BANK OF ENGLAND
PRUDENTIAL REGULATION
AUTHORITY

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17 June 2019

Dear Chief Actuary

Observations from recent regulatory reviews

This letter to Chief Actuaries of life insurers is part of the ongoing dialogue between the PRA and the UK insurance sector. The purpose of this letter is to share our observations from our regulatory activities in the past 12 months which are specifically relevant to Chief Actuaries of life insurers, and to signpost other important PRA initiatives that these Chief Actuaries should be aware of.[1] We encourage you to share this letter with your board and others at your firm (such as the Chief Risk Officer) as appropriate.

In the past year, we continued to focus our reviews on ensuring that appropriate prudential standards are maintained. We summarise below our key observations from industry-wide reviews, some of which David Rule (Executive Director of Insurance Supervision) highlighted in his recent speech at the ABI's Prudential Regulation Seminar.[2] In particular, we highlight areas where we are anticipating further work. More detail on each topic can be found in Annex 1; we strongly encourage you to review Annex 1 and share this information with others at your firm. We also refer you to Annex 2 which serves as a reminder on other important areas relevant for life insurers that we have issued policy or communications about, including: climate change; the impact on life insurers of moving from LIBOR to SONIA; equity release mortgages and other illiquid assets; Solvency II (SII) technical provisions; and transitional measures for technical provisions (TMTP) simplification. We have also included additional information on 'bottom up' model drift metrics in Annex 3.

Areas where further industry-wide PRA activity is expected in the next 12 months

Model drift

The PRA defines model drift as the risk that the capital requirements calculated using an internal model may gradually weaken over time such that they no longer remain reflective of the risks to which the firm is exposed. The PRA's model drift ratios are described in Chapter 2 of Supervisory Statement (SS) 15/16.[3] The PRA is carefully monitoring model drift using supervisory tools developed in recent years. Over the first two years of Solvency II we have observed that, although the aggregate modelled Solvency Capital Requirement (SCR) for UK solo life firms has increased, it increased by significantly less than the corresponding standard formula (SF) SCR.

While we recognise the limitations of the model drift metrics and take into account additional factors that may legitimately explain the potential model drift, this is not a trend we would expect to continue over time. We encourage firms to develop their own model drift measures and not to limit the model drift analysis to the metrics mentioned above.

The PRA will continue monitoring trends in modelled SCR at firm level, and is especially vigilant about material SCR reductions and weakening of risk calibrations (eg credit spread widening) where these cannot be adequately justified.

[1] My previous letter to Chief Actuaries of life insurers 'Solvency II: Two and a half years on' was published on the Bank's website on 18 July 2018, see https://www.bankofengland.co.uk/prudential-regulation/letter/2018/solvency-2-two-and-a-half-years-on.
[2] https://www.bankofengland.co.uk/speech/2019/david-rule-british-insurers-prudential-regulation-seminar.
[3] 'Solvency II: Monitoring model drift and standard formula SCR reporting for firms with an approved internal model', July 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2016/solvency2-monitoring-model-drift-and-standard-formula-scr-reporting-ss.

Proxy modelling

Most internal model life insurers use a proxy model to calculate their SCR and we recently surveyed a sample of firms in this area. The PRA recognises that proxy modelling is an area where thinking and techniques continue to evolve. Despite this, the PRA is keen that firms: recognise the risks associated with such complex modelling; do not place too much reliance on the proxy model output; and make sufficient allowance for the risk of model error.

Given the wide range of practice observed in the survey, the PRA is considering whether to issue a consultation on proposed expectations for how firms can continue to meet internal model tests and standards in respect of proxy modelling.

Treatment of expenses in SII technical provisions and the SCR

We have observed a variety of approaches to the projection of expenses in technical provisions and the treatment of fixed overheads in both the SF and internal model SCR calculations. This appears to be a challenge across the EEA, and European Insurance and Occupational Pensions Authority (EIOPA) has issued two Q&A responses (Q&A response 1037 & 1678)[4] relating to the interpretation of the Level 2 text. We consider that it is good practice to reflect the principles underlying these responses when determining the expense projections for all firms within technical provisions and in the capital requirement calculation.

The PRA plans to undertake some work in this area across the life insurance sector during 2019.

Firms' monitoring of matching adjustment portfolios

In late 2018, an industry-wide review by the PRA identified a broad range in the quality of firms' internal management information (MI) for monitoring regulatory compliance in relation to the matching adjustment (MA). Good observed practice included a clear explanation of the MI produced, governance processes, and how the MI linked to: (i) the firm's MA approval, (ii) MA requirements, and (iii) expectations set out by the PRA in SS7/18.[5] Specifically, Chief Actuaries may wish to consider the adequacy of how their firm monitors the trading of MA assets, and collateral management.

Given the significance of MA approval, the PRA is contemplating further reviews in this area to ensure firms are adequately monitoring their own compliance.

Areas where no further industry-wide PRA activity is planned in the next 12 months

Future management actions

To assist the PRA in establishing an updated picture of life insurance management actions, we surveyed a sample of larger firms on their future management actions plans. Good practice observed included a board-approved stand-alone comprehensive future management actions plan (CFMAP) for each insurance entity where all management actions are listed and the impacts quantified. Such CFMAPs have explained how the management actions are assumed to impact on the capital position of the firm (such as through the best estimate liability (BEL) or SCR and the rationale behind each (for example, why it is appropriate to assume future regulatory approval). We recommend firms assess themselves against the PRA's observed good practice for SII future management actions listed in Annex 1.

Mortality improvements in SII technical provisions

We have observed a number of different approaches to allowing for mortality improvements, particularly where firms are altering assumptions to give increased weight to recent trends. We consider good practice in setting assumptions will take into account expected differences between a firm's portfolio and general population data, justification for any (implicit) assumed changes in excess winter mortality, and

[4] EIOPA Q&A 1037 and 1678 can be found within https://eiopa.europa.eu/Publications/Guidelines/Answers%20to%20%28EU%29%202015-35%20supplementing%20Directive%202009-138.xlsb, which can be accessed from https://eiopa.europa.eu/Pages/Guidelines/Q-and-A-on-Regulation-Answers-Delegated-Regulation.aspx.

[5] 'Solvency II: Matching adjustment', July 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/solvency-2-matching-adjustment-ss.

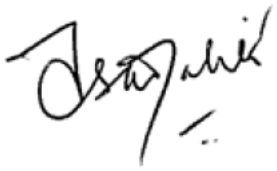
consideration of the likelihood of any cohort-based trends persisting into the long term. We encourage firms to consider adopting such practices in their assumption setting process.

Impact of expected inflation for annuity writers

Last year, we carried out an exercise to assess the resilience of a sample of firms with material annuity business to a range of stresses to expected inflation. We observed, unsurprisingly, that an increase in expected inflation for most firms leads to higher BEL, SCR, and risk margin, and a corresponding reduction in firms' solvency cover. In considering the effect of inflation hedging on firms' own balance sheet, we see it as good practice for firms to describe the hedging objective in terms of the components of the capital position (such as BEL and SCR) that the firm aimed to hedge, and the change in inflation in basis points that would prompt rebalancing of the MA portfolio. Other good practices observed included an articulation of the effect of hedging on the balance sheet, and of inflation collars on asset and liability cash flows. We encourage all firms to consider adopting such practices.

We welcome your feedback on this letter. If you would like to discuss the content of this letter, please speak to your usual supervisory contact in the first instance.

Yours sincerely



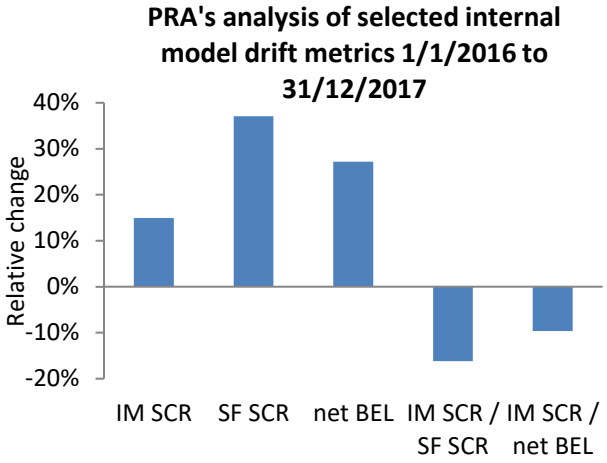
Annex 1 – Further details on our key observations from past industry-wide reviews

Areas where further PRA activity is expected in the next 12 months

Model drift

It has been over three years since the implementation of Solvency II (SII) and the PRA has given approval to a number of life firms to use an internal model to calculate their Solvency Capital Requirement (SCR). The PRA defines model drift as the risk that the capital requirements calculated using an internal model may gradually weaken over time such that they no longer remain reflective of the risks to which the firm is exposed. The PRA's model drift ratios are described in Section 2 of SS15/16[6]. The PRA is carefully monitoring model drift using supervisory tools developed in recent years, for example we analyse the change in capital ratios as set out in Supervisory Statement (SS) 15/16[7] and supplement this analysis using internal model output information as set out in SS25/15.[8] Moreover, we continue to monitor closely trends in the capital impacts of, and reasons for, major and minor model changes to firms' internal models.

The first three columns in the chart on the right show the aggregate industry increases, over the first two years of SII, in the modelled (IM) and standard formula (SF) SCRs and in the net best estimate liabilities (BEL less the reinsurance recoverables) for UK solo firms. The final two bars, the key model drift metrics, show the increase in the modelled SCR relative to the increase in SF SCR and to the increase in net BEL.



The key observation from this chart is that the modelled SCR increased by significantly less than both the increase in the SF SCR and the increase in the net BEL. The relative changes can mostly be explained by insurers adjusting to SII - for example, increased risk mitigation activities, transfers of business and additional investment in assets such as illiquid unrated assets for which the SF may not appropriately reflect the underlying risks. Our analysis also indicates that credit risk calibrations for some life firms have weakened since initial model approval.

That said, two key messages emerge from our analysis.

- First, while we recognise the limitations of the model drift metrics, and we take into account additional factors that may legitimately explain the potential model drift, the significant reduction in internal model capital compared to the standard formula is not a trend we would expect to continue over time.

- Second, the PRA is mindful that although modelled SCR across the industry has increased over the period, this may potentially mask inappropriate reductions or insufficient increases in the SCR for certain firms when compared to changes in risk profile. The PRA is monitoring these trends at firm level and is especially vigilant about such material SCR reductions and weakening of risk calibrations (eg credit spread widening) where these cannot be adequately justified, for example, as a result of increased risk mitigation or transfers of business.

[6] 'Solvency II: Monitoring model drift and standard formula SCR reporting for firms with an approved internal model' July 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2016/solvency2-monitoring-model-drift-and-standard-formula-scr-reporting-ss.
[7] See footnote 6 above.
[8] 'Solvency II: Regulatory reporting internal model outputs', October 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2015/solvency2-regulatory-reporting-internal-model-outputs-ss.

Some internal model firms assess and monitor model drift on an ongoing basis, and incorporate analysis in their annual validation cycles in order to highlight potential model drift. Some internal model firms' annual validation reports contain model drift analysis, for example, analysis of the factors driving changes in capital ratios, such as internal model SCR to standard formula SCR, and internal model SCR to BEL. We encourage firms to develop their own model drift measures and not to limit the model drift analysis to the metrics mentioned above.

Proxy modelling

A proxy model produces an approximation of the balance sheet given a range of inputs. Proxy models are used by most firms to calculate their (partial) internal model SCR because the balance sheet valuation models are too slow to complete the hundreds of thousands of balance sheet valuations necessary within the required timeframe. In general, firms also widely use their proxy models for decision making and risk management.

In May 2018, the PRA issued a survey to a sample of life insurers with a proxy model. The PRA considered the approaches of eleven firms that use a proxy model (either firms in pre-application for an internal model, with an approved internal model, or using a proxy model for risk management purposes).

The PRA sent detailed feedback regarding the proxy modelling survey results to firms that participated in the survey. This outlined the best practice observed across the firms in the survey and, individually for each firm, how it fared relative to the best observed practice. This feedback covered eight areas: use of the proxy model, fitting, out-of-sample testing, other testing, acceptance criteria, roll forward, out-of-model adjustments, and documentation. Some of these aspects are elaborated further below.

All firms surveyed had areas of strength and weakness within their proxy modelling. However, the gap in standards between firms is now more significant than it was at the point of approval of the first SII internal models, due to the difference in pace at which firms have improved various aspects of their modelling. Some firms have invested in software upgrades for their underlying valuation models, which has generally led to a reduction in observed proxy model error. Additionally, some firms have reduced proxy model error through investigating and/or adopting new approaches to fitting the loss functions. All firms have room to improve their models using some combination of these techniques.

Out-of-sample testing continues to be the key validation metric for firms. Out-of-sample testing allows a direct comparison between the proxy model and the valuation model at scenarios that were not used in the calibration of the proxy model.

We have observed that firms struggled to provide a robust validation of the proxy model using purely statistical approaches. This is because, unlike most academic applications of the proxy modelling approach, firms often have many material, interacting risk factors, which require an exponential increase in the number of testing points for each additional risk factor to achieve a statistically robust validation. Given current process and IT constraints, firms are unable to produce the number of out-of-sample points required to demonstrate adequately the statistical goodness of fit of the proxy model across all material risk factors.

Some firms have taken advantage of software system improvements to increase materially the number of out-of-sample validation tests. However, even these firms have a limited model run budget for out-of-sample test scenarios, making the choice of out-of-sample points critical for all firms. Firms with good practice carefully select points to ensure a broad coverage of the risk space.

The PRA observed that firms use many other tests to supplement out-of-sample testing, such as graphical analysis of risks in two dimensions and ranking tests. The PRA generally found that these other tests, which firms can carry out using the existing run budget for out-of-sample tests, were under-used. Firms with good practice carried out substantial testing between reporting periods and used the outcome of this testing to improve future iterations of the proxy model.

The PRA recognises that proxy modelling is an area where thinking and techniques continue to evolve. Despite this, the PRA is keen that firms recognise the risks associated with such complex modelling and do not place too much reliance on the model output. These risks are exacerbated for proxy models compared to other elements of the internal model given the necessarily approximate nature of the calculation and the (often) high degree of expert judgement involved. Firms with better practice were observed to recognise the inherent uncertainty in results generated using proxy models and to take a prudent approach to calculating the SCR, for example by applying prudent adjustments to allow for the approximate nature of the calculation.

Given the wide range of practice observed in the survey, the PRA is considering whether to issue a consultation on proposed expectations for how firms can continue to meet internal model tests and standards in respect of proxy modelling.

Treatment of expenses in SII technical provisions and the SCR

We have observed a variety of approaches to the projection of expenses in technical provisions and the treatment of fixed overheads in both the SF and internal model SCR calculations. This appears to be a challenge across the EEA, and EIOPA has issued two Q&A responses[9] relating to the interpretation of the Level 2 text:

- Q&A response 1037 highlights that undertakings should reflect the circumstances of the firm in expense projections within the technical provisions when they are closed to new business; and
- Q&A response 1678 highlights that for SF firms, the calculation of capital in a mass lapse scenario should reflect the adjustments that the undertaking would need to make to the expense component of the cash-flow projection in the best estimate calculation.

We consider that it is good practice to reflect the principles underlying these responses when determining the expense projections within the technical provisions and in the capital requirement calculation. The PRA will undertake some work in this area across the life insurance sector during 2019.

Firms' monitoring of MA portfolios

In September 2018 the PRA requested firms' internal management information (MI) used to monitor MA compliance. We observed a broad range in the quality of firms' MI, with better quality responses including a clear explanation of the MI produced, governance processes, and how the MI linked to: (i) the firm's MA approval, (ii) MA requirements, and (iii) expectations set out by the PRA. MI areas that Chief Actuaries may wish to consider include:

- Asset rebalancing. For a number of firms it was unclear how the volume of trading of MA assets is measured and monitored, and what the governance is around deeming this to be acceptable. Firms with better quality MI provided trading summaries, justification for actions taken, and appropriate sign off for those actions.
- Collateral management. We noted a variation in the MI produced by firms that receive collateral they may rely on in the event of counterparty default. In some cases it was not clear whether firms monitor the MA eligibility of the collateral pool, and how an orderly transition to a fully MA compliant pool would be achieved in the event of default.

As noted in SS7/18, [10] we expect firms to have in place appropriate MI in order to suitably identify, organise, and manage their portfolios of assets and liabilities separately.

[9] EIOPA Q&A 1037 and 1678 can be found within https://eiopa.europa.eu/Publications/Guidelines/Answers%20to%20%28EU%29%202015-35%20supplementing%20Directive%202009-138.xlsb, which can be accessed from https://eiopa.europa.eu/Pages/Guidelines/Q-and-A-on-Regulation-Answers-Delegated-Regulation.aspx.

[10] 'Solvency II: Matching adjustment', July 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/solvency-2-matching-adjustment-ss.

Areas where no further PRA activity is planned in the next 12 months

Future management actions

Last year, to assist the PRA in establishing an updated picture of life insurance management actions, a sample of larger firms were asked to respond to a voluntary information request regarding future management actions plans for their UK entities. For each management action, the PRA requested: a full description; clarification as to how the management actions were assumed to impact on the capital position of the firm (such as through the BEL or SCR); the impact in millions (£); and the part of the entity to which it applied.

The PRA observed the following good practice from submissions received.

A board-approved stand-alone comprehensive future management actions plan (CFMAP) for each insurance entity

This ensures consistency across the insurer and gives the governing body a single document to approve. It may describe management actions at a high level only, with the finer detail in other documents; but all related documents must meet the requirements of Articles 23(3) and 236(3) of the Delegated Regulation (EU) 2015/35. The appropriate level of detail for each firm may vary depending on the level of understanding within the governing body.

The impact of each management action was quantified

The impact of a management action was quantified to assist the governing body responsible for approving the actions in understanding the materiality of each action. Although no firms provided this, we also consider it good practice for firms to quantify the extent to which management actions interact with each other, ie where the combined impact is reduced, increased, or those that cannot be used together.

The CFMAP included all management actions available and specified how they are assumed to impact on the capital position of the firm

Firms were explicit in detailing which management actions were:

- included in their actuarial cash flow models used in the BEL calculations;
- assumed in the internal model and/or standard formula and used in the SCR and/or risk margin calculations; and
- formally agreed but used in circumstances more extreme than the SCR.

Additionally, we observed that some firms omitted references to certain management actions and therefore remind firms that all management actions should be included in the CFMAP; including those related to expenses, MA rebalancing, reinsurance and the with-profits fund.

The CFMAP included other potential management actions

These will be management actions that have been seriously considered, have not been discounted, but have not yet been agreed by the full governance process. The status of these actions was clear, for example highlighting when a management action will be taken through the full governance process, or where it could be used in formal stress tests submissions but is not currently scheduled to be taken through the full governance process.

Explanation of regulatory approval assumptions

For management actions which require approvals, such as the UK judicial system (eg a court) or PRA, a detailed explanation was given as to why it is reasonable to assume such approval would be granted.

We recommend that firms assess themselves against the PRA's observed good practice for SII future management actions.

Mortality improvements in SII technical provisions

The Institute and Faculty of Actuaries (IFoA) published the CMI_2018 model in March.[11] This incorporates 2018 mortality data and the core model gives extra weight to recent lower trends in improvements. Where firms use this model, they will need to consider whether an adjustment is necessary for their portfolios[12] as the model has been calibrated for general population lives data.[13]

In our view, good practice requires consideration of two further features:

i. Recent trends in annual data are significantly impacted by variation in Excess Winter Mortality (EWM). Adapting assumptions about future longevity improvements to fully, or materially, reflect recent trends may implicitly assume EWM will continue to deteriorate for many years to come. If a firm considers this its best estimate, as with all material expert judgements, this should be highlighted and justified to its board. The Office of National Statistics (ONS) mortality data is available for periods shorter than annual. Firms could consider using this data to assess how EWM may impact future trends.
ii. Models attributing historic trends to cohorts may assume these features will persist for many years into the future. For example, the CMI_2018 model assumes cohort features may persist for up to a further 40 years. Where material cohort-based trends are identified in historic data, it is good practice to consider how likely those trends are to persist over the next 40 years. This decision may be influenced by whether: a) cohort-based trends are stable over time; b) cohort deviations are of a sufficient magnitude to distinguish them from random noise or short term features; c) sufficient data exists to measure cohort-based trends for younger cohorts; and d) there is an understanding of the underlying drivers (and if these are likely to persist in future).

Impact of expected inflation on the SII balance sheet for annuity writers

Last year, we surveyed a sample of firms with material annuity books to assess the impact on their balance sheets of a number of changes of varying severity in expected inflation. We asked firms to apply these stresses without changing any other financial variables that might be expected to accompany such a stress. To maintain comparability between firms, we also asked them not to allow for rebalancing of the MA portfolio following the inflation shock. Although this constraint is unrealistic, because in practice firms may undertake continuous inflation hedging, we consider that the output provided useful insights for all annuity writers, including the possible impact of a temporary closure of derivative markets.

The survey results showed that for most (but not all) firms an increase in expected inflation led to an increase in BEL, SCR and risk margin (the latter was partially offset by the transitional measure on technical provisions (TMTP)), and a corresponding reduction in the firms' solvency cover. We did not observe any cases where a firm's policy was to hedge against inflation risk in its risk margin. Some firms explained that this was because they consider that they can rely on the partial offset of the TMTP for business written prior to 1 January 2016. Generally, despite the risk to firms with inflation floors embedded in their liabilities which invest in assets without such floors, the survey results showed that the overall capital position of firms appear to be more exposed to increases rather than decreases in expected inflation.

We observed that most firms had sought to understand how inflation caps and floors embedded in their liabilities affect the impact of changes in expected inflation on their balance sheets. Better quality responses to our survey described the hedging objective in terms of the components of the capital position that the firm aimed to hedge against inflation changes (such as BEL and SCR), and the size of the change in inflation in basis points that would prompt rebalancing of the MA portfolio. Other good practices observed included articulations of: i) how the assets and liabilities would behave under an inflation stress before and after allowing for hedging; and ii) how asset cash flows behave relative to liability cash flows,

[11] https://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-working-papers/mortality-projections/cmi-working-paper-119
[12] DA Art 22(1)(c)
[13] CMI Mortality Projections Model CMI_2018 Briefing Note.

taking inflation collars into account, and therefore how surplus might be extracted from the MA portfolio in the case of such a movement. We encourage all firms to consider adopting such practices.

Annex 2 – Reminder of upcoming PRA activities

Climate change

Climate change is becoming an increasingly important part of risk management and we expect that trend to continue over the coming months.

We welcome the fact that the Institute and Faculty of Actuaries (IFoA) is active in considering the implications of climate change. For example, in May 2017 the profession issued a risk alert[14] and in March 2019 published the document 'Climate change for Actuaries: an introduction'.[15] Subject-specific guides have been published for some disciplines, and the PRA understands that a guide for life actuaries is at an advanced stage of preparation.

The PRA is also actively considering the financial implications of climate change.

- The PRA published Supervisory Statement (SS) 3/19 'Enhancing banks' and insurers' approaches to managing the financial risks from climate change' in April 2019.[16] This sets out the PRA's expectations in four key areas: governance; risk management; scenario analysis; and disclosure. As set out in PS11/19[17], we expect that firms will have an initial plan in place by 15 October 2019 to respond to the expectations.
- The PRA and the FCA have jointly set up the Climate Financial Risk Forum to work on practical responses in these areas. Membership is drawn from the UK financial services industry, including insurers, banks, and asset managers. Four working groups have been set up initially looking at risk management (chair from HSBC), innovation (chair from L&G), disclosure (chair from Hermes), and scenario analysis (chair from Aviva).
- From June 2019, all insurance firms will be considering the PRA 2019 insurance stress testing exercise, including climate change scenario analysis.

As set out in SS3/19, we think that climate change presents different challenges for firms from most other risks, and requires a strategic response. If you have not already done so, I invite you to reflect on the PRA's expectations in the SS and engage your actuarial teams in your organisation's response to those expectations. You and your teams are likely to have valuable skills and experience to offer, especially in scenario analysis.

We further reference the recent EIOPA advice to the European Commission[18] (May 2019) on sustainability in the Pillar 2 areas of the actuarial function, risk management, investment strategy, stewardship, and product oversight; and the current EIOPA Consultation[19] (June 2019) on Pillar 1 areas. Therefore, you are likely to find that in your interactions with supervisors and actuaries from the PRA, you will be increasingly engaged on what you are doing to manage the financial risks from climate change.

Impact of moving from LIBOR to SONIA on life insurers

On 19 September 2018 the PRA and FCA jointly wrote to CEOs of large banks and insurers requesting information on their preparations for the discontinuance of LIBOR at the end of 2021. We outlined our observations on the responses in the joint PRA and FCA statement published on 5 June[20]. Chief Actuaries may wish to ensure that they are adequately sighted on their firm's transition plan to alternative risk-free rates, including identification of LIBOR in assets, liabilities, and processes. Chief Actuaries may also wish

[14] https://www.actuaries.org.uk/documents/risk-alert-climate-related-risks.
[15] https://www.actuaries.org.uk/documents/climate-change-actuaries-introduction.
[16] April 2019: https://www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss.
[17] April 2019: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change.
[18] https://eiopa.europa.eu/Pages/News/EIOPA-submits-advice-on-Sustainable-Finance-to-the-European-Commission-.aspx
[19] https://eiopa.europa.eu/Publications/Consultations/EIOPA-BoS-19-241_Consultation_Paper_on_an_opinion_%20on_sustainability_in_Solvency_II.pdf
[20] June 2019: https://www.bankofengland.co.uk/prudential-regulation/publication/2019/firms-preparations-for-transition-from-libor-to-risk-free-rates.

to consider carefully the risks arising from LIBOR discontinuance, and how these risks can be measured, managed, and mitigated.

Equity release mortgages and other illiquid assets

In early April, the PRA published Consultation Paper (CP) 7/19[21] which proposed amendments to some of the expectations in respect of firms investing in equity release mortgage portfolios, as set out in Chapter 3 of SS3/17.[22] David Rule, Executive Director of Insurance Supervision, published an accompanying letter addressed to CEOs highlighting key points from this consultation and also commenting on academic research jointly commissioned by the IFoA and the Association of British Insurers (ABI).[23] The PRA welcomes the research's advocacy of risk-neutral valuation and considers that there are several areas where the research needs further development. Where relevant, we encourage firms to read and participate in the CP7/19 consultation, which closes on Wednesday 3 July 2019.

The PRA continues to focus efforts on assessing the risks posed to its objectives by firms increasing their investment in illiquid assets that are internally rated and valued. The PRA is also reviewing firms' treatment of these assets and their associated MA in their internal models.

SII technical provisions

In the PRA Business Plan 2019/2020[24] we stated our renewed focus on the adequacy of life insurance reserving. The PRA is in the process of finalising the scope and plan of our activities in this area. We will give consideration to how and when to communicate our plan of activities to the UK life insurance sector.

TMTP simplification

In May, the PRA published CP11/19[25] which sets out the PRA's proposals to update SS6/16.[26] The proposals are aimed at providing:

- additional guidance for firms proposing to use a proportionate approach to the TMTP recalculation methodology; and
- further clarity on the consistency of Solvency I and Solvency II methodologies.

The PRA's response to the Treasury Select Committee's report on SII[27] recognised the burden of maintaining multiple systems for recalculation of the TMTP, and committed to considering the feasibility of simplifying the TMTP calculations. Where relevant, we encourage firms to read and participate in the consultation, which closes on Wednesday 21 August 2019.

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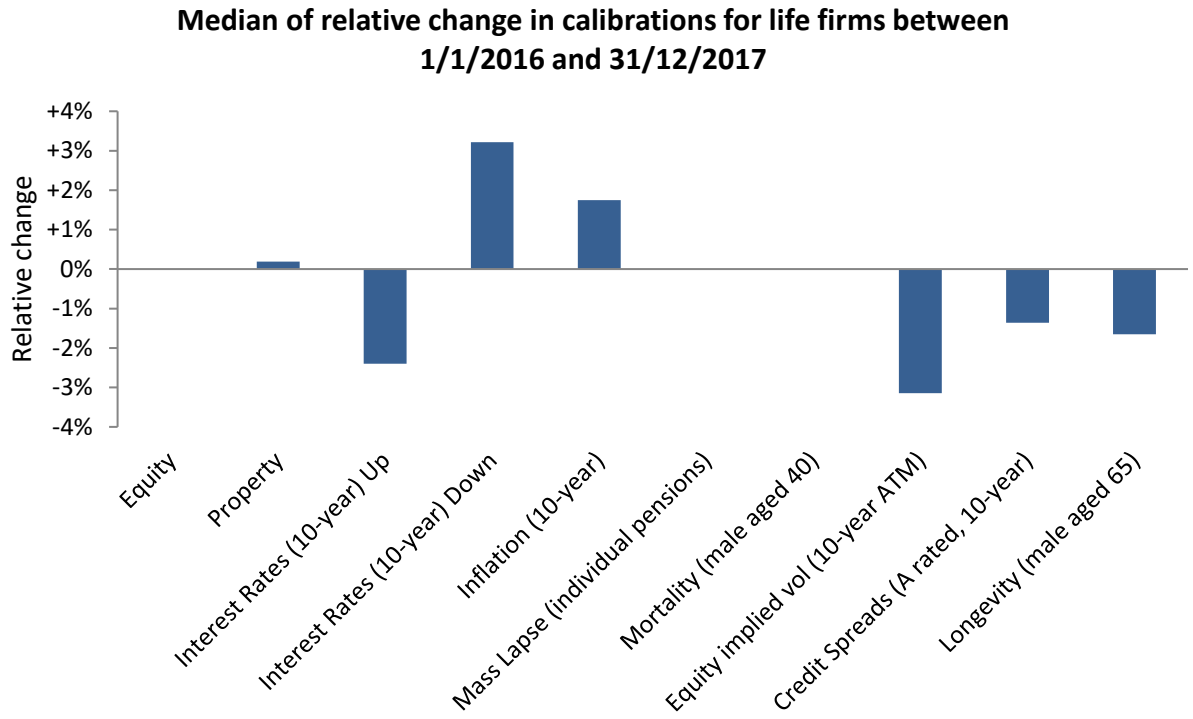
[21] 'Solvency II: Equity release mortgages – Part 2', April 2019: https://www.bankofengland.co.uk/prudential-regulation/publication/2019/solvency-ii-equity-release-mortgages-part-2.
[22] 'Solvency II: Matching adjustment – illiquid unrated assets and equity release mortgages', December 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2017/solvency-2-matching-adjustment-illiquid-unrated-assets-and-equity-release-mortgages-ss.
[23] April 2019: https://www.bankofengland.co.uk/prudential-regulation/letter/2019/solvency-ii-equity-release-mortgages-part-2-apr-19.
[24] https://www.bankofengland.co.uk/prudential-regulation/publication/2019/pra-business-plan-2019-20.
[25] 'Solvency II: Maintenance of the transitional measure on technical provisions' May 2019: https://www.bankofengland.co.uk/prudential-regulation/publication/2019/solvency-ii-maintenance-of-the-transitional-measure-on-technical-provisions.
[26] 'SS6/16 'Maintenance of the 'transitional measure on technical provisions' under Solvency II' April 2017: https://www.bankofengland.co.uk/prudential-regulation/publication/2016/maintenance-of-the-transitional-measure-on-technical-provisions-under-solvency2-ss.
[27] February 2018: https://www.bankofengland.co.uk/prudential-regulation/publication/2018/pra-response-to-the-treasury-committees-inquiry-into-solvency-2.

Annex 3 – Additional information on 'bottom up' model drift metrics

To supplement our analysis of 'top down' model drift metrics, showing movements in the ratio of internal model Solvency Capital Requirement (SCR) to standard formula SCR and net Best Estimate Liabilities, the following chart shows the movement in 'bottom up' model drift metrics. The chart shows the median of risk calibration movements[28] across life internal model firms for selected standardised risk factors, based on internal model output submissions.



While there has been a large degree of stability in life firms' internal model risk calibrations, we note that there has been significant movements for some risk factors. For example, for interest rates and inflation, we interpret the movements as being driven by modelling improvements (including allowance for negative interest rates under stress) and by changes in base yields.

Focussing on the most material risk factors, we have observed that the median change for both credit and longevity is a reduction in risk calibration. For longevity risk, the reduction is predominantly due to weakening in valuation (best estimate liability) assumptions, which has a second order impact on the capital stresses. This change is consistent with reductions in population longevity improvements, but we expect firms to take a prudent approach to incorporating this trend in their longevity assumptions. In contrast, for credit risk, the drivers of the reduction in risk calibration are varied. The PRA continues to monitor trends in risk calibrations and is vigilant about any material weakening that cannot be adequately justified.

[28] Calculated by ranking calibration movements (for a given standardised risk factor) for each internal model firm, and taking the median movement.

The following chart provides further detail on movements in the above standardised risk factors. In addition to the median of risk calibration movements (where the two coloured bars meet), the top of the orange bar shows the upper quartile of those movements, and the bottom of the blue bar shows the lower quartile.