BANK OF ENGLAND

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Governor

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House of Commons
London
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Dear Mel,

Thank you for your letter of 10 June containing questions following on from the Treasury Committee oral evidence session on 20 May.

I have set out answers to each of your questions below.

Insurance Stress Tests

> a) Set out the reasons for cancelling the publication of the insurance stress test, and how in its absence we as a Committee can be confident that it is appropriate for insurers to continue paying dividends.

In 2019, the PRA undertook stress test exercises for the largest UK insurers, and the work was presented to the Prudential Regulation Committee (PRC) on 17 March 2020. We moved into crisis management very shortly after that meeting, however, and redeployed people working on the publication of the findings to focus on additional analysis assessing insurers' resilience specifically in the context of Covid-19, as well as the unfolding market stresses.

The sections below explain how we assessed insurers' resilience in the context of Covid-19, the findings of this work, and how it informed the PRA's supervisory approach to insurers' dividend payments.

Assessing insurers' resilience in the context of Covid-19

Under the Solvency II capital regime, insurance capital requirements are calculated with the intention of enabling firms to withstand losses broadly corresponding to a 1 in 200-year event. On that basis, insurers' solvency coverage ratios were resilient to the stressed market conditions which occurred during Q1 2020, with a relatively modest reduction in aggregate capital coverage ratios of around 10%.

However, in order to assess the ability of the insurance sector to withstand potential further stresses which might be caused by the Covid-19 pandemic, we conducted further resilience testing of firms during April. Our analysis used the illustrative scenario outlined in the May 2020 Monetary Policy Report (MPR) and further severe asset and insurance shocks tailored to stress the different risks to which different types of insurance firm are exposed. In particular, for life insurers the stresses aimed to capture the impact of credit downgrades within Matching Adjustment portfolios. For general insurers, in addition to asset stresses, we also applied specific liability stresses, including business interruption claims.

Our analysis showed that the sector was robust to downside stresses, with the highest uncertainty centred on certain general insurers' liabilities – particularly those arising from business interruption claims. To

ensure that the sector remains robust in this evolving situation, we expect firms to maintain close monitoring of the additional risks presented by Covid-19, update their risk and capital assessments as the situation evolves and take appropriate management actions where necessary.

Life insurers

For life insurers, our Covid-19 resilience analysis centred on a further economic deterioration, above that experienced during the first three months of 2020, and in particular aimed to capture the impacts of credit downgrades as a key risk for life insurers with Matching Adjustment (MA) portfolios.

The stress applied was in addition to the changes in financial markets already seen during Q1 2020, most notably falls in the level of nominal interest rates and equity markets. In addition to asset price falls, spread-widening and falls in risk-free interest rates, our analysis encompassed the impact of the illustrative MPR scenario but also, in order to look at potential vulnerabilities specific to life insurers, tested a downgrade of 50% of assets by one credit quality step (i.e. a whole single letter downgrade, such as A to BBB). We focus on credit downgrades because these affect both the value of credit risky assets life insurers hold and (on the other side of the balance sheet) the level of Matching Adjustment (MA) benefit firms can claim, the net effect of which can have a significant impact on life insurers' solvency ratios. This 50% downgrade scenario is broadly equivalent to the worst one-year experience in history, felt during the Great Depression in 1932. We could have additionally allowed for defaults explicitly, but historically these have been very low and it was more practical to allow for this implicitly within the chosen allowance for downgrades. The stresses were applied instantaneously to life firms' balance sheets, and did not allow for the management actions that firms would have time to apply in reality, and which would provide some off-setting benefit to their capital positions.

The work provides us with a good relative measure of the risks faced by individual firms, and a means to assess how rigorously each firm and its board are assessing their position against their own risk appetites. The results of this resilience exercise showed that, for the reasons set out above, most firms are sensitive to a severe downgrade stress of this kind, but firms have a range of management actions available to help mitigate losses, particularly if the losses arise over a reasonable timeframe. This work has informed supervisory dialogue with each firm, including on firms' dividend plans, and will continue to be refreshed as the Covid-19 situation develops.

General insurers

General insurers' business models typically have lower levels of investment risk than life insurers, but have greater sensitivity to liability stresses. Therefore, in addition to stressing assets, for general insurers we also made non-life insurance specific assumptions and applied further stresses, including:

- underwriting losses based on the GDP path and length of lockdown in the MPR scenario;
- stresses on revenues and earnings due to premium holidays, lower economic activity, and/or an increase in bad debts; and
- further liability stresses, including from business interruption claims.

This exercise showed that the general insurance sector is resilient to these stresses under the assumption that the insurance policies work in line with insurers' current expectations. However, there are differences between insurers and policyholders as to the interpretation of some business interruption contract wordings in the context of the Covid-19 pandemic. To test this sensitivity, we stressed the assumptions made by firms around the robustness of their policy wordings. This showed that the sector was in aggregate resilient, but the level of uncertainty is high and some more severe scenarios could have a significant impact on the capital positions of a few firms.

The Financial Conduct Authority (FCA) is seeking a court declaration on a number of test cases to provide clarity for policyholders and firms as to how these business interruption wordings should be interpreted. We support this initiative and are working with the FCA and firms to understand the potential financial impact of the court case. We expect firms to review the potential for claims payments regularly and to take appropriate management actions to manage the impact on their balance sheets. A number of general insurers have announced actions to withhold or amend dividend payments in light of the potential for further claims stresses.

Dividend payments

The approach we have taken has been informed by the Covid-19 resilience testing work set out above. In response to stresses to firms' resilience, one of the management actions firms can take to manage the potential impact of further stresses is to preserve existing capital.

On 31 March 2020, we wrote to all insurance company CEOs[1] making clear our expectation that UK insurers' boards pay close attention to the need to protect policyholders and maintain safety and soundness when they are considering any distributions to shareholders or making decisions on variable remuneration, in light of the uncertainty caused by the Covid-19 pandemic (the PRA's general expectations of insurers regarding their dividend payments are set out in Supervisory Statement 4/18).[2] We subsequently welcomed the decision by a number of insurers to postpone dividends, and note that a number of other firms amended their dividend plans. Other firms have made distributions, but only after we had satisfied ourselves that this was consistent with the PRA's objectives based on our Covid-19 resilience testing and further relevant testing done by the firms themselves in response to requests from their boards and challenges from their supervisory teams.

While we considered it necessary to ask all of the large UK banks to cancel their final 2019 dividends, we have taken a different approach to insurers. There are a number of reasons for differentiating between the two sectors. First, whilst insurers provide critical financial services they do not generally present the same financial stability risks as banks. Second, if insurers do need to take management actions to shore up their capital positions under stressed conditions, these actions (for instance, cutting back on bulk purchases of annuities from pension schemes) do not typically have the same negative spill-over effects on the wider economy, and therefore on the safety and soundness of PRA-regulated firms, which would arise from banks cutting back their lending. And third, while banks' business models vary significantly, these differences are more marked for insurers, which operate in a range of very different markets (for instance, a London Market insurer operating in Lloyd's compared to a life insurer providing UK annuities), meaning that the potential impact of Covid-19 on their financial positions will vary widely.

Given the nature of the current crisis, we expect firms to continue close monitoring of the evolving risks presented by Covid-19, and to update their assessments accordingly. For life insurers this additional focus should include the potential for downgrades and defaults in their investments; and for general insurers it should include developments in respect of product coverage in business interruption, employers' liability, public liability, professional indemnity, event cancellation, trade credit and travel.

> b) Provide the Committee with an overview of any interim conclusions that could be drawn at the stage of the insurance stress testing process you reached, and how you are using this to inform your supervision of insurers.

As explained above, one of the re-prioritisation decisions we took as we moved into crisis management was to redeploy our resources working on the publication of the findings to focus on the additional analysis

[1] https://www.bankofengland.co.uk/prudential-regulation/letter/2020/letter-from-sam-woods-to-insurers-on-distribution-of-profits.
[2] https://www.bankofengland.co.uk/prudential-regulation/publication/2018/financial-management-and-planning-by-insurers-ss

assessing insurers' resilience in the context of Covid-19, and the unfolding market stresses. Having now made progress on those Covid-19 tasks, we have finalised the publication material of the 2019 tests and published it on Wednesday 17 June.[3]

Debt monetisation

> c) Could you expand upon your statement that 'you cannot inflate public debt away in a world where you pay interest on reserves', in particular by explaining the mechanism by which interest on reserves prevents the public debt from being inflated away?

The Bank of England has a statutory obligation to maintain price stability. The remit for the Bank's Monetary Policy Committee (MPC) defines price stability as a two per cent target for inflation as measured by the increase in the Consumer Prices Index (CPI) over a 12-month period. Subject to the inflation target, the MPC supports the wider economic policy of the Government. Inflating public debt away is not consistent with a commitment to price stability.

Monetary policy is implemented mainly by controlling overnight interest rates in the sterling money market. Since 2006, this has involved remunerating reserve balances at Bank Rate. It's possible for the central bank to affect interest rates in money markets without this, through active and careful management of the quantity of reserves to match variations in the demand for them. But in general remuneration of those reserves allows for more precise control of market interest rates.[4] All major central banks have adopted the same approach.

While it improves interest-rate control in normal times, the payment of interest on reserves becomes indispensable in the presence of QE. Quantitative easing creates an excess supply of reserves relative to that demanded by the banking system and, if there were no interest paid on them, market interest rates would be driven to zero and the MPC would lose control over broader monetary conditions.[5] In such a situation, the MPC may be unable to prevent inflation from rising materially above target, a consequence of which would be erosion of the real value of government debt.

The fact that interest rates are paid on them means reserves are not like cash, the (zero-interest) "money" of the simple textbook account. It has an important bearing on the relationship between central bank money and inflation, and also that between inflation and the real value of the public sector's liabilities. To see why, it is useful to imagine a situation in which inflation is permanently higher by some amount (1% point) and in which (very reasonably) there's a matching rise in inflation expectations. Taken in isolation, it's true that the extra inflation would erode (by 1% a year) the real value of the public sector's nominal liabilities, both conventional (non-indexed) gilts and central bank reserves. But it seems very unlikely the higher inflation could persist for any length of time before inflation expectations also rose. And because this in turn would necessitate a rise in interest rates and nominal bond yields, across the yield curve, paying interest rates on reserves begins to matter.

In the simple textbook account, in which central bank money bears no interest, joint rises in inflation and nominal interest rates reduce the public's willingness to hold money. This increases the excess supply of money and adds further to inflationary pressure. This creates the possibility of an inflationary spiral. However, when central bank reserves pay interest, banks' willingness to hold them increases as interest rates rise. So when interest rates rise there is less of a depressive effect on the demand for reserves.

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[3] https://www.bankofengland.co.uk/prudential-regulation/letter/2020/insurance-stress-test-2019-feedback

[4] https://www.bankofengland.co.uk/-/media/boe/files/speech/2019/waiting-for-the-exit-qt-and-the-boes-long-term-balance-sheet-speech-by-andrew-hauser.pdf and https://www.bankofengland.co.uk/-/media/boe/files/paper/2018/boe-future-balance-sheet-and-framework-for-controlling-interest-rates.pdf.

[5] https://www.bankofengland.co.uk/-/media/boe/files/speech/2020/monetary-policy-and-the-boes-balance-sheet-speech-by-gertjan-vlieghe.pdf

The payment of interest on reserves also has a direct bearing on the cost of the public sector's aggregate liabilities, of which reserves are a part. In its absence, QE would involve substituting a liability that does pay interest with one that does not. If inflation and interest rates subsequently rose, in line with the thought experiment, interest payments on those aggregate liabilities (gilts plus reserves) would be lower than they otherwise would have been. As it is, QE is more properly seen as a maturity swap – it replaces one form of interest-bearing liability of the public sector (longer-term government bonds) with another (short-term central bank reserves). If inflation and interest rates rose across the curve, there would be little material impact on the overall interest cost of those liabilities. Currently, with £613bn of gilts in the Asset Purchase Facility, a 1 percentage point rise in Bank Rate would increase interest payments on the associated reserves by £6bn a year. So QE actually makes the interest payments of the public sector *more* sensitive to Bank Rate and therefore makes it harder to inflate away government debt.

Paying interest on reserves therefore has two important implications for the interplay between monetary policy and government debt. First, it allows the MPC to tighten policy via increasing Bank Rate without necessarily reducing the stock of purchased assets,[6] allowing the MPC to react as nimbly as required to evolving macroeconomic conditions. And second, it implies that QE is effectively a maturity transformation of the interest-bearing liabilities of the consolidated public sector (which in fact makes it harder to inflate away government debt). Paying interest on reserves ensures that the MPC retains control over financial conditions and hence that the inflation target can be achieved in the medium term.

In closing, I should reiterate that the MPC sets policy solely with its statutory inflation remit in mind. Easier policy, whether conventional or unconventional, helps to reduce financing costs for all potential borrowers, private and public sector alike. But it is always the case that the MPC eases policy only because it sees things in the economy that would otherwise take inflation below target. For that reason, every policy decision should be seen in the economic context in which it is made. The MPC will continue to monitor the situation closely and, consistent with its remit, stands ready to take further action as necessary to support the economy and ensure a sustained return of inflation to the 2% target.

d) The subject of the costs of interest on reserves raises the issue of the profits and/or losses associated with the quantitative easing programme. Could you provide the Committee with an illustration of:

- the profits made to date by the Asset Purchase Facility (and transferred to the Treasury) due to the spread between gilt holdings and Bank rate;
- how profits would be affected by a 100, 200 and 300 basis point rise in Bank rate; and
- how these would be affected by a move to a negative Bank rate?

To understand the cash flows associated with the MPC's quantitative easing programme, it is useful to set out how the APF, which conducts the Bank's purchases of public and private sector assets for monetary policy purposes, is structured.

The APF (or more fully, the Bank of England Asset Purchase Facility Fund Limited) is a wholly-owned subsidiary of the Bank of England. The APF funds its purchases of gilts and corporate bonds through a loan from the Bank of England, charged at Bank Rate. The APF receives coupon payments on its gilt holdings, which are paid by HMT to all gilt holders, and on its corporate bond holdings from the issuers. If the gilts are held until they mature, the APF also receives a final redemption payment. Thus far, when gilts have matured, the MPC has reinvested the proceeds by purchasing other gilts in the secondary market. The income the APF earns from coupons is used to pay the interest on the loan from the Bank. The APF's realised income therefore comprises the coupon payments received from gilts and corporate bonds and redemption proceeds on asset maturities, net of interest payments on the loan from the Bank.

[6] As noted above, this would be necessary if QE had led to excess supply of reserves.

As at end February 2020 the APF reported a life-to-date accounting profit of £168 billion. Of this £168 billion, £105 billion was realised income; of that £105 billion, £99 billion had been transferred to HMT under the quarterly cash transfer arrangement. The residual balance – of £6 billion – represents amounts that will be included in future cash transfers to HMT and amounts held back as an operating buffer, as allowed under the indemnity agreement.

The remaining £63 billion of accounting profit represents unrealised mark-to-market gains on the assets held. This is an accounting valuation and, absent other effects, will decrease as coupon or maturity cash flows are realised and either reinvested or paid over to HMT under the quarterly cash transfer arrangement.

The net amount due to HMT from the APF overall is £69 billion (as reported in the BEAPFF 2019/20 annual accounts). This comprises the realised profit of £105 billion, less the £99 billion transferred already to HMT, plus the £63 billion of unrealised mark-to-market (MTM) gains on the assets held.

A rise in Bank Rate would increase the interest payments on the APF's loan from the Bank. All else equal, this would reduce the net income of the APF, and therefore the value of cash flows transferred from the APF to HMT. At present, we estimate that the APF will transfer cash flows of £30 billion to HMT over the period from March 2020 to February 2023. The table below shows how the value of those cash flows over the same period would change if Bank Rate were to rise immediately by 100bps, 200bps and 300bps.

Scenario	**Cash flows to HMT (£bn)**
Current Bank Rate	30
Bank Rate + 100bps	18
Bank Rate + 200bps	(10)
Bank Rate + 300bps	(35)

Were Bank Rate to become negative, the Bank would make interest payments to the APF on its loan, rather than the APF paying interest to the Bank. This would increase the cash balance held by the APF and so lead to an increase in payments from the APF to HMT. To provide an illustration, if the loan from the Bank to the APF were to be charged at a rate of -0.5%, the cash flows transferred to HMT over the period from March 2020 to February 2023 would rise from £30 billion to £41 billion.

While it is useful to understand the possible size and timing of these transfers to and from the APF, this narrow accounting definition of the financial gain or loss is not a measure of the impact of the scheme on the public sector accounts as a whole.[7] More broadly, the success of the asset purchase scheme should be judged by the degree to which it allows the MPC to meet its objectives, as set out in remit.

Matching Adjustment and other provisions

The concept of the matching adjustment (MA) – which is broadly similar to the Liquidity Premium measure that was recognised in the pre-Solvency II UK insurance prudential regime and was a major influence in having the MA concept introduced into Solvency II – forms an important part of the UK's solvency regime for life insurers. The role of the MA as part of the prudential regime is to reflect more appropriately the specific risk profile of annuity writers.

[7] That is for two reasons. First, it does not take into account the effect of asset purchases on the value of the government's liabilities, or their impact on the government's ongoing financing costs. Second, it does not include the effects on government tax and spending of the fall in yields and boost to economic activity caused by asset purchases.

Solvency II provides that insurers matching long-term illiquid insurance liabilities, such as annuities, with long duration illiquid assets may seek regulatory approval to value these liabilities using the MA. The MA represents an increase in the discount rate used by insurers to value these insurance liabilities (known as 'Technical Provisions' (TPs)). The higher the discount rate, the lower the value of TPs. The European Insurance and Occupational Pensions Authority (EIOPA) proposes Technical Information each quarter, which, once adopted by the European Commission, firms use to calculate the MA. After the end of the Implementation Period, the PRA will take responsibility for publishing the Technical Information required for the MA calculation for UK firms.

The rationale for this increased discount rate is that where firms closely match their illiquid long term liabilities with assets to maturity, the risk of firms needing to sell assets prior to maturity is low. So, unlike many other investors, insurers such as annuity providers are not materially exposed to short term changes in the market price of credit and liquidity risk, and it is appropriate to recognise this when assessing the commitments they have made against the assets they hold to back those commitments. Permitting firms to adjust the discount rate used to value their liabilities with the MA allows them to avoid short-term changes of asset spreads impacting the amount of their own funds. This mitigates not only prudential risk to the firm but also the financial stability risk associated with a number of firms having to sell their assets as market prices fall.

Solvency II is a largely maximum harmonising Directive, which is required to be transposed into domestic law across the EU. This was achieved in the UK primarily through PRA Rules but also through primary legislation (notably the Financial Services and Markets Act 2000) and secondary legislation (see the Solvency 2 Regulations 2015 No. 575 – 'HMT Regulations'). Firms applying to use the MA are robustly assessed against each of the MA eligibility criteria in Regulation 42 of the HMT Regulations (Supervisory Statement 7/18[8] sets out our expectations of firms in respect of application of the MA). In our view, the MA behaved as expected during the financial market stresses of March and April this year.

None of this is to say that the design of the MA is perfect. For example, as we have discussed with the Committee in the past, we consider there is a degree of over-specification in the MA design under Solvency II.[9] As HM Treasury announced on 23 June, the Government also plans to bring forward a review of certain features of Solvency II (including the Matching Adjustment) to ensure that it properly takes account of the structural features of the UK insurance sector. The Government expects to publish a Call for Evidence in Autumn 2020. The PRA will provide its views in response to that call for evidence.

(e) Could the Bank of England please provide further detail of the adjustments you refer to and quantify the extent of these adjustments?

Insurers calculate their MA with reference to the yield of assets they hold within MA portfolios, reduced by an allowance for credit risk. The allowance for credit risk is referred to under Solvency II as the Fundamental Spread (FS), which is currently proposed by EIOPA each quarter with a view to its adoption by the European Commission and varies depending on credit quality. The higher the allowance for credit risk, the lower the amount of MA resulting from the calculation. When the assets insurers hold are downgraded they therefore attract a higher FS. This reduces the amount of MA and in turn increases the value of TPs that represent an insurer's policyholder liabilities. Higher TPs result in lower Own Funds (being the excess value of assets over liabilities), and hence lower solvency ratios. In addition, after they are downgraded, assets will attract a higher capital charge and so a firm's Solvency Capital Requirement (SCR) will increase. This also results in lower solvency ratios.

[8] https://www.bankofengland.co.uk/prudential-regulation/publication/2018/solvency-2-matching-adjustment-ss.
[9] https://www.parliament.uk/documents/commons-committees/treasury/Correspondence/2017-19/PRA-Interim-Response-Solvency-II.PDF

During recent months, life insurers have reported their estimated solvency ratios to the PRA frequently, in many cases weekly or daily. While the life insurance sector has remained resilient, as highlighted earlier in this letter, those solvency ratios have generally reduced, in part due to changes in interest rates and other market risk factors and in part due to changes in asset quality. In fact, the level of defaults and downgrades in relation to assets held by life insurers so far in 2020 has been low. In light of this, the PRA has conducted analysis to investigate firms' resilience to further very severe credit downgrades and defaults and is satisfied that they allow adequately for this risk.

(f) Can you set out why the [sic][10] you mention, such as fixed obligations to annuitants, would 'adjust' downwards in value because a firm's assets have decreased in value?

Where an asset's value decreases (i.e. its yield increases) without a change in its credit rating, the FS will not immediately reflect this change. This is by design, because the FS is intended to be a measure of long-term through-the-cycle credit risk, so does not change in response to short-term fluctuations in asset prices. Consequently, when an asset's yield increases without a change in its credit rating, the FS does not change, so the increase in yield will directly result in higher MA and hence lower TPs. It is only when there is a reduction in the asset's credit rating that the FS increases, which would in turn decrease the MA benefit that can be taken into account in a firm's TPs, and in those circumstances TPs would increase.

The reduction in the asset value would be directly relevant to an investor needing to sell the asset at that time; the MA investor, however, is a 'buy and hold' investor and the risk of needing to sell an asset before its maturity date is very low because the contractual asset cash flows received by the insurer (after allowing for expected credit losses) are still well matched to the cash flows the insurer is required to pay to annuitants. The increased MA, which appears as an offsetting change in the balance sheet value of provisions to pay annuitants, therefore acts to counterbalance the volatility in asset values and reflects the insurer's lower risk exposure.

(g) Does that mean that falls in asset values are discounted or ignored because it is assumed they are drive by illiquidity?

Falls in asset values are not ignored. Where market consensus is that an asset's credit quality has reduced, for example after a sustained fall in value, there is likely to be an accompanying reduction in credit rating and consequential increase in the FS (reducing the MA). As noted above, falls in asset values that are accompanied by reductions in ratings lead to a direct reduction in insurers' solvency.

(h) Can you set out how the PRA can determine that bond spread widening is the effect of illiquidity and not anticipated defaults, or, if both, the breakdown between the two?

The breakdown between credit and illiquidity in the MA calculation is prescribed under Solvency 2, which requires that the MA must not include "the fundamental spread reflecting the risks retained by the insurance or reinsurance undertaking" (Article 77c(1)(b), transposed in Technical Provisions 7.2(2) in the PRA Rulebook).

For assets with credit ratings provided by External Credit Assessment Institutions (ECAIs), the process by which the FS is determined is relatively prescriptive. In that case, the FS depends on the Credit Quality Step (CQS) that is prescribed for the respective external credit rating that applies to the assets. The mapping of ECAI credit ratings to CQS for the purposes of Solvency 2 is set out in the Commission Implementing Regulation (EU) 2016/1799 and 2016/1800. The only judgement required is in relation to the categorisation by asset class. Once a CQS and asset class has been assigned, firms are required by Article 77e(3) of the Solvency 2 Directive to use the corresponding FS set out in the technical information

[10] We assume the intended word was 'liabilities'

published by the European Insurance and Occupational Pensions Authority (EIOPA), where this information has been adopted in an Implementing Technical Standard (ITS).

In contrast, for internally-rated assets there is more judgement involved in determining which CQS, and hence which FS, should apply. However, as in the case of externally rated assets, a CQS mapping for an exposure to an internally-rated asset should reflect all of the sources of credit risk relevant to that exposure. The PRA set out its expectations in respect of the use of internal credit assessments for assigning fundamental spreads in its Supervisory Statement 3/17 (updated April 2020). In broad terms, the starting point for the calculation of the FS is that an internal credit assessment should consider all possible sources of credit risk, both qualitative (e.g. due to strength of the terms and conditions in the loan agreement or a lack of default data) and quantitative (e.g. due to economic stresses), and how these may interact.

As explained in SS3/17, the PRA's view is that the CQS to which an internal credit assessment maps should lie within the plausible range of CQSs that could have resulted from an issue rating given by an ECAI. This is a matter of judgment in each case, but broad consistency between the CQSs resulting from firms' internal assessments and ECAI issue ratings is expected to provide assurance that the FS resulting from the assigned CQS and sector is appropriate and consistent with the Solvency 2 requirements.

Firms are required to hold appropriate assets to cover their TPs and eligible Own Funds to cover their SCR. In combination, these measures protect them against a very substantial level of credit downgrade and default risk. In the TP calculation, as noted above, the FS is a long-term view of credit risk through the credit cycle and its determination is highly prescriptive. In the SCR calculation it is assumed that a substantial element of any spread widening would result in increased FS. This means that insurers hold capital against the risk that all falls in asset values, however temporary, do in fact reflect increased credit risk and lead to increased downgrades and defaults. The PRA would be concerned if it felt that the impact of future defaults and downgrades might exceed the allowance firms hold against this risk. The PRA has therefore had reference to the very severe downgrade and default experience of the 1930s when reviewing the calibration of any internal models used by firms to calculate their SCRs. The actual losses insurers suffered in more recent crises, such as 2008-09, were not as severe as might have been indicated by the level of spread widening seen in those crises.

> (i) If these falls in prices were liquidity driven, would it not be the case that an investor with a long time horizon would buy these assets in the anticipation of certain, or near certain future profits?

Through the MA, Solvency II recognises that UK life insurers will not be forced sellers of the assets used to back annuity liabilities and can therefore ride out short-term fluctuations in asset prices. UK life insurers also hold capital in the form of Own Funds to cover their SCR which protects them from the risk that what was thought to be liquidity-driven falls in asset prices turns out to be credit-driven. Other investors with a similarly long investment horizon, and with similar access to long-term secure funding, could follow a similar investment strategy. Such investors could, in some cases, expect to make increased returns by forgoing the ability to realise an asset's value at short notice.

> (j) How is the view that the increases in spreads are due to illiquidity and therefore should be discounted using the matching adjustment, consistent with your answer in which you stated that "Corporate downgrades have happened already, and defaults, and those are painful"?

These points are not mutually exclusive. As noted above, insurers match liability cash flows with asset cash flows after the deduction of an allowance for credit risk. When that deduction increases, for example after an asset downgrades or defaults, a cash flow gap will appear and firms will need to use shareholder funds to plug that gap. Firms will therefore have already incurred some financial cost in replacing any lost asset cash flows due to downgrades and defaults already seen during 2020.

Other assets, that have neither downgraded nor defaulted, will continue to contribute to a firm's MA after deduction of FS that continues to reflect a long-term view of credit risk. As noted above, firms hold substantial capital against the risk that their future downgrade and default experience is worse than anticipated. Also see (g) above – where the fall in asset value is sustained and the market is reflecting (via a change in rating) a reduction in the asset's credit quality rather than liquidity, then the MA mechanism reflects this and the MA benefit from those assets reduces.

(k) You told us that you thought there would be no insolvencies in the absence of the Matching Adjustment. Can you confirm this is the case?

As Sam Woods said in his evidence in April, the MA is a major part of our regime, worth £68bn to firms at end-2018, and its removal from the regime would therefore result in a major problem. It is, however, implausible that the MA would simply be removed overnight. For such a material change to the solvency regime, transitional arrangements would be put in place given the impact of removal and also the long-term nature of the annuity business to which the MA is applied. By way of a reference point, the transitional arrangements for the introduction of Solvency II itself run for 16 years from the start of the regime. Even if the MA were removed, we would want to incorporate some benefit in our solvency regime which reflects the risk profile of annuity writers as 'buy and hold' investors - under the previous Solvency I regime we had a similar feature in the form of the 'Liquidity Premium'.

More narrowly on the impact of the MA on firms' solvency, it is necessarily the case that, if the size of a firm's MA benefit exceeds its Own Funds (which is broadly the excess value of assets over liabilities) then the mechanical and instantaneous removal of the MA benefit without allowing for other mitigating actions would result in negative Own Funds. Firms are required under rules transposing Solvency II requirements to disclose the impact of removing MA in their regulatory reporting. On the reported impact of MA removal (without allowing for existing Solvency II actions), a small number of firms would have negative Own Funds at end 2018. This does not include any of the very largest UK life insurers. This quantification is, however, somewhat artificial, as it does not take into account other measures that could realistically be implemented to mitigate the effects of the loss of the MA benefit (e.g. additional Solvency II transitional relief and the 'volatility adjustment').

(l) If the Matching Adjustment were no longer available to insurers, what would the response of firms need to be?

As noted above the PRA considers it implausible that the MA would be completely removed from the regime, and even if it were removed there would undoubtedly need to be a proper transition period. However, if the MA were completely removed, the cost of writing annuity business would likely be prohibitively expensive. Some writers might look to reinsure investment risk outside the UK's regulatory regime as has happened for longevity risk in response to the cost of the risk margin. In this scenario the PRA would not be able to directly oversee the safety and soundness of the reinsurer and this could potentially reduce the effectiveness of protecting policyholder security.

Looked at from a policyholder point of view, the pricing of annuity business could be expected to increase substantially, which would reduce the options for retirees' planning of their retirement financing; although many retirees make use of the new pension freedoms, a significant proportion may still want the guaranteed income from an annuity policy as part of their portfolio. The increase in pricing would also curtail the pension scheme buyout market; on buyout by an insurer, the security of pension benefits is actually increased so this would also not be in the interests of scheme members.

Insurers writing annuity business are natural investors in long term infrastructure and this source of funding would likely cease or be very significantly reduced. The equity release mortgage market would also likely close which would further reduce retirement funding options for older homeowners.

The Treasury Committee has already taken a keen interest in questions around the MA, given its important role in the UK regime. In its 2017 report on the PRA's implementation of Solvency II, the Committee noted the frictions and tested whether the regulation itself and/or the PRA's approach to areas such as the MA was overly stringent. For example, the Committee commented that:

> *'It also identified several areas where Solvency II is believed to be inhibiting competition and/or competitiveness. The Committee recommends that the PRA and industry should review how they can communicate more closely with each in addition to the more formal consultation procedures. Earlier, more frequent and possibly more informal communication might have resolved the current difficulties at an earlier stage. A widely quoted example was the annuity market, where difficulties relating to the Risk Margin and the Matching Adjustment have led some firms to exit the market, and others to reinsure significant amounts of business overseas' (3.54); and*
>
> *'The Matching Adjustment has given some relief to the industry in that it attempts to reflect the long term nature of assets matching long term liabilities. Nevertheless, the Adjustment is a "workaround" solution, bolted on to the core Solvency II rules, which is cumbersome, and unnecessarily constraining. For these reasons, the PRA needs to conduct a fundamental review of the Matching Adjustment and its eligibility criteria, in order to achieve a more principles-based approach to the Matching Adjustment' (5.119).*

The Matching Adjustment is a topic that has raised considerable interest, not only from your Committee. There has been active lobbying of the Bank both for more and less stringency in its design. I believe both positions are misplaced, but as my colleagues and I have said before to your Committee, there are areas where the Matching Adjustment does need revision and we will take these issues forward within the Government's review of Solvency II.

Bond purchase programme

> m) At your appointment hearing before the Treasury Committee you made a commitment, as a priority, to discuss with the Treasury the possibility of shifting the Bank's purchases of corporate bonds away from assets inconsistent with meeting the net-zero target. Why has the latest round of Bank of England corporate bond buying continued to include carbon intensive companies? Have you had the relevant discussions with the Treasury yet, and does this remain a priority commitment?

The MPC's actions are guided by statutory objectives as well as a remit set by Parliament and the government of the day. These objectives are for the economy as a whole and are not specific to particular sectors. The government's latest MPC remit letter does not specify a climate objective.

The Corporate Bond Purchase Scheme was launched in August 2016 as part of a comprehensive package designed to stimulate the UK economy as a whole. The Bank purchased £10bn of corporate bonds in proportion to the amounts outstanding in the market, with no tilt to or away from specific sectors. On 19 March 2020, the Monetary Policy Committee (MPC) decided to increase its holdings of both UK government and corporate bonds by £200bn, of which around £10bn is expected to comprise of corporate bonds. Of the corporate bonds, £0.3bn, or 3%, were issued by companies involved in energy extraction. Taking into account our wider purchase of government bonds, these energy bonds make up less than 0.1% of the overall amount of the Bank's asset purchases.

The Bank has regular discussions with HM Treasury on the CBPS. We recognise that there is a very strong argument for the greater inclusion of climate considerations in the Bank's policy operations and at my appointment hearing, I said the Bank would discuss this with the Treasury as a matter of priority. That commitment holds, but it has necessarily had to be put back on account of responding to the Covid crisis.

Illiquid funds

> n) Four years ago the Treasury Committee highlighted the risks posed by the mismatch between the liquidity of assets in some funds, and the promises made on how quickly investors could redeem their investments within those funds. These issues were acknowledged by the then Governor as valid concerns. Given this issue persists today, could you please outline why after four years this issue has not been resolved, what is being done, and how long any action will take?

In 2015, the FPC carried out an in-depth assessment of vulnerabilities associated with activities of open-ended investment funds – its first in-depth assessment linked to its annual review of risks and regulation beyond the core banking sector. Subsequent in-depth assessments included market liquidity; insurance companies; derivatives and non-bank leverage. Other non-bank areas the FPC has been monitoring closely include for example Fintech; financial firms' use of third-party cloud service provision or 'fast markets', including risks from flash episodes. Given the interconnectedness of global financial markets, the Bank has also been closely involved in relevant international work on market-based finance – in particular by the Financial Stability Board (FSB).

As part of the FPC's medium-term priority to improve the assessment of systemic risks across the financial system set out in the June 2017 FSR, the FPC supported the Bank's work to develop system-wide stress simulation, to help understand how the financial system as a whole is likely to respond to shocks. Relatedly, we have presented and published[11] a model for assessing how the UK's system of market-based finance – an increasingly important source of credit to the real economy since the financial crisis – might behave under stress. The core of this model is a set of representative agents, which correspond to key sectors of the UK's financial system. Our model generates 'tipping points' such that, if shocks are large, or if headroom relative to constraints is small, lower asset prices can cause solvency/liquidity constraints to bind, resulting in forced deleveraging and large endogenous illiquidity premia. Our findings highlighted the key role played by broker-dealers, commercial banks, investment funds and life insurers in shaping these dynamics, and we have raised and discussed this work in international fora.

The FPC has published and presented recommendations and conclusions regularly on the Bank's financial stability report with respect to non-bank financial intermediation. This was with the aim to assess the resilience sector as well as contribute to the international discussion on these topics. For example, the FPC presented in the Q2 2018 FSR[12] information on non-banks use of repo borrowing, and raised the importance of having appropriate measures for hedge funds leverage in order to monitor the potential financial stability risks from fund leverage. The latter has also been discussed in international context with the aim to catalyse consistent approaches to hedge-fund leverage, and work continues internationally on the topic.

Open-ended funds during COVID

The liquidity stress during the COVID episode caused open-ended funds to experience large outflows, underlining some of the vulnerabilities identified by the FPC. It will be important to take the lessons from this episode into account, and look at specific fund types such as MMFs

The COVID19 stress led to a sharp increase in uncertainty and deterioration of the economic outlook and financial market conditions. As a result, there were very large and sudden changes in the prices of a range of financial assets. And a 'flight to safety', in which prices of risky assets fell and prices of advanced-economy government bonds increased, became an abrupt and extreme 'dash for cash' in mid-March. In this period, investors' demand for cash and near-cash assets rose sharply.

[11] https://www.bankofengland.co.uk/working-paper/2019/system-wide-stress-simulation
[12] https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2018/november-2018.pdf

This demand for cash exacerbated withdrawals from investment funds. Globally, open-ended funds experienced very large outflows, particularly in equity, corporate bond and emerging market (EME) funds. For some asset classes (e.g.UK high yield and EME) they were larger than observed in the global financial crisis (GFC)[13]. As the FPC has highlighted, there may be financial stability risks if investors perceive an advantage to redeeming ahead of others (i.e. a potential first mover advantage) in a stress and this causes large outflows that result in forced asset sales.

During March, large differentials between headline prices of open-ended funds and exchange-traded funds (ETFs) in equivalent assets could have indicated the extent of a potential first-mover advantage for investors in open-ended funds. And there was evidence that open-ended fund investors acted procyclically – i.e. they are more likely to sell assets following price falls than other investors.

Funds used discretionary tools to reduce the risk of this dynamic. For example, in Europe including in the UK, many funds adjusted pricing to reflect the potential dilution effects of redemptions for remaining investors (so-called 'swing pricing'). This may have mitigated the potential risks. However, these measures were not applied consistently across funds or across jurisdictions. Assessing this and reviewing lessons learnt from this stress episode will be important in the next steps of the FCA/BoE review on open-ended funds.

Many UK property funds (representing around US$25 billion of Assets Under Management (AUM)) suspended or deferred redemptions, due to material uncertainties in valuing property. Valuation uncertainty was also cited as the cause for suspension of several EU funds (incl. high yield, corporate bonds and equities). This was in line with the FCA's September 2019 Policy Statement which includes a requirement for funds investing in property and other immovables to suspend dealing if there is material uncertainty about the value of at least 20% of the fund's assets.[14]

The FPC had previously highlighted the liquidity mismatch between redemption terms and the liquidity of some funds' assets and in 2019 commissioned a joint review by the FCA and the Bank into mitigating the associated financial stability risks. These risks stem from the potential advantage to investors who redeem ahead of others in a stress. The incentive to redeem ahead of others would be particularly strong if investors anticipate that the price of a unit in the fund may not yet factor in the latest information, with further adjustment to come once assets are sold, possibly at a large discount if markets are illiquid. If this causes large redemptions, it could result in forced asset sales by funds, which could test markets' ability to absorb them and may further amplify asset price moves. Funds have discretionary tools to reduce the risk of this dynamic, such as the ability to adjust pricing to reflect the potential dilution effects of redemptions for remaining investors (so-called 'swing pricing') and the ability to suspend redemptions. However, these measures are not applied consistently across funds or across jurisdictions, and fear of future suspension can further reinforce the incentive for investors to redeem.

The episode was also significant for one particular sector within the fund industry – money market funds (MMFs). In mid-March prime MMFs (those that invest largely in non-government assets) experienced large outflows globally.

In the US, outflows were driven primarily by a reallocation from prime MMFs to government MMFs, as investors became concerned about prime funds' declining net asset values (NAV) and the possibility of liquidity fees or redemption gates being applied as funds' liquidity positions worsened. Prime and

[13] UK HY: -1.05% COVID vs. -0.89% GFC; UK IG: -2.93% COVID vs. -0.56% GFC; GBP IG and HY March outflows were $1.6 billion and $60million respectively, corresponding to 2.93% and 1.05% of sample AUM respectively; EM ~-12% AUM outflows w1 through week 4 COVID vs. ~-6% w1 through w4 GFC

[14] Unless fund managers agreed with the depositary that continued dealing was in the investors' best interests. https://www.fca.org.uk/news/press-releases/fca-confirms-new-rules-certain-open-ended-funds-investing-inherently-illiquid-assets

municipal MMFs experienced a peak to trough fall in AUM of $120 billion compared to a starting AUM of $800bn (a 15% fall).

- While prime MMFs offered to institutional investors are required by post-crisis reforms to maintain variable pricing ('VNAV'), their share prices typically stay close to one (as proceeds are returned to investors), and for some funds these prices fell below one during March. Retail prime funds also saw large outflows.

- Prime funds can choose to impose liquidity fees or redemption gates if Weekly Liquid Assets fall below 30%. Government funds do not apply gates or fees.

In response the Federal Reserve introduced the money market liquidity facility (MMLF) The MMLF finances US depository institutions to buy back USD-denominated assets from MMFs. (As at April 14, the Federal Reserve's MMLF had a usage of $51bn.)[15]

In Europe, MMFs also suffered large outflows following withdrawals with sterling MMFs seeing a 9% weekly outflow from 16 March.

The withdrawals from sterling MMFs were mainly from life insurance and pension funds facing margin calls in volatile market conditions, but MMFs also reported smaller withdrawals across all investors from corporate and local authorities as they withdrew cash through the uncertain period. Some MMFs saw a peak to trough fall in assets over 20% (between 12-20 March).

At the same time, MMFs found their own ability to generate additional liquidity constrained, as some of the assets they hold (such as commercial paper) could not be sold under strained market conditions. Given investors regard holding MMF units as cash-like and generally redeemable on demand, these outflows represented a liquidity mismatch.

These outflows caused some MMFs to get close to regulatory limits, in particular holding 30% of the fund in weekly liquid assets. Under the EU MMF regulation, MMFs may decide to apply liquidity management tools (such as gates, liquidity fees or suspensions) if weekly liquid assets fall below 30% and daily net redemptions are more than 10%. (The fund's Board may also decide to take no action). If weekly liquid assets fall below 10%, liquidity fees or suspensions are mandatory.[16]

Since then, as market volatility has subsided in response to central bank actions globally, Sterling MMFs have improved their liquidity positions and buffers by allowing assets to mature and reinvesting in short-dated deposits, as well as via a resumption of investor inflows.

MMFs also demonstrated the interconnections across borders of some fund structures. The majority of Sterling MMFs are domiciled in Luxembourg and Ireland. Therefore, it will be important to review the performance of MMFs during this episode through international fora.

FPC actions

The FPC has been actively engaged with this issue since 2015. The FPC noted that some open-ended investment funds can have liquidity mismatch and that investors' and fund managers' procyclical behaviour could amplify shocks. The FPC also highlighted data gaps around funds' use of leverage, particularly through their use of derivatives, and, as discussed above, supported the Bank's work on system-wide stress simulations and incorporating the activity of investment funds into this work. The Bank has also inputted into global work on systemic stress simulations carried out by the FSB.

[15] https://www.federalreserve.gov/publications/files/pdcf-mmlf-and-cpff-4-24-20.pdf
[16] Although some fund websites reported buffers less than 30%, and some very small funds saw daily outflows greater than 10%, we are not aware of a fund meeting both conditions for apply liquidity management tools.

Given a significant proportion of asset management activity is located in overseas jurisdictions where the FPC lacks policy levers and given the benefits of an internationally coordinated approach, the FPC previously underscored the importance of international work via FSB and IOSCO. This helped catalyse international work, with the FSB setting in train work to consider financial stability risks from asset management activities. This culminated in the FSB's 2017 recommendation that funds' assets and investment strategies should be consistent with their redemption terms.

Following this, the FPC launched in July 2019 a joint FCA/BoE in-depth review in open-ended funds liquidity mismatch, which aimed to consider the appropriate policies for the UK financial system.

In the December 2019 Financial Stability Report[17], the FPC set out initial findings of the joint review and identified that, if greater consistency between the liquidity of a fund's assets and its redemption terms is to be achieved, three principles needed to be considered: (i) a form of liquidity classification; (ii) a pricing adjustment that reflects the discount needed to sell the required portion of a fund's assets in the specified redemption notice period; (iii) and redemptions' notice period that reflects the time needed to sell without discounts beyond those captured in the price received by redeeming investors.

A survey of fund practices, due to launch in Q1 2020, was paused due to the Covid-19 pandemic. The FPC will consider next steps in due course. The review is currently taking stock of the March stress event and the Bank and FCA have continued to engage in international discussions of the matter.

More generally, as highlighted in December 2019 FSR, whilst the UK is the ninth largest domicile[18] for funds globally, around two-thirds of UK assets held by open-ended funds are held by funds domiciled in other jurisdictions; and for UK-domiciled funds, around half of their fixed-income assets are foreign assets.

Therefore, whilst there are some elements will be taken forward domestically with the FCA, the international dimension remains important. The effectiveness of domestic policy measures will depend in part on the policies implemented in other jurisdictions and UK regulators will continue to engage with the relevant international bodies to achieve consistent implementation of the FSB 2017 recommendations.

In addition, and as stated in the Q4 2019 FSR, changes resulting from the joint BoE/FCA open-ended funds review should also promote funds' ability to invest in illiquid investments, helping to increase the supply of productive finance to the economy through the business and financial cycles, in line with the FPC's secondary objective. The forthcoming FSR will set out the FPC's response to Covid-related issues with respect to open-ended funds and will lay out the next steps for the review.

I hope that you find this information helpful.

Yours sincerely,

[17] https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2019/december-2019.pdf
[18] European Funds and Asset Management Association, International Statistical Release (2019 Q2).