

ACTUARIAL VALUATION AS AT 31 MARCH 2017

STATEMENT OF FUNDING PRINCIPLES

Universities Superannuation Scheme (the scheme)

This statement of funding principles (SFP) sets out the policies of Universities Superannuation Scheme Limited (the trustee) for securing that the statutory funding objective is met.

It has been prepared by the trustee to satisfy the requirements of section 223 of the Pensions Act 2004, after obtaining the advice of Ali Tayyebi, the scheme actuary appointed under s47 of the Pensions Act 1995. It reflects the guiding principles on risk management adopted by the trustee as set out in its published funding principles and tests. It has been taken into account in the actuarial valuation as at the effective date of 31 March 2017. The SFP will be reviewed and, if necessary, revised, before being taken into account at subsequent valuations under Part 3 of the Pensions Act 2004.

In accordance with legislation and the scheme rules, the trustee has consulted with Universities UK over the content of this statement of funding principles.

The Statutory Funding Objective

The statutory funding objective is that the scheme has sufficient and appropriate assets to meet the amount required, on actuarial calculation, to make provision for the scheme's liabilities (the technical provisions).

Calculation of the technical provisions

The principal method and assumptions to be used in the calculation of the technical provisions are set out in the Appendix.

The general principles adopted by the trustee are that the assumptions used, taken as a whole, will be chosen sufficiently prudently for pensions and benefits already in payment to continue to be paid, and to reflect the commitments which will arise from members' accrued pension rights. The basis will include appropriate margins to allow for the possibility of events turning out worse than expected and will only be adopted after considering how it compares with the assumptions used to assess the scheme's solvency position.

However, the trustee does not intend for the method and assumptions to remove completely the risk that the technical provisions could be insufficient to provide benefits in the future.

As part of its process for choosing the assumptions and determining the size of the margins to include, the trustee will take into account its objective assessment of the employer covenant and the level of risk present in the investment strategy of the scheme.

Self-sufficiency and Economic bases

The principles of risk management adopted by the trustee mean that the trustee will have regard to the *self-sufficiency* basis and the *economic* basis when setting the technical provisions basis. In particular, the trustee takes into account the projected difference between the *self-sufficiency* basis and the technical provisions basis over time in order to ensure that it is within a range which is considered acceptable. This means that the

choice of the discount rate may be impacted by the level of future benefit accrual as the latter will affect the projected quantum of liabilities over time. In the shorter term, the trustee considers the level of any shortfall between the assets held and the self-sufficiency liabilities, as a key risk measure.

The differences between the assumptions used for these two bases and the technical provisions assumptions are highlighted in the Appendix.

Policy on discretionary increases and funding strategy

No allowance has been included in the assumptions for paying discretionary benefits or making increases to benefits that are not guaranteed under the scheme rules.

There are no funding objectives provided for in the rules of the scheme or which the trustee has adopted in addition to the Statutory Funding Objective.

Rectifying a failure to meet the statutory funding objective

If the assets of the scheme are less than the technical provisions at the effective date of any actuarial valuation, a recovery plan will be put in place, which may require additional contributions from the employers (and potentially the members) to meet the shortfall. The trustee has agreed that any such funding shortfalls should be met over an appropriate period and tailored to both Scheme and Employer circumstances.

Additional contributions will be expressed as a percentage of pensionable payroll.

In determining the actual recovery period at any particular valuation, the trustee will take into account the following factors:

- The size of the funding shortfall and the scheme's current asset and liability structure;
- The trustee's future investment strategy, as set out in the Statement of Investment Principles;
- The trustee's objective assessment of the financial covenant of the employers.

Based on the principles and assuming the assumptions are borne out in practice, the shortfall calculated at 31 March 2017 valuation will be met by 30 June 2034 which is 17 years and 3 months from the effective date of the valuation. The assumptions to be used in these calculations are set out in Appendix.

Calculating the normal cost of the scheme

Contributions required to meet the cost of benefits accruing by members after the valuation date will be calculated using the method and assumptions set out in the Appendix.

Contributions payable to the scheme

The contributions payable to the scheme by members and employers, including those to meet the cost of new benefits accruing as well as any other contributions the trustee may require, will be set out in the Schedule of Contributions following each valuation.

Arrangements for other parties to make payments to the scheme

There is no provision except in specific, limited circumstances in the scheme rules to allow someone other than the employers or a scheme member to make contributions to the scheme.

Policy on reduction of cash equivalent transfer values (CETVs)

At each valuation, the trustee will ask the actuary to report on the extent to which assets are sufficient to provide CETVs for all members. If the assets are insufficient to provide 100% of benefits on that basis, so that payment of full CETVs would adversely affect the security of the remaining members' benefits, and the employers are unable or unwilling to provide additional funds, the trustee will consider reducing CETVs as permitted under legislation.

If, at any other time, the trustee is of the opinion that payment of CETVs at a previously agreed level could adversely affect the security of the remaining members' benefits, the trustee will commission a report from the actuary and will use the above criteria to decide whether, and to what extent, CETVs should be reduced.

Payments to the employer

There is no provision in the scheme rules for employers to request a refund of the excess assets over the cost of buying out benefits of all beneficiaries with an insurance company, when the scheme is not being wound up.

GMP Equalisation

As a result of the court case ruling in respect of the Lloyds Banking Group Pension Schemes, Schemes are required to equalise Guaranteed Minimum Pensions accrued between 17 May 1990 and 5 April 1997. The precise impact of the ruling on the scheme benefits has not been determined and so no explicit allowance for this has been made in the 2017 actuarial valuation. Any additional funding costs required to uplift benefits will be met by either the Scheme's assets or future contributions from the Employer, although it is expected that these will be immaterial in the context of the scheme as a whole.

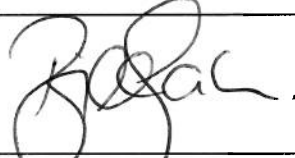
Frequency of valuations and circumstances for extra valuations

Subsequent valuations will in normal circumstances be carried out every three years, with an actuarial report being produced in intervening years. The trustee has agreed to carry out an additional valuation as at 31 March 2018 however.

The trustee will monitor the funding level on a regular basis between valuations. If the trustee decides that it is appropriate, it may commission a full actuarial valuation, when after considering the actuary's advice, it is of the opinion that it is necessary to do so and is an effective use of its resources.

This statement of funding principles, revised from has been agreed by the trustee of the USS after obtaining advice from the scheme actuary.

**Signed on behalf of the
Universities Superannuation
Scheme Limited as Trustee of
the Scheme**



Name

BILL GALVIN

Position

GROUP CHIEF EXECUTIVE OFFICER

Revised and effective from date

28 JANUARY 2019

Appendix to Statement of Funding Principles

Method and assumptions used in calculating the technical provisions

Summary of decisions made as to method and key assumptions used for calculating technical provisions as at 31 March 2017

The method used was the Projected Unit method.

Principal actuarial assumptions for Technical Provisions as at 31 March 2017

Market derived price inflation	In line with the difference between the Fixed Interest and Index-Linked yield curves
Inflation risk premium	0.3% pa
Price inflation – Retail Prices Index	Market derived price inflation less Inflation risk premium
RPI / CPI gap	1.0% pa
Price inflation – Consumer Prices Index	RPI assumption less RPI / CPI gap
Investment return	Years 1-10: CPI – 0.53% reducing linearly to CPI – 1.32% Years 11-20: CPI + 2.56% reducing linearly to CPI + 1.7% by year 21 Years 21 +: CPI + 1.7%
Pension increases in payment	CPI assumption (for both pre and post 2011 benefits)
Mortality base table	Pre-retirement: 71% of AMCO0 (duration 0) for males and 112% of AFCO0 (duration 0) for females Post retirement: 96.5% of SAPS S1NMA “light” for males and 101.3% of RFV00 for females
Future improvements to mortality	CMI_2016 with a smoothing parameter of 8.5 and a long term improvement rate of 1.8% pa for males and 1.6% pa for females

The derivation of these key assumptions and an explanation of the other assumptions to be used in the calculation of the technical provisions are set out below.

Method

The actuarial method to be used in the calculation of the technical provisions is the Projected Unit method with a one-year control period.

Financial assumptions

The financial assumptions shall be determined using a ‘yield curve approach’, with different assumptions applying at different points in time, reflecting the term structure of financial instruments. The particular approach to be used in determining each of the financial assumptions is set out below.

Inflation (RPI)

The assumption for the rate of increase in the Retail Prices Index (RPI) will be taken as a term structure derived from the investment market's expectation for inflation as indicated by the difference between an estimate of the yields available on conventional and index-linked UK Government bonds appropriate to the date of each future cash flow (extrapolated for cashflows beyond the longest available gilts), as advised by the Scheme Actuary. An adjustment may be made to the assumption to reflect market views that the prices of index-linked gilts include a 'risk premium' to reflect, for example, future inflation uncertainty. This adjustment may be limited by the existing or prospective level of inflation hedging targeted by the Scheme. For the 31 March 2017 valuation, the inflation risk premium is set to be 0.3% pa.

For the self-sufficiency and economic bases the inflation risk premium is assumed to be nil.

Inflation (CPI)

The assumption for the rate of increase in the Consumer Prices Index (CPI) will be derived from the RPI inflation assumption with an appropriate adjustment to recognise the difference between expectations of future RPI increases and future CPI increases. The adjustment will be reviewed at each valuation; at the 31 March 2017 valuation the adjustment was a deduction of 1.0% pa.

For the self-sufficiency and economic bases the adjustment to expected RPI is a deduction of 0.8% pa.

Investment return (discount rate)

A term structure derived from the expected CPI as above, plus a varying spread based on the allowance the Trustee has agreed for additional investment returns based on the investment strategy as set out in the applicable Statement of Investment Principles. The discount rates are CPI - 0.53% pa decreasing linearly to CPI - 1.32% in years 1-10, CPI + 2.56% pa in year 11 reducing linearly to CPI + 1.7% pa over the following 10 years, and assumed to stay at CPI + 1.7% pa beyond that point. This approach therefore implicitly includes a provision for gradual investment de-risking to take place over years 1 to 20.

The choice of the discount rate may be impacted by the level of the future benefit accrual. For the 2017 valuation the discount rate takes into account the current benefit structure.

If, following a review of the investment strategy and any consequential changes to the Statement of Investment Principles after completion of the valuation, or due to a change in the Trustee's view on the outlook for future returns, the assumed rate of best estimate investment return and / or the prudent discount rate in excess of the CPI assumption may also change at subsequent funding updates.

For the "Self-sufficiency" and "economic" bases the discount rate assumes a term structure derived from the yield of fixed interest gilts appropriate to the date of each future cash flow (extrapolated for cash flows beyond the longest available gilts) with a margin of 0.75% pa added to the fixed interest gilt yield.

Pension increases

Increases to pensions are assumed to be in line with the CPI inflation assumption described above. In particular, at the 31 March 2017 valuation no adjustment has been made for the fact that pension increases on benefits accrued after 30 September 2011 do not fully reflect inflation once CPI exceeds 5% pa, nor for the possibility that pensions would not reduce if CPI is negative.

Summary

The table below shows the Technical Provisions and discount rate and CPI assumptions as at 31 March 2017, determined in line with the above approach.

Term	Discount rate (forward)	CPI (forward)	Term	Discount rate (forward)	CPI (forward)
1	2.00%	2.53%	26	3.61%	1.91%
2	0.65%	1.27%	27	3.46%	1.76%
3	0.56%	1.26%	28	3.31%	1.61%
4	0.61%	1.41%	29	3.17%	1.47%
5	0.69%	1.57%	30	3.05%	1.35%
6	0.79%	1.76%	31	2.96%	1.26%
7	0.89%	1.94%	32	2.90%	1.20%
8	0.98%	2.13%	33	2.86%	1.16%
9	1.06%	2.29%	34	2.84%	1.14%
10	1.11%	2.43%	35	2.85%	1.15%
11	5.11%	2.55%	36	2.88%	1.18%
12	5.13%	2.65%	37	2.93%	1.23%
13	5.12%	2.74%	38	2.99%	1.29%
14	5.10%	2.80%	39	3.07%	1.37%
15	5.06%	2.85%	40	3.17%	1.47%
16	5.00%	2.87%	41	3.27%	1.57%
17	4.92%	2.87%	42	3.39%	1.69%
18	4.81%	2.85%	43	3.51%	1.81%
19	4.68%	2.80%	44	3.64%	1.94%
20	4.52%	2.73%	45	3.77%	2.07%
21	4.34%	2.64%	46	3.91%	2.21%
22	4.22%	2.52%	47	4.05%	2.35%
23	4.09%	2.39%	48	4.19%	2.49%
24	3.94%	2.24%	49	4.33%	2.63%
25	3.78%	2.08%	50	4.47%	2.77%

Demographic assumptions

Mortality

The mortality assumptions are based on scheme-specific experience analysis, expressed as liability-equivalent adjustments to standard tables published by the Continuous Mortality Investigation (CMI), making allowance for future improvements in longevity. The mortality tables are as follows:

Pre-retirement

AxC00 (duration 0) tables taking 71% for males and 112% for females, and improvements using CMI_2016 with a smoothing parameter of 8.5, and long term rates of 1.8% pa for males and 1.6% pa for females.

Post-retirement

- Males: S1NMA "Light" with 96.5% weighting and improvements using CMI_2016 [1.8%] with smoothing parameter 8.5
- Females: RFV00* with 101.3% weighting and improvements using CMI_2016 [1.6%] with smoothing parameter 8.5

**At ages below 50, the RFV00 table will be extended by blending into the RFC00 table*

Early retirement

The allowance for early retirements will reflect emerging experience of retirements as monitored at each actuarial valuation and any adjustment for future expectations which is considered appropriate. For the 31 March 2017 valuation it has been assumed that ex-final salary active members will retire in line with the following decrement table (with all others assumed to retire at 65). Benefits relating to service accrued prior to 1 October 2011 are assumed to be paid with no reduction (based on employer consent not being withheld), and an allowance has been made for benefits accrued after 30 September 2011 to be reduced from the payable age of 65.

Age	% leaving per annum
60	30
61	10
62	15
63	15
64	20

All other members of the scheme are assumed to retire at 65 and allowance is built in for the appropriate adjustment to each relevant tranche of benefit applicable to members in line with the benefit age or associated Contractual Pension Age.

Ill health retirement

A small proportion of the active members are assumed to retire owing to ill health. As an example of the rates assumed at the valuation with effective date 31 March 2017, the following is an extract from the decrement table used:

	% leaving per annum	
Age	Males	Females
35	0.01	0.01
45	0.04	0.05
55	0.14	0.25

Withdrawals

This assumption relates to those members who leave the Scheme with an entitlement to a deferred pension. It has been assumed that active members will leave the Scheme at the following sample rates:

Age	% leaving per annum
25	18.28
35	9.11
45	5.38

Commutation

No allowance has been made for the option that members have to commute part of their pension at retirement in return for an additional lump sum (or indeed exchange part of their additional lump sum for pension) on the basis that the overall effect of these options is not expected to be material to the Scheme.

Proportion of beneficiary pensions payable and age difference

It has been assumed that a proportion of members will have an eligible beneficiary at the time of retirement or earlier death based on the following:

Males:

All: 109% of the ONS 2008 table for males

Females:

Non-pensioners: 84% of ONS 2008 table for females

Pensioners: 68% up to and including age 59, 56% at 60 to 64 and 73% of ONS 2008 over age 64

Sample rates as shown in the table below.

Age	Male	% spouse / partner	
		Female pre-retirement	Female post-retirement
45	69.8	54.6	68.0
55	77.4	58.8	68.0
65	83.9	57.1	49.6
75	79.6	n/a	35.0
85	61.0	n/a	14.6

The surviving beneficiary of male members is assumed to be four years younger, on average, than the deceased scheme member, and the beneficiary of female members two years older.

Expenses

Expenses including PPF Levies are met by the fund. A provision for this is included by adding 0.4% of salary to the total contribution rate. This addition is reassessed at each valuation. The future level of the PPF levy in particular is very uncertain. Investment expenses have been allowed for implicitly in determining the discount rates.

Assumptions used in calculating contributions payable under the recovery plan

The contributions payable under the recovery plan will be calculated using the same assumptions as those used to calculate the technical provisions, with the exception of the following during the period of the recovery plan:

Investment return on existing assets and future contributions

As at 31 March 2017, the trustee agreed to allow for additional investment returns in the recovery plan. As at 31 March 2017 the additional investment return was equal to 10% of the excess return between the best estimate assumed return and the return assumed in the technical provisions. The best estimate return for the 31 March 2017 valuation is assumed to be CPI + 1.0% reducing linearly to CPI + 0.08% in years 1 to 10, and CPI + 3.54% reducing linearly to CPI + 2.56% by year 21, remaining at that level thereafter.

If, following a review of the investment strategy and any consequential changes to it and the Statement of Investment Principles after completion of the valuation, the assumed rate of investment return may also change at subsequent funding updates to reflect the different expected investment returns from the new asset mix.

Salary increases

The growth in the aggregate payroll of the scheme's membership, used in the recovery plan, is assumed to be CPI + 2% pa. Because of the methodology used for the valuation it is not necessary to specify assumptions for individual members' pay growth.

Method and assumptions used in calculating the cost of future accrual

The cost of future accrual was calculated using the same assumptions as those used to calculate the technical provisions. The salary threshold has been assumed to increase in line with the CPI assumption, and an assumption was made of an 80% take up for the 1% of salary matched contribution where applicable, although as a consequence of the results of the 2017 Valuation the matching facility will be removed from 1 April 2019.