

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 2005 (the '2005 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 six 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
2008	49,307	5,076	54,383

- 4.4 There was a significant fall in the combined MSBS and DFRDB membership over the six years to 1999. This was followed by a period of relatively stable membership. The last three years have seen a growth in contributory membership, which is probably, in part, related to the operational environment. As would be expected, DFRDB membership has fallen significantly over the last fifteen years. However, it is anticipated to be around another 20 years before DFRDB contributory membership is close to zero.

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- 4.5 The long term cost projections require an assumption regarding future growth in the membership of the relevant schemes. The previous Government had foreshadowed an increase in total military personnel and this has been achieved to some extent over the three years. This has, however, been in the context of a gradual decline in numbers over the longer term. Given the length of the projection period and uncertainty about long term movements in ADF numbers, we 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). This is measured as the excess of nominal wage growth over the increase in the CPI; and
 - the rate of interest to be used to discount future cashflows to a present value. Again, this is measured as the excess over the increase in the CPI.
- 4.8 The relationship between these rates is one of the most significant factors 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 can have a major effect on nominal cashflows but will have only a minor effect on the unfunded liability and notional employer contribution rate. On the other hand, 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.
- 4.9 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, we have decided that it is appropriate to retain the assumptions in relation to price and salary inflation and interest rates which were adopted in the 2005 Report for this current investigation.

- 4.10 For the purposes of this report, we have decided to adopt the following assumptions:

CPI increases	2.5 per cent per annum (base)
General salary increases	1.5 per cent per annum (in excess of CPI)
Interest rate	3.5 per cent per annum (in excess of CPI)

- 4.11 As well as these financial assumptions, assumptions regarding the rate of increase in GDP are required. A series of rates based for the first four projection years on Treasury forecasts for the 2008 Mid-Year Economic and Fiscal Outlook, increasing to a maximum of 2.8 per cent (adjusted for forecast inflation) for the 2012-13 financial year and then falling gradually over the following 35 years to 2.1 per cent per annum from 2047-48 onwards has been adopted.

- 4.12 The GDP growth rates have been produced by the Commonwealth Treasury specifically for the purpose of this report. 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 variation in growth rates, particularly the effectively zero growth in GDP projected for 2009-10, can and does affect the outlays and liabilities reported as a percentage of GDP.

Experience assumptions

- 4.13 Experience assumptions are set having regard to the assumptions adopted in the previous report, the experience over the intervening period and the likely impact of any factors expected to affect future experience but not yet apparent in the data.

- 4.14 There are noticeable differences in the experience of the two schemes. These differences reflect in part the behavioural incentives created by the 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 the 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,

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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

- 4.15 The assumed contributor mortality rates are unchanged from those used for the 2005 Report. The assumed 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

- 4.16 Invalidity retirements can impose a significant cost on the schemes, particularly when they affect young members. As a result, considerable care needs to be taken in setting invalidity assumptions. At the same time, invalidity experience over the past decade for the MSBS has been difficult to interpret and predict.
- 4.17 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.
- 4.18 In the following three years, observed rates were lower than the peak years and small reductions were made to the rates for both invalidity A and B for the 2005 Report.
- 4.19 The experience has deteriorated markedly since 2005. The observed invalidity A exits for both the DFRDB and the MSBS were noticeably higher than expected based on the assumptions adopted for the 2005 Report. This is likely to be associated with the operational tempo. This poses particular problems for setting rates which are to apply over the long term and under a range of operational conditions.
- 4.20 We have decided to increase the invalidity A rates to reflect the change in experience. In previous years, the invalidity rates have included a margin to allow for major incidents which result in multiple invalidity claims. In a situation where it is not clear whether the high invalidity rates observed over the two year analysis period will persist, the inclusion of this margin over and above the upwards adjustment of the rates could be regarded as unduly conservative. We have therefore decided to set the rates without the inclusion of this margin.
- 4.21 There is, however, a risk that invalidity rates could continue to increase. This is an area which will need to be closely examined in the next review.

- 4.22 There were smaller deviations in invalidity B experience from what was expected and the rates adopted are slightly lower overall than those from the 2005 Report.
- 4.23 Invalidity C benefits are similar to the benefits payable on resignation and for the DFRDB, the two modes of exit have been combined in a single withdrawal rate. A separate invalidity C exit rate is included for the MSBS but is immaterial in a valuation context.
- 4.24 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

- 4.25 Resignation assumptions have been made by duration of service.
- 4.26 As would be expected, given the benefit design, there are relatively few resignations from the DFRDB 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. Experience over the three years was somewhat confusing with resignation rates being higher in the first two years and sharply lower in the third year.
- 4.27 Our judgement was that the experience for 2007-08 was abnormally low. We note that Defence introduced a number of retention pay initiatives in this period which may have created significant financial incentives to defer resignation. However, it is unclear exactly how this will flow through to resignation rates in the longer term. It is possible that the incentives will only result in a short term deferral of exits rather than increase retention rates in the long term. Accordingly, we have set the assumptions primarily having regard to the experience in the first two years. Again, this is an area that will warrant close examination in the next review.
- 4.28 Analysis of MSBS resignation experience has been complicated by the fact that most members joined the scheme after 1991 and assumptions about resignation at longer durations have therefore necessarily involved a greater degree of judgement. With the availability of more experience, it appears that resignation rates for long serving members may be lower than previously assumed and the MSBS resignation rates were reduced to reflect this emerging experience. The observed resignation rates at short durations were affected by the issues around

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gender noted in paragraph 3.2. The assumptions were adjusted, but not all the way to the observed rates.

- 4.29 The compulsory retirement age for most ADF personnel was effectively increased from age 55 to age 60 from 1 July 2007. As there is very little experience as to how this will affect exit behaviour for those over age 55, we have continued to assume (for valuation calculation purposes only) that all ADF personnel will exit at age 55, if they have not exited beforehand. This is an area to be reviewed in the context of the next Long Term Cost Report when there will be more experience data available on those aged 55 or more.

Retrenchment and redundancy

- 4.30 No allowance has been made for the effect of retrenchments and redundancies as the occurrence 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

- 4.31 The data for the two year period to 30 June 2007 confirmed the reasonableness of age distributions for new entrants adopted for the 2005 Report and we have retained these assumptions for the current valuation. The majority of ADF personnel join at young ages, normally between 18 and 22.
- 4.32 We have assumed that the gender balance in the new entrant population is such that the mix of the contributory membership as reported on the ComSuper data is maintained. This assumption does not have a material impact on reported costs, which are not particularly sensitive to the gender balance.

Promotional increases in salaries

- 4.33 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. Since the last review, there have been a range of reforms affecting remuneration, including the incorporation of a number of allowances which were previously non-superannuable into superannuation salary and a major pay restructure for officers and some other ranks. This made it impossible to carry out any sensible analysis of the experience. Accordingly, we have retained the previous assumptions on promotional salary growth.

Mortality of pensioners

- 4.34 The numbers of deaths of age and reversionary pensioners (that is, pensioners other than invalid pensioners) were close to what was expected based on the assumptions adopted for the 2005 Report. As a result, the only change made

was to include an allowance in the base rates for mortality improvement since the last review. 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 the DFRDB and the MSBS.

- 4.35 It is conceivable that MSBS pensioners will have lower mortality rates than DFRDB pensioners of the same age. 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.
- 4.36 Analysis of invalid pensioner mortality experience suggested that mortality rates at older ages were somewhat less than the assumptions used for the 2005 Report and the rates were adjusted downwards at ages above 60. As would be expected, the rates of mortality are significantly higher than for the age pensioners.
- 4.37 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

- 4.38 There was no evidence to suggest that the assumptions on age differences between spouses should be altered from those adopted in the 2005 Report. The assumptions that married male members are four years older than their wives on death and female members three years younger than their husbands were therefore retained. There are few married female members and the sparse data was consistent with the previous assumptions on proportions married, which were accordingly also retained. Based on the more recent experience, the proportions married for males were reduced over most ages but increased for ages over 70 relative to the assumptions adopted in 2005.

Pension option in the MSBS

- 4.39 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. This assumption has a significant impact on the reported costs of the MSBS. In the 2005 Report, we substantially increased the proportion of benefits which are assumed to be taken in pension form for both officers and other ranks.

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This reflected a growing trend towards pension take-up that had been evident in both the military schemes and other Government superannuation schemes offering similar options. The experience since the last review did not suggest that further adjustment was required at this stage. We have, therefore, retained the assumption that 60 per cent of the employer financed lump sum will be converted to a pension for other ranks and 75 per cent will be converted for officers.

Commutation option in the DFRDB

4.40 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 since the last review.

Taxation

4.41 The DFRDB is entirely unfunded and hence no tax is levied on the scheme. At the time of the valuation, the notional interest rate used to determine the productivity superannuation benefit was based on the long term Commonwealth Bond rate with an allowance for a notional 15 per cent tax to replicate the investment tax payable under a funded arrangement and the results in this report reflect this arrangement. The policy was subsequently changed to remove the adjustment for tax. The impact of allowing for this change on the valuation results would be immaterial.

4.42 In calculating the accumulation of productivity contributions, allowance has been made for the 15 per cent contributions tax payable on contributions made to the MSBS Fund. Investment earnings of the Fund are also taxable at 15 per cent. For the purposes of the valuation, the after tax return on Fund assets is assumed to be the same as the valuation interest rate, that is, 3.5 per cent per annum in excess of the CPI assumption.

Superannuation surcharge

4.43 The superannuation surcharge was a tax on notional employer superannuation contributions in respect of those with high incomes. The tax was assessed on a year-by-year basis but for unfunded schemes, such as the DFRDB and the MSBS, is not paid to the Australian Taxation Office (ATO) until a benefit is payable. The tax was abolished from 1 July 2005 but those individuals who incurred a surcharge liability and have not yet taken their benefit will, for the most part, still have a surcharge debt account. 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.

Early release of preserved benefits in the MSBS

4.44 Early release of preserved benefits in the 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

4.45 Under the Family Law Act, superannuation benefits may be split as part of a Family Law agreement or order. At present, the data we receive in relation to affected contributory members does not include the details of the adjustment that will eventually be made to their benefits and thus overvalues the members' interests. At the same time, we do not include the value of benefits which have been allocated to non-member spouses. These two amounts could be expected to largely balance, with any discrepancy relating to differences in the timing of the adjustment of the member's benefit and the payment of the non-member spouse's entitlement. We have made no allowance for the impact of splits of superannuation on the grounds that, at this stage, it is not material.

Conflict situations

4.46 A number of ADF personnel are currently serving in various conflict situations (including peace-keeping duties). At any one point in time, the bulk of personnel are not on deployment, but a significant number are likely to spend some time overseas involved in a conflict situation. The long term costings reported here implicitly assume that the levels of ADF deployment will remain stable. As discussed in this report, there appears to be a positive correlation between increased involvement in overseas operations and invalidity rates. If levels of deployment in a war or warlike situations were to significantly increase, the assumptions adopted here are unlikely to hold. In particular, death and invalidity rates would be expected to be higher, as would ADF personnel numbers.