

Introduction

This document provides the University's response to USS's statutory consultation on the assumptions and approach to be adopted for the 2018 valuation. The response takes into account discussions at the Pensions Working Group meetings on 14 January and 11 February 2019 and comments made at the Council meeting on 17 February 2019. The response also includes consideration of UUK's proposal for a contingent contribution structure as set out in papers dated 27 February 2019.

Executive summary

The key elements of the University's draft response to the USS consultation are summarised below.

- Taking into account the short period of time in which the 2018 valuation must be finalised if we are to avoid an increase in the overall contribution rate to 32.9% from 1 October 2019, it is recommended that the University supports UUK's proposal. It is likely that a significant proportion of other employers will support the UUK proposal.
- Here we would note that individual employer proposals will differ, will be more time-consuming to review and may slow down the valuation process.
- Under the UUK proposal, the overall contribution rate would be 29.2% with additional contingent contributions of up to 3% payable if there is a material increase in the USS deficit. If the University was making its own proposal the overall contribution rate would be 29% with a 2.5% contingent contribution, so the difference is not significant.
- We support the use of a trigger deficit based on the Scheme's 'Technical Provisions' liabilities rather than the self-sufficiency liabilities as this is consistent with the relevant legislation (the 'Statutory Funding Objective').
- We will also request that there is an option to trigger a valuation at 31 March 2020 if phase 2 of the JEP work is completed by then and our proposals in respect of the bookend contributions and assessment of risk can be considered.
- In addition to the formal response, including answers to the three questions set out in UUK's consultation, we will include the following appendices to provide more detailed information on the University's view as an individual employer:-
 - Appendix 1 will highlight strong arguments for full implementation of the JEP recommendations, which would result in slightly lower bookend contributions than those proposed by UUK.
 - Appendix 2 will also make a strong case for USS to adopt a much longer term approach to assessing risk at future valuations

Commentary

The following is the University of Cambridge response to the USS consultation dated 2 January 2019 on the 2018 actuarial valuation of USS and the UUK consultation/proposal dated 27 February 2019 on the provision of contingent support. It has been approved by the University's Finance Committee acting on behalf of Council.

Summary of response

The key elements of the University's response to the USS consultation are summarised below.

- Taking into account the short period of time in which the 2018 valuation must be finalised if we are to avoid an increase in the overall contribution rate to 32.9% from 1 October 2019, the University supports, in full, UUK's proposal.
- In providing this response, we recognise that individual employer proposals will differ and will be more time-consuming to review.
- In Appendix 1 to our response we have set out the University's own independent analysis of the assumptions and contribution rates proposed by USS for the upper and lower bookends. Whilst this analysis has been provided for information only, we would note that if the University was making its own proposal the proposed overall contribution rate would be 29% with a 2.5% contingent contribution
- In Appendix 2 we have provided observations on the approach to measuring risk for consideration at future valuations and under Phase 2 of the Joint Expert Panel process.

Responses to UUK's consultation questions

Q1. Do you have any specific comments on the proposed assumptions for the 2018 valuation, including views on the upper bookend and lower bookend?

We support UUK's proposed lower bookend rate of 29.2%. We would also note that a lower contribution rate, incorporating all four JEP recommendations, could be justified as set out under the "Lower Bookend" section in Appendix 1 to this response.

We support UUK's proposed upper bookend rate of 32.2%. We would also note that a lower contribution rate, incorporating a longer deficit removal period consistent with the 2017 valuation could be justified as set out under the "Upper Bookend" section in Appendix 1 to this response.

Q2. Do you support UUK putting forward a proposal for a CCs arrangement to the USS Trustee as it requested? If not, would you prefer to pay at the upper bookend level, or what would your preferred response be?

We support the UUK proposal in full in respect of the 2018 valuation.

Q3. Do you find the proposal for a CCs arrangement set out in the Aon note (attached to this paper) acceptable, taking all factors into account? If not, what aspects would you wish to change?

We support the UUK/Aon proposal for a CCs arrangement in full in respect of the 2018 valuation, taking all factors into account.

We understand that it was not practical to obtain widespread negative pledges within the timeframe of the 2018 valuation but we would like to see this option considered as a way of strengthening the covenant in future valuations.

We note that the proposal for a CCs arrangement uses a trigger deficit based on the Scheme's 'Technical Provisions' liabilities rather than the self-sufficiency liabilities. In supporting this approach

we would highlight that the relevant funding legislation (the 'Statutory Funding Objective') also refers to the Technical Provisions.

We also request that there is an option to trigger a valuation at 31 March 2020 if Phase 2 of the JEP work is completed by then and our proposals in respect of the bookend contributions and assessment of risk as set out in Appendices 1 and 2 can be considered.

Our understanding of the UUK Proposals

We support, in full, UUK's proposals as set out Aon's paper "2018 Valuation and Contingent Contributions" dated 27 February 2019. We understand that this would lead to:-

- An overall contribution rate of 29.2%
- Contingent contributions of 3%, increasing to the full amount in 3 steps of 1%
- Six month delay before payment of contingent contributions
- Trigger deficit level of £10bn on a gilt plus equivalent of the technical provisions basis
- Reference deficit measured on a quarterly basis with 3 month smoothing
- Smoothed deficit must be higher than the trigger level over 2 consecutive quarters to trigger payment of contingent contributions
- Once contingent contributions are in payment, they are in payment for one year and an annual test is carried out to determine whether contingent contributions are increased, frozen or switched off.
- The contingent contribution mechanism will be reviewed at the next valuation

JEP Phase 2 and next full valuation

The contingent contribution mechanism and the valuation approach more generally should be reviewed at the earliest opportunity following completion of JEP's Phase 2 review.

If the JEP Phase 2 report is available, the next valuation should be brought forward to 31 March 2020 to allow the JEP Phase 2 findings to be considered at the earliest opportunity.

Appendix 1

University's independent analysis of USS's proposed approach and assumptions for the upper and lower bookend

These comments are included for information only in respect of future valuations and to confirm the University's view, as an individual employer, on USS's proposals for the 2018 valuation.

Our response to the 2018 valuation consultation is to support, in full UUK's proposals. Here, we would note that our individual employer view on the lower bookend rate is 29% (UUK 29.2%) and our individual view on contingent contributions is 2.5% (UUK 3%).

Upper bookend (no contingent support)

We support use of realised investment returns (i.e. asset values at 31 March 2018) and the use of latest mortality data and outlook and would expect these to be incorporated as part of a funding valuation.

We support use of updated view of future investment returns based on USS's FBB approach

We note the deficit of £3.6bn as at 31 March 2018 using the proposed 'no contingent support' assumptions

Deficit contributions – the proposed deficit contribution rate is 5%, which equates to a recovery period of approximately 11 years from 2018 and no asset outperformance. This compares to the 2017 valuation Recovery Plan period of 17 years from 2018.

The 2017 valuation Recovery Plan (as recently adopted by USS) has an end date of 2034 and requires deficit contributions of 5%.

We also note that under the current Recovery Plan put in place as part of the 2014 valuation, deficit contributions of 2.1% are payable from 1 October 2016 to 31 March 2033. In addition, the 2014 valuation Recovery Plan allowed for 50% of the difference between the best estimate return and the discount rate over the Recovery Plan period, reducing the cash contribution requirement.

For consistency with the 2017 valuation, the 2018 valuation should retain the same Recovery Plan end date of 2034. This would extend the 2018 recovery period from 11 years to 16 years and, we estimate, would reduce the deficit contribution from 5% to 2.8% and the overall 'upper bookend' rate from 33.7% to 31.5%. We would also note that the upper bookend Recovery Plan does not include any allowance for investment outperformance. More generally, our view is that the Trustee should take a long-term approach to spreading any deficit taking into account the confidence time horizon on covenant strength. This view is supported by credit rating agencies in respect of a significant number of long term university bond issues as noted below.

Here, we would note that a number of universities have raised significant amounts of capital through predominantly very long-dated bond issues (borrowing terms are typically at least 40 years but vary between institutions). Examples include Leeds (£250m), Southampton (£300m), Liverpool (£250m), Manchester (£300m) and Cardiff (£300m) as well as Cambridge and Oxford. In each case, the universities have been able to borrow at very low interest rates, reflecting the view of independent credit rating agencies* that the issuing universities are financially secure over the long term.

**** Moody's ratings for the bonds listed above are Aa (high quality) to Aaa (highest quality).***

Lower bookend

We note that lower bookend proposals would require some form of contingent support in addition to the agreed ongoing contributions.

We note that changes 5 to 8, which relate to the JEP recommendations, would lead to a lower contribution rate than under the upper bookend but would also lead to an increased level of risk.

We have previously supported, in full, the JEP's recommendations and our view on this has not changed. As such, we would support incorporation of all of changes 5 to 8. In particular, we support change 6 (deferring de-risking) and change 7, smoothing of contribution rate.

We recognise that adopting all of the changes will lead to a higher initial reliance on the covenant.

Impact of our proposed changes to the upper and lower bookends

We estimate that the upper bookend contribution rate would reduce from 33.7% to 31.5%.

We estimate that the lower bookend contribution rate would reduce by 2.3% from 29.7% to 27.4% if changes 6 and 7 are adopted as well as change 5 and 8. Please note that this reduction in the contribution rate does not allow for any reduction in deficit contributions below 2.1%.

Based on our estimated figures and allowing for the position at 31 March 2018, the deficit would be minimal and the overall contribution would reduce to 25.3%.

The following table, which is based on information from the consultation document and the JEP report, sets out in red the estimated impact of our proposed changes.

Table – proposed amendments to upper and lower bookends

	Future service rate	Deficit amount	Deficit rate	Overall rate
2017 valuation	30.6%	£7.5m	6.0%	36.6%
Incorporate realised investment returns	(1.9%)	(£3.9bn)	(1.0%)	(2.9%)
Incorporate latest mortality experience				
Change in retirement age				
Use updated future expected investment returns				
2018 valuation - upper bookend rate per USS	28.7%	£3.6bn	5.0%	33.7%
Proposed change - Increase deficit removal period from 11 to 16 years	Nil	Nil	(2.2%)	(2.2%)
Proposed revised upper bookend rate	28.7%	£3.6bn	2.8%	31.5%
Lower bookend rate per USS	27.6%	£2.5bn	2.1%	29.7%
Proposed change - Defer de-risking for 10 years*	(0.8%)	(£2.4bn)	(2.1%)	(2.9%)
Proposed change - Smooth contributions*	(1.5%)	Nil	Nil	(1.5%)
Proposed revised lower bookend rate (see below)	25.3%	(£0.1bn)	Nil	25.3%

* Page 104 of JEP report shows estimated reductions in the contribution rate if the JEP changes were adopted.

As noted in the table above, our proposals would reduce the upper bookend rate from 33.7% to 31.5% and the lower bookend rate from 29.7% to 25.3% as at 31 March 2018.

However, we recognise that the Scheme's funding position has been volatile since 31 March 2018. We also recognise that the vast majority of employers support the JEP recommendations including a combined contribution rate of 29%. We therefore propose that our revised lower bookend rate of 25.3% is increased to 29%. This rate builds in an explicit margin of 3.7% to cushion against adverse experience after the valuation date.

We also propose that any further increase in contributions (i.e. above 29%) should require a significant further deterioration in the funding position, relative to the position at 31 December 2018.

Assumptions as set out in the "Notes to Statement of Funding Principles"

We note that the proposed assumptions are based on no contingent support and are used to calculate the upper bookend contribution. Although complex, we recognise that the discount rate is based on the best estimate long term returns, less margins for prudence. We support the proposed approach for calculation of the future service rate. ***As noted earlier in our response (and for consistency with the 2017 valuation) the 2018 valuation should retain the same Recovery Plan end date of 2034. This would extend the 2018 recovery period to 16 years and, we estimate, would reduce the deficit contribution from 5% to 2.8%. If adopted it would reduce the overall 'upper bookend' rate from 33.7% to 31.5%.***

For the lower bookend contribution rate, we propose that all of the JEP recommendations are adopted, leading to an estimated total contribution rate of 25.3% as at 31 March 2018. To allow for the post valuation deterioration in funding we propose that a buffer of 3.7% is added to this rate leading to a total rate of 29%.

Post valuation experience

We note that the funding position of the scheme has deteriorated since 31 March 2018, due to adverse market conditions in the fourth quarter of 2018.

Here, we would note that the current overall rate of 26% and the new overall rate of 28.3% (payable from 1 April 2019) will start to provide a small cushion against adverse experience. Our proposed rate of 29% will provide a more significant cushion against adverse experience and should reduce the need for contingent contributions.

Appendix 2

University's independent analysis of USS's proposed approach to assessing risk

These comments are included for information only in respect of future valuations and Phase 2 of the JEP process. The comments also confirm the University's view, as an individual employer, on USS's proposals for the 2018 valuation.

As noted above, our response to the 2018 valuation consultation is to support, in full UUK's proposals.

Measurement of risk and reliance on Sector covenant

Under USS's proposals, reliance on the sector is measured by the gap between the assets held and the self-sufficiency liabilities (i.e. the self-sufficiency deficit).

Here we would comment that the 'Gilts plus 0.75%' self-sufficiency discount rate is too prescriptive and volatile. We recognise that gilt yields provide a view of risk free long term returns but yields have been affected by the Bank of England's quantitative easing programme and, more recently, by uncertainty around Brexit. This volatility makes it difficult if not impossible to adopt a long term approach to Scheme funding and makes long-term planning very difficult for employers.

Alternative measures of self-sufficiency should be considered including:-

- 1. A discounted cashflow approach (under which assets would be invested in a range of income producing assets - i.e. property, infrastructure, equities, bonds as well as gilts. The yields on these assets, with appropriate risk adjustment, could be used to generate a market based self-sufficiency discount rate.)***
- 2. A stochastic approach could be used to assess different asset allocations and associated success probabilities. A revised self-sufficiency deficit (and definition of risk and reliance on covenant) along the following lines should be considered:-***
 - The gap between the assets held and the minimum asset value required to provide a high probability of success (% probability to be discussed and agreed), where success is defined as paying all accrued benefits in full.***
 - The test requirement would be that the gap as defined above should be less than the value of a pre-defined rate of contributions payable over the a defined period (i.e. 7% payable over 15 or 20 years)***

We note that the Trustee manages long-term risk by setting a long-term target level of reliance that is within the risk capacity and risk appetite of the employers. We support this approach but, as noted above, propose that USS looks at alternative approaches to assessing reliance on covenant that are less volatile and less likely to lead to short-term decision making.

We would also note that, once set up, a stochastic model could be re-run on a regular basis (say monthly) to monitor risk and potentially as part of the contingent support mechanism. A summary of a potential stochastic model approach is set out in Appendix 1 for your initial consideration.

Discount rate spread over gilts and CPI inflation

We recognise that the Pensions Regulator will benchmark the valuation discount rate against market gilt yields at the valuation date and that this presents challenges for the Trustee. However, this also leads to significant volatility and makes it difficult for employers to adopt a long term approach to funding.

Here, we would note that the majority of other defined benefit pension schemes subject to the Regulator’s funding guidance are closed to new entrants (and in many cases accrual) and have been de-risking for a number of years and as a result have very different investment strategies with lower expected returns. In other words, a stable, open pension scheme with a strong employer covenant would be expected to have a very different long term investment strategy to a closed, maturing scheme and it is reasonable to allow for this in the discount rate.

The discount rates and estimated rates of return proposed by USS are set out in the table below:-

Comparison of (prudent) valuation discount rates and best estimate rates of return

	2017 valuation		2018 valuation		Best estimate	
	Final	Sept consult.	Upper bookend*	Lower bookend*	with de-risking**	no de-risking***
Relative to CPI	CPI + 0.71%	CPI + 0.91%	CPI + 0.9%	CPI + 1.05%	CPI + 2.0%	CPI + 3.26%
Relative to Gilts	Gilts + 1.20%	Gilts + 1.41%	Gilts + 1.3%	Gilts + 1.45%	Gilts + 2.5%	Gilts + 3.76%

* Estimated based on page 15 of 2018 consultation. Upper bookend is 2018: including 1-4, lower bookend is 2018: including 1-5

** Estimated based on information on page 27 (£10bn reliance, overall best estimate return)

*** 30 year return, based on reference portfolio, page 26 of USS consultation. Return relative to gilts assumed to be 0.5% higher than return relative to CPI.

Page 27 of the consultation states that the discount rate provides a 67% level of confidence that returns will be achieved.

Our concern here is the time horizon used to assess risk and confidence of success. Our view is that USS - as an open scheme with a strong employer covenant - can take a long term view on investment and risk. The key issue is that investment risk reduces over longer time periods and de-risking is unnecessary if investments are held over the long term, which is the case while the scheme is cashflow positive. The following graph, which is based on data from the Credit Suisse yearbook, shows the distribution of the 25 year real return (annualised) on UK equities over periods to 2017. Inflation is calculated using CPI since 1988 and RPI (and equivalent measures) prior to 1988.

UK equities – distribution of annualised real returns over 25 year periods (1900 – 2017)



Our analysis of long term real returns on UK equities shows the following:-

- Over holding periods of 25 years, annualised real returns have been positive since 1900
- The lowest annualised real return over a 25 year holding period is 2.2%
- The median real return is 6.1% per annum

The following table shows the worst and best 25 year periods of return:-

Best and worst 25 year periods of real return on UK equities (1900 – 2017)

Period (from/to end Dec)	Annualised real return	Comment
Worst 3 periods		
1906 to 1931	2.2%	First World War and Great Depression
1899 to 1924	2.2%	First World War
1927 to 1952	2.5%	Great Depression and Second World War
Best 3 periods		
1974 to 1999	14.6%	Recovery from OPEC crisis plus high returns in 80s and 90s
1975 to 2000	11.3%	High returns in 80s and 90s due to de-regulation / tech
1976 to 2001	11.2%	High returns in 80s and 90s due to de-regulation / tech

We recognise that past performance is not always a guide to the future and that the global outlook for equity returns may be lower now than it has been in the past (this is reflected in USS's 30 year real return expectation of 4.04% pa on equities). However, the critical point for USS is that risk should be measured over a long period (we would suggest at least 20 years) and that doing so would provide a better assessment of risk and would provide a much more stable framework for long term funding and benefit provision. This approach is consistent with a stochastic modelling approach.

We expect that the proposed discount rate of CPI + 0.91% would give a much higher confidence level if risk of underperformance is measured over longer time periods. We also expect that higher discount rates (i.e. CPI plus 1 - 1.5%) could be shown to provide a high confidence level if assessed in this way.

We also note that USS invests in a diverse portfolio of return seeking assets. We would expect the level of risk to be lower than on an equity only portfolio.

In summary, the proposed methodology for assessing confidence (and therefore risk) is based on a time horizon that is not consistent with the long-term nature of the scheme and sector covenant. We suggest that a longer time horizon is used to assess the risk of underperformance and that the discount rate is reconsidered based on this analysis.

Contingent support

We recognise that lower liabilities will lead to an increased level of reliance on the sector covenant, which may require contingent support. Here, we would note that the contingent support framework must be designed carefully to ensure that:-

- There is no hair-trigger mechanism
- The trigger metric is a relevant, reasonable and objective measure that does not display excessive volatility
- The amounts of the contingent contributions, including steps (or other contingent support measures) are defined in advance.
- Notice periods are sufficient to allow employers to budget for increases

Contingent contributions

UUK, with their advisors at AON, have developed a neat and relatively straightforward approach to setting Contingent Contributions for the 2018 valuation. We are supportive of this as it allows for the JEP contribution rate to be paid in the short term and should facilitate timely agreement on the 2018 valuation.

JEP

As noted above, we support in full the recommendations of the JEP's September 2018 report in respect of the 2017 valuation of USS. We propose that all of the JEP recommendations are allowed for in the 2018 valuation.

We recognise that the approach adopted for the 2018 valuation is to some extent a short term fix and that the next phase of the JEP work will look at a long term solution to the valuation process including agreement between UCU and UUK on key principles and consideration of a range of issues. The 2018 valuation should recognise the next phase of JEP work and should not impose an over-engineered or expensive solution.

Test 1

Test 1 (to measure reliance on the sector relative to the long term target level of reliance) should be redesigned. As noted earlier in our response, the Gilts plus 0.75% liability measure is too prescriptive and volatile and makes long term planning very difficult for employers.

Alternative measures of self-sufficiency should be considered including a discounted cashflow approach (under which assets would be invested in a range of income producing assets - i.e. property, infrastructure, equities, bonds as well as gilts. The yields on these assets, with appropriate risk adjustment, could be used to generate a market based self-sufficiency discount rate.)

A stochastic approach could be used to assess different low risk allocations and associated success probabilities

Stochastic modelling – overview of suggested approach (draft for discussion)

A stochastic model is used to provide multiple (typically 10,000 or more) randomly generated projections of future financial outcomes. In the context of USS this would involve projecting the scheme assets over a period of up to 100 years to see whether the assets and future contributions were expected to be sufficient to pay all benefits in full. By looking at all 10,000 outcomes, we can assess a probability of success (i.e. if the assets are sufficient in 9,500 projections out of 10,000, this would imply a 95% probability of success). Whilst complex, the key advantage of a stochastic approach is that it helps us to understand the both the probability of success and the likely range of outcomes (i.e. the level of uncertainty) over the long term as opposed to the valuation which leads to a single deficit figure.

The key elements of a stochastic model are set out below:-

Agree approach to model assumptions

- External 'economic scenario generator', or
- Assumptions generated internally by USS investment team

Agree model inputs and parameters

- Covenant strength – may determine time horizon / projection period
- Projection period – may allow for full run off of all accrued benefits (100 years)
- Affordable contributions and payment period (i.e. 5% of salary over 20 years)
- Required success probability
- Asset allocations (can be flexible)
- Salary (total salary roll, future growth)

Parameters can be treated as static or variable depending on the model is used.

Model assumptions

- These will cover a wide range of economic factors including inflation and interest rates as well as return expectations, volatilities and correlations. Longevity assumptions and variabilities can also be allowed for.

Model limitations – it is important to identify and understand the limitations of the model both in terms of the range of scenarios that can be modelled and the extent to which the outputs can be relied up (i.e. any model must be subject to independent sense checks).

Projections

- Assets to be projected allowing for investment returns, contribution income and benefit outgoings
- Benefit payments to be projected allowing for inflation, life expectancy and other relevant factors