

## CHAPTER 4: ASSUMPTIONS

- 4.1 Estimates of superannuation costs over the future are, by necessity, based on assumptions about the future. These assumptions can be divided into two categories:
- those which are not directly related to the scheme membership (termed General Assumptions); and
  - those which are based on the experience of the membership of the scheme (termed Experience Assumptions).
- 4.2 This Chapter sets out a broad outline of the main assumptions adopted for this report and comments on the changes made from the assumptions used in preparing the Long Term Cost Report as at 30 June 2002 (the '2002 Report').

### *General assumptions*

#### **Future size of the schemes**

- 4.3 The following Table shows the contributory membership of the schemes as valued since the 1993 review.

**Contributory Membership at Last Five Reviews**

Valuation Year	MSBS	DFRDB	TOTAL
1993	36,933	26,595	63,528
1996	38,610	20,271	58,881
1999	37,041	14,511	51,552
2002	42,113	9,571	51,684
2005	44,491	7,072	51,563

- 4.4 There was a significant fall in the combined MSBS and DFRDB membership over the six years to 1999. Since that time, the combined membership has been stable. As would be expected, DFRDB membership has fallen significantly over the period. However, it is anticipated to be around another 20 years before DFRDB contributory membership is close to zero.
- 4.5 The long term cost projections require an assumption regarding future growth in the membership of the relevant schemes. In recent decades, Australia's population has increased. Despite this, the number of ADF personnel has declined somewhat over the same period. Recent government initiatives

anticipate a reversal of this trend with a small increase in ADF personnel numbers. The 2002 Report assumed that combined MSBS and DFRDB contributory membership would remain constant. Given the length of the projection period and uncertainty about long term movements in ADF numbers, I have continued to use the assumption that the total contributory membership of the MSBS and the DFRDB will remain constant at the level existing at the valuation date.

- 4.6 Since the DFRDB is closed to new members, its contributory membership will decline. To compensate for this, the MSBS contributory membership is assumed to increase at the rate required to replace the members leaving the DFRDB. The projected decline in DFRDB contributory membership is based on the exit assumptions adopted for the DFRDB, as discussed below.

### **Economic assumptions**

- 4.7 The significant financial assumptions made in assessing the long term cost of the Commonwealth's military superannuation commitments are:
- the rate of future increases in those pensions and benefits which are linked to increases in the consumer price index (CPI);
  - the level of future general increases in salaries (that is, increases other than those relating to promotion or length of service etc); and
  - the rate of interest to be used to discount future cashflows to a present value.
- 4.8 As well as these financial assumptions, assumptions regarding the rate of increase in GDP are required.
- 4.9 The relationship between these rates is one of the most significant matters affecting the long term cost estimates. It is important to note that changes of equal magnitude in the absolute levels of each of the rates will have only a minor effect on long term cost estimates, but can have a major effect on nominal cashflows. Changes in the relationship between the rates can have quite substantial effects on the liability and long term cost estimates. Care is therefore needed when setting the economic assumptions.
- 4.10 For the purposes of this report, I have decided to adopt the following assumptions:

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CPI Increases	2.5% per annum (base)
General Salary Increases	1.5% per annum (real)
Interest Rate	3.5% per annum (real)
GDP Increases	A series of rates starting at 2.2% (real) for 2005/06, increasing to 3.0% per annum (real) in 2006/07 and then falling to 2.0% per annum (real) in 2040/41.

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- 4.11 The assumptions adopted in relation to the wage growth, inflation and interest rate are the same as those adopted for the 2002 Report. The financial assumptions for an investigation into long term costs must be realistic. At the same time, stability over time must be considered. Thus, since cost estimates are sensitive to even small changes in the financial assumptions, it is important not to introduce unnecessary volatility which might mask genuine effects. Inevitably, judgement is required in setting the financial assumptions. Taking all of this into account, I have decided that it is appropriate to retain the financial assumptions which were adopted in the 2002 Report for this current investigation.
- 4.12 The GDP growth rates are based on Commonwealth Treasury projections of nominal GDP values but adjusted for consistency with the assumption adopted for this investigation of real wages growth of 1.5 per cent per annum. Given the adjustments made, they should not be regarded as official Commonwealth Treasury projections. The rates of GDP increase assumed are set out in Appendix C. The GDP growth rates incorporate the long term effects of demographic and labour force change. The change to the GDP growth assumption has no effect on nominal dollar outlays. However, the higher GDP assumption compared with the 2002 Report has the effect of reducing estimates of projected costs and liabilities when expressed as a percentage of GDP.

#### ***Experience assumptions***

- 4.13 Considerable work for this report was devoted to an analysis of the data for the three years 1 July 2002 to 30 June 2005. Brief comments on the analysis are set out in the following paragraphs. It should be noted that there are significant differences in the experience of the two schemes. These differences reflect the relative design features of the two schemes. For instance, in the DFRDB, there is a big increase in the value of benefits when a member qualifies for a pension (normally after 20 years service). Thus, few members leave DFRDB in the years just before qualifying for a pension and many leave shortly after qualifying for a pension. In the MSBS, there are some incentives to serve 20 years but they are less pronounced than in the DFRDB and hence the resignation experience of the MSBS is different. Assumptions are made to reflect expected experience.

Thus, assumptions may differ according to scheme, gender, and whether officer, officer cadet or other rank. Details of assumptions are given in Appendix C.

### **Mortality of contributors**

- 4.14 The contributor mortality rates are lower than those used for the 2002 Report. The rates are higher than those experienced over the three years. This allows for a margin to cover the possibility of serious accidents which result in multiple deaths.

### **Invalidity**

- 4.15 The invalidity experience for DFRDB officers and other ranks was broadly in line with that assumed in the 2002 Report and the 2002 assumptions were retained.
- 4.16 Invalidity experience for the MSBS has been difficult to interpret and predict. In the late 1990's, the ADF introduced a new individual combat readiness regime which required serving members to have a high level of fitness. The 1999 Report anticipated that the introduction of this new regime would also lead to a one off effect with 1998/99 and 1999/2000 likely to be peak years for invalidity B and C exits. As it turned out, invalidity rates for 1999/2000 were higher than those for 1998/99 and stayed at similar levels for the following few years. Consequently, invalidity B and C rates were increased significantly for the 2002 Report.
- 4.17 Invalidity rates experienced since 2002 have been lower than those assumed for the 2002 Report for both officers and other ranks. Invalidity rates have therefore been reduced somewhat to reflect this more recent experience. A margin has been retained in the rates to cover the possibility of serious accidents which result in multiple invalidity claims. It is likely that invalidity rates will continue to be difficult to predict.
- 4.18 The invalidity experience for the MSBS has been consistently worse than for the DFRDB and accordingly the MSBS assumptions include significantly higher rates of invalidity. The explanation for this feature is not known, although it may be partly attributable to differences in scheme design. For example, a DFRDB member who has already qualified for a pension may elect to take a normal exit benefit instead of an invalidity benefit so as to be able to take part of the benefit as a lump sum. Pensions payable as a result of invalidity A or B must be taken wholly in pension form.

### **Resignation**

- 4.19 Resignation assumptions have been made by duration of service. The assumptions adopted were based on the experience for the three year period to 30 June 2005.

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- 4.20 As would be expected, given the DFRDB benefit design, there are relatively few resignations before 20 years service has been completed. A large number of resignations occur at the 20 year mark when entitlement to the pension benefit is attained. Lower rates of resignation apply thereafter. The DFRDB experience for the period was noticeably different from that assumed for the 2002 Report. Total resignations were about two-thirds of what was expected. It is not clear what has led to this change and it is difficult to know whether it is a permanent change in behaviour. However, because it persisted over the whole period, we have assumed that there has been a permanent change.
- 4.21 The experience for MSBS for the three years to 30 June 2005 was, for the most part, consistent with the assumptions adopted for the 2002 Report. The exception was at longer service durations. As with the DFRDB, resignation rates for long serving members were noticeably lower than expected and the MSBS resignation rates were reduced at these long durations. It should be noted that there are not many MSBS members with long periods of service. As a result, the resignation experience is not as reliable at long durations of service. Relatively minor modifications were also made to the rates for shorter service members based on the experience for the three years to 30 June 2005.

#### **Retrenchment and redundancy**

- 4.22 No allowance has been made for the effect of retrenchments and redundancies as the decision is unpredictable and impossible to model with any confidence. Generally, the effect of retrenchments and redundancies is to advance outlays rather than increase them overall.

#### **New entrants**

- 4.23 The data for the three year period to 30 June 2005 confirms the pattern that the majority of ADF personnel join at young ages, normally between 18 and 22. The age distribution of new entrants adopted for this report has been broadly based on the experience over the period. There were some noticeable differences from the 2002 Report. Very few individuals (apart from some officer cadets) join before age 18. Previously, many new entrants were aged 17. This change has resulted from Australia's compliance with a new United Nations charter against child soldiers. The other noticeable change was that there are more individuals joining at later ages than before. This is likely to be connected with the high level of ADF activities over the period and the need to acquire individuals with technical expertise and skills. The assumptions adopted have taken account of this change in experience.
- 4.24 At the present time, approximately 1/10th of permanent ADF personnel are females and I have assumed that this will continue to be the case. There has been a small drop in the proportion of females from 2002. This has not had a noticeable impact on reported costs, which are not particularly sensitive to the gender balance.

### Promotional increases in salaries

- 4.25 For other ranks, promotional increases appear to be related to period of service. For officers, promotional increases appear to be related to both period of service and the age at joining. Based on experience over the three years to 30 June 2005, the rates of promotional salary increases assumed for DFRDB officers and other ranks have been slightly reduced from those used for the 2002 Report.
- 4.26 From the additional experience available for this report, it is clear that MSBS officers have a different promotional experience from their DFRDB counterparts, particularly for service durations in the 10 to 20 year range. The most likely cause of this is differences in benefit design between the two schemes. In the DFRDB, there is a big financial incentive to stay to 20 years, irrespective of promotion prospects, in order to qualify for the DFRDB pension. In the MSBS, the financial incentives to stay to the 20-year mark are smaller. This means that MSBS officers with poor promotion prospects are more likely to leave compared to DFRDB officers, which in turn means those that stay have better promotional prospects. New promotional salary increase rates were introduced for MSBS officers for the 2002 Report and experience has been close to that expected. Accordingly, the assumptions used for the 2002 Report have been retained. A separate promotional increase pattern applies to Officer Cadets.

### Mortality of pensioners

- 4.27 The mortality rates for age and reversionary pensioners (that is, pensioners other than invalid pensioners) adopted at this review were primarily based on the actual experience over the three year period to 30 June 2005. The experience for male age pensioners was lower than that assumed for the 2002 Report and the pensioner mortality rates were reduced accordingly. The rates for female pensioners were the same as those used for the 2002 Report. Overall, the rates adopted are less than the mortality rates for the general population as reflected in the Australian Life Tables 2000-02. The same assumptions are used for both DFRDB and MSBS.
- 4.28 It is very conceivable that MSBS pensioners will have lower mortality rates than DFRDB. This is because most MSBS members have a choice between pension and lump sum on retirement whereas DFRDB members do not. The ability to choose the form of benefit means that those with poorer life expectancies might be expected to opt for the lump sum and, conversely, those who consider themselves healthier are more likely to choose the pension option. It is not possible to gauge the impact of this selection effect as the number of MSBS pensioners from age retirement is insufficient to allow a proper analysis. Thus, for the time being, the same assumptions are used for both schemes.

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- 4.29 The assumptions regarding invalid pensioner mortality were primarily based on the data for the three years to 30 June 2005. The experience was close to that assumed for the 2002 Report and only minor changes were made to the assumptions used. As would be expected, the rates of mortality are significantly higher than for the age pensioners.
- 4.30 Allowances for future improvements in mortality rates of age and reversionary pensioners were made in accordance with the trend in improvements shown in the series of Australian Life Tables published over the last 40 years. No allowance was made for improvement in the mortality of invalid pensioners.

#### **Proportions married and age differences**

- 4.31 Proportions of members and pensioners married and average age difference between husband and wife were primarily based on the data for the three year period to 30 June 2005. The proportions married for males were slightly increased compared to the proportions assumed for the 2002 Report. The proportions married for females were the same as those assumed for the 2002 Report. Married male members are assumed to be four years older than their wives on death. This is an increase of one year over the age difference assumed in the 2002 Report. Married female members are assumed to be three years younger than their husbands on death, which is the same assumption as was made for the 2002 Report.

#### **Pension option in MSBS**

- 4.32 Members retiring from the MSBS (other than on the grounds of invalidity) have the option to convert all or part of their employer financed lump sum to a pension. The experience for the three years to 30 June 2005 was limited. However, it did show an increased take up of pension by both other ranks and officers. Accordingly, it was assumed that 60 per cent of the employer financed lump sum will be converted to a pension for other ranks. This compares with 50 per cent assumed for the 2002 Report. For officers, it was assumed that 75 per cent of the employer financed lump sum will be converted to a pension compared to 70 per cent assumed for the 2002 Report. The trend towards increased take up of pensions has been noticed in other Government schemes where there are pension/lump sum options. This change has had a noticeable impact on the reported costs of the MSBS, as the pension is a significantly more expensive benefit to provide compared to the alternative lump sum.

#### **Commutation option in DFRDB**

- 4.33 Members retiring from the DFRDB (other than on the grounds of invalidity A or B) have the option to convert part of their pension to a lump sum. As the conversion factors provide for a lump sum which is greater than actuarial value of the forgone pension, it has been assumed that all retiring members take advantage of this option to the maximum extent permissible. The assumption is borne out by the experience over the three years to 30 June 2005.

### **Superannuation surcharge**

4.34 The superannuation surcharge is a tax on notional employer superannuation contributions in respect of those with high incomes. The tax is assessed on a year-by-year basis but for unfunded schemes, such as DFRDB and MSBS, is not paid to the Australian Taxation Office (ATO) until a benefit is payable. No tax will be assessed in respect of the 2005/06 year and subsequent years. A notional account of the amount owing to the ATO in respect of an individual is kept. When the benefit becomes payable, the actual benefit paid to the individual is reduced to take account of the superannuation surcharge amount payable to the ATO by the scheme. We have assumed that the schemes' liability to pay the superannuation surcharge to the ATO will be offset by the value of the benefit reductions resulting from the payment to the ATO. No specific allowances have thus been made in this report for the effects of the superannuation surcharge. For reference, it should be noted that, according to the Annual Report for the MSBS, the total surcharge liability outstanding at 30 June 2005 was \$15 million for MSBS.

### **Early release of preserved benefits in MSBS**

4.35 Early release of preserved benefits in MSBS is permitted on the basis of disablement or hardship. No allowance has been made for early release of preserved benefits.

### **Splitting of superannuation under the Family Law Act**

4.36 Changes to the Family Law Act allow superannuation benefits to be split as part of a Family Law agreement or order. We have made no allowance for the impact of future splits of superannuation. Generally the effect of a split is to alter the timing of benefit payments rather than the overall quantum of benefit payments.

### **Conflict situations (War)**

4.37 A small number of ADF personnel are currently serving in various conflict situations. However, the bulk of personnel are operating on a peace-time basis. The long term costings assume that the ADF will continue to operate on an essentially peace time basis. Conflict situations are likely to result in increased death and invalidity rates and may result in a substantial number of new entrants to the ADF.