SCHEME FUNDING REPORT OF THE ACTUARIAL VALUATION AS AT 31 MARCH 2014

UNIVERSITIES SUPERANNUATION SCHEME

JULY, 2015

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Introduction

This report is addressed to the Trustee of the Universities Superannuation Scheme ("the Trustee") and is provided to meet the requirements of Section 224(2)(a) of the Pensions Act 2004. It describes the factors considered by the Trustee when carrying out the actuarial valuation as at 31 March 2014, and the decisions reached as a result.

The purpose of the actuarial valuation is for the Trustee to determine:

- The expected cost of providing the benefits built up by members at the valuation date (the "liabilities"), and compare this against the funds held by the Universities Superannuation Scheme (the "assets").
- An appropriate plan for making up the shortfall if the Universities Superannuation Scheme (the "Scheme") has less assets than liabilities.
- The contributions needed to cover the cost of the benefits that active members will build up in the future and other costs incurred in running the Scheme.

Signature		**Date of signing**	24 JULY 2015
Scheme Actuary	Ali Tayyebi	**Qualification**	Fellow of the Institute and Faculty of Actuaries

This report has been prepared in accordance with the version of the *Pensions Technical Actuarial Standard* current at the date this report is signed. It also complies with the relevant requirements of *Technical Actuarial Standards R: Reporting Actuarial Information*, *D: Data* and *M: Modelling*, where they apply to this report. These Standards are all issued by the Financial Reporting Council. The calculations referred to in the report use methods and assumptions appropriate for reviewing the financial position of the Scheme and determining a contribution rate for the future. Mercer does not accept liability to any third party in respect of this report; nor do we accept liability to the Trustee if the information provided in this report is used for any purpose other than that stated. The report may be disclosed to members and others who have a statutory right to see it. It may also be disclosed to any participating employer and, if the Trustee and Mercer consent, it may be disclosed to other third parties.

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Key results of the scheme funding assessment

2.1 Past service funding position

The table on the right compares the assets and liabilities of the Scheme at 31 March 2014 taking into account the revised benefit structure effective 1 April 2016 agreed both by the Joint Negotiating Committee and the Trustee in July 2015 following the Employers' consultation which concluded in June 2015 . Figures are also shown for the last valuation as at 31 March 2011 for comparison.

	£bn	
	31 March 2014	**31 March 2011**
Total assets	41.6	32.4
Liabilities:		
Active members	23.5	18.4
Deferred pensioners	4.9	2.8
Pensioners	18.5	14.1
Total liabilities	46.9	35.3
Past service surplus / (shortfall)	(5.3)	(2.9)
Funding level	89%	92%

The figures in the liabilities value may not add to the total due to the effects of rounding

The table shows that at 31 March 2014 there was a shortfall of £5.3 bn. An alternative way of expressing the position is that the Scheme's assets were sufficient to cover 89% of its liabilities – this percentage is known as the funding level of the Scheme.

At the previous valuation at 31 March 2011 the shortfall was £2.9 bn, equivalent to a funding level of 92%. The key reasons for the changes between the two valuations are considered in 3.2.

The assets and liabilities of the Supplementary section of the Scheme are included in the figures above.

The liability value at 31 March 2014 shown in the table above is known as the Scheme's "technical provisions". The technical provisions are calculated using assumptions that the Trustee has determined are appropriate based on the Trustee's assessment of the strength of the Employer covenant, having consulted with the Employers over the approach. Throughout this report "Employers" means all institutions that have a liability in the Scheme.

Further details of the way in which the technical provisions are calculated are set out in Appendix A.

2.2 Correcting the shortfall

For the period up to 1 April 2016:

The Employers' deficit contributions over this period will amount to 16% p.a. of salaries less the employer future service cost of accrual (see below) and the expenses of administering the Scheme including PPF levies. On the assumptions made, this gives rise to a deficit contribution of 0.7% p.a. of salaries over this period.

For the period from 1 April 2016 to 31 March 2031:

The Employers' deficit contributions over this period will amount to 18% p.a. of salaries less the employer's share of the cost of accrual in the defined benefit section together with the employer contribution to the defined contribution section (see below) and the expenses of administering the Scheme including PPF levies. On the assumptions made and once the salary threshold and DC section are introduced this gives rise to deficit contributions of at least 2.1% p.a. of salaries over the period to 31 March 2031. From 1 April 2016 until the salary threshold and DC section are introduced (to be implemented as soon as practicable and in any case no later than 6 months after 1 April 2016) the deficit contributions amount to 2.5% p.a. of salaries.

2.3 Future service contributions

The valuation also looks at the cost of the benefits that will be built up over the year after the valuation date and/or the year after the change in benefits from 1 April 2016. A summary of the assumptions used is provided in Appendix A.

The 2014 valuation incorporates the effect of the benefit changes due with effect from 1 April 2016 and which are detailed in the document titled "Updated specification of the proposed modifications to USS benefits which was approved by the JNC on 9 July 2015". The key elements of these changes are set out in section 3.1 below. The introduction of the salary threshold and defined contribution benefits above the salary threshold however, will be implemented as soon as practicable after 1 April 2016 and, in any case, no later than six months after 1 April 2016. The table below gives a breakdown of the future service cost on this basis but based on the membership and assumptions at 31 March 2014 and shows the cost for the two sections in place at 31 March 2011 for comparison.

	31 March 2014 **Once DB salary threshold and DC section introduced** **% of salaries p.a.**	**31 March 2011** **% of salaries p.a.**	
		FS Section	**CRB Section**
Total normal cost of DB pension benefits (including life assurance)	20.1	19.9	11.3
Allowance for expenses	0.4	0.4	0.4
Total Employers cost of DC benefits	2.5	N/A	N/A
Less members' contribution in respect of DB benefits	(7.1)	(7.5)	(6.5)
Employer future service contribution rate (combined for 2011)	15.9	12.6	

The break of the final salary link after 31 March 2016 will also apply to benefits accrued up to that date. On this basis, the Employer future service contribution rate for the period between 31 March 2014 and 31 March 2016 is calculated to be 15.3% of total salaries (as an average for the FS and CRB sections).

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Experience since last valuation

3.1 Summary of key inter-valuation experience

The last actuarial valuation was carried out with an effective date of 31 March 2011. Since the last valuation, extensive discussions and negotiations in relation to the Scheme benefits have taken place, and in July 2015, a number of changes to the benefits provided by the Scheme were agreed to come into force on 1 April 2016 or, for certain benefit changes, as soon as practicable after this date (see below) following consideration of the responses to the Employers' consultation issued in March 2015. The key changes agreed include:

- For Final Salary section members – accrued entitlement up to 31 March 2016 will be calculated using pensionable salary and pensionable service immediately prior to this date. Going forwards, those accrued benefits will revalue in line with increases in official pensions which for the purposes of this valuation is assumed to be in line with CPI (subject to certain limits when CPI exceeds 5%).

- Future defined benefit accrual after 1 April 2016 will be on a CRB basis for all members with a pension accrual of 1/75th – and a cash lump sum of 3/75ths - of salary for each year of service in respect of salary up to a salary threshold*, initially £55,000 per annum.

- Member contributions will increase to 8% of salary.

- A new defined contribution benefit* for salary in excess of the salary threshold at a total level of 20% of salary in excess of the salary threshold (including member contributions of 8% of salary in excess of the salary threshold).

- Optional additional contributions* payable into defined contribution section of which the first 1% of salary is to be matched by the Employer.

* The implementation of the salary threshold for DB benefits and the corresponding introduction of DC benefits for salary above the salary threshold and the employer matching DC contributions up to 1% of salary will take place as soon as practicable after 1 April 2016 and in any case no later than 1 October 2016.

The average Salary increase for the Scheme members who were in service for the whole of the inter-valuation period was 3.7% per annum.

Pensions in payment (in excess of Guaranteed Minimum Pensions (GMPs)) were increased as guaranteed under the Scheme as follows:

- April 2011 3.1%
- April 2012 5.2%
- April 2013 2.2%
- April 2014 2.7%

During the inter-valuation period, the investment return on the Scheme's assets has been 8% per annum

The table summarises the contributions paid over the inter-valuation period. These figures are from the audited accounts and are in line with the rates agreed at the last actuarial valuation.

Date	Employer contributions % of salaries	Member contributions % of salaries
31 March 2011 to 30 September 2011	16%	6.35%
1 October 2011 to 31 March 2014	16%	7.5% FS Section and 6.5% CRB Section

3.2 Reasons for the change in funding position since the last actuarial valuation

As noted in 2.1, the shortfall at the last valuation date was £2.9bn. The table below sets out the main reasons for the change in the shortfall between 31 March 2011and 31 March 2014.

	£bn
Deficit as at 31 March 2011	2.9
- Interest on deficit	0.6
- Deficit contributions	-0.7
- Additional expected out-performance assumed in recovery plan	-0.6
- Reduction in gilt yields	7.6
- Change in long-term inflation expectations	-0.9
- Actual increases in pensionable salaries	-0.3
- Actual increases to pensions in payment	Nil
- Other membership experience	-0.4
- Impact of actual investment returns experience	-2.1
- Increase in long term life expectancy improvement rate from 1.25% pa to 1.5% pa and change of base table from CMI_2009 to CMI_2014	0.5
- Reducing ill-health decrement to ⅔rds allowance	-0.1
- Allowance for short-term salary increases in 2014 and 2015	-0.8
- Reduction in discount rate to 1.2% pa over 20 years	3.1
- Reduction in inflation risk premium from 0.3% pa to initially 0.2% pa reducing to 0.1% over 20 years	1.7
- Removal of the final salary link with effect from 31 March 2016	-5.2
Deficit as at 31 March 2014	5.3

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Projected future funding level and volatility

4.1 Projected funding position at next actuarial valuation

As part of this valuation, the Trustee has determined, after consultation with Universities UK, a recovery plan to pay off the shortfall by 31 March 2031. The next actuarial valuation will take place with an effective date no later than 31 March 2017. If experience up to that date is in line with the assumptions made for this current actuarial valuation and contributions are paid at the determined rates or amounts, the shortfall at 31 March 2017 would be £5bn, equivalent to a funding level of 91%.

4.2 Material risks faced by the Scheme

The Scheme is subject to some potentially material risks that are, to an extent, outside the Trustee's control, but could affect the funding level. Any material worsening of the funding level will mean more contributions are needed (either at an increased rate or at the same rate over a longer period) to be able to provide the benefits built up in the Scheme – unless experience acts in other ways to improve the funding level.

Overall the Trustee has developed parameters for managing the acceptable levels of risk, its "Financial Management Plan", which sets out in detail the interaction of its assessment of the employer's covenant, investment strategy and funding and the level of risk that it is prepared to operate within. It has also put in place governance and procedural structures to monitor and maintain the plan.

Examples of such risks, and how the Trustee manages them, are:

- If the Employer becomes unable to pay contributions or to make good deficits in the future, the Scheme's assets will be lower than expected and the funding level will be worse than expected. The Trustee regularly monitors the financial strength of the Employers.

- If future investment returns on assets are lower than assumed in the valuation, the Scheme's assets will be lower, and the funding level worse, than expected. The Trustee has a process in place to monitor investment performance regularly, and it reviews the Scheme's investment strategy alongside each actuarial valuation. It has taken the following actions to mitigate (but not fully remove) the risk:

  – The technical provisions assumptions make a provision for a gradual reduction in investment risk over a 20 year period based on the projected development of the size of the Scheme over that period. The Trustee has developed a plan to monitor investment strategy against that target reduction in investment risk and implement changes to investment strategy if considered appropriate based on a variety of indicators including the Scheme's funding position.

- If gilt yields change such that the liability values increase by more (or decrease by less) than the assets, the funding level against the technical provisions and on the wind-up basis (see section 5) will be worse than expected. The Trustee has taken the following action to mitigate (but not fully remove) the risk:

  – A proportion of the Scheme's assets are invested in gilts, which will help to offset some of the risk associated with movements in gilt yields.

- If improvements in life expectancy are greater than assumed, the cost of benefits will increase because members are living longer than expected. This will mean the funding level will be worse than expected. The Trustee regularly reviews the Scheme's experience and ensure that the assumptions it makes about members' life expectancy take the most recent Scheme-specific information and research available into account.

- If members make decisions about their options which increase the Scheme's liabilities, the funding level will be worse than expected. The Trustee regularly reviews the Scheme's experience and ensures that the treatment of member options remains appropriate with prudent costing assumptions.

4.3 Sensitivity of funding position to changes in key assumptions

The value placed on the Scheme's liabilities is critically dependent on the assumptions used to carry out the calculations. If future experience differs from the assumptions the Trustee has used after consulting with the Employers, then the projected future funding level will be different from the level described above in 4.1.

To illustrate how sensitive the funding level and overall contribution requirements are to experience being different from assumed, the table below shows how the valuation results at 31 March 2014 would have differed given small changes in the key assumptions (based on the new benefit structure).

	Change in Technical Provisions deficit £bn	**Change in total (employer + employee contribution rate) % of salaries 17 year recovery period**
Initial discount rate increased / reduced by 0.25% p.a.	-/+£0.8bn	-/+0.5%
Discount rate in 20 years' time increased / reduced by 0.25% p.a.	-/+£1.1bn	-/+2.1%
RPI inflation reduced / increased by 0.1% p.a.	-/+£0.8bn	-/+1.9%
Long-term life expectancy improvement trend increased to 1.75% p.a.[1]	+£0.5bn	+0.8%

[1] Corresponds to an increase in life expectancy of around a year

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Wind-up position

In extreme circumstances if all of the Employers were to become insolvent or decide not to support the Scheme, the Trustee could decide to wind up the Scheme and secure the benefits built up with an insurance company. Insurance companies use different assumptions to the Trustee's technical provisions when calculating the value of the Scheme's liabilities and the price they would charge to provide the benefits.

The table on the right shows an estimate of the funding level of the Scheme at 31 March 2014 assuming all benefits were bought out with an insurer. The wind-up position at 31 March 2011 is also shown for comparison. The wind-up position is shown for information only, and does not mean that the Trustee or Employers are considering winding up the Scheme.

	bn 31 March 2014	 31 March 2011
Total assets	41.6	32.4
Liabilities:		
Active members	42.3	31.2
Deferred pensioners	9.1	5.8
Pensioners	25.0	18.2
Expenses	0.9	2.1
Total liabilities	77.3	57.3
Past service surplus / (shortfall)	(35.7)	(24.9)
Funding level	54%	57%

As the table shows, the Scheme would have had a shortfall of £35.7bn if it had been wound up at 31 March 2014. This means that, on average, members could only expect to receive 54% of the benefits earned to date (although the percentage coverage would differ between members depending on age and when their benefit was earned).

In practice, if the Scheme was wound up due to the Employers becoming insolvent, the members may be eligible for compensation from the Pension Protection Fund (PPF) if the Scheme's assets were less than needed to buy that compensation from an insurance company. If this was the case, members could receive a higher proportion of the benefits they have earned to date. Further details of the compensation payable from the PPF are given in Appendix E.

If experience is in line with the assumptions and investment returns are as per the recovery plan, and contributions are paid at the determined rates or amounts, the shortfall projected at 31 March 2017 on a wind-up basis would be about £40bn, equivalent to a funding level of 57%.

APPENDIX A

Assumptions

A.1 How the benefits are valued

In order to calculate the liabilities, the Trustee needs to make assumptions about various factors that affect the cost of the benefits provided by the Scheme – for example, how long members will live, or the future level of inflation. The table below explains the key assumptions being made in the valuation.

Assumption	Why it is important and how it impacts on the liabilities
Discount rate	The majority of benefits in a pension scheme are paid many years in the future. In the period before the benefits are paid, the Trustee invests the funds held by the Scheme with the aim of achieving a return on those funds. When calculating how much money is needed now to make these benefit payments, it is appropriate to make allowance for the investment return that is expected to be earned on these funds. This is known as “discounting”. The higher the investment return achieved, the less money needs to be set aside now to pay for benefits. The calculation reflects this by placing a lower value on the liabilities if the “discount rate” is higher.
Inflation	Pensions in payment typically increase in line with price inflation, subject to a cap. Salary growth is also normally linked to price inflation. A higher inflation assumption will, all other things being equal, lead to a higher value being placed on the liabilities.
Pensionable Salary growth	Pensions for active members are based on their salaries each year, so it is necessary to make an assumption about future salary growth. The higher this assumption, the higher the value placed on the liabilities for active members although the link to salary will cease from 31 March 2016. The contributions paid towards the deficit remain linked to salary after 31 March 2016 and therefore a lower salary increase assumption would lead to a higher deficit contribution rate.
Life expectancy	Pensions are paid while the member (and potentially their spouse or partner) is alive. The longer people live, the greater is the cost of providing a pension. Allowing for longer life expectancy therefore increases the liabilities.

The liabilities of the Scheme are calculated projecting forward all of the future benefit cash flows and discounting them back to the effective date of the valuation, using these assumptions. For example, the liability for a pensioner with no spouse or partner is calculated by estimating the amount of each pension payment they will receive in the future, multiplying by the probability that the member will still be alive by the date of each payment, and then discounting each payment back to the effective date of the valuation; and then summing up all of these discounted amounts. The liabilities for the whole Scheme are calculated by summing the liabilities for each of the individual members.

A.2 Assumptions used to calculate technical provisions

The tables below summarise the key assumptions used in the calculation of the technical provisions and those used for the 31 March 2011 actuarial valuation.

Principal actuarial assumptions	**31 March 2014**	**31 March 2011**
Investment return	5.2% in year 1, decreasing linearly to 4.7% p.a. over 20 years	6.1% p.a.
Market derived price inflation	3.6% p.a.	3.7% p.a.
Inflation risk premium	0.2% in year 1, decreasing linearly to 0.1% p.a. over 20 years	0.3% p.a.
Price inflation – Retail Prices Index	Market derived price inflation less inflation risk premium	Market derived price inflation less inflation risk premium
RPI / CPI gap	0.8% p.a.	0.8% p.a.
Price inflation – Consumer Prices Index	RPI assumption less RPI / CPI gap	RPI assumption less RPI / CPI gap
Salary increases		
2) General pay growth	CPI in year 1, CPI +1% in year 2 and RPI + 1.0% p.a. thereafter	RPI + 0.25% p.a. in years 1 to 3, RPI + 1% p.a. thereafter
3) Salary scale for past service	Scale adopted (in first two years) reflecting	Scale adopted reflecting recent experience

Principal actuarial assumptions	31 March 2014	31 March 2011
	recent experience	
4) Salary scale for future service	N/A	Scale adopted reflecting longer term expectation
Pension increases in payment	CPI assumption (for both pre and post 2011 benefits)	RPI in years 1 to 3 then CPI assumption (for both pre and post 2011 benefits)
Mortality base table	98% of SAPS S1NA "light" YOB unadjusted for males and 99% of SAPS S1NA "light" YOB with a -1 year adjustment for females	SAPS S1NA "light" YOB unadjusted for males and with a -1 year adjustment for females
Future improvements to mortality	CMI_2014 with a long term rate of 1.5% p.a.	CMI_2009 with a long term rate of 1.25% p.a.
Retirement age (active members)	62 (accrued service) 65 (future service)	62 (accrued service) 65 (future service)
Ill health retirement:		
Males	20.9% of LG 59/60 table for male lives	31.4% of LG 59/60 table for male lives
	Sample rates of ill health retirement (% leaving p.a.):	Sample rates of ill health retirement (% leaving p.a.):
	Age 35 0.01	Age 35 0.01
	Age 45 0.04	Age 45 0.06
	Age 55 0.14	Age 55 0.21
Females	13.3% of LG 59/60 table for female lives	20% of LG 59/60 table for female lives
	Sample rates of ill health retirement (% leaving p.a.):	Sample rates of ill health retirement (% leaving p.a.):
	Age 35 0.01	Age 35 0.01
	Age 45 0.05	Age 45 0.08
	Age 55 0.25	Age 55 0.37

Principal actuarial assumptions	31 March 2014		31 March 2011	
Withdrawals:				
Males	270% of LG 59/60 table for male lives		270% of LG 59/60 table for male lives	
	Sample rates of withdrawal (% leaving p.a.):		Sample rates of withdrawal (% leaving p.a.):	
	Age 25	14.42	Age 25	14.42
	Age 35	9.19	Age 35	9.19
	Age 45	3.79	Age 45	3.79
Females	113% of LG 59/60 table for female lives		113% of LG 59/60 table for female lives	
	Sample rates of withdrawal (% leaving p.a.):		Sample rates of withdrawal (% leaving p.a.):	
	Age 25	19.28	Age 25	19.28
	Age 35	11.40	Age 35	11.40
	Age 45	3.83	Age 45	3.83
Proportions married:				
Males	109% of ONS 2008 tables for male lives		109% of ONS 2008 tables for male lives	
	Sample proportions of members with an eligible spouse/partner at the time of retirement or earlier death:		Sample proportions of members with an eligible spouse/partner at the time of retirement or earlier death:	
	Age 25	10.90%	Age 25	10.90%
	Age 35	53.41%	Age 35	53.41%
	Age 45	69.76%	Age 45	69.76%
Females	109% of ONS 2008 tables for male lives		109% of ONS 2008 tables for male lives	

Principal actuarial assumptions	31 March 2014		31 March 2011	
	Sample proportions of members with an eligible spouse/partner at the time of retirement or earlier death:		Sample proportions of members with an eligible spouse/partner at the time of retirement or earlier death:	
	Age 25	10.90%	Age 25	10.90%
	Age 35	53.41%	Age 35	53.41%
	Age 45	69.76%	Age 45	69.76%
Spouse's age	Surviving spouses/partners are 3 years younger than their deceased spouse/partner		Surviving spouses/partners are 3 years younger than their deceased spouse/partner	

The mortality assumptions used for the 31 March 2014 valuation result in the following life expectancies. This information may be useful to the Trustee when completing the annual scheme return.

	Cohort	Period
Life expectancy for a male aged 65 now	24.2	22.1
Life expectancy at 65 for a male aged 45 now	26.2	n/a
Life expectancy for a female aged 65 now	26.3	24.0
Life expectancy at 65 for a female aged 45 now	28.6	n/a

These assumptions have been selected by the Trustee to reflect its funding objective, after consulting with the Employers. In setting the assumptions the Trustee has assumed that the Scheme is ongoing (i.e. it is not in the process of being wound up). In particular, the assumptions allow for future salary increases for active members' benefits through to 1 April 2016. The Trustee's stated funding objective (which has also been consulted on with the Employer and Union) is to reach a position where the assets are sufficient to fully cover the technical provisions by 31 March 2031.

A.3 Assumptions used to calculate future service cost

The assumptions used to calculate the cost of future DB benefit accrual are the same as those used to calculate the technical provisions. An assumption is also made that 80% of members will take up the employer matching contribution of 1% of salary to the DC section.

A.4 Assumptions used to calculate the wind-up position

The wind-up position looks at the Scheme's funding on the assumption that it had been discontinued on the valuation date and the benefits bought out with an insurance company. In doing this, it is assumed that no further benefits accrue, no further contributions are paid and active members are entitled to benefits on the basis they had left service on the valuation date. There is no allowance for any discretionary benefits being paid in the future.

The wind-up position has been estimated using Mercer's experience of recent buyout quotations and our understanding of the factors affecting this market. Detailed analysis of the reserves that would need to be held by an insurance company has not been carried out. Consideration has been given to the market terms for the financial instruments in which insurance companies would be expected to invest. An approximate allowance has been made for the reserves an insurance company would maintain to cover the risks involved and the statutory reserving requirements. The results are, therefore, only a guide to the wind-up position and should not be taken as a quotation. Market changes, both in interest rates and in supply and demand for buyout business, mean that if a buyout ultimately proceeds, actual quotations may differ.

The wind-up funding level is only an estimate since it is not based on an actual quotation. The true position could only be established by completing a buyout.

The tables overleaf set out the assumptions used to assess the funding level in the event of the Scheme being wound up. The assumptions used at 31 March 2011 are also shown for comparison.

Assumption	31 March 2014		31 March 2011	
	Non-Pensioners	**Pensioners**	**Non-Pensioners**	**Pensioners**
Discount rate:				
Pre-retirement (under 15 years to retirement)	3.6% p.a.	N/A	3.7% p.a.	N/A
Pre-retirement (15 years or more to retirement)	3.1% p.a.	N/A	3.7% p.a.	N/A
Post retirement	3.4% p.a.	3.3% p.a.	4.5% p.a.	4.5% p.a.
Revaluation in deferment:	3.4% p.a.	n/a	3.9% p.a.	n/a
Pension increases:				
Pre 2011:	4.1% p.a.	3.4% p.a.	3.9% p.a.	3.6% p.a.
Post 2011:	3.9% p.a.	3.25% p.a.	3.9% p.a.	3.6% p.a.
Mortality: Base table	SAPS S1NA [“light”] YOB unadjusted for males and with a -1 year adjustment for females		SAPS S1NA [“light”] YOB unadjusted for males and with a -1 year adjustment for females	
Future improvements	CMI_2012 with a long term rate of 1.5% p.a. for females and 2% p.a. for males		Medium cohort projections with 1.5% minimum improvement p.a.	
Expenses: Wind-up (% of liabilities)	3% up to £50m; plus 2% between £50m and £100m; plus 1% over £100m		2% of liabilities plus 3% of the assets (in respect of the cost of transitioning assets plus Trustee and insurance company expenses)	
Benefit installation/payment	Per non-pensioner member: £500 per pensioner (dependent on age): Under 60 £450 60 to 70 £400 70 to 80 £300 80 or over £250		N/A	

As the Trustee’s current investment policy includes investment in different assets than would typically be held by an insurer, the wind-up position on a given date may be significantly different from the position estimated at the valuation date

APPENDIX B

Summary membership data

The membership data is summarised in the table, with figures at the previous valuation shown for comparison.

Data in relation to members of the Scheme were supplied by USS. The accuracy of the data provided has been relied on. While reasonableness checks on the data have been carried out, they do not guarantee the completeness or the accuracy of the data. Consequently Mercer does not accept any liability in respect of its advice where it has relied on data that is incomplete or inaccurate.

* At 2011, 3,658 actives were missing from the data taking the total number of actives to 139,905. The data in the table is in respect of the known active members only.

** In respect of final salary section members only.

*** There were 931 children in receipt of a pension (987 in 2011) excluded from the numbers shown.

	31 March 2014	31 March 2011
Active members		
Number	167,545	136,247*
Total Pensionable Salaries (£m p.a.)	7,159	5,845
Average Pensionable Salary (£ p.a.)	42,729	42,900
Average age	43.8	43.8
Average past service **	12.5	10.4
Deferred pensioners		
Number	110,430	91,048
Total deferred pensions revalued to valuation date (£m p.a.)	262	179
Average deferred pension (£ p.a.)	2,373	1,966
Average age	45.1	44.5
Pensioners including dependents ***		
Number	70,380	59,554
Total pensions payable (£m p.a.)	1,202	1,002
Average pension (£ p.a.)	17,079	16,825
Average age	71.1	70.7

APPENDIX C

Assets

The market value of the Scheme's assets (excluding additional voluntary contributions (AVCs) which are separately invested) was £41,604.6 million on the valuation date.

The Trustee's investment strategy is to proportion the Scheme's assets by asset class as shown in the table below. The actual distribution of assets will vary over time due to changes in financial markets. The table also shows the distribution of assets at the valuation date.

The Trustee also holds additional voluntary contributions (AVCs), which are separately invested. These assets have been excluded from the market value shown as they exactly match the value of the benefits they cover.

The details of the assets at the valuation date and the financial transactions during the inter-valuation period have been obtained from the audited accounts for the Scheme.

	Investment strategy	Actual market value of assets at 31 March 2014	
	%	£m	%
Equities:			
UK	47	6,379.0	15.3
Overseas		11,774.1	28.3
Bonds:			
Global Government	27	6,843.2	16.4
Liability Hedging Portfolio		2,745.9	6.6
Investment Grade Credit		998.5	2.4
Emerging Market Debt		1,248.1	3.0
Property	7	2,707.1	6.6
Alternatives	19	7,988.1	19.2
Cash deposits / Other	0	-499.3	-1.2
Net current assets / (liabilities)		88.6	0.2
Tactical Asset Allocation	0	1,331.3	3.2
Total	100	41,604.6	100.0

APPENDIX D

Benefit Summary

The benefits valued as at 31 March 2014 are as set out in the benefit summary provided to the Trustee in an email dated 18 August 2014. This broadly reflects the benefits communicated to members via membership booklets, announcements and correspondence outlining special terms where applicable.

The valuation also takes into account changes to benefits to be introduced with effect from 1 April 2016 (the implementation date) or, for certain benefit changes, as soon as practicable after that date (see below) namely:

- For Final Salary section members – accrued entitlement up to 31 March 2016 be calculated using pensionable salary and pensionable service immediately prior to this date. Going forwards, those accrued benefits will revalue in line with increases in official pensions which for the purposes of this valuation is assumed to be in line with CPI (subject to certain limits when CPI exceeds 5%).

- Future defined benefit accrual after 1 April 2016 will be on a CARE basis for all members after implementation date with a pension accrual of 1/75th – and a cash lump sum of 3/75ths - of salary for each year of service in respect of salary up to a salary threshold*, initially £55,000 per annum.

- Member contributions will increase to 8% of salary.

- A new defined contribution benefit* for salary in excess of the salary threshold, at a total level of 20% (including a member contribution rate of 8%) of salary in excess of the salary threshold.

- Optional additional contributions* into defined contribution section of which the first 1% of salary is to be matched by the Employer.

* The implementation of the salary threshold for DB benefits and the corresponding introduction of DC benefits for salary above the salary threshold and the employer matching DC contributions up to 1% of salary will take place as soon as practicable after 1 April 2016 and in any case no later than 1 October 2016.

The benefits that will emerge from defined contribution AVCs paid by members have been excluded from the valuation, as have the corresponding assets, since the value of these liabilities is exactly matched by these assets.

UK and European law requires pension schemes to provide equal benefits to men and women in respect of service after 17 May 1990 (the date of the "Barber" judgment). The Department of Work and Pensions' view is that this includes any inequality arising from the GMP rules, however there is still uncertainty as to how schemes should equalise their benefits in respect of GMPs. The valuation makes no allowance for equalisation of these inequalities. It is consequently possible that additional funding will be required for equalisation once the law has been clarified.

APPENDIX E

Summary of PPF benefits

If all of the Scheme’s participating Employers are insolvent, its members may be eligible for compensation from the Pension Protection Fund. Normally, a scheme’s assets and liabilities would only transfer to the PPF if the assets were insufficient to buy out the benefits provided by the PPF. The compensation that the PPF could provide would be broadly 100% of the pension in payment for members over pension age and 90% of a capped amount of the pension built up for members under pension age. Under the current PPF provisions:

- Pensions in payment will be increased annually, at the lower of 2.5% and the change in the Consumer Prices Index (CPI), in respect of service after 5 April 1997 only. Pensions accrued before April 1997 are not increased.

- Benefits in deferment are revalued in line with the scheme’s rules for any period between the member’s exit and the scheme’s entry into the PPF. Revaluation between the entry date and the member’s normal pension age will be in line with increases in the CPI subject to a maximum of 5% per annum compounded over the revaluation period in respect of service pre-6 April 2009, and CPI subject to a maximum of 2.5% per annum for service post-5 April 2009.

- Where scheme rules do not provide for revaluation in respect of a period of service, then no revaluation will be provided under the PPF in respect of that service.

- Spouses’ pensions will be 50% of members’ PPF compensation.

- The pensions of members aged less than their scheme’s normal pension age when the scheme enters the PPF will be capped. The cap depends on the member’s age when the pension is paid and is increased from time to time. For example, in 2013/14 the cap is £34,867 at age 65 – so, the maximum amount of compensation for members retiring at their normal pension age of 65 will be 90% of this, £31,380 per annum.

APPENDIX F

Section 179 certificate

This appendix includes a copy of the section 179 valuation certificate which sets out the information required to complete the section 179 section of the scheme return. The certificate is in the format required by the PPF; the terminology used in the certificate reflects the wording used in the section 179 valuation guidance.

In summary, the results of the valuation disclose a deficit of £8,954m, equivalent to a funding level of 82% on the PPF funding basis.

Scheme / Section details		**s179 valuation**	
Full name of scheme:	Universities Superannuation Scheme	Effective date of this valuation	31 March 2014
		Guidance and assumptions	
Name of section of applicable:	N/A	s179 guidance used for this valuation	G5
Pension Scheme Registration Number	10020100		
Address of scheme (or section, where appropriate)	Royal Liver Building Liverpool Post code: L3 1PY	s179 assumptions used for this valuation	A6

Assets		**Liabilities**	
Total assets (this figure should not be reduced by the amount of any external liabilities and should include the insurance policies referred to below)	£41,604,600,000	Please show liabilities for:	
		Active members (excluding expenses)	£25,885,506,000
Date of relevant accounts (dd/mm/yyyy)	31 March 2014	Deferred members (excluding expenses)	£6,265,570,500
		Pensioner members (excluding expenses)	£17,743,430,500
Percentage of the assets shown above held in the form of a contract of insurance where this is not included in the asset value recorded in the relevant scheme accounts.	0%	Estimated expenses of winding up	£500,445,100
		Estimated expense of benefit installation /payment	£163,740,500
		External liabilities	N/A
		Total protected liabilities	£50,558,692,600

1) Please provide the percentage of the liabilities shown above that are fully matched by insured annuity contracts for:		2) Please show the proportion of liabilities which relate to each period of service for:	Before 6 April 1997	6 April 1997 to 5 April 2009 (inclusive)	After 5 April 2009
Active members	0%	Active members	17%	48%	35%
Deferred members	0%	Deferred members	28%	64%	8%
Pensioner members	0%	Pensioner members	68%	32% (all post 6 April 1997)	n/a

Number of members and average ages

For each member type. Please show the number of members and the average age (weighted by the protected liabilities) as at the effective date of this valuation. Average ages should be rounded to the nearest whole year.

	Number	Average age
Active members	167,545	51
Deferred members	110,430	49
Pensioner members	70,380	73

I certify that this valuation has been carried out in accordance with the Pension Protection Fund (Valuation) Regulations 2005 and with the appropriate section 179 guidance and assumptions issued by the Board of the Pension Protection Fund. I also certify that the calculated value of the protected liabilities is, in my opinion, unlikely to have been understated.

Signature		Qualification	Fellow of the Institute and Faculty of Actuaries
Name	Ali Tayyebi	Employer	Mercer Limited
Date	24 JULY 2015		

As required, under Part 9 of the Guidance on undertaking a section 179 valuation, the section 179 certificate should form part of the scheme actuary's section 179 valuation report. The details contained in this certificate should be separately submitted to the PPF as part of the annual scheme return via the Pension Regulator's system "Exchange" within 15 months of the effective date. **This certificate should not be sent directly to the Pension Protection Fund.**

The key assumptions used to calculate the section 179 liabilities are set out in the table below.

Key assumptions	
Investment return:	
• In deferment (allowing for revaluation in deferment): pre 5 April 2009 benefits	-0.33%
• In deferment (allowing for revaluation in deferment): post 5 April 2009 benefits	0.78%
• For pensions in payment (flat) :	3.60%
• For pensions in payment (increasing):	1.10%
Mortality	Males: PCMA00 mc for year of birth, with a 1.5% p.a. floor applying from year 2000 Females: PCFA00 mc for year of birth, with a 1% p.a. floor applying from year 2000
Proportions “married”	85% (males) / 75% (females)
Age differences between member and dependant	Female 3 years younger than male
Children’s pensions	Children’s pensions already in payment assumed to stop at 18 (or 23 if already over 17) No other allowance
Expenses:	
Wind-up (% of liabilities)	3% up to £50m; plus 2% between £50m and £100m; plus 1% over £100m
Benefit installation/payment	per non-pensioner member: £500 per pensioner (dependent on age): Under 60 £450 60 to 70 £400 70 to 80 £300 80 or over £250

The benefits valued for the section 179 valuation are in line with the benefit summary provided to the Trustee dated 18 August 2014 except as follows:

- The provisions outlined in Appendix E (Summary of PPF benefits) are assumed to override the Scheme's own benefit provisions for the purpose of the section 179 valuation only.
- Revaluation of benefits in deferment after the effective date of the valuation has been ignored as revaluation is allowed for implicitly by the yield in the section 179 assumptions which takes account of increases between the valuation date and NPA.
- Money purchase benefits have been ignored.
- Normal pension age is the normal retirement date under the scheme rules or such earlier age specified where the only condition for the member to retire without actuarial reduction is the attainment of a particular age or length of service. It is possible for different tranches of benefits to have different normal pension ages.

The data used for the section 179 valuation is as set out in Appendix B and the assets used are as set out in Appendix C.

MERCER

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