GUIDANCE NOTE 252

ECONOMIC VALUATIONS OF LIFE INSURANCE BUSINESS

PURPOSE

This Guidance Note sets out considerations that bear on a Member's professional work in carrying out *economic valuation*s of *life insurance business*. It is supplemental to and builds on the general framework set out in GN552, "Economic Valuations" and should be read in conjunction with that Guidance Note.

This Guidance Note is not intended to be comprehensive and is not, in itself, sufficient to allow a Member who is inexperienced in the field to attempt an economic valuation of life insurance business.

HOW TO USE THIS GUIDANCE NOTE

This Guidance Note is supplemental to GN552. Users of this Guidance Note should also refer to the guidance provided in GN552 when using this Guidance Note.

Words that appear in italics are terms used throughout this Guidance Note with meanings as defined in the Definitions and Concepts section.

APPLICATION

This Guidance Note applies to all Members of the profession involved in performing *economic valuation*s of *life insurance business* where the Member is providing actuarial advice as defined in the Code of Conduct and where GN552 is applicable. It does not apply in situations where GN552 is not applicable.

In the event of any ambiguities or inconsistencies between this Guidance Note and GN552, GN552 will prevail.

Whilst only applying specifically to *life insurance business*, sections of this Guidance Note may be of assistance in determining *economic valuation*s of portfolios of other similar financial products or services where the use of similar techniques is considered by the Member to be appropriate.

Throughout this Guidance Note references are made to business transacted in Australia, Australian conditions and relevant Australian legislation. Such references should be interpreted appropriately in relation to business transacted overseas.

LEGISLATION

The Member will need to consider the specific implications of the following legislation: -

- The Life Insurance Act 1995, related regulations and standards; including
- Actuarial standards issued by the Life Insurance Actuarial Standards Board.

DEFINITIONS AND CONCEPTS

The definitions and concepts defined in GN552 have the same meaning in this Guidance Note and appear in italics throughout. In addition the following terms have meanings as defined below.

Capital Requirement: The amount of capital required to be maintained within a *life insurance business* to support its ongoing operations. This may or may not be equal to the Capital Adequacy Requirement as defined under Actuarial Standard No. 3 issued by the Life Insurance Actuarial Standards Board (LIASB).

Existing Business: Life insurance business that is in force on the *economic valuation* date.

Future New Business: New *life insurance business* expected to be procured, on certain assumptions, after the *economic valuation* date.

Life Insurance Business: Life insurance business as defined in the Life Insurance Act 1995, as amended or re-enacted from time to time, excluding Friendly Society business.

FIRST ISSUED

This Guidance Note was first issued in November 1993 as “Guidance Note 252 – Actuarial Appraisals of Life Insurance Business”. It has been substantially revised and released in July 2004 in a form to supplement GN552.

1 INTRODUCTION

1.1 Background

This Guidance Note provides guidance in relation to the *economic valuation* of *life insurance business*, which is supplemental to and builds on the general *economic valuation* framework set out in GN552.

1.2 Economic valuations of life insurance business

Most life insurance policies are issued on the expectation on the part of both the purchaser and the seller that the contract will remain in force for a number of years.

Both parties have expectations as regards future payments to each other. While the purchaser's obligations to make future payments may be voluntary, those of the life insurance company are usually not. In addition the life insurance company expects to incur costs in administering its *existing business* in the future. Accordingly, reserves must be established to meet the policy liabilities and capital requirements necessary for a company to be able to fulfill its obligations.

From the point of view of the life insurance company, the existence of the long-term contract enables it to structure its terms in such a way that an excess of expenses over revenues at the outset of a contract may be recouped by an expected excess of revenues over expenses throughout the life of the contract. This situation means that, at any point in time, the *existing business* of a life insurance company may represent an asset of value, which could be sold.

The capacity of a life insurance company to derive profits from future *new business* is also a potentially valuable asset. The value of such a capacity must also be taken into account in determining the economic value of *life insurance business*, unless specifically excluded from the scope of the assignment.

2 PROFESSIONAL CONSIDERATIONS

2.1 Interpretation of this guidance

The degree of detail and precision in an *economic valuation* performed by the Member should be appropriate to the context in which it is being performed.

This Guidance Note should be applied by the Member in the context of the scope of the *economic valuation* being performed. For example, the guidance will be applied differently in the context of a limited scope valuation than it would in the context of a full scope valuation. This is particularly relevant in respect of:

- Guidance on the selection of appropriate models; and
- Guidance on communication and disclosures.

2.2 Market valuations

In Australia, purchases and sales of *life insurance business* occur infrequently and there are only a small number of listed life insurance companies, making credible market data difficult to obtain. When a transaction does occur it is unusual for full details regarding the price to become public knowledge. Even when a value appears in the press it cannot necessarily be relied upon in assessing the actual price paid relative to the results of any associated economic values which may have been performed, as the terms and conditions of the transaction are unlikely to be known.

2.3 Actuarial Standards

The Life Insurance Actuarial Standards Board (LIASB) has issued a number of actuarial standards under the Life Insurance Act 1995. The Member should consider the requirements of these standards where relevant, in particular for the determination of capital requirements and policy liabilities if required in determining the economic value.

2.4 Working with other parties

Where a Member is asked to perform an *economic valuation* of *life insurance business* as a component part of a larger *economic valuation*, this Guidance Note applies to the *life insurance business* component of the *economic valuation* for which the Member takes responsibility.

3 GENERAL FRAMEWORK

3.1 Valuation framework

The valuation framework given in GN552 applies to all *economic valuation*s, including those of *life insurance business*.

3.2 Models used to perform an economic valuation

*Economic valuation*s of *life insurance business* typically use a combination of four major types of models i.e.

- Cash flow models – for forecasting of future cash flows;
- Probability models – for assumption selection including claims and persistency;
- Economic models – in determining future asset returns and inflation; and
- Risk allowance models – in allowing for the effect of uncertainty on value.

These models are described in greater detail in GN552 and in the context of *life insurance business* in Section 8 (Valuation Models). They are used to a lesser or greater extent depending upon the valuation method chosen (Section 6 – Valuation Methods).

4 PURPOSE, USE AND SCOPE CONSIDERATIONS

4.1 Scope of economic asset

4.1.1 Implications of corporate structure:

The Member should be aware of the corporate structure in which the *life insurance business* is being written and consider the implications of this for the *economic valuation*. Depending on the purpose of the *economic valuation*, it may be appropriate to include in the *economic valuation* profits or losses generated by related companies, such as:

- service companies;
- distribution companies; or
- investment companies.

Where the *life insurance business* is being written within a group company structure, the Member should consider the group's plans with respect to other businesses within the group and the potential impact of these on the economic value of the business being valued. In particular, the Member should consider the potential impact on the capacity to distribute business and on the projected unit costs of the *life insurance business*.

Intra-group transactions can often be complicated and the Member should be satisfied that elements of economic value are not double counted or omitted as a result of intra-group transactions. This is particularly important when the Member is determining an economic value of a life insurance

company to be used as a component in an *economic valuation* of the corporate group of which the life insurance company is a part. In these circumstances, the Member should be aware of the valuation methods being used for other relevant group companies.

4.1.2 Future new business

There can be considerable subjectivity regarding the definition of new business and hence assumed *future new business* volumes. The *future new business* volumes on which the economic value of *future new business* is based must be:

- consistent with the definition of existing business, so that there is no double-counting or omission of business; and
- consistent with the expense analysis used to determine new business and renewal expense assumptions.

The definition of new business will depend on the information systems available within a particular *life insurance business.* In defining new business it may be useful to consider the extent to which effort and/or action from the sales force was required to produce the increased business volumes. Under this approach the following could be considered new business:

- increases to sums insured that are not contractual, not automatic or had not been previously agreed to;
- new mandates in respect of corporate superannuation business; and
- recurring premiums in respect of investment business, to the extent they are not contractual, not automatic, or had not been previously agreed to.

Under this approach, the following would not typically be considered new business and so would correspondingly be included in the value of *existing business*:

- contractual or automatic increases to sums insured;
- new Members in existing corporate superannuation business; and
- contractual or automatic recurring premiums.

Clear disclosure of what comprises new business should be provided to the *principal* or user(s) of the report.

5 UNDERSTANDING THE ECONOMIC ASSET

*Life insurance business*es market products that can be complex in design and operation. In developing an understanding of a *life insurance business* for *economic valuation* purposes the Member will need to consider the unique aspects of the business being valued.

Examples of some of the aspects that may need to be considered include:

- disability income policy benefit definitions;
- the operation of participating funds and other forms of profit sharing and experience rebating;
- options and guarantees granted to policyholders, either implicitly or explicitly;
- discretions available to the life insurer within policy design and legislative requirements; and
- the relationship between policy liabilities and related assets.

6 VALUATION METHODS

6.1 Choice of method

Due to the long-term contractual nature of the business and the wide variety and complexity of products, the *economic valuation* of *life insurance business* will usually require the use of a valuation method that involves the projection of future cash flows. Simpler techniques will usually only be appropriate for approximate valuations or as a check on the results produced by other methods.

It is not the intention of this Guidance Note to prescribe the use of a particular *economic valuation* method. In choosing a method, the Member should have regard to:

- the strengths and weaknesses of the methods available in the context of both the business being valued and the purpose and materiality of the valuation; and
- the considerations set out in this Guidance Note and in GN552.

6.2 Ratio methods

If an approximate *economic valuation* is being derived using a price/earnings multiple approach, earnings should be normalised by removing the impact of experience profits or losses not expected to be repeated over the longer term; and normalising investment earnings on retained profits, consistent

with long term investment return expectations. Alternatively, a multiple of operating earnings (excluding investment income on retained profits) may be used, with the value of net assets at the valuation date added to the result.

In all cases the multiple should reflect the future growth expectations and risk profile of that part of the business that is being valued by the multiple approach. Different multiples may be appropriate for different segments of the business being valued.

6.3 Risk premium methods

If using the risk premium method in conjunction with a risk allowance model such as the Capital Asset Pricing Model the Member should be satisfied that the chosen risk discount rate is consistent with the risk profile of the business being valued (in particular the degree of market-related risk in the business) and the level of capital projected to be held within the business.

In particular, when determining *economic valuation* results under various scenarios (for example different asset or reinsurance profiles) the Member should be satisfied that the assumed risk-adjusted discount rate appropriately reflects the level of risk of the particular scenario, so that changes in the risk profile of the company do not result in inappropriate changes in the *economic valuation* result. For example, in most cases it would not be appropriate for the value of non-participating business to vary as a result of a change in the assets backing the portfolio. Where the method produces a change in economic value in such situations, the economic rationale for the change in value should be explained.

6.4 Risk neutral or certainty equivalent methods

In applying these methods the Member should be satisfied that the degree to which each cash flow is market related can be reasonably ascertained or approximated and that the risk neutral probabilities or certainty equivalent cashflows are appropriate. This applies both in respect of cash flows that have a direct link to economic parameters, for example surrender values on unit linked products, and cash flows where the link may be less direct, for example lapse rates, disability claim payments and expenses.

6.5 Asset replication

It may be difficult to find matching assets for certain characteristics of life insurance liabilities, for example matching of long duration or mortality-dependent cashflows may be difficult.

6.6 Approximate valuations

For certain purposes, the Member may perform approximate *economic valuation*s based on a limited analysis of the key drivers of economic value.

When undertaking an approximate *economic valuation* of a *life insurance business* the Member should consider the key drivers of economic value for each line of business being valued. Examples of key drivers of economic value may include:

- for unbundled investment business:
  - funds under management; and
  - the margin of fees less expenses;
- for lump sum risk business:
  - premium income; and
  - the margin of premiums less claims and expenses;
- for annuity business:
  - current market yields available on appropriate assets;
  - mortality experience, including expected improvements, in the case of lifetime annuities; and
  - the annuity liability amount.
- for traditional business and business with significant guarantees, such as investment account business, the Member will need to exercise judgement and it may be that in some situations it is not possible to identify suitable drivers to enable an approximate valuation to be determined. In such cases the Member should consider whether or not it is appropriate to attempt to perform an approximate valuation.

In each case the impact of releases of current reserves should be considered, if appropriate to the method being used.

6.7 Roll-forward or Roll-backward valuations

In certain circumstances the Member may be required to perform a roll-forward or roll-backward valuation of the *life insurance business*. Roll-forward/roll-backward valuations for *life insurance business* should take into account; to the extent it is practical and appropriate:

- the expected change in economic value over the roll-forward/roll-backward period (in accordance with how this is defined in the valuation method being used) including the effect of changes in capital requirements (if relevant to the valuation method);
- any dividends or capital injections over the roll-forward/roll-

backward period;

- deviations in operating experience over the roll-forward/roll-backward period from that expected in the base economic valuation. The most important of these are likely to result from differences in:
  - expenses;
  - claim payments;
  - investment earnings;
  - terminations; and
  - new business.
- differences in *existing business* volumes and mix at the end of the roll-forward/roll-backward period compared to those projected under the base valuation, allowing for new business over the period; and
- changes in the value of *existing business* and projected *future new business* at the end of the roll-forward/roll-backward period as a result of any changes to assumptions that might be appropriate. Changes to assumptions may result from changes in the experience and outlook of the individual company, the market or the industry over the roll-forward/roll-backward period. The following assumptions should be considered:
  - investment returns;
  - discount rates (if relevant to the valuation method);
  - expenses;
  - termination rates;
  - mortality/morbidity rates;
  - capital requirements, if relevant to the method being used; and
  - new business levels, future growth and expected profitability.

If using approximate methods to adjust for the impact of changes in assumptions at the end of the roll-forward/roll-backward period, the Member should be satisfied that appropriate allowance is made for the cumulative effects of varying assumptions, whereby the combined effect of changing two or more assumptions may be different from the sum of the individual effects.

In addition, the Member should consider the impact of any non-linearity of the results, for example as a result of investment guarantees.

7 DATA

7.1 Introduction

Due to the relatively complex nature of life insurance operations, the data required to perform an *economic valuation* can be quite detailed and is typically obtained from a number of different sources.

7.2 Available data

7.2.1 Internal data sources

Typical sources of data from within the business being valued include:

- Financial Condition Reports prepared by the Appointed Actuary;
- financial statements and internal management accounts;
- experience investigations prepared by actuarial or product management teams;
- business forecasts and marketing plans;
- current and pending product pricing & commission structures, key policy terms and conditions;
- policy and product data, including both existing business and movement data;
- asset mix and asset value details;
- underwriting and claims management processes;
- reinsurance arrangements;
- reserving bases and processes; and
- taxation basis and position.

7.2.2 External Data Sources

Data sources available externally may include:

- relevant publicly available information concerning the company, including general purpose and statutory financial statements, analyst information packs and product disclosure material;
- returns and information prepared for the regulator;
- relevant information from industry studies and other sources such as consultants and reinsurers;
- sales performance and market share information; and

- general asset prices or indices and other relevant information required for economic models and assumptions.

7.3 Data reliance and review

In relation to *life insurance business* there are particular areas where accurate and statistically credible data can be difficult to obtain or where data may be distorted or not relevant for the future.

Examples include:

- data relating to the claims experience of newer or emerging products; and
- significant changes in management or operating practices, such as underwriting or claims management practices, rendering past experience only partially relevant.

The suitability of the data and nature of the reliance that can be placed on this data should be determined bearing in mind the purpose of the *economic valuation*.

Where data is being used for a different purpose or in respect of a different time period from that for which it was originally collected, the Member should consider its suitability for use in respect of the intended time period or purpose. In particular, parameters such as discontinuance and disability claims cost can vary significantly over time and therefore related data should be updated on a regular basis.

Data obtained from multiple sources should be reviewed for consistency.

8 VALUATION MODELS

8.1 Testing the model

One or more of the following types of model are typically used to determine an *economic valuation* of *life insurance business*: cash flow, probability, economic and risk allowance.

It is important that the Member be satisfied as to the reliability and consistency of these underlying models.

It may be possible to gain access to other models maintained by the life insurance company for management and other purposes. It is likely that the Appointed Actuary will have models of products for use in determining policy

liabilities or product pricing. In addition, there may exist related models used for business planning purposes.

It may be possible and useful for the Member to compare results from models developed for determining *economic valuations* against the results from other models.

8.2 Cash flow models

There are a number of particular issues that need to be considered in modelling life insurance cash flows.

8.2.1 Policy terms and conditions

The contractual terms and conditions under which *life insurance business* is written are often complex and the Member should be satisfied that material contract terms and features are appropriately reflected in the cash flow model.

Subject to materiality considerations, segments of business with different characteristics, or a different expected emergence of profit over time should be modelled separately.

The Member should be satisfied that any policyholder options and guarantees, or other forms of asymmetric financial outcomes, are appropriately handled in the model. While policyholder options and guarantees are primarily associated with participating business, they can also be present in non-participating business. For example: guaranteed crediting rates in non-participating investment account business and unit price guarantees in investment-linked business.

8.2.2 Participating business

Participating products commonly provide the life insurer with a certain amount of discretion with respect to:

- the accrual of policyholder benefits via bonus or crediting rates; and
- the level of guarantees on surrender or maturity, for example via the use of reversionary versus terminal bonuses, market value adjusters, deferral of surrender payments, and/or variations in surrender bases for conventional business (subject to legislative minimum).

However, there are significant legal and other restraints on the allocation of profit, limiting the shareholders' share of participating business profit and the

distribution of retained profits. The *economic valuation* should reflect the implications of these constraints on the shareholders' ability to extract value from the *life insurance business*.

The *economic valuation* should reflect the manner in which participating business discretions may be expected to be exercised. The Member should be satisfied when undertaking stochastic projections that the manner in which such discretions are assumed to be exercised in extreme situations is representative of the likely situation in reality.

Participating business in most cases will represent an asymmetric risk to the shareholders of the life insurance company. The materiality of this asymmetry should be considered by the Member when selecting an appropriate valuation method to use for this business.

8.2.3 Existing and new business

For most lines of long-term *life insurance business* with significant acquisition expenditure and/or capital requirements new business cash flows should be projected separately from those arising from business in force at the valuation date. Failure to project in-force and new business cash flows separately may result in an incorrect projection of future expenses and capital requirements and hence compromise the valuation result.

8.2.4 Tax environment

The cash flow model should appropriately reflect the way in which taxation impacts the flow of profit and economic value, for example:

- the manner in which certain product portfolios are taxed may differ from the tax treatment of the earnings on shareholder capital supporting them or the shareholder profits arising;
- the shareholders' entitlement to imputation credits resulting from corporate tax paid; and
- the value to the shareholders of any accumulated shareholder imputation credits at the *economic valuation* date.

8.2.5 Capital requirements

Certain *economic valuation* methods require the future capital requirements of the business to be projected in the cash flow model. Where capital requirements are projected, they should be consistent with the *economic valuation* method and risk allowance model(s) being used.

For example, if using the risk premium method with the Capital Asset Pricing Model as the risk allowance model, projected capital requirements should be consistent with the determination of the risk discount rate.

8.3 Probability models

Life insurance cash flows are commonly subject to a range of contingencies including mortality, morbidity, lapse and surrender, and premium and fee changes. These are usually modelled using deterministic probability models, for example mortality tables.

There may be significant uncertainty as to the assumptions that should be used to reflect these contingencies. In particular, uncertainty will be greater in cases where:

- there is a lack of credible data (for example lapse rates for new products or mortality/morbidity data for new risk products); or
- it is expected that historical experience may not be representative of future experience (for example following a merger or acquisition, or a significant change in management practice).

In most cases, the impact on value is symmetric and therefore a deterministic model will usually be sufficient to determine the economic cost of the risk. However, where the impact of uncertainty on value is asymmetric, then more sophisticated probability models may be required.

8.4 Economic models

A robust economic model is a key factor in the determination of the economic value of many life insurance products. However, the considerations involved in selecting and building economic models are not specific to *life insurance business* and so the Member is referred to the guidance provided in GN552 in this regard.

8.5 Risk allowance models

Risk allowance models provide inputs required for the determination of the impact on the economic value of taking on risk in *life insurance business*. The form of risk allowance model selected must be consistent with the valuation method adopted.

8.5.1 Earnings and volume ratios

The impact of risk on value is allowed for in these methods via the selection of the multiplier. Multipliers should be selected bearing in mind the following features of the business:

- future growth prospects;
- risk profile; and
- the sustainability of current profit margins.

If multipliers are selected by comparing or benchmarking to market and/or other published valuations, then the Member should be satisfied that the business characteristics, including risk profile, of the comparative businesses are sufficiently similar to those of the business being valued. If this is not the case, adjustments to observed multipliers may be required.

8.5.2 Risk premium methods

Risk premium methods allow for risk by discounting future expected distributable profits at a risk-adjusted rate of return. The purpose of the risk allowance model is therefore to set an appropriate risk-adjusted discount rate. The most common risk allowance model used by actuaries in the life insurance sector is the Capital Asset Pricing Model. When using this or other risk allowance models in association with the risk premium method, the Member should be satisfied that the resulting risk discount rate is appropriate taking into account:

- the risk profile of the business being valued (in particular the degree of market-related risk in the business); and
- the level of capital projected to be held within the business.

In particular, when determining *economic valuation* results under various scenarios (for example different asset or reinsurance profiles) the Member should be satisfied that the assumed risk-adjusted discount rate appropriately reflects the level of risk of the particular scenario, so that changes in the risk profile of the company do not result in inappropriate changes in the *economic valuation* result. For example, in most cases it would not be appropriate for the value of non-participating business to vary as a result of a change in the assets backing the portfolio. Where the method produces a change in economic value in such circumstances, the economic rationale for the change in value should be explained.

8.5.3 Risk neutral or certainty equivalent methods

Risk neutral or certainty equivalent methods allow for risk by adjusting projected future cash flows or cash flow probabilities to be “risk neutral”. The

purpose of the risk model is to provide these risk neutral cash flows or probabilities for use in the cash flow model. The key requirements of a risk allowance model for use with risk neutral or certainty equivalent valuation methods are that it:

- appropriately identifies all cash flows or cash flow probabilities that should be adjusted for risk; and
- determines an appropriate risk adjustment for each of these.

In determining the risk adjustment that should be made to each cash flow or probability distribution, the Member should take into account the market related or systemic risk rather than the total risk of the cash flow. This may require the Member to develop data relating to the correlation of various cash flows with market movements. The Member should consider the market related risk associated with each of the cash flows being projected, including:

- asset-related cash flows;
- lapses;
- claim payments;
- expenses; and
- taxation.

The application of risk-neutral or certainty equivalent valuation techniques to the determination of *economic valuations* of *life insurance business* is a relatively new area of practice for actuaries. As such, it is to be expected that historical data for use in calibrating the risk models may be less complete than the Member would wish. In such situations, the Member should use his or her best judgment in calibrating models, and consider whether it may be necessary to use alternative methods to verify the reasonableness of results produced using such models.

8.5.4 Asset replication

Under an asset replication valuation methodology, a market-based allowance for the impact of risk on economic value is reflected in the observed price of the replicating asset. As such, no further explicit allowance for risk is required.

8.6 Consistency of models

The Member should be satisfied that each model used is appropriately internally consistent and consistent with any other model used. In particular, the Member should be satisfied as to:

- the consistency between the risk profile of the business, the capital requirements projected in the cash flow model and the risk discount rate from the risk allowance model, such that artificial changes to economic value as a result of changes in risk profile (for example in regard to asset mix) under the risk premium method are avoided;
- the consistency between the economic model and risk allowance model, for example inconsistent investment return assumptions and risk discount rates, or between investment return assumptions and asset values;
- the appropriateness of the assumed exercise of discretions in the cash flow model in response to the outcomes of the economic model; and
- the appropriateness of the probability models in respect of lapse rates and morbidity rates in response to the outcomes of the economic model.

9 SETTING ASSUMPTIONS

9.1 Background to assumptions

There are a number of characteristics of *life insurance business* that require particular attention when setting assumptions for *economic valuation* determination purposes. The significance of particular assumptions will depend upon the method and model chosen. Not all of the assumptions discussed below will necessarily be required for all models.

9.2 Setting assumptions for life insurance business

9.2.1 Expenses

The Member should be satisfied that expense assumptions have regard to current expense levels and, where appropriate, management business plans.

The following should also be considered in setting expense assumptions for *life insurance business*:

- the reasonableness of management business plans and the consistency of these plans with the current expense base. Depending on the assumption set chosen, valuation adjustments may be required to allow for any short to medium term overruns or under runs;
- the extent to which non-recurring expenses should be excluded.

This will depend upon the extent to which the Member is comfortable that these expenses will not be repeated either implicitly or explicitly into the future. In this respect it should be recognised that businesses will generally be required to maintain an adequate level of capital expenditure into the future to continue as viable operations;

- the extent to which production, administration or overhead capacity is in excess of that required for current volumes of in force and new business;
- the fixed and variable nature of the expense base and the appropriateness of drivers used to model this base. For example, number of policies, premiums, funds under management;
- the reasonableness of the modelled expense base throughout the projection period, both in absolute terms and relative to other projected items such as profit, revenue and other drivers of the business being modelled; and
- an appropriate allowance for future expense inflation.

The basis for the expense assumption set chosen should be clearly disclosed to the principal including the extent to which future synergies or expense savings have been allowed for.

9.2.2 Commission

Commission and related compensation assumptions should be based on the actual or anticipated experience of the business being modelled. In some cases, these assumptions will be based on historical levels. In other cases, including those where the commission arrangements may be more complex, a detailed review of agency contracts and company practices may be necessary.

9.2.3 Reinsurance

Where relevant to the valuation method employed, consideration should be given to the extent to which reinsurance arrangements impact the risk profile of the business and the related allowance for uncertainty made in the *economic valuation*.

Often reinsurance contracts have a component that is more in the nature of a financing transaction than risk transfer. Where a financing component exists the Member should be satisfied that the effects of this on both risk and projected cash flows are appropriately allowed for in the valuation so that the

financing aspect of reinsurance does not inappropriately affect the *economic valuation* result.

9.2.4 Management options and discretions

In setting the assumptions, the Member should consider actions available to management in managing the business. Assumptions should reflect the manner in which options available to management are expected to be exercised in the future; however, the Member should be wary of assuming departure from established management practice without good reason.

Assumptions about future management actions should be consistent with the other assumptions and with market context and practice.

Examples of such options are:

- the exercise of discretions in the setting of variable policy charges, bonus rates and surrender value bases; and
- the revision of non-guaranteed premium rates and conversion terms.

9.2.5 Third party options and discretions

In setting assumptions, the Member should consider options and discretions available to third parties that may be exercisable against the company. These may include, for example, options arising from a change of ownership or those relating to financing agreements or obligations.

9.2.6 Mortality and morbidity rates

Mortality and morbidity assumptions will usually be expressed relative to a chosen industry mortality or morbidity table with adjustments reflecting the organisation's own experience, where credible, and the experience of other comparable entities where available.

The potential for future changes, whether favourable or adverse, should also be taken into account. This may include changes arising from management actions such as alterations to contract pricing and design, underwriting and claims management practices.

In some cases, expected future improvements in mortality may not be explicitly modelled, but may be assumed to be offset by corresponding changes to product terms. If using this technique, the Member should be satisfied that the changes in product terms implicitly assumed would be reasonable in the expected future circumstances.

9.2.7 Policyholder lapse/surrender/premium dormancy rates

These assumptions should have regard to the experience of the business and that of the industry.

The effect of lapses or non-renewal, premium change and premium dormancy on flexible-premium products should be considered in the evaluation of historical experience and the development of the Member's assumptions as to future anticipated experience.

In addition, the Member should consider the following:

- the potential impact of economic conditions on persistency levels;
- the potential impact of recent or planned changes to price levels or commission structures;
- the potential impact of merger, acquisition or business migration activity; and
- the potential impact of product features such as exit fees, particularly where these vary over the life of the product.

9.2.8 Rates of investment return

These assumptions should be consistent with the economic and risk models employed.

9.2.9 Inflation

For *life insurance business*, inflation assumptions may be required in respect of cash flows, sums insured and policy fees. The inflation assumptions used should be consistent with the other economic assumptions employed.

9.2.10 Taxation

In most circumstances the Member would be expected to allow for the current taxation basis in determining the economic value of *life insurance business*. However, there may be situations in which it is more appropriate to allow for an alternative basis. The Member should consider if and when it may be appropriate to diverge from the current taxation basis having regard to the likelihood that the taxation basis will change in the future and the purpose of the valuation. The *economic valuation* report should make any departure from the current taxation basis clear.

The *economic valuation* should reflect:

- the assumed basis of apportionment of tax between statutory funds (where relevant);
- proprietors' entitlement to imputation credits resulting from dividends received and tax paid; and
- the value to the proprietors of any accumulated imputation credits at the valuation date.

9.2.11 Bonus and crediting rates

Assumed future bonus and crediting rates should be consistent with assumed rates of investment return and capital growth. In forming an opinion on appropriate assumptions the Member should consider:

- the bonus and crediting rate strategy of the business, including, if appropriate, due allowance for new business and market considerations;
- whether or not this has been applied in the past; and
- the likelihood that it will be applied in the future.

9.2.12 Market positioning

The assumptions should have regard to the size and growth prospects of the organisation's markets and the organisation's position in those markets, in particular:

- competition within those markets;
- the company's distribution methods, costs and future viability; and
- any other relevant external factors.

They should also be reasonable in the light of the company's internal structure, in particular:

- the strength of its management;
- its operating efficiency; and
- the attractiveness of its products and the way discretions such as bonus and crediting rates are being exercised.

In addition, the Member should consider the sustainability into the future of projected profit margins and in particular whether there should be an allowance for future margin squeeze.

9.2.13 Impact of change in nature of business

In setting assumptions, the Member should appropriately take account of any changes that are expected to occur in the nature of the business conducted by the organisation.

Such changes could include:

- different business plans;
- different bonus and crediting rate strategies;
- cost structure changes;
- revision of distribution methods and remuneration;
- contract repricing or redesign; and
- revision of investment policy.

Where these expected changes are dependent on future management decisions and actions, these should be agreed with the principal and stated in the *economic valuation* report.

The assumptions should allow for the costs associated with the assumed changes in the nature of the business and any likely impact on persistency.

9.3 Model points

Model points are frequently used as part of the cash flow model of particular products within a life insurance entity. It is important that the number of model points chosen reflects the diversity in pricing, potential performance of the product and the materiality and purpose of the valuation.

Individually underwritten risk products tend to display a diversity of premium rating and performance characteristics relating to factors such as age, sex, smoker status, underwriting acceptance status, period since inception and occupation. It would be usual for detailed models with many model points to be required to adequately represent all of these characteristics.

In the case of group risk schemes, the nature of the underwriting and premium rating processes, together with any experience refund arrangements that may apply, can mean that less detailed models with fewer model points may be appropriate. This may also be appropriate for some classes of investment products.

10 CHECKING AND ANALYSIS OF RESULTS

10.1 Analysing and portraying uncertainty

10.1.1 Stochastic modelling and simulations:

Stochastic modelling can be used to demonstrate the impact of investment market uncertainty on valuation results. This can be particularly relevant for products such as immediate annuities and those products with significant embedded guarantees or options.

10.1.2 Sensitivity testing

For *life insurance business* the following sensitivities may be particularly important:

- the assumed rates of investment return;
- expense rates;
- lapse and surrender rates;
- new business volume, growth and mix;
- mortality/morbidity; and
- the risk discount rate (depending on the valuation method employed).

10.1.3 Scenario testing

For *life insurance business*, the following assumptions will often be the most important to test:

- surrender rates and investment earnings;
- initial expenses and sales volumes;
- investment earnings and sales volumes; and
- surrender rates and claim rates.

10.1.4 Stress testing

The stress testing scenarios that may be particularly relevant for *life insurance business* include:

- a significant correction in investment markets;
- mass or ‘shock’ lapses; and
- a significant increase in expenses.

10.2 Analysis of change in value

The analysis of change in value in respect of *life insurance business* should generally identify, as a minimum:

- the effect of changes in the valuation method and model. This could include changes in methods, model enhancements and corrections.
- value expected to emerge over the period;
- variations in operating experience over the period;
- the effect of changes in the valuation assumptions. Details of the effect of the more material individual assumption changes should be shown separately. In respect of life insurance business, the key potential assumption changes will normally include:
  - investment earnings rate and inflation;
  - risk discount rate (if relevant to the valuation method employed);
  - decrement or claim rates, for example mortality, morbidity;
  - lapse or surrender rates;
  - expenses, both initial and renewal;
  - new business growth and profitability; and
  - profit sharing.
- growth in business volumes and change in the mix of business;
- the effect of a change in capital requirements (if relevant to the valuation method employed); and
- any capital transfers into or out of the business, including dividends.

11 COMMUNICATION AND DISCLOSURES

Communication and disclosure guidance is provided in the GN552.

END OF GUIDANCE NOTE 252