Government
Actuary's
Department

Judicial Pension Scheme

Actuarial Valuation as at 31 March 2012
Report on Methodology

Date: 8 October 2014

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1 Introduction

1.1 At the request of the Ministry of Justice, we have carried out an actuarial valuation of the Judicial Pension Scheme as at 31 March 2012 (the ***effective date***). The valuation has been undertaken in accordance with HM Treasury directions which specify certain assumptions and require other assumptions to be the Lord Chancellor's best estimates.

1.2 The purpose of this report is to summarise the methodologies adopted for certain aspects of the valuation calculations. It also explains why the approaches taken are necessary and the impact of the approaches taken on the valuation result.

1.3 The data and assumptions to be used for the valuation are the subject of separate reports.

1.4 Throughout this report the totals given for summed data may not be exactly the same as the sum of the components shown due to rounding effects.

1.5 HM Treasury Directions, made under the Public Service Pensions Act 2013, provide the legal framework for carrying out the valuation. References to the 'HMT Directions' in this report are in respect of these Directions, specifically 'The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 (as amended[1]).

1.6 This report is intended solely for the use of the Ministry of Justice. We are content for the Ministry of Justice to release this report to third parties, provided that:

- it is released in full
- the advice is not quoted selectively or partially
- GAD is identified as the source of the report, and
- GAD is notified of such release.

1.7 Third parties whose interests may differ from those of the Ministry of Justice should be encouraged to seek their own actuarial advice where appropriate. GAD has no liability to any person or third party for any act or omission taken, either in whole or in part, on the basis of this report.

1.8 A draft of this report was circulated to the Ministry of Justice in August 2014. It has been signed alongside the formal valuation report. No substantive changes have been made.

[1] Amendments are the Public Service Pensions (Valuations and Employer Cost Cap) (Amendment) Directions 2014 and the Public Service Pensions (Valuations and Employer Cost Cap) (Amendment) (No 2) Directions 2014

2 Active membership projections

2.1 The membership data being used for the valuation is as at the valuation date (i.e. 31 March 2012) and the valuation calculations need to allow for the cost of benefits being accrued over the implementation period (i.e. 1 April 2015 to 31 March 2019).

2.2 The expected cost of benefits provided to members remaining in the existing schemes differs from the expected cost of providing those members with benefits in the 2015 scheme. It is therefore necessary to separately project the membership within each scheme and benefit category at the valuation date to the start and end of the implementation period to enable the valuation results to be calculated.

2.3 In projecting the membership to these future dates a number of different overriding assumptions might be made. For example it could be assumed that:

> The membership profile will be stable; leavers expected at all ages with replacement from continued recruitment;

> The membership will decline; leavers expected at all ages with limited replacement from recruitment; or

> The membership will increase or otherwise change; leavers expected with replacement at a different rate or with a different profile.

2.4 Since the membership profile of the JPS tends to be relatively stable (for example if one Judge retires he or she will generally be replaced by another Judge on a similar salary), the first option above seems most appropriate. We have applied this assumption to mean that over the period from the valuation date to the end of the implementation period the total number and salary of the membership will remain stable.

2.5 If an alternative assumption were adopted the contribution rates determined as part of the valuation (both the employer contribution rate and the proposed employer cost cap) would be likely to differ. In general, any assumption which results in an ageing of the workforce will result in higher contribution rates being calculated and vice versa.

2.6 In conjunction with the overriding assumption above we also allow for the existing membership to “run off” in accordance with the assumptions (e.g. age retirement and death) recommended for the valuation.

2.7 To maintain a stable total number of members and salary, an assumption about the profile of new joiners to the scheme over the projection period is required. For this purpose the new membership profile has been taken to be proportional to the profile of new entrants between 31 March 2009 and 31 March 2012. The proportion used is set to maintain the stable membership as described above, i.e. both the number and salary of new joiners has been set to be equal to the number and salary of existing members who are projected to leave active membership during the projection period.

2.8 From 1 April 2015, two new options will be available for some members; Transitional Protection Allowance and a Defined Contribution option to be known as the Partnership Pension Account. Both of these options are alternatives to membership of the New Judicial Pension Scheme 2015. Following discussions with MoJ and HM Treasury, we have made no allowance for members to take up either option in our membership projections and valuation calculations.

Age retirement assumption

2.9 When projecting the membership, we have considered whether a more detailed assumption for age retirement is required.

2.10 For the liability calculations for the actuarial valuation as at 31 March 2012 we have used the following assumptions. These are as recommended in our "Advice on assumptions" report.

Membership Group	Assumed Retirement Age
1981 scheme members with full and taper protection	Age 70
1993 scheme members with full and taper protection	Age 67
2015 scheme members and unprotected members with service in existing scheme	Average of 70 and State Pension Age (SPA). (Age 67 for those with SPA 65)

2.11 The use of an assumption for retirement at a single age is appropriate for liability calculations as part of a valuation, but has drawbacks when considering a future membership projection as it creates a 'cliff edge' and assumes that any active members over this age retire immediately. A better approach would be to assume a spread of retirements over a range of ages which more accurately reflects what would be expected in practice.

2.12 We have therefore used a retirement assumption over a range of ages that is consistent with the single age retirement assumptions above, eg the average age of retirement from the range of assumptions for 1981 scheme members (with full and taper protection) is age 70.

2.13 These assumptions are set out below (annual probability of retirement at each age).

Age	1981 Scheme with full and taper protection	1993 Scheme with full and taper protection	2015 Scheme and unprotected members (SPA 65)[1]
60	0.0%	2.5%	2.5%
61	0.0%	2.5%	2.5%
62	0.0%	2.5%	2.5%
63	0.0%	2.5%	2.5%
64	0.0%	2.5%	2.5%
65	25.0%	25.0%	25.0%
66	5.0%	15.0%	15.0%
67	5.0%	15.0%	15.0%
68	5.0%	15.0%	15.0%
69	5.0%	15.0%	15.0%
70	15.0%	100.0%	100.0%
71	15.0%	100.0%	100.0%
72	15.0%	100.0%	100.0%
73	15.0%	100.0%	100.0%
74	15.0%	100.0%	100.0%
75	100.0%	100.0%	100.0%

Note 1: The age retirement assumption for the 2015 scheme and unprotected members is more complex as a different assumption applies depending on their SPA. However, in the projection period being considered (2012 to 2019), it is only those 2015 members that have a SPA of 65 that will be retiring. These members are assumed to retire at age 67, meaning that the same range of assumptions can be used as for 1993 scheme members (with full and taper protection).

2.14 The retirement assumptions were set using an analysis of the profile of retirements over the period 2009 to 2012 for each scheme. The actual percentage retiring at each age was calculated and then converted to a smooth set of assumptions using the following objectives:

> For a member below retirement age, the assumptions should result in retirement on average at the single age retirement assumption for each scheme (eg age 70 for the 1981 scheme).

> Consistency between the schemes where appropriate.

> The application of the retirement assumptions to the membership of the schemes as at 31 March 2012 should result in approximately the same number of retirements in a year as experienced on average over the three years to 31 March 2012.

> The assumptions should show a smooth pattern to remove any distortions to the actual percentage of retirements at particular ages resulting from a small number of members at a particular age and random fluctuations in the retirements experienced at a particular age over the period considered.

Results of the membership projection

2.15 The proportions of payroll in each scheme and average ages at the relevant dates are shown below.

	31 March 2012		31 March 2015		01 April 2015		31 March 2019	
	Proportion of Payroll	*Average Age**	*Proportion of Payroll*	*Average Age**	*Proportion of Payroll*	*Average Age**	*Proportion of Payroll*	*Average Age**
1993 Scheme	90.7%	58.6	93.4%	59.2	64.1%	62.1	35.4%	65.0
1981 Scheme	9.3%	66.0	6.6%	67.7	6.6%	67.8	3.6%	70.3
2015 Scheme	0.0%	N/A	0.0%	N/A	29.3%	52.8	61.0%	55.6
Total	100.0%	59.3	100.0%	59.7	100.0%	59.7	100.0%	59.5

* weighted by pay

2.16 The above illustrates that 29.3% of the membership at 1 April 2015 will move into the 2015 scheme on that date (ie 93.4% - 64.1%). The other 70.7% will continue in the existing schemes, with some remaining to retirement (if fully protected) and some moving to the 2015 scheme at a later date. By 31 March 2019 only 39.0% of the membership are expected to remain in the existing schemes. The age profile of those remaining in the existing schemes is considerably higher than that of the assumed population of the 2015 scheme as a result of the age criteria applied for protection. The average age of both existing scheme populations can be seen to increase between 2015 and 2019.

2.17 The distribution of the membership at the valuation date and at the start and end of the implementation period by head count and salary is shown in the following charts.

Chart 1A: 2012 membership profile by headcount

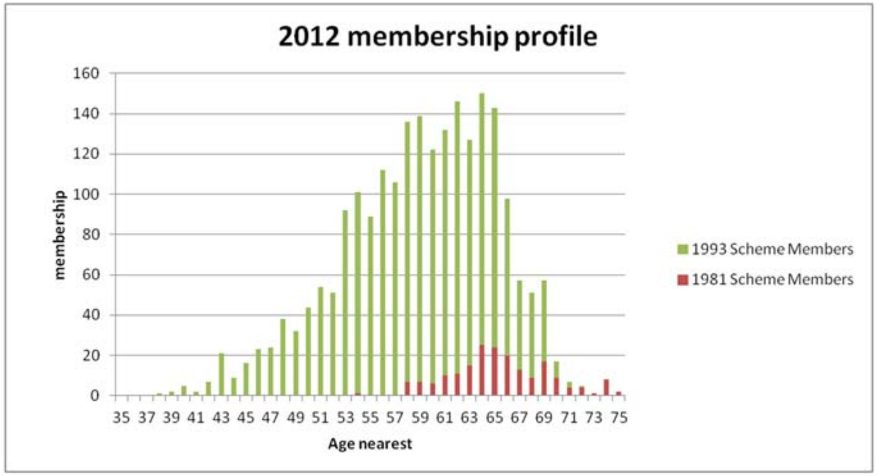


Chart 1B: 2012 membership profile by pay

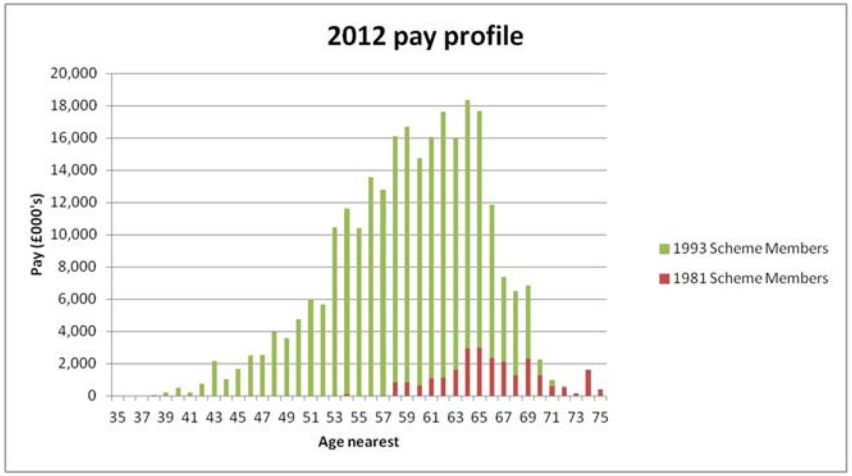


Chart 2A: 2015 membership profile by headcount

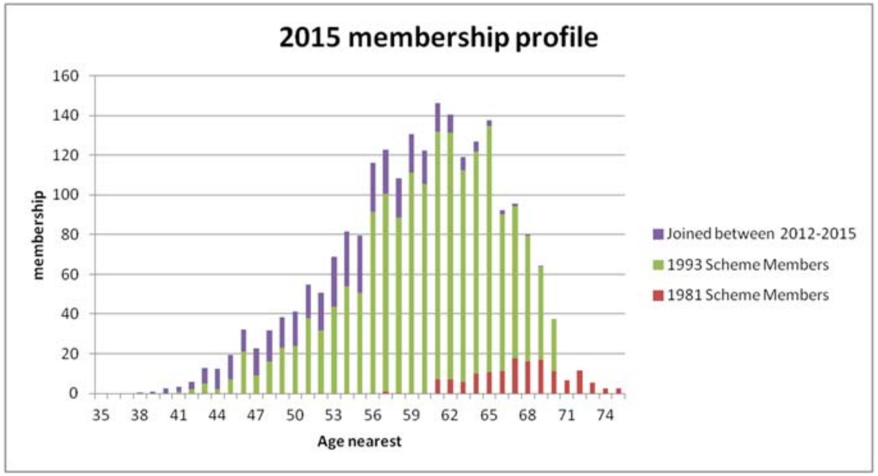


Chart 2B: 2015 membership profile by pay

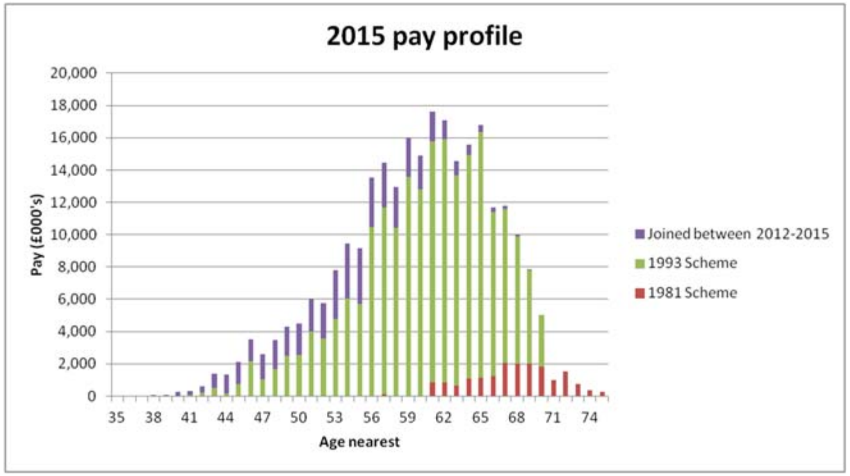


Chart 3A: 2019 membership profile by headcount

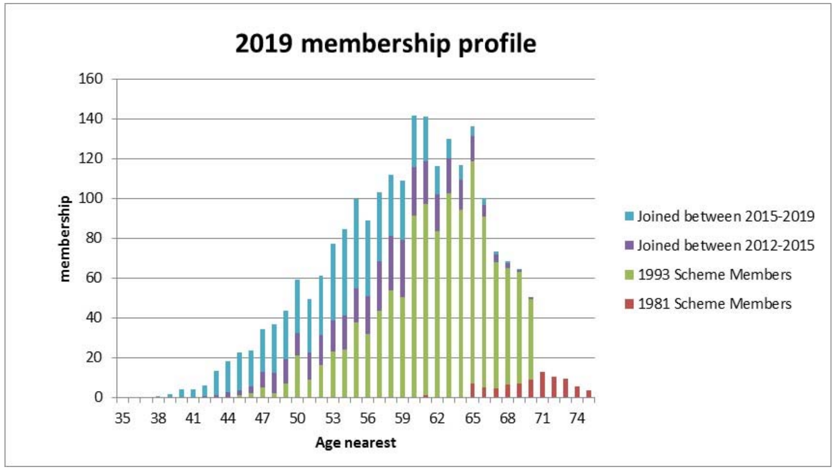
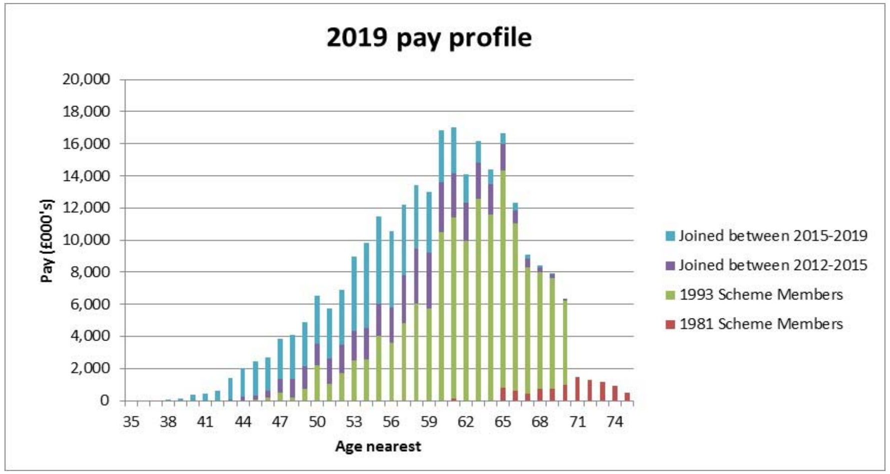


Chart 3B: 2019 membership profile by pay



3 Allowance for age retirement in the proposed employer cost cap calculations

3.1 Under the HMT Directions, a different method and set of assumptions should be used when calculating the employer contribution rate than those used to calculate the proposed employer cost cap. For example, under the proposed employer cost cap calculation all scheme members are assumed to accrue benefits in the 2015 scheme (ie assuming that no protection applies). The previous sections describe the methodology for calculation of the employer contribution rate. This section describes how the age retirement assumption is set for the employer cost cap calculation.

3.2 The age retirement assumptions for the employer contribution rate calculation are set out below. This is the same as the table set out in paragraph 2.10.

Membership Group	Assumed Retirement Age
1981 scheme members with full and taper protection	Age 70
1993 scheme members with full and taper protection	Age 67
2015 scheme members and unprotected members with service in existing scheme	Average of 70 and State Pension Age (SPA). (Age 67 for those with SPA 65)

3.3 For the proposed employer cost cap calculations this assumption should be determined on the basis that all members are members of the 2015 scheme. This would suggest that all members are assumed to retire at the average of age 70 and their SPA.

3.4 However, we understand that members who were first appointed to judicial office before 31 March 1995 and have a compulsory retirement age greater than age 70 will retain this higher compulsory retirement age if they become members of the 2015 scheme. This is because the compulsory retirement age for these individuals is separate from their pension scheme membership.

3.5 These members will be included in the 1981 scheme members group, so to comply with the requirement to use assumptions that are 'best estimates' (ie no margins for prudence or optimism are included), we recommend that 1981 scheme members are also assumed to retire at age 70 for the purposes of the proposed employer cost cap calculations, rather than the average of age 70 and their SPA.

4 Methodology

Accrual cost methodology

4.1 When determining the cost of accrual as required by the HMT Directions, the cost for members in each group at each relevant date (as identified from the membership projections) has been determined for each age and that rate has been applied to the total pensionable pay at each age to determine the average for the membership as a whole at each date. The cost over each relevant period has been taken as the average of the cost at the start and end of each period. The calculation allows for mortality improvements assuming the calculation date is the midpoint of each period.

4.2 Direction 11 requires use of the projected unit methodology to calculate the valuation results. Directions 14 to 17 specify some modifications to the financial assumptions in the short term. An implication of the short term modifications is that the projected unit methodology is expected to result in an increasing standard contribution rate over successive periods. For example the cost of accrual under the existing schemes over the period 2012 to 2015 will be lower than that over the period 2015 to 2019 (ignoring any redistribution of members between sections and into the 2015 scheme). This effect is material for final salary benefits but has minimal impact on the cost cap calculation.

Other methodology

4.3 The Annex shows the methodology table sent to HMT on 19 February 2014, updated for any changes since then.

Annex – Methodology table

Brief description of overriding membership projection assumption(s)	• Existing membership projected in line with valuation assumptions except for retirement decrement which will assume a spread of retirement ages but retaining same average retirement age as for valuation assumptions • New membership profile proportional to profile of new entrants between 31/3/09 and 31/3/12. • Headcount will be assumed to remain stable, in line with MoJ expectations (as reported in the OBR) • Total paybill will assume to rise in line with the valuation directions assumption for general public sector earnings growth • No allowance for fee-paid judges at all in the valuation
Rationale	• MoJ expect the total number of Judges to remain constant • When a Judge retires a new Judge is appointed to fill the post (usually younger but at the same pay). Using new entrant distribution takes this into account. Similarly, if a judge is promoted to a new role, a new judge is appointed to the vacated post.
Payroll at 31/12/12	£266 million
Projected payroll at 31/3/15 (in 2012 terms)	£266 million
Projected payroll at 31/3/19 (in 2012 terms)	£266 million
Average age of actives at 31/3/12 weighted by pay	59
Average age of new entrants 2012-2015 weighted by pay	54
Average age of new entrants 2015-2019 weighted by pay	54

Grouping of active members (to run through Superval)	Run on an individual basis at 2012 and a grouped basis at 2015 and 2019
Rate up of data	Rate up in line with known exclusions (headcount basis) – actives were rated up by 0.4%, deferreds by 10% (but only 10 deferred members) and 1% of pensioners/dependants. No additional uprating required to align to contribution derived pay/pension as shown in accounts.
Application of methodology	Accrual cost of any required period has been taken as the average of the cost for the membership at the start and end of the period (with appropriate selection of 'year of use' mortality in the runs used).
Salary used in the assessment of accrual	Salary at the time of accrual with revaluation to retirement (not average revalued salary over all service)
GMP	Savings calculated approximately based on GMP in-payment data above GMP payment age. Approximation intended to be unbiased
Earnings cap	Cap does not apply to benefits but is applied in modelling of 1993 scheme member contributions up to 31 March 2015 on an individual basis. Cap also applies to Judicial Long Service Award paid to 1993 scheme members but this benefit is not to be included in the valuation. Cap does not affect any other benefits or contributions.
Choice	**1 Taper/ 2015 scheme option** Members with taper protection who are assumed to choose to enter the new 2015 scheme in April 2015 are those who will have hit their service cap (20 years for almost all members) in their existing scheme before the end of their taper period **2 Transitional Protection Allowance option and opting-out** Assume nil take-up of TPA and nil opt-outs since no evidence available. Since the rate of TPA will be the same as the employer contribution rate this will be broadly cost neutral for the scheme. **3 Partnership (defined contribution) option** Assume nil take-up
Allowance for re-entry by current actives	No allowance made for withdrawal as negligible
Allowance for re-entry by current deferreds	None

Cost of non-accruing benefits (e.g. lump sum on death in service and service enhancements)	Recognised only at the point liability emerges (e.g. on death in service or ill-health retirement)
Modelling of early retirement	No early retirement assumed – would be cost neutral to the scheme due to the early retirement reductions
Modelling of late retirement	Normal Pension Age in Judicial Pension Scheme is 65, however we will assume members will retire as follows: Protected in the 1993 section – 67 years Protected in the 1981 section – 70 years New scheme including members with no protection – (SPA + compulsory retirement age of 70) / 2. (Age 67 is used for members with a SPA of 65.) This is because experience has shown Judge's generally retire after their NPA. Explicit using factors that might be expected to apply at retirement will be calculated. Assumed that factors will be calculated with no allowance for commutation.
Modelling of members with non-integer SPA	Use nearest integer
Application of interest to notional assets	Discount rate assumed to apply uniformly over any particular year; all cash flows treated as applying mid-year
Allowance for children's pensions	Current children's pensions valued but no allowance for future pensions