

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

Introduction

COVID-19 has increased Government expenditure while also significantly reducing price and earnings inflation in 2020. The Government may be considering changing the triple lock State Pension inflation mechanism to a double lock as a way of helping reduce government expenditure. However, potential spikes in earnings inflation in 2021 could mean that both a double and a triple lock would significantly increase the cost of the State Pension next year. **This Briefing Note explores the potential impact on the Government and on pensioners of moving from a triple lock to a double lock. The Note also explores the impact of a potential short-term smoothing mechanism which would reduce the level paid out on State Pensions in 2021 and help ensure that any spikes in inflation following economic recovery do not result in a dramatic increase in the State Pensions Bill.**

Summary of conclusions:

- Dropping the triple lock in favour of a double lock will not necessarily save money on State Pension costs in the short-term.
- A smoothing mechanism could ensure the cost of State Pensions does not rise significantly in 2021, saving up to 0.6% of GDP (around £15bn).
- A smoothing mechanism may require changes to legislation, or to the definition of earnings.
- The Government would need to weigh up the potential political consequences of breaking a manifesto promise, to drop the triple lock, with the potential savings.
- Changing the State Pension inflation mechanism would mean that pensioner incomes do not increase as quickly. Under a triple lock, average pensioner incomes could reach up to 31% of national average earnings by 2040, compared to up to 30% under a double lock and up to 29% under smoothing for one year, followed by the triple lock.
- The future cost of the State Pension is uncertain as changes in the economy and health trends are unpredictable.

There have been recent discussions regarding removing the triple lock to help fund the COVID-19 Bill

Since the election, the economy has undergone significant upheaval as the result of the COVID-19 pandemic which began to significantly affect the UK from March 2020. The pandemic has both reduced tax intake, due to increases in unemployment and furloughing, and resulted in an increase in Government spending on the NHS and care, grants, loans and tax reductions for businesses and individuals. The Office for Budget Responsibility (OBR) estimates that in 2020/2021 the UK will have spent £192bn on COVID-19 related spending and tax reductions, bringing the UK budget deficit to £322bn (16% of GDP) during 2020/2021.¹

In May 2020, there were reports that HM Treasury was considering moving from the triple lock State Pension inflation measure to a double lock, which would increase the level of the State Pension by the higher of prices (CPI) or earnings, as a way of reducing the impact on the budget arising from the pandemic.²

While changing the inflation mechanism will reduce Government spending in the short and long-term, it will also slow down the increase in pensioner income relative to earnings, resulting in future pensioners experiencing lower standards of living than they would have if the triple lock were maintained. The potential for a significant increase in earnings inflation in 2021, could also mean that a move to a double lock would not result in a reduction in the State Pensions Bill.

This Note:

- Sets out the history of State Pension inflation.
- Outlines uncertainties around State Pension costs.
- Sets out how the triple lock, double lock and a smoothing mechanism work.
- Explores the potential impact of changing inflation mechanisms on the cost of the State Pension and on pensioners.

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

History of State Pension inflation

State Pension uprating mechanisms have varied, affecting the value of the State Pension

The 1948 National Insurance Act introduced a flat rate, contributory basic State Pension (bSP), at a rate of £1.30 per week.³

Between 1948 and 1974 bSP increases were ad hoc, though over time the level of the State Pension rose more quickly than prices and generally earnings.⁴ In 1974, the full value of the bSP was equal to around 24% of average earnings.⁵

Between 1975 and 1979, the Government increased the State Pension by the higher of prices or earnings.⁶ By 1979 the bSP was worth around 26% of average earnings.⁷

In 1979, as part of a Government drive to reduce costs, the link to earnings inflation was broken and the State Pension increased with prices (with a floor of 2.5% introduced in 2001). By 2010, the value of a full bSP had fallen to around 16% of average earnings.

From 2011, the link to earnings was restored and the State Pension was increased by the 'triple lock': the higher of the increase in earnings (average weekly earnings), prices (Consumer Prices Index [CPI]), or 2.5%. Under the triple lock the State Pension increases in value, over time, above earnings because of years in which price inflation or 2.5% are higher than earnings inflation.

The triple lock was intended to increase the value of the State Pension

The Government originally intended the triple lock to be used long-term in order to ensure that, in return for rises in State Pension age (SPa) and the removal of an earnings element (as, under the new State Pension (nSP)), from 2016, people can no longer accrue entitlement to the additional State Pension), the State Pension would remain decent, properly indexed, and affordable.⁸

Between 2011 and April 2020, the value of a full bSP rose from 17% to 18% of average earnings. When the nSP was introduced in 2016, it was also increased by the triple lock. In April 2020, the full value of the nSP was worth around 24% of average earnings.⁹

There are sustainability concerns regarding the triple lock

The State Pension is more expensive under the triple lock, than under most other inflation mechanisms, and as a result there have been concerns regarding its sustainability. In 2018, the Office for Budget Responsibility (OBR) projected that State Pension expenditure under the triple lock would result in an annual cost of 7.06% of GDP per year by 2066/67, a 2.6% rise from a projected 4.5% in 2020.¹⁰

In 2020 the OBR warned of the "fiscal risk posed by the triple lock's upward ratchet and its propensity to exacerbate demographic spending pressures over the long term."¹

While there are concerns about maintaining the triple lock in the long-term, the current Conservative Government promised, in their 2019 Election Manifesto, to maintain the triple lock throughout the next Parliament.¹¹

Although there is no current obligation on Government to retain the triple lock further than the current Parliament, the State Pension cannot, under legislation, be inflated by a level below earnings. Therefore, a change from the triple lock will not result in the reductions in the value of the State Pension experienced between 1980 and 2011, unless changes to primary legislation are made.

Uncertainties of State Pension costs

The cost of the State Pension is projected to rise to 5.5% of GDP by 2040

Due to expected increases in the proportion of people eligible for the State Pension, and assuming that the triple lock remains in place, the cost of the State Pension is projected to rise to around 5.5% of Gross Domestic Product by 2040, from around 4.4% in 2021 (Figure 1). However, the future cost of the State Pension will depend on a number of factors which are not entirely predictable.

The key factors affecting State Pension costs, aside from policy, are the number of pensioners, (which is affected by longevity) and inflation (which is affected by the economy). As both longevity and the economy can vary due to health and market

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

factors, there is a range of uncertainty surrounding future pension costs.

5.5% of GDP in 2040 is the median outcome of a run of 100,000 scenarios drawn from a stochastic simulation model,¹⁸ however, if there were very high inflation (the 90th percentile of outcomes) State Pension could cost around 6.3% of GDP in 2040. Under low inflation (at the 10th percentile of outcomes) State Pension could cost around 4.9% in 2040. (See [Appendix on Modelling](#) for further details.)

The impact of COVID-19 on the pensioner population will affect the future cost of the State Pension

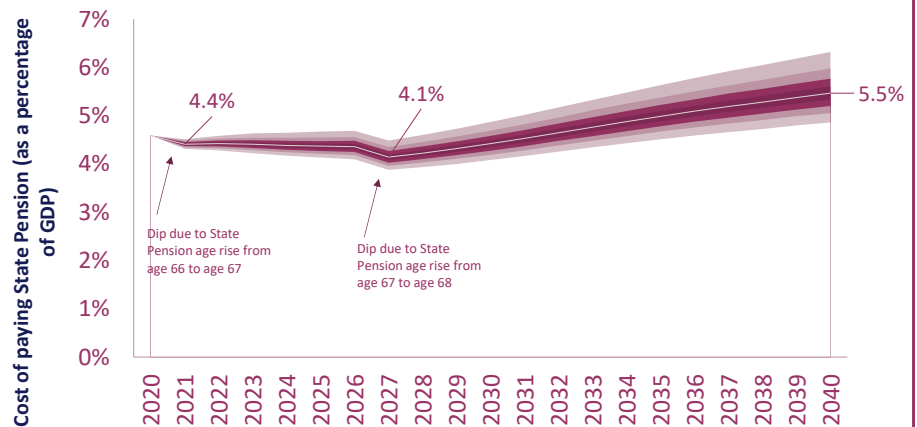
The cost of the State Pension is affected by the rate paid out, the inflation mechanism, the number of eligible pensioners, and the length of time that pensioners live. Changes to any of these affect the cost of the State Pension.

The COVID-19 pandemic, which has affected older people most significantly, has reduced the number of pensioners and may, alongside inflation and policy, impact the cost of State Pensions. This Briefing Note considers several sets of future conditions to assess the potential impact on pensioners. The baseline conditions assume that the number of pensioners stays the same as was expected pre-COVID-19, 11.9m pensioners in 2020 and 12m pensioners in 2021 (Figure 2). Two other scenarios assume that:

- COVID-19 has led to 45,000 additional deaths in 2020, over what was expected pre-COVID-19.¹²
- COVID-19 has led to 120,000 additional deaths in 2021.¹³

Figure 1: Before COVID-19 the cost of the State Pension was due to rise to around 5.5% of GDP by 2040

Projection of costs of paying the State Pension as a percentage of GDP - Each coloured band represents 10% of outcomes. Most extreme deciles (above 90% and below 10%) are not shown.



Without COVID-19, the Government expects there to be 12m people eligible for the (or State Pensions) State Pension in 2021.

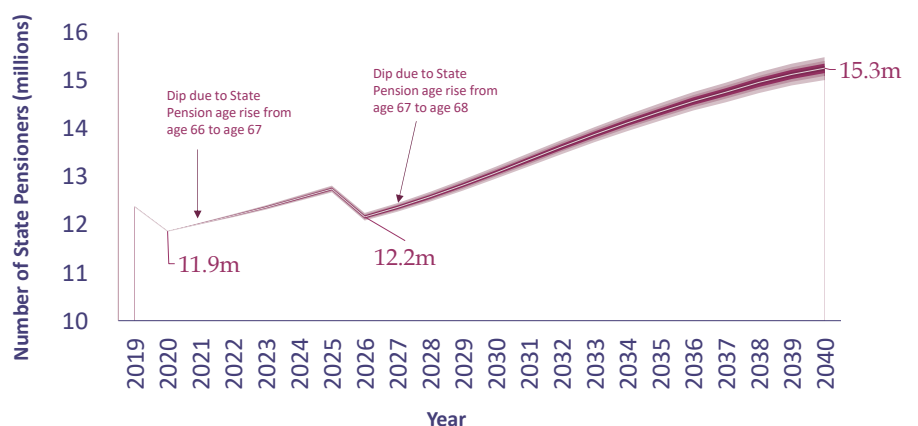
However, if a surge in cases occurs this winter, then there may be around 11.9m people eligible for a State Pension in 2021.

Depending on the number of deaths caused by COVID-19, and based on current available evidence, the State Pensions Bill could be over £1bn lower in 2021 than it would have been without COVID-19. The above numbers represent the central assumptions in the distribution of out-

Figure 2: The number of State Pensioners will continue to grow

Projection of number of State Pensioners

Each coloured band represents 10% of outcomes. Most extreme deciles are not shown.



What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

comes. Uncertainty in medical developments and future increases or decreases from expected infection rates will determine where in the distribution of potential outcomes future experience will fall.

The 2021 cost of the State Pension will depend on how COVID-19 affects inflation

Job losses, furloughs and the closure (both temporary and permanent) of businesses have had an immediate affect on inflation. Earnings inflation in May 2020 is at around -1%, which is around 4% less than at the end of 2019, when it had increased by around 3% from the previous year.¹⁴ CPI inflation has fallen by around 1% from 1.8% in January 2020, to around 0.6% in June 2020.¹⁵ (Figure 3)

As the pandemic situation develops and changes, inflation will continue to change also. There may be wage and price inflation rises prompted by businesses re-opening, people returning to work, or drops in inflation if, for example, more stringent lockdown measures are put in place in the event of another rise in the number of cases.

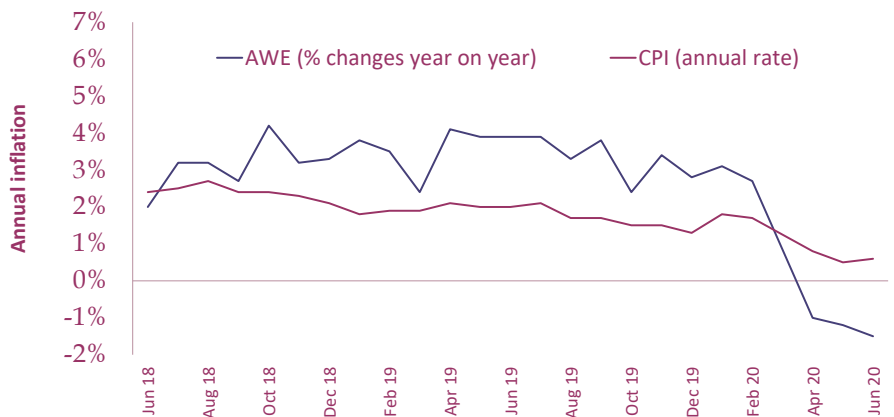
There are many projections of future price and earnings inflation available. This Note uses a selection of projections to present a range of possible outcomes under the different policy measures. As a baseline, this Note uses the OBR's pre-pandemic projections, published in the March 2020 Budget. The Note also explores potential outcomes under:

- OBR's Coronavirus scenario, released in April 2020.¹⁶

Figure 3: The pandemic has impacted inflation in 2020

Historical annual rate of increase of indexes used to uprate the State Pension

Source: ONS (2020) CPI ANNUAL RATE 00, EARN01: Average weekly earnings



- The July 2020, OBR, Fiscal Sustainability Report.¹
- An average of forecasts by Government and academic bodies, collected by Her Majesty's Treasury.¹⁷ (Figure 4)

Actual inflation is dependent on a range of factors and is likely to vary from above projections, however, using the current range is useful for exploring how variations in inflation can affect policy outcomes.

Figure 4: Earnings inflation in 2021 could vary between 2.4% and 18.3%

Economic projections under different OBR scenarios and an average of HMT forecasts

| Inflation | OBR's pre-pandemic projections, March 2020 | Average of HMT forecasts | OBR's Fiscal Sustainability Report, July 2020 | OBR's Coronavirus scenario, April 2020 |
|------------------------------|--------------------------------------------|--------------------------|-----------------------------------------------|----------------------------------------|
| Average Weekly Earnings 2020 | 2.9% | -0.1% | 0.2% | -7.3% |
| Average Weekly Earnings 2021 | 3.6% | 2.4% | 3.7% | 18.3% |
| Prices (CPI) 2020 | 1.7% | 0.6% | 0.7% | 1.2% |
| Prices (CPI) 2021 | 1.3% | 1.7% | 1.2% | 2.3% |

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

Double lock and smoothing

A double lock would require a floor of at least 0%

A double lock (as operated already for the State Pension between 1975 and 1979) involves the State Pension increasing each year by the higher of prices or earnings. A double lock would still result in the State Pension increasing above the level of earnings, but not as quickly as under the triple lock as there will be no floor of 2.5%. In a year where both earnings and prices experience negative inflation, under a double lock, technically the value of State Pension would decrease. It is unlikely, however, that the Government would reduce the level of State Pension, as this would not only be politically unpopular, it is likely to damage the incomes of some pensioners and increase pensioner poverty over the long-term, (as increases above earnings from the State Pension compensate for income which increases by prices or remains at the same nominal value).

The modelling in this Note assumes that a floor of 0% is used alongside a double lock. However, if a double lock was implemented, it might be determined that State Pension must rise in each year by some measure and a floor may be put in, below 2.5%.

A smoothing mechanism could address immediate spending concerns, and deal with inflation spikes

An alternative approach to reducing the State Pension Bill, without removing the triple lock completely, would

be to implement a temporary smoothing mechanism. A smoothing mechanism would have the double effect of reducing the State Pensions Bill over the next year and dealing with the anticipated spike in earnings inflation in 2021 from those who were furloughed or unemployed returning to work.

There are many options for smoothing inflation increases. This Note assumes that cumulative increases are used to smooth increases, while allowing for longer-term trends in inflation to continue to be reflected in State Pension increases.

The approach modelled considers 2.5% a year, prices, and earnings over a two year period and uses that two year increase to ensure that the 2022/23 New and Basic State Pension level has increased by the highest of these measures from the 2019/20 amount. So, for example, if earnings dropped by 2% in 2020 before rising by 10% in 2021 (increasing 7.8% over 2 years) and prices increased by 1% in 2020 and by 5% in 2021 (increasing 6.1% over 2 years) then the New and Basic State Pension would increase by 2.5% for 2021/22 and by 5.2% for 2022/23 to meet the two year increase in earnings.

| Index | Year 1 | Year 2 |
|---------------|------------------------|------------------------------------------------|
| Prices | 1% | 5% |
| Earnings | -2% | 10% |
| State pension | 2.5% | 5.2% |
| | Minimum of triple lock | Ensures increase over 2 years matches earnings |

Under a double lock, a high increase in earnings inflation in 2021 would result in a high increase in the State Pension Bill, so a smoothing mechanism may be a better policy option in the short-term, even if the Government intends to use the double lock for future State Pension inflation.

The definition of earnings may need to be changed if the Government pursues a smoothing mechanism

Using a smoothing mechanism may involve legislative complications as the Government is currently required by law to increase the basic and new State Pensions by a minimum of the increase in average weekly earnings.

Using the average level of earnings over two years may therefore be considered to be illegal under the current rules. If the Government wishes to pursue a smoothing mechanism for inflating State Pensions, it will need to investigate whether the definition of earnings can be changed to an average over two years.

The following analysis explores the potential outcomes of three different State Pension inflation policies on the cost of the State Pension

The following analysis is not intended to form a prediction of future economic outcomes or the future cost of State Pension. Rather the analysis illustrates how a change to a double lock, or the use of a smoothing mechanism could affect the cost of the basic State Pension, additional State Pension and new State Pension.

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

The analysis does not include consideration of the cost of Pension Credit, Housing Benefit or Council Tax Reduction. In practice, lower increases of the amount of State Pension paid will result in higher levels of entitlement for these benefits, especially among older pensions who receive State Pension under the old system and do not have their level of pension linked to the level of Pension Credit (as the new State Pension is). There are a significant number of pensioners currently eligible for these benefits. In 2017/18 around 2.1m pensioners were eligible for pension credit (1.4m were claiming), 1.5m pensioners were eligible for Housing Benefit (1.3m were claiming) and 1.7m pensioners Council Tax Reduction (figures are not available for eligible non-claimants).¹⁸

The impact on the cost of the State Pension

This analysis uses the triple lock as a baseline for exploration of the differences in impact between the triple lock and a double lock or a smoothing mechanism.

Similar studies have been conducted using previous projections of inflation and different policies for uprating State Pension. These provide useful context for the debate and show how small changes in inflation and other assumptions can vary the results widely. In addition, this Briefing Note considers the impact of population change and rises in State Pension age on the cost of State Pension, allowing for a dynamic exploration of the potential range of future costs.¹⁹

A smoothing mechanism would save more State Pension costs up-front, than a double lock

Under a Triple Lock, and different scenarios of inflation, the State Pension could cost between 4.7% and 5.2% of GDP in 2022/23. Under a double lock, the cost could be reduced, if there is low inflation, to a maximum of 5.1% of GDP. However, if the UK experiences price or earnings inflation above 2.5%, the cost of the triple lock will be the same as it would be under a double lock. In a scenario of higher inflation, where earnings reaches 18% in 2021, the cost of the State Pension could rise to 5.2% of GDP in 2022/23. Under a high inflation scenario a smoothing mechanism could reduce the cost of the State Pension to 4.7%, or 4.6% under a scenario of lower inflation (Figure 5).

The difference between 4.6% of GDP (£96bn) and 5.2% of GDP (£111bn) is

around £15bn. Therefore, moving to a smoothing mechanism could, under a high earnings inflation scenario, reduce the impact of the COVID-19 Bill from £192bn to £177bn.

The long-term effect of a change in policy on State Pension costs will be more significant

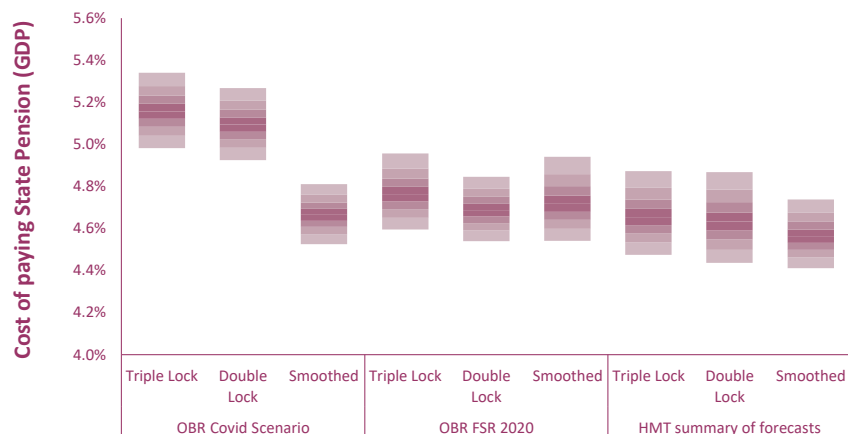
Under a triple lock, and different scenarios of inflation, the State Pension could cost between 5.8% and 6.6% of GDP in 2040. The cost could drop to between 5.8% and 6.3% of GDP in 2040 under a double lock.

If a smoothing mechanism was used for one year, and then the triple lock was returned to, the cost would drop more considerably, as a major increase in 2021 would be avoided, resulting in a cost of between 5.5% and 6% in 2040 (Figure 6).

Figure 5: The cost of paying the State Pension in 2022

Projection of costs of paying the State Pension (% GDP) 2022/23

Each coloured band represents 10% of outcomes. Most extreme deciles are not shown.

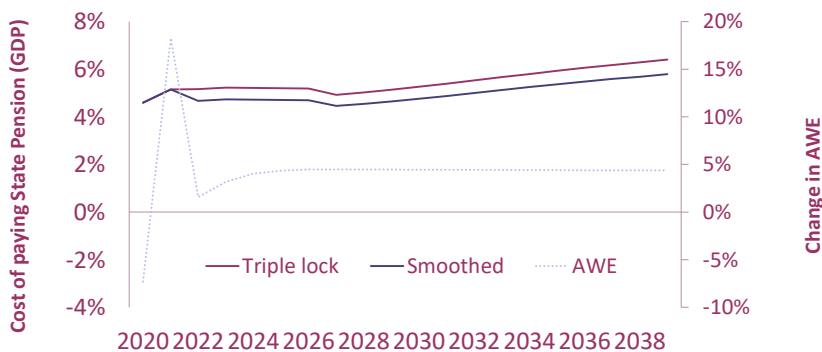


What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

Figure 6: A smoothing mechanism could mitigate high earnings increase in 2021

Projection of median AWE and median cost of paying the State Pension (% GDP) under alternative index options



The impact on State Pension income

A change to the State Pension inflation mechanism would reduce average pensioner income

Under a triple lock, average annual pensioner income in 2022/23 (from State Pensions) could be between 28% and 30% of Average Weekly Earnings. Under a double lock, 2022/23 levels of average State Pension would be similar in 2022/23, but a smoothing mechanism would result in levels of between 27% and 28%, as earnings above a certain level would be averaged over two years, preventing a significant rise.

The long-term impact of a change to inflation will be significant for pensioners

If the triple lock is replaced by a double lock, the average pensioner State

Pension income could be between 28% and 30% of average earnings, in 2040 compared to between 28% and 31% if the triple lock were maintained. A smoothing mechanism will result in a lower level of State Pension by 2040, of between 28% and 29%, as the level will not increase under a significant earnings inflation rise in 2021, leading to a higher overall level of State Pension.

Depending on both policy and inflation, the level of average receipt of State Pension income could vary by 3%. Changes in State Pension income levels affect the standard of living of pensioners, particularly older pensioners (over age 75) who receive 51% of their income from State Pensions and benefits, on average. A 3% difference in income would therefore affect the living standards of pensioners, which needs to be taken into account when assessing the impact of different State Pension inflation mechanisms.

Conclusions:

As with any policy debate, there are trade offs at the heart of decisions regarding inflating the State Pension. Possible future inflation scenarios must also be taken into account.

Dropping the triple lock in favour of a double lock will not necessarily save money on State Pension costs in the short-term

As a result of potentially higher earnings inflation in 2021, the double lock may not reduce the State Pension Bill to any significant degree in 2021, though a double lock will reduce the cost of the State Pension over time.

A smoothing mechanism could ensure the cost of State Pensions does not rise significantly in 2021

A smoothing mechanism which used, for example, the average of earnings over two years, would result in a lower increase to the cost of State Pensions, in the case of high earnings inflation. A smoothing mechanism which was used for one year, before reverting to the triple lock, would decrease the cost of the State Pension over the long-term by more than a double lock, as a significant rise in the State Pension level would have been avoided in 2021.

A smoothing mechanism may require changes to legislation, or to the definition of earnings

The Government is currently required by legislation to uprate the State Pension by a minimum of earnings. A move to using a smoothing mechanism may require some change or adaptation to the definition of earnings.

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

Moving away from the triple lock would involve the current Government breaking a manifesto promise

The current Conservative Government promised in its election manifesto to maintain the triple lock throughout this Parliament. Changing the inflation mechanism would involve breaking a manifesto promise. Therefore, the Government would need to consider whether they could justify changing the policies on which they were elected and whether the cost savings are worth the potential for loss of trust from some of their voters.

Changing the State Pension inflation mechanism would mean that pensioner incomes do not increase as quickly as they would were the triple lock maintained

A reduction in State Pension incomes would result in lower standards of living for some pensioners,

especially older pensioners (over age 75) who are more dependent on the State Pension.

The future cost of the State Pension is uncertain as changes in the economy and health trends are unpredictable

This Briefing Note uses currently available projections of how the economy might perform and what impact COVID-19 may have on the pensioner population to model changes to the level and cost of the State Pension. However, there are inherent uncertainties regarding the future. Variations in both the economy and health developments could result in significant variation in future costs.

Changing the triple lock to a smoothing mechanism could save in the region of £15bn

A smoothing mechanism could, under a high earnings inflation scenario, reduce the impact of the COVID-19 Bill by around £15bn, from £192bn to £177bn. Though this move would save money in the short-term, it would re-

sult in future pensioners income inflating more slowly. Moving to a double lock would not necessarily save much on the State Pension cost over the short-term, but would reduce costs in the long-term. Under a double lock, pensioner income would inflate more quickly than under a smoothing mechanism, but more slowly than under the triple lock. Policy-makers considering changing the way in which State Pensions are inflated will need to take these factors into account, alongside the inherent uncertainties around the economy and health, in order to ensure that changes are properly targeted to achieve the desired effect, and that potential negative effects on both pensioners and Government spending are taken into account.

Appendix on Modelling

The State Pension's cost depends on the development of longevity and the triple lock which in turn depends on price and wage inflations. The future development of these risk factors is highly uncertain and impossible to predict correctly. In this study, we have employed the multivariate stochastic simulation model of Sergio Alvares Maffra, John Armstrong, and Teemu Pennanen (of Kings College, London)²⁰ to describe these uncertainties. The model captures the dynamics and the dependencies across different risk factors and it is easy to calibrate to both historical data as well as forecasts or user views concerning the future. The forecasts and views used in the study were obtained from the ONS,²¹ OBR,^{1,16,22} and HMT.¹⁷ Additional data on the average level of benefits for each gender/age group were obtained from the DWP.²³ Short-term forecasts were used to model the first and second wave longevity impacts of the pandemic. Based on the "reasonable worst-case" scenario from the Academy of Medical Sciences¹³ and on the number of reported casualties, mortality rates were adjusted to account, on average, for additional 45,000 deaths in 2020, and 120,000 in 2021.

What does COVID-19 mean for the triple lock and State Pension inflation?

PPI Briefing Note Number 123

- 1, Office for Budgetary Responsibility - Fiscal Sustainability Report, July 2020
- 2, The Guardian, 22 May, 2020, Collinson, P “ Should UK pensioners be forced to pay the bill for coronavirus?”
- 3, Rutherford T (2013) House of Commons Library paper Historical Rates of Social Security Benefits SN/SG/6762, HoC
- 4, Thurley, D (2010) House of Commons Library paper Pensions up-rating – background SN/BT/2117, HoC
- 5, Comparative earnings data does not exist prior to 1971; Department for Work and Pensions (DWP) (2016) The Annual Abstract of Statistics DWP, Table 2.1a
- 6, With the rationale that that price inflation was not sufficient on its own to allow pensioners “a continuing share in our increasing national prosperity”; HoC Debates 28 March 1974, c 643
- 7, Department for Work and Pensions (DWP) (2016) The Annual Abstract of Statistics DWP, Table 2.1a
- 8, Steve Webb (Minister for Pensions), Evidence to the Work and Pensions Committee, 2 March 2016, Q3
- 9, PPI (2020) The Pensions Primer: a guide to the UK pensions system
- 10, Office for Budgetary Responsibilities Fiscal Sustainability Report, 2017, chart 3.10
- 11, 2019 Conservative Party Election Manifesto: Get Brexit Done Unleash Britain’s Potential
- 12, WHO Coronavirus Disease (COVID-19) Dashboard; Coronavirus disease (COVID-2019) situation reports; COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University
- 13, Academy of Medical Sciences, July 2020, Preparing for a challenging winter 2020/21
- 14, OBR, July 2020, EARN01: Average weekly earnings
- 15, ONS, July 2020, Consumer price inflation tables
- 16, OBR (2020) Coronavirus analysis
- 17, HMT, July 2020, Forecasts for the UK economy: a comparison of independent forecasts
- 18, DWP (2020) Income-related benefits: estimates of take-up: financial year 2017 to 2018 tables PC11 & HB1; GOV.UK (2020) Live tables on local government finance
- 19, Resolution Foundation, Intergenerational Centre (2020) Locked in? The triple lock on the State Pension in light of the coronavirus crisis
- 20, Sergio Alvares Maffra, John Armstrong, and Teemu Pennanen (2020) Stochastic modeling of assets and liabilities with mortality risk.
- 21, ONS (2019) National population projections: 2018-based.
- 22, OBR (2020) Long-term economic determinants.
- 23, DWP (2020) State Pension: Caseload data

This Briefing Note is authored by:

Daniela Silcock (PPI Head of Policy Research) with modelling support provided by:
Tim Pike (PPI Head of Modelling), Sergio Alvares Maffra, Teemu Pennanen (from Kings College London)

Pensions Policy Institute
t: 020 7848 3744
e: daniela@pensionspolicyinstitute.org.uk
w: www.pensionspolicyinstitute.org.uk

For more information on the topic please contact Daniela Silcock

© PPI September 2020