Universities Superannuation Scheme

A consultation for the 2020 valuation

A consultation with Universities UK on the proposed methodology and assumptions for the Scheme's Technical Provisions

28 August 2020

Contents

Foreword

It is difficult to imagine a more challenging time for the UK's Higher Education (HE) sector or, indeed, to be undertaking a valuation.

Against this backdrop, we gave careful consideration as to whether we should have deferred the valuation. For the reasons we explain below, responding to the current circumstances and a deteriorating funding position under the framework of the 2018 valuation would likely have created still greater and more immediate challenges. So, with the Scheme Actuary's advice, we determined it was in the best interests of both the Scheme and the sector to continue with the 2020 valuation as planned.

Given these challenging times and the difficult messages contained in the consultation, we have sought to set out the position as clearly as possible, and in as much detail as employers need to provide you, as the formal consultee, with their feedback. Our approach embodies recommendations from UUK and UCU's Joint Expert Panel (JEP). It benefits from our reflections on the methodology used for the 2018 valuation and is informed by the response to our Discussion Document of March. It pays appropriate attention to the regulatory environment and guidance from the Pensions Regulator (TPR).

The stewardship of USS is an extraordinary responsibility. As the HE sector has grown, commitments have been made to provide highly valued pensions to almost 460,000 members. This represents a very substantial financial commitment of the employers participating in the Scheme to their past and current employees.

We have been guided throughout this process by our primary legal duty to ensure that the Scheme can meet its obligations to pay the benefits that members have already been promised. We have also sought to ensure that contributions and investment strategies are appropriate for securing new promises.

COVID-19 has affected all sectors of the UK economy, and the HE sector is no different. Its resilience will only become fully clear over the next two to three academic years. We recognise that this is a period of significant uncertainty for our members and their employers. The pandemic has also had a material adverse effect on the prospects for the global economy. The extent and duration of that effect also remains uncertain, but it has already had a major impact on financial markets.

These factors have combined to increase the objective price of protecting and maintaining the valuable benefits offered by USS. The uncertainty surrounding these factors is reflected in the wide range of potential outcomes we have illustrated for this consultation. We will, of course, reflect on and give due weight to post-valuation experience as we consider your response to this consultation.

These are not the messages we had hoped to be delivering when we made a commitment to hold a valuation in 2020. That commitment recognised the challenging and volatile economic conditions present during the 2018 valuation, and the desire of UUK and UCU to revisit the contributions scheduled from October 2021, having considered the conclusions of the JEP's second report.

Against a more benign economic backdrop, we might have expected some of the changes we are proposing as part of the valuation to deliver better news for you. But circumstances have worked against us. Experience has been notably worse than the economic assumptions and expectations that drove the 2018 valuation. Even ahead of the pandemic, the continued fall in real interest rates was increasing the cost of USS pensions.

We know that affordability is already a key concern for employers and members alike, so we are acutely aware of how unwelcome the prospect of paying more will be. Nevertheless, it is something we must address, because we have a legal duty to protect the benefits promised to our members.

Proceeding as planned with the 2020 valuation allows us to pursue a calm and considered response to these unprecedented circumstances and a deteriorating funding position. The only other options available were increasing the employer contributions or other covenant support commitments to the Scheme or, if those were not available, considering the need to accelerate the de-risking planned under the 2018 valuation.

The 2020 valuation will also reflect the significant work we have done since filing the 2018 valuation. In that time, we have carried out a comprehensive review of our methodology. We have reflected on both JEP reports. We have engaged extensively with our stakeholders on the approach we will take, the process we will follow, and the critical issues that need to be addressed.

This is reflected in the proposals we set out here for consultation, as trailed in our Discussion Document: the dual discount rate (DDR) approach, the removal of 'Test 1', the covenant assessment, questions of risk capacity and appetite and the associated investment strategy.

These proposals are largely in line with the JEP's recommendations. They have been discussed at length with our stakeholders. The 11 meetings of the Valuation Methodology Discussion Forum (VMDF), summarised in Appendix A, resulted in a greater understanding of different perspectives – if not agreement. The views of TPR, as shared with stakeholders in the context of the VMDF, are also provided for completeness.

All else being equal, the changes we are proposing would allow for significantly greater investment risk to be taken over the longer-term than assumed at the last valuation. This, of course, continues to depend on employers being committed to backing the risks we propose to take in order to pay members' benefits on their behalf. Recent events demonstrate the fundamental importance of this commitment. Some of the short-term risks we were focused on for the 2018 valuation – given their importance to having continued confidence in our long-term projections – have started to crystallise: real interest rates have fallen even further, and the outlook for future investment returns is very challenging.

Our approach

As Trustee, our legal obligations and fiduciary duties mean our primary objective is to protect the benefits our members have already built up.

To the extent that employers are able and committed to underwriting the risks, we also aim to make the cost of funding new pensions as sustainable as possible. This is reflected in our proposed new methodology and approach to investment strategy, which are more closely aligned with the Scheme's economics and demographics.

Addressing our primary legal duty must, however, be our priority.

The VMDF considered different approaches. We could, for example, assume the impacts of current market conditions are just down to market volatility. We could also rely to a much greater extent on an assumption that conditions will improve. After careful consideration, we have concluded that both of these approaches would fall short of fulfilling our primary legal duty. Moreover, both approaches would require far greater commitments from employers than have been evidenced to date as regards underwriting the risks.

Before concluding on the options for this consultation we considered the latest available analysis. Experience since 31 March 2020 to the end of June 2020 was not favourable. We are continuing to monitor developments very carefully, with the support of our advisors.

In this consultation document we have set out the current funding position as comprehensively as possible and illustrated the potential contributions – both for future service and deficit recovery – that would be required.

We are not formally consulting on the Schedule of Contributions, Recovery Plan or Statement of Funding Principles at this stage, but we have illustrated the effect of different assumptions on the Recovery Plan and the trade-offs in relation to commitments to the covenant. These are critical issues on which we will consult subsequently.

The range of potential contributions we show is very wide – from 40.8% to 67.9% of employers' USS payroll. This includes illustrative contributions towards the deficit as well as to support the current benefit structure. This range is necessary, as there are a number of covenant-related factors outside our control that could change and which will be critical to the overall valuation outcome. These include the commitments that employers are willing to make, and the underlying financial resilience of the HE sector to COVID-19.

We are seeking your feedback on these issues, as set out in Section 10.

In doing so, we recognise that UUK and UCU both consider current contributions to be at the limits of acceptability. We also share concerns about the relatively high level of opt-outs the Scheme is already seeing, in part due to affordability concerns from members. The potential outcomes we have illustrated in this document are therefore unlikely to be considered affordable or sustainable by employers and members, particularly those based on the lower pre-retirement discount rates.

This could be mitigated by additional employer commitments or other measures, including benefit adjustments. These are primarily issues for UUK and UCU to address, via the Joint Negotiating Committee (JNC), but we stand ready to support discussions as required.

Employer support

We are particularly keen to understand employers' views on risk appetite, and their willingness to make commitments that could support a more manageable outcome to the valuation for the sector.

The 2018 valuation assumed employers would make additional commitments to strengthen the covenant. We welcome the progress that you are now making – having consulted with employers on debt monitoring and *pari passu* arrangements, and in establishing a working group on a long-term rule change on employer exits in advance of further consultation.

As things stand, however, these measures are still not in place. We have therefore assumed for the purposes of this consultation that the covenant would be tending-to-strong and the covenant horizon is up to 20 years. That is weaker than the covenant that underpinned the 2018 valuation. The weaker the covenant, the less risk we can contemplate taking in funding members' benefits. All things equal, less risk means higher contributions.

As set out above, a stronger rating can still be achieved, and we will finalise the status of the covenant in the autumn – once we have had your response to this consultation and further analysis from our advisors. Lower contributions could be achieved if employers are willing to make further commitments over and above those assumed under the 2018 valuation. For example, contingent contribution structures were raised during the last valuation and in our Discussion Document.

Next steps

Employers should plan to provide you with their feedback by 30 October, in support of the indicative timeline for the completion of the valuation in Section 10.

We have extended the original consultation period so that you have time to engage with employers on these issues and questions before providing a consolidated response.

Employers will also need time to agree their feedback to you through their own governance structures. We expect they will want to do so with as full a picture of their respective finances as possible once the new academic year has started.

We hope we can continue to work constructively with our stakeholders, recognising the constraints and demands that are on us all.

We hope that, together, we can find a workable solution that recognises the objectives agreed by the stakeholders in the JEP tripartite talks. This is consistent with our purpose: 'Working with Higher Education employers to build a secure financial future for our members and their families.'

We will consult with you more formally on the Schedule of Contributions, Recovery Plan and Statement of Funding Principles later in the valuation process, factoring in developments on the covenant and post-valuation experience.

We look forward to receiving your response to this consultation which will inform the decisions we take later in the valuation process. The financial and economic backdrop has made this a far more challenging valuation than any of us could have reasonably anticipated. We stand ready to support our stakeholders in the difficult discussions that will follow.

Professor Sir David Eastwood, *Chair of the Trustee Board*

Dame Kate Barker, *Chair-elect*

28 August 2020

Key terms we use

Assets: The investments the Scheme owns, like shares, property and government bonds. Assets generate the money we need to pay benefits and expenses now and in the future. 'Assets' can also mean the *total value* of our investments as a figure in pounds.

Covenant: The legal obligation and financial ability of employers to financially support the Scheme now and in the future. When the Scheme takes risk it is relying on the covenant for support if, for example, investment returns are lower than we expected.

Deficit recovery contributions (DRC): An estimate of the contributions required to repair any funding shortfall (deficit) in the Technical Provisions identified by a valuation.

Discount rate: A number that is applied to all the benefits that members have already been promised to calculate their present-day value. We work out this rate using a forecast of investment returns and a margin for prudence.

Dual discount rate (DDR): An approach to setting the Technical Provisions that uses one discount rate to value the benefits of pensioners and another for non-pensioners (both active members and deferred members).

Employers: The sponsoring employers of USS – the institutions whose employees or ex-employees are members (or prospective members) of USS.

Future service cost: An estimate of the contributions required to meet the ongoing cost of new benefits.

Liabilities: An estimate of the money that the Scheme will have to pay out in benefits that members have built up so far. When talking about Scheme funding, we express liabilities as the present value of the money we will have to pay out from the valuation date onwards.

Methodology: The way we process information to produce the valuation outcome. The information that the methodology processes is about members, employers, the Higher Education sector, global financial markets, and the global economy.

Prudence: An allowance for prudence increases the probability of the Scheme having enough money to pay the pensions being promised. Prudence in the context of the proposed Technical Provisions has been achieved by an adjustment to our 'best-estimate' funding assumptions. We are required to choose individual assumptions, the prudence of which is consistent with the level of prudence appropriate for the Technical Provisions as a whole.

Recovery Plan: A plan to repair any funding shortfall ('Technical Provisions deficit') at the valuation date in a set amount of time through the payment of deficit recovery contributions (DRCs).

Risk appetite: Willingness to take risk in the way the pensions promised to members are funded, now and in the future, while continuing to comply with legal and regulatory obligations. This can be the willingness of employers, the Trustee, or members.

- The Trustee's risk appetite reflects our willingness to take risk in the way the pensions promised to members are funded – to the extent that employers are able and committed to underwriting the risk.
- Employers' risk appetite is the collective willingness of employers to take risk in the way the pensions promised to members are funded, now and in the future. This reflects the portion of their available risk capacity that employers are prepared to use to support the Scheme.

Risk capacity: The financial ability of the employers as a group to withstand risks. This reflects the total amount of money that we could call on to respond to risks materialising, if we need to.

- Available risk capacity is the most that employers could pay to secure all the benefits already promised to members in an extreme downside scenario. Calling on the full amount in such a scenario implies the failure of a substantial portion of the HE sector and is likely to require remaining employers to significantly change their business models and engage in substantial restructuring.
- Affordable risk capacity Is what employers could realistically and sustainably afford to pay over the long term to support the Scheme in a sustained adverse scenario. Calling on this might require employers to reprioritise their future expenditure, including changing future pension arrangements, but it should not threaten the long-term viability of the sector. The affordable risk capacity is likely to be significantly lower than the available risk capacity.

Schedule of Contributions: The contributions we need for the Recovery Plan plus the contributions we need to be able to fund future pension benefits being built up.

Self-sufficiency: The assets and low-risk investment strategy that provide a 95% chance of paying all accrued benefits without the need for additional contributions, while maintaining a high funding ratio.

Technical Provisions (TP): An estimate of the Scheme's liabilities built up before the valuation date. The liabilities are calculated on a prudent basis, as is required by law. They are driven by the benefits members have already earned and the actuarial assumptions we make about what will happen in the future.

Valuation: An assessment of the Scheme's financial position. It is carried out by the Trustee with the support of the Scheme Actuary, an appointed independent specialist who reports to the Board, as required by law and under the Scheme rules. A valuation is a budgeting exercise that establishes a plan for how, at the valuation date, the Scheme will generate enough money to be able to pay the pensions that members are expecting, now and long into the future. The Trustee must carry out formal valuations at least every three years.

Valuation date: The date we use to calculate the Scheme's Technical Provisions when we carry out a formal valuation. For the 2020 valuation, this is 31 March 2020.

We/the Trustee/the Trustee Board: The people responsible for the management and administration of the Scheme.

You: This consultation is with Universities UK (UUK), the body that represents sponsoring employers in the Scheme. So 'you' in this document is specifically UUK.

Introduction

This document sets out our assessment of the funding level of the USS Retirement Income Builder on the valuation date, 31 March 2020. This is the defined benefit section of USS, referred to as 'the Scheme'.

It begins the formal statutory consultation on the methodology and assumptions for the Scheme's Technical Provisions with Universities UK (UUK). This is being carried out in accordance with the Scheme's Trust Deed and Rules and the Pensions Act 2004.

The consultation is with UUK on behalf of all employers participating in USS and meets the Trustee's requirements to consult with employers as specified in the Scheme Rules.

We invite you to give feedback on behalf of employers on our proposed approach, assumptions and conclusions. In other words, on the inputs and outputs of our assessment and our methodology. In particular, we would value your feedback on:

1. The inputs and assumptions
2. The methodology (this was the primary focus of the March Discussion Document)
3. The risk management framework
4. The figures for the Technical Provisions
5. Whether employers are willing to agree to debt monitoring and *pari passu* arrangements and the long-term rule change required to support a strong covenant. (We anticipate that UUK will be issuing a separate consultation to employers on the rule change.)
6. Whether employers have any further feedback on the possibility of additional contingent support
7. The level of financial support employers are collectively able to give the Scheme (see Section 5), and their *affordable* risk capacity (and risk appetite, if different), specifically:
    a. the percentage of payroll available (We assume 10%)
    b. the length of time over which that is available (We assume 20 years under a tending-to-strong covenant, and 30 years under a strong covenant)
    c. the cost of future pension provision to employers acceptable to the sector in an adverse scenario (We assume 15% of payroll. This is on top of the 10% of payroll available for deficit recovery contributions. This gives a total rate of employer contributions of 25% of payroll)
    d. the growth of the sector payroll over the longer term (We have used CPI+2% before, but we have shown alternatives)
8. How we should determine employers' collective risk appetite, and any alternatives if you don't think the approach based on *affordable* risk capacity is reasonable

Employers should plan to provide you with their feedback by 5pm on 30 October.

Your response, as the formal consultee specified in the Scheme Rules, will help us to produce the final methods, assumptions and figures for the valuation. These will also be influenced by changes to the UK and global economy and the outlook for the HE sector over the coming months.

We have provided the illustrative future service costs and deficit recovery contributions in this document to give you a view of the valuation in the round, but they are not formally part of this consultation. As in the schedule in Section 10, the JNC first needs to consider how any change to the required contribution rate will be met before further consultations are held.

As the Trustee, our role in the valuation is to work out the value of the benefits already promised to members, and the cost of providing the same benefits in future. We must have regard to, and comply with, all relevant law and regulations. Our overriding concern is the security of our members' pensions in good times and bad.

We also appreciate that affordability is a key issue for members and employers alike. However, it is not for us to decide the benefits provided to our members, or how the cost of funding them is shared between members and employers. Under the Scheme Rules, this is a matter of benefit design primarily for our stakeholders via the JNC.

This document includes:

- the value of the Scheme's assets
- a calculation of the Scheme's Technical Provisions liabilities
- the proposed assumptions and method used to calculate the liabilities
- the range of outcomes possible depending on our view of the strength of the employer covenant and the factors that will influence its strength, and the commitment of employers to supporting risk

As set out above, we will formally consult on the Schedule of Contributions and the Recovery Plan, together with the Statement of Funding Principles, later in the valuation process.

A portion of salary above the USS Retirement Income Builder threshold automatically goes into the USS Investment Builder (see Section 1). All references in this document to 'current contributions', and any illustrative future service costs, include adjustments to account for that.

Important Notice: Please Read

In formulating this consultation document, the Trustee has received actuarial information and actuarial advice (together the '***Actuarial Input***') from the Scheme Actuary, Aaron Punwani of LCP, investment advice from USS Investment Management Ltd and Mercer as investment advisers, and covenant advice from PWC supplemented by analysis from EY Parthenon. The Scheme Actuary has confirmed to the Trustee that the Actuarial Input complies with relevant Technical Actuarial Standards.

For the avoidance of doubt, this consultation document is addressed to UUK only. Neither UUK, nor any other entity or person who might receive or otherwise come into possession of a copy of this document, are considered to be 'users' of the Actuarial Input or other advice that has been carried out for the Trustee by the Scheme Actuary or other advisors. To the extent that any of the Actuarial Input, or other advice provided to the Trustee, is included within this consultation document it is provided for information only and on a non-reliance basis. We recommend that UUK or any other entity or person who might receive or otherwise come into possession of a copy of this document take their own advice, including actuarial advice, on which they can rely. References to consultation document and document includes the appendices.

Part 1: Key information

1. Current benefits

USS is a hybrid pension scheme. It has a defined benefit (DB) section, the USS Retirement Income Builder. This consultation relates only to the DB section, which we refer to here as 'the Scheme'. USS also has a defined contribution (DC) section, the USS Investment Builder.

Since 1 October 2019, contributions to the Scheme have been set at 9.6% of payroll for members and 21.1% for employers – a total of 30.7%. They are currently due to increase to 34.7% of payroll from 1 October 2021. This will be shared 11% for members and 23.7% for employers. However, this valuation is likely to affect that scheduled increase.

With these contributions, members build up a lifetime retirement income. Each year, the member builds up a pension of 1/75th of their salary, up to a threshold. The salary threshold is £59,585.72 for 2020/2021. The member's retirement income increases each year. The increase is broadly in line with CPI inflation. Members also earn a one-off cash sum payable at retirement, worth three times their annual pension.

A portion of any salary above the threshold automatically goes into the Investment Builder[1]. This money is invested to provide a pot of money that the member can use in various ways. Members can choose to save extra into the Investment Builder. This is on top of, but not instead of, their contributions to the Retirement Income Builder.

There are several other benefits provided to members. See the USS website:

- The value of being a USS member
- Video guides

2. Current context

Economic conditions during the 2018 valuation were challenging and volatile. As a result, we committed to carry out another valuation in 2020. UUK viewed the 2018 valuation as "a fair, short-term solution" and were focused on addressing the JEP's second report with a 2020 valuation. This also provided our stakeholders with the chance to revisit the contribution increases scheduled for October 2021 before they came into effect.

The 2018 valuation was concluded on the assumption that a number of measures would be introduced to protect the employer covenant. However, the long-term rule change on employers exiting the Scheme, and the debt monitoring and *pari passu* arrangements, are still to be put in place.

Since filing the 2018 valuation, COVID-19 has seriously affected financial markets and the wider economy. This is making judgements about the investment outlook and the HE sector's financial strength more challenging than usual.

[1] While this consultation relates to the funding position of the DB section, illustrative figures in Section 9 for future service costs include adjustments to account for contributions to the DC section on salary above the threshold and running costs.

The Pension Regulator's Annual Funding Statement, issued in April, recognises the challenging conditions of the pandemic. It says that trustees undertaking valuations at this time might want to take more care to review the impact on their schemes before taking key decisions about the Technical Provisions assumptions, until more clarity emerges.

Our view, supported by advice from the Scheme Actuary and as previously explained to our stakeholders, is that proceeding with the valuation is the best way for us to respond to the current circumstances and a deteriorating funding position as it allows for a full review of the issues. The only other options available under the framework of the 2018 valuation were increasing employer contributions or other covenant support commitments to the Scheme or, if those were not available, considering the need to accelerate the de-risking planned under the 2018 valuation. These would have created greater and more immediate challenges.

The statutory deadline for completing the valuation is 30 June 2021. As circumstances change in financial markets, in the HE sector and in the outlook for the global economy, we may need to respond. We might need to carry out further analysis or reconsider our view.

We will keep the valuation timeline under review, in discussion with our stakeholders.

This consultation will run from **7 September**. Employers should plan to provide you with their feedback by **Friday 30 October** giving them an extended period of eight weeks. We expect your response to us by **Wednesday 11 November**. This recognises the extra challenges facing the HE sector at the moment, and addresses comments by the JEP about timeframes for consultations. Employers have told us that their decision-making bodies will have a clearer view of their own financial outlook once they reach the start of the new academic year this September.

3. How we have engaged leading up to this consultation

At the start of this valuation, we made a commitment to engage with our stakeholders, UCU and UUK, to a greater extent, and from earlier in the process, than in previous valuations.

We have sent regular updates direct to employers, and published them on a section of our website dedicated to the 2020 valuation. In December 2019 we shared an outline of the valuation timetable with employers. In March 2020 we published a Discussion Document. This followed a review of the lessons learnt from the 2017 and 2018 valuations. (See pages 11-12 in the Discussion Document for more on this.) It set out why we are carrying out this valuation and what has happened since the 2018 one. It explained our thinking on the methodology – how we would carry out this valuation and the key factors that will affect the outcome.

Since March, we've continued to have extensive discussions with our stakeholders. This included 11 meetings of the VMDF from February to July 2020 (see Appendix A). We've worked through the feedback from UUK and employers on the Discussion Document. The feedback included broad support for the DDR approach recommended in the JEP's second report.

Throughout this process we have also provided regular updates to the JNC. One or more of our Board directors have attended all the JNC meetings since January 2020 – again, as recommended by the JEP's second report. We have communicated with our stakeholders, employers and members directly, and have supported many other stakeholder forums, events and working groups.

This consultation includes changes we have made as a result of that engagement. We outlined those changes in our update in June.

These points are most relevant to the JEP's reports and recommendations:

- The proposed move to a DDR approach better aligns with the open nature of the Scheme and its maturity.
- The so-called 'Test 1' measure of risk appetite has been removed from the valuation calculation.
- We are retaining 'self-sufficiency' as our benchmark for risk. This is consistent with guidance from TPR, and the JEP's view that it 'is a useful concept…it provides a reference point for judging whether a scheme is over-reliant on the sponsor covenant' (JEP 1, page 8).
- Depending on the strength of the covenant, we are proposing that an acceptable distance from self-sufficiency is somewhere between £22bn and £38bn at any point over the next 20 to 30 years. This contrasts with £10bn by 2038 under the 2018 valuation.
- The investment strategy also assumes we will take more risk in the long-term. Just over 35% will still be invested in growth assets in 20 years' time for a tending-to-strong covenant, and just over 50% for a strong covenant. That compares with as little as 20% under the 2018 valuation.
- We assume a more uniform long-term risk profile, with less de-risking, delivers a more sustainable approach. This has a greater regard to intergenerational fairness, recognising that the financial and demographic environment differs between generations of members.
- We will continue to base our outlook for future investment returns on our Fundamental Building Blocks (FBB) approach. (JEP 1, page 9, noted: '…it is appropriate for the Scheme to develop its own model for establishing economic and investment outcomes… The Panel has identified no concerns about the FBB approach'.)

We have assumed that employers still support these proposed changes. But as we can't make any decisions until the formal consultation is complete, UUK has the opportunity to give more feedback. This could include feedback on matters where broad agreement has been reached, such as the DDR approach.

The valuation methodology that we propose in this consultation is consistent with the valuation methodology principles. (See Section 4.) We shared these principles with the JEP and stakeholders in 2019 and the VMDF in February 2020. They are also on page 10 of the Discussion Document.

Other factors have also influenced our recent work on the valuation. These include the market downturn caused by coronavirus, and new guidance on valuations from the Pensions Regulator. This guidance covers issues including covenant assessments and affordability considerations, funding positions, Recovery Plans and post-valuation experience. It discusses key risks for Schemes and actions trustees and employers should take to respond to current conditions.

4. Methodology for the 2020 valuation

A pension scheme valuation is a budgeting calculation. Its purpose is to decide the level and pace at which to fund the Scheme, so it can pay benefits already built up and benefits to be built up in future. Our 'budget' reflects how we expect future contributions, together with prudently forecasted future investment returns, to fund members' benefits over the long term.

The new methodology for the 2020 Valuation

The Discussion Document explained that we have proposed a new methodology for this valuation, guided by three high-level principles (See the Discussion Document, page 10):

- **Principle 1:** The level of risk must be "acceptable"
- **Principle 2:** Long-term and short-term perspectives are important
- **Principle 3:** Intergenerational fairness should be considered

Our proposed approach is more closely aligned with the evolving economics and demographics of the Scheme, as well as with emerging legal and regulatory developments. Consistent with the JEP's views, it takes account of the Scheme still being open to new members. It is designed to produce a 'budget' that is achievable, yet still prudent and compliant with regulation.

The new methodology introduces a DDR approach which brings several benefits. (See pages 4 and 12 in the Discussion Document.) It incorporates a new approach to investment strategy, prudence and discount rates. (See Appendix B.) The DDR approach uses two different discount rates to calculate the Technical Provisions. In line with how other open schemes use DDRs, we use one discount rate for the benefits of pensioners and another for the benefits of non-pensioners (active and deferred members). In this way, the methodology adapts to the Scheme's membership profile as it evolves over time.

The key elements of the methodology are:

- the use of the DDR approach
- the framework for setting investment strategy, prudence and discount rates
- the approach to future service contributions and deficit recovery contributions
- the integrated risk management framework

There is more detail in Sections 6 and 7, and Appendices B and D.

5. Covenant

The covenant is the legal obligation and financial ability of employers to financially support the Scheme now and in the future. When the Scheme takes risk, it is relying on the covenant for support if, for example, investment returns are lower than we expected.

In line with TPR's guidance on assessing and monitoring covenant, the level of investment and funding risk we take is dependent on the ability and commitment of employers to support the Scheme.

This support is above and beyond the regular contributions employers are required to make under the Schedule of Contributions. Our assessment of the strength of this support is used to make decisions on investment strategy and the money we aim to hold.

Covenant strength rating

TPR's guidance sets out a four-point scale for covenant strength: weak, tending to weak, tending-to-strong and strong. EY Parthenon and PwC have carried out work that has helped to determine the covenant provided to the Scheme by the employers. PwC advises that the covenant is currently 'strong – on negative watch' and that the possibility of maintaining a 'strong' rating depends on:

- an additional review in the autumn that will assess if any aspects of the covenant have changed – covering the outlook for the HE sector, the affordability of contributions, and the material and newly emerging risks and opportunities facing the sector (including those related to geopolitics, technological change, COVID-19 and government support for R&D related to its target of 2.4% of GDP by 2027)
- implementing the debt monitoring framework

- committing to granting *pari passu* security for the Scheme with any new secured debt issued by employers
- executing the long-term rule change regarding an employer's ability to exit the Scheme without our written consent

UUK has consulted employers on the proposed debt monitoring and *pari passu* arrangements and we await their formal feedback. Employers have yet to be consulted on the rule change.

We have considered this position, along with PwC's advice, and in light of the covenant review due in the autumn. We are therefore consulting on the basis that **the covenant would be tending-to-strong**.

The ratings of strong and tending-to-strong are not binary. If the covenant is rated tending-to-strong, each of the above measures will still act individually to enhance our assessment of covenant strength. This is reflected in Section 9, which shows a range of potential outcomes. Further details on our view of the covenant are provided in Appendix C.

Covenant horizon

The covenant horizon reflects how far into the future we can reasonably rely on the ongoing financial support of the employers. To measure this, we take into account the unique nature of the UK's HE sector and the 'last-man-standing' structure of the Scheme.

Our view, supported by our advisors, is that **if the covenant were downgraded to tending-to-strong because the rule change had not been implemented, the covenant horizon would be at most 20 years**. This means that we can take risk, confident that if higher contributions become necessary, employers would be able to pay them over this period.

We believe the covenant horizon could be up to 30 years. This depends on the covenant review due in the autumn but would need a rule change to secure the long-term commitment of strong employers. We explained this in the 2018 valuation, in the Discussion Document in March this year and in the 'Rationale for a long-term rule change' in April this year.

As we are consulting on the basis of a tending-to-strong covenant, the covenant horizon is assumed to be no more than 20 years. This means there is less time, compared to a stronger covenant, for us to rely on contributions to address an extreme downturn. This in turn means there is a lower available risk capacity. Other potential outcomes are shown in Section 9.

Estimating the risk capacity provided by the covenant

Risk capacity is the financial ability of the employers as a group to withstand risks. In particular, it reflects the total amount of money that we could call on to respond to risks, if we need to.

'Available risk capacity' is the most that employers could pay to secure all the benefits already promised to members in an extreme downside scenario. Calling on the full amount implies institutional failures across a substantial portion of the HE sector. Such an extreme downside scenario is likely to require remaining employers to significantly change their business models and engage in substantial restructuring.

Quantifying risk capacity is not a precise science and depends on a number of external factors. In the Discussion Document, we described possible approaches including a free cash flow valuation model, reflecting the approach to funding the Scheme through employer contributions.

In the Discussion Document, available risk capacity was estimated to be £54bn over a 20-year horizon, rising to £65bn over a 30-year horizon. The emerging impact of COVID-19 suggests that some risk capacity will be used up by responding to changes in the sector. However, many employers are looking at reducing costs beyond the assumptions made in our previous evaluation, which is likely to have a positive impact on the covenant.

Based on our interviews and advice from EY Parthenon, we anticipate that a higher capacity to achieve cost savings may be available. This would mitigate the impact of a severe downturn, though the cost of implementing cost savings may reduce sector cash generation and growth over the short term.

We will continue to check this assessment in the coming months as the pandemic evolves and employers solidify their plans. We will also check the extent to which the capacity will be used in response to the impact of COVID-19.

There may be changes to the above estimates of available risk capacity as a result of the additional covenant review work planned for the autumn. It is too early to speculate on the size and direction of these potential changes here in this document. So for now these figures should be considered illustrative.

When would *available* risk capacity be called?

The extreme downside scenarios in which we would expect to call on the employers' available risk capacity and move to self-sufficiency might correspond to the following:

1. The current self-sufficiency deficit is approaching the available risk capacity
2. The future self-sufficiency deficit is *not* expected (i) to fall to well below the available risk capacity over the long term and (ii) to remain below the available risk capacity over the short-to-medium term
3. No mitigations are available that would make a difference to (1) or (2) above

These scenarios are sufficiently extreme that there is likely to have been institutional failures across a substantial portion of the HE sector. Moreover, in these scenarios the Trustee's call on employers' assets in these scenarios would not necessarily be restrained by the possibility of inflicting additional harm on the HE sector. This call on assets would most likely be accompanied by a move to self-sufficiency. (Note that the ongoing monitoring and action framework will be specified later in the valuation process.)

Affordable risk capacity

'Affordable risk capacity' refers to the amount that employers could realistically and sustainably make available to support the Scheme over the long term in a sustained adverse scenario.

As set out below, we assume this is contributions of 10% of payroll over a long period. Calling on this might require employers to reprioritise their future expenditure and change future pension arrangements, but it should not threaten the long-term viability of the sector.

The affordable risk capacity is likely to be significantly lower than the available risk capacity.

When would *affordable* risk capacity be called?

Unlike the severe response required by the prospect of approaching the limits of 'available risk capacity', it is less likely that affordable risk capacity would in practice be 'called' in one event. However, by maintaining the proportionality of covenant size (covenant horizon and resource availability) to Scheme risk (the self-sufficiency deficit) through successive valuations, the Scheme is protected against a gradual deterioration in covenant or Scheme funding. It is more likely that this measure tightens gradually than gets called suddenly.

What are the sustained adverse scenarios in which we would expect to call on the employers' affordable risk capacity? Such scenarios correspond to a situation that is not as extreme as when available risk capacity would be called. They are characterised by the following:

1. The current self-sufficiency deficit exceeds the affordable risk capacity (but is still well short of the available risk capacity)
2. The future self-sufficiency deficit is *not* expected to fall to well below the affordable risk capacity over the long term because the outlook for the self-sufficiency deficit and/or the covenant is very poor
3. No mitigations are available that would make a difference to (1) or (2) above. In particular, the following measures do not make a material difference or there is no willingness to implement them: additional covenant enhancement, changes to investment strategy, very high contributions over the short term, and/or benefit change.

These scenarios may involve some employer failures over the short-to-medium term. As long as the affordable risk capacity contributions of 10% of payroll over a long period are expected to materially improve the situation, and employer risk appetite supports the ongoing strategy, we would likely not move to self-sufficiency but we may derisk to limit further deterioration.

We look to have self-sufficiency within 'affordable' reach. That way, any adjustments required at a valuation to maintain that position can be made gradually, rather than through extreme changes.

Based on external advice, we have assumed in establishing the *affordable* risk capacity that an annual employer pension contribution rate of **25%** is a realistic long-run affordable maximum.

In an extreme scenario, where the DB section of the Scheme was forced to close to future accrual, we could assume that **15%** may be a minimum employer contribution towards the cost of alternative retirement provision.

This would leave a maximum employer contribution to USS of **10%** a year to improve the funding position. Analysis and advice to date suggests that our assumptions here are realistic, but they will be reviewed in the coming months.

To put a figure on what **10%** of payroll each year amounts to, we also make assumptions about payroll growth in respect of USS membership. Over the long term, this can be proxied by the future projected growth of the HE sector. This is because salaries are the largest cost for HE institutions and they tend to manage to a fixed surplus margin.

For example, assuming long-term payroll growth of CPI+2% and a 20-year covenant horizon would suggest an *affordable* risk capacity of £22bn.

The same assumption and a 30-year horizon would suggest an *affordable* risk capacity of £38bn.

Assuming a lower level of payroll growth of CPI+1% results in *affordable* risk capacity of £20bn and £32bn respectively.

We have used these ranges when considering our risk metrics. (See Sections 6 and 8 and Appendices D and E.) These values have been calculated using a discount rate equal to the self-sufficiency discount rate (which was gilts+1% at the valuation date).

To put these figures into context, the distance from self-sufficiency was £35bn at 31 March 2020. This is equivalent to a contribution of 9.3% of USS payroll each year for the next 30 years, or 15.6% for the next 20 years (assuming payroll growth of CPI+2% pa).

Appendix C shows different calibrations of affordable risk capacity. We ask for your views on the inputs to the affordable risk capacity in Section 10.

6. Managing risk and our reliance on the sector

This section is a summary of the proposed integrated Risk Management Framework (RMF) for the valuation. There is more detail in Appendix D.

Having an integrated RMF is a regulatory requirement. Its purpose is to make sure that the reliance on the employer covenant is:

- within employers' aggregate risk *capacity* (see the discussion of risk metrics later in this section), and
- within the risk appetite of the Trustee and the employers (see the discussion of risk *appetite* below)

In line with TPR's DB funding guidance, we have taken a proportionate integrated approach in developing the RMF. The regulator's guidance recognises that trustees have a strong vantage point from which to identify the risks that their scheme faces, taking account of the advice they receive across the employer covenant, investment and funding strands in an integrated way.

The RMF is informed by expert professional advice from different specialist sources:

- Covenant advice from PwC, supplemented by analysis from EY Parthenon
- Investment advice from USS Investment Management (USSIM) and Mercer Investment Consulting
- Actuarial advice from the Scheme Actuary, Aaron Punwani of LCP

We then integrate this advice into a coherent framework for addressing the management of risk in the context of the covenant.

Risk management and the valuation methodology principles

Of the three guiding principles for the valuation methodology mentioned in Section 4, two relate to risk management. The first methodology principle states that 'the level of risk must be acceptable'. The second principle states that 'long-term and short-term perspectives are important'.

Covenant, risk capacity and risk appetite

The employers' covenant plays a central role in the valuation (see diagram in Appendix B). This is because it supports taking risk in the way pensions are funded.

Taking investment risk can help to lower the regular contributions required. Without a covenant, we would effectively have to pursue a 'self-sufficiency' investment strategy, involving a much higher funding target and commensurately higher contributions.

Our risk appetite as Trustee reflects our willingness to take risk in the way the pensions promised to members are funded – to the extent that employers are able and committed to underwriting the risks. This is bounded in the short term by the employers' *available* risk capacity and over the long term by the *affordable* risk capacity (see Section 5 and Appendix C).

The risk appetite of employers as sponsors of the Scheme reflects their collective ability and commitment to take risk in the way the pensions promised to members are funded.

Our assessment of the covenant informs our decisions on risk appetite (and so investment strategy), prudence and the Technical Provisions, the Recovery Plan and ultimately the contributions required. It is important that the risk we take is within the available risk capacity provided by the covenant and within our risk appetite and that of the employers.

Overall, the decision on investment strategy must be coordinated with decisions on the level of prudence, the approach to contributions and the Recovery Plan. This ensures the overall level of risk is within risk appetite.

Risk must be seen in relation to our objectives

Our **primary objective and legal duty** as Trustee is to make sure that the benefits our members have already built up can be paid when they are due. The Pensions Regulator's DB funding guidance also expressly endorses that paying the promised benefits as and when they fall due is to be regarded as the key objective of trustees of DB schemes.

To the extent that employers are able and committed to underwriting the risks, we also aim to make the cost of funding new pensions as sustainable as possible. Here, we mean the DB section remains open, its benefits remain valuable but affordable for both members and employers, and contributions remain relatively stable. Where a scheme remains open to accrual, the regulator's guidance says that preservation of future benefit accrual can be an additional aim.

We believe that these objectives are appropriately weighted to reflect the balance between our legal duty and our desire for the Scheme to remain sustainable.

If our only objective were to fulfil our primary legal duty, we would (all other things being equal) look to take a low-risk approach to funding the Scheme's defined benefits. In the extreme case of there being no covenant, this would be a self-sufficiency strategy. This would, however, be a very expensive approach and would make the sustainability of the current benefits very difficult. Sustainability is important to us, to our members and to employers.

So, we consider how much risk employers are able and committed to underwriting over and above a self-sufficiency approach. This depends on the strength of the employers' covenant and their risk appetite: How much of their net assets and future income are our employers able and willing to commit, over other financial priorities, to paying USS pensions if investment returns are lower than expected and the funding plan does not pan out as expected in the valuation?

Given our primary legal duty, being able to evidence that we could if needed move to funding on a low-risk self-sufficiency basis is a requirement. We aim for self-sufficiency to be always within the *affordable* risk capacity employers can provide. That way, any adjustments required at a valuation to maintain that position can be made gradually, rather than through extreme changes and/or unilateral calls on their total *available* risk capacity. See Section 5 for the difference between affordable and available risk capacity and the scenarios that would apply to each.

Taking more risk can reduce the cost of providing benefits. But we must be sure that the promises being made can always be kept, even if the risks taken materialise and the expected investment returns do not.

Some might be of the view that, based on the figures in Section 5, we are already facing a materially adverse scenario that might warrant a call on the covenant: the distance from self-sufficiency at 31 March 2020 (£35bn) is equivalent to a contribution of 9.3% of payroll over the next 30 years, or 15.6% over 20 years.

However, we do not believe it is as adverse as the scenarios described in Section 5, because:

- The self-sufficiency deficit of £35bn is considerably lower than *available* risk capacity
- The future self-sufficiency deficit is expected to fall well below the *affordable* risk capacity in the medium-to-long term and, importantly
- Potential mitigations are still available

Self-sufficiency is our benchmark for risk

The Discussion Document (pages 21-22) proposed that self-sufficiency remains the primary basis, or benchmark, for measuring and managing funding risk in the Scheme. Self-sufficiency is a low-risk strategy for funding the Scheme in the absence of a covenant. It corresponds to a confidence level of 95% (equivalent to a 5% failure rate) of being able to pay all benefits when they fall due without the need for any additional contributions, while maintaining a high funding ratio.

Managing risk relative to self-sufficiency

The cornerstone of our approach to risk management is to ensure that employers could bridge the gap between the assets held by the Scheme and self-sufficiency over an appropriate period of time, if necessary. This reflects our **primary objective and legal duty**.

We seek to avoid a position where our only option is to rely on uncertain investment returns rather than on the employers. To the extent that the distance to self-sufficiency is comfortably bridged by employers' *available* risk capacity (see Section 5), we would not expect to pursue a self-sufficiency funding strategy and we have no current plans to do so.

We propose the 2020 valuation no longer uses so-called 'Test 1' as a way of controlling long-term risk. (See Appendix D.) We instead propose to take an approach consistent with the 'long-term funding objective' suggested by the JEP: *'USS aims to be fully funded on a Technical Provisions basis where Technical Provisions are valued on a low-risk self-sufficiency basis for post-retirement years and on a prudent on-going basis for the pre-retirement years. The Scheme will also ensure that, at all times, the proximity to full self-sufficiency assessed on a low-risk basis can be supported by employers over an appropriate time frame if the Scheme were to be closed to future accruals.'* (Page 58, JEP 2 report)

Ultimately, it is risk appetite that constrains the investment strategy and the discount rates that are used to calculate the Technical Provisions (TP), the TP deficit and the contributions required. One benefit of the DDR approach for the investment strategy is that derisking is no longer driven by 'Test 1' as it was in the past three valuations. See Section 3. Instead the assumed investment strategy (for funding purposes) is to hold appropriate assets to back the benefits of pensioners and non-pensioners. As the Scheme matures, and the proportion of pensioner members grows, the investment strategy is assumed to gradually move to less risky assets. This is more in line with the evolution of the risk profile of the Scheme and, on an ongoing basis, would result in a higher allocation to growth assets in the long term than assumed for the 2018 valuation.

Metrics for measuring risk

In our proposed RMF, we measure how close we are to self-sufficiency through a number of risk metrics. We use the term 'headroom' to refer to how much affordable risk capacity remains beyond that needed to get to self-sufficiency. We compare the results with different measures of the employer covenant:

- **Long-term headroom to self-sufficiency** – measures how close our funding target (the Technical Provisions liability) is to self-sufficiency. We then compare this to the *affordable* risk capacity of the employers. This influences the decision on the Technical Provisions. If the headroom is too low, it means the Technical Provisions were set too low and we would be too far away (over the long term) from self-sufficiency relative to the covenant.
- **Short-term headroom to self-sufficiency** – measures how close the current asset level is to the self-sufficiency liability. We then compare this to the *affordable* risk capacity of the employers. We would like to be in a position where this headroom is sufficiently high. If not, this can influence contributions under the Recovery Plan.
- **Short-term capacity constraint** – measures the extent to which the self-sufficiency deficit is within the *available* risk capacity of the employers' covenant.

We have adopted a 'red/amber/green' (RAG) approach to these scoring metrics. The full rationale for the metrics and their ratings is in Appendix D.

We will review the parameters we have used in light of your response to this consultation and the updated covenant advice due in the autumn. The final outcome will also be influenced significantly by any additional support employers are collectively willing and able to provide to the Scheme.

Other risk metrics, for example based on the Technical Provisions liability as discussed in the VMDF (see Appendix A, Meeting 10), are likely to play a role in the ongoing monitoring of the Scheme. This will be developed later in the valuation process.

7. Investment strategy

Consistent with a DDR approach, for the purpose of the valuation we are using different notional investment strategies for pensioners and non-pensioners. This reflects where we believe it is appropriate to take investment risk. We assume:

- a low-risk strategy for pensioners (similar to self-sufficiency), and
- a growth strategy for active and deferred members before they reach retirement (that is, higher risk and higher expected return)

Broadly, the current liabilities of the Scheme are split 45% pensioners and 55% non-pensioners. ('Pensioners' includes both active and deferred members who are assumed to retire immediately because they are over normal pension age.)

Of the 55% of non-pensioner liabilities, 40% are in respect of active members who are currently paying into the Scheme and building up new benefits. For the purposes of this consultation, we have assumed:

- For a strong covenant, a 'maximum' return-seeking investment strategy (with 90% growth assets) in respect of all non-pensioner liabilities. In this case, the combined portfolio would hold approximately 55% growth assets

- For a tending-to-strong covenant, a more moderate investment strategy, where the combined portfolio would hold approximately 40% in growth assets, reflecting a lower tolerance for risk. This is consistent with adopting the same return-seeking strategy as above (90% growth assets) only in respect of the liabilities of active members (with the strategy adopted in respect of the liabilities of deferred members being similar to the low-risk strategy adopted in respect of pensioners)

The influence of the assumed investment strategy on the Technical Provisions is highlighted in Section 9. In practice, the Scheme's investments will be managed as a single portfolio rather than rigidly investing in line with the two notional component strategies.

Currently, our 'Reference Portfolio' holds approximately 64% growth assets. The Reference Portfolio provides USS Investment Management with a benchmark investment strategy that is consistent with our risk appetite under the 2018 valuation.

The actual investment strategy we will implement will be considered later in the valuation as part of the consultation on the Statement of Investment Principles. But even if growth assets of more than 55% were supportable by the covenant and the employers' risk appetite, it would not necessarily result in lower contributions in the short-term. See Section 9 and Appendix D.

Self-sufficiency

The investment strategy corresponding to self-sufficiency differs significantly from the overall combined investment strategies proposed for the valuation. It is a low-risk investment strategy designed to maintain a stable funding ratio on a self-sufficiency basis, whilst generating a modest amount of investment growth.

It incorporates a small allocation to growth assets (equities and property) of around 10%. It is largely composed of fixed-income investments (including index-linked gilts and corporate bonds). It has a duration of around 24 years, matching the duration of the Scheme's liabilities (on a self-sufficiency basis).

8. Underlying assumptions

We use the underlying assumptions to calculate the liabilities built up on a Technical Provisions basis and the contributions needed in future to fund the current benefit structure.

The assumptions fall into two categories: demographic and financial.

At each valuation, we re-examine these assumptions with input and advice from the Scheme Actuary. When we do this, we use our 'best estimate' of how each one will change in future. We are required to choose individual assumptions, the prudence of which is consistent with the level of prudence appropriate for the Technical Provisions as a whole. We reflect this in the discount rate and mortality assumptions.

Changes to demographic assumptions, including mortality

We have considered the Scheme's demographic experience over the three years to 31 March 2019. This is consistent with the approach adopted at previous valuations. Having taken advice from the Scheme Actuary, we have proposed changes to the demographic assumptions adopted at the 2018 valuation:

- Lowered ill-health retirement rates above age 60
- Slightly increased assumed rates of members leaving the Scheme
- Updated proportion of members leaving a dependant on death
- Lowered the age difference of the dependant on the death of a female member

We have also proposed changes to the mortality assumptions, including:

- Changed the mortality 'base tables' (effectively the current rates of mortality), reflecting more deaths than were previously assumed
- Changed the future improvement assumptions, based on the latest version of the projections issued by the Continuous Mortality Investigation

Together, these changes to mortality assumptions reduce a current 65-year-old's life expectancy by slightly over half a year. These changes combined reduce the Technical Provisions liability by around £3bn. They reduce future service contributions by a little under 1% of payroll. See Appendices F and G for more.

Financial assumptions

The two key financial assumptions are the expected investment returns and inflation. When considering any deficit recovery contributions which are expressed as a percentage of payroll, the development of future payroll and pensionable salaries is also important.

Expected investment returns

Our view of expected long-term investment returns is derived from USSIM's Fundamental Building Block (FBB) methodology. The Scheme Actuary considers these in providing his advice to the Trustee on discount rates, along with other factors. As at 31 March 2020 the expected real returns relative to CPI for the main asset classes are provided in the Table 8.1 below.

Table 8.1: FBB expected 30-year investment returns relative to CPI by asset class as at 31 March 2020

Asset class	Annual expected return relative to CPI
Equities	4.39%
Property	1.80%
Listed Credit	1.68%
US TIPS	-0.28%
Index Linked	-1.57%
UK Nominal Gilts (30 years)	-1.14%
Cash	-0.04%

The FBB expected returns are one key input to our prudent assumptions about the discount rates, although not the only significant input. We have also looked at other sources of return expectations including those produced by the Scheme Actuary's firm (LCP) and those of other consultancy firms and asset managers.

In determining our discount rates, we consider the investment returns that are expected to be achieved from the investments we hold now and in the future. As discussed in Section 7, for this valuation we have proposed using:

- a low-risk strategy for pensioner liabilities (similar to self-sufficiency)
- a growth strategy for the liabilities of active and deferred members prior to retirement
- for a strong covenant the combined portfolio would hold approximately 55% growth assets and for a tending-to-strong covenant the combined portfolio would hold approximately 40% growth assets

Table 8.2 provides details of the 30-year expected investment returns from the portfolios we expect to hold. The actual investment strategy will be subject to consultation later in the process but, in practice, the assets would be managed as a single portfolio.

Table 8.2: Expected 30-year investment returns for the component investment portfolios

Investment Strategy	Return relative to	Pre-retirement portfolio	Post-retirement portfolio
55% Growth	CPI	4.22%	0.70%
	Gilts	5.90%	1.55%
40% Growth	CPI	2.77%	0.70%
	Gilts	4.47%	1.55%

There are investment management benefits for managing the assets as a single portfolio, as opposed to separate pre- and post-retirement portfolios. In practice we would do this rather than treating them separately. This would be likely to increase the expected return slightly relative to simply combining the expected returns from the notional pre- and post-retirement portfolios.

As noted above, we also consider returns from other sources. The expected returns for the portfolio from the Scheme Actuary's firm are lower for the pre-retirement portfolio but slightly higher for the post-retirement portfolio, as shown in Table 8.3 below.

Table 8.3: Expected investment returns from analysis by the Scheme Actuary's firm

Investment Strategy	Return relative to	Pre-retirement portfolio	Post-retirement portfolio
55% Growth	Gilts	5.4%	1.7%
40% Growth	Gilts	4.0%	1.7%

<u>Discount rates</u>

The Scheme Actuary has taken into account the factors noted above, along with the unusual financial market conditions and market practice, in advising the Trustee of the discount rate that is supported by the relevant investment strategies.

The Scheme Actuary has indicated that there is a greater level of uncertainty than is usual in determining the 'best estimate' at 31 March 2020, given the economic disruption caused by COVID-19.

The Scheme Actuary has advised us that it is important that the discount rates adopted should contain sufficient prudence such that the overall funding strategy is reasonably robust to alternative possible economic developments.

The implied level of reliance on the employer covenant should also be consistent with the risk management framework described in Section 6. This means that the level of funding risk supported by the covenant should not only be within the employers' *available* risk capacity, but also within both the employers' risk appetite and ours. (Our risk appetite, for the purpose of this consultation, is taken to be equal to the *affordable* risk capacity.)

This is important, as the distance between Technical Provisions and our self-sufficiency measure may be restricted by the amount of reliance we can place on the covenant, which would influence our choice of the Technical Provisions and the discount rate.

Based on the Actuary's advice, we are consulting on the following discount rates as at 31 March 2020:

- Post-retirement: gilts+1% pa
- Pre-retirement: gilts+2% for a tending-to-strong covenant
- Pre-retirement: potentially up to gilts+3.5% pa for a strong covenant (depending on feedback on this consultation, employers' risk appetite and commitments to supporting risk, and our view of the covenant in the autumn)

Given the financial market conditions at 31 March 2020, and consistent with the regulator's recent guidance, both the pre- and post-retirement discount rates relative to gilts are higher than the Scheme Actuary would expect to recommend in more normal markets.

The post-retirement discount rate of gilts+1% at 31 March 2020 is supportable due to the large credit spread on investment-grade corporate bonds on that date. Whilst not explicitly formulated as such, the post-retirement discount rate could be viewed as gilts+0.75% *plus* an additional allowance for this higher credit spread. The credit spread will vary over time but it is expected to fall from its elevated position at 31 March 2020.

The pre-retirement discount rates we are consulting on reflect expected returns at 31 March 2020. These are higher relative to gilts than we would expect to use in more typical market conditions, including at both 31 December 2019 and 30 June 2020. This is due to the particular circumstances at that date.

In deciding the discount rates to propose, we also took account of broader market practice. The Pensions Regulator publishes information on this annually in its analysis of scheme funding. Its analysis published in 2019 covers valuations with effective dates up to September 2017. See Appendix F for more information.

Overall, we believe we have taken a rounded approach to our choice of discount rates, reflecting a range of factors.

The discount rates we adopt must be prudent under the scheme funding legislation. As noted above, there is considerable uncertainty about any assessment of levels of prudence at 31 March 2020. Table 8.4 shows the range of discount rates for potential Technical Provisions compared with 'best estimate' expected investment returns. It also shows the confidence levels (based on the FBB expected returns as at 31 March 2020) of achieving an investment return at least in line with the discount rate given the investment strategy.

Table 8.4: Discount rate and confidence level of achieving an investment return at least in line with the discount rate (rates are on a 'gilts+' basis) – best estimate returns and confidence levels based on FBB

	55% growth assets		40% growth assets	
	Pre-retirement	Post-retirement	Pre-retirement	Post-retirement
Best estimate	5.90%	1.55%	4.47%	1.55%
Discount rate	**3.5%**	**1.0%**	**2.0%**	**1.0%**
Confidence level	78%	73%	85%	73%

Assuming a lower pre-retirement discount rate than gilts+3.5% whilst maintaining a 55% growth asset investment strategy would result in a higher confidence level (and therefore more prudence).

The confidence levels shown above are higher than those adopted at the 2018 valuation. Given the volatility and uncertainty in outlook based on market conditions at the valuation date, it is difficult to draw any firm conclusions from this analysis. Different assumptions could produce lower confidence levels.

A 67% confidence level was used for the 2018 valuation. Based on the FBB model in this valuation, this would result in pre-retirement discount rates of gilts+4.5% and gilts+3.4% for strategies of 55% and 40% growth assets respectively. The post-retirement discount rate would be gilts+1.2%. However, these rates fall outside the range we are prepared to accept for the valuation based on advice from the Scheme Actuary, taking into account our views of the employer covenant, the factors outlined above, and the proposed RMF risk metrics.

CPI inflation

Most Scheme benefits are linked to CPI inflation. So, we need to take a view as to how CPI will develop. In past valuations we have done this using 'market-implied RPI' less a fixed margin (1.3% in 2018). Market-implied RPI is the difference between the yield on nominal and index-linked government bonds.

Since the 2018 valuation, the UK Statistics Authority has said it is reviewing the RPI inflation measure. Potential changes could be implemented as early as 2025 but more likely from 2030. The Government's consultation on changes to RPI has been delayed by COVID-19. As a result, the timing on implementation remains uncertain. Also uncertain is the amount of any potential change that is reflected in market yields of index-linked government bonds at the valuation date.

On the advice of the Scheme Actuary, we have continued to estimate future CPI using the difference between the yield on nominal and index-linked bonds but have varied the margin between this difference and assumed CPI. The difference in the margin effectively reflects (i) an estimate of the change in index-linked bond yields attributable to potential RPI reform, plus (ii) a change in the allowance for an inflation risk premium (IRP).

The 1.3% difference between market-implied RPI and our CPI assumption at the 2018 valuation incorporated a deduction of 0.3% pa for IRP. An IRP may exist because of supply and demand in the gilt market – market participants may be prepared to pay more for inflation protection than a true best estimate of future inflation. However, given the uncertainty around the future calculation of RPI as a result of the Government's consultation, the Scheme Actuary has advised that it is less certain that an IRP, to the extent that it existed previously, continues to exist as at 31 March 2020.

While the FBB model does not give a value for the IRP as at 31 March 2020, it is conditioned on an expectation that the IRP will be around zero in equilibrium (that is, beyond year 10). So, we propose not to make an allowance for an IRP as at 31 March 2020, but we recognise that an IRP may re-emerge at later dates.

Taking account of all the above, our proposed approach results in an average CPI assumption of about 2.1% a year – slightly higher than that used in the 2018 valuation and close to the Bank of England's long-term inflation target of 2.0% a year. See Appendix F.

Payroll growth

Most pension benefits are linked to CPI and future increases to benefits have been independent of an individual's final salary since 2016. However, overall payroll growth does affect the total benefits that will build up in future. It also affects deficit recovery contributions, which are currently expressed as a percentage of payroll. It is also a critical factor in identifying the affordable risk capacity of employers.

As with the 2018 valuation, we plan to make an assumption for future payroll growth consistent with our assumption for how the sector will grow in the future over the long term. This contributes to our view of the amount of risk the covenant can support.

In the 2018 valuation, we assumed long-term payroll growth of active members would be in line with a blend of UK and global GDP growth (since UK institutions compete internationally for both staff and students). At the time, the blended GDP growth was expected to be CPI+2%. It may now be lower. For example, as at 31 March 2020 the GDP growth underlying the FBB expected returns, calculated from a consensus of professional economists, is CPI+1.3% for the UK and CPI+2.0%-2.5% globally, over the long term (that is, 10-plus years).

For the purpose of this consultation, we have assumed payroll growth is CPI+2%. Appendix C includes sensitivities of moving to CPI+1% in the covenant measures.

The future level of payroll growth could also affect deficit contributions if they are expressed as a percentage of payroll. We will be doing more work on forecasting payroll growth as part of the forthcoming covenant review and would also welcome your views on these points (see Section 10).

9. Technical Provisions, with illustrative contribution requirements and Recovery Plan

Measures that would support the possibility of securing a strong covenant are not yet in place. As we explain above, we are consulting on the basis that the covenant would be tending-to-strong (TTS).

We are proposing to set Technical Provisions using a pre-retirement discount rate of gilts+2.0% pa. We describe other assumptions in Section 8 and Appendix F.

As we've set out in Section 5, the covenant ratings of strong and tending-to-strong are not binary. We have therefore set out in Table 9.1 an illustration of possible Technical Provisions figures based on different covenant positions/discount rates. These reflect what could be appropriate depending on progress with the covenant support measures, your response to this consultation, employers' risk appetite and commitments to supporting risk, and the covenant review due in the autumn.

This document constitutes the formal consultation on the Technical Provisions, rather than on contributions or the Recovery Plan. We provide illustrative figures for contributions purely to provide information on the valuation in the round and we will consult on them later in the valuation process. We felt it would be helpful to include potential contribution rates associated with the assumptions behind each of the Technical Provisions results.

Table 9.1 shows a range for the Technical Provisions, associated deficits and future service costs of current benefits. In each case, the single equivalent discount rate is higher relative to gilts than the 2018 valuation (equivalent to gilts+1.33% pa). Despite this, the deficits and future service costs in all cases are higher than the values at the last valuation on 31 March 2018 (deficit of £3.6bn and future service cost of 28.7%). The increase in the deficit and future service cost are driven by the deteriorating outlook for future investment returns and the need for greater prudence associated with that.

Table 9.1: Potential range of Technical Provisions and associated contributions

	TTS covenant	Other potential outcomes (subject to Trustee review of the covenant)		
Discount rate pre-retirement	Gilts+2%	Gilts+2.5%	Gilts+3%	Gilts+3.5%
Technical Provisions	£84.4bn	£81.4bn	£78.8bn	£76.3bn
Assets	£66.5bn	£66.5bn	£66.5bn	£66.5bn
Deficit	£17.9bn	£14.9bn	£12.3bn	£9.8bn
Future service cost *(current benefits)*	37.6%	34.5%	31.8%	29.4%
Single equivalent discount rate	Gilts+1.4%	Gilts+1.5%	Gilts+1.7%	Gilts+1.9%
	CPI+0.0%	CPI+0.2%	CPI+0.4%	CPI+0.5%

Notes to table:
1. *In each case the post-retirement discount rate is gilts+1% pa.*
2. *Future service cost is the total rate including employee contributions. It includes allowance for expenses of 0.4% of salary and DC contributions.*
3. *Because of rounding to the nearest 0.1%, the difference between the gilts+ and CPI+ single equivalent rates varies slightly*

Since 31 March 2018 long-term yields on gilts have fallen significantly. A lower outlook for future investment returns means we need to hold more assets in the Scheme now in order to provide for the pension promises we need to pay to members in the future. As a result, providing defined benefit (DB) pensions has continued to become more expensive since the last valuation.

Table 9.2 quantifies the factors that have driven the change in deficit since 31 March 2018. We have reconciled the change in deficit since then in the case of a pre-retirement discount rates at 31 March 2020 of gilts+2.0%. This decomposition is based on a gilts-plus comparison because we are comparing two different methodologies. More detailed information is provided in Appendix G on this, as well as analysis of the gilts+3.5% case.

Using different pre-retirement discount rates would not materially change the attribution, apart from that attributable to the 'change in methodology'. This would broadly change by the difference between the deficit on the alternative discount rate (see Table 9.1).

Table 9.2: Evolution of deficit since 31 March 2018 based on gilts+2.0% pa / gilts+1.0% pa

The evolution of the Technical Provisions deficit	
31 March 2018	3.6
Effect of asset returns, contributions and pension increase experience since 31 March 2018	+1.6
Change in gilt yields and expected CPI	+16.3
Change of methodology	-0.5
Change in mortality and other demographic assumptions	-3.1
31 March 2020	17.9

This reconciliation is from an approach using a single equivalent discount rate of gilts+1.33% pa in 2018

We have also considered the overall position of the Scheme as at 30 June 2020 in order to evaluate whether the 31 March position was a short-term, unrepresentative 'blip', and whether financial market changes since that date would result in a more representative improved position. If that were the case, there could be an argument for departing from normal practice and focusing the valuation discussions on the more recent figures. In practice, we have concluded that the deficit would be slightly larger on a like-for-like basis at 30 June 2020 than at 31 March 2020.

This is because, despite asset markets recovering over this period, the outlook for future investment returns (derived from FBB analysis) has deteriorated. From 31 March to 30 June 2020, equity prices bounced back rapidly (recovering about two-thirds of the December to March loss), while government bond yields and credit spreads fell (so increasing bond prices). As a result, expected returns fell for both equities and bonds, due to higher starting prices for both and a weakened outlook for equities.

We will continue to keep this under review but have decided to continue to focus the valuation discussions on the 31 March 2020 position.

Consistency of the Technical Provisions with our Risk Management Framework

A summary of our proposed Risk Management Framework (RMF) is in Section 6 with more detail in Appendix D.

In essence, the three metrics used in the framework look to measure the Scheme's financial position relative to self-sufficiency, given the affordable risk capacity and the available risk capacity of the sector.

Our view of both the affordable risk capacity and available risk capacity, based on an assessment of the covenant as tending-to-strong or strong, is summarised in Table 9.3.

Table 9.3: Affordable risk capacity and available risk capacity

Covenant rating	Affordable risk capacity £bn	Available risk capacity £bn
Tending-to-strong	£20bn - £22bn	£54bn
Strong	£32bn - £38bn	£65bn

The affordable risk capacity figures are based on employer contributions to the Scheme of 10% of payroll for 20 years (for a tending-to-strong covenant) and 30 years (for a strong covenant), with growth in the aggregate payroll of CPI+1% to CPI+2% pa.

Table 9.4 summarises the RMF metrics for each of the Technical Provisions given in Table 9.1. In making this assessment we have used a range for affordable risk capacity in Table 9.3.

Table 9.4: Potential Technical Provisions measured against RMF metrics

Investment Strategy	Covenant	Pre-retirement discount rate	Assessment relative to risk framework		
			Metric A	Metric B	Metric C
40% growth assets	Tending-to-strong	Gilts+2%			
55% growth assets	Other potential outcomes*	Gilts+2.5%			
		Gilts+3%			
		Gilts+3.5%			

**For the purposes of illustration only, these risk metrics have been assessed assuming a strong covenant*

The first row of Table 9.4 shows the tending-to-strong covenant with the gilts+2.0% pre-retirement discount rate for Technical Provisions. This results in Technical Provisions that are barely high enough to get us close enough to self-sufficiency in the long term (Metric A).

For the same case, Metric B indicates we currently have a much higher self-sufficiency deficit than we believe could be supported by the affordable risk capacity in this covenant scenario. This suggests a relatively short Recovery Plan is needed to improve the position on this metric.

For the gilts+2.0% case, Metric C indicates that the self-sufficiency deficit is within the available risk capacity for a tending-to-strong covenant. Any significant worsening of this metric could indicate that we would need to consider whether to move the investment strategy towards self-sufficiency.

If the covenant were to be rated strong, Table 9.4 indicates a less constrained position under the RMF compared to the tending-to-strong case. Here, Metric A suggests that the Technical Provisions for a strong covenant are sufficient in the long term, but in the case of a gilts+3.5% pre-retirement discount rate, the headroom on this metric is slightly more limited. For Metric B there is less pressure in the case of a strong covenant but the current headroom for the self-sufficiency deficit appears to be approaching the limit. The results for Metric C indicate that there is adequate risk capacity in all cases. Appendix E has examples of how the metrics are assessed.

Deficit recovery contributions

At this stage we are not consulting on the future service costs or on the structure of the Recovery Plan and the resulting deficit recovery contributions. We will do this later in the valuation process. We do, however, believe it would be useful to provide an illustration of Recovery Plan contributions using parameters broadly consistent with those adopted for the 2018 valuation.

In deciding the deficit recovery contributions to illustrate, we have taken advice from the Scheme Actuary and reflected upon the risk position of the Scheme.

We have also reflected on the regulator's Annual Funding Statement 2020 and other recent guidance. For example, for a relatively immature scheme with a strong or tending-to-strong covenant, and a long Recovery Plan (defined as more than seven years), the regulator places a focus on reducing scheme risk by strengthening the TP and Recovery Plan (increased DRC and/or a shorter Recovery Plan), and considering strengthening short-term security through other means. The Recovery Plan for the 2018 valuation would have ended in 2028, so there is currently eight years remaining.

The regulator's guidance suggests that where the investment return assumed in the Recovery Plan is more optimistic than the prudent view taken in the TPs, trustees should be mindful of the consequences of this optimism not being borne out. They suggest that, if appropriate, trustees should consider underpinning the additional risk with contingent security or link additional DRCs to triggers based on investment outperformance.

We have also considered and noted the feedback from the regulator to the VMDF (see Appendix A).

Taking all these factors into account, we have illustrated potential DRCs in Table 9.5 assuming:

- A recovery period equal to the remaining term of the 2018 Recovery Plan without any outperformance
- A recovery period equal to the remaining term of the 2018 Recovery Plan, with investment outperformance of 0.5% a year for the duration of the Recovery Plan
- A recovery period of 10 years without any outperformance

These illustrations demonstrate the relationship between the Technical Provisions, deficit recovery contributions and future service costs. DRCs have been presented as an annual fixed percentage of USS payroll but other approaches could be considered, such as lump sums and contingent arrangements

*Table 9.5: Illustrative **deficit recovery contributions** as a percentage of payroll*

Recovery period	Investment outperformance	Technical Provision pre-retirement discount rate*			
		Gilts+2%	Gilts+2.5%	Gilts+3%	Gilts+3.5%
8 years	Nil	30.3%	25.2%	20.4%	16.0%
8 years	0.5% a year	25.4%	20.4%	15.7%	11.4%
10 years	Nil	22.7%	19.0%	15.4%	12.1%

**Deficit contributions are based on a total payroll of £8.96bn pa assumed to increase at 2% above CPI each year, with the revised rates assumed to apply from 1 October 2021.*

As we have mentioned, the illustrative DRC are dependent on the payroll growth assumption of CPI+2% pa. Table 9.6 shows how the DRC given in Table 9.5 would increase for a lower payroll growth assumption of CPI+1%. The increase in DRC varies from 0.5% to 1.3% of payroll, dependent on the length of recovery plan, the level of investment outperformance assumed and the pre-retirement discount rate.

*Table 9.6: Illustrative **deficit recovery contributions** as a percentage of payroll for **payroll growth of CPI+1%.** The figures in parentheses correspond to the increase in DRC relative to payroll growth of CPI+2%.*

Recovery Period	Investment outperformance	Technical Provisions pre-retirement discount rate*			
		Gilts+2%	Gilts+2.5%	Gilts+3%	Gilts+3.5%
8 years	Nil	31.6% (+1.3%)	26.2% (+1.0%)	21.3% (+0.9%)	16.7% (+0.7%)
8 years	0.5% a year	26.5% (+1.1%)	21.2% (+0.8%)	16.4% (+0.7%)	11.9% (+0.5%)
10 years	Nil	23.9% (+1.2%)	20.0% (+1.0%)	16.3% (+0.9%)	12.8% (+0.7%)

**Deficit contributions are based on a total payroll of £8.96bn pa assumed to increase at 1% above CPI each year, with the revised rates assumed to apply from 1 October 2021.*

Combining these DRC based on a payroll growth assumption of CPI+2% pa from Table 9.5 with the future service costs illustrated in Table 9.1 results in a very wide range of potential contributions – from 40.8% to 67.9% of payroll. Table 9.7 has more details. For comparison, the current funding arrangement includes total contributions of 30.7% of payroll, increasing to 34.7% from October 2021.

*Table 9.7: Illustrative **total contributions** as a percentage of payroll*

Recovery period	Investment outperformance	Technical Provision pre-retirement discount rate*			
		Gilts+2%	Gilts+2.5%	Gilts+3%	Gilts+3.5%
8 years	Nil	67.9%	59.7%	52.2%	45.4%
8 years	0.5% a year	63.0%	54.9%	47.5%	40.8%
10 years	Nil	60.3%	53.5%	47.2%	41.5%

**Deficit contributions are based on a total payroll of £8.96bn pa assumed to increase at 2% above CPI each year, with the revised rates assumed to apply from 1 October 2021*

Our reaction to the indicative contribution rates

We recognise that UUK and UCU believe that current levels of contributions are at the limits of their acceptability for both employers and members respectively. We also share concerns about the relatively high level of opt-outs the Scheme is already seeing, in part due to affordability concerns from members.

The indicative contribution rates shown above are unlikely to be either affordable or sustainable, particularly those which are based on the lower pre-retirement discount rates. This situation could be mitigated by additional employer commitments to covenant support and/or other measures, including benefit adjustments. These are primarily issues for the stakeholders to address rather than matters for us. However, we stand ready to support stakeholders with their discussions and any alternative options they wish to explore.

The proposed Technical Provisions and underlying assumptions are based on the current benefit structure. If any changes are proposed by stakeholders as a result of the valuation, we would need to consider if and how the assumptions are affected.

How employers can support us in adopting a higher discount rate

We believe it would be possible to set Technical Provisions based on a pre-retirement discount rate higher than the tending-to-strong case of gilts+2.0% – potentially up to the higher end of the range in Table 9.1 – with:

- debt monitoring and *pari passu* arrangements
- agreement to a long-term rule change
- an adequate employers' risk appetite
- further employer support (such as contingent funding structures), and
- confirmation (based on further analysis from our advisors in the autumn) that the sector can continue to support a strong covenant

We have calculated the illustrative deficit recovery contributions assuming an 8- or 10-year Recovery Plan. We have included an illustration where the deficit recovery contributions allow for Scheme investments to outperform the Technical Provisions discount rate by 0.5% pa over the 8-year Recovery Plan.

Any allowance for outperformance would need to be consistent with the expected future investment strategy. It is also important that covenant support is not 'double-counted' in justifying a combination of a high discount rate, additional investment outperformance and a long Recovery Plan. Therefore, the ability to achieve some of the outcomes in Table 9.7, or contributions that are lower than those shown, is likely to need further employer support, such as contingent funding structures.

We discussed such arrangements during the 2018 valuation and in our Discussion Document. It will also depend on the outcome of the covenant review due in the autumn, the response to this consultation, and the risk appetite of employers.

We have already heard from employers, via UUK, that they are sceptical of how additional covenant support measures (such as contingent contributions) could work collectively and alongside the cost-sharing aspects of the Scheme. We would, however, be prepared to investigate this further now that a range of potential outcomes has been illustrated.

The distance from self-sufficiency was £35bn at 31 March 2020. This is equivalent to a contribution of 9.3% of payroll over the next 30 years, or 15.6% over 20 years. So, the Scheme is currently very near the limit of the affordable risk capacity for a strong covenant and actually beyond it for a tending-to-strong covenant (see Tables 9.3 and 9.4).

Taking more investment risk would therefore probably be accompanied by a greater need for prudence in the discount rate. As a result, if we were to assume a higher risk investment strategy than proposed, this would not necessarily lead to lower contributions.

10. Timeline, UUK's response and next steps

This document is the basis for the formal consultation with you on the Technical Provisions for the 2020 valuation, which will begin on **7 September**.

It is the second major milestone in the 2020 valuation process, following the Discussion Document in March. Employers should plan to provide you with their feedback by **30 October.**

We expect your response to us no later than **11 November.**

We have separately commissioned further advice from PwC on the strength of the covenant, which we expect to receive in the autumn. This advice will inform our final view of the contributions we need to fund the current benefit structure using the proposed methodology and assumptions. Our view will also be informed by your response to this consultation, and the progress anticipated on covenant support measures more generally.

We will inform the JNC of the contributions needed to fund the current benefit structure as early as we can in the process, taking into account any feedback received from you on the TP methodology and assumptions as part of this consultation. The JNC will then have three months (or such other period we may allow) to decide how any change to the overall contribution rate will be addressed, whether by changes to member and employer contributions, changes to the future benefit structure, or both.

The final contribution rates to be paid by employers and members respectively will depend on the JNC's decision. If the JNC cannot make a decision, the rate will be set according to the cost-sharing provisions under the Scheme Rules. We might also need to revisit the overall contribution rate proposed later in the process if there are new circumstances that affect the Scheme, such as developments in the covenant or market conditions.

Indicative timeline for completing the valuation

December '20:	We expect to be in a position to tell the JNC the overall contribution rate that the Scheme needs for members to build up further benefits at the current level
March '21:	Deadline for the JNC to decide how to address the change in the contribution rate
March '21:	If the JNC decides to make any changes, or cannot reach a decision, this is when employers might need to prepare for a consultation with affected employees.
30 June '21:	Statutory deadline for us to file the valuation with TPR. (We will also have to complete the consultation on the Schedule of Contributions, the Recovery Plan and the Statement of Funding Principles before the valuation can be filed.)
October '21:	Contributions are due to increase, as set out in the 2018 valuation.

Feedback

We invite you to comment on any aspect of this document.

Employers should plan to provide you with their feedback by 5pm on Friday 30 October.

If you do not support the approach or proposals, please say as precisely as you can what you would like to see instead, and why. In particular, we would value your feedback on:

1. The inputs and assumptions
2. The methodology (this was the primary focus of the March Discussion Document)
3. The risk management framework
4. The figures for the Technical Provisions
5. Whether employers are willing to agree to debt monitoring and *pari passu* arrangements and the long-term rule change required to support a strong covenant. (We anticipate that UUK will be issuing a separate consultation to employers on the rule change.)
6. Whether employers have any further feedback on the possibility of additional contingent support
7. The level of financial support employers are collectively able to give the Scheme (see Section 5), and their *affordable* risk capacity (and risk appetite, if different), specifically:
    a. the percentage of payroll available (We assume 10%)
    b. the length of time over which that is available (We assume 20 years under a tending-to-strong covenant, and 30 years under a strong covenant)
    c. the cost of future pension provision to employers acceptable to the sector in an adverse scenario (We assume 15% of payroll. This is on top of the 10% of payroll available for deficit recovery contributions. This gives a total rate of employer contributions of 25% of payroll)
    d. the growth of the sector payroll over the longer term (We have used CPI+2% before, but we have shown alternatives)
8. How we should determine employers' collective risk appetite, and any alternatives if you don't think the approach based on affordable risk capacity is reasonable

Part 2: Detailed information

Appendix A: Trustee report on the Valuation Methodology Discussion Forum (VMDF) activities

What was the VMDF?

The Valuation Methodology Discussion Forum (VMDF) was a forum set up by the Trustee for the purpose of providing input and feedback on the Trustee's broad methodology approach for the 2020 valuation to support the overall valuation process.

It was an extension of the Trustee's Methodology Working Group, which had delegated authority from the Trustee Board to explore the valuation methodology and risk management approach for the 2020 valuation. The Trustee wrote to UCU and UUK in January to establish the VMDF and invite the stakeholders to nominate their representatives to attend.

The forum was a discussion forum, not a decision-making body. Its creation as a forum to discuss methodology issues for the 2020 valuation with the stakeholders followed similar engagement with stakeholders on methodology ahead of the 2017 valuation. It also aligned with the recommendations around *valuation governance* and *alternative paths to the valuation* arising from the second report of the Joint Expert Panel (JEP).

What was the remit of the VMDF?

The VMDF's remit was to:

- Consider different aspects of the valuation methodology, including issues of covenant; risk appetite (Trustee, employer, member); investment strategy; expected returns and discount rates; and risk management. Its remit expressly excluded consideration of the input assumptions used in the valuation
- Seek to facilitate a common understanding of issues relating to the valuation methodology amongst the key stakeholders and provide feedback on how the approach could be clearly explained to employers, members and other stakeholders
- Provide a channel for stakeholders to submit reasonable requests for further information to the Trustee, and for those requests to be prioritised by the Trustee as appropriate

The VMDF attendees were asked to be cognisant of the valuation timetable and statutory deadline, the Shared Valuation Principles agreed in principle by UCU, UUK and the Trustee as part of the JEP Tripartite Group discussions, and the Trustee's own decision-making principles for the valuation.

Who attended meetings of the VMDF?

- Four UCU and three UUK representatives, and their actuarial advisers (First Actuarial and Aon respectively)
- The Scheme Actuary (Ali Tayyebi of Mercer then Aaron Punwani of LCP following his appointment from 1 April 2020)
- Certain Trustee Board directors (those directors who were members of the Trustee's Valuation Methodology Working Group, which had been meeting since September 2019) and members of the USS executive

In addition, representatives of the Pensions Regulator ("TPR") attended two of the VMDF meetings.

The agendas for the meetings were discussed and agreed with the VMDF representatives with all attendees able to propose agenda items for discussion and present proposals, modelling and analysis.

The VMDF representatives were also able to submit requests for further information and modelling and to indicate which of these were of the highest priority. Where it was appropriate for the Trustee to respond to these they were prioritised alongside the sequencing and dependencies of wider work on the valuation for the Trustee Board.

The Trustee would like to express its sincere thanks to the stakeholder representatives, their advisers and representatives from TPR for their contributions to the VMDF and the considerable time commitment preparing for and attending VMDF meetings. This was particularly significant given the unanticipated challenges of COVID-19 on all organisations' workloads and adjustments to remote working practices at this time.

What matters were considered at each of the VMDF meetings?

The VMDF met 11 times between 6 February and 13 July 2020, with the first four meetings taking place in advance of the Trustee's discussion document "Methodology and risk appetite for the 2020 valuation" being issued to UUK and employers. It is worth noting that the COVID-19 pandemic, and the associated turbulence in financial markets, impacted very heavily during this period making comparisons between market conditions prior to, and at, the valuation date of 31 March 2020 more challenging.

A high-level summary of the matters considered by the VMDF at those 11 meetings appears at the end of this Appendix.

How did the VMDF discussions flow into the Trustee Board's decision-making process for the TP consultation?

Regular updates on the VMDF discussions were provided to the Trustee Board by the Trustee Directors and executives who attended the VMDF meetings.

The Trustee Board also invited, and received, separate submissions from UCU and UUK representatives, and all the Meeting Papers for the VMDF were made available to board members in advance of final decisions on the inputs, assumptions and methodology for the TP consultation on 22 July. In addition, UCU and UUK officials (as opposed to VMDF representatives) were invited to present any further views in relation to the 2020 valuation and the VMDF at the 22 July board.

TPR's letter to the VMDF following their attendance at the VMDF on 30 June was also shared with the Trustee Board for their information (see letter from TPR enclosed in this Appendix dated 10 July 2020).

What key areas of consensus and difference emerged during the VMDF discussions?

As illustrated by the summary above, the VMDF considered a significant volume of supporting analysis and evidence during its 11 meetings covering a wide range of issues relating directly or indirectly to different aspects of the methodology for the 2020 valuation.

While the majority of the input to the meetings was provided by the Trustee and its advisors, partly in response to requests to the Trustee from the UCU and UUK representatives, there were also direct inputs from individual UCU and UUK representatives and their advisors, notably from First Actuarial and Aon as highlighted.

Whilst the VMDF has led to a greater understanding of the respective positions of UUK, UCU, the Trustee and their respective advisers, and the identification of some areas of common ground around the methodology for the 2020 valuation, the Trustee believes that there remain a number of areas on which substantive differences of view and/or interpretation of evidence or legal and regulatory constraints remain and where it is unlikely to be possible to reconcile views across all parties.

Some of the matters discussed by the VMDF are more relevant to the latter stages of the valuation process (rather than the consultation in relation to Technical Provisions) and consequently will be subject to further exploration and consideration by the Trustee later on in the 2020 valuation process.

For simplicity and ease of understanding we have therefore sought to summarise the range of issues considered by the VMDF into three broad categories as follows:

- **Category 1** – those areas where we believe a broad consensus was reached by the VMDF attendees
- **Category 2** – those areas where we believe substantive differences of view and/or interpretation remain between the VMDF attendees
- **Category 3** – those areas where there may be differences of views but which are to be further considered by the Trustee later in the valuation process and which may be influenced by responses to consultations or further stakeholder input to the process

A high-level summary of the discussions and the Trustee's perspective on each of these categories follows below. For ease of understanding we have sought to keep each of these sections simple, though acknowledge that the views of the representatives at the VMDF meetings may have been more nuanced than this, and that the strength of views and opinion expressed on different issues may not be consistent either across all individual representatives or across the UCU and UUK representatives. Views expressed by individuals representing UUK at the VMDF should not be considered a formal UUK position, which would be premature to provide absent their consultation with employers.

Areas where a broad consensus was reached during the VMDF discussions (Category 1)

The Trustee's believes that there was a broad consensus across the VMDF on the following issues:

- **The introduction of a dual discount rate approach.**
  A dual discount rate approach (DDR), as also proposed by the Joint Expert Panel in its second report, brings a number of potential benefits and appears consistent with the consultation published by TPR in relation to the DB Funding Code and the concept of a Long-Term Objective (LTO). A DDR approach is helpful for recognising that USS remains an open and

relatively immature DB scheme. It should be noted however that the representatives on the VMDF stated that their views on DDRs were conditional on understanding the implications in terms of the discount rate assumptions; the investment strategy; and the valuation outcomes that would apply under this approach. These conditions are primarily issues for the Technical Provisions consultation rather than issues of methodology.
The Trustee is proposing to adopt a DDR methodology for the 2020 valuation.

- The removal of Test 1.
  Test 1 should be removed and any risk management framework adopted should be focussed on checks and balances rather than rigid constraints. Some concerns were however expressed that the inclusion of risk metrics focussed on Self-Sufficiency measures could result in an approach which is broadly equivalent to that of Test 1.
  Test 1 has been removed for the 2020 valuation and the risk management framework and metrics reviewed.

- The potential to take more investment risk over the longer term.
  Following from the removal of Test 1, under the proposed methodology for the 2020 valuation, there is the potential for the Trustee to take significantly more investment risk over the longer term compared to the 2017 and 2018 valuation trajectories for derisking. In particular, under the proposed dual discount rate approach a much higher risk appetite (and potential distance from Self-Sufficiency funding) is allowed for in 20 years' time allowing in turn for a significantly higher proportion of growth assets to be held over the longer term and for a lower future service cost than would otherwise be the case. This is a significant change from the approach for the 2017 and 2018 valuations where there was a £10bn constraint placed on the reliance in 20 years' time restricting the investment risk that could be taken over the longer term.
  Subject to the underlying covenant strength, and the required commitments on debt monitoring, pari passu and the rule change on employer exits, the Trustee is willing to take significantly more investment risk over the longer term compared to the 2018 valuation.

- The relationship between dual discount rates and the investment strategy.
  The relationship between a dual discount rate approach for the funding strategy and the investment strategy should not be overly mechanistic. The component investment strategies for pre- and post-retirement liabilities are notional strategies that broadly reflect the two different risk profiles of active and deferred members and pensioner members consistent with the DDR approach. Some VMDF representatives took a stronger view and felt that no link at all was a possibility.
  The Trustee will formulate its final decisions on the actual investment strategy to be implemented, and the speed of any adjustment to an alternative investment strategy, later on in the valuation process once it has considered the consultation responses, especially on matters such as employer risk appetite.

- The need to understand the downside risks facing the Scheme and for the Trustee and stakeholders be in a position to take remedial action.
  Risk needs to be taken into account in relation to the 2020 valuation although differences of view exist as to how and the extent to which it should. There was a consensus that it was important for the Trustee to take account of plausible adverse/downside economic scenarios when deciding upon the Technical Provisions and broader methodology and investment

strategy approach for the 2020 valuation and to reach a view on the actions it would be likely to take in response to such scenarios and how that could impact on employers and members. There was some discussion over whether the downside scenarios the Trustee is considering were too extreme to factor into decision making and the likelihood of remedial action being required is therefore very low.
Six economic scenarios have been developed by the Trustee for the purpose of testing and the modelling of these will be provided in a separate document: "Scenario Testing and Stochastic Analysis".

Areas where substantive differences of view and/or interpretation remain within the VMDF (Category 2)

- **The relative importance of the Trustee's stated primary and secondary objectives.**

  The view was expressed that the Trustee is placing too much emphasis on its primary objective and that its secondary objective relating to the sustainability and affordability of the current Scheme benefits should be placed on an equal footing. The UCU and UUK representatives expressed the view that this is to the detriment of the active/future members, and therefore conflicts with intergenerational fairness. The UCU representatives expressed the view that the greater prioritisation of the secondary objective could in fact help to secure the primary objective (e.g. by keeping the contributions affordable and maintaining ongoing cashflows into the Scheme).

  The Trustee's position
  The Trustee's position reflects its legal duty and is aligned with TPR's position as communicated directly to the VMDF. Our primary objective is to ensure that members accrued benefits are protected and can be paid in full. However, we also place significant emphasis on our secondary objective of sustainability. If our primary objective were our only objective it is likely that we would seek to achieve a self-sufficiency level of funding. Our proposal to use a DDR methodology involves remaining tens of billions of pounds distant from self-sufficiency over the long term whilst the scheme remains open, provided that distance can be justified by the covenant. This places considerably greater emphasis on sustainability in the 2020 valuation than the 2018 methodology. By assuming a more uniform long-term risk profile, the Trustee is aiming to deliver an approach that has regard to intergenerational fairness (our third high-level principle for the valuation methodology), recognising that the demographic, economic and environmental context differs between generations of members. The Trustee would welcome further input from stakeholders on member risk appetite, although we currently take the view that it would not be appropriate to treat the cost-sharing arrangement within the Scheme Rules as being additive to the covenant, as the risk of member opt-outs would increase if member contributions were to become unaffordable.

  The Trustee believes that its primary and secondary objectives are appropriately weighted to reflect the balance between its legal duty and its desire for the Scheme to remain sustainable. The Trustee is clear that the Technical Provisions need to have regard to the long-term distance to self-sufficiency (Risk Metric A) and action is required to address the current risk position as reflected in the short-term distance to self-sufficiency (Risk Metric B). The only levers the Trustee has available are the setting of contributions and the setting of the investment strategy. Moreover, to address the current adverse short-term position, the setting of contributions is the primary lever. Within these constraints The Trustee is reflecting both its primary and secondary objectives in its proposals. The stakeholders have other levers available to them, including the ability to adjust the contributions and benefit structure if appropriate, to address wider intergenerational fairness and affordability concerns within the Scheme.

- **Member (and employer) affordability is a real and significant concern if the Scheme is to remain relevant for the sector but there are differing views on member risk appetite and how it should be factored into the valuation.**

  The concerns around member affordability (and the high opt-out rates experienced currently) are known and understood by the Trustee and stakeholders. However there are differences in view on the appropriate response to managing this issue given the levers that are available to the different parties. Some VMDF representatives felt that the most significant risk to (active and future) members was the potential closure of the DB section at some future point.

  The Trustee's position
  Member risk appetite is important. However, because members can choose to leave the Scheme at any time (and without penalty), the Trustee cannot rely on them to fund the Scheme in future and they do not contribute to the covenant. Given this employer's risk appetite (subject to the constraint of their affordable and available risk capacity (see Part 1, Section 6)) is more relevant than member risk appetite in the construction of the Scheme's integrated risk management framework.

- **Whether a combined contribution rate of 26% (the contribution rate that applied from the 2014 valuation) is sufficient for current benefits.**

  A central focus of the VMDF discussions has been whether combined contributions of 26%, particularly if fixed over the longer term rather than reducing as the funding position improves, would be sufficient to support the current structure.

  A funding strategy based on the current reference portfolio investment strategy with no derisking, a fixed total contribution of 26% and a commitment to "overfund" the Scheme over time to build up a risk buffer was shown in the analysis shared with the VMDF to be sufficient to secure current levels of benefits over a 20 year period in the majority of scenarios. However, there are scenarios in which the funding position in the short term falls to an unacceptably low level.

  The Trustee's position
  Because the buffer would take some considerable time to build up, and the path of future returns is uncertain, the short-term risk position would be unacceptable to the Trustee, as it would expose the Scheme to high levels of downside risk if there were further adverse market movements. The Trustee seeks to avoid a position where the only option is to rely on uncertain investment returns rather than the employers. The Trustee therefore wishes to remain close enough to the self-sufficiency measure that the gap can be bridged by the covenant support from the employers, and that position is under pressure in the short term.

  In any real situation it cannot be known at the time if a low funding level will recover over the long term and the possibility that it will not must be seriously considered. This situation would lead to strain on employer risk budgets and external pressure to take urgent action to rectify the situation and/or take measures to prevent further deterioration.

If actual investment returns turn out to be higher than those assumed by the Trustee then this will permit contributions to reduce in the future. However, the Trustee is required under legislation to fund the Scheme on a prudent basis and therefore cannot take excessive advance credit for that prudence unwinding.

The Trustee is therefore of the view that combined contributions of 26% are not sufficient to support the current benefit structure under any reasonable investment strategy approach.

- **The relevance of the Scheme's positive cashflow position to support more investment risk**

The UCU and UUK representatives expressed the view that the cashflow projections for the Scheme mean that benefits can be paid out for many decades from a combination of contributions and investment income, and as such there is no need to sell assets and as a result short-term volatility in market values are not a relevant consideration. UCU representatives expressed the view that a cash flow analysis should form the basis of decision making over the valuation, or at least a benchmark for comparison.

The Trustee's position
The Trustee's position is that the cashflow projections are a feature of the Scheme being open to new members which is reflected in the DDR methodology by the higher assumed allocation to growth assets over the long term than was assumed within the 2018 valuation methodology. It is required under legislation to fund Technical Provisions that reflect the cash flows relating to benefits already promised to members and the uncertainty attached to those cash flows. This is standard practice for all financial firms with liabilities (not just pension schemes), regardless of the nature of the liabilities.

While the Trustee can deploy a greater degree of flexibility in its investment strategy given the cash flow position, it must also ensure past service benefits continue to be funded to a level consistent with sector's affordability. The Trustee cannot solely rely on cash flows that are intended to fund future benefits to instead fund past service benefits leading to a shortfall in the provision for new accrual over time - that would be tantamount to assuming an infinite risk capacity for the HE sector and would therefore place the sector at risk.

- **The use of the FBB model for expected investment return assumptions.**

The UUK representatives expressed concern over the merits of using the expected investment returns produced by the FBB model as opposed to employing a fixed margin over inflation, expressing the view that the former is harder to explain and monitor, and that the extra complexity does not necessarily give more robust results. These concerns also note that return percentiles are very sensitive to input assumptions and hence can be quite volatile. UCU representatives also expressed some concern over the validity of the FBB return assumptions.

The Trustee's position
For the 2020 valuation the Trustee used the FBB expected returns as a key input to the TP discount rate, but this is not the only significant input. The amount of prudence deducted

from the expected returns is equally important. The FBB expected returns are calculated as a spread over inflation (CPI) but converted to a spread over gilts for the purposes of communication and to allow easy comparisons with the discount rates for TP and self-sufficiency. The Trustee has expressed the proposed discount rates as a fixed margin above gilt yields that is the same at the valuation date for all maturities, although, recognising the higher credit spreads and depressed equity markets at the valuation dates, it has proposed using a higher margin above gilts than it would use at other dates. This is in line with the FBB methodology, and consistent with TPR's recent guidance, but we have also looked at other sources of return expectations including the Scheme Actuary's and those of other consultancy firms and asset managers. The risk management framework also influences the discount rate as the distance between Technical Provisions and self-sufficiency may be restricted by the amount of reliance we can place on the covenant.

We therefore believe as the Trustee we have taken a well-rounded view in setting the proposed discount rates in this TP consultation document without excessive reliance on the FBB model. In addition, the JEP reported in its first report that "it is appropriate for the Scheme to develop its own model for establishing economic and investment outcomes… The Panel has identified no concerns about the FBB approach.

Areas where there may be differences of views within the VMDF but which are to be further explored by the Trustee later in the valuation process and which may be influenced by stakeholder input to the process (Category 3)

Areas that require further exploration by the Trustee do not really concern issues of methodology as such but rather issues of application. They include the final determination of the covenant strength and risk appetite; the decisions on the actual investment strategy to be implemented, including the pace with which any initial de-risking would take place; and final decisions on contributions and the recovery plan, including potential smoothing and investment outperformance. The Trustee also anticipates further refinement to the Monitoring and Actions framework associated with the revised RMF outlined in Part 1, Section 6 including the potential responses should significant adverse scenarios materialise.

- **The need to de-risk from the December 2019 investment strategy**

  The UCU and UUK representatives expressed the view that the modelling presented had suggested that there is no material benefit to be gained from de-risking from the December 2019 investment strategy of c. 65% growth assets to the assets implied by the proposed DDR approach (initially 55% growth assets); and that it reduces the upside over the long term and has little impact on the downside in the short or longer term.

  The Trustee's position

  The stochastic modelling performed by the Trustee showed that over the long term the 65% growth strategy outperformed strategies with less growth assets across the vast majority of scenarios, with the downside risk being somewhat offset by the higher returns over the longer run. However, it should be recognised that high-growth strategies involve a large amount of model risk associated with the long-term expected returns of growth assets (coming from the FBB expected return model). Stochastic models are calibrated around a central return forecast. While the stochastic modelling captures the price volatility around said forecast, it does not allow for the uncertainty in the forecast itself. This uncertainty is also greater where the forecast relies on non-contractual cashflow (in relation to growth assets) as opposed to contractual cashflow (in relation to matching assets). This shortcoming becomes ever more apparent as the projection horizon increases. Holding a higher growth strategy could be appropriate if the additional downside risk is manageable within the risk appetite and capacity and if appropriate contingent support were provided by the employers. Further work would need to be done on this as appetite to explore such contingent support has been low so far.

Final decisions on the investment strategy, including the timing and pace of any reduction in growth assets, and the scope for any leveraging, will be considered by the Trustee Board after the TP consultation, taking into account the consultation responses on matters such as risk appetite. For the TP consultation different potential portfolios have been proposed depending on whether the covenant rating is strong or tending to strong.

- **Emphasis on the distance from self-sufficiency as the central risk metric.**

  The UCU and UUK representatives expressed the view that an excessive focus on self-sufficiency effectively "reintroduces Test 1 by the back door"; reduces the acceptable investment risk; and drives up costs for employers and members beyond affordable amounts.

  The Trustee's position
  The Trustee plans to fund the Scheme on the basis that it remains far (in fact, tens of billions of pounds) away from self-sufficiency indefinitely provided the Scheme remains open and the distance to self-sufficiency (which represents the reliance on the covenant) can be justified by the level of covenant support. This is very different from Test 1 which applied a £10bn self-sufficiency deficit as a target in 20 years' time, which *formulaically* determined the discount rate in 20 years' time and the path of derisking over the next 20 years.

  The Trustee seeks to avoid a position where the only option is to rely on uncertain investment returns rather than the employers. The Trustee therefore wishes to remain close enough to the self-sufficiency measure that the gap can be bridged by the covenant support from the employers.

  The TP consultation discusses three risk metrics (A, B, and C) to evaluate the Scheme's risk, initially for the valuation and in due course for monitoring on an ongoing basis. The results of the measurements will be expressed in terms of a RAG status for each metric. The Board will respond to the RAG status of the metrics collectively, taking account of the RAG profile and the underlying causes of each rating. The potential role of complementary risk metrics will be considered, and UUK/employers are asked for their views on the risk management framework in Part 1, Section 10, however as yet the Trustee does not consider that any credible alternatives to Self-Sufficiency metrics have been proposed.

- **Smoothing of contributions and allowance for long recovery plans and asset outperformance**

  The JEP argued that i) USS could support a long recovery plan of 15-20 years; ii) a more consistent approach to DRCs between valuations would include outperformance of investment returns and iii) that future service costs should be smoothed over at least two valuation cycles. The Trustee recognised in the VMDF discussions that smoothing of Future

Service Costs was one potential aspect of the methodology that could be considered. A proposal was brought to the VMDF by UUK representatives to develop a risk framework along similar lines.

The Trustee's position
Smoothing of contributions, the length of the recovery plan and the degree of outperformance need to be considered collectively in terms of their impact on the overall risk in the valuation. This is because they effectively "dip into the same well", by relying on higher future investment returns to compensate for lower future service and/or deficit recovery plan contributions today. Using such approaches needs to be considered in the context of the amount of risk currently being run in funding the Scheme and the employers' ability and willingness to support that risk.

The TP consultation is focused on Technical Provisions. The Trustee will formally consult on contribution levels later in the valuation process. The consultation does, however, include illustrations of possible recovery plans.

- Actions to manage risk

  Through successive valuations, and the monitoring and actions framework it has put in place, the Trustee seeks to maintain a level of risk in the Scheme appropriate to the capacity of the sector, and to avoid circumstances that could precipitate a sudden decision to fund the Scheme to a self-sufficiency level. Concerns were expressed, particularly by the UUK representatives, that the Trustee has not explained what action it would take to manage short term risk or when it would decide it needed to move towards a Self-Sufficiency portfolio, and views were expressed by both UCU and UUK's representatives that the optimal/most plausible path under an adverse scenario might be to wait for market conditions to improve.

The Trustee's position
In practice the Trustee has limited levers at its disposal if it considers the short-term risk position unsustainable: it can either increase the required contributions and/or derisk. Derisking is an option the Trustee would need to consider carefully if the distance to self-sufficiency becomes too great, but cannot be implemented quickly, given the size of the Scheme, so for the valuation we focus on the first. Increased contributions, while clearly beneficial, can take considerable time to improve the funding position and as such need to be started early. Increases in contributions require employers to consider their affordability position: i) contributions are affordable; ii) contributions are not affordable and as a result changes are made to the Scheme's benefits through a decision by the JNC; iii) contributions are not affordable but are still paid in the short term, placing employers under strain and worsening the overall covenant position. This is why it is important not to drift too far from the Self-Sufficiency position, as it could lead to more drastic action being required, with potentially harmful consequences for the sector, particularly in circumstances when the covenant is already under strain.

The separate document "Scenario Testing and Stochastic Analysis" will include examples of the adverse economic scenarios considered by the VMDF and their impact on the future path of contributions.

General commentary

In addition to the above areas of difference, for transparency, and in the spirit of recognising the Shared Valuation Principles agreed as part of the JEP Tripartite Group discussions, we note that both the UCU and UUK attendees have expressed some frustrations in relation to certain administrative aspects of the VMDF meetings.

These included, the amount of time they had to review papers before VMDF meetings and the time it took the Trustee to complete some of stakeholders' modelling requests (as there were occasions when the Trustee had to prioritise modelling that was being undertaken in support of Trustee board decision making over that for the VMDF, particularly in light of the COVID-19 pandemic), and the extent to which all assumptions and methods were fully documented in the initial analysis provided.

Despite these frustrations and the differences of view that remain we hope the stakeholders found the VMDF to be a useful forum.

Summary of Individual Meetings

Meeting 1 (6 February 2020)

- The VMDF discussed the purpose of the VMDF and its terms of reference and went on to consider the Trustee's proposed high-level principles (that the level of risk must be "acceptable"; long-term and short-term perspectives are important; and intergenerational fairness should be considered), constraints and considerations for the valuation methodology, which had already been discussed with the JEP in September 2019, along with the Trustee's primary and secondary objectives. The discussion then turned to the relationship between the employers' covenant and risk taking/risk appetite; the definition and interpretation of the concept of 'prudence' in the context of the valuation; and specific aspects of the methodology including member risk appetite (and how this might differ between pensioners, actives and deferred members), the potential adoption of dual discount rates, the removal of Test 1, the setting of the investment strategy, and the scope to take more risk in the 2020 valuation compared to previous valuations.
- The Trustee noted that understanding each party's approach to risk appetite should provide a common basis for the valuation, but that that doesn't mean all parties will necessarily agree their views on risk appetite. It was also clarified to the VMDF representatives that a change in the methodology approach *alone* would not have a significant impact on the outcome of the valuation and that the key drivers of the outcome of the valuation would be the strength of the covenant (and the risk capacity it provides to the Scheme); the level of risk appetite; and the investment environment and outlook prevailing at 31 March 2020.

Meeting 2 (13 February 2020)

- The indicative valuation results as at 31 December 2019 were shared with the VMDF and the results were shown based on the 2018 methodology (with and without de-risking) and on a revised dual discount rate approach to the methodology with different covenant ratings (Tending to Strong and Strong). During the meeting the VMDF considered some specific aspects of methodology as well as some of the different views on risk that exist in relation to the Scheme and the role of different risk metrics and stress testing in the absence of Test 1. Information was also provided to the VMDF about the statutory/regulatory constraints that apply to the valuation methodology that the Scheme adopts. An alternative approach to the covenant and assessing the net present value of the risk capacity available to the Scheme through a cash flow approach was also discussed.

- The UCU representatives raised concerns that the numbers presented to the meeting on the relative Year 20 positions under different approaches were not presented on a like-for-like basis.
- Shortly after Meeting 2 UCU and UUK VMDF representatives provided a shared list of queries and substantive modelling requests that they wanted the Trustee to consider – particularly in relation to modelling scenarios where no de-risking of the investment strategy takes place and fixed contributions of 26% over time are used to gradually build up a funding buffer for the Technical Provisions to protect against future adverse scenarios. The UCU and UUK representatives also expressed a strong interest in seeing projections of the funding position on a best estimate returns basis and well as a prudent basis.

Meeting 3 (24 February 2020)

- The VMDF was provided with feedback from the Trustee Board on 18 February, was briefed on the likely presentation for the forthcoming discussion document "Methodology and risk appetite for the 2020 valuation" and received an update on the critical path for the valuation timeline. The VMDF also considered further information in relation to the valuation of the employer covenant and how the 'capacity' of the Higher Education sector could be assessed. This included consideration of a cash-flow based approach to valuing the covenant and risk capacity available and definitions of reliance and self-sufficiency.
- The importance of needing to understand a realistic, committed appetite from employers to take risk was emphasised in order for the Trustee to clearly assess when it is approaching the limit of the covenant available to the Scheme, particularly if the market outlook is deteriorating, and whether it should take pre-emptive action.
- The VMDF also discussed a presentation from one of the UCU representatives on "GDP and discount rates".

Meeting 4 (2 March 2020)

- The VMDF meeting focused on reviewing the draft Discussion Document "Methodology and risk appetite for the 2020 valuation" in advance of its publication by the Trustee on 9 March. The VMDF also discussed the results of initial modelling from one of the UUK representatives on a no de-risking roll forward scenario with fixed contributions.
- Written comments were also submitted to the Trustee by VMDF representatives from UCU and UUK shortly after the VMDF meeting and in advance of publication of the Discussion Document. These comments had been considered in the final drafting of the document and were shared with the board for consideration at its 6 March 2020 meeting.
- Supplementary requests were also made by UCU and UUK representatives in relation to the inclusion of additional analysis which was included in Appendix A of the Discussion Document. That considered a higher expected return investment strategy (no derisking) than the dual discount rate examples and gave a comparison based on a fixed total contribution rate between Year 0 and Year 20. Since the contribution rate was set at a higher level than required by the future service cost for the 'no derisking' strategy the effect was to build up a 'risk buffer' over time to mitigate the risk associated with the strategy.
- This concluded that the 'risk buffer' built up over the next 20 years could provide effective risk mitigation by 2040 with sufficiently high contributions. However, over the short-to-medium term there would be higher risk than the dual discount rate approaches illustrated in

the main document, as illustrated in the modelling and analysis subsequently shared with the VMDF.

- The investment return assumption used for the 'no derisking' case in Appendix A of the Discussion Document differed from the Technical Provisions discount rate shown earlier in the document. A clarificatory note was subsequently issued describing the reasoning for this and providing further detail on the calculations.

Meeting 5 (19 March 2020)

- The VMDF received updates from the Trustee on the current financial market conditions and their impact on the USS funding position in the wake of the COVID-19 pandemic as well as an update from UUK on their recent consultation with employers on the recommendations in the Joint Expert Panel's second report.
- The meeting also included responses to some of the specific VMDF requests after Meeting 2 (in relation to questions previously identified by the Stochastic Modelling Working Group) on stochastic models and historical performance versus future projections of asset return distributions. This included a presentation from Ortec Finance in relation to portfolio and scenario modelling.
- The VMDF also discussed a follow up to the 24 February presentation by a UCU representative in relation to "GDP and discount rates".

Meeting 6 (8 April 2020)

- The VMDF received a further update from the Trustee on financial market conditions and related developments and from UUK on their recent consultation with employers on the recommendations in the Joint Expert Panel's second report and their intention to publish a summary report in the coming weeks. The VMDF discussed papers from First Actuarial, actuarial adviser to UCU and Aon, actuarial adviser to UUK. The First Actuarial paper summarised the output of modelling First Actuarial developed in relation to the impact of 'derisking' the investment portfolio assuming a range of different contribution scenarios. The Aon paper set out some initial thoughts from Aon as to how a new risk framework for the Scheme could be developed focussing on smoothing of future service contributions and deficit recovery contributions and requesting that the Trustee model Aon's proposals.
- There was recognition that if best estimate returns were realised then the Scheme would be well funded in 20 years' time, and having a higher exposure to higher return seeking assets will lead to the Scheme having higher assets, provided those expected returns are indeed realised. The best estimate returns position did not however mitigate the Trustee's concerns around risks on the journey that could knock the funding position further off course.

Meeting 7 (20 April 2020)

- The VMDF considered the substantive responses to specific modelling requests raised by the VMDF attendees after Meeting 2 which had taken longer than expected to produce given other pressures and, in particular, additional COVID-19 related analysis required by the Trustee Board. In particular this modelling included projections of the Scheme's funding position based on different investment strategies including (a) "no derisking" (i.e. if the current reference portfolio investment strategy were to be continued permanently), (b) derisking to 'Test 1' as per the 2018 valuation trajectory and (c) adopting a dual discount rate approach (with analysis provided based on different proportions of growth assets linked to covenant strength ratings). The analysis also modelled projections for the Scheme in different economic scenarios.

- There was broad agreement that in general, taking more rather than less investment risk improves the results even in stress scenarios and that over the medium term the investment strategies being compared by the VMDF have a limited impact on the effects of a significant market crash. However, the short-term risk position and the impact of further adverse scenarios given the current funding position remained a significant concern to the Trustee and it was agreed that the issue of short term risk was a priority area for the VMDF to consider at a future meeting.
- This meeting was attended by TPR who also provided a brief verbal update on their latest guidance for trustees and employers, their forthcoming Annual Funding Statement for DB Schemes, and their perspective on the valuation in the context of the current DB funding regime.
- Additionally, the VMDF also reviewed short written papers from the Trustee responding to the Aon and First Actuarial papers that had been presented at Meeting 6 on 8 April.

Meeting 8 (11 May 2020)

- The VMDF received a short update from the Trustee on the 2020 valuation and updates from UUK and UCU (including an update on the employer responses to the Trustee's Discussion Document, which had closed on Friday 1 May). The VMDF discussed presentations from USSIM in relation to how it uses the Fundamental Building Blocks (FBB) approach to forecast expected returns and the approach to constructing a Self-Sufficiency investment portfolio for the 2020 valuation.
- A further presentation was shared by a UCU representative on "Interest rate reversion and the price of prudence" in advance of the meeting but was discussed more fully at the subsequent meeting given time pressures.

Meeting 9 (22 June 2020)

- The VMDF received an update from the Trustee, following its 17 June Board meeting, in relation to the 2020 valuation and updates from UUK and UCU.
- The main focus of this meeting was (a) a presentation from one of the UCU representatives in relation to the "Price of prudence and interest rate reversion" which continued the discussion of the previous meeting and (b) a discussion of the Trustee's Scenario Analysis (based on 6 economic scenarios – with and without interest rate reversion; redistribution; secular stagnation; financial repression; and an initial equity markets crash) and consideration of the short, medium and long-term risk position under a fixed contribution funding strategy (including a consideration of best estimate returns and prudent returns and the impact of both a 'no derisking' approach compared to a dual discount rate approach with 55% growth assets as requested by VMDF representatives).

Meeting 10 (30 June 2020)

- The VMDF received presentations from the Scheme Actuary and TPR on their perspectives on integrated risk management frameworks and the subsequent presentations and discussions focused on risk management frameworks and potential metrics linked to Self-Sufficiency based measures, Technical Provisions based measures, and alternative metrics. The Trustee shared the view that other risk metrics do not appear to provide suitable replacements for self-sufficiency metrics but may be complementary. The VMDF had a further discussion on short-term risk and the levers either at the Trustee's disposal (contributions and/or investment strategy) or outside of the Trustee's control (contingent forms of support and the benefit structure) and the Trustee shared its view of the short-term risk and scenario analysis that 26% contributions do not appear adequate irrespective of the investment strategy assumed.

- The VMDF also began to discuss Aon's paper from Meeting 6 in relation to developing a risk management framework and the analysis the Trustee had carried out to illustrate the impact of the proposed framework on the path of future contributions and the funding position but agreed to extend the final meeting on the 13 July to allow for fuller discussion and further modelling.
- Following the meeting, TPR wrote to the VMDF to confirm the key points made by its representatives during their presentation. Although the letter was not created for the purpose of the consultation; nor to support any particular position in relation to the setting of Technical provisions, given the points covered it was felt useful to include a copy of the letter with this document (see the Annex to this Appendix).

Meeting 11 (13 July 2020)

- At its final (extended) meeting the VMDF considered (a) further analysis in relation to the scheme's short term risk position under a range of different economic scenarios, (b) the draft House of Lords amendment to the Pensions Bill in respect of open DB schemes as raised by UCU in the previous VMDF meeting (noting that if introduced through primary legislation this would apply to future valuations but not the 2020 valuation), (c) a proposal in relation to the creation of the 'Scenario Testing and Stochastic Analysis' to be published by the Trustee separately to the TP consultation document and (d) a substantive deck of analysis in relation to the impact on the path of contributions and the funding position of contribution smoothing (through demonstrating the impact of a historical application of the Aon proposal for developing a risk framework).
- The VMDF also considered a summary of the VMDF discussions by the Trustee and presentations and papers from the UCU and UUK representatives and their advisors summarising their own perspectives on the VMDF discussions, prior to onward submission to the Trustee Board.

Annex to Appendix A: TPR letter to the VMDF

The Pensions Regulator
Making workplace pensions work

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10 July 2020

Dear VMDF

Thank you for inviting us to join the meeting on 30 June 2020. I have provided a summary of our presentation together with responses to some of the questions which were raised.

Our presentation focused on three main areas:

1) Risk appetite
2) Discount rates
3) How TPR assesses valuation proposals

Risk appetite:

Assessing risk appetite is integral to an Integrated Risk Management approach. We expect the Trustee to consider the employer and employee appetite along with their own appetite when setting the technical provisions. The assessment of employer and employee appetite should reflect both how able and how willing they are to support the scheme. Considering risk appetite involves looking at both the short and long-term risk position of the scheme.

The current risk position for the scheme is already challenging. This is illustrated by the significant self-sufficiency deficit (or "distance to self-sufficiency") at the valuation date compared to USS's assessment of risk appetite for monitoring purposes. This is demonstrated by some of the analysis USS prepared and presented at the meeting including the scenario analysis.

Discount rates:

Setting discount rates for schemes with a 31 March 2020 valuation date is a challenge because of the impact of Covid-19. We might expect higher expected returns versus the yield on gilts compared to the recent past, however, there is a lot of uncertainty around the future economic situation and the long-term expected investment returns. This would suggest that the Trustee should take a more prudent approach than they might otherwise do if they followed a similar approach as for the 2018 valuation in terms of confidence intervals.

Assessing valuation proposals;

When we assess an actuarial valuation, we do not focus on the individual components but rather consider the overall proposal. Factors that we need to consider are the covenant strength and affordability, discount rates and level of technical provisions, recovery plan (RP) length and investment outperformance, and, to some degree, the approach to the calculation of the future service contribution rate We view covenant as tending to strong and greater covenant support is needed in order to improve that rating to strong. Covenant is about affordability, the ability to pay higher contributions and demonstrable commitment to do so, as well as long-term visibility.

For a scheme with a strong or tending to strong covenant, the trustees' starting point for the length of RP is usually the current length of RP, keeping the same end date. However, the trustees should also take into account affordability and the change in the scheme's deficit which could result in them agreeing to extend the RP. We would not usually expect a long RP for a strong or tending to strong covenant. In order, to become comfortable with a long RP for the scheme, we'd require a strong rationale and some contingent support that underpins the extended reliance on employers' affordability.

If there was a long RP combined with a significant element of investment outperformance, we consider it would remove much of the prudence in the technical provisions discount rate assumptions.

We see there is a risk of double counting credit for the covenant already taken in another part of the valuation proposal. For example, if the technical provisions were set at low TPs to reflect a strong covenant and then a long RP with significant element of investment outperformance was agreed to reflect that strong covenant again.

Questions

Q: If the employers' risk appetite is much higher than the Trustee's risk appetite, then why should the Trustee constrain it?

A: Under UK pensions legislation, the Trustee has the primary responsibility for protecting members' accrued benefits and ensuring they are paid. If it is for the Trustee to satisfy itself that the scheme's investment and funding strategy does not result in too much risk to members. If the assumptions used for this valuation are too optimistic, this creates a risk that there could be dramatic increase in required contributions at the next valuation in 3 years' time.

Q: TPR's approach is not doing anything to protect members. The interests of members are getting entirely lost in the approach.

A: We have a statutory objective to ensure that members' accrued benefits are protected and can be paid in full. This is the foundation on which we exercise our function of ensuring that schemes adopt a prudent and appropriate approach to funding. If USS is underfunded now there is an increased risk of members' accrued benefits not being paid and of unaffordable increases in contribution requirements at some point in the future.

Yours sincerely,

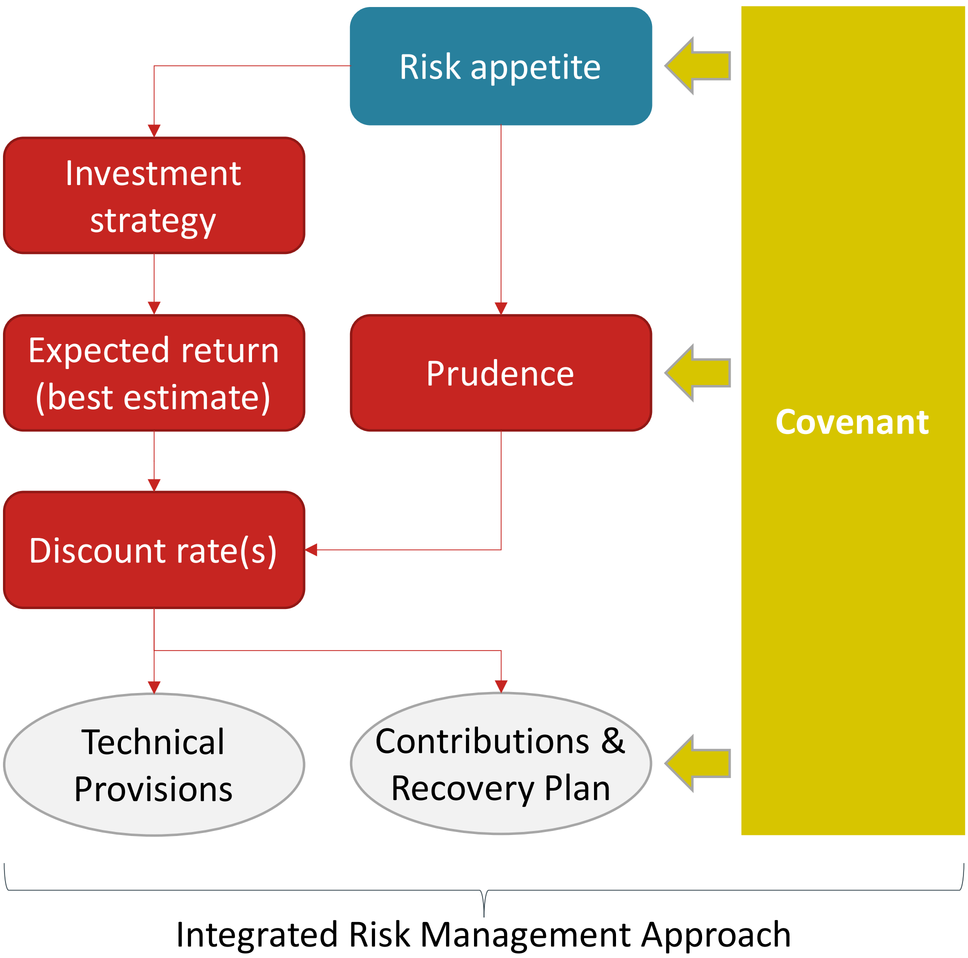
TPR

Page **2** of **2**

Appendix B: The relationship between dual discount rates, investment strategy, expected returns and prudence

This appendix presents more detail on the relationship between investment strategy, expected returns and prudence under a DDR approach to the valuation. (See Sections 4, 6 and 7 in Part 1.) This relationship is best understood in the context of the key valuation components shown in Figure B1 below.

Figure B1: The key components of the 2020 valuation



Investment strategy and dual discount rates

Each of the discount rates in the DDR approach reflects the expected return on an appropriate component investment strategy, adjusted downwards by a margin of prudence. So, the DDR approach involves two notional, component investment strategies that serve as guidelines for the overall investment strategy.

The DDR approach is a reflection (but not a driver) of how investors would typically invest differently for different levels of scheme maturity. All other things being equal, a fully mature (all pensioners) DB scheme should be in a low-risk strategy. A fully immature (all actives) open DB scheme can invest in higher-returning, higher-risk, growth assets, subject to a sufficiently strong employer covenant supporting the scheme. As above, there is no hypothecation of assets between pre- and post-retirement members, even in the DDR approach. That is, there is no assignment of specific assets to the different sets of benefits.

As a result:

- Both sets of benefits are supported by the overall investment strategy
- The component strategies for pre- and post-retirement are notional only. (They serve as guidelines for the overall strategy and how it should evolve as the Scheme matures.)
- The overall strategy is likely to be different from the simple sum of components, for example, in the way it allows for diversification (as covered in March's Discussion Document)

An important advantage of the DDR approach is that we can design the investment strategy to automatically adjust its risk position to match changes to the Scheme's maturity over time. As members retire, a portion of the high-return, high-risk growth strategy is notionally transitioned into the low-risk strategy.

It is important to note that the DDR investment strategy leads to a much smaller transition from growth assets to low-risk assets over the next 20 years than the current derisking approach based on the 2018 valuation, on the basis that the Scheme remains open.

We are considering an initial allocation to growth assets of 40% for a tending-to-strong covenant and 55% for a strong covenant. Based on our projections for the evolution of the Scheme's membership over the next 20 years, we expect the allocation to growth assets to fall only modestly (by less than 5%) over the long term. This is a much higher allocation to growth assets over the long term than would have been the case under the previous methodology using so-called 'Test 1' (as set out in Section 3).

How discount rates are set

The starting point for setting discount rates is the investment strategy. What matters is the overall investment strategy, as this is what needs to be supportable by the covenant and within the risk appetite of the Trustee and employers.

The expected return is the 'best estimate' forecasted return corresponding to the overall investment strategy. The discount rate is determined by making a downward adjustment to this expected return to reflect an appropriate level of prudence for the strategy overall.

We need to coordinate the decisions relating to the investment strategy and the level of prudence. We need to make sure that they, along with other sources of risk, collectively reflect the risk appetite of the employers and Trustee. See the discussion of the Risk Management Framework (Section 5 and Appendix D).

How investment strategy is set

The overall investment strategy is determined from the risk appetites of the employers and the Trustee. For the 2020 valuation we have considered investment strategies with initial allocations to growth assets ranging from 40% (the 'tending-to-strong' covenant case) to around 55% (the 'strong' covenant case). Currently our 'Reference Portfolio' holds approximately 64% growth assets.

The overall investment strategy is based on a combination of the two component strategies, but with adjustments to reflect risk-return efficiencies that arise when combining the components into an overall strategy for the Scheme as a whole.

The two component investment strategies are notional strategies with the following characteristics:

- **Post-retirement notional strategy**: A low-risk self-sufficiency-like strategy, which is associated with the benefits relating to pensioner* members post-retirement. The properties of this strategy are that it is:
    - similar, but not identical, to the Scheme's overall self-sufficiency strategy (described in Sections 6 and 7)
    - shorter in duration than the self-sufficiency strategy, because the associated benefits are shorter in duration. The duration of these benefits is around 14 years vs. around 24 for the Scheme overall
    - incorporates a small allocation (around 10%) to growth assets (consistent with the self-sufficiency portfolio)
    - the associated discount rate incorporates prudence set at the level determined by the Board on the advice of the Scheme Actuary

- **Pre-retirement notional strategy**: A higher-risk, return-seeking, or growth investment strategy, which is associated with the benefits of active and deferred members pre-retirement. The properties of this strategy are that it is:
    - a higher-return, higher-risk, growth strategy, with an allocation to equities and property of up to 90%, dependent on the overall level of investment risk. This reflects the employers' and Trustee's risk appetites in relation to the overall investment strategy
    - longer in duration than the self-sufficiency strategy, because the associated benefits are longer in duration. The duration of these benefits is around 29 years vs. around 24 for the Scheme overall
    - the associated discount rate incorporates prudence set at the level determined by the Board on the advice of the Scheme Actuary

*(*Note: 'Pensioners' includes both active and deferred members who are assumed to retire immediately because they are over normal pension age.)*

Appendix C: Covenant assessment work

The importance of covenant strength

A strong covenant allows us to take a longer-term view on Scheme funding issues. It informs decisions we take on:

- risk appetite
- prudence
- contributions
- the Recovery Plan

The more robust the covenant, the more risk we can take in our funding assumptions and investment strategy. If there were no support at all from employers, then in order to pay all the benefits that members had accrued, we would need to hold enough assets to make sure we would be able to pay those benefits. However, the amounts to be paid out in the future are not entirely predictable. They depend on external factors such as the rate of inflation. One way to make sure that payments will be met would be to hold a very high value of very secure assets. A more efficient way would be to hold assets which vary with the same factors as those which influence future payments. The lowest cost portfolio of assets which can be constructed to be highly likely to meet accrued member benefits is the basis for our 'self-sufficiency' portfolio.

We do not currently run the Scheme to have sufficient funding to purchase the self-sufficiency portfolio. At 31 March 2020, the cost of constructing the self-sufficiency portfolio was calculated at £101.5bn. On the same date, Scheme assets were £66.5bn. The difference of £35bn is a measure of the extent to which we rely on the covenant.

It is expected that by taking more risk, on average, we can achieve higher returns. And, in the longer term, we would expect to need lower contributions and to reduce the gap between the Scheme's assets and self-sufficiency liabilities to a manageable level. But we must be confident that if things don't go according to plan, the employers can and will contribute as required to make sure that all member benefits currently accrued will continue to be met as they fall due, far into the future.

The shortfall of £35bn at 31 March 2020 is equivalent to a contribution of 9.3% of USS payroll over the next 30 years, or 15.6% over 20 years. This is close to the limit of our assessment of affordable risk capacity for a strong covenant, and well beyond it for a tending-to-strong covenant.

Process and approach

We began the 2020 valuation soon after the conclusion of the 2018 valuation. Much of the insight gained from that process remains valid. EY Parthenon and PwC presented their advice on the sector for the 2018 valuation to the Board as recently as July 2019.

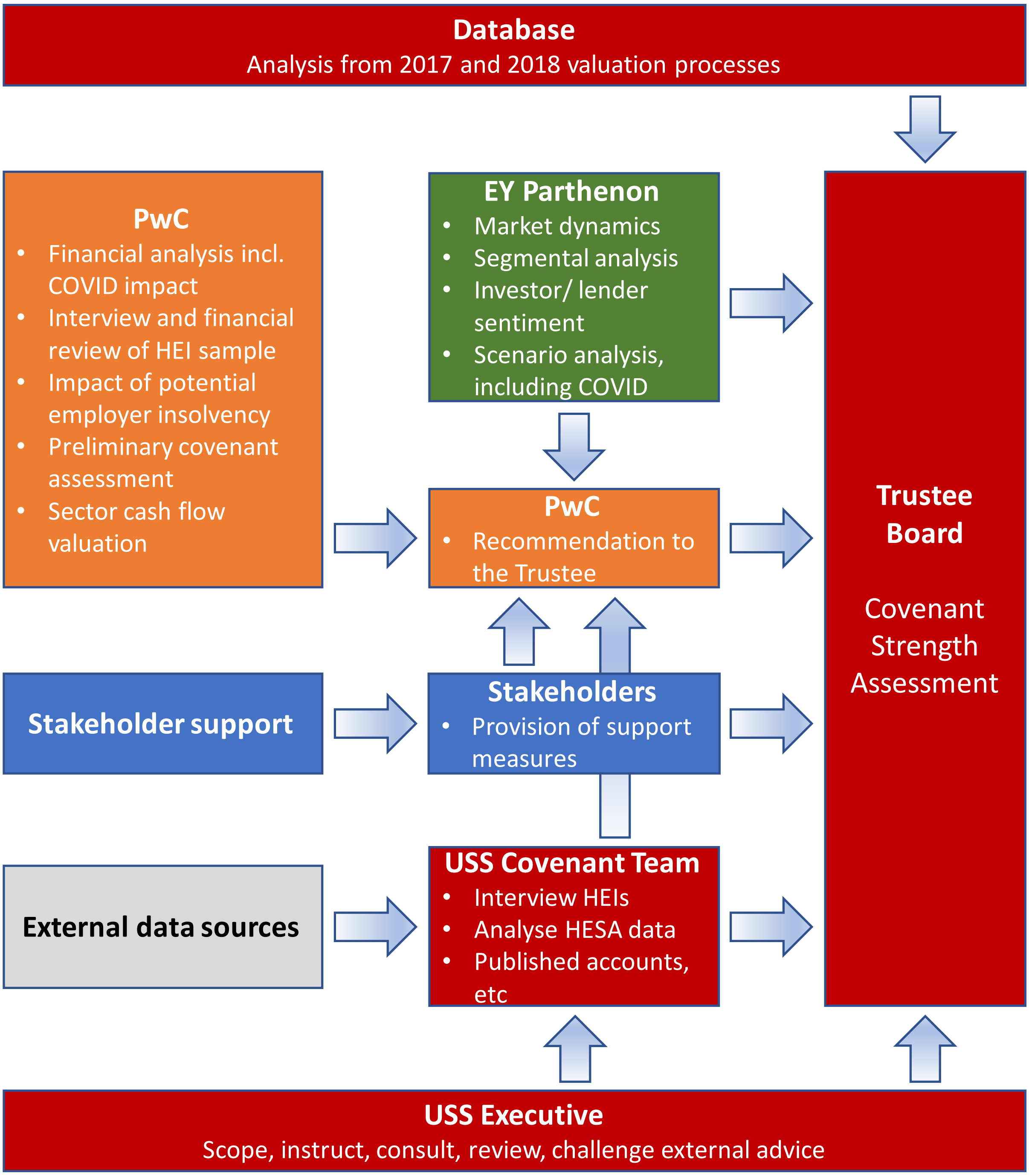
We engaged EY Parthenon to build on their sector analysis, to refresh and update it to review the global positioning of the UK's HE sector, investor sentiment and sector resilience. For the 2020 valuation, we asked EY Parthenon to undertake a second phase of work to consider scenarios for the long-term impact of COVID-19.

PwC has been our covenant advisor since 2016. They have reviewed and updated their assessment of earlier this year, as it was before the impact of the pandemic began to become apparent. The PwC team has also continued to help develop covenant support measures and provide advice. We also asked them to advise us on, and create, a valuation model for the sector, to estimate an aggregate value of risk capacity. We published their initial conclusions in the Discussion Document.

PwC has also worked more closely with some individual institutions. They have examined the dynamics of those institutions with higher debt levels, potentially more constrained affordability and/or greater exposure to international students. On this last point, they sought to understand at a detailed level the ability of institutions to cope with the potential decline in enrolments from international students.

Along with our advisors, we have made extensive use of publicly available data, including that published by HESA (as set out in Figure C1 below). This information helped us analyse in detail the institutions that provide it, reducing the amount of time we need to spend directly with institutions. We're very grateful to those institutions that have supported us to date and to those we hope to contact in future, for the richness of information and insight they have shared.

Figure C1: an overview of the covenant analysis process



Role of external advisors

EY Parthenon – advice on market dynamics

EY Parthenon has extensive knowledge and expertise in the education sector. For that reason, we chose them to complete a detailed review of the HE sector for the 2017 valuation. We have retained them for the 2018 and 2020 valuations to update and enhance their advice. Specifically for this valuation, we asked for advice on:

- the resilience of the sector and its ability to generate surplus through operational flexibility
- investor sentiment
- underlying market trends and scenario analysis – expanded in scope during April to consider in more depth a range of pandemic scenarios

As part of their analysis, EY Parthenon has considered a sub-division of the sector into the broad groupings shown in Table C1 below.

We have continued to use this segmentation as a tool for analysing the sector. All institutions have their own characteristics and detailed analysis is conducted at institutional level. However, these segments are useful at a high-level, for example in considering assumptions for long-term growth.

Table C1: Segmentation of the HE sector

EY-Parthenon segment	Segment definition
Broad-based Research (n=25)	Russell Group + prestigious UK universities with research focus
Specialist (n=29)	Niche institutions, for example arts universities and research institutes
Scotland Research (n=4)	Scottish universities with research focus
"Cusp" University (n=27)	Universities between research- and teaching-focussed; above 100 in REF ranking AND between 20-55% vocational enrolments
Teaching University (n=60)	Universities with >50% vocational enrolments OR >50% of income from tuition
Teaching University – International (n=9)	Universities with >50% vocational enrolments OR >50% of income from tuition, AND >15% international enrolments
Scotland Teaching (n=14)	Scottish universities with teaching focus

PwC – covenant advisor

PwC is our covenant advisor. They carry out extensive analysis of publicly available information, interview selected institutions and review private information provided by these institutions such as business plans. They draw on their knowledge of the sector and the work undertaken by EY Parthenon. They review and evaluate individual institutions and the employer group in aggregate.

Covenant methodology

We recognise that the complexities of the sector are more nuanced than can be captured in one of four covenant ratings, from strong to weak. But the rating and the analysis which supports it remain important tools to inform risk appetite.

In assessing covenant strength with PwC, we look at our sponsoring employers, individually and collectively, in terms of:

- the outlook for the sector
- employers' ability to grow, generate surpluses and cash
- the affordability of future contributions
- the strength of employers' balance sheets
- the Scheme's access to value in employers and competing creditors
- what we can learn from corporate valuation techniques

Overall seven different covenant metrics are used to give a rating to the strength of the covenant. Six were used for the 2018 valuation. Cash flow analysis has been introduced for the 2020 valuation.

Conclusions from the 2018 valuation

Based on analysis completed by PwC for the 2018 valuation, the overall covenant rating for the Scheme was rated strong – on negative watch. The strong rating was informed by PwC's assessment of six covenant areas, with the conclusion taking these factors in the round. Of these six areas, four were rated strong and two were rated tending-to-strong.

The 'negative watch' recognised:

a) the risk of increased debt levels (the Balance Sheet and Financing metric), and
b) the possibility of employers that provide material support to the Scheme leaving in the future (the Group Structure metric)

Measures to mitigate these risks were identified in the 2018 valuation. These included debt-monitoring and *pari passu* arrangements, and a long-term rule change to give the Trustee discretion over employers exiting the Scheme. PwC advised us that if any of these is not implemented, the covenant should no longer be considered 'strong'.

Updated conclusions on covenant for the 2020 valuation

From the findings produced in this work, we have drawn the following conclusions:

- The UK HE system is underpinned by structural and positive persistent fundamentals, which will support continued growth of the sector.
- UK higher education has become increasingly competitive and commercially focused.
- Universities have sought to improve their value proposition in this 'demand-driven' market through capital expenditure and improved student experience.
- Investors and the debt market view universities as a safe haven with strong fundamentals, supporting the sector's overall resilience.
- Universities do not seek to maximise 'profit' but rather are focused on managing their spend against income. They have considerable financial flexibility to manage a change in income. In particular, they have a number of ways they could reduce costs in the sector without impacting overall growth.
- USS employer segments are significantly more protected than the overall market, given their focus on Broad-Based Research Universities and more highly ranked 'Cusp' institutions (see Table C1 for segment definitions)
- Moderate and severe COVID-19 downsides demonstrate significant impact on revenue in the near term (see Figure C2 below). This is consistent with sector expectations, although growth assumptions remain resilient in the longer term. In the severe scenario, income dips by £5bn in the next financial year. It recovers to today's levels over a five-year period

As it became clear that the impact of the COVID-19 pandemic could be significant, we asked EY Parthenon to revisit their horizon analysis – and we have drawn the following conclusions from their work. In the short to medium term, there is likely to be a significant impact on international students in particular, but also on commercial activities. There might also be some realignment in the research economy. However, EY Parthenon continue to believe that long-term global demand will be resilient and there will be continued growth over the longer term. They helped us consider a range of possible scenarios summarised in the long-term revenue projections shown in Figure C2.

Figure C2: A range of possible long-term revenue projections (COVID-19 scenarios only)

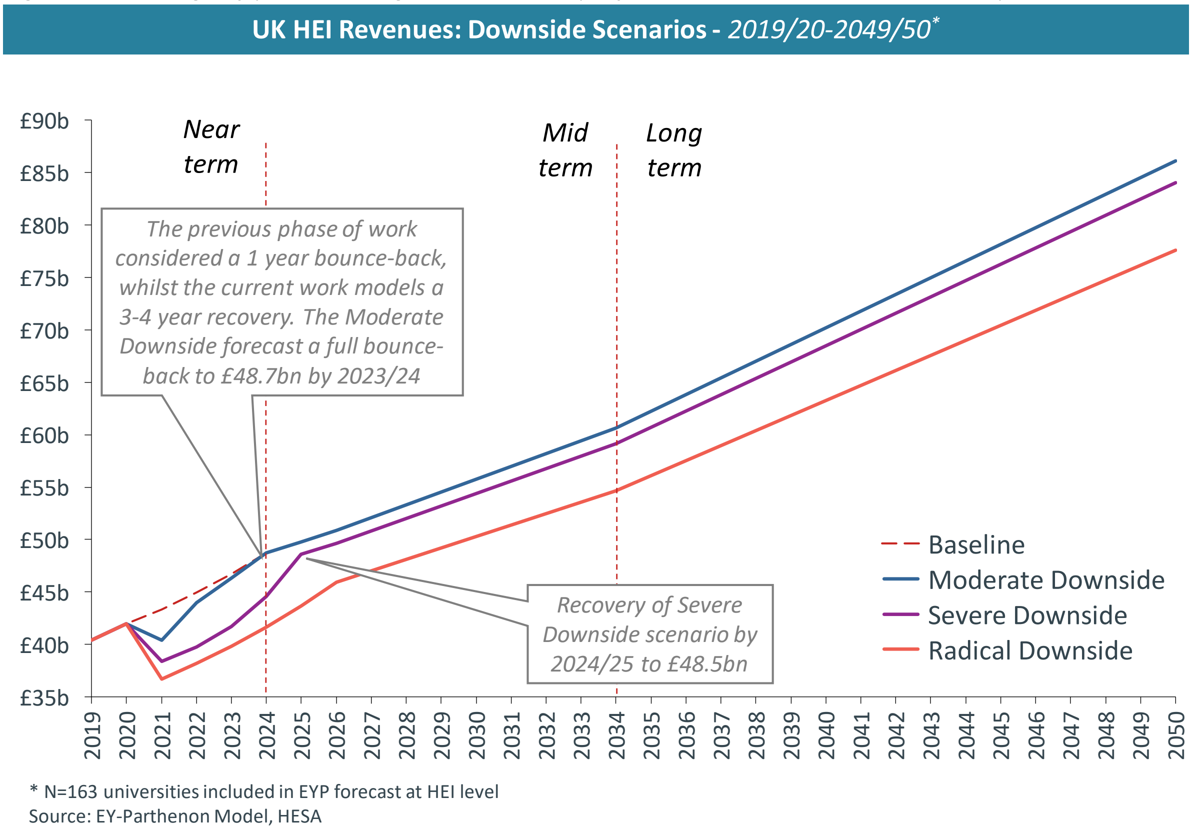


Figure C2 represents the long-term expectation of the major categories of income and some of the possible scenarios for the evolution of the effects of the pandemic. The dotted line represents a long-term expectation before the impact of COVID-19, reflecting long-term demographic trends as the main driver of increasing enrolments and inflationary growth in other income lines.

In our analysis we have considered a number of upside and downside scenarios. The least certain at this point in time is the projected impact of the pandemic. Whilst the analysis of possible scenarios has been done at a segment level, we recognise that the outlook for individual institutions will reflect their individual circumstances and may be very different. In particular, the near-term impact of COVID-19 is likely to be felt most acutely amongst institutions which have had higher proportions of international students and perhaps to a lesser extent in the Teaching, Scottish Teaching and Cusp segments.

A focus of our further work in the autumn will be understanding the impact of the pandemic and its consequences in more detail, when there is more certainty on student arrivals in the new academic year, as well as other emerging influences relating to the global and domestic political and economic environment.

We have in the past assumed that USS member payroll grows in line with a blend of long-run global and UK growth in GDP. In previous valuations, this has been set at CPI+2%. There is a range of possible outcomes, and we recognise there might be near-term actions in the sector to respond to the pandemic, which could include reductions in staff levels that may lower growth in the short term. We would welcome your views on this (see Section 10).

In preparing their advice to us for this consultation, some of PwC's observations included:

- PwC has historically rated the covenant as strong. This reflects the financial strength and strong global position of the UK's university sector, its ability to adapt to challenges, and the joint and several, last-man-standing nature of the Scheme, which means USS can rely on the full support of the sector.
- In reviewing the FY19 financial data of 122 HESA institutions participating in the Scheme (representing more than 95% of USS's liabilities in 2018), there had been no material changes between FY18 and FY19 that would suggest a covenant downgrade.
- The covenant metrics do show a weaker position driven by decline in the Scheme's funding level as at March 2020 and an increase in pension contributions to reflect the 2018 Schedule of Contributions.
- An illustration of the impact of COVID-19 was undertaken by looking at a 50% reduction in international student income over 1, 2 and 3 years as a proxy for the various revenue effects. This indicates that 120 of the 122 HESA institutions have resources available to mitigate such a decline over one year, though this will probably be challenging for some institutions. Over 2 or 3 years this becomes more challenging and cost savings will become increasingly important to mitigate the impact in a sustainable way. This analysis will be revisited in the autumn when there is more information about the impact of the pandemic.
- The covenant will remain on negative watch, while discussions continue on the covenant support measures mentioned above and pending the covenant review due in the autumn

PwC has advised on their pre-pandemic assessment of the six metrics used in the 2018 valuation. They also this year included an additional metric using cash-flow projections. The results of these assessments, as at 28 February 2020, are summarised on the dashboard shown in Figure C3.

Figure C3: Covenant dashboard as at February 2020

Covenant Dashboard – 2020 Valuation			
Covenant metric		**Illustrative sub-rating**	**Overall rating**
Group structure	Nature of the Scheme and nature of the higher education sector	S	Strong
Balance sheet & financing	Assets and liabilities of the sector	S	
EBITDA (current and forecast)	Strength of EBITDA and coverage of TP deficit	S	
Cash flows (current and forecast)	Cash flow from operations compared to contributions and other commitments	TTS	Strong but on negative watch due to the risks of increased debt levels and strong employers exiting the Scheme.
Markets	Positioning of employers in the UK and global education market	S	
Affordability	Affordability of higher contributions taking account of flexibility for cost reduction	TTS	
Valuation approach	Cash flow-based valuation compared to Scheme obligations	TTS	

Note: *"S" denotes "strong" and "TTS" denotes "tending-to-strong". Source: data from PwC.*

PwC re-confirmed the covenant rating of strong but on negative watch in May 2020. This rating is subject to the outcome of the debt monitoring framework and *pari passu* security consultations, the Scheme rule change on employer exits and an updated review of the covenant in the autumn. PwC concluded that the covenant should be downgraded to tending-to-strong if a long-term rule change on employer exits is not put in place ahead of the moratorium expiring when the 2020 valuation is complete. PwC also concluded that the covenant should be downgraded to tending-to-strong if employers do not agree to debt monitoring and *pari passu* arrangements. We have therefore decided to consult on the basis that the covenant would be **tending-to-strong**.

Covenant horizon

Where the Scheme takes investment risk, there is the possibility that shortfalls arise. We might need additional contributions to maintain an acceptable probability of paying member benefits in the future. When setting the covenant horizon, we are making a judgement that after a long period of time there is insufficient certainty about the employers' financial ability and commitment.

Section 5 summarises our view that the covenant horizon is up to 20 years for this consultation, but with the covenant support measures in place could be up to 30 years.

Estimating available risk capacity

When we consider the maximum level of risk which the Scheme should take, it's important that we can satisfy ourselves that the sector will in the future be able to support that level of risk. We must therefore be confident that the sector has sufficient capacity to cope with a full range of other risks which could affect its continued ability to operate.

Quantifying available risk capacity is not a precise science and depends on a number of external factors. The approach and assumptions we used to calculate available risk capacity have been summarised for publication on our website. This calculation was prepared before the extent of the impact of the pandemic was understood. It suggested at that time an available risk capacity of:

- **£54bn** over a 20-year horizon
- **£65bn** over a 30-year horizon

If our analysis in the autumn demonstrates a greater ability to flex costs than the assumption in our free cash flow model, this would, all other assumptions unchanged, suggest a higher capacity to cope with financial stress after the effects of the pandemic have subsided. The question we will look to answer is the extent to which that could exceed the revenue shock the sector is now facing.

Also, in the autumn, there will be an opportunity to determine the impact on covenant strength of implementation of the covenant support measures required at the last valuation, if these have been put in place. We can also consider the sector's ability to support the level of deficit in the Scheme, as well as the illustrated contributions and the proposed level of risk.

Affordable risk capacity

Section 5 summarises the figures for affordable risk capacity. Table C2 below illustrates other possible calibrations. We would welcome your feedback on these (see Section 10).

Table C2 Other calibrations of affordable risk capacity

Net Present Value (£bn)						
Time period	**20 years**	**30 years**	20 years	30 years	20 years	30 years
Salary growth rate	**CPI+2%**	**CPI+2%**	CPI+1%	CPI+1%	CPI+0%	CPI+0%
5% of payroll	11.2	18.8	10.1	16.2	9.2	14.0
10% of payroll	**22.4**	**37.7**	20.3	32.4	18.5	27.9
15% of payroll	33.6	56.5	30.4	48.5	27.7	41.9

Figures in bold reflect the current, central assumptions used for the purposes of this consultation.

Covenant support measures

During the 2018 valuation, two key threats to covenant strength were identified which required mitigating measures. These were the risk of increasing employer debt and the risk of strong employers leaving the Scheme.

Covenant support measures have progressed as follows:

Measures to address the risk of increasing employer debt

A framework has been designed which comprises two key elements:

a) to allow us to monitor the levels of debt in the sector
b) to mitigate the risk that third-party lenders are granted security which takes priority over employers' commitments to the Scheme (referred to as *pari passu* arrangements)

This framework has been developed in collaboration with UUK and issued by UUK for consultation with employers and we await their formal response. A range of informal responses have been received so far and, in particular, some institutions have expressed concern over the provisions to provide *pari passu* security to the Scheme on new debt.

The intention of the proposed framework is not to put undue stress on institutions which are already facing difficulties and it will be implemented proportionately, with the sole objective of protecting the Scheme's covenant. The Scheme is a very substantial creditor of the HE sector. It cannot accept being subordinated to other creditors who are given security. This is in the interests of members and of other employers.

Long-term rule change to prevent strong employers leaving the Scheme

The unique position of the sector and the Scheme potentially allows us to consider the covenant to be resilient for a long time. This is how we can contemplate a covenant horizon longer than might generally be the case for other schemes.

However, when Trinity College Cambridge decided to leave, an employer was lost which had financial capacity far in excess of the contribution it made to the Scheme on exit. To mitigate the risk of this happening again, a moratorium on any employer leaving the Scheme without our written consent has been in place. This will expire when the 2020 valuation is signed off.

If employers want the Scheme to retain a covenant rating of strong, a long-term rule change needs to be made that gives confidence over a covenant horizon of at least 30 years.

We reiterated this in the Discussion Document and in a communication to employers on 17 April 2020. This was accompanied by a webinar on 28 April, supported by PwC.

The key features of such a rule change would need to include:

- securing the commitment of any employer which we reasonably consider to be important to the ongoing support of the covenant
- enduring for a covenant horizon of at least 30 years and with the presumption of indefinite renewal
- provisions for employers to leave where appropriate

Whilst UUK has recently established a working group to further consider this issue, we have had no firm commitment that this will definitely be progressed or in what form.

Additional contingent support

In the Discussion Document, we asked employers whether they would be willing to work jointly on additional contingent measures to support the covenant. These measures would only be called upon if needed and would potentially reduce the regular contributions required.

Around half of employers who responded (49%) did not support this proposal and just 24% strongly or conditionally supported considering it. UUK stated that employers were generally sceptical of how such approaches could work collectively alongside the Scheme's cost-sharing rule.

Reflecting this, we have not committed any Scheme resources to further exploring the idea. But we remain open to revisiting the arrangements covered in the Discussion Document and in the 2018 valuation, if employers express an interest in light of the potential Technical Provisions outcomes illustrated in this document.

Reaching a final assessment

It is difficult at this time to come to a final view on the employers' covenant, depending as it does on the support measures discussed above and the impact of factors such as COVID-19, Brexit and the US-China trade war.

An additional review will be conducted in the autumn that will further assess if any aspects of the covenant have changed since the last valuation. The review will build on the comprehensive assessments carried out for both the 2017 and 2018 valuations, and its scope will be broad. It will cover the outlook for the HE sector, the affordability of contributions, and the material and newly emerging risks facing the sector, including risks related to geopolitics, technological change and COVID-19.

The pandemic is unlikely to have significant long-term consequences for the sector as a whole, but its impact in the short-to-medium term may be significant for some institutions. It may also serve to accelerate changes that were already underway in terms of remote learning and the use of technology more generally. As a result, it will form a key part of the autumn review.

We will consider the results of this work alongside whether the required covenant support measures have been put in place. We will then, taking advice from PwC, make our final assessment of covenant strength. The status of the proposed debt monitoring and *pari passu* arrangements and the long-term rule change will each influence the strength of the covenant and the covenant horizon.

Appendix D: Integrated Risk Management Framework

Introduction

As covered in Section 6, having an Integrated Risk Management Framework (RMF) is a regulatory requirement. Its purpose is to ensure that the reliance on the covenant is:

- within employers' aggregate risk capacity
- within the risk appetite of the Trustee and the employers

The RMF is aligned with the overall structure of the valuation shown in Appendix B. It is founded on and informed by expert professional advice from different specialist sources as shown in the diagram below. We bring together and integrate this advice into a coherent framework for addressing the management of risk in the context of the covenant of employers to support the Scheme.

The three different elements of professional advice are:

- *Covenant advice provided by PwC, supplemented by EY Parthenon analysis.* PwC are experts in pension covenants and our primary covenant advisor. They provide advice in relation to different aspects of the employers' covenant, including financial strength, covenant horizon, risk capacity and contribution affordability. This is supplemented by specialist advice on the HE sector provided by EY Parthenon, who are experts in this field
- *Investment advice provided by USSIM and Mercer Investment Consulting.* USS Investment Management (USSIM) is the primary investment advisor to the Trustee's Investment Committee (and the Board). In this role USSIM provides advice on investment strategy and implementation, as well as specialised stochastic modelling. Mercer is a secondary investment advisor that provides independent review and challenge of USSIM. The Investment Committee has delegated authority from the Board to oversee the Scheme's investment activities
- *Actuarial advice provided by the Scheme Actuary and his team at LCP.* The Scheme Actuary has a special formal role in the valuation providing actuarial advice and signing off the outcome of the valuation. More specifically, the Scheme Actuary provides advice on input assumptions, discount rates, Technical Provisions, contributions, Recovery Plan, valuation methodology and elements of the RMF

Figure D1. The proposed RMF draws on expert professional advice

Risk and the valuation methodology principles

Of our three guiding principles for the valuation methodology, two of them relate to risk management. (See Section 4 and page 10 of the Discussion Document.)

The first methodology principle states that 'the level of risk must be acceptable'. This means that the total level of risk coming from all aspects of the valuation, investment strategy, financial markets, inflation, life expectancy and other demographic risks, must be acceptable to us. This means they must fall within our overall risk appetite, and within the risk capacity and risk appetite of the covenant provided by employers. This provides a constraint on what are acceptable funding strategies (contribution and investment strategies) in this valuation.

The second methodology principle states that 'long-term and short-term perspectives are important'. This means that we have to be aware of both short-term risks and long-term risks that may threaten the Scheme's ability to deliver on its objectives. In particular, it is not enough to focus on the long term, we must be awake to the short-term risks that may threaten our long-term goals. Similarly, we cannot solely focus on the current situation without considering what might change over the long term.

Self-sufficiency as our benchmark for risk

If there were no covenant, in order to provide benefit security, the Scheme would need to be funded to at least a self-sufficiency level. The deficit on a self-sufficiency basis is therefore a key metric as it represents the reliance we are placing on the employer covenant.

Note that we do not plan to pursue a self-sufficiency funding strategy and we are not proposing one as part of this consultation. While the potential outcomes we have illustrated in this document are unlikely to be affordable or sustainable, this could yet be mitigated by additional employer commitments or other measures agreed by UUK and UCU. In circumstances where we were out of other, less costly options to keep members' benefits secure, we may be forced to make that move, but only after having fully consulted with you. In such extreme circumstances, we may need to call on the affordable risk capacity of the covenant to support the Scheme.

Managing risk relative to self-sufficiency

The 2020 valuation proposes no longer using so-called 'Test 1' as the key way of controlling long-term risk. Test 1 was originally designed to be an ex-post check that the funding risk was within the employers' risk appetite. However, largely because of the need to implement the stated risk appetite of employers in 20 years' time within the methodology used at that time, it became a binding constraint. As such it directly drove the discount rate and the derisking strategy. It enforced the long-term distance to self-sufficiency (that is, the difference between self-sufficiency and Technical Provisions liabilities) to be £10bn (in real terms) in 20 years' time. This directly determined the discount rate in 20 years' time, which determined the investment strategy at that point, which in turn determined the derisking strategy between now and then.

By contrast the proposed approach to the 2020 valuation does not formulaically drive either the discount rate or the derisking strategy. Instead we evaluated key *risk metrics* and compared them against *affordable* risk capacity and *available* risk capacity to test the overall robustness of the funding strategy. Clearly the discount rate, investment strategy and RMF are interconnected, but our valuation approach seeks overall consistency, not rigid mechanical linkages.

At this stage our risk metrics have been formulated solely for the purpose of informing decisions on the Technical Provisions.

In due course we will develop an ongoing monitoring and action framework addressing the actions we might take if the risk metrics breach key thresholds (related to *affordable* risk capacity or *available* risk capacity). In such a case, the Board will consider the appropriate response based on:

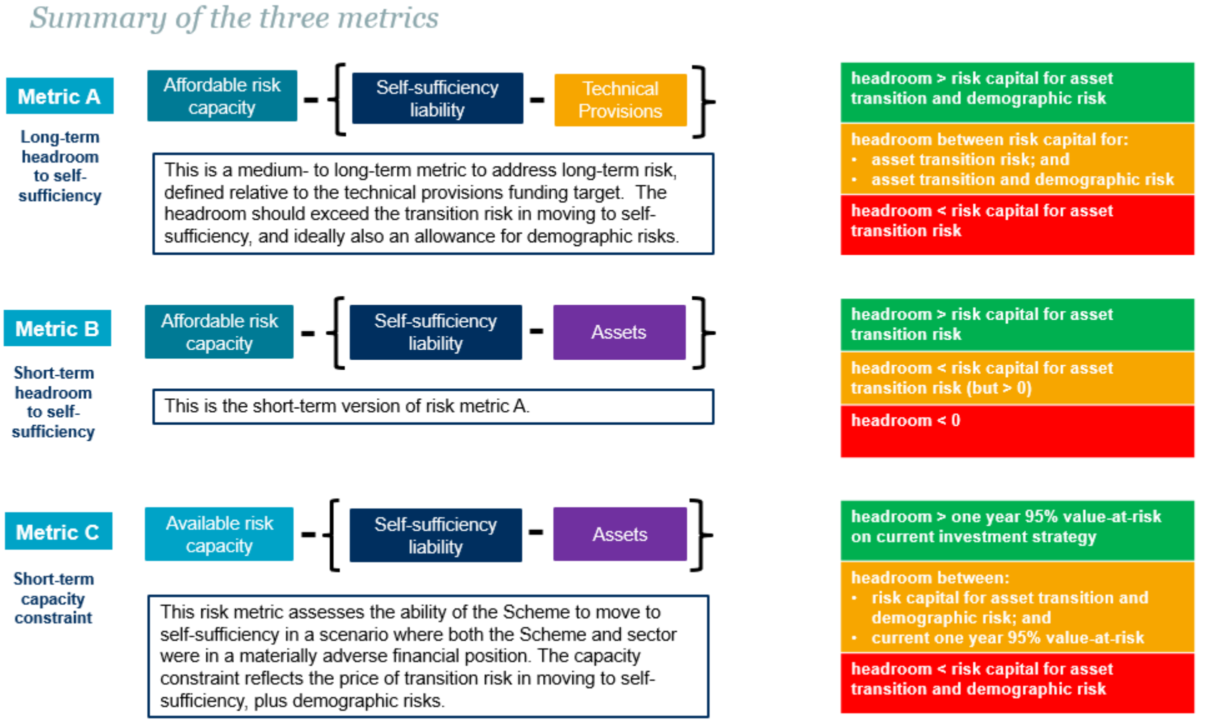
- Which metric, or combination of metrics, have exceeded the threshold
- The quantum of the excess
- The reason for the excess
- The prevailing situation in the financial markets, global economy and HE sector

We will engage with stakeholders and employers on this monitoring and action framework, as appropriate, later in the valuation process.

Risk metrics

See Figure D2 below for a summary of the metrics outlined in Section 6 and their RAG thresholds.

Figure D2: Definitions of the three risk metrics and their thresholds



The parameters we have used in the RMF will be reviewed in light of UUK's response to this consultation and further advice on the covenant in the autumn. The final outcome will also be influenced by any additional support employers are able and willing to provide to the Scheme.

In the metrics, the affordable risk capacity represents the value of contributions we believe employers could afford over a period of 20-30 years. The derivations of the affordable risk capacity and available risk capacity proposed in this consultation are provided in Appendix C.

Given we want to be able to move to a self-sufficiency approach if it became necessary, it makes sense for us to monitor the difference between our assets and the cost of achieving self-sufficiency. We also need to plan to be close enough such that we could move to it if necessary, through contributions that are affordable to the employers. This is the background for Metric A and Metric B, and these influence the outcome of the actuarial valuation.

We have also included within our RMF a more extreme test which considers what might happen in an extreme downside scenario. Here we consider the funds we might be able to realise from the employers in a more extreme case (the *available* risk capacity), and our ability to move to a self-sufficiency approach in that instance. This is reflected in Metric C.

Metric A – long-term headroom to self-sufficiency

Metric A relates to the position we aim for in the medium to long term. We wish to set a funding plan such that when the Scheme is fully funded on its Technical Provisions assumptions, it is sufficiently close to self-sufficiency that the affordable deficit recovery contributions from the sector could bridge the gap to self-sufficiency if needed. The metric is defined as the extent to which the affordable risk capacity exceeds the projected self-sufficiency deficit when the Scheme is fully funded on the Technical Provisions assumptions:

Affordable risk capacity – { Self-sufficiency liability – Technical Provisions }

The ‘headroom’ (if any) within this metric is then compared against (i) the risk of deterioration in the funding level during the process of de-risking the investments as part of moving to a self-sufficiency strategy (“asset transition risk”); and (ii) an allowance for demographic risk (risks relating to the membership such as life expectancies). If the headroom is not high enough, it shows the Technical Provisions are too weak a target for adequately funding the Scheme.

We plan to consider this metric whenever an actuarial valuation is being carried out and the Technical Provisions reviewed and expect to use it as part of our ongoing monitoring.

Our RAG threshold rating for Metric A is as follows:

Metric A Level of headroom	RAG	Rationale
Headroom < asset transition risk	RED	Affordable risk capacity not enough to bridge gap to self-sufficiency even when fully funded on Technical Provisions (including allowance for asset transition risk). Technical Provisions to be set at a higher level
Headroom between: • asset transition risk, and • asset transition and demographic risk	AMBER	Affordable risk capacity just sufficient, but with little to spare. If demographic assumptions move in adverse direction affordable risk capacity may be insufficient
Headroom > asset transition and demographic risk	GREEN	Affordable risk capacity sufficient to reach self-sufficiency once fully funded on Technical Provisions, with a margin for demographic risk as well as asset transition risk

At this stage we have based our analysis on the following levels of asset transition and demographic risks (the asset transition risk varies depending on the assumed investment strategy).

We have assumed when including demographic risks that the demographic and asset risks are not correlated, as illustrated below:

Investment strategy	Allowance for asset transition risk (£bn)	Allowance for asset transition and demographic risks (£bn)
55% growth portfolio	6	8
40% growth portfolio	5	7

We plan to revisit these figures, along with any updates to our assessment of the figures relating to the employer covenant (see below), following this consultation and before reaching any final conclusions in relation to the actuarial valuation and the Technical Provisions.

Metric B - short-term headroom to self-sufficiency

Metric B is the corresponding short-term version of Metric A - it compares the self-sufficiency deficit with the affordable risk capacity and is defined as:

Affordable risk capacity - { Self-sufficiency liability - Assets }

Our RAG threshold rating for Metric B is as follows:

Metric B Level of headroom	RAG	Rationale
Headroom < 0	RED	Affordable risk capacity is not sufficient to bridge the current gap to self-sufficiency. Higher contributions likely required to move to Amber within a meaningful timeframe
0 < Headroom < asset transition risk	AMBER	Affordable risk capacity just sufficient, but with little spare and not necessarily sufficient to allow for asset transition risk
Headroom > asset transition risk	GREEN	Affordable risk capacity sufficient to bridge gap to self-sufficiency, with allowance for asset transition risk

A red rating for this metric at the time of a valuation is likely to prompt an increase in contributions and, potentially, a relatively short Recovery Plan. It indicates that a move to self-sufficiency would require contributions that would cause employers some level of financial strain. We would want to return to a position where such a move would be affordable.

A green rating means the affordable risk capacity is also sufficient to cover the asset transition risk in Metric A, to give good confidence that we could move to self-sufficiency in the short term if that were necessary. We felt there is less of a need to cover the risk of future changes in demographic assumptions within this metric because it is measuring the current position rather than the longer-term strategic aim covered in Metric A.

An amber rating means that there are sufficient funds, allowing for affordable risk capacity, to bridge the gap to self-sufficiency, but not necessarily cover the full asset transition risk (the allowance for which is the same as that used in Metric A).

Metric C - short-term capacity constraint

In an extreme downside scenario, we want to be in a position to move to a self-sufficiency approach to protect accrued benefits, should we decide it is necessary to do so. This is consistent with our primary objective and legal duty.

In such a situation:

- the financial support expected to be available at that time would differ from that considered in Metrics A and B. We anticipate access to a different degree of support which is potentially greater than the affordable risk capacity
- we need to have scope to move the investments to a self-sufficiency strategy with a high level of confidence, and some allowance for funding volatility in the meantime

The aim is to give us time to move to a self-sufficiency investment strategy in practice with the expectation that the funds we can recover from the sector can still improve the financial position of the Scheme up to the self-sufficiency level.

We define the metric as the extent to which the available risk capacity exceeds the self-sufficiency deficit, that is:

Available risk capacity - { Self-sufficiency liability - Assets }

Our RAG threshold rating for Metric C is as follows:

Metric C Level of headroom	RAG	Rationale
Headroom < asset transition risk and demographic risks	RED	Available risk capacity not sufficient to bridge the current gap to self-sufficiency, with an allowance for downside risk. Sector capacity close to being exceeded – we would review our investment strategy and as part of that consider moving to a self-sufficiency approach and de-risking investments
Headroom between: • asset transition and demographic risks, and • 'value-at-risk'	AMBER	Available risk capacity under significant pressure. We would wish to consider potential actions if this metric were to change to red. If no mitigations were available, we would review our funding and investment strategy, and consider moving to a self-sufficiency approach and de-risking investments
Headroom > 'value-at-risk'	GREEN	Available risk capacity sufficient to reach self-sufficiency, with greater allowance for asset transition risk

We believe the headroom on this metric should be at least the asset transition and demographic risk allowances in Metric A. If the headroom is not at least this level, this metric would be red. Whilst we have not at this stage agreed the actions we would take in such a situation, we would need to urgently consider (if we had not already done so when the metric was amber) the option of de-risking in practice to a self-sufficiency strategy. This is because we would be close to a position where the total funds we could access from the sector are insufficient to support the risk we are running in the Scheme. If employers are able to increase our assessment of the available risk capacity, for example through additional financial support earmarked for the Scheme, this would reduce the chance of us needing to de-risk. We would be happy to explore this.

To achieve green status (that is, a high degree of comfort that we do not need to move to a self-sufficiency investment strategy), the headroom within this metric should cover a material adverse change in financial markets on the prevailing investment strategy. We have measured this as a 'one year 95% value-at-risk' event. (Note that USS Investment Management calculations show a value-at-risk figure of £15bn for a 40% growth asset investment strategy and £19bn for a 55% growth strategy. This compares with £20bn for the current Reference Portfolio strategy.) This covers more than asset transition risk; it also includes an allowance for funding volatility. Arguably it could also include demographic risk, but if this is assumed to be independent of investment risk the additional amount after taking account of diversification would not be material.

Required covenant-related metrics

The March Discussion Document discussed different covenant figures that can be used in metrics like those set out above and put them into context (see pages 17-18, 24-25 and 46-48 of the Discussion Document).

Metrics A and B require an assessment of the sector's **affordable risk capacity** and Metric C requires an assessment of the **available risk capacity**. For the affordable risk capacity, we have allowed for figures based on the present value of additional contributions of 10% of payroll over 30 years for a strong covenant, and over 20 years for a tending-to-strong covenant.

This gives figures at 31 March 2020 of £20-22bn (tending-to-strong) or £32-38bn (strong). In each case the lower end of the range assumes an increase in aggregate payroll of CPI+1% pa over the full length of that period, and the upper end assumes CPI+2% pa.

We have used £54bn (tending-to-strong) and £65bn (strong) for illustration as the available risk capacity. These estimates were calculated in February 2020, before the impact of COVID-19. They will be reviewed in light of UUK's response to this consultation, further advice on the covenant in the autumn, and any additional support employers are able to provide to the Scheme.

Appendix E: How the risk metrics are calculated

This appendix provides details of how the risk metrics used in the RMF are calculated for two cases of the potential Technical Provisions. Full details of the metrics and their role in the RMF is provided in Section 6 and Appendix D. The two cases that are considered are:

- A tending-to-strong covenant with Technical Provisions based on a pre-retirement discount rate of gilts+2%
- A strong covenant with Technical Provisions based on a pre-retirement discount rate of gilts+3.5%

In both cases the post-retirement discount rate is gilts+1%. The other inputs into the calculations are as follows. Our view of the affordable risk capacity and available risk capacity in these cases is:

Covenant rating	Affordable risk capacity	Available risk capacity
Tending-to-strong	£20-22bn	£54bn
Strong	£32-38bn	£65bn

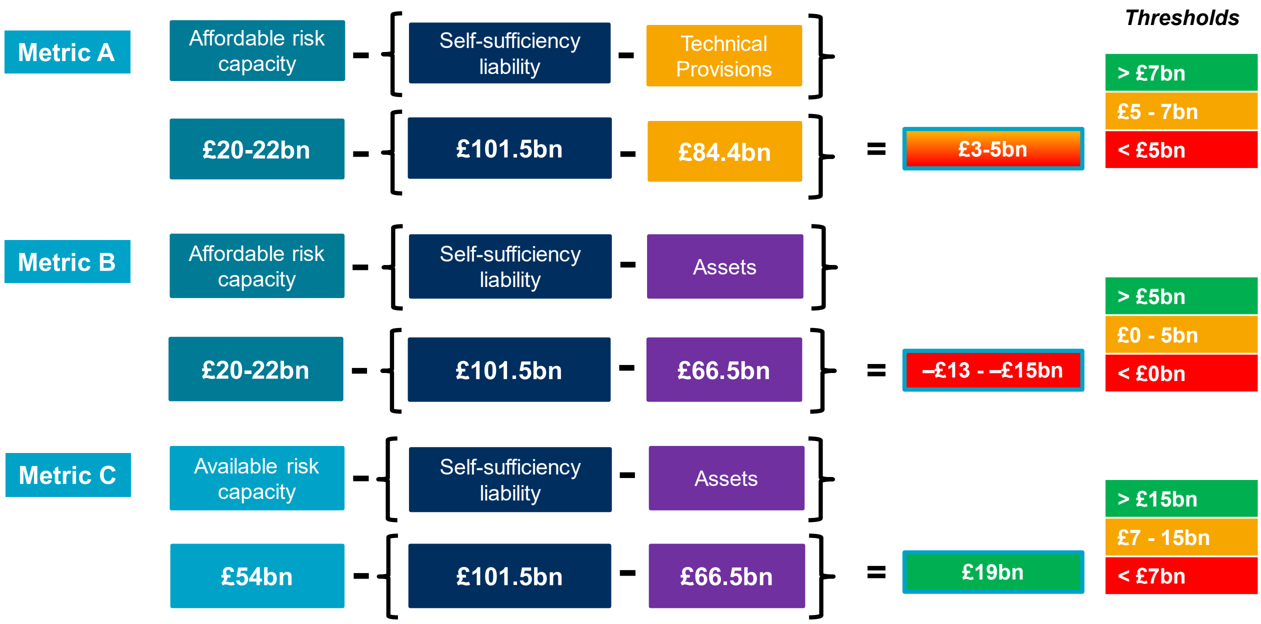
The affordable risk capacity figures are based on employer contributions to the Scheme of 10% of payroll for 20 years (for a tending-to-strong covenant) or 30 years (for a strong covenant). The ranges for these figures have been calculated assuming growth in the payroll of CPI+2% pa and CPI+1% pa.

The Scheme's liability value on our self-sufficiency basis is £101.5bn at 31 March 2020.

Tending-to-strong covenant example

This case assumes a tending-to-strong covenant, a pre-retirement discount rate of gilts+2% pa and an assumed investment strategy with 40% invested in growth assets. The calculations of the metrics in this case are shown in Figure E1.

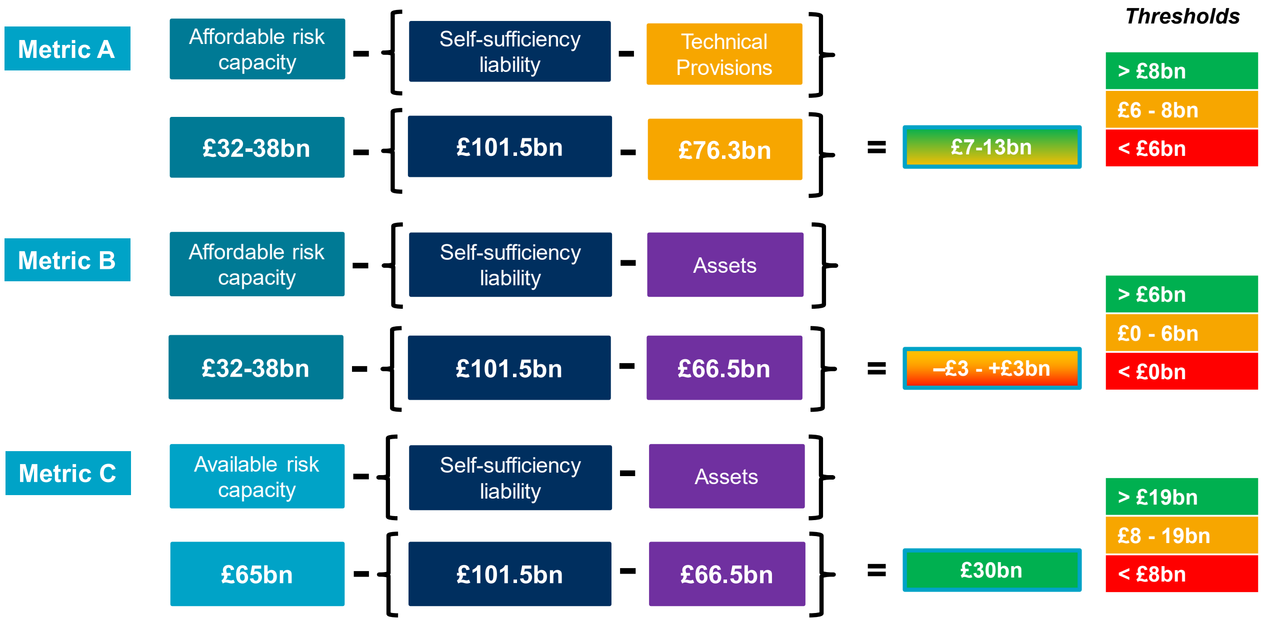
Figure E1: Calculation of the risk metrics for a tending-to-strong covenant with a pre-retirement discount rate of gilts+2%



Strong covenant example

This case assumes a strong covenant with a pre-retirement discount rate of gilts+3.5% pa and an assumed investment strategy with 55% invested in growth assets. The calculations of the metrics in this case are shown in Figure E2.

Figure E2: Calculation of the risk metrics for the case of a strong covenant with a pre-retirement discount rate of gilts+3.5%



Appendix F: Assumptions on inflation, pension increases and demographics

We use a range of assumptions to value the liabilities for benefits members have already earned and will earn in the future under the current benefit structure.

For most assumptions, we use a 'best estimate' of how the future will turn out based on advice from the Scheme Actuary. That is, we don't include a margin for prudence, to protect against poor results. However, we are required to include a margin in mortality assumptions and the discount rate.

This appendix sets out:

- our proposed method for the valuation calculations
- our proposed financial assumptions
- our proposed demographic assumptions

Actuarial method

To calculate the Technical Provisions and future service contributions, we propose to use the 'Projected Unit' method with a one-year control period. This is a common method for open pension Schemes like ours. We used this method in the 2018 valuation.

Financial assumptions

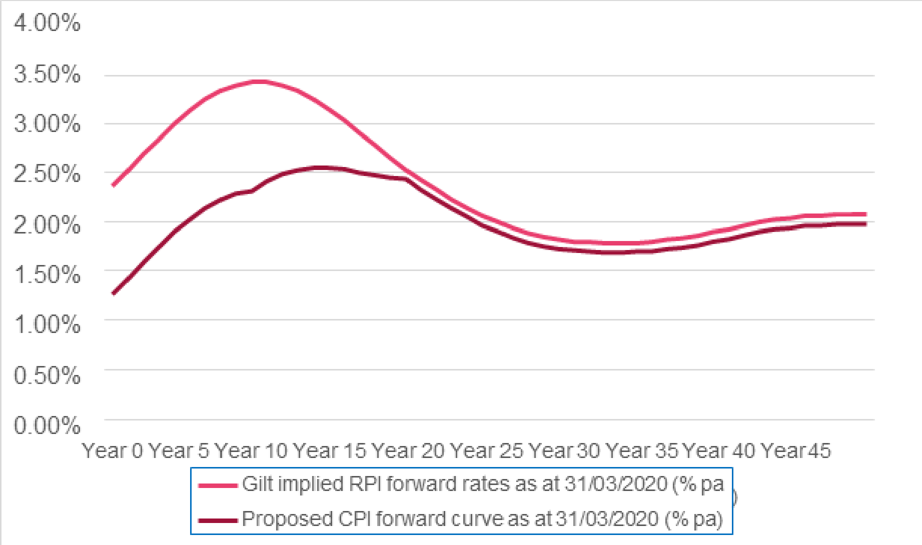
Assumptions for future investment returns

RPI and CPI assumptions

The assumptions for future price inflation are important as pensions paid by the Scheme increase primarily by reference to CPI. A small proportion of legacy benefits are linked to RPI. We derive an assumption for CPI inflation by looking initially at an assumption for RPI inflation.

- The RPI assumption as at 31 March 2020 is set by reference to future levels of RPI implied by the gilt markets
- The CPI assumption as at 31 March 2020 is set to be 1.1% pa lower than the RPI assumption in the period to 2030. The gap reduces linearly by 0.1% pa over the following 10 years to a long-term difference of 0.1% pa lower than the RPI assumption from 2040 onwards. The approach to the CPI assumption differs from the last valuation. This is because we expect the way RPI is calculated to change (see Section 8), to bring it more into line with CPI, possibly from 2030
- The single-equivalent assumption for RPI as at 31 March 2020 is 2.8% pa and the single-equivalent assumption for CPI as at 31 March 2020 is 2.1% pa. These are rounded indicative figures

Figure F1: The 'forward curve' shows our proposed assumption for RPI and CPI inflation.



<u>Pension increases</u>

The table below sets out the main pension increase assumptions for pensions that increase with different caps (maximum increases) and floors (minimum increases).

Annual pension increase type	Proposed assumption
CPI subject to a 0% floor and no cap	CPI curve + 5bps pa
CPI subject to a 0% floor and a "soft" cap of 5%, with 50% of any CPI increase between 5% and 15% applying in addition	CPI curve + 5bps pa

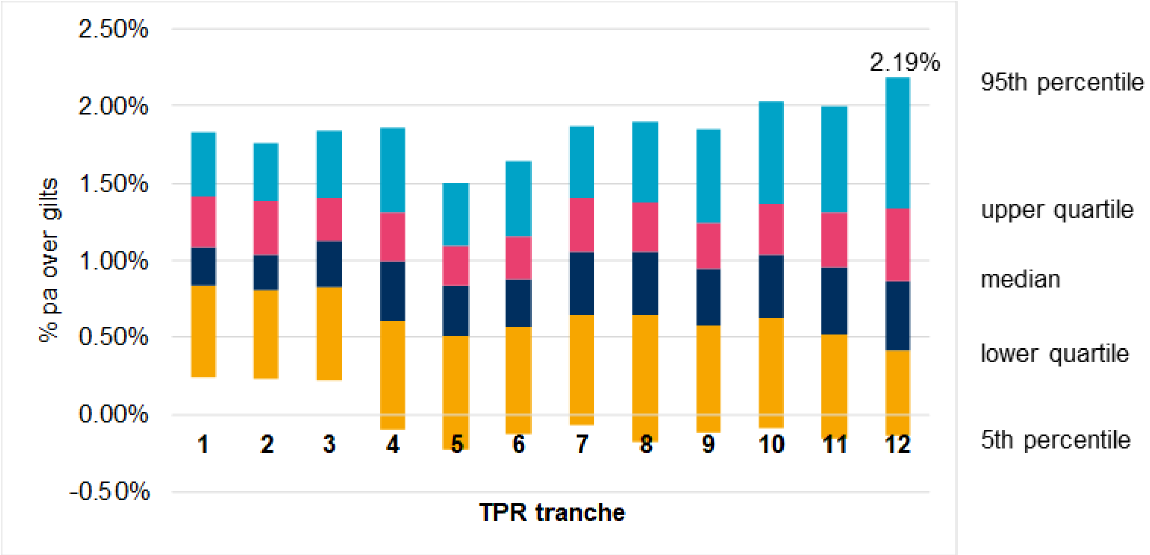
1 basis point = 1 bp = 0.01%

<u>Discount rates</u>

In deciding the discount rates to propose, we also took account of broader market practice. The Pensions Regulator publishes information on this annually in its analysis of scheme funding. Its analysis published in 2019 covers valuations with effective dates up to September 2017.

The information includes percentiles for the single-equivalent discount rates adopted by schemes for technical provisions purposes. The single-equivalent allows comparison between schemes which have adopted different discount rate methodologies. This is summarised in Chart F1.

Chart F1: Distribution of discount rates assumed relative to gilts by UK defined benefit pension schemes over time



Notes to chart:

1. *Source: the Pensions Regulator*
2. *Tranche 1 is for valuation dates from 22 September 2005 to 21 September 2006*
3. *Tranche 12 is 22 September 2016 to 21 September 2017*
4. *TPR has changed its methodology for calculating single-equivalent rates. Chart shows old methodology for tranches 1-9 and new methodology for tranches 10-12.*

This shows that all the single equivalent rates that we are considering for the 2020 valuation, including if we work on the basis of a tending-to-strong covenant, are in the upper quartile of market practice, with the higher rates around the 95th percentile of the rates used since 2005. Economic conditions may of course be significantly different at different times. We have benchmarked the position around the time of the last financial shock around 2007/2008 (tranches 3 and 4 in the TPR data). At that time a much greater number of schemes remained open to new members and further benefit accrual, so that data arguably offers a better comparison for USS than more recent data.

Demographic assumptions

We also make assumptions about the Scheme membership. For example, how long members might live, when they might retire, and how many members will have a dependant when they die who would then receive a pension from the Scheme. We have set out the proposed assumptions below.

Mortality assumption

	Base tables (essentially the current rate of mortality)
Males	101% of S2PMA_L
Females	95% of S3PFA

S2PMA_L and S3PFA are standard actuarial mortality tables. They have been adjusted to reflect the characteristics of the Scheme members. The base table assumptions include a margin for prudence by reducing the rating factors by 2% compared to the best fit to the Scheme's characteristics and recent mortality experience. The 101% and the 95% allow for this 2% adjustment, which is the same adjustment as for the 2018 valuation.

Mortality improvements are assumed to be in line with the industry-standard CMI 2019 series projections. They have a smoothing factor of 7.5 (reduced from 8.5 in the 2018 valuation), an initial addition of 0.5% pa and long-term rates of improvements of 1.8% pa (males) and 1.6% pa (females). The long-term rates are again the same as for the 2018 valuation.

We propose to use the same mortality assumption before and after retirement.

In aggregate the change to the mortality assumptions reduces the Technical Provisions by £2-3bn compared with those used for the 2018 valuation.

Retirements in normal health

We need to make an assumption about when members will retire in future.

Our proposed assumption is that ex-final salary members will retire from service at the rates set out in the table below. We assume all other members will retire at 65. Early or late retirement factors would apply to any tranches of benefit payable at different ages, as appropriate. This is the same as for the 2018 valuation.

Age	Assumed rate of retirement from service for ex-final salary members of those attaining age
60	30%
61	10%
62	15%
63	15%
64	20%
65	100%

In the future service contributions we allow for the change to the normal pension age to 66 to apply to future accruals from October 2020, as for the 2018 valuation.

Retirements in ill-health

We propose to assume members will retire in ill-health according to an age- and sex-related scale. For members under age 60, the scale is in line with the 2018 valuation assumption. For older ages, the scale is capped at the rates assumed for age 60. This reflects a lower recent rate of over 60 ill-health retirements compared to the previous allowance.

Withdrawals from service

We propose to assume members will withdraw from service according to an age-related scale. This scale has a modest increase to the assumed rates of withdrawal compared to the 2018 valuation assumption. This reflects the Scheme's experience over the last 6 years.

Proportion of members leaving a dependant on death

We need to make an assumption for the number of members who, when they die, will leave a dependant who would then receive a pension from the Scheme. We propose a change in approach compared to the 2018 valuation assumption. This is to match more closely recent Scheme experience of deaths at each age. We propose to apply the assumptions at the assumed date of death. Previously, we applied them at the assumed date of retirement or earlier death for non-pensioners, and at the valuation date for pensioners. The effect of the change is a modest reduction in the Technical Provisions.

Sex of member	Proposed assumption
Male	104% of bespoke scale derived from 2018 ONS data for males in co-habiting couples
Female	89% of bespoke scale derived from 2018 ONS data for females in co-habiting couples

Age difference between members and dependants

For members who die leaving a dependant, we need to make an assumption about the age of that dependant.

Sex of member	Assumed dependant age
Male	4 years younger
Female	1 year older

The assumption for males is the same as for the 2018 valuation. The assumption for females is that their dependant would be on average one year younger than the 2018 valuation assumption. In 2018 we assumed male dependants were two years older than a female Scheme member. This matches more closely recent Scheme experience.

Exchanging for a lump sum and transferring out

We propose to make no allowance in the Technical Provisions for members exchanging part of their pension for a cash sum at retirement. This doesn't include the lump sum that is part of the main benefit formula. We also propose no allowance for members taking transfer values before they retire. This is the same as for the 2018 valuation.

GMP equalisation

The figures in this document make no allowance for equalising members' benefits for the effect of Guaranteed Minimum Pensions. This is the same as for the 2018 valuation. We believe the Scheme's rules neutralise the vast majority of any inequality arising from GMPs. The impact of GMP equalisation is not expected to be material in the context of the Scheme.

Expenses

We propose to include an allowance of 0.4% of salary in the contribution rate to meet expenses including PPF levies. This is the same as for the 2018 valuation. Investment expenses are implicitly allowed for in the discount rates.

Payroll increases

The aggregate payroll, as used in the Recovery Plan calculations, is assumed to increase at CPI+2% pa. This is the same as for the 2018 valuation. We would welcome UUK's feedback on this assumption and have provided different potential calibrations in Appendix C.

Salary threshold

The salary threshold within the Scheme benefit structure is assumed to increase in line with CPI. This is the same as for the 2018 valuation.

Appendix G: Reconciliation of Technical Provisions at 31 March 2018 and 31 March 2020

The tables below set out estimated reconciliations between the 31 March 2018 and 31 March 2020 valuation positions. These are based on illustrative pre-retirement discount rates, as at 31 March 2020, of gilts+2% and gilts+3.5% respectively. The post-retirement rate is gilts+1% in both cases.

The reconciliations have been carried out on the equivalent 'gilts+' basis as at 31 March 2018 (using a discount rate of gilts+1.33%) for ease of comparison as we are comparing two different methodologies. The largest single item across both tables shows the increase in the deficit that has resulted from the very significant falls in the yields on gilts between the valuation dates.

Table G1: Evolution of deficit since 31 March 2018 based on gilts+2% pa / gilts+1% pa

Item	Deficit & impact on deficit (£bn)
Technical provisions deficit at 31 March 2018	3.6
Interest on deficit	+0.2
Asset return compared to expected	+0.2
Contributions lower than cost of accrual	+0.7
Pension increase compared to expected	+0.5
Change in future inflation / pension increase expectations	+1.4
Change in gilt yields	+14.9
Change in methodology (to DDR, based on gilts+2% / gilts+1% discount rates)	-0.5
Change in mortality assumptions	-2.7
Change in other demographic assumptions	-0.4
Indicative technical provisions deficit at 31 March 2020	17.9

Table G2: Evolution of deficit since 31 March 2018 based on gilts+3.5% pa / gilts+1% pa

Item	Deficit & impact on deficit (£bn)
Technical provisions deficit at 31 March 2018	3.6
Interest on deficit	+0.2
Asset return compared to expected	+0.2
Contributions lower than cost of accrual	+0.7
Pension increase compared to expected	+0.5
Change in future inflation / pension increase expectations	+1.4
Change in gilt yields	+14.9
Change in methodology (to DDR, based on gilts+3.5% / gilts+1% discount rates)	-8.9
Change in mortality assumptions	-2.4
Change in other demographic assumptions	-0.4
Indicative technical provisions deficit at 31 March 2020	9.8

Appendix H: Sensitivity to assumptions

We have looked at the effect of varying assumptions.

- We have illustrated the effect on the Technical Provisions deficit and the future service contributions by taking the proposed 2020 assumptions with an illustrative discount rate of gilts+2.5% pa before retirement and gilts+1% pa post-retirement and varying some of the assumptions
- This indicates the sensitivity of the Scheme's finances to the assumptions, and the quantum of changes is broadly similar for different discount rates

	Description	Deficit	Future service rate
	2020 assumptions with gilts + 2.5% / gilts + 1.0% pa	£14.9bn	34.5%
A	Increase pre-retirement discount rate to gilts + 3.0% pa	£12.3bn	31.8%
B	Decrease post-retirement discount rate to gilts + 0.75% pa	£17.7bn	35.8%
C	Assume longer life expectancy by reducing the adjustment to the base mortality tables by 5%	£16.1bn	34.9%
D	Make greater allowance for mortality improvements by increasing the annual long-term rates by 0.2% pa to 2% pa (males) and 1.8% pa (females)	£15.6bn	34.9%
E	Allow for all ex-Final salary members to retire from service at age 60 with no reduction for early payment	£16.5bn	34.5%

Each line in the table shows the effect of varying each assumption in isolation. The effect of making more than one change is not necessarily additive.

The future service rate includes allowance for expenses and contributions in respect of DC benefits.