Association of British Insurers

Analysis of Proposed Solvency II Reforms

21 July 2022

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Charlotte Clark CBE
Director of Regulation
Association of British Insurers
One America Square
17 Crosswall
London
EC3N 2LB

Dear Charlotte

Pursuant to our Statement of Work with the Association of British Insurers ("ABI"), dated 7 June 2022, please find enclosed our report covering our analysis of the proposed Solvency II reforms.

Attention is drawn to the distribution, reliances and limitations of our work, as set out in Section 6 of our report.

At your request, we consented to the publication of this report. For the avoidance of doubt, Towers Watson Limited ("WTW", "we" or "us") does not assume any responsibility, nor accept any duty of care or liability to any third party who may obtain access to a copy of this document; any reliance placed by such party is entirely at their own risk.

We remain available to answer the ABI's questions that may arise regarding this document. We assume that the reader of this report will seek such explanation on any matter in question via the ABI.

Yours sincerely

Anthony Plotnek
Director
+44 20 7170 2432
anthony.plotnek@wtwco.com

Kenneth McIvor
Director
+44 20 7170 2402
kenneth.mcivor@wtwco.com

Gareth Sutcliffe
Senior Director
+44 7771 974120

gareth.sutcliffe@wtwco.com

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Purpose of this report

WTW is a leading global advisory, broking and solutions company providing data-driven, insight-led solutions in the areas of people, risk and capital.

This document was prepared by the UK insurance practice of WTW for the Association of British Insurers ("ABI") to use in accordance with the terms of our Statement of Work dated 7 June 2022. This document must be considered in its entirety as individual sections may be misleading if considered in isolation.

This is an independent report prepared by WTW to analyse the implications of the proposed reforms to Solvency II as described in the HM Treasury ("HMT") Review of Solvency II Consultation and the Prudential Regulation Authority ("PRA") Discussion Paper 2/22 ("DP2/22"), both published on 28 April 2022. Our analysis focusses on the changes proposed to the Matching Adjustment ("MA") and Risk Margin ("RM") and their implications for life insurers, and in particular annuity providers. As part of this analysis, we have taken into account the PRA's Data Collection Exercise ("DCE"), published on 10 June 2022, which sets out indicative scenarios and parametrisations. We do not comment on the implications for providers of general ("non-life") insurance.

This report contains analysis on specific aspects of the proposed designs and calibrations. It does not purport to be a comprehensive analysis of the proposals.

We direct the reader to the Glossary for explanation on abbreviations and technical terms used in this document. This report should be read in conjunction with the WTW independent report published on 14 February 2022.[a]

Our report contains analyses of selected responses to the PRA's 2021 Quantitative Impact Study ("QIS") from 16 participating UK life and composite insurers, using data that covers approximately 75% of the UK life insurance market based on life and health technical provisions (excluding unit linked business). This is the same data used for the WTW independent report referenced above. The results are presented in aggregate form only and do not represent the UK insurance market in total. Furthermore, the analysis does not cover the impacts on non-life insurance business. The results of our analysis should not be construed to represent the results of any one firm.

We note that the QIS data uses a year-end 2020 valuation date and there have been significant increases in risk-free and inflation rates since this time. Our analysis of the impact of any proposed reforms that is based on this data is therefore not necessarily reflective of the impacts of such proposals today.

This document was prepared for use by persons technically competent in the areas addressed and with the necessary background information. This document was produced based on information available to us at, or prior to, 19 July 2022, and takes no account of developments after that date. WTW is under no obligation to update or correct inaccuracies which may become apparent in this report. We refer the reader to our reliances and limitations in Section 6 of this report.

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[a] https://www.wtwco.com/en-GB/Insights/2022/02/solvency-II-review-independent-report-by-wtw-on-solvency-II-reforms

The Institute and Faculty of Actuaries sets Actuarial Professional Standards ("APS") and the Financial Reporting Council sets Technical Actuarial Standards ("TAS") for the members of the UK Actuarial Profession. This report, and the related work carried out to produce it, are subject to and compliant with TAS 100, TAS 200 and APS X2 (Review of Actuarial Work).

Executive summary

The package of reforms under consultation has the potential to create clear winners and losers if the parametrisation of the MA indicated by the PRA is not recalibrated, modified through alternative designs or left unchanged in line with the existing Solvency II regime. In particular, for those firms focussed on writing material volumes of bulk purchase annuity business, a 60-70% reduction in RM combined with the proposed significant reduction to the MA benefit, more capital would be required. This is not only a reduction in the 10-15% level of capital release that has been targeted by Government[b], but a movement in the opposite direction.

To determine whether HMT's objectives are met it is most relevant to consider these long-term annuity writers, who are the long-term investors capable of supporting the growth of the UK economy following the UK's withdrawal from the EU. Our quantitative analysis of the proposed reforms of the MA and RM shows a wide range of impacts across firms. Annuity writers are impacted by the proposed changes to both MA and RM, which are not like for like and affect, in opposing directions, the capital that is available to fund new business. Based on our analysis of the QIS data, we see that for the majority of annuity writers the proposals would result in lower available capital and not provide the types of release indicated to meet HMT's Solvency II review objectives.

HMT Objectives

HMT set out three key objectives for its proposals at the outset of the review. These objectives interact (and potentially conflict) with each other, so they must be considered collectively. The protection of policyholders and the safety and soundness of firms (HMT Objective 2), if considered standalone and narrowly, could be detrimental to the other two objectives and to the prices future policyholders pay.

Our analysis informs our view that the PRA's 28 April 2022 Discussion Paper proposals would introduce unnecessary prudence in the MA to the detriment of best delivering on the internationally competitive objective and the driving growth through long-term capital objective (HMT Objectives 1 and 3, respectively).

Our analysis using year-end 2020 QIS data shows that the net balance sheet effect for annuity firms of the PRA's proposals is negative on average (lower Own Funds, "OF") with the exact effects depending upon how the proposals are calibrated. This does not allow for the recent large rises in risk-free rates, which will have significantly reduced the benefit of RM changes but not significantly changed the adverse MA impact. As such, we would expect the net impact, in conditions prevailing at the time of writing, on annuity firms' OF to be significantly further reduced than that shown by the analysis presented here, which is based on data from year-end 2020, i.e., even further from the 10-15% reform target. Anchoring analysis to year-end 2020 could materially understate the adverse impacts of the proposals.

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[b] John Glen MP's Speech: https://www.gov.uk/government/speeches/speech-by-john-glen-mp-economic-secretary-to-the-treasury-to-the-association-of-british-insurers-annual-dinner

HMT Objective 1: Spur a vibrant, innovative and internationally competitive insurance sector

To support a vibrant, innovative and internationally competitive insurance sector the regulatory environment should not have excessive financial resource requirements or unnecessary investment constraints, which are likely to act as barriers to new entrants, stifling a key source of innovation and competition.

The PRA's estimate of capital impacts makes no allowance for the offsetting reduction in the existing arrangements to ease the transition from Solvency I to Solvency II. These transitional arrangements are intended to apply over a 16-year period and remain substantial.[c] We see that the PRA's 10-15% estimate of the release of current capital held does not apply in practice for many insurers (we estimate almost no change – in fact, a marginal *decrease* in OF – based on our QIS data set after allowing for the reduction in transitional arrangements and assuming that the RM and MA changes take effect at the same time).

For specialist annuity writers, the picture is even more disappointing. Rather than facilitate a 10-15% capital release to spur growth in the sector, we estimate that the reforms package offered (again based on the calibrations indicated in PRA's DP and DCE and year-end 2020 QIS data and market conditions) would lead to specialist annuity firms requiring a capital injection[d] to restore existing levels of solvency coverage unless there was an offsetting reduction in SCR which PRA indicates in DP2/22 it does not envisage. This could have adverse consequences in relation to the HMT objectives and the protection of as-yet-uninsured pension scheme members.

A recent Institute and Faculty of Actuaries' Working Paper[e] that surveyed UK annuity writers over the second half of 2021 indicates that firms consider that asset risk transfer outside the UK would increase. [f] Reform of the MA that increases the relative attractiveness of using asset reinsurance risks creating a similar issue to that caused by the existing RM. Increases in the scale of risk transfer outside of the UK is indicative of an imbalance and undermines the Government's ambition to support firms as providers of long-term capital to drive growth in the UK (HMT Objective 3).

HMT Objective 2: Protect policyholders and ensure the safety and soundness of firms

A regulatory regime that fosters strong and sustainable growth in the economy will enhance the safety and soundness of firms which is in the long-term interests of policyholders.

With this important long-term viewpoint in mind, policyholder protection must accommodate the needs and interests of both current and potential future policyholders.[g] There is no compelling evidence to suggest that the protection being afforded to existing policyholders via the solvency regime is inappropriate. Additionally, the existence of a competitive pension risk transfer market is as essential to existing pensioners as it is to future generations.

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[c] £21.7 billion as at year-end 2020 across firms in our QIS dataset.
[d] In Section 4, we estimate a 5.9% *decrease* in OF for annuity specialists.
[e] Insurers' hidden risk from reinsurance recaptures; the perspective of UK annuity writers – benchmarking report
[f] See Section 2, on reinsurance.
[g] The PRA has two, complementary, primary objectives in its supervision of insurers: to promote their safety and soundness as with all firms it supervises and, specific to insurers, to contribute to the securing of an appropriate degree of protection for those who are *or may become* policyholders. The Prudential Regulation Authority's approach to insurance supervision, October 2018

Our historical analysis[h] shows significant margin (allowance for uncertainty) between the current FS allowance within the existing regime and the actual default loss experienced. The existing FS already allows for considerable uncertainty and is set at a multiple of around three times historical default losses. The calibration in the PRA's ongoing DCE would increase this multiple to approximately five times based upon our sample portfolio.[i]

The Solvency II SCR additionally allows for significant credit capital to protect against the risk of defaults. The PRA argues that that the MA should be calibrated to provide a substantial level of coverage against a Great Depression 1930s scenario[j], which is the most extreme period ever in historical default and downgrade data[k] and also indicates an expectation that Solvency Capital Requirement ("SCR") will not reduce. This implies a double counting of tail risk.

Calibrating an allowance in firms' Best Estimate Liabilities ("BEL") for credit defaults that uses the worst decade in history for which there exists transitions and default data is not aligned to the requirements of the Solvency II balance sheet. It is unclear why such a prudent margin for the allowance for uncertainty is appropriate for what is meant to be a best estimate value.

Increasing insurers' financial resource requirements (the total of BEL, RM and SCR capital) will increase prices and could raise barriers on customers' access to the insurance sector, resulting in less secure alternatives becoming more attractive, adversely impacting the competitiveness of the insurance market.

Reducing the availability and accessibility of the pension buyout market to pension schemes and scaling down an important source of long-term investment could potentially significantly hinder the growth prospects for the UK economy and perversely reduce pensioner protection if the insurance sector is used less.

HMT Objective 3: Support firms to provide long-term capital to drive growth consistent with the Government's climate change and productive finance objectives

The current proposals do not incentivise capital investment. Instead, the reforms create obstacles for the insurers participating in the growing pension buyout market which provides security for millions of vulnerable UK pensioners and whose retirement income relies on a thriving insurance sector.

For insurers whose business focusses on annuities, the significant dampening of the MA benefit indicated in DP2/22 will more than offset any release offered by the reduction of RM, according to analysis based on year-end 2020 data and market conditions.[l] Additional spread volatility created in the balance sheet will further act as a constraint on investment. New aspects of the MA design are overly complex and lack detailed specification making them challenging to implement and difficult to fully assess in particular for private asset holdings. As with all significant changes to a regulatory regime, care needs to be taken to make sure new methodologies or approaches are robustly

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[h] See Section 3.
[i] See further details in Section 3, Figure 3.4.
[j] DP2/22 Annex, paragraph 47.
[k] A comparison to the 1930s experience is shown in Section 4.
[l] Further details are in Section 4.

examined and tested under a wide range of economic scenarios to avoid unintended consequences and/or excessive and unnecessary redevelopment costs on the industry.

The significant proposed changes to the MA do not in our view encourage the investment needed to drive growth consistent with the Government's climate change and productive finance objectives. Additionally, proposals appear overly penal for those assets where firms might currently be rewarded by earning excess spreads over equivalently rated UK corporate bond assets.[m]

By seemingly attempting to narrow the range of MA benefit possible across the range of investments within the asset universe, the Index Spread approach wipes out the excess spread achieved on some highly secure good cashflow matching assets such as student accommodation loans. Some assets are inherently more illiquid with supply and demand factors also coming into play and it is not clear why there should be a lower dispersion of MA across asset types as the PRA's Index Spread calibration implies.

The significant change in the relative attractiveness of different asset classes or sub-classes will have material consequences on firms' investment approaches and allocations. If the additional work required to originate the types of assets underlying this objective is no longer rewarded, firms may deem this not worthwhile. In line with the Prudent Person Principle of Solvency II, for a Board to approve investment in a new asset class, the firm must demonstrate sufficient understanding of the risks and modelling of these risks in a range of economic scenarios. As they have expanded allocations into more complex private unrated assets, firms have significantly upskilled teams to be able to meet this requirement.

The one-size-fits-all Index-Spread approach doesn't allow for these different risk-return combinations in asset classes as it does not reflect the true underlying risks the firm is exposed to by holding the asset. Our analysis indicates that there are significant consequences for the relative attractiveness of different investments.[n]

More balanced outcomes

It is detrimental to the UK economy and future policyholders to have overly prudent protection for existing policyholders as this will drive up future prices, likely increase the use of overseas reinsurance and reduce the capital for UK Government climate change and productive finance objectives. A proportionate approach is needed that recognises the adverse impact that a narrow focus on any one objective could have. Subject to achieving an appropriate degree of policyholder protection, the focus should be on improving international competitiveness and delivering long-term sustainable growth.

Critically, to provide an outcome closer to the 10% to 15% release of capital currently held by life insurers that the Government is targeting, a more balanced package of reforms is required which avoids significant change to the level and volatility of MA and results in a less polarised outcome for different types of insurers.

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[m] See Section 3.4.

[n] In Section 3.4, Figure 3.7 and Figure 3.8 illustrate the impact of the proposals by asset class.

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Section 1: Background and introduction

1.1 HMT's Call for Evidence

On 19 October 2020, HMT's Call for Evidence kicked off the activities to review and re-shape the UK's insurance regulatory regime following its withdrawal from the EU. The Call for Evidence set out three objectives underpinning the review as:

Objective 1: To spur a vibrant, innovative and internationally competitive insurance sector

Objective 2: To protect policyholders and ensure the safety and soundness of firms

Objective 3: To support firms to provide long-term capital to drive growth consistent with the Government's climate change and productive finance objectives

WTW published its response to the Call for Evidence on 19 February 2021.[o]

1.2 PRA's QIS

Subsequently, on 20 July 2021, the PRA launched a QIS with responses due by 20 October 2021. This QIS explored two scenarios – Scenario A and Scenario B – with differing designs and calibration strengths for the MA and RM.

Using a large subset of the data firms submitted for the QIS and working with representative portfolios of the assets and liabilities of annuity portfolios, WTW produced a detailed analysis of the implications of the two QIS scenarios. We refer the reader to WTW's independent report on the Solvency II reforms and the PRA's Quantitative Impact Study, published on 14 February 2022,[p] which contains the results of our QIS analysis. This analytical report should be read in conjunction with this previous report.

1.3 John Glen's Speech at the ABI Annual Dinner

One week after the publication of the WTW independent report, the then Economic Secretary to the Treasury, John Glen MP, gave a speech at the ABI Annual Dinner on 21 February 2022.[q] The speech provided significant insight into the direction of government on many key areas of the reforms. It referred to two key aspects in particular: a substantial reduction in the risk margin of around 60-70% for long-term life insurers and a material release of capital currently held by life insurers of as much as 10% or even 15%.

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[o] https://www.wtwco.com/en-GB/Insights/2021/02/solvency-II-review-willis-towers-watsons-response-to-hm-treasury-call-for-evidence
[p] https://www.wtwco.com/en-GB/Insights/2022/02/solvency-II-review-independent-report-by-wtw-on-solvency-II-reforms
[q] https://www.gov.uk/government/speeches/speech-by-john-glen-mp-economic-secretary-to-the-treasury-to-the-association-of-british-insurers-annual-dinner

1.4   HMT's Consultation Paper

On 28 April 2022, HMT released its consultation on the Solvency II reforms package. This outlined proposals for four key elements of the regime – RM, MA, investment flexibility, and reporting and administration – with questions put to stakeholders for each of these.

On the RM, the consultation paper indicates HMT's preference for the tapered cost of capital approach. HMT reiterates the Government's proposal for a cut of around 60-70% to the RM for long-term life insurers.

On the MA, the HMT consultation presented the "Index-Spread Model" as the basis for what has been named the Credit Risk Premium ("CRP") in the Fundamental Spread ("FS")[r], but stated that HMT had not reached a final decision on calibration. The HMT paper consults on CRP calibrations of 25%, 35% and 45% of credit spreads on assets in an underlying reference index (which itself is still to be decided).

In the investment flexibility and reporting / administration sections, HMT has proposed – among other changes – extending the universe of assets and liabilities which are eligible for the MA, reforming insurers' reporting requirements and simplifying the calculation of Transitional Measures on Technical Provisions ("TMTP").

1.5   PRA's Discussion Paper

The HMT consultation paper coincided with the release of the PRA's Discussion Paper on the reforms, DP2/22. DP2/22 states the PRA view that the CRP should be calibrated to deliver an outcome equivalent to 35% of credit spreads on average through the cycle. PRA further states that that a reduction of around 60% to the RM combined with a CRP equivalent to 35% of credit spreads through the cycle would not be inconsistent with transfer value evidence.

The PRA assesses that a package of around 60% reduction in RM for life insurers and a CRP equivalent to 35% of credit spreads would release between 10% and 15% of the capital held by the life insurance industry. Notably, the PRA's calculations are performed assuming that reforms are fully phased in and transitional measures – such as TMTP – do not exist.

DP2/22 also included an annex that set out the PRA's position on various aspects of the calibration of the proposed MA design, based on the Index-Spread Model for CRP in the FS. The PRA analysis within the DP2/22 annex illustrates how a possible formulation[t] of the Index-Spread Model would compare to the current approach.

Submissions to both the HMT consultation paper and PRA's discussion paper are due by 21 July 2022.

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[r] FS has been presented as the sum of Expected Loss and CRP, where Expected Loss is the same as the Probability of Default under the current Solvency II MA approach.
[t] PRA uses an averaging period of 5 years but does not define the calibration of CRP relative to spreads or the reference index it has adopted.

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1.6 PRA DCE

On 10 June 2022, the PRA launched a Data Collection Exercise ("DCE"), in which the PRA is seeking data from selected firms in three parts:

I.   Valuation methods for asset types with no direct market price;

II.   Asset level data at year-end 2020 related to rating notches, reference indices for valuation, Z-spreads relative to given reference indices and valuation methodologies, among other items;

III. (a) Base balance sheet impacts based on two given calibrations of the Index-Spread Model and four combinations of TMTP and deferred tax (among other items);

      (b) Results under four SCR scenarios for Internal Model ("IM") firms; and

      (c) Implementation effort and cost-benefit information.

The PRA had previously indicated in DP2/22 that it is not its current expectation that there would be a material change in the level of SCR capital held by firms.

The PRA's response deadlines for the above are 21 July 2022 for Part I, 1 August 2022 for Part II and 12 September 2022 for Part III.

1.7 EU's Review of Solvency II

The EU Solvency II Directive requires the European Commission ("EC") to periodically carry out a review of EU (re)insurance rules. This review is described by the EU as an opportunity to reflect on the lessons learned from the first years of application of the Solvency II rules, including during the COVID-19 crisis.

It is expected, in the short term, that capital of up to an estimated €90 billion could be released at EU level due to the phasing in of certain rules. The proposals maintain a €30 billion estimated increase in capital resources once all elements are phased in, based on an economic environment similar to that at end of 2019.[u]

Although the UK's review of Solvency II overlaps in timing with the EU's own, the UK review follows the country's withdrawal from the EU and has its own objectives.

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[u] EC Impact Assessment Part 1, page 39: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021SC0260

Section 2: Risk Margin ("RM")

2.1 Background

The HMT consultation and DP2/22 both agree that the RM should be reformed based on concerns that it is overly sensitive to interest rate movements and may be overstated in low interest rate environments. In particular, the HMT consultation highlights that the Government is proposing a substantial reduction in the RM, which is to include a cut of around 60-70% for long-term life insurers.

Two different approaches to calculating the RM were tested in the PRA QIS. The first a percentile-based approach identical to the Margin Over Current Estimate ("MOCE") used in the Insurance Capital Standard ("ICS") developed by the International Association of Insurance Supervisors ("IAIS") and the other a cost of capital approach (the "lambda" or "tapered" approach) similar to the existing approach, but using a lambda factor to reduce future costs of capital.

The HMT consultation paper indicates a preference for the tapered cost of capital approach based on its views on:

1. Sensitivity towards differing risk profiles and liability durations in the UK insurance market;

2. Level of consistency with the existing RM approach, particularly in comparison against the significant changes required for a MOCE approach;

3. Comparability with EU proposals for a revised RM; and

4. Linkage between calculation of RM and underlying principles (recapitalisation or transfer value).

The PRA is also in favour of a tapered cost of capital approach for the reasons above.

2.2 Relevant EU developments

The tapered cost of capital method has precedent. In September 2021, the EC proposed that a tapered cost of capital method for the RM under the EU's regime. The EC's proposal is to introduce a tapering parameter (or lambda) of 97.5% and lower the cost of capital rate ("COC rate") from 6% to 5%. In its impact assessment, the EC acknowledged that the cost of capital rate needs to reflect the low-yield environment and proposed a 1% decrease in the existing rate, going beyond the recommendation of its independent advisory body, EIOPA. The EC proposal also removed the 50% floor that applied to the cumulative lambda in the EIOPA recommendation.

Under year-end 2019 economic conditions, the EC estimates a €28 billion capital release due to the reform of the RM.[a] Furthermore, an EU Parliament report published on 6 June 2022 proposes further cuts to the RM – a lambda factor of 90% and a COC rate of 4%.

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[a] EC Impact Assessment Part 1, page 41: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021SC0260

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2.3 RM design and calibration

The tapered cost of capital approach, preferred by HMT and PRA, has three parameters: the COC rate, the lambda factor and the cumulative lambda floor. We have calculated the RM under variations of these parameters that that would be expected to achieve a 60% or 70% reduction in the RM for a representative annuity portfolio[b] with a liability duration of 12.5 years.

Table 2.1: Parameterisations of the RM for an illustrative in-payment annuity portfolio that achieve a given reduction in the RM

	Lambda	COC rate (no cumulative lambda floor)	COC rate (50% cumulative lambda floor)
Current approach (no reduction in RM)	100%	6.0%	n/a
EC approach (33% reduction in RM)	97.5%	5.0%	n/a
EU Parliament approach (68% reduction in RM)	90%	4.0%	n/a
Lower end of proposed range (60% reduction in RM)	100%	2.4%	n/a
	95%	3.6%	3.4%
	90%	5.0%	3.9%
	85%	6.6%	4.2%
Upper end of proposed range (70% reduction in RM)	100%	1.8%	n/a
	95%	2.7%	2.6%
	90%	3.8%	2.9%
	85%	5.0%	3.1%

We can see from the table above that there are various formulations of the tapered cost of capital approach that would deliver the proposed reductions in RM. The parameterisations that achieve these reductions would however differ by portfolio, with reductions in lambda more beneficial to longer duration portfolios relative to short duration portfolios.[c]

Additionally, we would note that the increases in interest rates experienced since year-end 2020 (the valuation date used in the QIS) have already led to material decreases in the level of RM. This means that any balance between increases to the FS used in the MA calculation and decreases to the RM that has been assessed using the QIS data no longer holds.

Using May 2022 risk-free rate data – the latest available at time of writing – the RM for our illustrative portfolio is 37% lower than the one based on year-end 2020 risk-free rates.

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[b] For this portfolio, only longevity risks form the non-hedgeable risks for the purposes of the RM and no diversification effect is assumed. For simplicity we have excluded any operational risk allowance.
[c] Based on this illustrative portfolio, we estimate the EC proposals to reduce the RM by around 34% and the EU Parliament proposals to reduce the RM by around 67%, using year-end 2020 risk-free rates.

2.4   Impact of TMTP on RM

TMTP exists as an option to insurers to ease the transition from Solvency I to Solvency II. Applying over a 16-year period they are designed to partially offset the changes to Technical Provisions ("TP") arising due to various elements of Solvency II, including the RM, MA and the risk-free rate determination, among others.

In the QIS submission data, 12 out of the 16 firms use TMTP, and the value of the transitional measures represented £21.7 billion at year-end 2020. The majority of the TMTP amount (approximately 80% of total[d]) is contributed by the RM, meaning that this portion exists to counteract the existence of the RM in Solvency II for business written prior to Solvency II coming into force.

Due to the wide use of TMTP, and the direct relationship between the amount of RM and the amount of TMTP, a reduction in the level of RM will mostly be offset by a reduction in TMTP. However, this would not apply to the RM on business written after 2016 since TMTP only applies to business written prior to the introduction of Solvency II in 2016.

Firms writing new annuity business from 2016 onwards have looked to the (overseas) longevity reinsurance market to mitigate the impact of the RM. The potential impact on the reinsurance market is discussed further below.

2.5   Reinsurance

The insurance industry uses reinsurance for a wide variety of purposes. Use of reinsurance among annuity writers has grown as the reinsurance market has matured. As a result of the combined effect of the RM, longevity capital requirements and low interest rates, longevity risks have become less economically attractive to retain for UK insurers subject to the Solvency II regime.

A recent Institute and Faculty of Actuaries' Working Paper that surveyed UK annuity writers over the second half of 2021 suggests that the RM alone may not be the driver for reinsuring longevity risk overseas.[e] The paper points to European regulators taking a different view to the PRA on aspects of the Solvency II regime, such as longevity stress calibrations; diversification between longevity and other demographic risks; or by differing attitudes toward retrocessions outside of the Solvency II regime. The paper also refers to the increasing appetite for quota share reinsurance, which indicates greater potential for UK insurers to cede more asset risk in the future.

The ABI has argued that a 75% reduction in the RM is necessary for firms to reconsider current levels of reinsurance.[f] It appears that this threshold will not be met by the proposed reforms. Instead, the reforms may lead to increased reinsurance of asset risk because of the proposed changes to the MA and reduced incentive for firms to retain this risk in the UK.

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[d] RM contribution to TMTP among firms in our QIS data set before application of the Financial Resources Requirement cap.
[e] Insurers' hidden risk from reinsurance recaptures; the perspective of UK annuity writers – benchmarking report
[f] See ABI cover note: https://www.abi.org.uk/news/news-articles/2022/02/solvency-ii-impact-of-the-pras-quantitative-impact-study-explored-in-new-independent-report/

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Section 3: Matching Adjustment ("MA")

3.1 Background

Both HMT and PRA set out concerns that the current calibration of the FS may not be appropriate and therefore the resulting MA benefit may not be either.

In DP2/22, the PRA highlights its three main concerns with the current FS construct:

1. The FS does not capture all retained risks which insurers face and as such its level (in basis points) is generally too low;

2. The FS is not sensitive to differences in risks across asset classes for a given currency, sector and Credit Quality Step ("CQS"); and

3. The FS does not adjust to reflect structural shifts in the credit environment over time unless there are actual defaults or downgrades.

These concerns are consistent with those described by HMT in its consultation paper.

DP2/22 describes the CRP concept as "the uncertainty around the expected loss ("EL") for which a willing arm's length third party would demand a premium for taking on the risk" and notes that the PRA considers that the current FS construct does not fully and explicitly take this into account. The proposed FS is articulated as the sum of the EL and the CRP.

The HMT consultation sets out the following "Index-Spread Model" (or "X-Z Model") for the design of the CRP component which it considers incorporates market measures of credit risk:

$$CRP = X.(average\ spread\ for\ reference\ index\ over\ n\ years)$$
$$+ Z.\begin{pmatrix} difference\ between\ the\ spread\ of\ asset\ and\ that\ of \\ a\ reference\ index \end{pmatrix}$$

There are four key components to this X-Z model:

■ The X parameter sets an initial level for the CRP to consider uncertainty around future expected default losses which does not depend upon the individual asset but is dependent on the level of granularity of the reference indices used. The PRA DCE uses a value of 35% for X and provides defined values of the average spread for a reference index split by credit quality step and whether the asset is financial or non-financial.

■ The Z parameter adjusts the CRP based on whether the current market spread of each asset held is higher or lower than the current market spread of the reference index. This component seeks to address concerns that the current FS approach incentivises investment in assets with high spreads for a given rating. The PRA DCE uses a value of 17.5% for Z (and a value of 0% but this is to allow the PRA to assess the impact of introducing the Z component).

■ The n parameter represents the averaging period for the reference index which is multiplied by the X parameter. The PRA DCE uses 5 years for n.

- The X and Z terms both refer to a reference index which would provide the average and prevailing credit spreads needed for the calculation. The PRA envisages that the indices used for the two terms would be the same and indicates that a corporate bond index may be a suitable choice given that this underlies the existing FS calibration and has a sufficiently long data set. The PRA DCE explicitly provides 5-year average, Z-spreads and durations for Financial and Non-Financial assets by CQS which have been obtained from the "all-term" iBoxx indices as at year-end 2020. The PRA intends that the X, Z and n parameters would be calibrated to result in a CRP that appropriately reflects the credit risk of MA portfolio assets (including the risks associated with illiquid assets) while avoiding undue volatility on life insurers' balance sheets. The PRA sets out its expectation that X and Z would be chosen to achieve a CRP equivalent to a minimum of 35% of spread, through the cycle.

While no specific parameterisation is proposed, the PRA suggests that 5 years may be a suitable averaging period for the n parameter given it responds to sustained change in the level of spreads without being overly volatile.

HMT has stated that it has yet to reach a final position on the calibration of CRP and has asked stakeholders to comment on the impact of it being set at 25%, 35% and 45% of spread.

3.2   Relevant EU developments

At the outset of the review of Solvency II, the EC requested an assessment of the quantitative impact of potential alternative approaches for the MA.[a] However, the only proposals by the EC concerning the MA have been to recognise in the standard formula SCR the MA portfolio diversification effects and to clarify the eligibility of restructured assets.[b]

The focus of the EC has been on amendments to the design of the Volatility Adjustment ("VA") which is in significantly greater use by firms operating in the EU than the MA. There have been no significant changes to the design or calibration of the MA for European insurers.

3.3   Current FS design and calibration

- Instead of an explicit CRP component, as proposed by the PRA, the current approach allows for uncertainty around expected losses through the combination of the Cost of Downgrade ("CoD") and the 35% LTAS floor.

Figure 3.1 and Figure 3.2 below show a breakdown of the three components of the current approach for various credit ratings (AAA to BBB) and terms to maturity, "YTM" for the Financial and Non-Financial sectors respectively. The following assumptions were made:

- Current PD, CoD, FS and LTAS as at year-end 2020.

- A 30% recovery assumption is adopted consistent with the current approach.

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[a] EC request for Solvency II review:
https://register.eiopa.europa.eu/Publications/Requests%20for%20advice/RH_SRAnnex%20-%20CfA%202020%20SII%20review.pdf
[b] EC proposed amendments to Solvency II: https://eur-lex.europa.eu/resource.html?uri=cellar:da66a00c-1c51-11ec-b4fe-01aa75ed71a1.0001.02/DOC_1&format=PDF

wtw

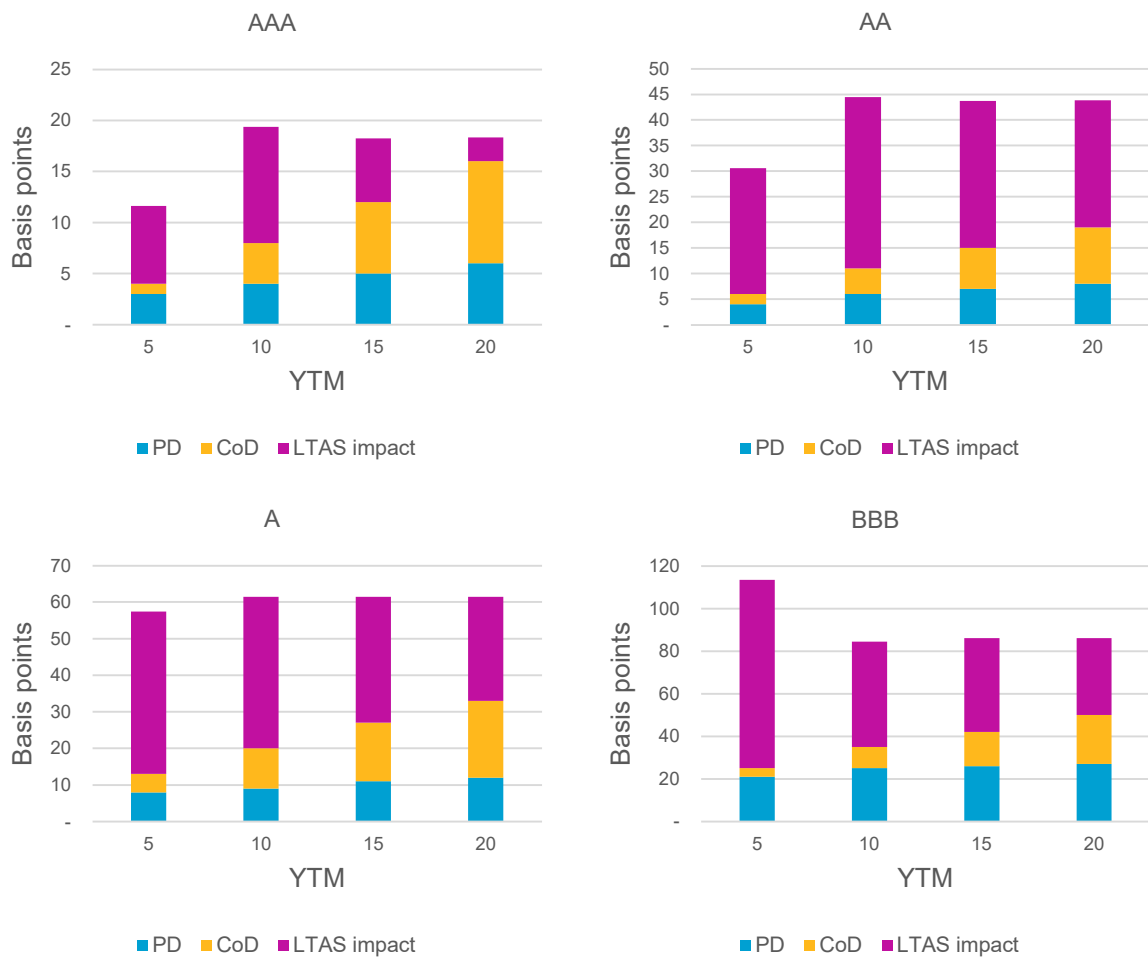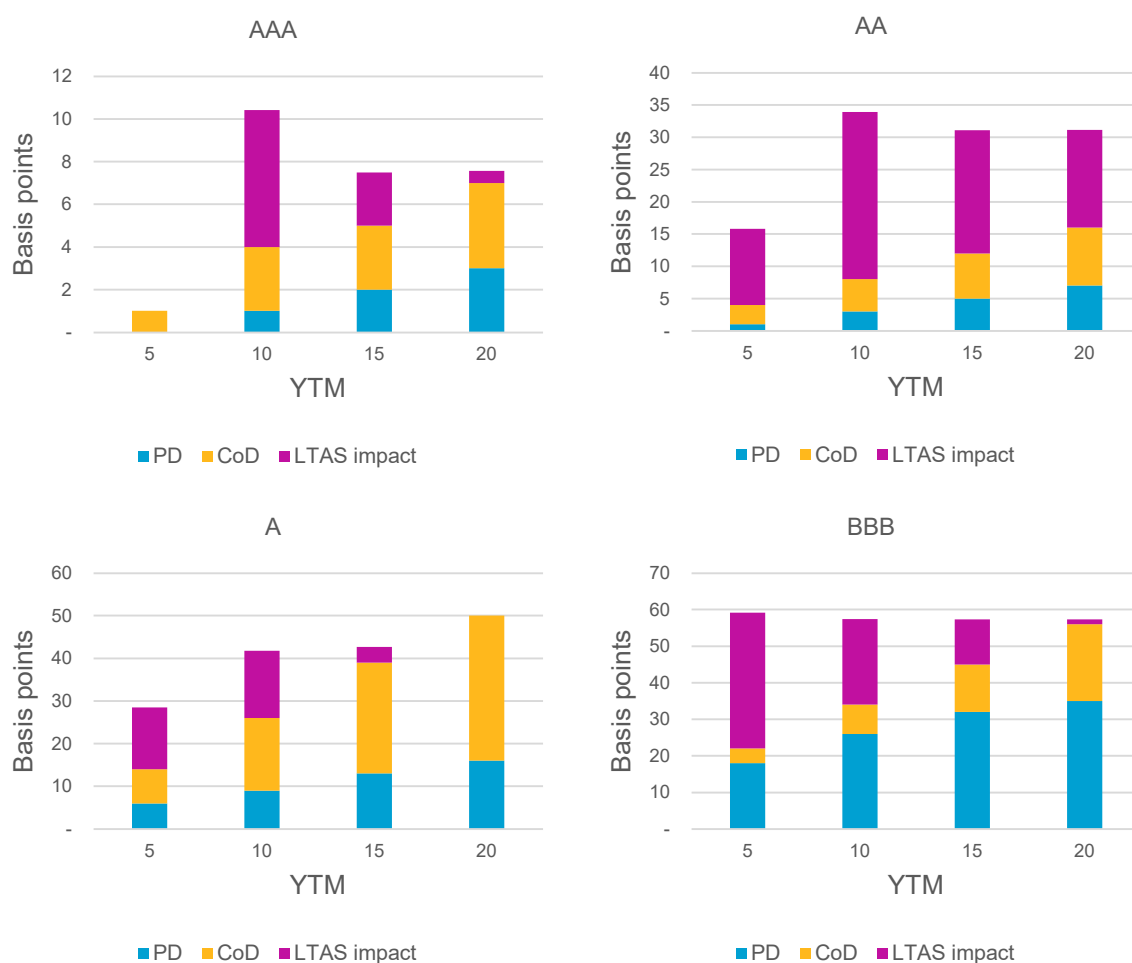**Figure 3.1: Breakdown of current FS components – Financial**

Figure 3.2: Breakdown of current FS components – Non-Financial

The analysis shows that:

- The impacts from LTAS floor are significant due to it mostly biting, with the exception of longer duration (>20 Year) cashflows for Non-Financial. The current approach hence already makes sizeable allowance for uncertainty around FS through CoD and LTAS floor. As shown in Section 3.4 the Index-Spread Model results in an even larger allowance through the CRP component.

- To further analyse the impact of the LTAS floor, we considered an alternative formulation of the current FS, removing the LTAS floor and applying a scalar to the CoD component: $FS = PD + A * CoD$. The weighted average FS is then calculated on an illustrative portfolio with a typical asset allocation for MA portfolios, with average term to maturity at 10 to 15 years. We determined that the scalar, A, needs to be c.410% (Financials) and c.190% (Non-Financials) for this alternative FS to be equal to the current LTAS floor.

- The Index-Spread Model assumes as the EL the PD that is used for the current approach. We discuss later, in Section 5, alternative ways to better reflect the risk characteristics of, for example, very secure non-traded private assets such as allowing for a more granular recovery assumption instead of a flat 30%, and a more granular categorisation that differentiates between ratings notches.

3.4   Proposed FS design and calibration

In this section we consider the implications of the CRP approach that is proposed in the FS, looking first at the research on this topic, and then at our estimation of the strength of the proposed calibration compared to the current approach, both on an aggregate portfolio basis and on an asset-by-asset basis.

CRP calibration

The current FS approach is dependent on credit rating assessments. It is linked to spreads only through a 30-year average, the LTAS floor, which we have seen typically bites. Although ratings are imperfect and tend to lag market changes, the short-term spreads observed in markets are prone to overreact on bullish and bearish sentiment and so are unreliable predictors of long-term credit losses for buy-and-hold investors.

The PRA has indicated that it believes a CRP within the range of 35% to 55% of spreads over n-years is justifiable, where n is suggested to be 5 years. This is based on selected academic research comprising only seven studies, which the PRA cites in Annex A of the DP2/22 annex. These papers are listed in the table in Appendix A alongside further papers that the PRA cite as having been provided by respondents but not used since, in the view of the PRA, (a) the underlying data is not relevant to the UK, (b) they do not inform a calibration of the CRP or (c) they do not provide results that can be used to decompose spreads.

We note that there is a much wider body of research on this subject and this research has failed to reach a consensus on linking future defaults to spreads. The papers selected by the PRA represent a small proportion of the total research and are predominantly based on U.S. markets, analysing only corporate bond assets and employing structural models, which are typically used for the purposes of pricing rather than to establish a prudent level of real world credit losses for a buy-and-hold investor.

The PRA also does not set out why the chosen papers, which generally assess defaults and downgrades a point in time, are representative of the long-term risk associated with default and downgrades and therefore should be used as the basis on which the FS is determined. Therefore, it may not be appropriate to draw conclusions directly from the selected academic papers.

FS based on DP2/22

Figure 3.3 below shows a comparison of the FS between the current approach, the two QIS scenarios and the Index-Spread Model. This analysis is based upon the following assumptions:

- The FS is calculated on an illustrative portfolio with a typical asset allocation for MA portfolios, with average term to maturity at 10 to 15 years.

- We have calculated the FS for a pure corporate portfolio as well as an illiquid portfolio, assuming 40% of the portfolio is invested (evenly spread across credit ratings) in a basket of illiquid assets with an average 60 basis points loan-to-bond uplift.[c]

- We have used the 5-year average parameters provided for QIS Scenario A as the 5-year average of the corporate bond reference index for the X component of the CRP.

- For the Z component we have assumed that, on a portfolio level, the basis risk on individual asset is minimal so assumed the difference between corporate bond spread and reference index spread to be zero. For illiquid assets we assumed the loan-to-bond spread will be reflected fully in the Z component.

- We have assumed 17.5% for Z and applied caps and floors on the CRP consistent with the DCE.

Figure 3.3: Comparison of the current FS and the FS based on the QIS scenarios and the Index-Spread Model
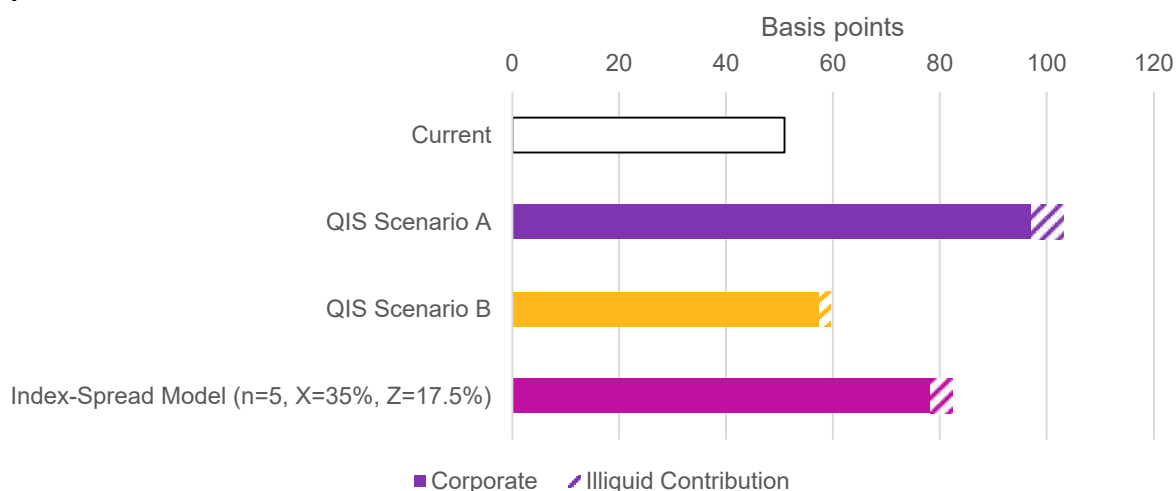
Figure 3.4 expresses the FS as a percentage of the LTAS and PD. The first chart also shows the current approach at 35% due to the floor almost always biting, as well as the level of PD.

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[c] We note that some illiquid assets may provide substantially more than a 60 basis points uplift verses a comparable corporate and firms with greater exposure to such assets may be more materially impacted by the reforms than the analysis below suggests is representative on average. Please find further discussion on the relative impacts for different asset classes in Figure 3.7 and Figure 3.8 below.

Figure 3.4: FS expressed as percentages of LTAS and PD
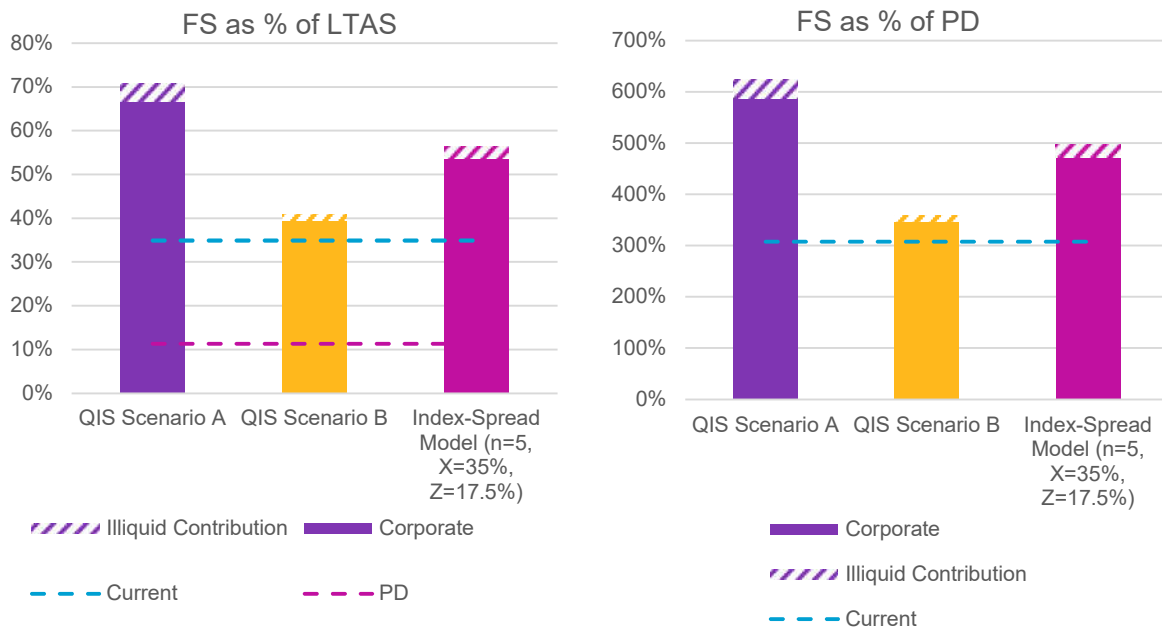
We observe from this analysis that:

■ The PRA Index-Spread Model with CRP representing 35% of spreads has a FS level somewhere between those of the two QIS scenarios. However, both the Index-Spread Model and the QIS approaches result in a FS higher than the current level.

■ Consistent with our analysis in Section 3.3, this further widens the gap between the FS and the historical default losses increasing the allowance for uncertainty considerably.

■ Similar to our analysis in Section 3.3, we have considered an alternative formulation of the current approach to remove the LTAS floor and add a CoD scalar, *A*:

  ■ We showed previously that *A* needs to be c.410% and c.190% to match the current LTAS floor on the illustrative portfolio for Financial and non-Financial assets respectively.

  ■ *A* needs to be c.610% (Financial) and c.430% (non-Financial) to in order for the portfolio FS to be equal to the Index-Spread Model, illustrating the extent of the implicit prudent margin included.

  ■ The table below summarises the CoD scalar required to hit both approaches.

Table 3.1: CoD Scalar required for LTAS floor and Index-Spread Model

|	Financial	Non-Financial
35% LTAS floor	410%	190%
Index-Spread Model 35% CRP	610%	430%

■ The Index-Spread Model results in a reduced benefit of investing in illiquid assets compared to the current approach.

- The 17.5% Z factor reduces the possible additional MA benefit from illiquid assets, reducing their relative attractiveness to insurers as good long-term matching assets.

- The degree of strengthening from the move to the Index-Spread Model is more material for Non-Financials than Financials.

Figure 3.5 shows the impact on this MA portfolio of spread widening using the "moderate spread widening" scenario in the PRA's QIS. We assumed that illiquid assets retain the 60bps loan-to-bond spread over corporate bonds under such a stress.

The Index-Spread Model introduces more volatility than the current approach, which aims to better reflect structural shifts in the credit environment over time. However, the Index-Spread Model does not result in as much volatility in FS as was observed in the QIS approaches under a spread-widening scenario, as the direct linkage to Z-spreads has been removed and instantaneous spread stress is dampened through the 5-year averaging within the X component.

Figure 3.5: FS under moderate spread widening stress for the current FS and the FS based on the QIS scenarios and the Index-Spread Model
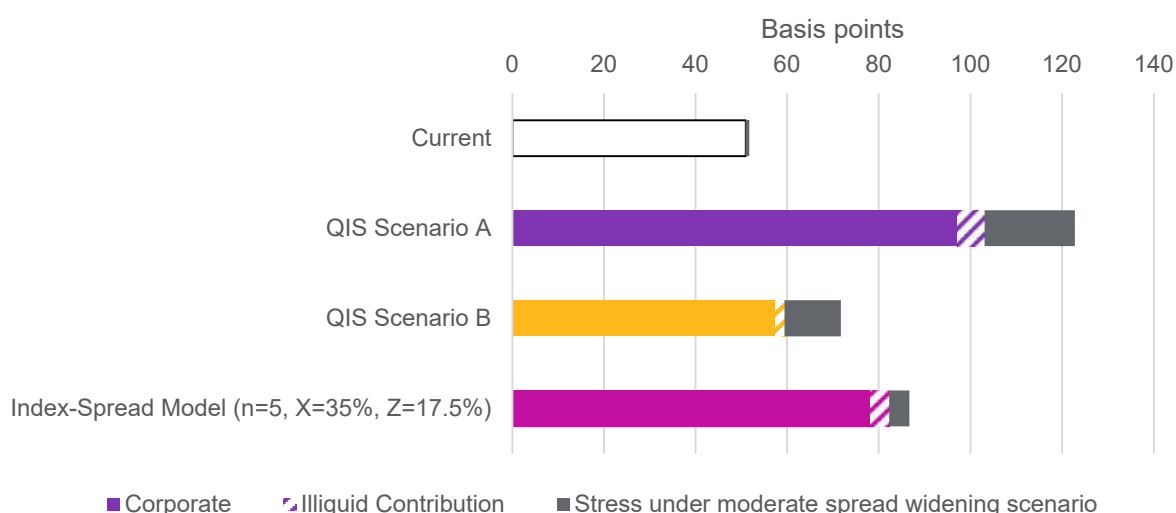
Reference indices

Within paragraphs 89 to 91 of the annex of DP2/22, the PRA sets out considerations for the choice of reference index to be used within the Index-Spread Model when calculating the CRP. While the use of all-term corporate bond indices provides simplicity as well as a mature data set, this would effectively act to penalise spreads in excess of those achieved by corporate bonds as all assets would be considered against a corporate bond index.

This may, to some extent, disincentivise investment in illiquid assets which is unlikely to align to HMT's third objective. It will also create significant basis risk for short and long duration assets due to the shape of the yield curve not being captured due to using only all term indices.

However, it is unclear the extent to which an alternative set of reference indices may be more appropriate as any chosen index is unlikely to fit every asset class being considered. While the ideal

solution may be to have different reference indices for specific asset classes, it is unlikely to be straightforward to identify reference indices given the idiosyncratic nature of the investments within a certain asset class and that there is limited data for these illiquid assets. Furthermore, if reference indices could be identified for different asset classes and durations, their introduction would likely further increase the complexity of the Index-Spread Model as varying parameterisations would also be needed.

Based on the discussion set out above, we note that there are likely to be issues with simply using all-term corporate bond indices, however there is not a clear alternative that offers a better solution under an Index-Spread model.

We note that Part II of the PRA's DCE asks firms to provide details on reference indices used in valuing different illiquid assets which the PRA may use to inform an alternative to simply using corporate bond indices. However, for the reasons set out above we see significant technical and operational challenges with such an approach and view that alternatives such as notching and self-imposed rating uncertainty allowances, as discussed in Section 5.3, are better ways of reflecting idiosyncratic risks.

Capturing excessive uncertainty in the base FS

DP2/22 describes a concern about "the level of current FS being too low as it does not take account of uncertainty around future expected default losses". Best estimate assumptions need to be realistic and any allowance for uncertainty needs to be consistent with this. There should also be no double counting in respect of what is allowed for in SCR capital requirements. The PRA's Index-Spread proposal is likely to result in significant double counting especially when spreads are widening.

The 5-year averaging approach also means that the CRP will be highest immediately after a period of heightened spreads and lowest following a benign period of tight spreads which is counter-intuitive. A balance must be struck between allowing the level of FS uncertainty that is derived in base and that which is captured under the SCR to ensure there is no double counting of risk on the balance sheet.

Currently, in calibrating transition and default risk under the SCR, insurers typically analyse the severity of individual years of transitions and defaults from 1920 to the present day and look to benchmark their 1-in-200 default and downgrade risk against the most onerous period of The Great Depression (1932 to 1935) in accordance with the PRA's guidance in Supervisory Statement 8/18.[d] This provides a gauge to capture uncertainty in future expected defaults and downgrades based on historical data.

Figure 3.6 presents our derivation of the EIOPA FS implied by the 1932 scenario (based on a 5-year glide path per Moody's 1932-1935 transitions experience and subsequently reverting to Moody's long-term average) which is typically benchmarked against when determining the IM credit calibration as required by PRA's Supervisory Statement 8/18. We compare this stressed FS against the year-end 2020 FS and the year-end 2020 FS if instead calculated using the Index-Spread Model.

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[d] https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2018/ss818.pdf

This comparison provides a useful illustration of the balance of the FS currently between base and stressed balance sheet. For a representative portfolio, under the current methodology, the FS under this onerous stress scenario increases from 51 basis points to 113 basis points (more than doubling).

Figure 3.6: Comparison between the current FS, FS under the 1932-35 (The Great Depression) scenario and the DP2/22 FS
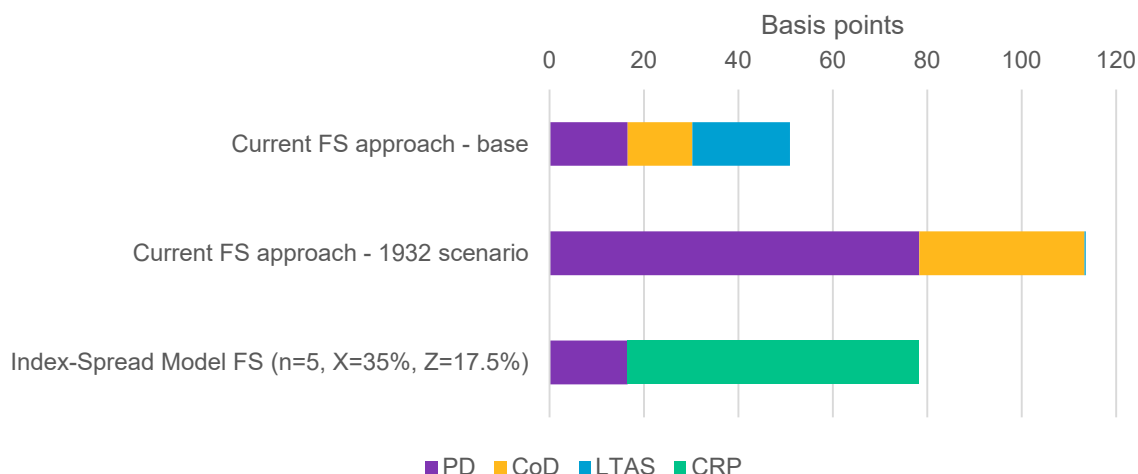
The proposed Index-Spread Model is calibrated to include a CRP which is shown to be broadly equivalent to an allowance for the stressed PD under the Great Depression scenario. This scenario represents a 30-year long term average cost of default which has been calibrated to include the 1932-1935 period, which is the worst observed in historical data. Therefore, if further capital were expected to be held at a similar proportional increase to base as currently allowed for in existing models, there is a risk of some double counting the level of uncertainty being captured, unless there is a significant reduction in the level of SCR to compensate.

If the base balance sheet already allows for a stressed PD at a 99.5[th] percentile level (as currently allowed for in IM stressed calibrations as guided by PRA's Supervisory Statement 8/18), then no increase in PD should be required in the capital calibration.

Impact by asset class

Within the annex of DP2/22, the PRA sets out its concerns around the lack of risk sensitivity of the current FS to differences across asset classes. Chart 3 in the annex sets out the split of MA and current FS in basis points and as a percentage of the total MA for a range of asset classes.

We have produced an equivalent chart comparing the current MA and FS for different asset classes as at year-end 2020 against the MA and FS based on FS design as set out in DP2/22 and the DCE.

Within the analysis below, the spreads for each asset class have been estimated from Chart 3 of the DP2/22 annex, the EL has been assumed to be fixed at 9 basis points[e] and the CRP is based on the

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[e] Assumption based on a CQS 2 Non-Financial corporate bond with maturity of 10 years at year-end 2020.

CRP parameterisation adopted within the DCE[f] ("DCE CRP parametrisation") with the caps and floors on the CRP set out within the DCE applied where necessary.

As shown by Figure 3.7, the FS in basis points increases for corporate bonds and illiquid assets relative to the current FS.

Figure 3.7: Comparison of MA and FS in basis points (based on current FS and CRP parameterisation adopted within the DCE) for different asset classes at year-end 2020

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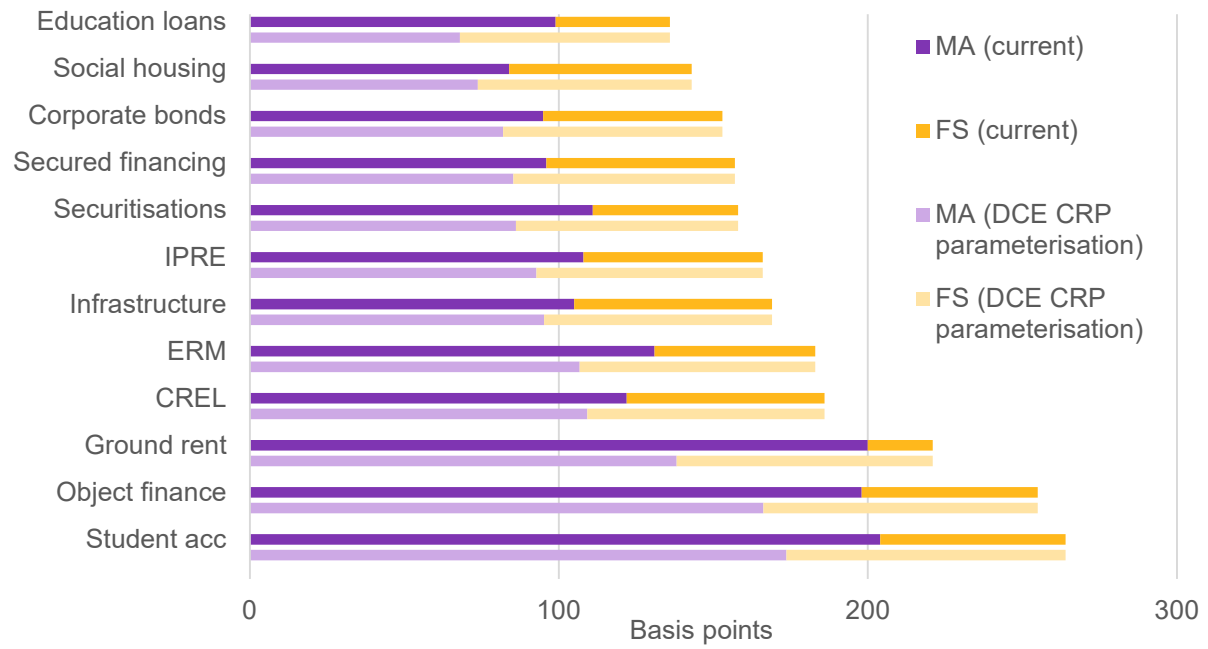
[f] X=35%, Z=17.5%, 5-year average of CQS 2 Non-Financial corporate bond spread = 159 bps, z-spread of CQS 2 Non-Financial corporate bond spread = 117 bps

Figure 3.8: Comparison of MA and FS as percentage of spread (based on current FS and CRP parameterisation adopted within the DCE) for different asset classes at year-end 2020
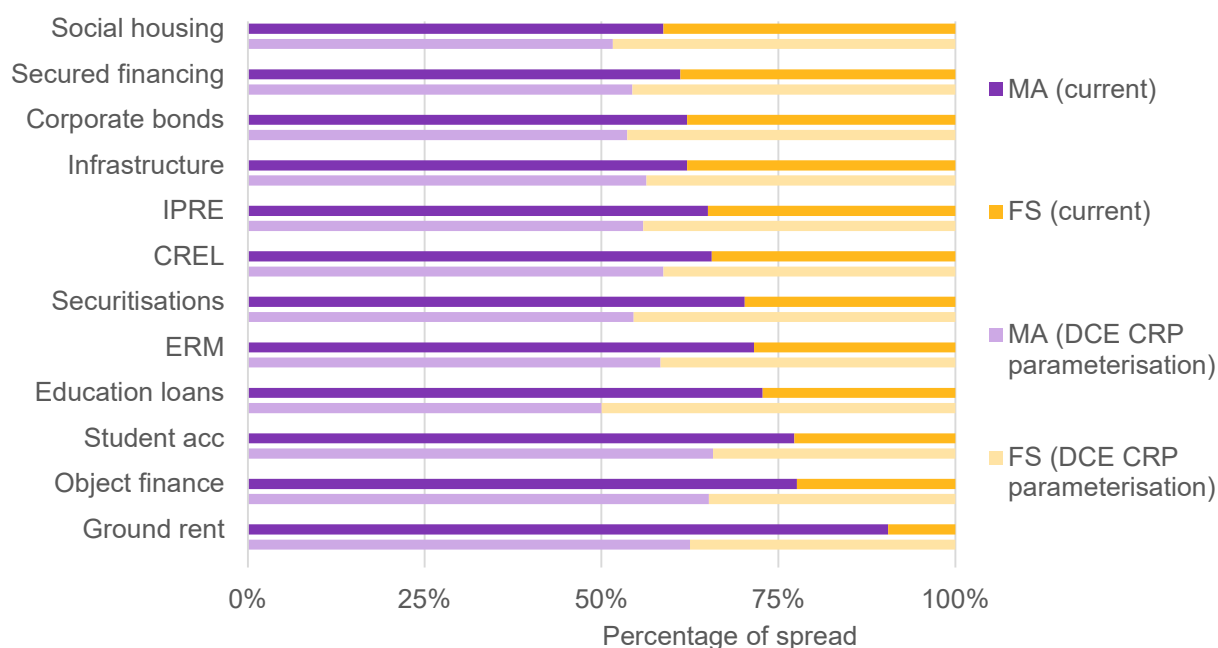
The DCE CRP parameterisation results in the MA in basis points and the MA as a percentage of spread reducing. The resulting MA as a percentage of spread broadly aligns to analysis within DP2/22, where the PRA notes that assuming a 35% CRP leads to the MA being 57% of spreads across all MA portfolio assets.

Further to this, applying a CRP based on the DCE CRP parameterisation, may disincentivise investment in certain illiquid assets. As shown in Figure 3.7 above, illiquid asset classes such as social housing, education loans and infrastructure have spreads very similar to corporate bonds while assets such as ground rent, object finance and student accommodation exhibit higher spreads. The latter group are more heavily impacted under the proposed approach.

Figure 3.8 highlights that the MA as a percentage of spread as implied by the DCE calibration is similar across asset classes. It is not intuitive that the MA as a percentage of spread should be largely the same for all asset classes regardless of the differing illiquidity and risk characteristics.

Therefore, if this approach and calibration did become policy firms may choose to simply invest in corporate bonds rather than going through more complex and costly processes to invest in illiquid asset classes such as social housing, education loans and infrastructure which ultimately provide the same MA benefit at a much higher cost, but also have productive finance benefits**.**

This reduction of incentivisation to invest in certain illiquid assets is unlikely to align to HMT's third objective to support firms to provide long-term capital to drive growth consistent with the Government's climate change and productive finance objectives. Indeed**,** following such an investment approach would only be possible where insurance company shareholders/owners are prepared to take a longer-term view with an expectation that excessive regulatory prudence is released over time.

Section 4: Impacts on the balance sheet

4.1   Background

The HMT consultation sets out the UK Government's ambition with respect to the materiality of Solvency II reforms. John Glen (Economic Secretary to the Treasury at the time) highlighted in his speech to the ABI and in the foreword of the HMT consultation that reforms could result in a material release of possibly as much as 10% or even 15% of the capital currently held by life insurers.

This target capital release of 10-15% is proposed to arise from the release of RM combined with an offsetting reduction in MA as discussed in Section 3.

For new flows of business written into MA portfolios (the same business that supports investment into productive finance) the incentive for writing business is not impacted by TMTP. So, the impact of reforms will be different on average and across firms dependent upon the mix of business written before and after the implementation date of Solvency II (1 January 2016) and the new business and reinsurance strategy.

We are not able to separate the impact of the proposed reforms on pre- and post-1 January 2016 business. For business written before 1 January 2016, the TMTP plays an important role.

4.2   Approach to estimating change in OF

We have used the year-end 2020 QIS data to estimate the release of capital under the calibrations of RM and MA that have been set out by HMT and PRA. One of the aims of this is to understand whether the Index-Spread Model with CRP calibrated to represent 35% of spreads provides a release of capital in the range of 10% to 15%.

The following assumptions have been made to estimate the change in OF:

■   We have estimated the net of tax[a] movement in OF before allowing for TMTP by scaling the changes in RM and MA from QIS Scenario A.

■   The RM change under Scenario A is scaled up to represent a 60% reduction in RM. This is the lower end of the 60-70% reduction proposed for long-term life insurers.

■   For the 35% CRP calibration, the MA change under Scenario A is scaled down to represent the expected change under this scenario based on the balance sheet impact. This includes the impact of the Z component for illiquid assets based on the same assumptions as in Section 3. For the CRP representing 25% and 45% of spreads, we have performed the same calculation as for a 35% CRP with commensurate scaling of the MA change.

■   The FS and RM proposals are introduced at the same time, with no phasing in.

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[a] A small number of firms were identified as having provided gross of tax movements in MA, RM and TMTP and in these cases the amounts were converted to net of tax using a 19% rate of tax.

- Change in OF as a percentage is calculated as the change in RM and MA excluding TMTP divided by the base OF less TMTP.

Table 4.1 shows the assumed MA and RM changes for the three Index-Spread Model calibrations that HMT has asked for feedback on.

Table 4.1: Changes assumed relative to base position

	Index-Spread CRP=35%	Index-Spread CRP=25%	Index-Spread CRP=45%
RM change assumed	-60%	-60%	-60%
MA change assumed	-26%	-10%	-42%

4.3   Approach to estimating effect of TMTP

As described in Section 2, the RM is the main component of firms' TMTP and a reduction in the level of RM leads to a direct reduction in the level of TMTP. We have estimated the change in TMTP under the Index-Spread Model calibrations by scaling the change under Scenario A in the RM and MA contributions to TMTP (based still on the year-end 2020 valuation date). We have assumed that the contributions to TMTP other than for the RM and MA remain the same as in the base case.

We note that this is an approximation and it does not allow for any movement in, for example, the Financial Resources Requirement ("FRR") cap for firms where this is biting or the impact of recent rises in interest rates. The FRR acts as a restriction on the level of TMTP to ensure that the total capital requirements are no less under Solvency II than they would have been under the Solvency I.

Not all firms in our QIS data set use TMTP, however we show the results for all firms in the data set.

4.4   Estimated change in OF

Using the approach above and allowing for the revised TMTP following the changes to RM and MA, we have calculated the estimated change in OF.

We also show, in Figure B.1 in Appendix B, the change in OF results assuming there is no TMTP (i.e., under similar assumptions adopted by the PRA in DP2/22). The 35% CRP result being within the range quoted by the PRA lends us confidence in our estimates of the true impacts on current levels of OF when overlaying TMTP effects.

In these charts, the average change for firms with and without a MA portfolio is shown separately, as is the average change for firms who write annuity business only (annuity specialists). The block colour in this chart represents the range that all firms' results sit within except for the maximum and minimum outliers that are shown separately.

Figure 4.1 shows the estimated change in OF under the three calibrations of the Index-Spread Model.

We also show, in Figure B.1 in Appendix B, the change in OF results assuming there is no TMTP (i.e., under similar assumptions adopted by the PRA in DP2/22). The 35% CRP result being within the range quoted by the PRA lends us confidence in our estimates of the true impacts on current levels of OF when overlaying TMTP effects.

In these charts, the average change for firms with and without a MA portfolio is shown separately, as is the average change for firms who write annuity business only (annuity specialists). The block colour in this chart represents the range that all firms' results sit within except for the maximum and minimum outliers that are shown separately.

Figure 4.1: Percentage change in OF after allowing for TMTP recalculation

We observe that:

- The 10-15% target is not reached by any of the firms in our sample other than one, and this is a special circumstance due to this firm's unique status.

- After allowing for the change in TMTP, under the Index-Spread Model scenario where CRP represents 35% of spreads the result is an aggregate OF decrease of £0.02 billion (representing -0.02% of total OF).

- For the 25% of spreads scenario the aggregate OF increase is £2.4 billion (2.9% of total OF) and for the 45% of spreads scenario the OF decreases by £2.5 billion (-3.0% of OF).

- Firms with MA portfolios are estimated to see a reduction in OF of £0.6 billion (-0.9%) and annuity specialists are estimated to see a £0.9 billion reduction (-5.9%) in OF under the 35% scenario.

These results are based on the year-end 2020 QIS data and do not reflect changes in the risk-free rates experienced since then. These changes are expected to result in significantly more negative / less positive outcomes for firms than indicated in our analysis above.

4.5 Effect of higher risk-free rates

A sensitivity requested as part of the QIS exercise required firms to include responses with a 200 basis points increase to the year-end 2020 risk-free rate.[b] However, three firms with material MA portfolios either submitted partial responses or no response at all to these sensitivity runs, so only limited analysis is possible with the data available. Among the firms providing the interest rate sensitivity, we see the average increase in OF for firms without MA portfolios almost halving under the 35% CRP scenario once the 200 basis points rise in risk-free rates is allowed for.

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[b] The difference in risk-free rates between year-end 2020 and 30 June 2022 is over +200 bps in the 10-year spot rate (0.29% vs 2.36%) and about +175 bps in the 25-year rate (0.48% vs 2.22%).

Section 5: Assessment against the reform objectives

5.1 PRA's view on the calibration

The PRA has stated in DP2/22 that it considers there to be a package of reforms that exists within the indicative ranges of the HMT consultation that would be collectively consistent with the PRA's statutory objectives and achieve HMT's objectives of the Solvency II review.

While the annex to DP2/22 contains some insight into the calibration that the PRA has adopted for its analysis, certain details such as the value of Z parameter, are missing. The DCE released on 10 June 2022 tests a parameterisation of the Index-Spread Model with the X parameter set to 35% and the Z parameter set to 17.5%.[a]

The DCE also looks to test a sub-set of SCR scenarios. It is not yet clear how the Index-Spread Model would manifest itself within firms' internal model credit capital calibrations which are already very complex and not intended to be standardised. The PRA has set an initial expectation that they do not expect levels of SCR to significantly change despite the significant dampening of the MA. As highlighted in Section 3.4, there is a danger here therefore that the proposed reforms introduce a double counting of risk through adding a substantial additional margin for uncertainty around expected credit losses in the MA calculation.

Our analysis does not attempt to delve further into the SCR treatment, and this remains a key piece of analysis required before any material revisions in MA approach being implemented. Ahead of this, however, it would appear sensible to reconsider why such a significant change to the MA calculation is required at all given it is not clear there is a compelling case for such a substantial strengthening of the best estimate allowance for risk.

5.2 Consideration of the wider regime

In addition to reviewing the MA and RM, the Solvency II review is also looking at aspects of the existing regime that are considered overly burdensome and lacking sufficient flexibility to support the growth of the UK insurance market. For example, relaxation of the MA eligibility requirements and streamlining of application processes (including the major model change process for internal model firms) has the potential to unlock new routes of insurance funding, e.g., from new entrants to the annuity market and the inclusion of new asset and liability types into MA portfolios.

Other aspects of proposed reforms such as relaxing the two-month period to restore MA eligibility requirements in the event of a breach are also helpful to aid the management of MA portfolios in more stressed periods. However, it appears that the benefits offered here are being balanced with the significant strengthening of the MA discussed in Section 3. In some areas it is not clear how the potential improvements would materialise in practice with very limited detail provided so far on for example the streamlining of application processes and reporting requirements. Taken together it is

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[a] Note that the DCE also includes an intermediate calibration where the Z parameter is set to 0, allowing the PRA to assess the impact of including the idiosyncratic risk component (i.e., the Z term).

hard to see how the overall package supports increased levels of investment for the large established players with existing MA approvals.

As part of Solvency II, insurers additionally need to give consideration towards risk management, governance and compliance which includes an Own Risk and Solvency Assessment ("ORSA") – this combination of these aspects is referred to as "Pillar 2" of the Solvency II regime.

In the run-up to and throughout the course of Solvency II, firms have invested heavily in developing their understanding of the risks inherent in their own business models, ensuring that appropriate governance structures are in place and that thorough risk management discipline and internal controls are adhered to.

Given that efficacy of a solvency regime and provision of policyholder protection in line with HMT's second objective is highly dependent on robust governance, controls and risk management, greater consideration should be given to more holistic approach which goes beyond the balance sheet alone and places appropriate weight on the governance and disclosure aspects of the framework.

5.3   Addressing pitfalls in the Index-Spread Model

Whilst we fundamentally do not agree with the need or justification for using the Index-Spread Model, it is the approach that the PRA is currently advancing. In this section we provide analysis of alternatives to its current calibration that might lessen some of its adverse features.

This section of our report should in no way be viewed as endorsing alternative calibrations of the Index-Spread Model and is provided for illustrative purposes only to aid the HMT consultation process. Less substantial changes to the MA can be achieved through modifications to the existing approach without requiring a completely new formulation which itself lacks strong economic justification.

FS alternatives

We have explored alternative calibrations of X, Z and n parameters of the Index-Spread model and examined how changing each of the parameters impacts various components of the FS under both base and the moderate spread widening scenario. We have used the same illustrative portfolio and illiquid asset composition as we used in Section 3.

Figure 5.1: Alternative FS parameters in the Index-Spread Model
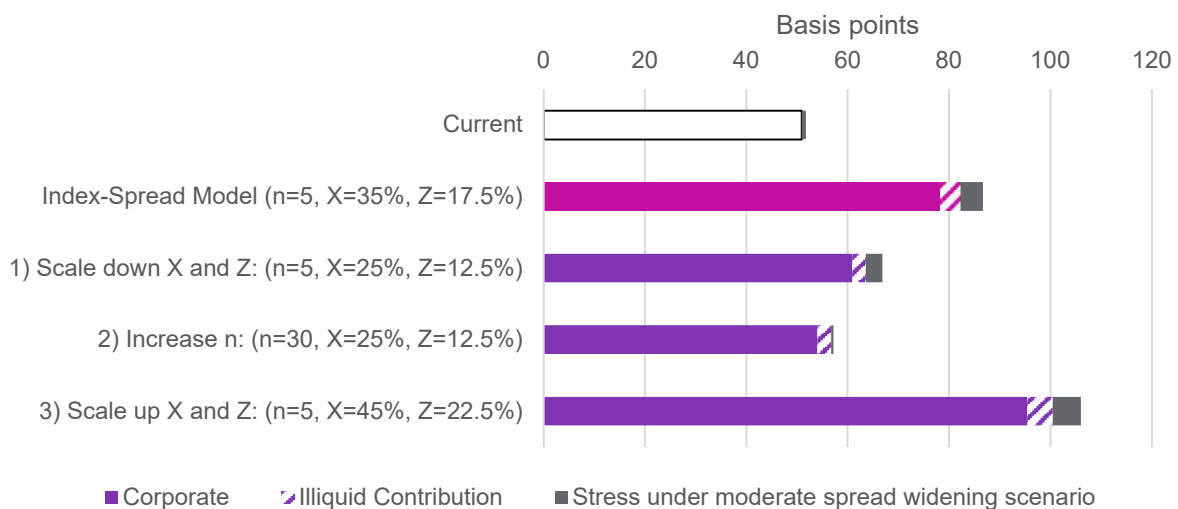
- **X parameter**:

  - The X parameter of the CRP impacts the overall level of FS. The current proposed 35% results in a significant increase in FS compared to the current approach, which is intended to address PRA's concern that the current FS is too low and does not consider the uncertainty around future expected default losses.

  - However, as shown in Section 3 the current level of FS already makes a sizeable allowance for CRP through CoD and LTAS floor. The proposed Index-Spread Model will further increase this allowance.

  - In addition, as shown in Section 4, the current Index-Spread Model will not achieve the 10% to 15% capital release in current capital held envisaged by the Government due to not factoring in the offset of the RM benefit from TMTP. Hence the proposed approach does not align with HMT's objective to spur a competitive insurance sector.

  - Whilst we do not agree with the need to use the Index-Spread Model and see alternatives that modify the existing regime as preferable, a lower X parameter gives an outcome more aligned with the stated capital release and we have shown the impact of a 25% X in Figure 5.1 above.
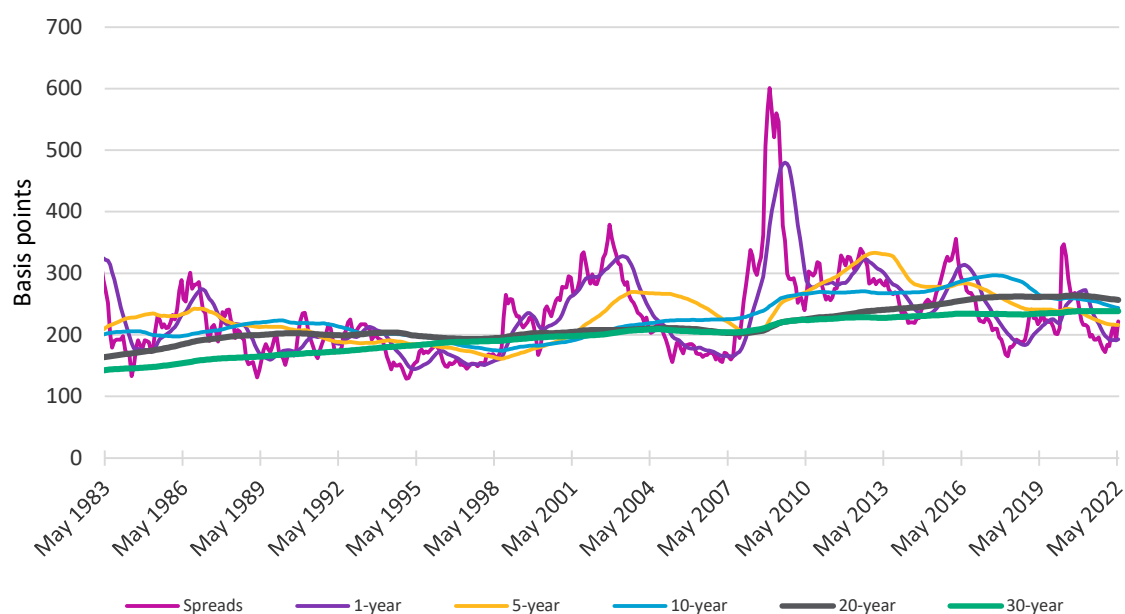
- **Z parameter:**

  - The introduction of the Z parameter intends to address PRA's concern that the current FS overly rewards investment in assets with high spreads within a given rating.

  - This will discourage firms from investing in illiquid assets – firms already need extra resources and governance around investing in illiquid assets to be compliant with the Prudent Person Principle (and rightly so).

  - Reducing the MA benefit from investment in illiquid assets might prompt firms to divest from such assets which often better match the long-term liabilities than UK corporate bonds where there is a lack of supply. This does not align with HMT's objective to protect policyholders and ensure safety of firms.

  - Implementing a more granular FS framework that includes notching in ratings can be an alternative way to address PRA's concerns, as firms holding more say BBB- assets will naturally be subject to higher FS. This is further discussed below.

■ **n parameter:**

- ■ "n" is the averaging period for the "X" parameter, which determines the level of risk sensitivity in the FS.

- ■ There are disadvantages to the proposed 5-year period. Firstly, a short averaging period creates significant and unrepresentative volatility in the FS derived in comparison to the current approach, which creates spread volatility on insurers' balance sheets. It is not yet clear how this might futher impact the volatility of SCR in credit-widening periods where firms currently need to allow for a 1930s Great Depression type stress.

- ■ Further, the additional volatility introduced in the FS mismatches the timing of the actual credit event, due to the shorter 5-year period not covering the full credit cycle to average the impact across. This is evident in Figure 5.2, where the 5-year average spread reaches a trough in 2008 and peaks around 2012/2013 at the point of recovery from the Global Financial Crisis.

- ■ In comparison, a longer averaging period such as 20-year shows a more gradual changes in average spread which better reflects any shift in credit environment over time as intended.

Figure 5.2: Comparison of historical USD 10-year BBB spreads using multi-period moving averages[b]

Alternative for Z parameter: increase FS granularity to include notching

As previously explained the purpose of the Z parameter in the CRP is to address PRA's concern that the current FS overly rewards investment in assets with high spread within a given rating. An

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[b] 10-year USD BBB spreads taken from the St. Louis Fed. Historic defaults have been taken from Standard and Poor's Default, Transition, and Recovery: 2020 Annual Global Corporate Default and Rating Transition Study. We note that there will be some differences between USD and GBP spreads, however, we have compared the analysis to available GBP indices, which shows a very similar shape. Indeed, Chart 7 from DP2/22 which has data from 2006 onwards, shows an almost identical pattern.

alternative approach is to increase the granularity of the current FS tables to differentiate these by notching in rating.

Figure 5.3 below shows the impact on FS from notching, using the same illustrative portfolio and illiquid asset composition as in Section 3:

- We have used a simple approach of lineraly interpolating the current full-letter FS to include + and – notched assets. A more advanced intepolation method could be investigated at if it was decided to take this more granular approach forward as a suitable way of adapting the existing regime.

- We have shown the impact of notching in two portfolios:

  - An evenly split portfolio with 33% of asset in each notch. The FS increases slightly due to bias in interpolation: FS of "-" rated assets tend to be higher as the FS gap is higher between lower rated assets than higher rated assets.

  - A "-" weighted portfolio with 50% of the assets "–" rated, 25% of the assets "+" rated and 25% of the assets in the exact letter rating. As expected this biased portfolio receives a higher increase in FS from the notching approach.

Figure 5.3: Impact of notching
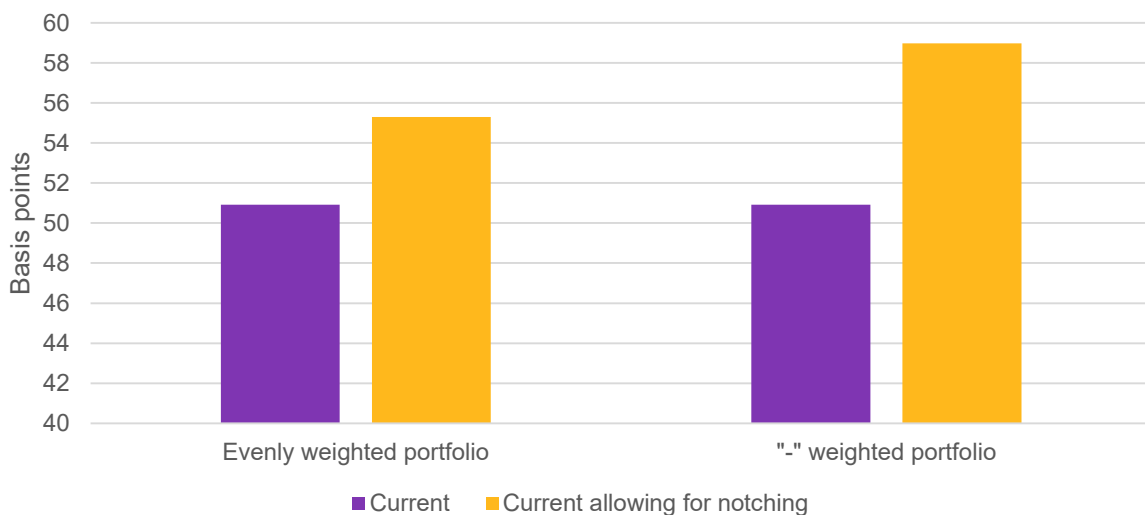
We believe that having a more granular FS including notching is a plausible alternative of addressing PRA's concern of firms holding more risky assets, as riskier assets within the full letter rating will be naturally penalised through higher FS.

The universal Z parameter and reference indices underling the PRA's DCE calibration may not vary suitably by term/rating leaving an outcome which lacks transparency and is highly dependent upon the granularity and form of the reference indices used. In addition, a more granular FS can suitably distinguish between the relative risks of different assets in the following ways:

- High spread assets with inherit higher risk, reflected from their notching, will be penalised to reflect the increase in risk as intended;

- On the other hand, those assets with higher spread due to true market opportunities or illiquidity premium will remain rewarded so that firms remain encouraged to invest into such high-quality assets;

- For internally rated assets, where there is potentially greater uncertainty about a particular asset's rating, firms can use case by case judgment to apply notch downgrades to allow for an increased level of FS and reduced MA. In the existing regime, which doesn't allow for this granularity of FS, such an expert judgment would require a full letter downgrade;

- With a shorter averaging period (5-year vs. 30-year) and the clear dependence upon the granularity of reference indices chosen, there will be periods where spread patterns are more volatile and abnormal. This could create oddities where more highly rated assets have a larger CRP and lower MA than assets rating agencies view as higher risk. By definition such problems are far less likely to materialise under the existing framework;

- In paragraph 62 of DP2/22 annex, PRA expressed the concern that the some very illiquid assets may not be able to realise their full market value reflected from the spreads in an asset transfer scenario. While the notching approach will not be able to fully address this point it does allow for a more granular assessment of risk, which should reduce, but not necessarily eliminate, valuation uncertainty and provides the flexibility to do this on a case by case basis. We note such concerns do not warrant the significant strengthening applied across the board created by the Z-component; and

- As insurers have increased allocations to illiquid assets there has been a necessity for increased levels of review and scrutiny of valuation and internal ratings methodologies requiring significant additional resource and knowledge within firms' Line 1 and Line 2 teams. We regard this need for robust governance over illiquid assets as important and it is not clear this necessity will disappear if the Index-Spread approach was adopted despite the attempted move to a one-size fits all prudent additional margin for idiosyncratic risk.

We recognise as with any approach with increased complexity there may be potential limitations in implementing a more granular FS approach. Here we note, however, that a notching approach can be more easily and suitably implemented under the existing framework than under the Index-Spread approach.

More balanced outcomes

The Index Spread Model has not been shown to either demonstrate outcomes that reflect economic reality for all asset classes ("backtesting") nor been shown to behave sensibly under a range of economic circumstances to prove that the model choice is parsimonious with suitable explanatory predictive power. If such significant changes to the MA formulation, level and volatility are to be adopted this burden of proof needs to be met.

It is detrimental to the UK economy and future policyholders to have overly prudent protection for existing policyholders as this will drive up future prices, likely increase the use of overseas reinsurance and reduce the capital for UK Government climate change and productive finance objectives.

A proportionate approach is needed that recognises the adverse impact that a narrow focus on any one objective could have. Subject to achieving an appropriate degree of policyholder protection, the focus should be on improving international competitiveness and delivering long-term sustainable growth.

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Critically, to provide an outcome closer to the 10% to 15% release of capital currently held by life insurers that the Government is targeting, a more balanced package of reforms is required which avoids significant change to the level and volatility of MA and results in a less polarised outcome for different types of insurers.

Here we note, however, that it is not possible to hit the 10-15% release of current capital held across the UK life industry as a whole with a 60-70% release of the RM unless the MA was also increased rather than being significantly strengthened per the PRA's proposals in DP2/22.

Section 6: Distribution, reliances and limitations

6.1 Distribution

This report was prepared for the Association of British Insurers' ("ABI") sole and exclusive use and on the basis agreed. It was not prepared for use by any other party and may not address their needs, concerns or objectives. This document and any related information provided by WTW may not be referenced or distributed in any form to any third party other than as agreed by us in advance in writing. We do not assume any responsibility, or accept any duty of care or liability to any third party who may obtain a copy of this document and any reliance placed by such party on it is entirely at their own risk.

Draft versions of this document should not be relied upon by any person for any purpose.

6.2 Reliances

In developing this document, we have relied on confidential and publicly available data, including quantitative and qualitative information. We have not independently audited or verified this information; however, we have reviewed it for general reasonableness and consistency with our knowledge of the insurance industry. Reliance is therefore placed on the accuracy of such information as obtained by us.

The accuracy of our findings is dependent upon the accuracy and completeness of the underlying data.

Reliance is placed on, but not limited to, the following information which we did not independently verify:

- HMT Consultation Paper published on 28 April 2022.

- PRA Discussion Paper DP2/22 and Annex published on 28 April 2022.

- PRA 2022 Data Collection Exercise published on 10 June 2022.

- Confidential submissions of quantitative and qualitative questionnaire data from 16 firms that participated in the PRA QIS, received 22 to 26 November 2021.

- Discussions with 16 life insurers from 23 July to 5 October 2021 and subsequently from 3 March to 5 May 2022, including the WTW Chief Actuaries Forum discussion with 19 participants on 6 October 2021 and the WTW Breakfast Roundtable on 10 May 2022 with 26 life insurers participating.

- PRA QIS materials, including the main QIS template, the QIS instructions, the qualitative questionnaire and the "Q&A", downloaded from the PRA QIS website on 19 November 2021.

- The PRA Roundtables with industry, held on 7 October 2021 and 30 November 2021, 16 February 2022 (MA), 7 March 2022 and 16 March 2022 (RM), 16 March 2022 (Internal Models) and 19 April 2022 (TMTP).

- Markit iBoxx data used to determine illustrative FS and MA for Financial and Non-Financial corporate bonds.

- Moody's data on realised default losses based on historical credit transition matrices.

We also relied upon certain references within public speeches and documents as listed in the footnotes.

6.3   Limitations

This report was prepared for use by persons technically competent in the areas addressed and with the necessary background information. This report was produced based on information available to us at, or prior to, 19 July 2022, and takes no account of developments after that date. WTW is under no obligation to update or correct inaccuracies which may become apparent in this report.

The report provides an explanation of the key challenges of the approaches explored in the QIS and summarises the outcomes for a subset of major UK insurers. Due to the nature of the PRA's impact study, this report focuses on specific, technical aspects of the regime, most notably those with significant relevance to annuity providers. While the report does refer to other, more general aspects of the solvency regime, this is only in the context of changes resulting from the specific areas covered in the impact study. Our analysis is not limited to the implications for providers of annuities; however, the focus is on aspects of the regime which most clearly affect those firms which write long-term guarantees, such as annuities. We do not comment on the implications for providers of general ("non-life") insurance.

The QIS may or may not be a reasonable representation of end regulation adopted by the PRA. Readers should not rely on results presented here for making decisions about the running of a MA portfolio or annuity fund.

Simplifying assumptions have been made for the purposes of providing illustrative for the analyses of MA, RM and TMTP (where for TMTP we have applied basic scaling of the components and have not re-estimated the FRR cap). We also note that our MA analysis does not consider a scenario where spreads are lower than current spreads.

Our report contains analyses of selected responses to the QIS from participating UK life and composite insurers. The results are presented in aggregate form only and do not represent the UK insurance market in total. Any errors or misinterpretation of the QIS instructions by firms could have distorted our analysis and we have not checked firms' submissions other than for high level reasonableness using our industry knowledge. Furthermore, the analysis does not cover the impacts on non-life insurance business. The results of our analysis should not be construed to represent the results of any one firm.

We note that the QIS data uses a year-end 2020 valuation date and there have been significant increases in interest and inflation rates since this time. Our analysis of the impact of any proposed reforms that is based on this data is therefore not necessarily reflective of the impacts of such proposals today.

Appendix A: Academic studies on credit risk modelling

**Table A.1: Summary of the academic papers cited in the annexes of the DP2/22 annex**

DP2/22 Annex	Author	Title	Year	Assets studied	Geography	Data period	Model / approach
Annex A	Bu, D. *et al*	A hybrid information approach to predict corporate credit risk	2018	Corporate Bonds	US	1992-2016	Structural and Reduced Form Models
Annex A	Chen, H. *et al*	Quantifying Liquidity and Default Risks of Corporate Bonds over the Business Cycle	2018	Corporate Bonds	US	1994-2012	Structural Model
Annex A	Feldhutter, P. & Schaefer, S.	The Myth of the Credit Spread Puzzle	2018	Corporate Bonds	US	1987-2012	Structural Model: Black-Cox
Annex A	Feldhutter, P. & Schaefer, S.	Debt Dynamics and Credit Risk	2019	Corporate Bonds	US	1988-2017	Structural Models: Black-Cox, Collin-Dufresne and Goldstein and Stochastic Debt
Annex A	Dick-Neilson, J., Feldhutter, P. & Lando, D.	Corporate bond liquidity before and after the onset of the subprime crisis	2012	Corporate Bonds	US	2005-2009	Illiquidity measure
Annex A	van Loon, P.	Empirical Studies in Corporate Credit Modelling: Liquidity Premia, Factor Portfolios and Model Uncertainty	2017	Corporate Bonds	UK	2003-2014	Stochastic Credit Models
Annex A	Webber, L.	Decomposing Corporate Bond Spreads	2007	Corporate Bonds	UK, US, EU	1997-2007	Structural Model: Merton
Annex B	Claussen, C., Kriebel, J. & Pfingsten, A.	The Credit Spread Puzzle - Evidence from a Quasi-Natural Experiment	2020	Bonds issued by German Savings Banks and State Banks	Germany	2002-2015	Empirical analysis (no parametric model)
Annex B	Huang, J., Nozawa, Y. & Shi, Z.	The Global Credit Spread Puzzle	2019	Corporate Bonds	Australia, Canada, France, Germany, Italy, Japan, U.S. and UK	1997-2017	Extended Structural Model
Annex B	Giesecke, K. *et al*	Corporate Bond Default Risk: A 150-Year Perspective	2011	Corporate Bonds	US	1866-2008	Regime-switching model
Annex B	Collin-Dufresne, P., Martin, J. & Goldstein, R.	The Determinants of Credit Spread Changes	2001	Corporate Bonds	US	1988-1997	Structural Models
Annex B	Friewald, N. & Nagler, F.	Over-the-Counter Market Frictions and Yield Spread Changes	2018	Corporate Bonds	US	2003-2013	Structural Models
Annex B	Bordalo, P., Gennaoili, N. & Sheifer, A.	Diagnostic Expectations and Credit Cycles	2017	Analysts' Forecasts	US	1999-2014	Behavioural model of credit cycles
Annex B	Manning, M.	Exploring the Relationship between Credit Spreads and Default Probabilities	2004	Corporate Bonds	UK	2003	Structural Model: Merton

Appendix B: Estimated change in OF before allowing for TMTP

We have estimated the change in OF before allowing for TMTP, following the approach taken by the PRA for its estimations, as a check that we can replicate the PRA results. We note that this view of the change in OF – ignoring the effects of TMTP – does not reflect the impacts of reforms on the current capital held by insurers and does not therefore provide a realistic measure on which to assess the outcomes of the proposed reforms against the reform objectives.

Figure B.1 shows the estimated difference in OF before allowing for TMTP for the three Index-Spread Model scenarios relating to the total business of all firms in our QIS data set. The average change for firms with and without a MA portfolio is shown separately, as is the average change for firms who write annuity business only (annuity specialists). The block colour in this chart represents the range that all firms' results sit within except for the maximum and minimum outliers that are shown separately.

Figure B.1: Percentage change in OF assuming no TMTP
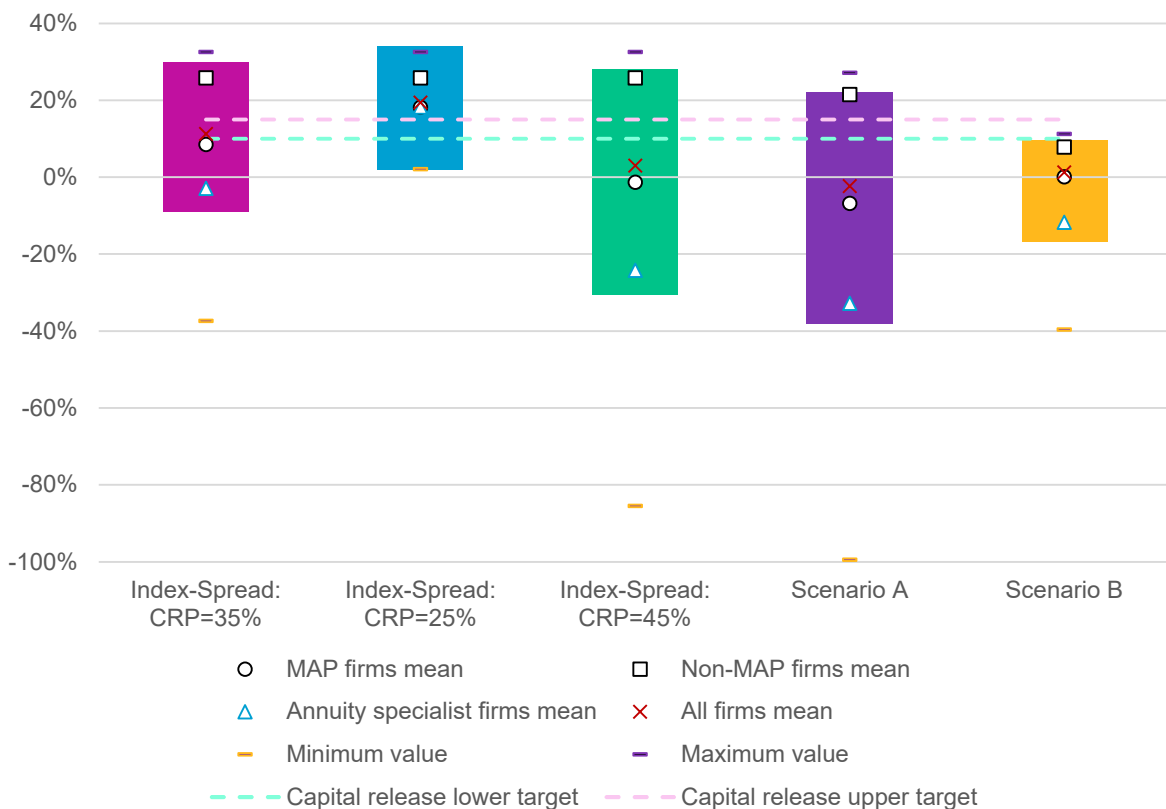
We observe from this analysis that:

- Before allowing for the change in TMTP, the aggregate OF change in the Index-Spread Model scenario where CRP represents 35% of spreads is an increase of £6.9 billion. This represents 11.2% of total OF for all firms in our sample.

- For the 25% of spreads scenario the aggregate OF increase is £11.9 billion (19.4% of total OF) and for the 45% of spreads scenario the OF increases by £1.8 billion (3.0% of OF).

- Firms with MA portfolios are estimated to have lower increases to OF than the average across all firms (a £4.4 billion increase in OF, equivalent to 8.5% of OF for these firms). Notably, annuity specialists are materially worse off (a £0.3 billion reduction (-2.9%) in OF under the 35% scenario.

- There is a wide range of outcomes across firms, including a significant outlier that faces significant negative impacts on OF.

That the 35% CRP result falls within the range of 10-15% quoted by the PRA lends us confidence in our estimates. However, we note that this is not equivalent to the 10-15% of current capital held that was targeted in the John Glen speech.

Glossary

Term	Definition
Basis points	A unit of measure for interest rates and other percentages. One basis point is equal to one 100th of 1% (i.e. 100 basis points makes up one percentage point). Also referred to in shorthand as "bps."
CoC	Cost of Capital. The return required for a company to justify the capital outlay for a given capital project. Under Solvency II, this became the basis for calculating the value to be held in respect to the concept of the RM.
CoD	Cost of Downgrade. Losses incurred by a lender by reason of borrower ratings downgrade.
CQS	Credit Quality Steps more commonly known as ratings. A standardised indicator of credit risk that is recognised by the EU.
DCE	Data Collection Exercise. The PRA launched a data collection exercise in June 2022 requesting information relating to DP2/22 and HMT's consultation.
DCE parameterisation	A potential scenario of parameters being considered as part of the PRA's DCE.
EC	European Commission. The executive arm of the EU, responsible for initiating new legislation and the day-to-day running of the EU.
EIOPA	European Insurance and Occupational Pensions Authority. The EU supervisory body for insurance established in January 2011.
EL	Expected Loss which is the same as the Probability of Default under the current Solvency II MA approach.
ERM	Equity Release Mortgages. A financial loan secured against residential property, and which includes Lifetime Mortgages and Home Reversions.
FS	Fundamental Spread. Under Solvency II, the credit related spread of the asset spread where the remainder is the MA that provides compensation for illiquidity risk
IAIS	International Association of Insurance Supervisors. A global regulatory standard setting body and a membership organisation of insurance supervisors from over 190 jurisdictions.
ICS	Insurance Capital Standard. A consolidated group-wide capital standard developed by the IAIS as part of the Common Framework for the

Term	Definition
	Supervision of Internationally Active Insurance Groups.
Interquartile range	The range of a dataset expressed as the 75th and 25th percentiles of the data.
Internal model	A system for analysing an insurer's risk, to quantify risks and to determine the capital required to meet those risks. Under Solvency II, with the approval of its supervisor, an insurer may use its internal model to calculate its SCR.
LTAS	Long-Term Average Spread. The average spread based on the last 30 years of data which is used as a floor in the current Solvency II approach to calculating the matching adjustment.
MA	Matching Adjustment. Under Solvency II, a long-term guarantees measure designed to prevent spread volatility from introducing artificial balance sheet volatility and triggering procyclical investment behaviour.
MOCE	Margin Over Current Estimate. The percentile approach to the calculation of the RM as used in Scenario A of the QIS
OF	Own Funds. Under Solvency II, OF consists of basic own funds and ancillary own funds, where basic own funds are composed of the excess of assets over liabilities and subordinated liabilities.
PD	Probability of Default. Probability of losses incurred by a lender by reason of borrower default.
PRA	Prudential Regulation Authority. The UK regulatory body responsible for supervision of the prudential requirements of banks, building societies, credit unions, insurers and major investment firms.
QIS	Quantitative Impact Study.
RM	Risk Margin. Under Solvency II, the amount to be added to BEL to align technical provisions with the amount another insurer would require to take on the business in an arm's length transaction.
SCR	Solvency Capital Requirement. Under Solvency II, the SCR is the amount of assets to be held in excess of liabilities to withstand a 1-in-200 loss event. The SCR is calculated using either the Standard Formula or an approved internal model.
Solvency I	Directive in EEC law concerning minimum capital requirements. The precursor to Solvency II

Term	Definition
Solvency II	Directive in EU law setting out regulatory requirements for insurance firms and groups, covering financial resources, governance and accountability, risk assessment and management, supervision, reporting and public disclosure, which came into effect on 1 January 2016.
Standard formula	A risk-based formula used by insurers to calculate their SCR under Solvency II.
Tapered cost of capital	The cost of capital approach to the calculation of the RM which reduces the cost of capital at late durations as used in Scenario B of the QIS.
Technical provisions	Under Solvency II, the amount required to be paid to transfer the insurance business to another undertaking. The sum of BEL and RM.
TMTP	Transitional Measure on Technical Provisions. A Solvency II mechanism designed to help smooth in the capital impact of Solvency II over a 16-year period.
Transfer value	A transfer value (or exit value) is the estimated price for an asset or transfer of a liability on the open market.
VA	Volatility Adjustment. Under Solvency II, a long-term guarantees measure designed to dampen the impact of short-term spread movements.
Z-spread	Zero-volatility spread. The constant adjustment that makes the price of a security equal to the present value of its cashflows when added as a parallel shift to the risk-free yield curve used to discount the cashflows.