

# How could changes to price indices affect Defined Benefit schemes?

## PPI Briefing Note Number 118

### Introduction

The Government is consulting on its proposal to reform the Retail Prices Index (RPI) to align it with the Consumer Prices Index + owner occupiers' housing costs (CPIH). The consultation focusses on the technical points of how to implement the change and on when between 2025 and 2030 the change should be made. The change to indexation will reduce the value of some of the assets that Defined Benefit (DB) pension schemes are invested in but will also reduce liabilities for some schemes and reduce pension benefits for many scheme members. This Briefing Note, sponsored by the BT Pension Scheme, explores the implications of the change on DB pension scheme members, investments, liabilities and funding positions.

### Summary of main findings

- The Government intends to reform RPI to align it with CPIH between 2025 and 2030.
- Changes to RPI will have an impact on DB pension schemes and their members because of the way these schemes are invested and because many schemes use RPI to uprate pensioner benefits.
- The overall effect of the change is likely to be an increase in scheme deficits.
- The total value of DB scheme assets currently invested in index-linked bonds is around £470bn. The total value of the bond-related impact on DB schemes of the switch to CPIH could be a reduction in value of around £80bn if the switch is made in 2025 and around £60bn if the switch is made in 2030. There will also be material impacts from investments in other RPI-linked assets.
- Schemes currently hold a principal amount of around £350bn in swaps and index-linked gilt repurchase agreements, the inflation increases on which will be repaid at a lower than previously anticipated expected rate.
- However, schemes will see a reduction in liabilities in respect of

This Briefing note was informed by a roundtable discussion with leading industry thinkers and scheme representatives. The roundtable was chaired by Sir Steve Webb, Partner, Lane Clark & Peacock. The PPI would like to thank the attendees for their helpful contributions.

members whose benefits are increased or revalued in line with rises to RPI.

- Many members will see a reduction to their lifetime and annual benefits, with women and younger members experiencing the greatest reductions.
- Individual schemes should be able to estimate the impact on scheme funding by calculating the proportion of funds they hold in RPI-linked assets and the potential reduction in RPI-linked liabilities.

### **There are currently three recognised price indices in the UK**

The Office for National Statistics (ONS) produces estimates of the change in consumer price inflation every month. Estimates are based on the rate of change in price of a basket of goods and services, chosen as a representative sample of goods and services purchased by UK households.

These measures indicate both the rate at which the price of consumer goods and services rise and fall and

changes in the performance of the economy. There are currently three main price indices published by the ONS (though there are sub-indices attached to each):

- Consumer Prices Index (CPI),
- Consumer Prices Index + owner occupiers' housing costs (CPIH) and,
- Retail Prices Index (RPI)

### **The UK has tracked price inflation since 1914**

The first UK price index, the "Cost of Living Index", was published in 1914 by the Ministry of Labour. From this date, the Government, or its subsidiaries, have always published one or more price indices. Over time, indices have been reviewed, resulting in changes to formulae or to the basket of goods and services used in evaluation, and new indices have been introduced.

The RPI was established in 1956 and designated as the official UK inflation index. The RPI remained the official UK index until 2013, at which point the CPI became the official index. However, RPI continues to be published and used today.

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The CPI was introduced in 1997 (under the original name “the Harmonised Index of Consumer Prices”) in order to serve as a UK index which harmonised with the methodology of indices across the rest of the EU. The CPI measures the rise and fall of consumer prices, but excludes owner occupier housing costs as these are not considered consumption-based costs. CPI does include rental costs.

In 2013, the CPIH was introduced, in order to provide a holistic measure of CPI with owner-occupiers’ housing costs included.

### Flaws with RPI methodology mean it inflates more quickly than other indices

The proposal to reform RPI is the culmination of several reviews since 2011 which highlighted flaws in the RPI related to the formula used to calculate inflation, and issues with the way RPI priced clothing.<sup>1</sup> These flaws resulted in RPI inflating more quickly than CPI and CPIH, by around 1% higher every year. CPI and CPIH generally inflate at a similar rate over time (Figure 1).

In 2012, the ONS consulted on the future of RPI and decided to make no further improvements to it, though stated an intention to continue publishing RPI for use with indexation, bonds and gilts.<sup>2</sup>

In 2013, Paul Johnson, Director of the Institute for Fiscal Studies was asked to review British price indices and reported in 2015, recommending that the ONS should move towards making CPIH its main meas-

ure of inflation, and maintain RPI as a legacy measure with a view to ending the use of it as soon as possible. The review also recommended that “no further changes should be made to the RPI methodology other than those that ensure its continued functionality...”<sup>3</sup> However, in 2018, the UK National Statistician stated that they did not intend to cease publishing the RPI as there is “significant value to users in maintaining the continuity of the existing RPI’s long time series without major change, so that it may continue to be used for long-term indexation and for index-linked gilts and bonds in accordance with user expectations”.<sup>4</sup>

### CPIH provides a more comprehensive measure than CPI

While the CPI is currently used to inflate many Government services and benefits, CPIH was designated as the “lead” measure of inflation in 2017 as

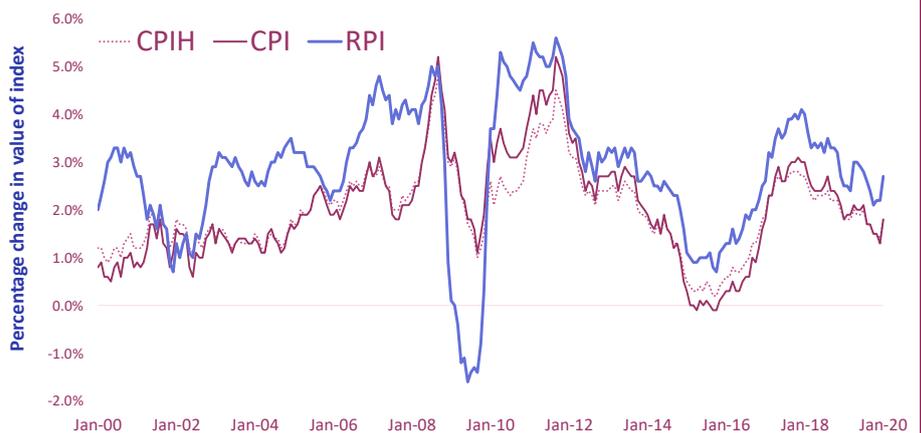
it provides a more comprehensive overview of rises in consumer spending due to the inclusion of the costs of owning, maintaining and living in one’s own home and the cost of Council Tax.<sup>5</sup>

Despite CPI serving as the main measure of inflation, the price of some goods and services (for example, interest on student loans and rail fares), inflation on many tenant rents, returns on some investment products (in particular, Government issued index-linked gilts), and some pension benefits, still rise in line with RPI.

However, it has been suggested that neither RPI, CPI nor CPIH are the most appropriate indices for pensioner price inflation as pensioners tend to spend on a different basket of goods than working-age people, spending, for example, more on

**Figure 1: RPI generally inflates around 1% faster than CPI, while CPI and CPIH generally inflate at a similar rate**

Monthly change in value of RPI, CPI and CPIH (with CPIH projected back) between January 2000 and January 2020



Source: ONS (2020) Inflation and price indices

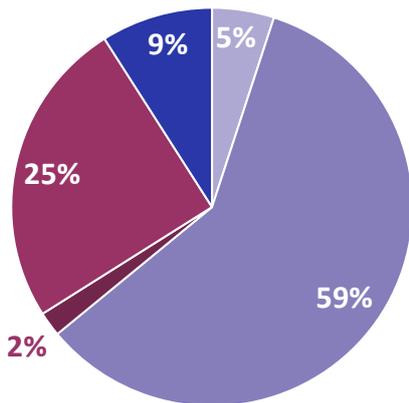
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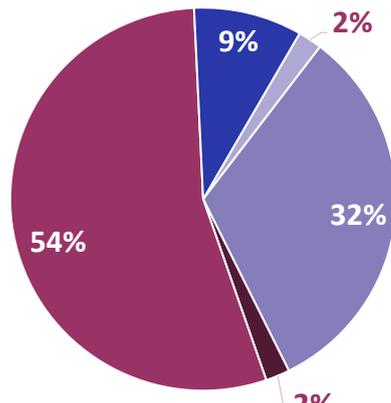
**Figure 2: 64% of schemes uprate pensioner benefits in line with increases in RPI**

The proportion of private sector schemes required by scheme rules to use CPI and RPI for revaluation and indexation of scheme benefits

Scheme rules regarding inflation of pensioner benefits



Scheme rules regarding revaluation of deferred member benefits



Legend: RPI (light blue), RPI + Cap (dark blue), CPI (red), CPI + Cap (purple), Other (grey)

Source: PLSA (2017) Annual Survey

form is likely to occur by the end of 2030, depending on the outcome of the consultation.

### The proposed changes to indices will impact Defined Benefit scheme members, investments, liabilities and funding positions

Changes to RPI will have an impact on DB pension schemes and their members because of the way these schemes are invested and because many schemes use RPI to uprate pensioner benefits.

Most DB schemes invest some of their funds into Government issued RPI-linked gilts (Government bonds) and other RPI-linked asset in order to hedge against changes in the value of pension liabilities resulting from changes in inflation.

Some schemes are also required, by their scheme rules, to increase pensioner benefit payments, and to revalue deferred pensioner benefits, in line with RPI. Other schemes have rules which only require benefit increases and revaluations to increase in line with the Government's official price index, and most of these schemes inflate pensioner benefits by CPI.

As a result of DB scheme investments, benefit pay outs and revaluations, changes to RPI will have a significant impact DB scheme members, investments, liabilities and funding positions.

The rest of this Briefing Note explores the impact of the proposed changes on each of these factors in turn.

heating costs and less on transport than other households. An ideal index for pensioner benefits to be inflated by would be worth further investigation.<sup>6</sup>

### The Government intends to introduce a single index

Most state benefits, many consumer goods and services, and some pension benefits now rise in line with CPI.

In 2018, the House of Lords Economic Affairs Committee conducted an inquiry into inflation indices and concluded that the differential uprating of goods, services and returns on investment products ("inflation shopping") was unfair to some groups, for example, students and commuters. The Committee was given evidence that flaws in the RPI meant that the Government was paying out interest on index-linked gilts at an over-inflated rate. In 2019, the Committee recommended the con-

struction of a single measure of inflation, which would replace the current three.

Following this report, and based on recommendations by the UK Statistics Authority (UKSA), the Chancellor at the time agreed to reform RPI to align it with CPIH, and for CPIH to become the single, official, inflation measure for the UK.

Until 2030, the Chancellor's consent is required in order make any changes to RPI that would affect gilts issued at a particular time. The last gilt which is subject to this legislation matures in 2030. From 2030, the UKSA are able to make the change without the Chancellor's consent.<sup>7</sup>

The Chancellor has said that the changes will not take place prior to 2025, and as the UKSA is keen to enact the changes as soon as possible, re-

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### Members

Many scheme members will see benefits inflate more slowly as a result of changes to inflation indices, while others will see little change

64% of private sector schemes are required by their scheme rules to uprate pensioner benefits by RPI, though the majority cap the RPI increases and use a “floor” below which inflation increases cannot fall.<sup>8</sup>

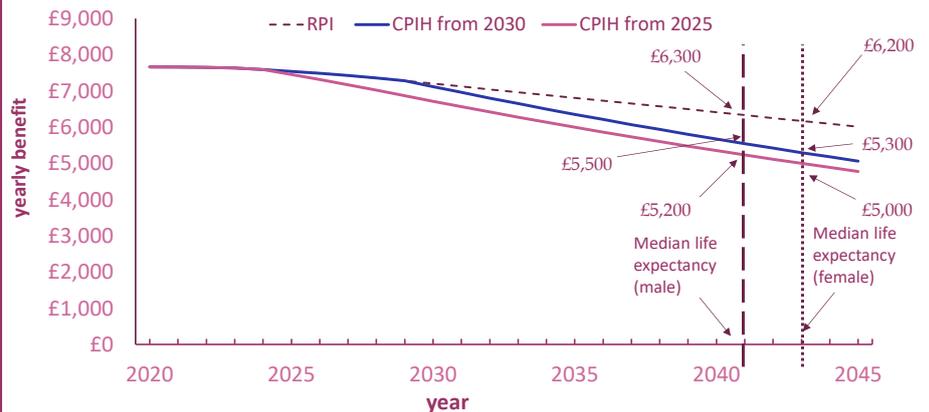
The rules for uprating deferred member benefits can be different from those for current pensioners. Deferred members (who have ceased contributing but are not yet receiving their pension) have their benefits uprated (revalued) every year until they reach their retirement date. 56% of schemes revalue by CPI, the majority of which cap the increases (Figure 2).

Members whose benefits inflate or are revalued by CPI, are unlikely to see a substantive change due to RPI reform as CPI and CPIH tend to inflate at a similar rate over time.

Members whose schemes inflate or revalue benefits in line with rises in RPI will see their benefits increase more slowly over time, after the RPI is aligned with CPIH, resulting in a lower overall benefit than they would have received without the change (Figure 3). A pensioner will see the reduction in income in-

**Figure 3: A 65 year old pensioner in 2020 could receive up to 21% less per year in DB pension, by the age of 90, depending on the timing of the change**

Yearly pensioner benefit for a member reaching age 65 in 2020, with the median pension receipt £7,700, in 2020, under different uprating scenarios until 2045 (all figures in 2020 earnings terms)



Source: PPI modelling

crease the longer the new index is in place.

**Members will experience a year on year drop in income, with women experiencing a greater drop over time on average, due to longer life expectancy**

By a 65 year old (in 2020) man’s average life expectancy of 86, yearly average DB income under RPI uprating would be around £6,300pa. This could drop by 17% to £5,200pa if the change took place from 2025, or by 12% to £5,500pa, if the change took place in 2030 (all in 2020 earnings terms).<sup>9</sup>

By a 65 year old (in 2020) woman’s average life expectancy of 88, yearly average DB income under RPI uprating would be around £6,200pa. This could drop by 19% to £5,000pa if the change took place from 2025, or by 14% to

£5,300pa, if the change took place in 2030 (all in 2020s earnings terms).<sup>10</sup>

**The total average loss in lifetime pension across both sexes will average between 4% and 9%**

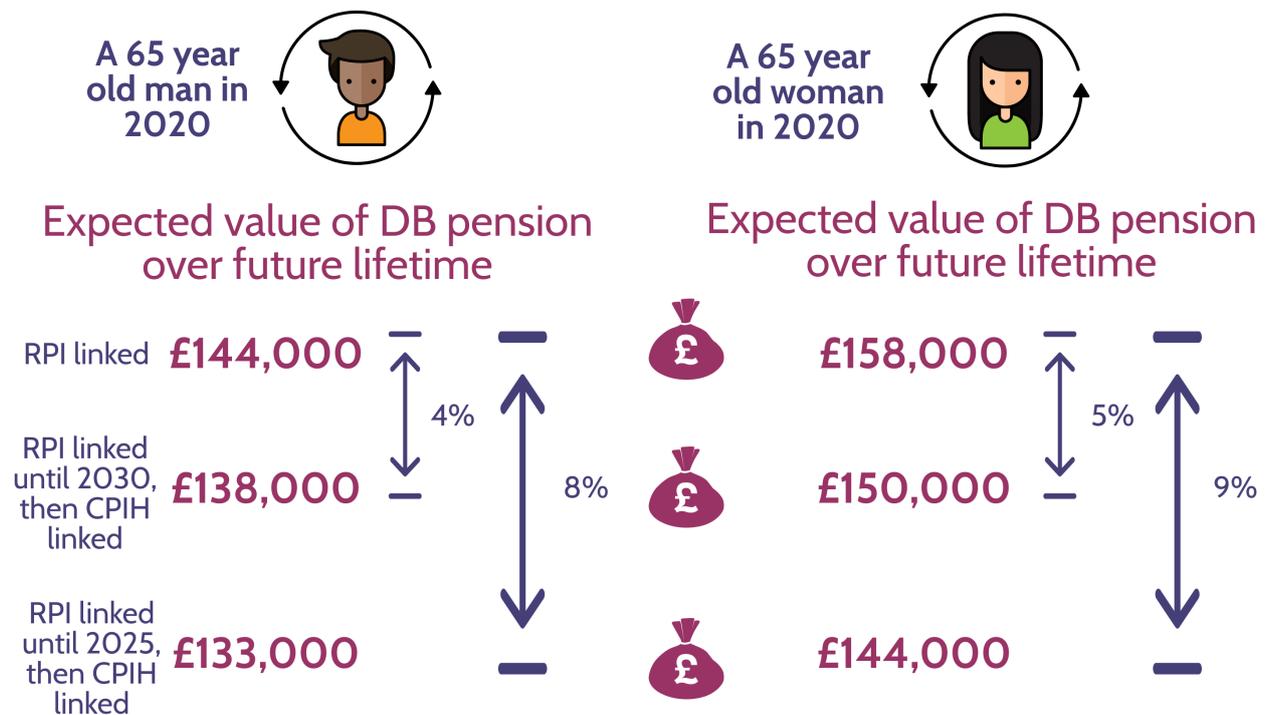
A 65 year old male pensioner in 2020 could receive a total lifetime DB pension benefit, of £144,000, if his pension is uprated by RPI. He could receive a total pension of:

- 8% less (around £133,000), if RPI and CPIH are aligned in 2025, and
- 4% less (around £137,000), if they are aligned in 2030 (Figure 4).<sup>11</sup>

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**Figure 4: Men and women could see a reduction in lifetime benefit of up to 8% or 9%, on average**



Source: PPI Modelling

### Women will generally experience a greater lifetime reduction in overall pension benefit, as they live longer than men, on average

A 65 year old female pensioner in 2020 could receive a total lifetime DB pension benefit, of £158,000, if her pension is uprated by RPI. She could receive a total future pension of:

- 9% less (around £144,000), if RPI and CPIH are aligned in 2025, and
- 5% less (around £150,000), if they are aligned in 2030 (Figure 4).<sup>12</sup>

Deferred members, who have ceased contributing, are likely to experience a greater reduction in benefits as both increases to deferred benefits and increases to pensions in payment will be lower than they would have been without the change.<sup>13</sup>

A member who defers for 10 years, in 2020, and takes their benefit at age 65 in 2030, could receive a pension at retirement of between 12% to 17% less (men) and 13% to 18% less (women) than they would have received under RPI indexation, depending on the date of the change.<sup>14</sup>

### Investments

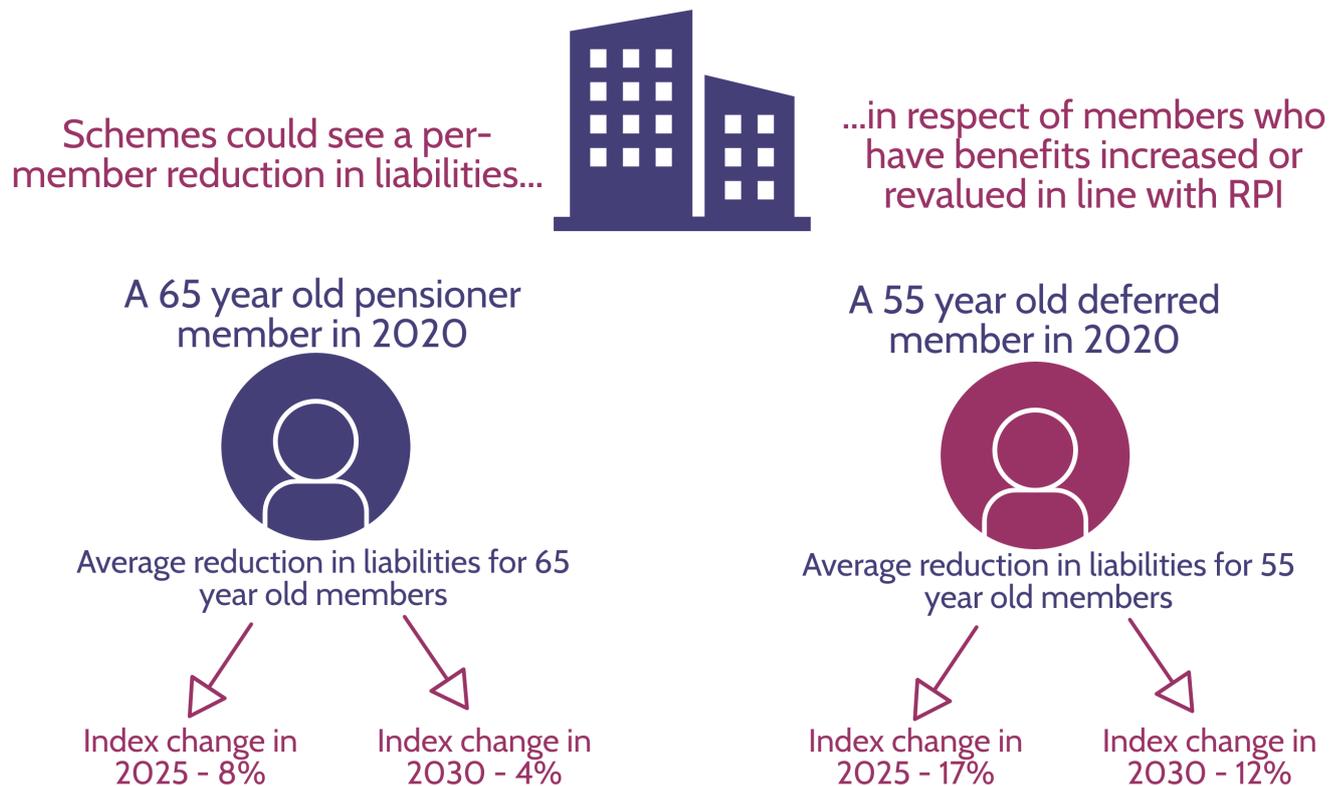
#### A switch from RPI to CPI will affect the value of assets in which schemes are invested

DB scheme investment strategies vary based on the indexation rules for pensioner benefits and revaluation of deferred benefits; level of deficit; and investment appetite and approach of sponsor and trustees.

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Figure 5: Schemes could see a per member reduction in liabilities in respect of both pensioner members and deferred members



Source: PPI Modelling

### Many schemes use RPI-linked assets as part of Liability Driven Investment (LDI) strategies

An LDI investment strategy involves investing a portion of a scheme's assets in instruments that match the sensitivity of its liabilities to inflation and interest rates. Therefore, when interest rate or inflation expectations change, asset and liability values should increase or decrease together and the funding

position of the scheme should remain relatively stable and predictable.

### RPI-linked gilts and inflation swaps are used by schemes to hedge inflation

RPI-linked gilts are used to some degree by most DB schemes in order to hedge against inflation, as they allow for investment in a future income stream which will pay out at inflation.

Pension funds can also hedge long-term inflation-linked liabilities using "inflation swaps". These products in-

volve the pension scheme paying out a fixed-rate of return to a counter party in exchange for an inflation-linked return. Most inflation swaps are linked to RPI and many have long maturities, up to 50 years. Under the index change, the payments from the counter-party to the pension scheme will drop, while the payment from the scheme to the counter party will remain unchanged.<sup>17</sup>

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### Schemes use RPI-linked assets to hedge both RPI and CPI-linked liabilities

Many Schemes' liabilities include benefits that are linked to both CPI and RPI inflation. However, inflation hedges are predominantly in RPI format.

It is the difference between pension liabilities and hedging assets that will cause a deterioration in schemes' funding positions if RPI reform is enacted without any mitigating steps. Schemes typically hedge CPI-liabilities with RPI assets because:

- The CPI hedging market is very small and illiquid (which means that the most effective hedge for CPI-linked liabilities is RPI-linked assets) and,
- Schemes have relied on public statements made by the statistical authorities over recent years confirming that RPI's methodology would be left substantially unchanged.<sup>15</sup>

Many schemes have hedged liabilities in accordance with Pensions Regulator guidance and market best practice in order to reduce volatility in scheme funding and to reduce risk to members.<sup>16</sup>

### Around 29% of DB scheme assets are in RPI-linked bonds

In 2019, 29% of private sector DB scheme assets were invested into index-linked bonds (the majority of which are likely to be RPI-linked Gov-

ernment gilts).<sup>18</sup> The total value of these assets for DB schemes is around £470bn in 2020.<sup>19</sup>

As discussed at the roundtable, some of the expected future impact is already priced into the market, through a change in the value of current bonds and gilts, though it is not known to what extent. The direct impact on any individual scheme will depend on the extent to which they are invested in index-linked gilts, the expiry dates of these gilts and the future inflation of CPIH.

The total value of the bond-related impact (reduction in value to coupon and redemption amount) on DB schemes of a switch to CPIH could be:

- Around £80bn if the switch is made in 2025, and
- Around £60bn if the switch is made in 2030 (Figure 5).<sup>20</sup>

Schemes currently hold a further principal amount of around £350bn in swaps and index-linked gilt repurchase agreements (which work in a similar way to swaps), the inflation increases on which will be paid at a lower than previously anticipated expected rate.

### The value of other assets will also be affected by a change to the index

The main investment-related impact of the switch to CPIH will relate to index-linked gilts and RPI-swaps.

However, schemes may see a reduced return from other assets such as prop-

erty, infrastructure and regulated utilities, as a result of the change. These asset classes are likely to have RPI embedded into some element of the asset price or return. For example, rents often rise in line with RPI affecting property and real estate assets; train fares, toll road payments, utility and energy bills generally go up in line with RPI, affecting returns from infrastructure, utilities and energy.

### Liabilities

Schemes will see a reduction in liabilities in respect of members whose benefits are increased or revalued in line with rises to RPI, though these reductions will represent a cut in benefits to members.

The value of the reduction will depend on the ages and proportion of members with benefits and deferred benefits that are being revalued by RPI. In respect of members aged 65 in 2020, schemes could see a reduction in liabilities of:

- Around 4% on member benefits, on average, if the change occurs in 2030, and
- around 8% if the change occurs in 2025.<sup>21</sup>

The reduction in liabilities in relation to the benefits of younger members and women will be higher. However, as a result, these members will experience a greater reduction in lifetime DB benefit on average.

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As with benefit inflation, the reduction in liabilities in relation to revaluation of deferred member benefits will also depend on the proportion of deferred member benefits which are revalued by RPI. In respect of deferred members aged 55 in 2020 (and taking their pension at age 65 in 2030), schemes could see a reduction in liabilities of:

- Around 12% on average, on member benefits (including benefits in payment) if the change occurs in 2030, and
- Around 17% if the change occurs in 2025 (Figure 5).<sup>22</sup>

### Funding

#### The overall effect of the change is likely to be an increase in scheme deficits

The overall effect on schemes of the change, barring mitigating measures, is likely to be an increase in scheme deficits, although the magnitude of the increase will depend on many factors. Overall, two main factors, aside from the date of the change, will affect the impact on scheme deficits:

- The proportion of RPI-linked assets held by the scheme, and
- The proportion of benefits which they inflate or revalue by RPI.

The proportion of RPI-linked gilts held by a scheme will go some way to determine the level of loss in value that scheme assets experience as a result of the change,

though other RPI-linked assets will also result in value loss.

For each £10m invested in RPI-linked gilts a scheme could see a total loss in asset value of:

- Around 1m if the change occurs in 2030, and
- Around 2m if the change occurs in 2025 (Figure 6).<sup>23</sup>

However, schemes which inflate or revalue benefits by RPI will see a reduction in liabilities, though these will represent a reduction in member benefits. Individual schemes should, therefore, be able to assess the impact of the change on scheme funding by calculating the proportion of assets they hold in RPI-linked gilts and the potential reduction in liabilities in respect of RPI-linked member benefits and deferred benefit revaluations.

**Figure 6: Loss in value of RPI-linked gilts by value of gilts held and timing of change to index**

Value of index-linked gilts	Change occurs in 2025		Change occurs in 2030	
	Impact	New value	Impact	New value
£10m	−£2m	£8m	−£1m	£9m
£100m	−£17m	£83m	−£13m	£87m
£500m	−£87m	£413m	−£67m	£433m
£1bn	−£174m	£825m	−£133m	£867m

Source: PPI modelling

Some schemes could see a reduction in the value of assets coupled with a decrease in liabilities. Other schemes may experience one or the other, with some schemes experiencing a reduction in deficits. For example, schemes heavily invested in equities without much inflation hedging may experience little in the way of asset value loss and a reduction in liabilities, leading to a boost to scheme funding.

Schemes with more inflation hedging will experience a fall in asset value with potentially a reduction in liabilities, depending on scheme indexation rules (Figure 7).

Increases in deficits will lengthen the amount of time that schemes will need in order to become fully funded, and increases the risk that they may not be able to meet their obligations. Deficit increases are

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**Figure 7: Effect of index change as a result of liability rules and inflation hedging**

	Inflation hedged	Not inflation hedged
RPI liabilities	Assets: fall in value Liabilities: reduction in cost	Assets: unaffected Liabilities: reduction in cost
CPI liabilities	Assets: fall in value Liabilities: unaffected	Assets: unaffected Liabilities: unaffected

Source: Insight Investment (2019) Proposed changes to RPI: nobody needs to lose out, page 8

likely to result in scheme sponsors needing to make higher levels of contributions to schemes.

### The index change could affect the buy out and buy in market

Some schemes are investing with a mind to sell all of their liabilities on to a third party, known as “buy-out”.

A change to indexation which increases deficits could increase the amount of time that it takes for schemes to generate sufficient funding in order to sell their liabilities on through buy-out.

Some schemes who are concerned about meeting liabilities can “buy-in” portions of their liabilities. Buy in scenarios involve the scheme buying an insurance policy to cover the liabilities respecting some of their membership. The insurance policy is held

as an asset by the scheme and pays out in line with benefits in respect of the members that it covers.

Changes to indexation could affect the benefit pay outs from buy in policies and reduce the value of the overall asset.

### Mitigating measures could reduce the impact on schemes and members and reduce wealth redistribution

Mitigating measures could ensure that schemes, members and other RPI-users do not experience a significant reduction in asset values or benefits. For example, RPI could be reformed to align it with CPIH plus a spread, where the spread would be calculated to reflect the expected long-term average difference between RPI and CPIH. Gilts and benefits could continue to

pay out at the index, plus the spread.

### Conclusions

- The Government intends to reform RPI to align it with CPIH and will consult on when between 2025 and 2030 to make this change.
- Changes to RPI will have an impact on DB pension schemes and their members because of the way these schemes are invested and because many schemes use RPI to uprate pensioner benefits.
- Many DB pensioners will experience a reduction in lifetime benefit, with women and younger members experiencing a greater reduction.
- A 65 year old female DB pensioner’s average lifetime loss from the switch to RPI could be between 5% and 9% depending on the date of the change, and for a 65 year old pensioner man the average loss could be between 4% and 8%.
- A member who defers for 10 years, in 2020, and takes their benefit at age 65 in 2030, could receive a pension at retirement of between 12% to 17% less, male, and 13% to 18% less, female, than they would have received under RPI indexation, depending on the date of the change.
- In 2019, 29% of private sector DB scheme assets were invested into index-linked bonds. The total val-

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- ue of these assets for DB schemes is around £470bn in 2020. The total value of the bond-related impact on DB schemes of the switch to CPIH could be a reduction in value of around £80bn if the switch is made in 2025 and around £60bn if the switch is made in 2030.
- Schemes currently hold a principal amount of around £350bn in swaps and index-linked gilt purchase agreements (which work in a similar way to swaps), the inflation increases on which will be paid at a lower than previously anticipated expected rate.
  - However, schemes will see a reduction in liabilities in respect of members whose benefits are increased or revalued in line with rises to RPI.
  - In respect of members aged 65 in 2020, schemes could see a reduction in liabilities of around 4% on member benefits, on average, if the change occurs in 2030, and around 8% if the change occurs in 2025.
  - In respect of deferred members aged 55 in 2020 (and taking their pension at age 65 in 2030), schemes could see a reduction in liabilities of around 12% on average, on member benefits (including benefits in payment) if the change occurs in 2030, and around 17% if the change occurs in 2030.
  - The overall effect of the change is likely to be an increase in scheme deficits.
  - Individual schemes should be able to make estimates of the impact on scheme funding by calculating the proportion of assets they hold in RPI-linked gilts and the potential reduction in liabilities they could see in respect of RPI-linked member benefits and deferred benefit revaluations.
  - Mitigating measures could ensure that schemes, members and other RPI-users do not experience a significant reduction in asset values or benefits.

- 1 House of Lords, Economic Affairs Committee (2019) Measuring Inflation, 5th Report of Session 2017–19
- 2 House of Lords, Economic Affairs Committee (2019) Measuring Inflation, 5th Report of Session 2017–19
- 3 Johnson, Paul (2015) UK Consumer Price Statistics: A Review
- 4 House of Lords, Economic Affairs Committee (2019) Measuring Inflation, 5th Report of Session 2017–19
- 5 Office for National Statistics (ONS) (2017) Consumer Price Inflation (includes all 3 indices – CPIH, CPI and RPI) QMI
- 6 [www.ons.gov.uk/economy/inflationandpriceindices/timeseries/cziw/mm23](http://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/cziw/mm23)
- 7 House of Lords, Economic Affairs Committee (2019) Measuring Inflation, 5th Report of Session 2017–19
- 8 PLSA (2017) PLSA Annual report
- 9-14 PPI Modelling
- 15 House of Lords, Economic Affairs Committee (2019) Measuring Inflation, 5th Report of Session 2017–19
- 16 The Pensions Regulator (2019) Investment guidance for defined benefit pension schemes
- 17 Insight Investment (2019) Proposed changes to RPI: nobody needs to lose out
- 18 Pension Protection Fund (PPF) (2019) The Purple Book 2019; DB pensions universe risk profile
- 19-23 PPI Modelling



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