8.1 Market risk will normally either be modelled stochastically, or by selecting appropriate deterministic scenarios. Where a run-off approach is used, in selecting such deterministic scenarios, attention should be paid not just to the end value of the parameters modelled (e.g. total return) but also to the path followed. This is because the cost of guarantees if asset prices follow smooth as opposed to fluctuating paths may differ, especially where the incidence of guarantees is itself materially non-uniform or the impact of management actions is different under the different paths.
- 8.2 The cost of the inefficiencies associated with dynamic hedging strategies needs to be allowed for either by stochastic modelling of the strategies or by estimating the costs in an extreme, deterministic scenario (again, the cost is likely to be larger in non-smooth as opposed to smooth paths).
- 8.3 Where the assumed management action is to put a hedge in place if a specified price movement occurs, capital should be allowed for the loss which would result if it was reasonably foreseeable that a larger price movement could occur before the hedge could be put in place, including the likely additional cost of the hedge following that price movement. Careful consideration needs to be given to the likely capacity and

pricing spreads in the relevant markets in such extreme scenarios and any assumptions in this regard should, if possible, be justified relative to recent historic experience at times of large price changes.

- 8.4 The capital required in connection with a reasonably foreseeable change in implied asset volatility should be allowed for where this is a material risk for the firm.
- 8.5 Fixed interest exposures should be subject to stresses which allow for changes in the shape of the yield curve, as well as to uniform changes of level, where the impact of this may be material.
- 8.6 Firms should also consider the impact of any exposure to movements in exchange rates. Particular attention should be paid to ensuring the movements allowed for within the stress tests or stochastic projections are consistent with the market conditions implied by each scenario considered. Alternatively a separate test may be performed, provided appropriate allowance is made for the correlation between exchange rate risk and other market risks.

## **9. Credit Risk**

- 9.1 The variation in market prices and proceeds from corporate bonds could either be treated as a credit risk or as market risk. If variations in corporate bond spread and default risk for a diversified holding are modelled stochastically within the same model as is used for other market risks, then the combined result may be reported under a combined heading.
- 9.2 The exposure under derivative contracts can be considered to be net of margin payments and collateral arrangements. Where regular marking-to-market margining occurs, the maximum loss in an extreme scenario is the movement between margin intervals, less the value in that scenario of any collateral. In addition, if the calculation of the liabilities in the extreme scenario is dependent upon the existence of the derivative contract, consideration should be given to the cost (in spread terms) of obtaining identical derivatives from another counterparty. It is not necessary to assume that the UK financial market as a whole has ceased to function, although where the original derivative was of an infrequently traded type, consideration should be given to the time which may be necessary to arrange a replacement (with the consequential unprotected period) and the terms which a replacement provider may be likely to demand.

## **10. Insurance Risk**

### **10.1 Expense Risk**

- 10.1.1 A deterministic or stochastic approach may be used. In either case, the expense inflation assumption should be considered in the context of other economic assumptions.

- 10.1.2 If a one-year timeframe or instantaneous stress approach is used and if it is considered that inflation is an unhedged material risk, care should be taken to ensure that the liability valuation basis assumed after the period or stress allows for adequately stressed future inflationary expectations (or uses a market-consistent model calibrated relative to such expectations) consistent with paragraph 8 above.
- 10.1.3 On closed to new business assumptions the number of policies in force would be expected to reduce over time. The effect of increasing diseconomies of scale should be brought into account in an appropriate manner. If an outsourcing arrangement with a third party is in place on guaranteed terms, it is acceptable to assume that those terms will continue to apply for the duration of the guarantee. However, allowance must be made under credit risk or elsewhere for the possibility and impact of default by the outsourcer. Appropriate allowance must be made for a reversion to a full internal cost or a market-benchmarked outsourcing cost basis at the end of the guaranteed terms period if the terms of renewal of the contract are not constrained. Conversely, if a firm has a contractual commitment under an outsourcing agreement which results in minimum payments, appropriate allowance for this feature must be made.
- 10.1.4 Where services are shared between a number of companies in a group, it is necessary to identify reasonably foreseeable combinations of group company closures and correlations with other variables and assess the impact of these on the expense burden on the firm in each scenario modelled, allowing for the assessed probability of the combination.
- 10.1.5 Allowance should also be made for the risk of mismanagement of expenses generally, the extent of the allowance reflecting the effectiveness of the controls in place. This may alternatively be classified as operational risk.

## 10.2 Mortality and Morbidity Risk

- 10.2.1 Large scale events include:
- events which significantly increase claims globally or nationally for a limited time period; and
  - events which significantly increase claims only for the firm (e.g. as a result of multiple claims under a group life or income protection policy).
- 10.2.2 Material advances in the treatment of a significant critical illness of the aged (e.g. cancer or heart disease) or the development of a commonly available treatment to delay significantly the normal ageing process could be considered a 'large scale event' for a portfolio of annuities or guaranteed annuity options.
- 10.2.3 Long-term adverse trends are particularly important where policy terms are guaranteed (whether assurance or annuities). The *ICA* should consider firstly, with justification, how any historically observed trends (including cohort effects) might continue, or might continue to accelerate or decelerate. Extreme adverse events should then be significant worsenings of the expected trend or its rate of acceleration or deceleration. It may be necessary to assume different rates or even directions of change for different groups of lives or at different ages.
- 10.2.4 If a one-year timeframe or instantaneous stress approach is used, care should be taken to ensure that the liability valuation basis assumed after the period or



stress allows for adequately stressed future longevity expectations consistent with paragraph 10.2.3 above.

- 10.2.5 If it is intended to use a combined economic and mortality stochastic model to value deferred annuities, guaranteed annuity options or other liabilities, the stochastic variation most relevant for mortality is likely to be in the rate of mortality improvement rather than mortality levels. The mortality element of the stochastic model should produce extreme outcomes that satisfy the criteria of paragraph 10.2.3 above.
- 10.2.6 The possibility of adverse selection by policyholders terminating their life contracts early may need to be taken into account in assessing the range of possible future mortality experience. For reviewable rate products, the resulting increases in premium rates (to the extent permitted by policy terms and the duty to treat customers fairly contained in Principle 6 of the FSA's Principles for Businesses) may exacerbate selective lapse experience.

### 10.3 Persistency

- 10.3.1 Rates of early termination and option take-up can be affected both by a general change and by specific causative factors (including large scale events). For example, the rate of surrender of with-profits bonds at a date on which no market value reduction (MVR) may be applied may depend on the size of the MVR which would otherwise apply. Both a general change and possible causative factors should be considered in an ICA. The direction of the change should not be assumed to be the same for all classes of business unless this can be justified.
- 10.3.2 General changes in persistency could be modelled stochastically, if a reasonable distribution can be derived, or deterministically, in both cases taking into account historic variations in experience not attributable to specific causative factors. Consideration should also be given to step changes due to external factors, to the extent that these are reasonably foreseeable.
- 10.3.3 Under either approach, it may be necessary to assume that the 'central' rate of persistency varies over the lifetime of a policy, reflecting both the early experience of recently written business and, in time, the possibility of improving persistency as term remaining to maturity reduces.
- 10.3.4 The take-up rate of options or the persistency of business subject to guarantees should be assumed to be adversely correlated or dynamically related to the variation (or trend) of factors which increase the value of the option or guarantee (e.g. in the case of GARs, to reducing interest rates and increasing longevity; in the case of "no MVR" guarantees, to investment underperformance) unless the firm has credible evidence to the contrary.
- 10.3.5 If a one-year timeframe or instantaneous stress approach is used, care should be taken to ensure that the liability valuation basis assumed thereafter allows for adequately stressed future persistency and option take up rates consistent with paragraphs 10.3.1 to 10.3.4 above.