Conditional Indexation

Second report of the CISG

December 2025

Foreword

What is Conditional Indexation?

Indexation refers to annual cost of living increases to pensions to help protect their value from being eroded by inflation over time. Under USS's current DB benefit structure, indexation (both before and after retirement) is guaranteed within certain limits. Under Conditional Indexation (CI), the core benefits would continue to be DB, but indexation would be at a targeted level within certain limits. Whether or not indexation applies would ultimately depend on the funding position of the scheme (i.e. in simple terms, whether the scheme could afford to pay it).

It is important to note that past benefits, and indexation on those benefits, would remain guaranteed. If introduced, CI would only apply to benefits accrued after the date it is introduced.

What this paper is (and what it isn't)

This is the second report from the Conditional Indexation Sub-Group (CISG), following the publication of its **Interim Report** in June 2025, which can be accessed here.

This paper is designed to assist stakeholders in assessing the benefits and drawbacks of CI before engaging with members and employers about whether exploration of CI should continue to a more detailed design phase.

Importantly **it does not seek to set out an optimal design for the benefits or governance structure** that would apply under CI. Instead, it sets out the important trade-offs for members and employers that would be involved if the scheme were to move to a CI benefit structure to help inform whether an acceptable balance could exist.

Where can I find out more?

The Interim Report from the CISG contains further information including about:

i. How CI has operated in other jurisdictions around the world.
ii. An introduction to how indexation could be calculated and granted under CI using annual tests.
iii. Illustrations of the range of possible outcomes for members and employers.

We build upon that information within this report.

Contents

Foreword 1

What is Conditional Indexation? 2

What this paper is (and what it isn't) 2

Where can I find out more? 2

1 Executive Summary 3

1.1 Introduction 4

1.2 Summary of Analysis 4

1.3 Work Included in this Report 6

1.4 Next Steps 6

2 Scope and purpose 7

2.1 Introduction 8

2.2 Scope of the CI Sub-Group (CISG) 8

2.3 Purpose of this report 8

Appendices 8

Appendix A – CI Decision-Making 9

Appendix B – CI Outcome Modelling 14

Appendix B1 - Overview of modelling outcomes 16

Appendix B2 - Update of modelling in Interim Report: 'Standing Start' modelling at 31 March 2025 17

Appendix B3 - The dynamics of CI in 'steady state' 20

Appendix B4 - How we have modelled 'steady state' 21

Appendix B5 - Steady state stochastic modelling results: scheme-wide outcomes 22

Appendix B6 - Managing a surplus: Differences in how DB and CI fare in upside scenarios 30

Appendix C - Considering design trade-offs 33

Appendix D – Evaluating CI against agreed assessment criteria 37

Appendix E – Terms of Reference 39

Appendix F – Methodology and assumptions 41

Appendix F1 – Correlations 53

1 Executive Summary

1.1 Introduction

The Interim Report explored some key questions:

- Can Conditional Indexation (CI) deliver better outcomes for members and employers than the current DB structure, and if so to what extent?
- What might worse outcomes look like and how do these compare to the existing structure?
- Are the potential benefits worth the potential risks, drawbacks and challenges?

Ultimately, this balance between risk and reward depends on the design of the scheme, the level of benefits offered, the contributions payable and the framework and safeguards in place.

Whilst there would need to be significant detailed design work before any CI scheme could be taken forward, this paper considers some key questions to help explore whether an acceptable balance could exist that meets both the needs of members and employers, helping to increase the likelihood that the scheme can be retained as predominantly DB in a resilient way over the long term:

1. For employers, key questions include whether CI can provide stable contributions and benefits from one valuation to the next, how their employees view the value of the scheme, and how much of a lever it provides in particularly stressed situations.
2. For members, key questions include whether the potential reward through higher expected benefits, is worth the increase in risk associated with making indexation conditional. This will depend on the level of indexation targeted, the safeguards and catch-up mechanisms in place and how risk is shared between different groups of members and employers.
3. Both members and employers face important questions about whether a suitably clear and robust governance and operational framework can be established that facilitates transparent and accountable decision-making, clear communication and builds trust.

1.2 Summary of Analysis

The analysis within this paper suggests:

1. Contribution and Benefit Stability

- As part of funding the scheme, the Trustee creates prudent reserves as a buffer against risks. From inception, CI helps create more flexibility in setting these reserves. This flexibility is sufficient to improve contribution stability – even if indexation is never awarded below target in practice.
- As CI becomes more established over time, it provides a significant additional lever to manage situations where funding is stressed, contributing to improved resilience of the scheme in the long term.
- In scenarios where funding is stressed, adjustments to benefits and contributions are likely to be less severe under CI than under the current DB structure by virtue of having greater flexibility in the funding approach and the ability to spread the impact more gradually over a broader group of members than is currently the case.
- Overall, CI increases the chances of retaining a predominantly DB benefit structure over the long term by providing additional levers to respond to stress events. In any event, the reaction to a

stress may be less severe under CI owing to the additional flexibility afforded by softer guarantees.

2. Member Outcomes and Risks

- CI presents a three-way trade-off between contribution rates, target benefits, and risk.
- For a given target level of benefits, the higher the contribution rates, the lower the risk that indexation will be below target.
- In the long term, whether members are better off or worse off relative to the current DB structure depends on the target level of benefits, the contribution rates used to fund these, the returns on the scheme assets and the valuation methodology adopted.
- Modelling suggests[1] that current contribution rates (as at December 2025) could support benefits that are, in aggregate, 20% more generous than existing benefits with a very high degree of confidence.
- The risk of not being able to award the target level of indexation is greatest in the early years after CI benefits are introduced when outcomes are heavily influenced by the funding position of accrued non-CI benefits.
- Simplified modelling suggests steps could be taken to improve the likelihood of providing the target level of indexation in these early years (such as establishing buffers) – if stakeholders decide to proceed with CI, a precise mechanism will need to be investigated further.
- Similar to the position expressed in the interim report, scenarios where CI delivers lower benefits than the existing DB benefit structure generally correspond to situations where funding in the existing DB structure would be under strain. In such situations, the costs of DB are likely to be higher or future benefit accrual may need to be reduced to remain affordable – or a combination of the two.
- In situations where the funding position would suggest that indexation could not be awarded at target, it would be open to stakeholders via the JNC to address any funding shortfall through existing means – i.e. through higher contributions or adjusting future benefits. Whilst the modelling suggests that scenarios where indexation is not awarded at target represent severe events, the flexibilities provided by CI means that any such intervention would be expected to be less severe than under the current non-conditional benefit structure.[2]

There are important differences between the current benefit structure and CI in how costs and risks are borne out in practice:

- Under both structures the risks associated with core benefit accrual are borne by active members and employers.
- Under the current benefit structure, the risks associated with indexation (namely that funding is insufficient and needs to be made good) is borne solely by current and future active members and employers, rather than all of those who benefit from indexation.
- Under CI, the risks of indexation are also borne by those who benefit from indexation including deferred and pensioner members with CI benefits. Costs and shortfalls can be addressed either via additional contributions or a reduction in indexation being granted. This is a way of distributing risk more evenly across the membership rather than relying predominantly on active

[1] See Appendix B5, Table 4, pg 20
[2] See Simplified illustration, pg 24

members. (For the avoidance of doubt, DB benefits accrued under the current structure would not be impacted.)

3. Decision-making and Operational Framework

- Effective decision-making is fundamental to the success of CI as an important part of member benefits (indexation) will no longer be guaranteed and instead depend on decisions taken.
- To support this, it is envisaged that a decision-making framework would need to be determined encompassing how CI is expected to operate, how decisions are taken and the information upon which decisions would be based. This would need to be integrated with existing duties and powers and allow each party to comply with its legal duties.
- The framework would need to be clear and readily understandable, allowing members and employers to trust that the process will lead to fair, accountable and reasonable outcomes.
- Two key decisions to be made would include:

    i. **The degree of specificity in the framework** – in particular, what would need to be agreed in advance, and how much should be left to parties to respond to emerging circumstances.

    ii. **Which elements of the framework should be formulaic, which should be legally binding, and which should be subject to future discretion**. To have maximum flexibility in how the scheme is funded (and therefore help ensure stable contributions, benefits and indexation), the indexation to be awarded would need to be discretionary. The level of flexibility and discretion would be considered as part of any design phase.

- To support this, a **Funding Policy Document** would need to be developed which would set out intended responses to future circumstances including: the level of indexation that should be awarded; how any emerging surplus should be used; what should happen if a deficit emerges; if/when additional contributions should be paid (and by whom); if/when 'catch-up' indexation will be awarded to address any periods in which it has been awarded at less than target; and, if/when any changes to benefits/accrual levels are required. This policy document could be publicly available (similar to the approach taken by other CI schemes globally) so that it is transparent how funding levels could affect benefits.

1.3 Work Included in this Report

This report summarises three key areas of exploratory work undertaken by the CISG:

1. CI Decision-Making (Appendix A) - Exploration of how decisions related to CI - particularly indexation - could be structured, governed, and communicated.
2. CI Outcome Modelling (Appendices B and C) - Quantitative modelling to assess the potential impact of CI on benefits and contributions under various scenarios.
3. Assessment Criteria (Appendix D) - Development of criteria to evaluate whether CI offers a viable and balanced alternative to the current DB structure.

The detailed outputs of these workstreams are provided in the annexes to this report, which also include a Terms of Reference (Appendix E) and Assumptions (Appendix F).

1.4 Next Steps

The exploratory work contained within this paper will provide input into stakeholder discussions with employers and members as to the relative merits and drawbacks of CI, following which a decision is required as to whether exploration of CI should continue to a more detailed design phase.

To be clear, the timeline for design development and consultation could take a number of years. Implementation would be unlikely to be feasible any earlier than 2029.

As part of these discussions, it is important to identify key priorities and concerns such that future efforts by the CISG and Trustee are targeted appropriately.

2 Scope and purpose

2.1 Introduction

UCU and UCEA have been working with support from the USS Trustee to consider how to achieve greater stability in the scheme over time, reducing the volatility in contribution rates and benefits seen in recent years.

As part of this work, it was agreed to explore CI benefit design options, which could potentially support the drive towards greater stability. A working group of UCU and UCEA representatives has been established (the CISG) to focus on how CI could work and whether it may be a concept that should be explored in more detail.

2.2 Scope of the CI Sub-Group (CISG)

The work of the CISG is exploratory, guided by a defined remit outlined in its Terms of Reference, (see Appendix E). Its scope is specifically focused on the exploration of CI in comparison to the current benefit design.

Importantly, broader issues that influence scheme stability and benefit design—such as valuation methodology - fall outside the CISG's remit and are being considered separately by the Stability Working Group (StWG). The CI work is intended to complement, not replace, these broader efforts. In particular, an appropriate valuation methodology and clarity on how this would impact outcomes is critical to the success of CI.

2.3 Purpose of this report

This is the second report published by the CISG. The first report, which provided some introductory information and analysis in relation to CI was published in June 2025 and can be accessed here.

Following publication of this report, UCU and UCEA will be engaging with members and employers to discuss and seek views on Conditional Indexation to inform whether exploration of CI should move to a more detailed design phase.

Appendices

Appendix A – CI Decision-Making 7
Appendix B – CI Outcome Modelling 12
Appendix C - Considering design trade-offs 28
Appendix D – Evaluating CI against agreed assessment criteria 32
Appendix E – Terms of Reference 34
Appendix F – Methodology and assumptions 36

*The modelling work in the appendices to this report ("**Work**") was provided by Universities Superannuation Scheme Limited (the "**Trustee**") in its capacity as the sole corporate trustee of the Universities Superannuation Scheme. The Trustee is not an actuary and cannot provide actuarial advice. Therefore, Technical Actuarial Standards do not apply to the Trustee or to the provision of this Work.*

The Trustee has agreed that we can provide this Work to you for information purposes only and for no other purpose. Nothing in this Work constitutes advice and recipients must take whatever professional advice they deem necessary. The Trustee will not be responsible to anyone in relation to any matters referred to in the Work. If any person relies on the Work, such person does so entirely at such person's own risk. The Trustee does not accept liability to any person, whether in tort or otherwise, in respect of any information provided in or matters referred to in this Work.

The terms and provisions of this disclaimer shall not, and do not purport to, exclude or restrict any liability to the extent that it may not be so excluded or restricted by law.

Appendix A – CI Decision-Making

Introduction

Effective decision-making that builds trust is important to all pension schemes. It is particularly important in a CI scheme because an important part of members' benefits (i.e. what indexation they receive) will depend on the decisions that are taken. As such, having clarity on what the key decisions are and when, how and by whom they will be taken is paramount. It's also important to consider what information will be used to inform the process and what information is communicated to scheme members and employers.

Any decision-making framework needs to be reflective of the specific design of the overall CI benefits. At this stage it would therefore be premature to attempt to set out a definitive approach – instead this chapter covers:

1. Design principles – What might a good decision-making framework look like?
2. Key considerations in relation to decision-making.
3. Illustrative examples to show how CI decision-making might work in USS.
4. Issues that would need to be considered, prior to any implementation of CI.

For the avoidance of doubt, this chapter identifies some of the governance and decision-making considerations that would need to be addressed if CI is to be implemented, and the risks associated with this. It doesn't comment on the broader governance of the USS scheme.

1. Decision-making design principles – what does a good framework look like?

We have set out below some design principles that outline the factors we believe would help support good decision-making and outcomes.

A CI decision-making framework should be:

1. **Legally compliant:** Allows each party (the Trustee and JNC) to comply with its legal duties under the scheme rules and legislation.
2. **Coherent:** An approach that dovetails effectively with other processes, provisions and powers (for example the valuation process) where appropriate.
3. **Time-bound:** An approach that is time-bound, with a clear backstop if relevant parties don't agree (as pensions still need to be paid).
4. **Clear and transparent:** A framework that is clear, well structured, readily understandable and based on transparent information (so that members, employers and the Trustee know how decisions will be taken based on what information and by whom).
5. **Fair and balanced:** Members, employers and the Trustee should be able to trust that the decision-making framework will lead to fair and reasonable outcomes in accordance with fiduciary duties.
6. **Durable:** The framework should be sufficiently durable in a broad range of circumstances, with appropriate catch-up mechanisms and safety nets to support benefit and contribution stability over the long term.

Whilst there is significant detail that would need to be agreed as part of this framework, an agreed set of principles is helpful for setting a strong foundation to develop this detail as well as quickly

exposing potential areas of difference between relevant parties. We have reflected on these design principles when creating the rest of this chapter.

2. Decision-making – Key considerations

There are two fundamental issues that go to the heart of decision-making in CI schemes.

1. **The degree of specificity in the decision-making framework –** The first choice is how detailed any decision-making framework should be. This requires a judgement call as to how much it is useful to agree in advance and how much scope should be left to the parties to respond to future emerging circumstances e.g. in 5, 10, 20+ years' time.
2. **Which elements of the framework should be formulaic, which should be legally binding, and which should be subject to future discretion –** The second is which elements of the decision-making framework should be automatic and legally binding (for example by being specified in the scheme rules) and which would be subject to future discretion (but where the criteria to be considered in making a decision could be set out in a policy document agreed between the relevant parties that could guide but not bind future decision-making). Enshrining key provisions in the rules provides certainty as to what the outcome will be in a given situation. However, it is unlikely to be possible to pre-agree, in advance, how the benefits and financing of the scheme should react in all possible future circumstances. Some degree of flexibility is likely to be overall beneficial to the 'durability' of the framework. Importantly, to have maximum flexibility from a funding perspective (and therefore help ensure stable contributions, benefits and indexation), the indexation to be awarded cannot be prescribed in a legally binding formula. In practice this would mean that decisions on indexation would ultimately be a matter of judgement for the relevant decision makers rather than governed in an entirely mechanical fashion - this would enable the scheme to be funded on the basis that CI increases are not guaranteed – thereby delivering increased flexibility compared with the existing approach. The risks associated with any increased flexibility would need to be understood and acceptable.

In the Interim Report we included an appendix on the provision of conditional indexation in other jurisdictions. As discussed in that report, some Canadian CI schemes have funding policies that provide a pre-agreed framework for how the scheme should operate, be financed and critically, the level of indexation that can be awarded. This helps improve transparency, supports timely decision-making and sets expectations for members and employers of the likely outcomes in different scenarios. Funding policies are typically guidelines rather than legally binding requirements, with the relevant decision-making body retaining discretion to decide the appropriate outcome at each valuation/review. If such a policy was adopted in the USS context, it would be possible to include a requirement in the rules for the Trustee and JNC to have regard to the policy when taking relevant decisions.

The contents of funding policies vary, but the types of things they typically cover include:

- The target level of indexation.
- How any emerging surplus could be used.
- What could happen if a deficit emerges.
- If/when additional contributions could be paid (and by whom).
- If/when 'catch-up' indexation could be awarded to address any periods in which it has been awarded at less than target.
- If/when any changes to benefits/accrual levels may be required.

A well-written policy document would help articulate how many of the design principles expressed at the start of this chapter might be achieved. As such, if CI is implemented, it would be important for stakeholders via the JNC and the Trustee to agree a suitable funding policy to guide decision-making and we illustrate how this could work in the following section.

3. How could CI decision-making operate at USS?

We are at a relatively early stage in our consideration of CI. We are therefore keen not to pre-judge exactly how CI could operate within the USS scheme if implemented. However, in order that members and employers can understand how it could work in practice we have set out an illustrative example below. This example is broadly aligned with the existing balance of powers within the USS scheme, and the wider regulatory framework.

At a high-level this means that the Trustee calculates the 'price' of benefits (i.e. the expected cost of new benefits) and considers the scheme's funding position whereas the JNC has primary responsibility for benefit design and/or how any change in contributions is addressed.

We have assumed that the primary decision on indexation is taken as part of the triennial actuarial valuation as this is the primary process through which the Trustee and stakeholders, via the JNC, consider contributions and benefit stability. Ultimately, within a CI scheme, deciding the level of indexation to award is a critical decision which influences both member outcomes and the financing of the scheme, and needs appropriate consideration by decision makers.

An example of the steps taken could include:

- Step 1 – Alongside the actuarial valuation the Trustee would also calculate whether target indexation is affordable. In reaching its determination the Trustee would have regard to the funding policy, and how the parties have agreed affordability will be assessed. The Trustee would also provide any pre-agreed information to the JNC, UCU and UCEA to help inform decision-making.
- Step 2 – If the Trustee's calculations suggest that target indexation is not affordable, then further calculations would be required. The Trustee would also calculate (again having regard to the funding policy) (i) the level of increase (if any) that would be affordable and (ii) the level of contributions that would be required in order for indexation to be payable at target.
- Step 3 – Following receipt of the determination and information referenced in Steps 1 and 2, the JNC would have three months to respond to the information provided by the Trustee and decide what should happen. For example, whether indexation should be awarded below target, contributions should be increased, or core target benefits should be changed.
- Step 4 – If the JNC did not reach a decision within three months, the Trustee's calculations would become the backstop default. For example, if target indexation was calculated to be affordable and sustainable it would be awarded at target. Conversely if it was calculated to be unaffordable, the maximum affordable level of indexation under the existing contribution rate would be awarded.

In addition to the above triennial process, we also envisage that there would be a lighter touch annual review in non-valuation years. This would provide an opportunity to respond to material changes (whether positive or negative) in the scheme's funding position between triennial valuations. Between triennial valuations stakeholders could agree the speed with which to react to restoring indexation where it has been cut vs responding to market volatility impacts on funding; the

appropriate pace of response to these different circumstances would be situation specific and need not be symmetrical for positive and negative movements in funding.

Illustrative Funding Policy

We have included a simple illustration of what a funding policy could look like below. This is purely for illustrative purposes, to show what it could contain. In practice, we would expect agreement of a funding policy to require detailed negotiations between all parties, reflecting the specific design of the CI benefits. As an illustrative example, the funding policy could include:

- Funding tests – sets out the funding tests that the Trustee would have regard to in assessing the affordability of indexation.
- Key information – sets out the information that the Trustee would provide to the JNC, UCU and UCEA in relation to the calculations.
- Funding guidelines – sets out what actions and measures are taken in response to a given funding position. An example of how this could look is as follows (as noted above the detail would need to be agreed before CI was implemented):

Table 1 - Illustrative funding policy

Zone	Definition	Key matters the funding policy would set out	Default backstop in absence of JNC agreement
Surplus Zone	Funding suitably strong to support additional indexation and/or contribution reductions and/or consideration of benefit improvements	• Order of any catch-up (if required) • Amount of additional indexation to be awarded (if any) • Amount of contribution reduction (if any) to be applied including split between members and employers	• Indexation granted at target • Catch-up indexation payable (if needed) • Agreed contribution level
Maintain Zone	Funding sufficient to support indexation at target at agreed contribution level	• Indexation and contributions at target • Order of any catch-up (if required)	• Indexation granted at target • Catch-up indexation payable (if needed) • Agreed contribution level
Insufficiency Zone	Funding insufficient to support indexation at target at agreed contribution level	• Level of indexation to award; and/or • Level of contribution increase • Point at which indexation would be restored	• Indexation granted at affordable level • No catch-up affordable • Agreed contribution level
Recovery Zone	Guaranteed benefits underfunded. Unable to support conditional indexation	• Level of contribution increase required • Point at which indexation would be restored • Consideration of changes to benefit structure	• No conditional indexation granted* • Contributions at greater of agreed contribution level and statutory level (a recovery plan would also need to be agreed)

**Pensioner members would still receive indexation in line with statutory requirements – currently CPI capped at 2.5%.*

4. Detailed areas that need further consideration

Before implementing CI, there would be a number of detailed points that would need to be considered and agreed. To bring this to life, we've set out some non-exhaustive examples below:

- **Information** – what information would be provided as standard to inform decisions? How would this evolve over time? How would the level of information differ depending on the nature of the decisions required? What would be shared with members and employers?
- **Changes to the funding policy** – What would the governance process be for future changes to the policy?
- **Annual/triennial processes** – What processes would be followed on a triennial basis and what lighter touch review would be undertaken on an annual basis. What would the annual review need to show in order to trigger a deviation from the position set at the latest triennial valuation?
- **Timeframes and backstop process** – how long would the parties have to take key decisions? How would the backstop work if they failed to reach agreement within the relevant time period?
- **Managing upside** – How much surplus would be required before additional benefits are awarded to members? If/when would consideration be given to lowering contributions?
- **Managing downside** – What would happen if indexation were below target, and would this trigger any other changes? For example, would contributions change and how would they change?
- **Catch-up indexation awards** – Should the way in which any catch-up indexation awards be made be set in advance or agreed at the relevant time? What would happen if the funding position only allowed the granting of a partial catch-up?
- **Cost share** – How would the current cost share arrangements apply in a CI context[1].
- **Severe downside** – How would a CI design cope with severe downside risks, and how does this compare to the current DB structure? How can these risks be mitigated?

These are important topics that would need to be worked through in detail at a later stage ahead of any CI implementation.

[1] The current cost share provisions are contained in the scheme rules and broadly provide that unless the JNC decides otherwise increases or decreases in contributions are borne in the ratio 35/65 between members and employers respectively.

Appendix B – CI Outcome Modelling

Introduction - Reminder of key conclusions from the Interim report

As explored in the Interim Report (published in June 2025), a key feature of CI is that there are a range of possible outcomes for members' benefits depending on actual experience each year, rather than receiving guaranteed increases on accrued benefits.

The interim report considered three different benefit structures[1]. The analysis suggested that for fixed contributions of 20% of pay, then across the structures:

- There was a high probability (c90%) that the benefits paid from a CI structure would be higher than the benefits paid under the existing DB structure.
- Depending on the design chosen members might expect between 110% and 120% of current benefit levels.
- In situations where CI provides lower benefits than the existing DB benefit, it is highly likely that there would have been pressure and/or additional cost associated with the existing DB benefit structure.
- The pressure on CI funding would be less severe in these scenarios as indexation could be flexed with the ability to make catch-up payments in future to help mitigate downsides to members.

Key areas to explore

The Interim Report considered how a CI scheme would evolve from a 'standing start' of having no CI benefits at inception.

This paper now extends this modelling in the following important ways:

1. How the 'standing start' modelling in the Interim Report[2] has evolved in light of an improved funding position at 31 March 2025, and what conclusions, benefits and issues this presents?
2. How might the scheme behave once benefits are predominantly CI?
    a. How much of a lever could this create for achieving stability?
    b. How might such a scheme respond in a stress scenario and what protections could be put in place to improve outcomes and manage risk?

We present a summary of the findings before addressing the detail of each of these in turn in the following sections.

For the purposes of brevity, the detailed analysis explores these questions for one design contained within the Interim Report, Design 1, which assumes indexation of CPI+1% pre-retirement and CPI post-retirement. We then consider trade-offs for alternative designs later in the report.

[1] Broadly, Design 1: CPI+1% pre-retirement, Design 2: CPI+1% post-retirement, Design 3: Accrual increased to 1/65th

[2] The Interim Report used an effective calculation date of 31 March 2023

Important note on the limitations of modelling and analysis

The purpose of the stochastic modelling is to help illustrate a range of potential outcomes and how CI and the existing benefit structure would fare across this range of outcomes. As such, it is a powerful tool for considering outcomes in *relative* terms – i.e. for comparing how one approach might fare against another in a range of economic scenarios.

Significant caution is needed against over-interpreting outputs *in absolute terms* of any stochastic model as these are highly sensitive to starting assumptions.

The stochastic modelling within this report explores a range of 5,000 future potential scenarios based on an initial set of assumptions. In relative terms, an outcome is considered more likely if it occurs in a higher proportion of future modelled scenarios. There are limitations to this. Events more extreme than those modelled are possible.

Ultimately, pension schemes are designed to be long-term savings vehicles. Over a long enough period, it is less a case of "if" a shock occurs, but "when". Therefore, irrespective of the output of the stochastic modelling, it is also important to consider how CI might behave in a stress scenario.

Full details of the methodology and assumptions used can be found in Appendix F.

Appendix B1 - Overview of modelling outcomes

For CI to be viable it needs to provide better outcomes and acceptable risks in two situations:

1. **In its initial phases** (i.e. from a standing start)– this is what many current members will experience, and any long term benefits would be conditional on CI being viable in the short term.
2. **In the long term** (i.e. once the scheme reaches a steady state) - over the lifetime of the scheme, this is what will drive benefits and risks for members and employers. It is important that any approach is not overly reliant on initial conditions for its ultimate success.

CI would need to offer acceptable trade-offs in ***both*** of these circumstances.

Overview of key conclusions:

Member outcomes:

- CI could provide higher benefits than the existing benefit structure with a high probability[1]. As with all forms of benefit design, there is a trade-off between target benefits, risk and cost. Stakeholders would need to agree how to strike the required balance, but based on current conditions[2], a 20% contribution rate could support benefits targeting c120% of the existing structure in the vast majority of modelled future scenarios (99%)[3].
- Situations where indexation is cut to a level such that benefits are lower than the existing provisions relate to scenarios where the existing DB benefit structure would also be under strain.
- In such a scenario, lower contributions are generally required under CI to maintain benefit provision at existing levels compared with DB. This is a result of the funding flexibilities associated with a relaxation of guaranteed indexation.
- As such, the existence of CI (as a lever) helps improve outcomes *even in situations where the ability to award less than target indexation is never actually used.*
- The risk that indexation would be below target under CI is greatest in the early years post inception. Once CI reaches steady state, outcomes are expected to be less volatile and more predictable year to year for members and employers.
- An approach could be developed to help manage downside risks. Simplified modelling suggests even modest action here could be highly effective at limiting the severity of downside risks to members in early years.

Stability:

CI supports stable contribution rates and stability of core benefits in two key ways:

1. From inception, CI introduces greater flexibility in the valuation methodology allowing for more stable contribution rates over time. This is of benefit, even in situations where the option to award less than target indexation is never actually used in practice.

2. Once there is sufficient CI accrual within the scheme, it provides a significant additional lever to manage stressed situations helping to improve both contribution stability and the viability of the scheme in the long term. Compared with the existing benefit structure, CI allows the scheme, its members and employers more time to gauge the speed and extent of any recovery – reducing the chances that wholesale changes would need to be made to benefits and or contribution rates.

Taken together, CI can help produce more stable outcomes both in more benign environments and in more severe stress situations.

[1] As illustrated in Table 4, p20, Tables 5, 6 and 7, pg22-23 and Charts 1, 2 and 3 p29-31
[2] Assumptions set out in Appendix F
[3] As illustrated in Table 6 p22

Appendix B2 - Update of modelling in Interim Report: 'Standing Start' modelling at 31 March 2025

Introduction

The modelling in the Interim Report was based on the funding position and financial conditions as at the last triennial valuation date of 31 March 2023.

Since then, the funding position has improved, the estimated surplus on the Technical Provisions basis has increased as at 31 March 2025 from £7.4bn to £10.1bn representing a circa £2.7bn improvement. Furthermore, the cost of providing new benefits has also fallen reflecting a rise in discount rates over the period.

Taken together, this:

- Reduces the chances that CI will deliver lower benefits than the existing benefit structure.
- Materially increases the likelihood that members receive full increases at target each and every year into the future.

For Design 1 (pre-retirement indexation at CPI +1%) this equates to:

- The chance of CI delivering lower benefits than the existing structure reducing from 8% to 4%
- The expected level of benefit provision vs the existing structure increasing from 117% to 119%
- The likelihood of members receiving the full increase at target every year increasing from 40% to 66%.

Similar results are observed for the other designs considered in the Interim Report.[1]

It is important to understand the extent to which CI is sensitive to the initial funding position and economic assumptions. Against this context, the changes between the calculation dates of 31 March 2023 and 31 March 2025 are important to consider. As any implementation of CI would take a number of years, a detailed design phase would need to consider the sensitivity to initial conditions, how that impacts expected outcomes and whether downside risk could be managed and mitigated.

Similar to the position expressed in the Interim Report, situations where CI delivers lower benefits than the existing DB benefit structure generally correspond to situations where funding in the DB scheme would be under strain. In such situations, the costs of DB would likely be higher or future benefit accrual would need to be reduced to remain affordable – or a combination of the two.

Observation: Non-CI benefits dominate outcomes in the early years

Analysis suggests that in the early years of CI, outcomes are largely dominated by the funding position of the accrued non-CI benefits. Consistent with the conclusions earlier in this section, scenarios where target indexation is not awarded generally correspond to situations where affordability of indexation is constrained due to the funding position of the non-CI benefits being under pressure.

Whilst the improvement in funding and economic conditions helps to reduce this risk – it also highlights the sensitivity of outcomes to initial conditions.

As we discuss later in the report, even if all parties agreed to move to a CI scheme, the timeline for implementation, the associated detailed work, planning and communication would take a number of years to complete.

[1] The approach to modelling these outcomes is consistent with that adopted in the Interim Report and considers the total amount expected to be paid out to members over a fixed period of time and compares these figures under CI and the current benefit structure.

Recent history has demonstrated that a lot can change in a short amount of time. Whilst an improvement in funding has suggested an improved likelihood of better outcomes from CI, it is entirely possible that funding could deteriorate either in the run-up to any implementation, or in the early years after implementation.

The risk of accrued non-CI benefits driving poor member outcomes is most acute in the early years where over the first 10 years post implementation, non-CI benefits make up the majority of the accrued benefits within the scheme.

Therefore, getting CI right in the early years is vitally important:

- Any long-term benefits can only be realised if CI is viable during the initial phases.
- The early period will be most relevant for outcomes for many current members.
- It is the early period when there is the highest risk of not being able to award target indexation under CI.

As such for CI to be a success, it is important to consider how such a risk could be managed.

Managing early years volatility

The CISG has considered some simplified modelling that suggests that a framework could be developed to help manage both the likelihood and size of downside risks in early years. The detailed design of such a framework is beyond the scope of this report, but as an example, if CI were structured such that:

- The CI benefits are notionally 'ringfenced' from the legacy non-CI benefits; and
- A funding buffer was established at inception out of existing surplus[1] to support awarding target indexation

Then the modelling suggests a material reduction in likelihood that members would be worse off from the point that conditional indexation is introduced.

Table 2 - Likelihood that total scheme benefits lower than DB from 'standing start'

	Likelihood of downside under CI (i.e. probability members receive less from CI than current provision)	Expected level of benefit provision in downside (as proportion of current provision)
No mitigation	4%	86%
Mitigation: (CI ringfenced with initial buffer of £1.5bn[2])	<0.5%	96%

This modelling is deliberately simplified, and caution should be taken to avoid over-interpreting the precise absolute output of the stochastic modelling. However, the analysis does serve to illustrate that in relative terms, action to manage downside risk could be used to provide better outcomes to members (both in terms of the likelihood and severity of downside scenarios), particularly in the early years when CI benefits are potentially most exposed to the volatility of accrued non-CI benefits. In practice there are a range of potential ways that could be used to manage volatility of outcomes and these options and

[1] This section discusses downside scenarios, see Appendix B5 for discussion of managing surplus in upside scenarios.
[2] Represents c2% of the overall scheme liabilities. For modelling purposes, we have assumed this would be invested in line with the VIS. Alternate investment strategies could be used to optimise outcomes further.

relative pros and cons would need to be explored prior to any implementation. If stakeholders decide to proceed with CI, the precise mechanism would need to be investigated further.

Appendix B3 - The dynamics of CI in 'steady state'

Introduction and motivation

One of the key reasons for exploring CI is to understand the extent to which it can deliver better, more stable outcomes for employers and members.

To understand this, it is important to consider how CI behaves once it becomes the predominant source of benefits delivered from the scheme. We refer to this as 'steady state'.

Understanding the 'steady state' dynamics of CI can help us consider:

- How much of a 'lever' CI creates in providing long-term stability
- The extent to which CI can aid in addressing stress situations and how this compares to the current benefit structure.
- Whether any conclusions from the Interim Report change, if CI is the predominant benefit within the scheme.

This helps us address the extent to which CI meets a number of the key objectives set out in the Interim Report, compared with the current benefit structure as follows:

Table 3 - Assessment criteria

Assessment Criteria:	Detail
Likelihood of retaining DB	Increase the chances of retaining a predominantly DB benefit structure over the long term
More stable contributions for members and employers	Total contributions should be more likely to remain within an agreed range in the short-medium term
Higher overall benefits	Higher expected benefits in the vast majority of scenarios with acceptable outcomes in poor scenarios supported by a catch-up mechanism
Stability of core benefits	Achieve greater stability over time in the core level of benefit accrual (accrual rate and salary threshold)

Appendix B4 - How we have modelled 'steady state'

There are a number of ways that a 'steady state' with CI could be illustrated.

The approach adopted and described below seeks to strike a balance between producing analysis that is intuitive and comparable to the scheme today, is sufficiently straightforward to explain and model whilst also providing a sufficiently robust analysis of the key features of CI.

We have set out four key areas of assumptions below, but an intuitive way to think about the approach taken is to consider "if the scheme provided predominantly conditional DB benefits rather than current non-conditional DB benefits – how would things look?"

a) Demographics

Our steady state modelling assumes that around two-thirds of accrued DB benefits are CI. To get to this point takes circa 30 years of accrual. At this point, the vast majority of existing benefits are in payment. We have assumed the same profile of membership as today.

b) Funding level:

As a starting point, we have assumed that the funding level in the steady state CI scheme is comparable to that of the current DB benefits as at 31 March 2025. There are two primary reasons for this:

i. This provides a natural and intuitive comparison against the current level of benefit provision.

ii. This is a deliberately 'safe-side' assumption that provides a more prudent test as to whether CI can produce favourable outcomes.[1]

c) Level of benefits

A CI scheme that has been running for 30 years with a higher level of target indexation than the existing scheme would (all else equal) be expected to be providing higher benefits than the existing DB benefit structure for the same contribution rate.

Comparing against this baseline means that the DB comparator begins with lower benefits in payment than CI but importantly has comparatively better funding than CI (as CI has awarded a higher level of benefits and is expected to award higher benefits in future than the DB comparator assuming the same investment strategy and contribution rate).

d) Economic assumptions

Our economic assumptions make no allowance for near term views in capital market expectations, reflecting the fact that it is expected to take 30 years to reach steady state conditions for the CI benefit structure.

[1] Analysis suggests that we can expect funding to be better than this in 30 years in around 80% of scenarios.

Appendix B5 - Steady state stochastic modelling results: scheme-wide outcomes

We now take the updated analysis from Appendix B2 of this report and consider it through the steady state lens – again focussing on Design 1 for brevity.

This helps us consider:

- How CI might fare in the long term vs the current DB provision
- The extent to which CI benefits and drawbacks are expected to be short-lived or sustained

We first consider what conclusions change when moving from the initial phase of CI to steady state, and then extend our analysis to help illustrate:

- How much flexibility CI could provide in attaining contribution stability
- Outcomes in situations where indexation is not being granted at target

We use this analysis to comment on how CI could compare to some of the assessment criteria set out in the Interim Report.

As before, this modelling is simplified. It does not consider any intervening actions that might be taken in practice, by the Trustee or the stakeholders and instead assumes the agreed structures and contributions are allowed to continue indefinitely, irrespective of the overall funding position or economic outlook.

The table below compares the steady state analysis to the updated 'standing start' analysis from Appendix B2 to illustrate the impact of the evolution of the scheme over time. The narrative in blue is designed to help the reader interpret the table.

Table 4 - How do outcomes change once we reach Steady State?

Design 1	Standing Start		Steady state (Assuming current DB as starting point)	
Member outcomes				
Likelihood of members receiving less/more than current benefits	Less than current benefits	More than current benefits	Less than current benefits	More than current benefits
	4%	96%	1%	99%
Expected level of benefit provision	86%	120%	93%	123%
Overall average level of benefits compared with current benefits	119%		122%	
CI Outcomes				
Likelihood that catch-up indexation required at some point	100%	31%	100%	22%
Likelihood that indexation below target in any given year	69%	5%	67%	4%
Funding Outcomes				
Existing structure: Likelihood average funding < 80%	76%	<1%	43%	<1%
CI structure: Likelihood average funding < 80%	30%	<1%	14%	<1%

Members less likely to be worse off from CI – once we are in steady state

The highlighted cells measure expected outcomes in a downside scenario (i.e. what proportion of current benefits do members expect in situations where they receive less)

An increase here shows severity of downsides less material – once we are in steady state

Similar likelihood of paying at target each year

Severe downside outcomes less likely once reach steady state as funding expected to improve over time.

Key observations

- Once in steady state, Design 1 delivers c22% higher benefits[1] to members than the existing benefit structure and is more likely than not to generate a surplus over time.
- Over time, as CI benefits accrue and become the predominant form of benefits within the scheme, the likelihood of members being worse off relative to current benefits reduces.
- In situations where members are worse off, the severity of the downsides is less material in steady state than standing start, as the most extreme outcomes in earlier standing start modelling were dominated by scenarios where legacy non-CI benefits were under strain. This matters less in steady state, as non-CI benefits will be materially smaller.
- Similar results are seen for the other designs considered in the Interim Report of Design 2 and Design 3[2].

This analysis is useful in assessing CI against one of the key objectives agreed by the CISG in the Interim Report – namely, whether CI can provide "Higher expected benefits in the vast majority of scenarios with acceptable outcomes in poor scenarios supported by a catch-up mechanism".

Taken together, this illustrates that a 20% contribution level could provide a very high likelihood of being able to pay CI benefits at around 120% of the existing non-conditional structure.

Extending the steady state analysis:

How might the existing DB benefit structure fare in future, and how does CI respond in challenging scenarios?

This steady state analysis also allows us to consider three of the key objectives outlined in the Interim Report, namely:

1. Increase the chances of retaining a predominantly DB benefit structure over the long term
2. More stable contributions for members and employers
3. Achieve greater stability over time in the core level of benefit accrual (accrual rate and salary threshold)

In order to illustrate this, it is helpful to consider the range of possible outcomes for the existing DB scheme, and the likelihood and severity of these outcomes. We can then consider how CI would fare and whether this produces outcomes that are more or less stable than the existing benefits.

To do this, we consider the potential evolution of the DB scheme over a 60-year time horizon (twenty valuations) under 5,000 possible future scenarios and then identify scenarios that could be considered stressed, in particular:

- Identify those scenarios where a funding deficit arises
- Within this, consider the contribution rate that might apply

Whilst it is not possible to pre-judge how a valuation outcome might be negotiated and the extent to which contribution and/or benefit changes might be required, we can identify future situations where flexibility within the DB regime would be most limited, namely where there is no ability to use a funding surplus to stabilise outcomes, where there may be a deficit to repair, and where required contribution rates are above current levels.

[1] Average outcome over 60-year time horizon across 5,000 modelled scenarios

[2] Broadly, Design 1: CPI+1% pre-retirement, Design 2: CPI+1% post-retirement, Design 3: Accrual increased to 1/65th

Table 5 - Steady state modelling: How do CI and DB fare in stress scenarios?

Rating	Green	Yellow	Amber	Red
Description	Never in deficit	In deficit, required future service contributions <20%	In deficit, required future service contributions 20% - 30%	In deficit, required future service contributions >30%
Existing DB	83%	8%	6%	3%

The above table illustrates that in our modelled scenarios there is a modest likelihood (c17%) that the existing DB scheme would be under some kind of financial stress potentially requiring intervention in the way of higher contributions (above 20%), deficit repair and/or lower benefits.

This is a function of the substantial funding surplus as at 31 March 2025 and associated financial conditions. A stronger starting position would show less potential for future funding challenges and a weaker starting position would show a higher potential for financial stress.

Similar comments equally apply to the conditional indexation modelling. As referenced earlier in this report, part of the improvement seen in the analysis (compared with the analysis presented in the Interim report) is a direct consequence of the improvement in funding position and changes to financial conditions.

Nobody can predict the future, and reasonable minds will differ on the likelihood of future scenarios and therefore care is needed in placing too much weight on the precise numbers produced by stochastic analysis. However, what is potentially *more* helpful, is to understand how CI would fare in identical scenarios to the existing DB scheme – in other words, whilst we don't know what the future holds, we can observe how CI DB would perform vs non-conditional DB in each of the 5,000 scenarios and draw a comparison.

For simplicity of illustration, we divide potential CI outcomes into three categories:

1. CI awards indexation at target i.e. above existing non-conditional benefits[1]
2. CI awards indexation below target but provides benefits above levels of existing benefits
3. CI awards indexation below target with benefits at levels at or below existing benefits[2]

We first consider these in aggregate as follows:

Table 6 – Steady State modelling: Potential CI outcomes

Scenario	Proportion of scenarios modelled
CI awards indexation at target	93%
CI awards below target indexation but benefits still above levels of existing benefits	6%
CI awards indexation below target with benefits at or below existing benefits	1%

Taken together members are expected to be better off under CI in 99% of the modelled scenarios.

[1] Indexation considered to be granted at target if granted at target every year, or indexation fully caught up by the end of the simulation

[2] This assumes that the existing DB scheme would continue in current form

We then compare how CI fares depending on how the existing benefits would fare:

Table 7 - Steady state modelling: CI outcomes compared with existing benefits

Rating	Green	Yellow	Amber	Red
Description of DB outcome	DB never in deficit	DB in deficit, required future service contributions <20%	DB in deficit, required future service contributions 20% - 30%	DB in deficit, required future service contributions >30%
CI awards at target	99%	79%	57%	41%
CI awards below target indexation but benefits above levels of existing benefits	1%	20%	36%	48%
CI awards below target indexation and benefits below existing benefits	0%	1%	7%	11%

In other words:

- In situations where the existing DB scheme would never face financial strain – CI provides better outcomes for members through higher benefits in all modelled scenarios.
- In situations where there would be a deficit in the DB scheme – in the vast majority of circumstances, CI would still be likely to award benefits higher than existing levels of benefits – and in most cases, still award at target.

Importantly, even in situations where funding for the existing DB benefits is sufficiently strained that changes would almost certainly be required - either through higher contributions or changes to benefits – CI would provide benefits at or above the existing structure, with contribution rates remaining stable in around 90% of these scenarios.

Three important conclusions can be drawn from this analysis:

1. CI introduces flexibilities that help improve outcomes via higher benefits and greater contribution and benefit stability – *even in situations where the lever of adjusting indexation is never used.*
2. In situations where the existing DB scheme is under financial strain that could result in benefit and/or contribution changes – in most situations CI provides benefits at or above current DB levels, without the need for further contributions.
3. Conversely, situations where CI is expected to pay out less than the existing benefits, generally correspond to situations where the funding of existing DB benefits is under strain - which in recent history resulted in higher contributions for employers and members and/or lower benefits.

As set out in the Interim Report, guarantees provide valuable certainty to members but come at a cost. As part of funding the scheme, the Trustee holds reserves as a buffer against risks. Building

reserves costs money – with stronger guarantees requiring greater reserves. The above three conclusions are a result of the resulting flexibility in funding requirements associated with a relaxation of guaranteed indexation.

Put simply; having additional flexibility available is sufficient to improve outcomes – even if such flexibility is never used in practice.

In situations under CI where economic conditions suggest that indexation could not be awarded at target, it would be open to stakeholders via the JNC to take alternative steps to address this through existing means – i.e. through higher contributions or adjusting future benefits. However as above, the flexibilities provided by CI means that any such intervention would be expected to be less severe than under the current non-conditional benefit structure.

Simplified illustration:

To bring this to life, we consider a simplified example whereby returns and therefore discount rates have fallen by 2% in the first year of our steady state scenario:

For DB this would result in:

- A fall in Technical Provisions funding level from 122% to 98%
- A Technical Provisions funding deficit to be addressed of c£3bn
- An increase in total future service contribution rate to around 29% of pay

Under CI this would result in:

- The Technical Provisions funding level falling from 143% to 121% (the funding level in CI is materially higher, as only the guaranteed benefits and not conditional indexation are allowed for within the Technical Provisions)
- A Technical Provisions funding surplus of £18bn
- A contribution rate relating to the guaranteed benefits of 16%

Under CI, we would then consider what indexation would be sustainable in perpetuity using best estimate assumptions. This would suggest:

- Indexation would be sustainable at 70% of target (i.e. 70% of CPI + 1% pre-retirement, averaging 2.8% if CPI averages 3.0%) Retired members would continue to be entitled to statutory indexation of CPI capped at 2.5% on their benefits in payment).
- Alternatively, contributions would need to increase to 28% to see indexation sustained at target.
- Contributions increasing to 22% would be sufficient to see indexation affordable at full CPI (i.e. above the provision provided by the existing DB scheme).

Therefore, in our example stress scenario, broadly equivalent member outcomes would require:

- **Under existing DB:** Contributions of 29% would be required, with a deficit of £3bn to be addressed. To the extent this is unaffordable, reductions to future benefits may be required.
- **Under CI:** Contributions of 22% would be required, with no statutory deficit to remove. To the extent this is unaffordable, indexation would need to be awarded below the target level (with potential for 'catch-up' should the position improve, or reductions to future benefit accrual if required).

It is important to note that any decision between adjusting indexation, paying higher contributions or altering future benefit accrual would affect different groups of members in different ways and this would need to be considered as part of decision-making. Of course, such trade-offs already exist. If

current DB benefits are deemed unaffordable, a decision is required over how this is addressed and how the impact of this is borne by active members and employers.

The key differences with CI are that:

- Any adjustment required to benefits (whether through indexation or changes to the core benefit) is likely to be less severe, owing to the increased funding flexibility outlined above. This helps illustrate how CI helps achieve objectives of greater benefit and contribution stability whilst increasing the chances that DB benefits could be maintained in a stress scenario.

- CI would allow indexation to be reduced to statutory levels on benefits in payment (i.e. CPI capped at 2.5%). This would allow the impact of any funding strain to be shared by a broader group of members than the current approach.

Reasonable minds may differ as to whether it is more or less intergenerationally fair for the balance of any funding strain to be borne by a broader or narrower group of members. We make no assertions here as to what may be preferable, other than to say that there is nothing suggested within CI that would preclude the stakeholders from taking actions under CI in response to a funding strain that they otherwise would have taken under DB.

What is therefore critical is understanding how such decisions might be taken and the information that could be provided to facilitate such decisions, as explored further in Appendix A of this report.

Conclusions

Part of the rationale for exploring the range of future scenarios and focussing on outcomes in stressed funding events is to understand that extent to which CI achieves the objectives set out in the Interim Report.

The analysis above suggests:

1. CI increases the chances of retaining a predominantly DB benefit structure over the long term by providing additional levers to respond to a stress. In any event, the reaction to a stress may be less severe under CI owing to the additional flexibility afforded by softer guarantees.

2. CI helps reduce contribution volatility for members and employers. The existing DB benefit structure is more likely to result in a valuation that requires contribution or benefit changes than a CI structure – even if indexation is always paid at target.

3. CI helps achieve greater stability over time in the core level of benefit accrual (accrual rate and salary threshold):
    - The flexibilities introduced by CI mean that even in situations where DB would be under most financial strain (potentially leading to changes in accrual), in many cases core benefits and contributions under CI could remain unchanged.
    - Likewise, in situations where there was limited appetite to award less than target indexation, smaller changes to contributions and core benefits would be required under CI to address a funding stress position than would be required under current DB.

Appendix B6 - Managing a surplus: Differences in how DB and CI fare in upside scenarios

If CI is designed and financed on the principle that there should be a high probability of paying target benefits, then such a scheme is likely to generate a surplus over time.

Put another way, if a 20% contribution rate is sufficient to grant CPI+1% indexation in 90% of future scenarios, then in a high proportion of such cases, it will be more than sufficient, creating surplus funds.

It is therefore important to think about the consequences of a surplus building up and any of the surplus being used to increase benefits or reduce cost.

Distributing surplus under CI has some key differences compared with distributing surplus under non-conditional DB benefits.

As an example, under the current DB structure, if surplus is spent on benefit improvements and subsequently, with the benefit of hindsight, this turns out to be unaffordable – there is no mechanism to unwind improvements already granted. In such a case the costs of improving benefits for older members would be felt by future generations of members and employers through higher contributions and/or lower benefits going forward.

To avoid such a scenario, caution is required in distributing surplus to avoid the risk of unintended intergenerational unfairness.

On the other hand, CI could be designed such that, if surplus is spent on benefit improvements and similarly, with the benefit of hindsight, this turned out to be unaffordable, there would be the ability to 'unwind' the improvements by pausing or reducing indexation for a period to put members back in the position they would have otherwise been in. This could help support a less conservative approach to surplus usage under CI.

Under CI, care would still be needed on how surplus is spent. Whilst CI helps manage the risk of unintentional intergenerational wealth transfers there is a tension between:

- Aiming for the highest possible target benefits: Paying out the maximum affordable target benefits by minimising risk buffers and therefore increasing volatility in indexation each year.
- Aiming for predictability: Placing more weight on the ability to pay benefits at least at target with a high degree of certainty.

This reflects a core feature of CI. For a given level of contributions, there is a trade-off between the level of benefits targeted, and the certainty in achieving this. The higher the level of benefits – the lower the certainty.

A key design principle is how to balance **predictability** of indexation against the potential for **higher benefits** and the associated **cost** via contributions.

Illustrating the range of potential upside outcomes

There will likely be a range of views on how any surplus could be distributed. Below we provide analysis to illustrate what could be possible. As is currently the case, it would be for the stakeholders and Trustee to agree from time to time how any surplus would be distributed.

The modelling[1] assumes that an upside scenario is one in which:

- CI target benefits are at least 115% funded on a best estimate basis.
- Non-CI benefits are at least 130% funded on a best estimate basis.
- Any surplus beyond this is eligible for distribution. We have assumed for illustration this is split evenly between additional indexation for members and lower contributions for employers (in practice there would be many ways to determine the split).
- The commitment to paying contributions at 20%, if required, remains in perpetuity.

In reality, such a structure could result in a broad range of outcomes. We can extend the analysis presented earlier, to illustrate this:

Table 8 - Range of potential outcomes allowing for surplus distribution

Scenario	Likelihood[2]
CI awards at target + 2% or more	8%
CI awards at target + 1% to + 2%	41%
CI awards at target +0% to +1%	41%
CI awards below target indexation but benefits above levels of existing DB	9%
CI awards below target indexation and benefits at or below existing DB	1%

As a rough rule of thumb, for every 1% p.a. that indexation increases (both pre and post-retirement), total benefits received by typical non-pensioner members increases by around 20%, with a commensurate reduction in contributions of around 5%.

To bring this to life, the above table suggests that indexation of around 1% p.a. above target could be sustainable on average.

For a 45-year-old member who retires at 65 and lives until age 95 this would increase benefits received by around 40% relative to current non-conditional DB provision. Total contributions would fall by around 5% of payroll p.a. (i.e. to 15% p.a.).

Similar to any DB scheme, actual experience will differ by member and depend on when the member joins, retires and dies and how funding evolves over these periods.

Key conclusions:

CI can facilitate a less conservative approach to using surplus **to improve benefits** as such improvements can be more easily scaled back if they subsequently turn-out to be unaffordable.

It can also facilitate a less conservative approach to using surplus **to reduce contributions** by making allowance for contributions to return to target if needed.

[1] Modelling is performed using steady-state scheme and assumptions – further detail in Appendix F
[2] Measured over 60 years

Appendix C - Considering design trade-offs

At its heart, conditional indexation presents a three-way trade-off between:

- **Cost** – The agreed level of contributions to be paid
- **Benefits** – The agreed level of indexation to target
- **Risk** – The likelihood of being able to grant benefits at target over time

So, for a given level of cost, the higher the benefits targeted, the higher the risk that indexation cannot be granted at target.

This is a balancing act:

- Setting the target benefits too aggressively would see volatile outcomes and members receiving less than expectations, with the potential for shortfalls to be borne by later generations.

- Setting the target benefits too conservatively would see earlier generations establishing large surpluses that are then used to provide later generations with higher benefits or lower contributions.

The same tension exists in all forms of DB benefit design, conditional and non-conditional, and ultimately how to strike such a balance is a key question. For a given level of contributions, would members rather an approach that seeks to maximise potential benefits, or increase the likelihood that benefits are paid at target?

There is no single right answer, and in establishing any CI scheme, stakeholders would need to find the right balance between cost, benefits and risk.

To help inform such a conversation, we extend the analysis produced in this paper thus far, which primarily focuses on Design 1 from the Interim Report (i.e. indexation of CPI + 1% pre-retirement, CPI post-retirement) at a contribution rate of 20%, to look at a range of potential benefit designs and contribution rates.

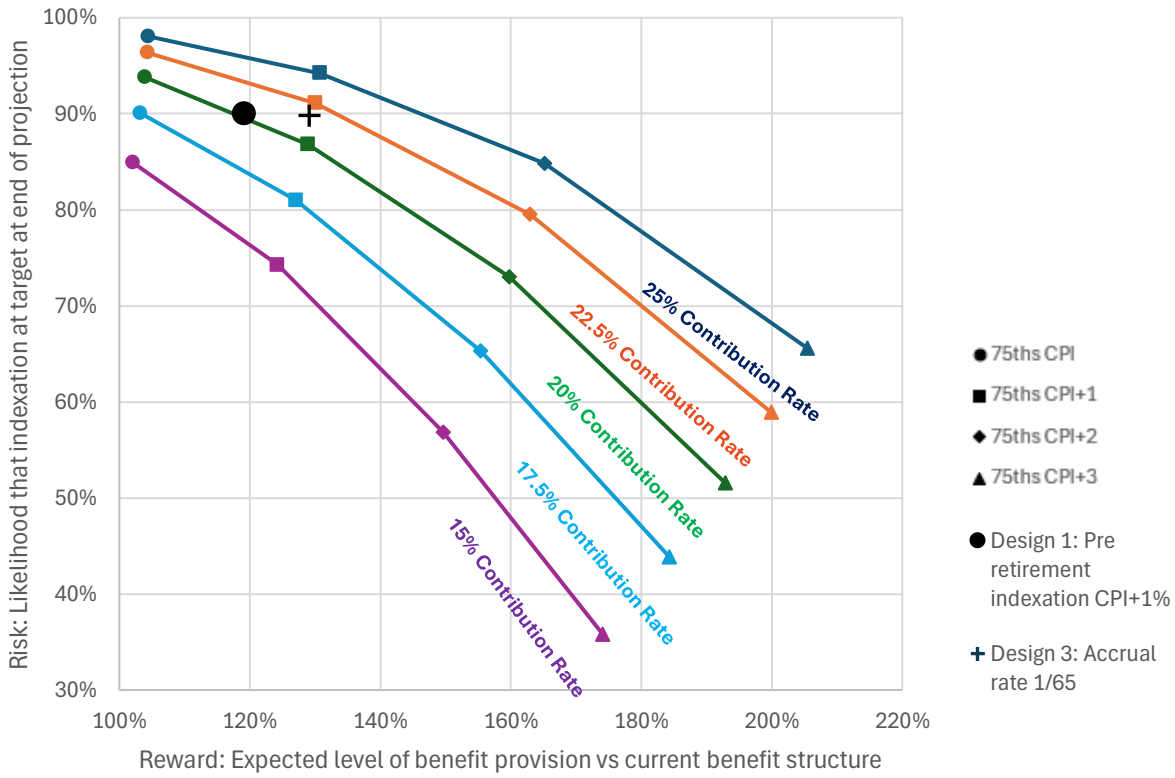
We consider:

- The impact of increasing target indexation in 1% increments both pre and post-retirement
- The impact of contributions on outcomes considering 15% through to 25% contribution rates

And then we assess:

- **Risk:** At the end of our projection, whether indexation is being paid at target (either because indexation is granted in full each and every year, or because any shortfall in indexation has been caught up in full); and
- **Reward:** The difference in total benefits payable to members over the period under CI and under the existing DB benefit structure.

Chart 1 - Risk vs Reward vs Cost – Design trade off: All simulations



Observations:

The chart above illustrates that for a given contribution rate, as target indexation is increased, the likelihood that indexation is granted at target falls. **Broadly speaking, a move from the bottom left to the top right of the chart represents an improvement in outcomes.**

As a benchmark, the large black circle represents Design 1 at a contribution rate of 20% that has been considered by the more detailed analysis within this paper.
The chart illustrates that for Design 1:

- There is a c90% chance of paying at target over the projection period (either by granting target each year, or by fully catching up by the end of the projection)
- That on average, members would be c120% better off compared with the existing structure

The chart also illustrates the impact of an increase or decrease in contribution rates on member outcomes. For example,

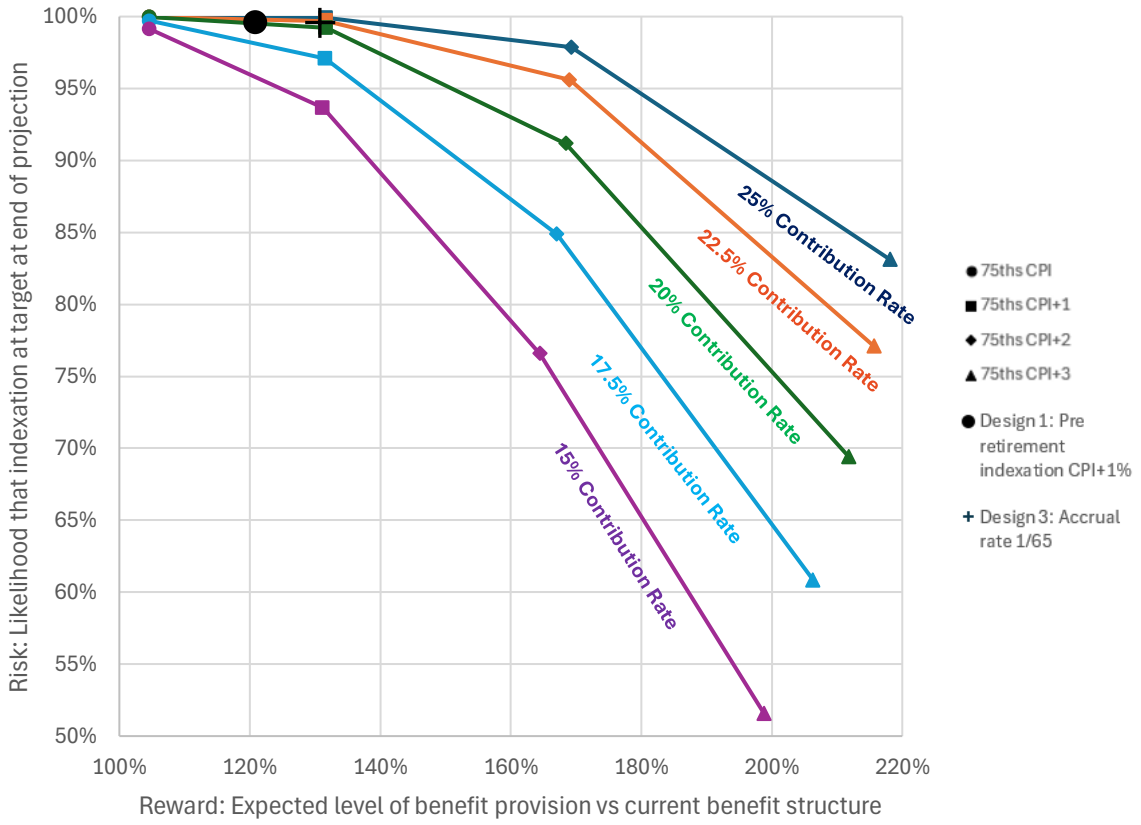
- For a fixed level of risk (i.e. a given level of wanting to grant benefits at target) – the cost of improving target benefits by 1% p.a. is a c5% increase in contributions.

As an illustration:

- A contribution rate of 20% would allow target indexation of CPI +1% to be granted around 87% of the time
- A contribution rate of 25% would allow target indexation of CPI + 2% to be granted around 85% of the time.

Similar to the position earlier in this report, if we focus only on those circumstances where DB is **not** under funding strain, this reduces the possibility that indexation would need to be cut:

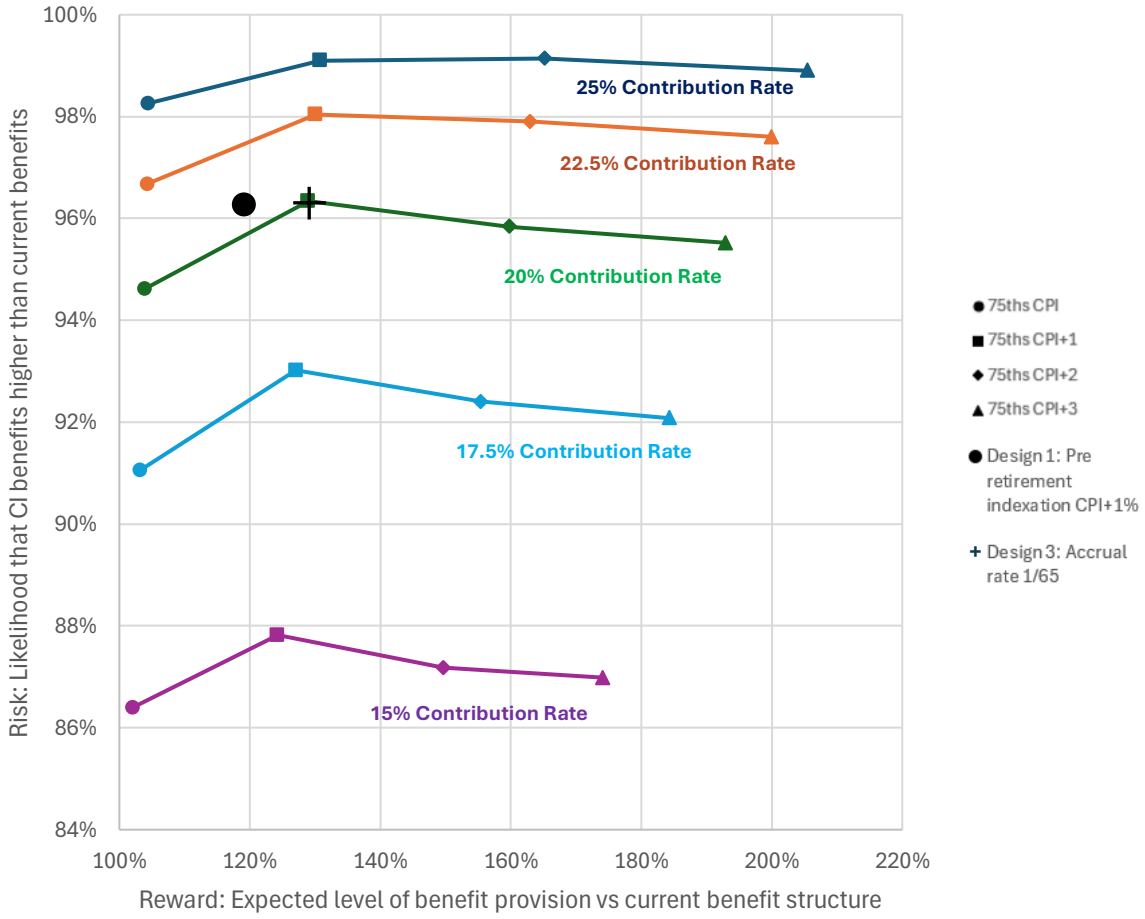
Chart 2 - Risk vs Reward vs Cost – Design trade off: Excluding scenarios where DB in deficit



Of course, in many of the situations with higher benefit targets, even indexation *below* target would provide benefits higher than the existing benefit structure.

The final chart considers the risk vs reward vs cost trade-off from a different perspective, by considering risk as "the likelihood that total benefits are higher than would have been received from current DB" – i.e. rather than comparing indexation against target, we compare against what members would have received in aggregate via the current non-conditional DB benefit design:

Chart 3 - Likelihood that total benefits are higher than would have been received from current DB



Assessing CI outcomes against the current non-conditional DB benefit structure illustrates that:

1. Some level of indexation above CPI is beneficial in helping to improve the chances that CI benefits are above benefits provided by the current non-conditional DB design (by avoiding the chances that one or two years of below target indexation brings you below the existing benefit structure).
2. There is a diminishing impact of increasing contribution rates in terms of reducing risk.

Exploring the design trade-offs - conclusions:

A core feature of CI is that for a given level of contributions, there is a trade-off between the level of benefits targeted, and the certainty in achieving this. The higher the level of benefits – the lower the certainty that they will be paid at target.

A key decision in the design of any CI scheme is how to balance **predictability** of indexation against the potential for **higher benefits** and the associated **cost** via contributions. This is a trade-off and there is no single right answer here, and, if taken forward, it would be for stakeholders to determine where any mutually acceptable trade-off is set.

Appendix D – Evaluating CI against agreed assessment criteria

The Interim Report sets out assessment criteria for CI considering whether CI could achieve agreed objectives and whether risks, challenges and trade-offs could be appropriately managed. The table below sets out the criteria identified in the Interim Report, initial conclusions stemming from the analysis within this paper and potential next step for further exploration.

Objectives – How do we assess if CI can deliver better outcomes?		
Assessment criteria:	**Description**	**Conclusion**
Likelihood of retaining DB	Increase the chances of retaining DB over the long term.	CI increases the chances of retaining a predominantly DB benefit structure over the long term by providing additional levers to respond to a stress event, as set out in Appendix B5. The reaction to a stress may be less severe under CI owing to the additional flexibility afforded by making indexation conditional rather than guaranteed.
More stable contributions for members and employers	Total contributions should be more likely to remain within an agreed range in the short-medium term.	CI helps reduce contribution volatility for members and employers. The existing DB benefit structure is more likely to result in a valuation that requires contribution or benefit changes than a CI structure – even if indexation is always paid at target.
Higher overall benefits	Higher expected benefits in the vast majority of scenarios with acceptable outcomes in poor scenarios supported by a catch-up mechanism.	A number of the benefit designs modelled achieve this aim. Ultimately, the likelihood of CI providing higher benefits is dependent on the level of contributions and level of target benefits. **Key next steps in this area would be for stakeholders to consider:** **1. What benefits should be targeted at what level of contribution rate.** **2. How a catch-up could work for years where target inflation had not been paid**.
Stability of core benefits	Achieve greater stability over time in the core level of benefit accrual (accrual rate and salary threshold).	CI helps achieve greater stability over time in the core level of benefit accrual (accrual rate and salary threshold): ▪ In situations where the current DB design would be under material financial strain (potentially leading to changes in accrual and or increases to contribution rates), the flexibilities introduced by CI mean that core benefits and contributions under CI could, in many cases, remain unchanged. ▪ Likewise, in situations where there was limited appetite to award indexation below target, smaller changes to contributions and core benefits would be required under CI to address a funding stress position than would be required under current DB which as well as reducing the impact of funding stress, gives stakeholders additional optionality to address it.

Limitations – How do we assess risks, challenges and trade-offs?		
Risk	The levels, types and transfer of risk and reward from employers to scheme members must be understood and acceptable.	This paper sets out how CI would fare compared with the existing DB benefit structure and what this would mean for members in a range of scenarios. **Key next steps in this area include:** **1. Further exploration of how risk is transferred between different groups of members and employers.** **2. Whether these associated risks are acceptable relative to the level of benefits targeted.** **3. What mitigations could be agreed to help manage downside risks.** **4. Exploration of other potential risks and how severe downside scenarios could be mitigated.**
Clear, transparent approach for managing CI	Transparent decision-making process established for determining annual CI increases, with clarity on the roles and responsibilities of different bodies.	This paper sets out key considerations for effective decision-making in a CI scheme and an example of how this could dovetail with existing provisions. **Key next steps in this area include:** **1. To consider which elements of decision-making should be agreed in advance, and which should be flexible to respond to future emerging circumstances.** **2. To consider which elements of the framework should be formulaic, which should be legally binding and which should be subject to future discretion**. **3. To consider who makes which decisions and what information they rely upon in doing so.**
Member fairness and equity	The risk and reward trade-offs between different groups of members must be understood, proportionate and more intergenerationally fair.	There are important differences between the current benefit structure and CI in how costs and risks are borne out in practice: ▪ Under the current benefit structure, the costs of the guarantees are borne solely by current and future active members and employers, rather than all of those who benefit from them. ▪ Under CI, the risks associated with the costs of indexation are borne by all of those who benefit from them. (For the avoidance of doubt, DB benefits accrued under the current structure would not be impacted.) Opinions may differ as to whether it is more or less intergenerationally fair for the balance of any funding strain to be borne by a broader or narrower group of members. However, there is nothing suggested within CI that would preclude the stakeholders from taking actions under CI in response to a funding strain that they otherwise would have taken under DB.
Communicable and implementable	The benefit design should not be unnecessarily complex, should be capable of being clearly communicated and understood by members and employers and implemented in a way that represents good value for members and employers.	A clear indexation policy covering funding, contributions and indexation levels can support transparency and clarity of communication with members and employers, however the broader member and employer engagement and communication strategy has not yet been considered. **Key next steps in this area include:** **1. To consider how CI could be best communicated to members and employers.**

Appendix E – Terms of Reference

Purpose and Scope

This term of reference is for a sub-group of the Stability Working Group (StWG) of the Joint Negotiating Committee (JNC) to explore conditional indexation (CI) with the objective to identify if CI could improve USS member expected outcomes and/or deliver improved contribution and benefit stability within an affordable cost envelope for members and employers compared to the current benefit design. The Group will report into the StWG and explore whether a CI benefit design would support the objective set out above. Upon completion of the work of the Group and reporting its findings into the StWG, the StWG can make a recommendation / recommendation to the JNC for its consideration in respect of core CI benefit design.

Considerations of the Group include:

- Benefit design - including exploring benefit design and contribution structures that could improve member expected outcomes and provide greater stability, and considering the practical implementability of any CI solution
- CI decision-making and Governance
- CI valuation methodology and funding risk
- Sector support and engagement
- Understanding member impacts including fairness and equality aspects of any designs

In undertaking the review the Group will:

- Respect the responsibilities of different parties in matters of benefit change, scheme funding and investment
- Recognise the legal and regulatory boundaries that frame benefit change, scheme funding and investment, and ensure that all relevant pensions legislation and law will be upheld

Regular updates will be provided to the JNC within the reporting from the StWG. The Group will identify checkpoints to review and report key findings to the StWG and JNC and to ensure that it remains appropriate to continue the exploration of CI. An interim report is to be scheduled for May 2025 and a findings report will be submitted to the JNC via the Stability Working Group in October 2025 to give a view as to whether CI would be a viable solution to support the objective set out in the purpose and scope. The timetable will be kept under review with a formal review in late January 2025/early February 2025.

Context

CI is a defined benefit pension like the USS Retirement Income Builder except that future annual "cost of living" increases (revaluation and indexation) ordinarily applied to the future benefits members build up are instead conditional on the scheme's funding position. CI has the potential to deliver improved member expected outcomes and greater benefit and contribution stability but does replace guaranteed indexation within the rules with a partly conditional increase based on scheme funding. The Group will consider this balance of better expected member outcomes and improved stability, against the reduced certainty around indexation as it progresses the exploration of CI.

Structure

The Group will consider and agree the programme of work, matters to be considered and resource requirements at an initiation meeting (or 'Meeting Zero') of the Group. The programme timetable

will be considered and agreed at meeting zero noting that it will remain under review and can be adjusted if required.

Group members: UCU and UCEA will each appoint three representatives to the Group (with the option for the UCU/UCEA officer to be a fourth representative); to attend meetings and to consider and discuss CI. Advisers are invited to attend meetings and participate in the discussions.

Chair: The Trustee will facilitate the CI meetings as is the case for the StWG. There will be no formal chair however UCU and UCEA can appoint one.

Secretariat: USS

Meetings: A meeting quorum will be three members each from UCU and UCEA. UCU and UCEA can decide a different quorum requirement for meetings where that is jointly approved by them in advance. Meetings will be held in a format which allows either attendance in person or via remote access. The USS executive will assist with meeting arrangements, agendas and notes, supported by UCEA and UCU as appropriate.

Communications and engagement with employers and members:

- The work of the Group will include clear and regular communications with members and employers and updates on findings and progress at regular intervals
- The work of the Group will be exploratory, and the information shared with it from the Trustee or advisers may at times be confidential. The Group will identify key pieces of information which would be useful to share publicly and agree if and when that information can be made public (seeking permission from the Trustee in advance where it relates to confidential information).

Appendix F – Methodology and assumptions

The modelling results shown in this paper have been provided by USS, who have provided the following notes accompanying the results.

The stochastic modelling is carried out using ORTEC's GLASS software (here), a third-party proprietary Asset Liability Modelling (ALM) tool.

This system can be thought of as having two main components.

1. An economic scenario generator producing multiple economically plausible forward-looking scenarios. These are calibrated to the initial assumptions described later in this section.
2. An ALM engine which for each forward-looking scenario generated by the economic scenario generator, models the expected impact on the scheme (including the operation of the CI mechanism).

We discuss each of these in the sections below.

As discussed in the report, modelling has been carried out both assuming an inception date of 31 March 2025 for CI benefits ('standing start'), and assuming a 'steady state' position where significant CI benefits have been built up. In each case the underlying financial assumptions are based on market conditions at 31 March 2025, however shorter-term effects have been removed for the 'steady state' position given that this would not be reached for some years. The 'steady state' position is effectively based on where the standing start modelling might evolve to.

Financial assumptions and economic scenarios

The economic scenario generator used in the modelling produces a set of 5,000 simulations with a horizon of 60 years in annual timesteps, each representing a different possible future path of economic conditions, which together are intended to represent a reasonable range of future outcomes. The underlying economic scenario generator is based on a combination of historic market data and Ortec Finance research; certain simulated quantities are subsequently calibrated to align their central paths with USS Capital Market Expectations.

Key risk and return statistics from the modelling are set out below, for both the 'standing start' and 'steady state' modelling:

Table 9 - Standing start statistics

	Real Return, Years 1-10	**Real Return, Years 11-30**	**Real Return, Years 1-30**	**Standard Deviation (30 Year Horizon, Annual returns)**
Equities	3.9%	4.8%	4.5%	17.4%
Property	1.4%	3.3%	2.6%	19.8%
Other Fixed Income	2.4%	3.4%	3.0%	6.9%
LDI	2.8%	1.8%	2.1%	10.9%
Cash	1.2%	1.0%	1.1%	2.1%

Table 10 - Steady state statistics

	Real Return, Years 1-30[1]	Standard Deviation (30 Year Horizon, Annual returns)
Equities	4.8%	17.3%
Property	3.2%	20.3%
Other Fixed Income	3.3%	6.8%
LDI	1.8%	10.4%
Cash	1.0%	2.2%

The returns shown are the means of the annualised return over CPI (geometric excess) for each asset for each period. The standard deviations are the standard deviations of annual discrete returns across the simulations over a 30-year horizon. These figures are outputs from the modelling.

The dynamics which drive returns and other economic conditions in the simulations are state and time-dependent, so that each of the 5,000 scenarios effectively has its own observable covariance matrix over a particular simulation horizon. This allows the model to capture complex path-dependent behaviours and more extreme tail conditions than would be the case with a conventional log-normal model of returns. As such, there is no single specified covariance matrix from which the return simulations are generated. Observed correlation statistics for the standing start and steady state modelling are set out in Appendix F1.

The investment strategy is based on the asset allocations used in USS's Valuation Investment Strategy as at 31 March 2025, with these allocations held constant across the simulations and through time for the modelling involving CI benefits. This is slightly different from the way the actual Valuation Investment Strategy operates, which maintains a particular hedge ratio, and the modelling of the comparator non-CI benefit structures reflects this approach.

The financial assumptions used to determine the scheme's liabilities in the various tests vary according to the projected market conditions. They are set as follows (n.b. "Gilts" here refers to the fixed interest gilt yield curve in force at the projection point under the simulation in question[2]):

- Best Estimate discount rates:
    - Pre-retirement: Initial discount rates of Gilts+3.23% under 'standing start', and Gilts+3.7% under 'steady state', with changes to reflect market conditions as each simulation evolves
    - Post-retirement: Gilts+0.87% under 'standing start' and Gilts+0.7% under 'steady state'

- Technical Provisions discount rates:

[1] 1-30 years only, due to no shorter-term reversionary effects allowed for

[2] At 31 March 2025, a proprietary curve is used which can be approximated by the Bank of England gilt yield curve which can be found here: https://www.bankofengland.co.uk/statistics/yield-curves. These curves then vary stochastically by simulation and point in time. The economic scenarios are calibrated such that the meancurve evolves in line with the Trustee's capital market expectations but each scenario will exhibit its own characteristics. The average return effects are outlined in Tables 9 and 10.

- Pre-retirement: Initial discount rates of Gilts+1.75% under 'standing start', and Gilts+2.2% under 'steady state', with changes to reflect market conditions as each simulation evolves
- Post-retirement: Gilts+0.57% under 'standing start' and Gilts+0.5% under 'steady state'

The discount rate spreads relative to gilts reflect market conditions at the outset of each piece of modelling. The changes in the pre-retirement discount rates reflect the performance of equities in each scenario, such that as equities under- or over-perform compared with initial expectations in real terms, the real pre-retirement discount rates increase or reduce respectively to compensate, reflecting a dynamic frequently seen in expected returns.

These rates exclude any 'illiquidity risk premium' for consistency with the asset modelling. The steady state pre-retirement assumptions are higher reflecting an assumed increase in best estimate equity returns over time.

- Best Estimate and Technical Provisions CPI inflation: 3% p.a. initially, varying with changes in market-implied RPI inflation.
- Statutory minimum indexation is allowed for using an inflation volatility assumption consistent with the 2023 valuation, other than in the sustainability test where a simplified approach has been used by applying a cap to the CPI spot yield curve at 2.5%.
- All indexation within the scheme is based on CPI, so where the term "inflation" is used, this refers to CPI inflation unless otherwise noted. Indexation is assumed to apply at each 1 April, with indexation to all accrued benefits granted (subject to conditionality where appropriate) and to salary roll based on CPI to the previous September under each simulation.
- Demographic assumptions (including mortality) are based on the 2023 USS valuation (summarised in the valuation report).

Notes on methodology

- The calculations for current benefits are based on the FMP monitoring calculations as at 31 March 2025. The CI cashflows are based on the 2023 valuation membership data, approximately adjusted to 31 March 2025 to allow for accrual, pension increases, and benefits paid since then. The 'steady state' modelling then allows for an approximate projection of the scheme's benefit cashflows for 30 years assuming accrual of relevant benefits (i.e. CI or current structure) over that time. The scheme's asset value in 30 years has been set so that the CI structure has a comparable funding level to the current scheme as at 31 March 2025 (in practice this is around a 1-in-5 downside scenario, i.e. the expectation is that the scheme would be better funded than this). The 'steady state' modelling then considers subsequent periods.
- Some simplifications have been made for the purpose of the modelling, including in the allowance for the salary threshold (where only benefits and contributions on salary up to the threshold have been considered).
- There are some approximations in how inflationary caps and floors are allowed for within the modelling however these would not be expected to materially affect the results.

Further detail on ALM approach

The ALM tool takes cashflows and economic simulations as inputs and performs calculations at each relevant timestep on each simulation.

We describe below first how this works in a general sense, before describing specific conditional indexation functionality.

General approach adopted within ALM tool

GLASS takes as inputs a set of expected future cashflows based on the scheme membership as at 31 March 2025. These expected cashflows reflect the aggregated future expected benefits based on membership data at the latest actuarial valuation (31 March 2023) approximately adjusted to 31 March 2025.

The membership is assumed to stay stable over time with new entrants implicitly replacing those assumed to leave and retire.

The model then:

- Evolves the benefit cashflows to the relevant timestep allowing for the financial conditions of the specific scenario produced within the economic scenario generator and how this affects the relevant liability measure, the benefits to be paid, new accrual and expected membership movements.
- Evolves the scheme's assets to the relevant timestep (allowing for the financial conditions of the specific scenario reflecting the assumed investment strategy, cashflows out of the assets, as well as contributions and investment returns received).
- Evaluates different funding measures at the timestep, by inflating and discounting the liability cashflows according to different assumptions as set out in the previous section.
- Assesses indexation and any relevant catch-up indexation payable within the scenario depending on the outcome of this evaluation (the rules of which are described in detail below).
- Applies indexation (reflecting the pension increase granted at the timestep) to the benefits according to the design modelled, before the cashflows are evolved to the next timestep.

The potential CI valuation methodology considers only the cashflows in respect of the expected membership at the applicable point in time. This means that at any given projected valuation date, only the contributions and benefits relating to the expected membership at that time are considered.

Further detail on the approach taken to model Conditional Indexation within the ALM tool.

This section describes the mechanism used to determine conditional indexation and catch-up indexation. For ease, this section generally illustrates the approach using "Design 1, but an analogous approach applies for other forms of target indexation.

1. Annual conditional indexation calculations

1.1. Introduction

Under Design 1, indexation targets of CI benefits are defined as

- Pre-retirement: CPI+1%
- Post-retirement: CPI

Statutory minimum indexation applies to benefits in payment and applies as an underpin to conditional benefits as follows:

- The annual increase of post-retirement CI benefits is guaranteed based on CPI inflation up to 2.5%. This means that post-retirement CI benefits will always receive an increase of CPI up to 2.5% regardless of the funding position. For example, irrespective of the results of the calculation of annual conditional indexation tests:
    - If CPI = 1%, statutory minimum indexation for post-retirement benefits is 1%
    - If CPI = 3%, statutory minimum indexation for post-retirement benefits is 2.5%
- Pre-retirement statutory minimum indexation on CI benefits is nil.

For the avoidance of doubt:

- Benefits already accrued under the current structure maintain their existing level of guaranteed increases.
- Indexation granted cannot be negative (i.e. benefits cannot decrease).

1.2. Calculation of annual conditional indexation

The following calculations take place at each timestep in order to calculate the relevant level of indexation to be granted.

Step 1: Evaluate the two conditional indexation tests

1. **Sustainability test**:
   Evaluate available budget on an 'aggregate' best estimate basis (i.e. allowing for accrued liabilities and assets as well as future accrual and contributions in respect of members at the relevant date) as follows:

   Aggregate Surplus = Aggregate assets – aggregate best estimate liabilities (full CI target), *where*

   Aggregate assets = Assets held + contribution percentage (specified as 20%) * present value of future projected payroll in respect of members at the relevant date.

   Aggregate best estimate liabilities (full CI target) = calculation of liabilities on a best estimate basis, including future accrual and all future target indexation.

2. **Affordability test**:

   Determine the funding position on a prudent Technical Provisions (TP) basis as follows:

   TP Surplus = Assets held – TP liabilities (based on accrued benefits only, with in year indexation awarded at target, and statutory minimum indexation thereafter).

Step 2: Determine the CI indexation that can be awarded on an aggregate basis under the sustainability test by:

1. Establishing whether there are sufficient funds to award indexation at target (i.e. there is a surplus on an aggregate basis under the sustainability test).
2. If not, calculating a "CI factor" to apply to the target increases. The CI factor materially influences the value of the conditional section of liabilities on an aggregate basis because it is not only applied to the increase to be granted but also to future increases.

In more detail:

If Surplus (assessed under the sustainability test) >= 0: Award full indexation at target.

If Surplus (assessed under the sustainability test) <0: Determine the CI factor applied to the indexation curves and the increase about to be granted, that leads to zero aggregate surplus. The CI factor is subject to a minimum of zero.

The indexation assumptions for the purposes of calculating best estimate liabilities is then as:

Post-retirement: Target indexation x CI Factor (floored at statutory minimum levels).

Pre-retirement: Target indexation x CI Factor (zero floor).

With the CI factor adjusted to ensure that the sustainability test is passed. For example (where pre-retirement and post-retirement target indexation is the same, for ease):

- Current in year target indexation is 5% (e.g. in-year CPI of 4% + 1%).
- Long-term target indexation is 3% (e.g. expected long-term CPI of 2% + 1%).

Example 1:

CI factor = 0.4 (i.e. future assumed increases need to be scaled by 40% to avoid a deficit under the sustainability test). In this case:

In year indexation = 2% (i.e. 0.4 * in year target); and

Expected future indexation = 1.2% (0.4 * long-term target)

Post-retirement indexation awarded is floored at statutory minimum level in this step.
The expected future post-retirement indexation assumption is floored at CPI between 0% and 2.5% on a forward basis.

Example 2:

CI factor = 0 (i.e. even assuming no conditional indexation awards in future, there is still a deficit under the sustainability test). In this case:

CI up to statutory minimum for post-retirement benefits cannot be afforded but needs to be paid.

In this case post-retirement benefits receive statutory minimum while no indexation is granted to pre-retirement benefits.

There is a deficit on an aggregate basis.

Example 3:

CI factor = 1 (i.e. there is a surplus under the sustainability test, allowing for target indexation to be awarded). In this case:

Under the sustainability test, target indexation can be awarded in current year and in all future years and so would lead to in year indexation of 5% and expected future indexation of 3%, as follows:

In year indexation = 5% (i.e. 1 * in year target); and

Expected future indexation = 3% (1 * long-term target)

In this case increases awarded and expected in future are higher than statutory minima which therefore do not apply.

Step 3: Determine the CI indexation that can be awarded on the Technical Provisions basis under the affordability test by establishing that the scheme remains in surplus allowing for guaranteed benefits (i.e. assuming only statutory minima are granted, after the in year increase being assessed). The impact of varying indexation on this measure is considerably smaller than under Step 2 as it only affects the liability increase relating to in year indexation as future indexation is assumed to be at statutory levels.

In more detail:

If surplus (assessed on Technical Provisions basis) >= 0: Award indexation at target.

If surplus (assessed on Technical Provisions basis) < 0: Determine reduced level of indexation which, if awarded, would increase TP surplus to nil post increase award (with indexation subject to a minimum of nil even if this leaves a negative surplus).

Step 4: Determine the annual conditional indexation that can be afforded according to Steps 2 and 3 by:

- Determining the lowest indexation award from step 2 and step 3.
- Determining the corresponding CI factor.

The average annual probability over 30 years of a CI factor being less than 1 (i.e. lower than target indexation being granted in a particular year), is around 4% in the 'steady state' modelling and 7% in the 'standing start' modelling for Design 1. In each piece of modelling, around three quarters of these cases are due to the affordability test failing in isolation, with the vast majority of the remainder where both tests fail. The sustainability test failing in isolation is rare.

Step 5: Apply indexation and update liabilities and cashflows

- Indexation determined in Step 4 applied to cashflows.
- CI factor determined in Step 4 applied to projected future cashflows (subject to statutory minimum indexation) under the aggregate balance sheet (i.e. the sustainability test assumes future increases adjusted to level affordable).

Where indexation is granted at target – consider whether catch-up indexation steps are required as set out in the next section.

1.3. Catch-up indexation

CI offers the possibility to recover indexation missed in the past, by granting additional 'catch-up' indexation when the funding level has improved. In broad terms we do this by comparing the level of surplus funds within the scheme that could be used for catch-up (a budget) and the extent to which indexation is behind target (a gap). Full catch-up can be awarded when the budget is greater than the gap.

Note that the operation of a catch-up mechanism in a CI benefit structure would be subject to further discussion and agreement prior to implementation. The mechanism included in the modelling is indicative only and does not imply that decisions have been made.

Importantly, this is sufficient to establish the affordability and ability to award catch-up payments for the purposes of understanding scheme wide outcomes. In practice, the detailed design will be important as this will determine the level of catch-up awarded to different groups of members and in what order.

For the purposes of this modelling, the tool uses an indexation gap to keep track of how much indexation needs to be awarded to restore benefits to target indexation and is defined as the cumulative difference between the annual indexation targets less the indexation that has been granted up to this point in the scenario. Three separate indexation gaps are used as follows:

i. **Indexation gap Pre-retirement (stat min)**

Calculated as:

> (1 + cumulative pre-ret. stat. min. underpin) / (1 + cumulative pre-retirement indexation awarded including previous catch-up indexation) – 1,

where cumulative pre-ret. stat. min. underpin = compounded accumulation of either pre-retirement indexation awarded excluding any catch-up or the statutory minimum increase applicable to post-retirement, based on whichever was greater in each given year.

Since post-retirement has already received statutory minimum, the available budget for catch-up indexation is first used to reduce the gap between indexation granted to pre-retirement benefits and the cumulative statutory minimum indexation that equivalent post-retirement benefits have received (meaning this gap can only arise or increase in years where pre-retirement benefits were awarded indexation below this level). Note that the stat min guarantee is applied per year and then this annual difference is compounded; in other words, having awarded pre-retirement increases above post-retirement statutory minimum levels in the past does not mitigate or reduce this gap if later pre-retirement increases are below this level, and vice versa.

If there is remaining budget after pre-retirement benefits have been indexed to statutory minimum, the remaining budget is pro rata distributed to close the remaining gaps for pre-retirement and post-retirement benefits to target.

ii. **Indexation gap Pre-retirement (full target)**

Calculated as:

(1+cumulative pre-retirement target)/(1+cumulative pre-retirement indexation awarded including previous catch-up indexation) -1.

iii. **Indexation gap Post-retirement (full target)**

Calculated as:

(1+cumulative post-retirement target)/(1+cumulative post-retirement indexation awarded including previous catch-up indexation) -1.

Catch-up feeds into the annual conditional indexation by continuing the previous process:

Step 6: Evaluate preconditions before granting any catch-up indexation.

The preconditions are as follows:

1. CI factor (step 4) = 1

   (i.e. in year target indexation is granted before any catch-up)

2. Indexation gap Pre-retirement (full target) > 0; and/or
   Indexation gap Post-retirement (full target) > 0

   (i.e. if members have already received their full indexation ambition, no catch-up is needed.)

If either of precondition 1 or 2 fails, no catch-up indexation is granted (because it is either unaffordable or not needed).

Step 7: Determine budget available for catchup indexation.

- The available budget for catch-up is determined *after* allowing for the award of in year indexation.
- The budget available is then assessed by considering the impact on both the sustainability and affordability tests as set out in steps 1 through 3 above, as follows:

  Determine affordable catch-up indexation on sustainability test:

  - Available budget = Aggregate surplus = Aggregate assets – aggregate liabilities (including in year and future target indexation but before awarding catchup).

  Determine affordable catch-up indexation on affordability test:

  - Available budget = TP surplus = Assets - TP liabilities.

Affordable catch-up indexation is determined for pre-retirement and post-retirement benefits based on the available budget under these tests and the cost of granting indexation at the level of the gap between awarded indexation and target indexation (i.e. the indexation gap). In this step pre-retirement indexation is recovered first back to statutory minimum level.

2. Surplus distribution – Additional indexation and Contribution reduction (see Appendix B6)

If there is additional budget remaining after target indexation and any necessary catch-up indexation is awarded, the mechanism can, if chosen, distribute surplus via additional indexation and/or a reduction to total contributions. The effect of this is shown in Appendix B6 of the report.

For the avoidance of doubt:

- Other modelling within the report does **not** allow for distribution of the surplus.
- The surplus distribution mechanism does **not** interact with the initial determination of the CI increase to be granted in year, or the catch-up mechanism, i.e. surplus can only be spent after in year target indexation is granted, and any outstanding catch-up indexation is provided.

For the figures in this report, a provisional assumption has been made that any surplus would not be spent in full, in order to reduce the chance of a deficit emerging in future. This modelling requires CI target benefits to be at least 115% funded and non-CI benefits to be at least 130% funded on a best estimate basis, with only surplus above this level eligible for distribution.

It has been assumed for illustration within this report that surplus would be spent equally on additional indexation and contribution reductions, however this, like the buffer required above, would be a benefit design decision. The modelling follows the following steps:

Surplus spending step 1: Establish budget

- As outlined above, the budget to be considered as part of surplus spending is any surplus on a version of the sustainability test making allowance for 115% of aggregate CI liabilities plus 130% of accrued non-CI benefits, both assessed on a best estimate basis.

Surplus spending step 2: Establish sustainable level of additional indexation for CI:

- 50% of the available surplus for distribution is used for additional indexation applied to conditional liabilities.
- This indexation is defined as indexation in excess of the target, and determined by adding a fixed percentage to both the in year and future target indexation. By allowing the future indexation to increase, the additional discretionary indexation is assumed to be granted indefinitely and effectively amortized over the liability horizon.
- Effectively, this assumes a greater level of indexation within the sustainability test.
- The implied additional in year indexation is then added to the liabilities used in the affordability test to check a breach is not caused, and the additional indexation limited if so. This limitation is very unlikely to apply within this modelling setup.

For example:

- The calculated budget can provide extra indexation of 2% p.a. in perpetuity.
- The target for pre-retirement is CPI + 1%, which leads to a total increase of CPI + 3%.
- The target for post-retirement is equal to CPI, which leads to a total increase of CPI + 2%
- On the best estimate basis (in the sustainability test), additional indexation is added to both in year indexation and expected future indexation

- On the Technical Provisions basis (in the affordability test), additional indexation is added to the in year indexation only, and expected future indexation remains at the statutory minimum level.

Surplus spending step 3: contribution reduction

- The model calculates the increase in the Best Estimate liabilities which arises from applying the additional in year increase above (without allowing for further increases – i.e. the in year effect only)
- This amount is subtracted from the contributions payable in £ terms.
- This has the effect of effectively expecting to award half the spendable surplus to indexation and half to contribution reductions, with the distribution amortized at the same rate.

For example:

- Total spendable surplus is £9bn
- £4.5bn is available to grant additional indexation to members.
- In this example this amount would be expected to provide 1% p.a. additional indexation to all benefits.
- The PV which arises from giving the additional increase of 1% to the members this year is for example £350m. Then £350m will be also subtracted from next year's contribution, with the total amount of surplus being actually spent this year being £700m.

Appendix F1 – Correlations

The tables below set out the experienced correlation between different asset classes under the standing start and steady state modelling. These are correlations of annual discrete returns across the simulations over a 30-year horizon and are intended to assist with understanding the range of investment returns within the simulations used by the model. They do not capture shorter-term volatility nor longer-term dispersion dynamics, and their use would not replicate the outputs of the modelling.

Table 11 - Standing start modelling correlations

30-year correlation	Equities	Property	Other Fixed Income	LDI	Cash
Equities	100%	35%	41%	9%	-6%
Property	35%	100%	25%	4%	-9%
Other Fixed Income	41%	25%	100%	35%	12%
LDI	9%	4%	35%	100%	7%
Cash	-6%	-9%	12%	7%	100%

Table 12 - Steady state modelling correlations

30-year correlation	Equities	Property	Other Fixed Income	LDI	Cash
Equities	100%	34%	42%	11%	-7%
Property	34%	100%	25%	5%	-8%
Other Fixed Income	42%	25%	100%	33%	11%
LDI	11%	5%	33%	100%	5%
Cash	-7%	-8%	11%	5%	100%