12. PPF risk developments

Summary

- This chapter contains information on how the PPF manages its risks and on how the risks to which we are exposed, outlined in the previous chapters, might impact our future funding levels.
- We operate a comprehensive enterprise risk management framework which enables us to understand and measure the potential impact of risks on the PPF.
- We operate a stochastic model which enables us to assess the likelihood of us meeting our funding objectives, and which also enables us to consider the impact of possible future stresses and scenarios on those plans.
- The environment in which operate has changed substantially over the year, with a number of court cases and the COVID-19 pandemic continuing to affect our outlook.

The table below highlights some of the key findings from this section:

Key metric	Result
Probability of Success (PoS)	83%, down from 89% last year as a result of the COVID-19 pandemic hitting financial markets in March 2020
Downside risk	£5 billion
Funding horizon and target funding margin	2030 and 10%, unchanged since last year
Key stress	Lower returns on growth assets: PoS -9pp

Our approach to risk management

Like other financial institutions, we assess all of our risks using a comprehensive enterprise risk management framework so that we can ensure our focus is on the most important risks to our balance sheet. We seek to understand our risks using modelling, including stress testing and sensitivity testing, to help us understand the potential impact of those risks for the future.

In making decision about our risk management processes the aim is to be proportionate. This means that we always consider the cost of any risk management activities being undertaken and the benefit it will provide to members and levy payers.

We consider our risk under three broad headings – external environment, strategic and funding, and operational. In *The Purple Book* we focus our attention on the components of those risk types with material financial implications for us, and so do not cover operational risk or the many non-financial external environment risks to which we are exposed.

External environment: Risk from the universe

This is the risk that we exist to protect – it is the credit risk that a scheme sponsor fails, possibly resulting in a claim. It is the biggest risk that we face. We are unable to manage the risks in the scheme universe, but must accept them. Therefore we monitor these risks to understand any implications this may have for us both financially and operationally.

We are protected by TPR, which monitors and sets guidance for DB pension schemes to ensure strong funding levels. This helps reduces the size of any claim we receive. We liaise with TPR regularly, in order to gain a shared understanding of developments that may change the risk of claims on the PPF.

In order to understand the possible implications of claims on the PPF, consideration is given both to the potential size of a claim and the likelihood of it occurring. An allowance for these risks is also included within our financial modelling as detailed in the summary of modelling section below.

The data in Chapter 4 shows how the size of the aggregate deficit of schemes in deficit (the theoretical maximum risk that we are exposed to) had been falling in the few years up to 2019. There were several contributors to this trend, including deficit reduction contributions and investment returns.

12. PPF risk developments continued

However, market movements between 31 March 2019 and 31 March 2020, culminating in the large-scale disruption caused by the COVID-19 pandemic, reversed this trend.

In order to monitor the likelihood of a claim, we monitor key information about employers who sponsor the schemes in the universe. This includes any public credit ratings. Chapter 6 provides information about the historical levels of insolvencies that we have seen. The COVID-19 pandemic has materially impacted the UK economy, and so over the next year we currently expect both higher numbers of claims because sponsors are less robust and higher claim amounts as the market disruption has increased the size of scheme deficits.

The timing of any increase is highly uncertain. The UK Government's ongoing support measures will have the effect of delaying the insolvency process for some employers which may otherwise have collapsed.

There are specific schemes whose deficits are large enough to wipe out our reserves if they claimed. This has always been the case. We monitor the position of the relevant schemes and their sponsors particularly closely.

Strategic and funding risks: Risk from our existing assets and liabilities

These risks are similar to those that all financial institutions with their own balance sheets face, including pension funds and insurance companies. They include the risks of managing our own investment portfolio and the demographic risks we face.

We will accept risk where it adds value to do so or where the costs of hedging are disproportionate. We manage our investment risk by hedging our liabilities closely and by investing using a bespoke investment strategy which seeks to avoid concentration in the UK economy that we protect. This strategy takes a conservative level of investment risk to target an investment return that exceeds the growth of liabilities over the long term. We accept short-term volatility of our funding level and have no immediate external constraints on our funding level, so if it changes significantly in the short term we will ensure that our response is consistent with our long-term funding strategy.

We are willing to accept longevity and other demographic risks, however we are prepared to transfer this risk to a third party if the risk is significant and hedging costs are reasonable. We actively monitor the level of demographic risk we are exposed to, using granular estimates of longevity based on socio-economic and geographical factors, and use these estimates to ensure that our liability hedging strategy is effectively implemented.

Both investment and demographic risks are potentially impacted in the long term by climate change. We have a comprehensive Responsible Investment strategy which helps mitigate this risk, and are developing approaches to understand the potential impact of climate change on our demographic risk exposure.

Summary of modelling

Members of DB pension schemes rely on the continued financial resilience of the PPF to provide them with a safety net if the sponsors of their schemes become insolvent. The data in *The Purple Book* demonstrates that there is still significant risk in the universe of schemes that we protect.

We use the Long Term Risk Model (LTRM), a Monte Carlo simulation model, to inform our understanding of the funding risks we face, and to protect our finances in a range of possible versions of the future.

Like any complex modelling exercise, the projections are subject to significant uncertainty and our success ultimately depends on some factors outside of our control. In particular, the model run for the base case makes the simplifying assumption that our investment strategy and broad approach to levy will not change before the horizon. Schemes are assumed to transition gradually to a low-risk investment strategy, and to keep paying DRCs to remove underfunding.

During 2020 we have reprogrammed the LTRM onto a new modelling platform, which is providing more flexibility and responsiveness. We continue to develop the model to provide improved functionality in preparation for our review of our funding strategy in the next financial year.

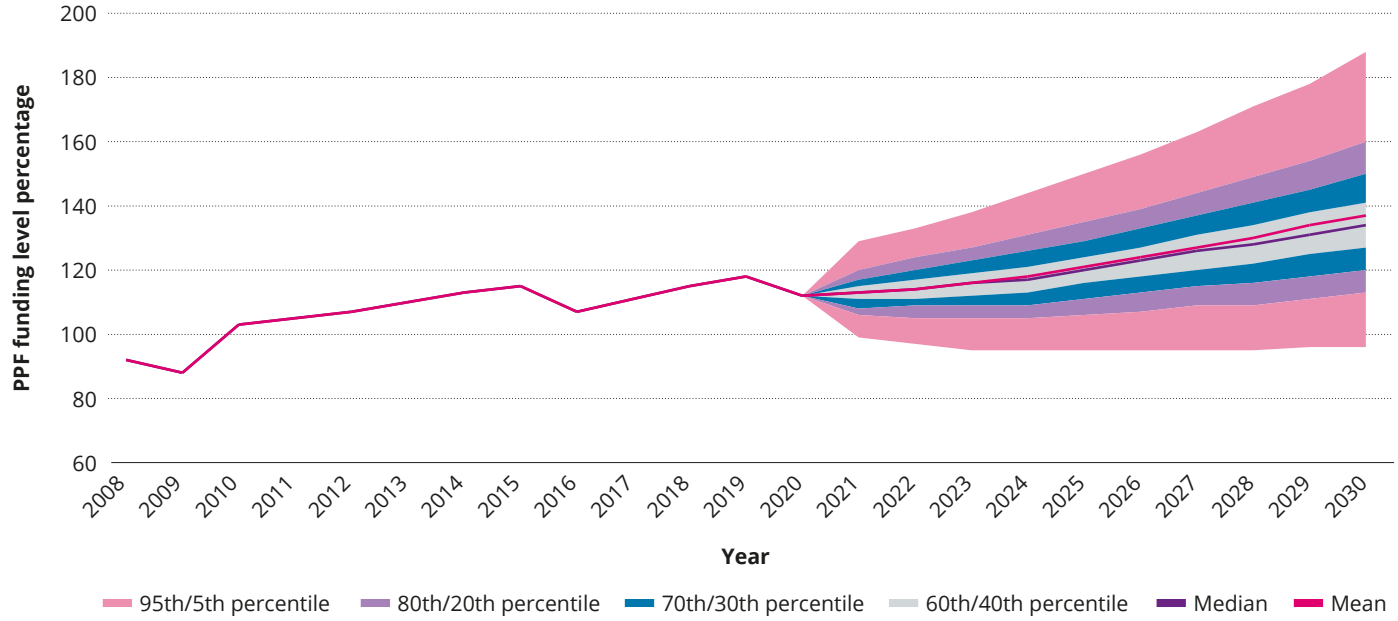
Monitoring our funding objective

Our current long-term funding objective is to be financially self-sufficient by the target funding horizon, currently estimated as 2030 – this is the point at which we expect claims to be low. Self-sufficiency means that we will have accumulated sufficient reserves by the funding horizon to protect against reasonably adverse experience, and will have little reliance on levy or return-seeking assets. We currently estimate that we need to be 110 per cent funded to ensure self-sufficiency.

We use the PoS[25] and downside risk[26] statistics to monitor progress against our funding objective. As at 31 March 2020, the PoS was 83 per cent, and the downside risk was £5 billion.

This year we have needed to make additional assumptions in response to the COVID-19 pandemic to reflect both the short and longer-term impacts – see the section below entitled changes over the year for further information. Following the Court of Justice of the European Union (CJEU) judgments on the *Hampshire* and *Bauer* cases we have also assumed that an additional liability will arise from resultant increases to member compensation we are required to provide.

Figure 12.1 | Projections of PPF funding level



Source: PPF

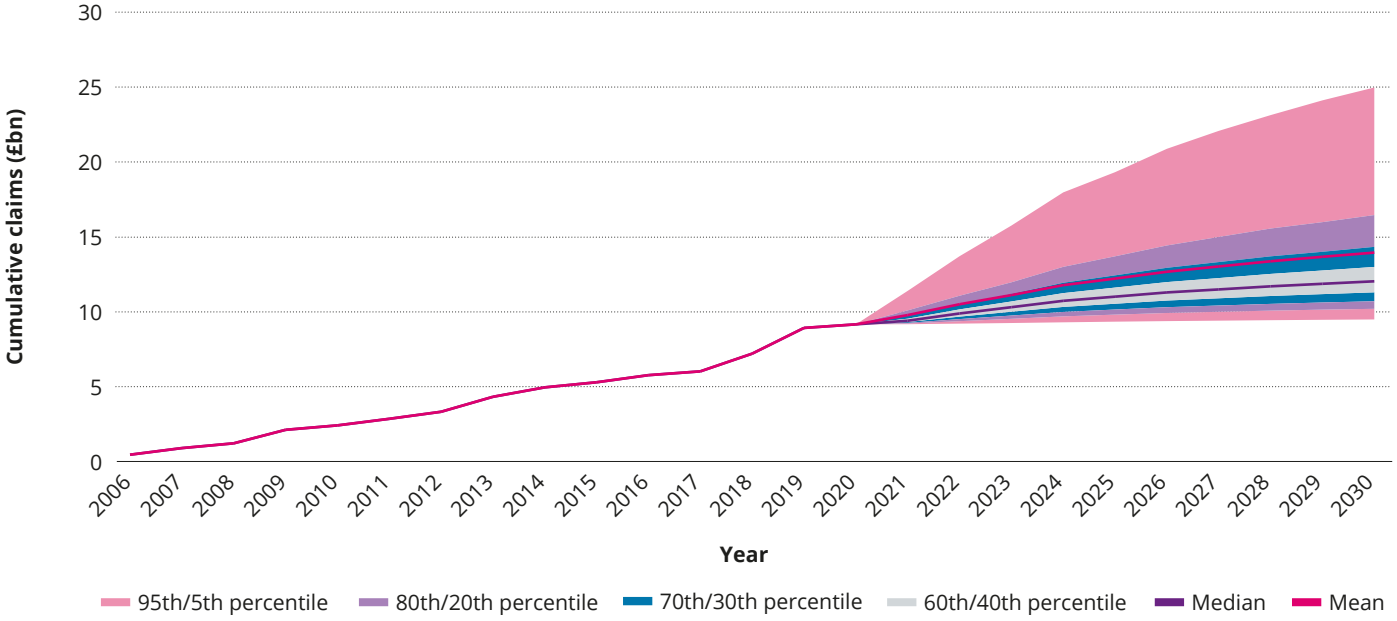
The fan chart in figure 12.1 shows the history of the PPF funding level as well as the base case projection beyond 2020. It shows that our central projection is for funding levels to remain reasonably static over the next few years as higher claims levels offset investment return and income from levy. Thereafter the central projection is for funding levels to increase.

During 2021/22 we will be reviewing our funding strategy, and this is likely to result in the future in different central paths for our projections.

25 The PoS measures the chance of the PPF being self-sufficient at the funding horizon if it continues on its current course with no change to the investment strategy or to the levy formula.

26 Downside risk is calculated as the deficit that is reached or exceeded in 10 per cent of modelled scenarios at some point before reaching the funding horizon.

Figure 12.2 | Projections of cumulative claims on the PPF



Source: PPF

The fan chart in figure 12.2 shows modelled claim levels. As discussed in the section above on the risk management approach at the PPF, the level of claims being made on the PPF in future years is the biggest risk we face and is one we cannot control. It is also one of the areas of greatest uncertainty. The most uncertainty is around exactly which schemes might claim, and when those claims might occur. There are favourable scenarios in which we receive fairly small claim volumes, but there is a substantial risk that we could face some very large claims.

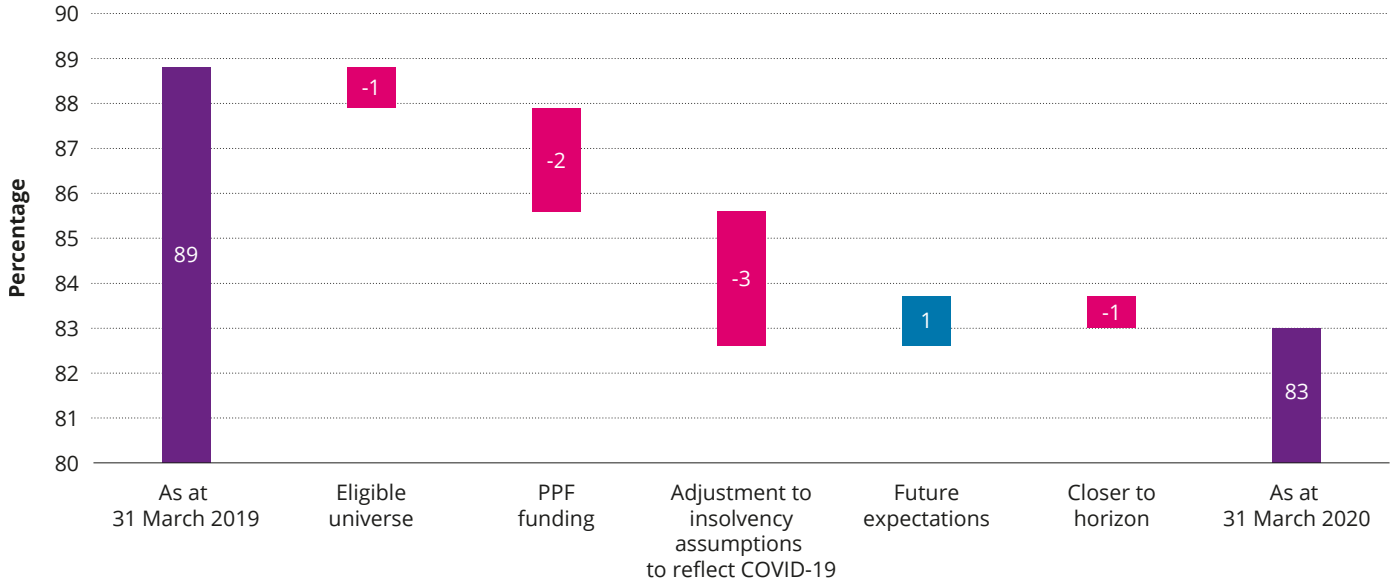
Changes over the year

The largest change to the environment impacting the schemes we protect during the year has been the COVID-19 pandemic. Economic conditions have worsened considerably, while the UK economy has been protected temporarily by government support measures. The economic scenarios underlying our projections reflect the expected impact on major asset classes in the short term before returning to levels in the long term that are broadly unchanged from pre-COVID-19 expectations. The modelling also includes a specific adjustment to reflect the expected impact from COVID-19 on insolvencies. As claim experience continues to emerge we will update our assumptions.

We disclosed in our ARA a number of court judgments in the cases of *Hampshire, Bauer* and *Hughes*. These have the effect of increasing the central estimate of future benefit outgoings.

From a modelling perspective the outcome of these rulings is an increase to the compensation the PPF is required to provide, and thus an increase to our liabilities. The rulings also increase the value placed on liabilities for schemes in assessment, increasing the likelihood of a scheme being underfunded on assessment and thus increasing both the likelihood of it entering the PPF and the deficit associated with the scheme when it does. Combined these impacts reduce the PoS a little.

Figure 12.3 | Probability of success attribution over year to 31 March 2020



Source: PPF

Note: All figures have been rounded to the nearest whole number.

The chart above shows the main changes to the PoS over the past year. The projections are as at 31 March 2020, a time when financial markets had fallen significantly due to the COVID-19 crisis. This combined with falling gilt yields has meant that the funding position of the schemes in the PPF universe has deteriorated leading to a worsening in the PoS.

Our own funding position fell by around five percentage points due to the fall in financial markets impacting our growth assets, although our hedging programme effectively protected us from movements in gilt yields. This contributed to a fall in the PoS.

For a number of large schemes, sponsor credit ratings were downgraded as an early response to the COVID-19 pandemic. This has the effect of increasing the claim risk in the modelling. In addition, a specific adjustment to reflect a plausible future impact from COVID-19 on the likelihood of claims has been made.

There are also small impacts on the PoS as a result of us being a year closer to the funding horizon and as a result of the modelling assumptions made as we generate expected future returns.

Possible future changes

Like all financial services institutions, including the schemes we protect, the PPF is exposed to other possible circumstances over which we have no or limited influence. The following is a list of some of the most material which we are monitoring at the moment.

COVID-19 pandemic: There is the potential for further impact on the value of schemes' assets, the value of our own assets, and the rate of insolvencies among DB scheme sponsors. Since year end, asset values have recovered somewhat, with a positive impact on the PPF's funding position, although our estimate is that this recovery is not yet reflected in scheme funding levels. At this point both the size of the financial impacts and the length of time they will continue for are very uncertain. The longer-term impacts of the pandemic on life expectancy remain uncertain, although we have seen an increase in mortality during 2020 – this is financially immaterial in the context of the PPF's whole liabilities.

***Hampshire, Bauer* and *Hughes*:** We continue to work through the implications of these judgments which are operationally complex. We do not expect that the outcome will be have a material impact on our finances.

12. PPF risk developments continued

Brexit: At the date of compiling *The Purple Book* there is still political uncertainty over the final outcome of the negotiations of a future trade deal with the European Union. Any outcome which results in weaker economic conditions in the UK could have an adverse impact on the sponsors of the schemes that we protect, and therefore could affect future claims. Depending on the exact terms of any trade deal, certain sectors could see structural changes that have a particularly large impact.

Phasing out RPI as a measure of inflation: The Government has reiterated its intention to gradually move to the Consumer Prices Index including owner occupiers' housing costs (CPIH) as the main measure of inflation, which is similar to the Consumer Price Index (CPI) so it tends to be lower than RPI. Although we hedge our inflation risk, we currently do so via RPI-linked assets and so are exposed to the basis risk between CPI and RPI. Convergence between the two measures would reduce the PPF's basis risk, but the proposed change is likely to have an impact on our balance sheet. It may also impact the funding levels of some of the schemes we protect which hedge in the same way. The potential maximum level of this impact is reasonably foreseeable and it is not expected to make a material difference to our ability to meet our funding targets.

Commercial consolidators and superfunds: Interest in consolidator vehicles continues to advance. However, the shape and size of the market is relatively unclear so at this stage we have made no specific adjustments in our financial modelling. TPR set out guidance for superfunds in June[27], which indicates that the risk these new models pose to our ability to meet our funding objectives will be limited.

TPR's consultation on a new DB funding framework: The aim of the new framework is to increase the security of the benefits that have been promised to members of DB schemes, which also has the impact of reducing the likelihood and scale of claims on the PPF.

Climate change: Climate change could, over the medium to long term, have a significant impact on the level of claims we receive. This is due to both impacts on the value of scheme asset portfolios and on sponsoring employer business models. Increased requirements on pension schemes for disclosure are likely to drive changes in approach to investment.

Sensitivities

The LTRM output has been tested for sensitivity to a range of modelling assumptions. A selection of the more significant sensitivity tests is shown in figure 12.4. The sensitivity tests aim to provide an insight into how the PoS and the downside risk might be affected if future experience is not as expected relative to the base case, best-estimate assumptions.

As the PoS has fallen between 31 March 2019 and 31 March 2020, the PoS result has become more sensitive to the assumptions used. So the sensitivities presented in figure 12.4 are larger than the comparable sensitivity from previous years.

27 For more information see: https://www.thepensionsregulator.gov.uk/en/document-library/regulatory-guidance/db-superfunds

Figure 12.4 | Sensitivities

Base case at March 2020	PoS; 83%	Downside risk: £5bn
Assumption	Change in PoS	Change in downside risk
Higher nominal yields *Nominal yields are assumed to increase by 0.5% p.a.*	+5pp	-£3bn
Higher inflation *Inflation is assumed to increase by 0.5% p.a.*	-3pp	+£2bn
Lower life expectancy *Modelled mortality is adjusted so that a male aged 63 lives on average one year less*	+6pp	-£3bn
Lower returns on growth assets *Growth asset returns are 1 percentage point p.a. lower*	-9pp	+£2bn
There is a large one-off claim on the PPF *A simulated £1.5bn claim, where PPF starting assets increased by £5bn and PPF starting liabilities increased by £6.5bn*	-4pp	+£2bn
Reduction in DRCs *DRCs are reduced so recovery plans are extended to 10 years*	0pp	+£0.2bn
Lower PPF levies *The PPF levy collected is lower by 10%*	-1pp	+0.4bn

Source: PPF

Scenario analysis

By applying stresses simultaneously to a number of assumptions in the LTRM on asset returns, bond yields and insolvency experience, we can explore how our finances respond to stress scenarios in which future financial market conditions depart significantly from current central estimates. This kind of analysis helps to assess how resilient our funding objective is to different types of macroeconomic shocks, whether our current funding strategy could be maintained in such conditions, and how best to respond to and plan for such a scenario.

For this year we have examined two stress scenarios. One is the annual cyclical scenario (ACS), released by the Prudential Regulation Authority (PRA) which is designed to test resilience to a deep recession followed by a recovery. The other has been designed as a reverse stress test, which allows us to explore what economic conditions could cause the PoS to drop below 50 per cent.

The stress scenarios described below are not modelled deterministically as a single realisation of future events, but are rather the 'central projections' upon which stochastic simulations of future financial conditions, known as scenarios, are modelled in the LTRM. The one million scenarios that the LTRM projects can therefore show considerable variation around these central projections. The scenarios start from the baseline figures calculated as at March 2020, and so model an additional stress scenario on top of the existing stress of the COVID-19 pandemic.

Potential impacts of demographic stress scenarios, particularly for longevity, are explored as part of the work considering the estimated funding reserve required at the funding horizon.

We are fully reviewing our approach to stress testing and sensitivity testing during 2020.

PRA ACS

The PRA's 2019 ACS was designed to test the resilience of the UK financial system to deep simultaneous recessions in the UK and global economies, a financial market stress, and an independent stress of misconduct costs. This latter cost is not applicable to the PPF.

This stress scenario contains a severe short-term shock to growth assets, offset by sharp declines in scheme liabilities due to the spike in UK bond yields. The strong recovery in growth assets in the medium term, and return to baseline levels of bond yields and asset returns thereafter, mean that this scenario amounts to a mild stress to the PPF's long-term funding objective.

The outcome – of a small increase in PoS – is consistent with previous explorations of similar short-term stresses. These have consistently shown that we are resilient to short-term stress provided that is followed by a strong recovery. Whereas commercial financial services organisations need to ensure adequate capitalisation at all points of the economic cycle, we are able to focus on long-term measures alone.

Figure 12.5 | PRA ACS

Stress scenario	Change in PoS	Change in downside risk
PRA 2019 ACS (adapted)	+3pp	-5bn

Source: PPF

Reverse Stress Test

The Reverse Stress Test (RST) stress scenario was developed within the PPF as no published scenario showed economic conditions that could cause the PoS to drop below 50 per cent. We identified stochastic scenarios produced by the LTRM which would lead to us not hitting the funding target at the funding horizon – these are already fairly extreme scenarios. Then by looking at the average economic impacts of these scenarios, we developed a central path for a new set of stochastic simulations.

This new set of scenarios being used in the LTRM helps us to gain a great understanding of the following areas:

- The type of economic conditions that could lead to us not having a sufficient funding reserve at the funding horizon.
- The type of economic scenarios where there are severe economic impacts, but our funding level recovers sufficiently to meet the funding target at the funding horizon.
- If there are severe economic conditions how much impact it would make on our current funding target.
- How the model operates in severe economic conditions and ensure it is robust and performs well even under extreme economic conditions.

The following table defines the RST. It outlines how the key economic variables differ in the RST compared with the baseline 31 March position outlined above.

Figure 12.6 | RST – definition

Variable	Average annual change on return before the funding horizon
UK equity	-6pp
World equities	-7pp
UK RPI	0.2pp

Source: PPF

The table below illustrates the impact of the RST on our funding metrics

Figure 12.7 | RST – impact on funding

Stress scenario	Change in PoS	Change in downside risk
RST	-45pp	+18bn

Source: PPF

The RST is a deliberately extreme exercise. It shows us that equity market performance is the key economic variable driving the most extreme scenarios we model. This is due to two key factors:

- A significant proportion of the assets of schemes in the universe are held in equities. When the value of equity assets drop, scheme assets fall in value, the size of claims increases and more schemes enter with a deficit so make a claim.
- The strength of the UK economy is modelled as being positively correlated with the value of UK equity assets. This means that we can expect that when equity values fall, there will be a greater number of employers who are modelled as insolvent.

It also shows that in the unlikely event of such a severe stress our current funding strategy would be inadequate to respond and we would need to alter our approach. The possible measures we could take are:

- to extend the horizon so that we are taking more investment risk for longer;
- to change the investment strategy;
- to change our approach to levy; or
- in extreme circumstances, to reduce benefits to the extent permitted by law.

Our funding strategy review will help us decide how best to prioritise these measures in the event of severe financial stress, and will enable us to design an approach to funding for the next period of the PPF's existence.