

# GN44: Mathematical Reserves and Resilience Capital Requirement

## *Classification*

Practice Standard

**Purpose** The FSA Prudential Sourcebooks (INSPRU and GENPRU) require insurance companies and Directive friendly societies with *long-term insurance liabilities* to establish *mathematical reserves* and, where applicable, a *resilience capital requirement* in respect of these liabilities. They also set out detailed *rules and guidance* to follow in calculating these items, including in particular a requirement to use methods and assumptions which are in accordance with generally accepted actuarial practice, and more generally to establish adequate *technical provisions* with due regard to generally accepted actuarial practice. 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. Guidance for non-Directive friendly societies is contained in GN8.

**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 *technical provisions* in accordance with the rules and guidance relating to *mathematical reserves*, and the calculation of the *resilience capital requirement* if required.

| <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 technical provisions or resilience capital requirement 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 *mathematical reserves*, and the calculation of the *resilience capital requirement* if required.
- 1.4** If there are any doubts about the accuracy of the data, an additional *mathematical reserve* 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, the directors' certificate required and any statement must make reference to this.

## **2 Basic valuation method**

- 2.1** A valuation method which is not in general use in the actuarial profession (whether to value a normal type of contract or in other circumstances) is not precluded, but would need to be justified by reference to actuarial principles.
- 2.2** Account must be taken of any relationship which the *firm* has with another company that is relevant for the purposes of the valuation. For example, where there are service agreements with other companies (whether or not within the same group structure) consideration must be given as to whether any additional provision is necessary for the contingency that such agreements might cease. This would be particularly relevant where a subsidised or beneficial agreement exists.
- 2.3** While it is expected that stochastic modelling will be used where there is a considerable range of possible outcomes, approximations may be used if it can be demonstrated that the *mathematical reserve* is prudent. The method used to demonstrate prudence does not itself need to be a full stochastic quantification, the requirement being solely that it should demonstrate prudence.

## **3 Treatment of discretionary charges**

- 3.1** Where the *firm* has discretion to increase charges for linked business, account may be taken of this when calculating the reserves, but only to the extent that the assumed future increases in charges would be consistent with the regulatory duty of fair treatment of customers and contractual conditions in the context of the assumptions made for the valuation. In making the calculation allowance must be made for any delay before increases could be implemented, and for any administration costs associated with such increases.

## **4 Interest rates and assumptions relating to assets**

- 4.1** Under generally accepted actuarial practice, an asset may be assumed to be disposed of only when required to meet the liability, or where the characteristics of the liability change significantly at a point in time. The change of a policy from with-profits to non-profit is such a change.
- 4.2** If allowance is made for the actual allocation of assets to liabilities used within the *firm's* tax calculation when setting the interest rate, this must be on a sustainable basis over the term of the relevant contracts, assuming unchanged tax legislation. It would not be appropriate to offset an excess of the actual expected tax liability in one period against a subsequent shortfall without adjusting for the time value of the respective amounts.
- 4.3** Distinct subsets of assets can be allocated to different classes of policy. Although there are no specific requirements regarding the type of assets which may be allocated to particular classes of business, some allocations would not be prudent, for example allocation of overseas branch assets to cover liabilities to United Kingdom policyholders if rules in the territory concerned made such an allocation impractical to achieve.
- 4.4** In calculating the internal rate of return, where appropriate, it is necessary to allow for interest accrued up to the valuation date if this is not otherwise allowed for in the market value of the asset.
- 4.5** When assessing any adjustment for credit risk to the running yield on equities and real estate and to the internal rate of return on fixed interest stocks it is appropriate to allow for market knowledge, degree of marketability and, for real estate, the covenant of the tenant. A yield on an asset in excess of the yield on government stock of a similar term is not necessarily due entirely to credit risk.
- 4.6** For *realistic basis life firms*, the risk-adjusted yield assumed for sterling investments or reinvestments must not exceed a rate derived from the forward gilts yield. Where the valuation approach adopted does not allow for forward yields to be used directly, it must be demonstrated that any approximation is reasonably expected to be no less prudent. One approach for demonstrating this is to test the resulting discount derived for relevant durations with the price of comparable gilt strips.

## **5 Expenses**

- 5.1** Consideration must be given to the impact of selective withdrawals on the allowance for future expenses, particularly where the allowance is not assessed on a per policy basis. For example if allowance for expenses is expressed as a percentage of premiums, the possibility of higher withdrawals among high premium policies should be taken into account. Particular attention should be paid to this aspect when calculating non-unit reserves for linked business.
- 5.2** Proper provision must be made for claims handling expenses, directly or indirectly. This is particularly relevant to classes of business such as permanent health insurance where these expenses are likely to be significant.

**5.3** The total provision for expenses must be sufficient, on the valuation assumptions, to meet the expenses that would be incurred in fulfilling contracts if the *firm* were to cease to transact new business and must take into account the fact that the transition to a closed fund is likely to be costly and that it may take more than twelve months from such closure before the lower level of expense appropriate to a closed fund is achieved, together with any impact on the future tax position of the fund.

## **6 Mortality and morbidity**

**6.1** In the context of annuitant longevity, it will normally be appropriate to consider a birth-year cohort approach where the liability is material.

**6.2** For permanent health insurance business the adequacy of the reserves should generally be assessed against a method which makes specific allowance for claim inception rates and the duration of sickness. Alternative techniques may be acceptable in some circumstances, for example for sickness contracts with very short deferred periods in respect of short duration claims. Where the Manchester Unity method is used it should be borne in mind that observed experience as measured by this method is highly sensitive to the maturity of the business. If the valuation basis is being set by reference to observed experience it will be appropriate to consider how this is likely to change as the business matures. For immature business and in some other circumstances significant margins over current experience may be appropriate. If the Manchester Unity method is used, consideration should be given as to whether additional reserves need to be established in respect of claims in payment.

## **7 Options**

**7.1** When stochastic models or market option pricing are used to calculate the reserve required for an option available to a policyholder, the reserve must be reviewed for the purposes of calculating the *resilience capital requirement* when one is required. When calculating the liability using stochastic techniques, the level of prudence must not be reduced by the inclusion of a risk premium in any of the parameters. GN47 provides further guidance on recommended practice for stochastic modelling.

**7.2** The same considerations apply with the valuation of options by more approximate methods than stochastic models as are given in Section 2.3 above.

## **8 Persistency**

**8.1** In making a prudent allowance for lapses within their valuation, the actuary needs to take into account the fact that lapse experience within a class can vary. It will be necessary to assess whether a change in assumed persistency for a class of business on or around particular durations (eg when valuable options are available) increases or reduces the reserve. This may mean using different assumptions for different classes or on different occasions.

## 9 Reinsurance

**9.1** There is a long established principle of actuarial valuation (which differs from accounting practice), that contingent cashflows under a contract may be offset against other earlier cashflows which necessarily occur before the contingent cashflows, irrespective of the parties involved. In particular, obligations to make payments to reinsurers which arise only after and to the extent of the receipt of a specific item of cash inflow under a long term business contract are properly valued together with that item of cash inflow. This covers premiums payable and charges deducted from contracts, but does not extend to generalised cashflows, such as those arising from assets, whether actually held or notional. However, in the context of obligations to make payments to reinsurers, this actuarial principle is only applicable where specific items of cash inflow can be identified which trigger a requirement to make a payment, and their non-receipt avoids that payment. Otherwise the reinsurance cash outflow items must be valued as separate liabilities unless an exemption applies.

## 10 Resilience capital requirement

**10.1** In the calculation of *mathematical reserves*, there must be no arbitrary changes in methods and assumptions from year to year. This means that, while margins in the valuation basis that are not required by the rules may be reduced or removed when calculating any *resilience capital requirement*, there can be no changes to the assumptions used other than those changes that can reasonably be expected to result from the changes in economic conditions. This restriction does not preclude the introduction of a zillmer adjustment, which may be considered as an offset to the reduction in net premium caused by an increase in the valuation interest rate. The amount of any such zillmer adjustment must be justified by reference to the change in net premium.

**10.2** When calculating any *resilience capital requirement* for with-profits business, the liability in the changed investment conditions must adequately cover policyholders' (revised) reasonable expectations, including any expectations in relation to immediate surrender values having due regard to the requirement to treat customers fairly.

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