



4 February 2003

Ms Kimberley Crook
Project Manager
International Accounting Standards Board
30 Cannon Street
LONDON EC4M 6XH
UNITED KINGDOM

Dear Ms Crook

Comment on Exposure Draft 2: “Share Based Payment”

The Institute of Actuaries of Australia (IAAust) is pleased to provide these comments on ED 2.

We welcome the draft standard and in particular the attention it gives to the issue of recognition of the expense of share based compensation instruments (including options). We agree with the underlying principle that the issuing of such instruments represents an expense of an entity and hence should be recognised accordingly in financial reporting at the issue or grant date.

Actuaries have mathematical and financial skills together with the professional standards which will contribute significantly towards developing a consistent, “best practice” approach to valuing executive and employee options. We enclose a copy of a discussion paper and exposure draft Guidance Note “Valuation of Executive and Employee Share Options”, prepared recently by a taskforce of IAAust members. The objective of the proposed guidance note is to enhance the consistency and hence comparability of valuations of such instruments performed by actuaries.

There is a strong case for an approach where equity instruments are revalued each year and the change in value is booked as an expense in that year. The value of this approach is that the ultimate cost recognised in the accounts is then the actual cost of the equity instrument to shareholders, rather than the initial “best estimate” of that cost.

We also attach as an Appendix responses to some of the specific questions posed in the ED 2. We have only responded to those questions which we felt fall within our area of expertise or specific interest. We draw your attention in particular to our response to Question 10 regarding the (lack of) revaluation of equity instruments after issue. We have responded to the other questions raised assuming the broad expensing framework that is proposed under the draft standard.

We note that the enclosed guidance note is still in exposure draft form and has not yet been exposed to members or completed IAAust approval processes, and hence does not represent official IAAust guidance. We have enclosed this material with our submission, as it represents the current thinking on these matters by task force comprising a number of Australian actuaries working actively in the area of executive and employee option valuation.

We would be pleased to discuss any of the matters raised in our submission or any other relevant issues. Please contact either myself or Catherine Beall, IAAust Chief Executive via email (catherine.beall@actuaries.asn.au) or telephone (02) 9239-6106.

Yours sincerely

A handwritten signature in black ink, appearing to read 'N Callil', with a stylized flourish at the end.

Nick Callil
Convenor
Executive Options Sub Committee
Institute of Actuaries of Australia

Copy: Mr K Alfredson – Chairman, Australian Accounting Standards Board

Attachments: Responses to Specific Questions Posed in ED 2
Exposure Draft Guidance Note 5ZZ
Discussion Paper – Valuation of Executive & Employee Share Options

ATTACHMENT

RESPONSES TO SPECIFIC QUESTIONS POSED IN ED 2

Question 5

We support the measurement of fair value at the date of grant. We believe that robust methods are available for determining fair value at this date, as discussed in the enclosed discussion paper.

Question 8

Under the broad expensing framework proposed in the draft standard, we agree with the approach proposed.

We note that under some share option designs, the options do not vest immediately but the period until the option vests is not able to be specified in advance (e.g. the option vests when the share price reaches a prescribed level). Hence, the alternatives in paragraphs 13 and 14 may need to be extended to cover such designs.

Question 9

Under the broad framework proposed in the draft standard, we agree with the approach proposed. We note however that there is considerable room for discussion about the assumptions used to determine the number of units of service expected to be received during the vesting period from the counterparties. Such assumptions may need to cover issues such as:

- the likelihood that each counterparty remains in service until the end of the vesting period may itself be related to future movements in the share price, particularly in the case of options issued to an entity's chief executive; and
- where options or other equity instruments can vest before the completion of the nominal vesting period in specific circumstances (e.g. upon takeover of the entity, or retrenchment of the counterparty), it may be appropriate to allow for the probability of those circumstances in determining the expected service.

Question 10

In our view there is a strong case for an alternative approach to recognition of equity instrument expenses: namely, that changes in the fair value of the equity instrument should be determined each year, and the increase (decrease) in fair value should be recognised as an expense (or negative expense) for that year.

We consider the aim of expensing an equity instrument is to detail the transfer of wealth from the shareholder to the recipient. The ultimate cost of this transfer, in the absence of any "hedging", is the "payoff" (share price on exercise less the Strike price with a minimum of zero). This is true whether the "payoff" is made in a transfer of equity or via

a cash settlement. The approach detailed in ED2 does not capture this cost. We see the issuing of an equity instrument as follows:

- At grant date the recipient receives an equity instrument which has a fair value.
- The fair value is a discounted estimate of the potential “payoff” with allowance for the probability of forfeiture, performance hurdles and early exercise.
- This “fair value” is the value of the payment to the employee and should be expensed.
- By choosing to make the payment for service as an equity instrument a contingent asset / liability has also been created. This contingency arises since the value of the actual payment will differ from the estimate.
- At grant date the value of this contingent asset / liability is zero. The value will not remain at zero but will, at the time the option is exercised or finally lapses, be equal to the payoff (which could be zero) less the accumulated fair value.

Therefore we consider that the equity instrument should be “marked to market” each year, and any changes in the value relative to the anticipated value should be expensed.

That is, the initial expense should be the “fair value” at grant date. The “fair value” should be reassessed for each subsequent set of accounts until the instrument is exercised, bought out or expires. This approach would ensure the expense to the Company is the same regardless of whether the payment is equity or cash settled.

We understand that there are definitional issues concerning equity based assets and liabilities; however, we consider that the overriding principle should be that financial reporting should reflect the final payoff of the instrument issued, as occurs under the approach proposed above.

Question 11

We agree that if a market value is not available, an option pricing model should be adopted to measure the “fair value”.

We would recommend that the standard specify that any modifications made to standard pricing models to allow for benefit design characteristics (like vesting conditions) be required to, where possible, be consistent with the risk neutral valuation framework. This issue is covered in more detail in the enclosed discussion paper.

Question 12

We agree that the effect of non-transferability will result in the expected life being shorter than the contractual term as exercise is the only way to release funds from the instrument.

We strongly disagree, however, with using the “expected life” of an instrument in measuring the fair value. The expected life would be based on past exercise patterns that relate to past share price experience. In a rising equity market, equity instruments are likely to be exercised prior to expiry as the holders seek to crystallise gains and diversify. However in a falling market the equity instruments may have no value for long periods and are therefore unlikely to be exercised prior to expiry. Hence, in this area, we believe past experience is not a reliable indicator of expected term in a risk neutral pricing model.

We agree that if vesting conditions prevent exercise in a certain period, allowance for these conditions should be made in the valuation.

We recommend that if allowance is to be made for modifying the “fair value” then it is achieved by assuming the instrument is exercised when the underlying share reaches a given price or percentage increase. This would require Monte-Carlo or other stochastic modelling, with which actuaries and other professionals in the financial services industry are very familiar.

Question 13

We strongly agree that vesting conditions should be taken into account in measuring the fair value. These should be modelled in a rigorous manner using stochastic techniques. Please see the enclosed discussion paper for more detail on this issue.

Question 14

We would recommend that the reload feature is accounted for as a new option grant.

Question 16

We agree with a principles-based approach. However we would stress the desirability of a professional approach to the valuing of options. The enclosed copy of the IAAust's draft guidance note provides an indication of our current thinking on the best practice regarding the valuation of executive and employee options and option-like instruments.

Questions 19 and 20

We agree with these approaches, and consider the same approach should be applied regardless of whether the share-based payment is settled in cash or stock, on the basis that the cost to shareholders is the same under either approach.

Question 21

We agree with the disclosure arrangements. In addition, we consider that the standard should require disclosure of the details of the person valuing the equity instrument, e.g. the name, employer, experience and qualifications.

Discussion Paper

Valuation of Executive and Employee Share Options

Executive Options Task Force

Nick Callil BSc(Hons) FIAA (Convenor)
Paul Carrett BEc FIAA
Esther Conway BSc FIAA
Peter Grigaliunas FIAA
Glenn Langton BA ASA FIA FIAA
Christian Olsen BCom(Hons) MCom(Hons) FIAA

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Discussion Paper

Valuation of Executive and Employee Share Options

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1. Introduction

Executive Options Taskforce

- 1.1 In recent years there has been rapid growth in the use of share options as a form of compensation for executives and employees. In line with this growth, there has been an increasing focus on the valuation of such instruments.
- 1.2 The Executive Options taskforce was established under the Superannuation and Employee Benefits Practice Committee with the objectives of:
 - fostering greater understanding of option valuation techniques and hence disclosure; and
 - develop guidance to assist in establishing actuaries as leaders in the area of valuation of executive and employee options.
- 1.3 The taskforce agreed that the most appropriate initial mechanism in moving towards these objectives would be to produce a non-mandatory Guidance Note. It was agreed that a non-mandatory Guidance Note would limit the constraints on actuaries providing advice in an area in which practice is still developing, while providing some formal guidelines for actuaries in this area.

Purpose of Guidance Note

- 1.4 There is no single accepted method for the valuation of employee and executive share options (ESOs). In addition, this is an area where active research is continuing and it is envisaged that valuation techniques will continue to develop over time.
- 1.5 As such, it is not the intention of the Guidance Note to prescribe a particular method or approach that actuaries should follow when valuing these instruments. An actuary should exercise professional judgement in choosing an approach that he or she feels is appropriate to the circumstances.
- 1.6 Rather, the intention of the Guidance Note is to set out the considerations, basic principles and reporting framework that the actuary should follow in undertaking (ESO) valuations. The objective is to enhance the consistency and hence comparability of (ESO) valuations performed by actuaries.

- 1.7 In preparing this paper and Guidance Note, the taskforce has also had regard to the discussion paper issued by the IAAust Economic Valuations Task Force in 2002. The contents of the Guidance Note are intended to be consistent with the principles put forward in that paper.

Scope of Paper

- 1.8 In developing the Guidance Note, the taskforce sought to strike a balance between providing meaningful guidance to actuaries on the one hand, whilst on the other hand avoiding any attempt to produce a technical paper on the subject.
- 1.9 The view of the taskforce was that the Guidance Note should be prepared on the assumption that actuaries undertaking work in this area will have an understanding of the technical concepts involved. Nevertheless, it was recognised that some of the concepts covered in the Guidance Note may require further background discussion. This discussion paper is being issued to members in order to provide this background to the draft Guidance Note.

2. Purpose of ESO Valuations

2.1 The reasons for a ESO valuation may include (but are not limited to):

- Regulatory expensing and disclosure requirements;
- Calculation of the value of liabilities and changes in liabilities in respect of ESO plans, for inclusion in financial statements;
- Design and communication of executive and employee remuneration packages;
- Determination of compensation to employees affected by company restructuring, or mergers and acquisitions;
- Individual financial counselling;
- Taxation purposes; and
- For the resolution of legal matters, e.g. divorce settlements.

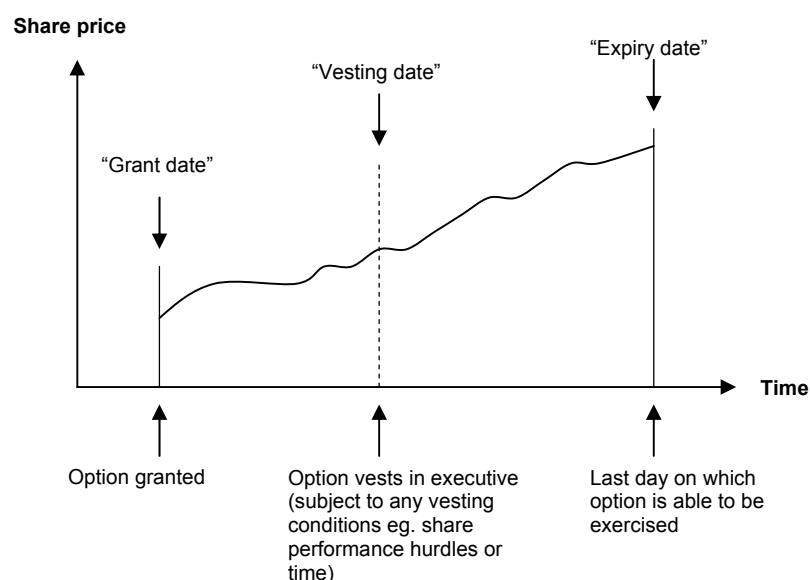
2.2 In most cases, the purpose of the valuation will influence the choice of an appropriate valuation method and assumptions.

For example, when assessing the value of ESOs for an individual, it may be appropriate to make an adjustment for the impact of taxation on the ESO, whereas this may not be appropriate when determining a Company's ESO costs for disclosure to shareholders.

2.3 It is important that any report draws notice to the purpose of the valuation and, where relevant, state that the valuation may not be appropriate for other purposes.

3. Measurement Date Issues

- 3.1 While various share option designs are possible, a typical executive option arrangement is structured as follows:



- 3.2 Actuaries may be asked to assess the value on ESOs at a variety of dates. This will generally be linked to the purpose of the valuation. The most commonly used valuation dates will include:

- the grant date
- the vesting date
- the expiry date.

- 3.3 The actuary should consider the effect that the choice of the measurement date has on the valuation method and assumptions.

For example, the value of an ESO at the expiry date will equal the intrinsic value, while at the vesting date the standard Black-Scholes method may be sufficient. At the grant date, the method will need to allow for the vesting conditions.

4. ESO Design

- 4.1 Design details vary significantly between different ESOs. This can have important implications for the choice of valuation method and assumptions. This section includes various design features that should be considered by the actuary.

Strike Price

- 4.2 The strike price is the price at which the ESO holder can purchase the shares. This may be a fixed price determined at the grant date or a price which is determined according to a pre-defined formula (for example, the average price of the share over a period).

The lower the strike price, the higher the value of the ESO.

Early Exercise and Vesting Requirements

- 4.3 Typically, ESOs are neither simple American (i.e. able to be exercised “early” i.e. at any time up to expiration) nor European (i.e. able to be exercised only at expiration).

- 4.4 Instead, entitlement to exercise the ESO is usually subject to vesting requirements. Vesting can take a number of forms including:

(i) *Service Requirements*

Exercise may not be permitted for a period after the grant date (for example, 3 years).

(ii) *Performance Hurdles*

This may be related to:

- the share price passing a pre-defined price level; or
- the total shareholder return outperforming an index or a group of individual stocks.

- 4.5 While the availability of early exercise may increase the value of the ESO compared to a European type option, vesting requirements have the effect of reducing the ESO value.

Forfeiture on termination

- 4.6 In many ESO plans, on termination of employment the employee will lose any unvested ESOs and may be forced to prematurely exercise vested ESOs.

This feature will tend to reduce the value of an ESO.

Maturity Date

- 4.7 Typically, there will be a defined period during which the ESO can be exercised (for example, 3, 5 or 10 years). This may be measured from the grant date or the vesting date.

In general, the longer the term of the ESO, the higher the value.

Transferability Conditions

- 4.8 ESOs are not tradeable. Employees are also likely to be constrained in the opportunity to short sell the stock of their employer.

This transferability limitation, along with wealth concentration and taxation issues, mean that the value placed on an ESO by the employee may be less than the fair value from the company's perspective.

Discretions

- 4.9 In many cases, the employer's board will have some discretion to alter the terms or conditions of the ESO after issue (generally to the benefit of the employee).

For example:

- the board may have discretion to reduce the strike price; or
- the board may have discretion to waive vesting requirements, particularly in the event of retirement.

- 4.10 Generally, exercise of these discretions is likely to result in the issue of new ESOs. However, in some circumstances, it may be appropriate for the actuary to make allowance for these discretions as part of the valuation. Any such allowance should be noted in the actuary's report.

Capital Structure Effects

- 4.11 Unlike exchange-traded options, ESOs are typically an obligation of the company itself. Therefore, like warrants, they potentially lead to newly issued shares in exchange for the strike price at the time of exercise, i.e. potential *dilution* of shareholders ownership rights.
- 4.12 In some cases, this dilution effect will be insignificant, relative to other influences. However, if the effect is significant, it may need to be allowed for in some way. If dilution is to be allowed for, the actuary will need to take into account all new shares which may be issued during the period under consideration, not just those relating to the ESOs which are being valued. The actuary should state what, if any, allowance has been made for dilution effects.

5. Data Requirements

- 5.1 As described above, prior to undertaking a valuation the actuary will need to have a detailed understanding of the design of the ESO. The actuary will also need to be familiar with the capital structure of the company as a whole.
- 5.2 Depending on the purpose of the valuation, the actuary may also find it useful to collect some or all of the following additional data:
- Share price history (of the company issuing the options, as well as any other companies relevant to the performance hurdle);
 - Historical prices of associated exchange-traded options;
 - Dividend history;
 - Dividend forecasts;
 - Membership details (of option plans);
 - Forfeiture history;
 - Early exercise history.
- 5.3 The actuary should take steps to ensure the accuracy of any data relied upon.

6. Choice of Valuation Method

- 6.1 While the basic principles underlying the valuation of ESOs are similar to exchange traded share options, there are important differences due to the greater complexity in the design of ESOs, and their long-term nature.

These differences mean that, without modification, conventional valuation techniques used for traded options may not be appropriate for valuing ESOs.

- 6.2 As previously stated, there is no single accepted method for the valuation of such options, and a method that may be suitable in one circumstance may not be suitable in another. Therefore, the choice of the valuation method is a matter for actuarial judgement. However, the general practice is to value options using risk-neutral valuation principles which can be applied without using any variables that are affected by the risk preferences of investors (for example, the expected return on the stock). The methods discussed below are essentially variations on a theme, in that they produce a share price distribution. The methods differ in the extent that they allow the price path leading to the share price distribution to be analysed.
- 6.3 This section discusses briefly some commonly used methods for valuation and issues that the actuary should consider when choosing a particular method.

Use of the Black-Scholes Method

- 6.4 The Black-Scholes method forms the basis of standard option valuation practice. It has the advantage of being well known and understood and is widely accepted as the appropriate method for valuing exchange traded “vanilla” European options.

The Black-Scholes method may also be suitable for the valuation of ESOs (or be considered by the actuary to provide a reasonable approximation). Use of the Black-Scholes method may also be required in certain circumstances (for example, by relevant accounting standards).

However, if adopting the Black-Scholes method, actuaries should be aware of the possible limitations of this method and consider whether any adjustments to the method are appropriate. This is particularly relevant in relation to the often unique features of ESOs, including:

(i) Performance hurdles

- 6.5 Where performance hurdles apply, the standard Black-Scholes formula will overstate the value of ESOs as it makes no adjustment for the possibility of the hurdle being missed. A common adjustment to the Black-Scholes model places a value on the option using the following method:
1. determine the Black-Scholes value ignoring the performance hurdle (\$x); and
 2. multiply the value by the probability that the option will vest (y%).
- 6.6 The actuary should be aware that this approach is unsatisfactory as it will in most circumstances significantly *understate* the value of the option. This is because, in the y% of scenarios where the option actually vests (due to share price growth), the average value of the option is higher than the overall average price of the option (\$x).

(ii) Long Life

- 6.7 Compared to exchange-traded options, ESOs are issued with a long life. The parameters used in the Black-Scholes method (in particular, volatility and the risk-free rate) are unlikely to remain constant over this period.

(iii) Early Exercise

- 6.8 The standard Black-Scholes method is only applicable to European options and makes no allowance for the possibility of early exercise. With the existence of dividends, early exercise may be optimal in some cases.
- 6.9 In addition, anecdotal evidence indicates that executives tend to exercise ESOs earlier than the theoretical “optimal” exercise time. Possible reasons for this include cash flow requirements, distortions caused by the wealth concentration issues, and the executive’s personal views of the company’s likely future performance.

(iv) Liquidity

- 6.10 The Black-Scholes method is implicitly based on the assumption that option buyers and sellers can diversify risk by short selling or otherwise hedging their position. Typically, this will not be the case in respect of an ESO, at least from the perspective of the employee.

Binomial Models

- 6.11 The binomial model breaks down the time to expiration into a very large number of time intervals, or steps. At each step it is assumed that the stock price will move up or down by an amount calculated based on the stock's volatility. This produces a binomial distribution, or recombining tree, of underlying stock prices. The tree represents all the possible paths that the stock price could take, based on the assumptions underlying the calculations, during the life of the option.
- 6.12 At the end of the tree – i.e. at expiration of the option - all the terminal option values for each of the final possible stock prices are known as they simply equal their intrinsic values. The option values at each step of the tree are then calculated working back from expiration to the present.
- 6.13 The significant advantage the binomial model has over the Black-Scholes model is that it can be used to accurately allow for early exercise or the achievement of performance hurdles. This is because it is possible to check at every step of the binomial tree for the possibility of early exercise, and make explicit assumptions regarding exercise behaviour of ESO holders.
- 6.14 However, use of the binomial tree can be computationally intensive, particularly for example where looking at a peer group of stocks where it would be necessary to create a multi-dimensional tree.
- 6.15 In applying the binomial method, the actuary should give particular consideration to the number of steps that are necessary.

Simulation techniques

- 6.16 Due to the complex nature of ESOs, simulation techniques provide a flexible alternative to closed form and numerical techniques.
- 6.17 In applying simulation techniques, the actuary should give particular consideration to:
- the number of simulations that are required;
 - the generation of random numbers; and
 - the use of variance reduction techniques to reduce the estimation variance without increasing the number of simulations (for example, using antithetic variables or control variates).

6.18 The main advantages of stochastic techniques are that:

- They are often flexible and easier to apply than numerical techniques;
- Variables (such as volatility) can be made to be stochastic; and
- It is relatively straightforward to allow for path dependant outcomes.

6.19 Disadvantages to be considered by the actuary in adopting simulation techniques are:

- They can be computationally time consuming;
- They cannot easily handle the valuation of optimal early exercise provisions; and
- The results may not be reproducible. (It is possible to ensure results are reproducible by using a random seed, and an algorithm for generating random numbers).

Risk-neutral or real world pricing method

6.20 The techniques described above are based on risk-neutral valuation principles.

The assumption of risk neutrality considerably simplifies the analysis of options. However, there are occasions where the actuary may wish to use an alternative basis (for example, in order to place a real world probability on a particular outcome).

The actuary should ensure that there is consistency between the chosen method and the assumptions.

7. Assumptions

- 7.1 Regardless of the valuation method adopted by the actuary, there are a number of basic assumptions that will need to be considered by the actuary, including the following:
- The interest rate;
 - Dividend allowance;
 - Volatility;
 - Correlation of various assumptions;
 - Exchange Rates;
 - Early exercise; and
 - Decrement rates.
- 7.2 All material assumptions, whether explicit or implicit should be stated, including any assumptions made due to shortcomings in data available to the actuary. The actuary should also describe the approach used to determine the assumptions and any qualifications to their appropriateness.

Interest rate

- 7.3 Under the risk neutral assumption, the interest rate should be the risk-free rate appropriate to the term of the ESO. Increases in the assumed risk-free rate will tend to increase the value of the ESO (an increase in the rate leads to an increase in the expected stock price, offset in part by a decrease in the present value of cash flows received by the holder).
- 7.4 For most valuation purposes, the risk-free rate will need to be expressed as a continuous rate. This may require adjustments to quoted bond yields (which are often expressed as semi-annual compounding rates).
- 7.5 Generally, the most appropriate rate is a gross of tax interest rate appropriate to the term of the ESO.
- 7.6 The actuary should also consider the need to allow for variation in the risk-free rate over the life of the ESO.

Dividends

- 7.7 When a stock goes ex-dividend, the price of a stock will fall to reflect the dividend paid per share. As such, the value of an ESO will be reduced, the higher the assumed level of dividend payments.
- 7.8 In addition, allowing for dividends can mean that early exercise (where available) is an optimal strategy.
- 7.9 In determining the assumption for dividends the actuary may consider applying:
- Estimation via historical data;
 - Stated company dividend policies;
 - Market forecasts of future dividends; or
 - Information provided by the company (for example, in relation to targeted dividend ratios).
- 7.10 Particularly where relying on estimation based on historical data, the actuary should consider if factors exist that may require adjustment to the prima facie assumption (for example, restructuring of the company).

Volatility

- 7.11 Volatility is generally the most critical parameter for the valuation of ESOs. The higher the volatility, the greater the value of that will be placed on the ESO.

There are a number of techniques that can be used to estimate the volatility of the stock, most typically based on historical data.

- 7.12 Actuarial judgement is required in choosing an appropriate period over which to estimate the volatility. Although more data may improve the accuracy of the estimate, data that is too old may not be relevant.

It should be recognised that volatility is not constant and the actuary should consider the applicability of methods that attempt to allow for variations in the volatility over time.

- 7.13 Where historical data is used, special consideration may need to be given to:
- Outliers in the return data.
 - The measurement of time (e.g. calendar days or trading days).

- Special circumstances. Many newly listed companies, for example, have quite high historic volatility relative to the future volatility expected by markets as implied by option prices. Alternatively, there may be no historical data, or very limited data available.
- 7.14 Where possible, the actuary should consider comparing the assumed volatility with the implied volatility of the stock determined from market option prices for exchange traded options.

Correlation of Returns and Exchange Rates

- 7.15 Where performance hurdles are expressed in terms of the performance of the company's shares relative to that of other companies (or an index), the actuary will generally need to make assumptions regarding the correlation of various company returns.
- 7.16 Where it is necessary to set correlation assumptions, similar considerations as to volatility assumptions and consistent methods should be applied. The internal consistency of an estimated variance-covariance matrix should be checked (the matrix should be positive semi-definite).

Exchange Rates

- 7.17 For multinationals, ESOs will often be specified in a foreign currency. The valuation may require further assumptions regarding foreign interest rates and/or foreign exchange markets.

Early Exercise and Forfeiture

- 7.18 Where provisions exist, early exercise can result from:
- employees leaving the company and exercising vested ESOs to avoid forfeiture;
 - employees making optimal decisions to exercise (due to dividends); or
 - employees making sub-optimal decisions to exercise.

Forfeiture of ESOs will occur where employees leave the company before vesting requirements are met.

- 7.19 The actuary may determine, based on the circumstances, that it is reasonable to ignore possibility of early exercise for modelling purposes. However, the actuary should comment on the treatment adopted and the reasoning for this.

- 7.20 Decrement assumptions can have a significant impact on the valuation placed on ESOs (particularly, where employees are expected to leave before vesting conditions are satisfied).
- 7.21 In setting decrement assumptions, the considerations for the actuary will be similar to those that apply in setting similar assumptions for an investigation of a defined benefit superannuation fund (however, it will generally not be necessary to separate decrements by cause). The actuary should consider whether decrements appropriate to individual executives are required if there is a significant concentration of ESOs in certain individuals.
- 7.22 Further consideration is required in respect of executives for whom there may be significant negative correlation between the future share price and the probability of the executive leaving the company before vesting of ESOs.

8. Simplified Methods

- 8.1 There will be circumstances where options can satisfactorily be valued using simplified methods. For example, it may be possible to place an upper or lower limit on the value of an option, without undertaking detailed calculations. Similarly, the actuary may choose to ignore (or make approximate adjustments for) some of the option features discussed above.
- 8.2 Actuaries will need to use professional judgement to decide whether a simplified method is appropriate, taking into account the circumstances of the valuation and the purpose for which the advice is being given.
- 8.3 Where simplified methods are used, the actuary should make appropriate disclosures, and comment on the expected impact on the results.

9. Uncertainty

- 9.1 The nature of an option valuation means that the results will always be an estimate. There are various sources of uncertainty that will affect the valuation process, some of which may be more or less amenable to statistical or other estimation. The actuary should consider which aspects of uncertainty are material to the purpose of the valuation and which should therefore be drawn to the particular attention of the recipient of the valuation.
- 9.2 Sources of uncertainty in an option valuation include:
- The valuation method will never provide an exact model of future experience;
 - Distortions or random fluctuations in historical data may result in mis-estimation of parameters;
 - Future economic conditions are unknown and will differ from those assumed;
 - Future random fluctuations in experience will cause uncertainty, even if the underlying assumptions were correct.
- 9.3 The actuary is encouraged to quantify the materiality of the uncertainty. This will generally require the use of one or more of:
- Stochastic methods;
 - Sensitivity analysis – making changes to the assumptions and/or the valuation method;
 - Analysis of the outcomes of previous valuations;
 - Analysis of different scenarios; and
 - Judgement.
- 9.4 The extent to which such quantifications are required will depend on the purpose of the valuation and the judgment of the actuary as to what is reasonable in the circumstances.

EXPOSURE DRAFT GUIDANCE NOTE 5ZZ

VALUATION OF EXECUTIVE AND EMPLOYEE SHARE OPTIONS

1. INTRODUCTION

Application

- 1.1 This Guidance Note applies to actuaries who are performing valuations of executive and employee share options (ESOs) and related instruments.

Classification

- 1.2 This is a non-mandatory Guidance Note issued to provide a formal basis for actuaries undertaking work in this area. Actuaries are expected to disclose any departure from this Guidance Note, but departure from the Guidance Note is not, in itself, unprofessional conduct.

First Issued

- 1.3 xxxxxx, 2003

2. PURPOSE OF GUIDANCE NOTE

- 2.1 There is no single accepted method for the valuation of ESOs. In addition, the valuation of ESOs is an area where active research is continuing and it is envisaged that valuation techniques will continue to develop over time.
- 2.2 The intention of this Guidance Note is to set out the considerations, basic principles and framework that the actuary should follow in undertaking an ESO valuation.
- 2.3 It is not the intention of this Guidance Note to prescribe a particular method or approach that an actuary should follow when valuing ESOs. The actuary should exercise professional judgement in choosing an approach that he or she feels is appropriate to the circumstances.

3. DEFINITIONS

- 3.1 A **central estimate** is an estimate which contains no intended over or under estimation.

- 3.2 **Grant Date** refers to the date at which the company and employee enter into a contract that will entitle the employee to receive an ESO either on this date or some future date, provided that certain conditions are met.
- 3.3 **Measurement Date** refers to the date at which the value of the ESO is to be estimated.
- 3.4 **Expiry Date** refers to the latest date at which the ESO is able to be converted to a share.
- 3.5 **Strike Price** refers to the price paid by the ESO holder to convert the ESO into a share.
- 3.6 **Performance Hurdle** refers to a condition (generally expressed in terms of company share performance) which must be satisfied in order for the employee to become entitled to the ESO.
- 3.7 **Vesting Date** refers to the date at which the employee becomes unconditionally entitled to the ESO. It should be noted that in this context, the Vesting Date may be unknown in advance (e.g. it may depend on the achievement of one or more performance hurdles).

4. PURPOSE OF ESO VALUATIONS

- 4.1 The actuary should clarify the purpose of the valuation prior to commencing. Actuaries may be requested to perform a valuation for a variety of reasons, including:
- Regulatory expensing or disclosure requirements for ESOs awarded to executives or broadly based employee option plans;
 - Calculation of the value of liabilities and changes in liabilities in respect of option plans, for inclusion in financial statements;
 - For design and communication of executive and employee remuneration packages;
 - Determination of compensation to employees affected by company restructuring, or mergers and acquisitions;
 - Individual financial counselling;
 - Taxation purposes; and
 - For the resolution of legal matters, e.g. divorce settlements.

- 4.2 This Guidance Note is intended to cover valuations carried out for many different purposes. As a result, not all sections of the Guidance Note will be relevant in all circumstances. It is expected that Actuaries will generally comply with those sections of the Guidance Note which are relevant to, or are significant in, the particular circumstances in which they are conducting a valuation.

Other Standards

- 4.3 Where the valuation is performed to satisfy the requirements of an accounting or legislative standard, the actuary should be familiar with the requirements of the applicable standard.
- 4.4 As at the date of this Guidance Note, the following standards or exposure drafts are of particular relevance:
- Australian Accounting Standards Board AASB 1028 and AAS 30 'Accounting for Employee Entitlements'
 - Australian Accounting Standards Board ED 108 'Share Based Payments'
 - Australian Accounting Standards Board ED 106 'Director, Executive and Related Party Disclosures'
 - International Accounting Standards Board ED 2, 'Share Based Payment'.

It is expected that new standards and legislation will emerge in the future.

Measurement Date

- 4.5 The measurement date for the valuation should be consistent with the purpose of the valuation. Measurement dates commonly used include:
- the grant date
 - the vesting date
 - the expiry date
- 4.6 The actuary should consider the effect that the choice of the measurement date has on the valuation method and required assumptions.

5. DATA REQUIREMENTS

5.1 Design of the ESO

The actuary should be familiar with the design of the ESO(s) to be valued .

In particular, design features that should be considered by the actuary include:

- (i) The strike price at which the ESO holder can purchase shares under the terms of the ESO.
- (ii) The conditions under which the employee becomes entitled to exercise the ESOs.

Typically, employee ESOs are subject to vesting requirements, which can take a number of forms. For example, exercise may not be permitted:

- until a specified minimum period after the grant date;
 - unless the share price passes a predefined price level; or
 - unless the total shareholder return exceeds the performance of a specified index or group of individual stocks.
- (iii) The status of the ESOs in the event of termination of employment.
 - (iv) The ESO expiry date.
 - (v) The extent (if any) to which the ESOs can be traded. Generally, employee ESOs are not tradeable. This liquidity limitation, along with wealth concentration and taxation issues mean that the economic value placed on an ESO by the employee may be less than the value from the company's perspective.
 - (vi) Any discretions which may be exercised by the employer.
 - (vii) Any concentration of ESOs in an individual or individuals which may affect the use of general decrement and exercise rates.

5.2 Capital Structure

The actuary should be familiar with the capital structure of the company issuing the ESOs. In particular, the actuary should be aware of any intention or obligation of the company to issue new shares during the life of the ESO (for example, to meet existing obligations to employees), which would have a dilutive effect on the ownership rights of existing shareholders.

5.3 Other Data

The actuary should also consider the extent to which the following additional data is required:

- Share price history (of the company, and any other companies relevant to the performance hurdle);
- Historical prices of associated exchange-traded options;
- Dividend history;
- Dividend forecasts;
- Membership details (of option plans);
- Forfeiture history;
- Early Exercise history.

The actuary should take steps to ensure the accuracy of any used in the valuation process.

6. CHOICE OF VALUATION METHOD

6.1 The main methods which are likely to be used by actuaries can be classified as:

- Black-Scholes formula
- Binomial models
- Simulation techniques

Selection of the most appropriate valuation method is a matter requiring judgement.

6.2 In exercising this judgement, the actuary should give consideration to the ability of the method to cope with the particular features of the ESOs being valued. Particular factors which should be considered by the actuary include:

- (i) Statutory or legal requirements.
- (ii) How allowance is to be made for any performance hurdles.
- (iii) The term of the ESO, and the need to allow for variations in key assumptions (e.g. volatility, risk-free discount rate) over the life of the ESO.
- (iv) The ability of the method to allow for dividends.
- (v) The possibility of early exercise of the ESOs, due to termination of employment, optimal exercise strategies, or other factors.
- (vi) The ability of the method to allow for dilution effects (if these are likely to be significant).
- (vii) How allowance is to be made for any lack of liquidity (if required).
- (viii) The ability to reproduce any results obtained.

6.3 The actuary should comment on the appropriateness of the method in the valuation report, having regard to the above factors, and any other factors which the actuary believes are relevant. The actuary should also identify any limitations of the method, taking into account the purpose of the valuation.

- 6.4 It is recognised that in certain circumstances, the actuary may be requested to perform a valuation using a particular method, or may be constrained to use a method by a particular standard or legislation. Where this is the case, the actuary should seek to make the client aware of any limitations of the method, and comment on these in the valuation report.

7. ASSUMPTIONS

- 7.1 Regardless of the valuation method adopted by the actuary, there are a number of basic assumptions that will need to be considered by the actuary, including the following:
- The interest rate;
 - Dividend allowance;
 - Volatility;
 - Correlation of various assumptions;
 - Exchange Rates;
 - Early exercise;
 - Decrement rates.
- 7.2 The actuary should ensure that there is consistency between the assumptions and the valuation method, and that the assumptions are internally consistent.
- 7.3 All material assumptions, whether explicit or implicit should be stated, including any assumptions made due to shortcomings in data available to the actuary. The actuary should also describe the approach used to determine the assumptions and any qualifications to their appropriateness.
- 7.4 In setting the assumptions, it is expected that the actuary will have regard to:
- available historical data;
 - current market information (for example, implied volatilities); and/or
 - additional information provided by the company.

However, particularly where relying on estimation based on historical data, the actuary should consider whether external factors exist that may require adjustment to the prima facie assumption (for example, a change in company policy).

8. UNCERTAINTY

8.1 The nature of an ESO valuation means that the results will always be an estimate. There are various sources of uncertainty that will affect the valuation process, some of which may be more or less amenable to statistical or other estimation. The actuary should consider which aspects of uncertainty are material to the purpose of the valuation and which should therefore be drawn to the particular attention of the recipient of the valuation.

8.2 Sources of uncertainty in an ESO valuation include:

- The valuation method will never provide an exact model of future experience;
- Distortions or random fluctuations in historical data may result in mis-estimation of parameters;
- Future economic conditions are unknown and will differ from those assumed;
- Future random fluctuations in experience will cause uncertainty, even if the underlying assumptions were correct.

8.3 It is part of the actuary's task to respond to uncertainty, both as a technical matter and in the presentation of results. Assessment of uncertainty will generally require the use of one or more of:

- Stochastic methods;
- Sensitivity analysis – making changes to the assumptions and/or the valuation method;
- Analysis of the outcomes of previous valuations
- Analysis of different scenarios; and
- Judgement.

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- 8.4 While the client should be provided with a single central estimate of the valuation result, the actuary should, where appropriate, also explain the practical consequences of the uncertainty relating to this estimate.

9. SIMPLIFIED METHODS

- 9.1 It is recognised that there will be circumstances in which it is appropriate to use a simplified method to determine an (approximate) ESO value.
- 9.2 Actuaries will need to use professional judgement to decide whether a simplified method is appropriate, taking into account the circumstances of the valuation and the purpose for which the advice is being given.
- 9.3 Where simplified methods are used, the actuary should make appropriate disclosures, and comment on the expected impact on the results.

10. REPORTING

- 10.1 When providing advice on ESO valuations, the actuary should prepare, date and sign a written report.
- 10.2 The following checklist provides a guide to the matters the actuary would normally consider in preparing a valuation report in this area, but it should not be considered comprehensive.
- 10.3 In the report, the actuary should draw notice to the purpose of the valuation and, where relevant, state that the valuation may not be appropriate for other purposes.
- 10.4 The assumptions and method should be stated clearly and their derivation explained. Any limitations of the method or assumptions should also be clearly stated.
- 10.5 Where the actuary is required to use specific assumptions or methods, the actuary should clearly state the circumstances, discuss whether or not the assumptions and methods are appropriate, and describe any limitations identified.

11. CHECKLIST

1. Identification

Purpose and circumstances of the valuation
Date of valuation
To whom the report is addressed
Name and qualifications of the actuary
Date of the report

2. Data

Design of ESOs
Company Structure
Other data

- Source
- Veracity

3. Valuation method

Derivation
Appropriateness
Limitations

4. Assumptions

Derivation
Appropriateness
Limitations

5. Results

Central Estimate
Assessment of Uncertainty

6. Reporting

Statement of compliance with this Guidance Note or reasons for departure.
Statements required under external standards, legislation.

END OF GUIDANCE NOTE