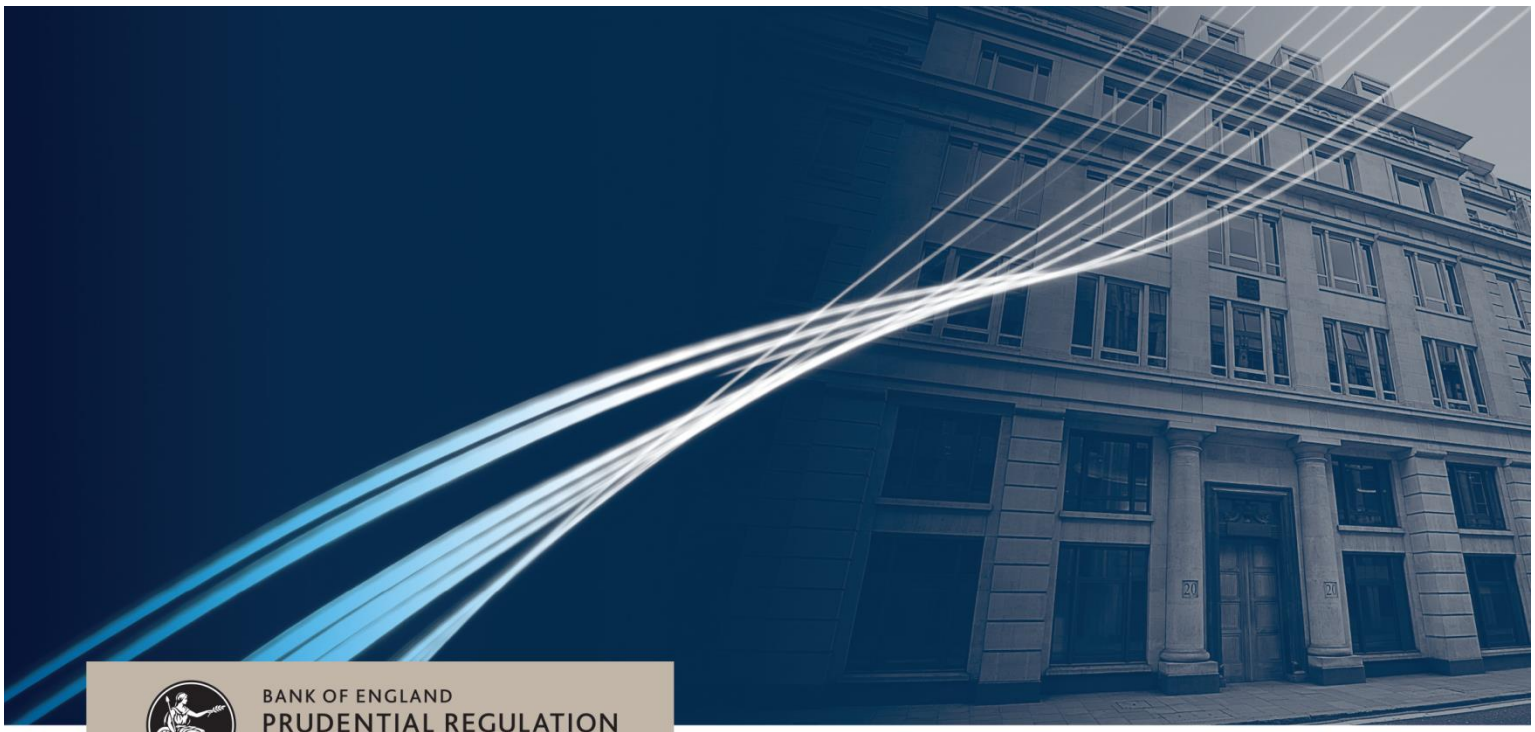

BANK OF ENGLAND
PRUDENTIAL REGULATION AUTHORITY

Discussion Paper | DP1/16

Equity release mortgages

March 2016

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Responses are requested by Friday 27 May 2016.

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Contents

1 Overview

1.1 In this discussion paper (DP), the Prudential Regulation Authority (PRA) asks for views on equity release mortgage (ERM) valuation, capital treatment, risk management and associated matters. The PRA seeks a range of views on good practice for managing the risks introduced by investing in this asset class.

1.2 The PRA previously indicated its intention to begin a review of ERMs in its 6 November 2015 Solvency II Directors' update.[1]

1.3 This DP is most relevant to life insurance and reinsurance companies with ERM exposure. For brevity, the term 'insurers' includes reinsurers in the remainder of this document. It will also be of interest to other industry stakeholders (including, without limitation, banks, building societies, other lenders, trade bodies, brokers, credit rating agencies, consultants, actuaries and auditors) and academics. By opening the discussion to a range of stakeholders, the PRA is aiming to consolidate views from across sectors.

1.4 Chapters 2 to 6 are relevant to all stakeholders. However, the discussion in Chapter 7 of restructuring ERMs in connection with the Solvency II matching adjustment (MA) is aimed at insurers and related stakeholders, rather than banks and building societies.

1.5 Discussion questions are listed in the main body of this paper. The PRA is seeking respondents' own opinions rather than their understanding of market practice. Following receipt of responses, the PRA may invite some respondents to participate in further discussions (either in writing or in person) with the aim of clarifying their responses. The PRA will consult further where it considers that policy or supervisory proposals are warranted.

1.6 The discussion process is compatible with the PRA's statutory objectives under the Financial Services and Markets Act 2000 (FSMA): to promote the safety and soundness of PRA-authorised firms;[2] and in the context of insurance, to contribute to policyholder protection.[3] Consideration of conduct issues is outside the PRA's remit.

1.7 The PRA is required to perform a cost benefit analysis in respect of proposed rules. This DP does not propose additional rules, but the PRA would like to understand, from the answers of firms with ERM exposure or other stakeholders, the materiality of the points raised, including any expected impacts on other illiquid assets.

1.8 References to and quotations from the PRA Rulebook, other regulations, International Financial Reporting Standards (IFRS) and Financial Reporting Standards (FRS) under UK Generally Accepted Accounting Principles (UK GAAP) were correct at the time of writing but may not remain so indefinitely.

1.9 The PRA invites answers on the questions set out in this DP, which for ease of reference are collated in an appendix to this DP. Please address any comments or enquiries to DP1_16@bankofengland.co.uk. This discussion process closes on Friday 27 May 2016.

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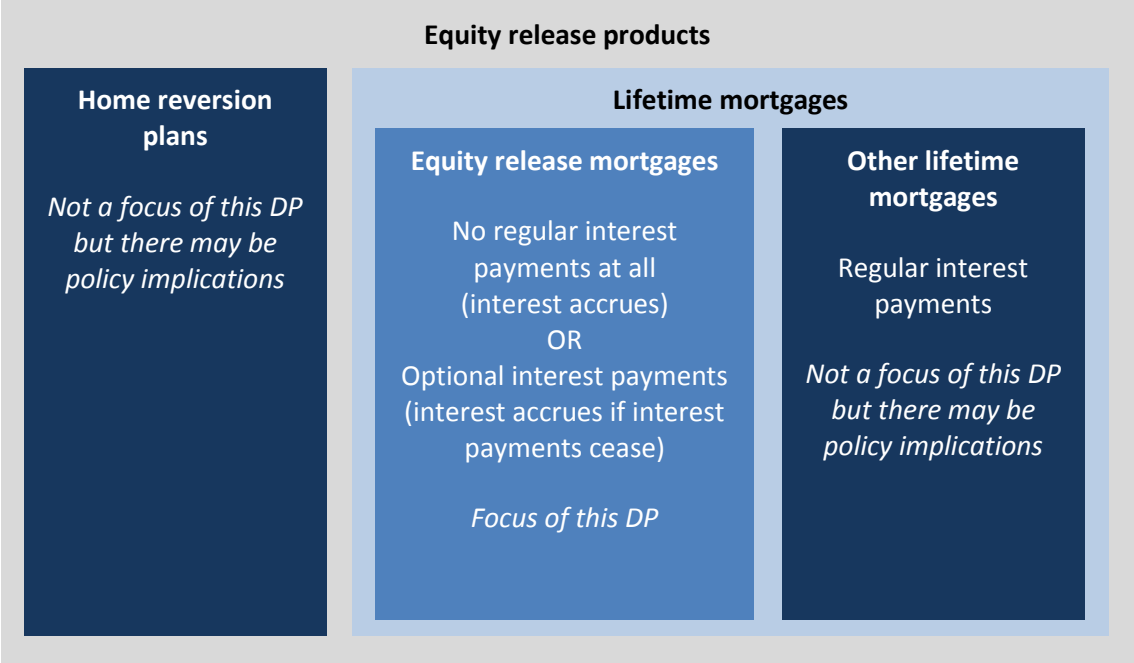
1 See www.bankofengland.co.uk/pra/Documents/solvency2/insdirectorsletter11nov2015.pdf.
2 See s.2B FSMA.
3 See s.2C FSMA.

2 Introduction

2.1 ERMs are a type of lifetime mortgage. This DP is directly relevant to lifetime mortgage products with the following features: they are restricted to older customers, they do not have a fixed term, they generally have a no negative equity guarantee, and there is no obligation to make regular interest payments on the capital. For simplicity, this sub-set of equity release products is referred to as 'ERMs' for the purpose of this paper, but the PRA is aware that other definitions of ERMs are used in the industry. Other forms of lifetime mortgage may involve interest payments throughout the mortgage term, but are not covered directly by this DP. Figure 1 below is an illustration of different types of equity release product.

Figure 1: Equity release products



2.2 On 6 November 2015 the PRA published a Solvency II Directors' update[1] stating that during 2016 it would undertake an industry-wide review of ERM valuations and capital treatment. The Directors' update referred to mark-to-model assets more generally but specifically mentioned ERMs, where there are particular challenges and a range of perspectives on the degree of risk embedded in ERMs and how they should be valued. This DP is the first part of this review.

2.3 The format of this DP is a series of questions about ERM valuation, risk management and capital treatment, and, for affected insurers, the Solvency II matching adjustment. The PRA is seeking your views on good practice.

2.4 ERM industry stakeholders (including without limitation life insurers, banks, building societies, other lenders, trade bodies, brokers, credit rating agencies, consultants, actuaries and auditors) are invited to participate in the DP by providing answers to the questions. The PRA also invites responses from academics, particularly those with experience of property valuation and the valuation of contingent claims in incomplete markets.

1 See www.bankofengland.co.uk/pra/Documents/solvency2/insdirectorsletter11nov2015.pdf.

2.5 While the PRA is focusing on the types of ERMs discussed in 2.1, there may be policy implications for other forms of equity release and other illiquid mark-to-model assets, in keeping with the intention of the Directors' update.

2.6 This DP does not propose a new framework or policy for treatment of ERMs. However, the PRA will take responses to this DP into account as part of any further consultation it may undertake relating to policy or supervisory guidance affecting matters covered by this DP.

3 Introduction to ERMs

3.1 ERMs allow capital to be released from residential properties without requiring the property to be sold. ERMs are loans secured by way of a mortgage on a residential property, repayable on 'exit' (death; or move to a care home; or voluntary repayment, either for an individual borrower or a couple) rather than at a fixed maturity date. In the United Kingdom (UK), loans are advanced as a lump sum, or through flexible drawdown facilities. In general it is possible to 'port' ERMs from one property to another if the borrowers wish to move house, subject to certain restrictions, which may include a requirement to make a partial repayment of the outstanding loan.

3.2 Loan interest is generally at a fixed rate, but can be variable or vary subject to a cap. In general, interest accrues to the loan balance without regular payments being made, so that the final repayment is larger than the amount lent, often significantly so. Sometimes interest payments can be made and these may be lower than the interest that would otherwise accrue. Such interest payments can be terminated by the borrower, in which case interest starts to accrue again. The accruing nature of the interest leads to the name 'reverse mortgage' being used in some territories.

3.3 In the UK, there is often a guarantee that on certain forms of repayment any excess of the accrued loan amount above the (sale) value of the property will be written off or waived by the lender, subject to certain conditions. This is known as a 'no negative equity guarantee' (NNEG). For an ERM product to meet the Product Standards within the Statement of Principles of the Equity Release Council,[1] it must incorporate a NNEG. This means the NNEG has become a standard feature of the UK ERM market.

3.4 ERMs receivables are held – either directly or indirectly – by a range of different financial institutions, including life insurers, banks, building societies and other lenders. ERMs require long-term funding that is sufficiently flexible to adapt to the timing and amount of repayments, both of which may vary from expectations. In particular, annuity writers have liabilities with long-term and relatively predictable cashflows. So (taking into account their other capital and liquidity resources) some of these firms consider that cashflows from a suitable portfolio of ERMs offer a sufficiently good match for some of their annuity liabilities and provide a good risk/return trade-off, given the long duration and reasonably predictable cashflows of a sufficiently large portfolio of ERMs.

3.5 In the UK, ERMs are not actively traded in a secondary market, although the PRA is aware of some bilateral transactions between firms. Some ERM holdings have been externally securitised in the past, but the PRA is not aware of widespread use of securitisation as a means of funding ERMs in the UK.

1 See www.equityreleasecouncil.com/ship-standards/statement-of-principles/.

3.6 It is common for lenders to require properties to be insured and maintained as part of the loan terms and conditions. There is a risk that maintenance may reduce over time as borrowers become older and potentially cash-poor, and the financial interest of the borrowers in the property reduces. This 'dilapidation risk' may lead to the performance (as an asset) of residential properties connected with an ERM being inferior to the performance of similar properties that do not have such a connection. Conversely, if the loan advanced is used to improve the property, then performance may be superior to similar but unimproved properties.

3.7 The responsibility for the sale of the property upon exit may, in some circumstances, rest with the lender who, for risk management purposes, may be willing to reduce the sale price in order to reflect a 'quick sale discount' on a vacant property, subject to obtaining the best price for the owner within reasonable timescales. If so, this will further increase the value of the NNEG. There may be a relationship between the desirability of offering a quick sale discount and market-wide movements in house prices.

3.8 Part of the loan interest rate can be considered as a charge for the cost of the NNEG. Higher interest rates lead to higher NNEG costs, other things being equal, and so (depending on how the ERM is priced) there is potentially a limit to how much the cost of the NNEG can be recouped through an increase in interest rates. Lenders therefore control their overall exposure to NNEGs primarily by restricting loan-to-value (LTV) ratios. LTVs are typically age-dependent, with LTVs lower at younger ages and increasing with age, reflecting changes in expected exit rates. Some lenders offer to advance larger amounts to borrowers in poor health, based on medical underwriting.

3.9 From the provider's point of view, the future value of the ERM at any given exit date depends on whether or not the NNEG bites. If the NNEG does not bite, the loan plus accrued interest is repaid to the provider in full; if it does bite, the repayment is restricted to the value of the property. Thus the present value of the ERM is equal to the sum of: (i) the present value of the loan plus accrued interest at exit date, if and only if the NNEG does not bite; and (ii) the present value of receiving the property, if and only if the NNEG does bite. The computation of this involves, amongst other things, estimating the present value of receiving the property at exit, and – in order to estimate the probability of the NNEG biting – the volatility of the underlying property price.

3.10 Thus when the probability of the NNEG biting is low (typically at shorter durations) the value of the ERM approximates to the present value of receiving the loan plus accrued interest at exit. When it is high (typically at longer durations), the value of the ERM approximates to the present value of receiving the property at exit. Note that the present value of the ERM can never exceed the present value of receiving the property at exit, where a NNEG is in place.

3.11 The proportion of loans assumed to exit at any given date depends on the probabilities of death, entry into long-term care and early repayment. The mortality experience of the remaining borrowers can be expected to change as borrowers go into long-term care.

3.12 The challenges of valuing ERMs include estimating exit probabilities, estimating drawdown rates (for products permitting future drawdowns) and setting property-related assumptions. In addition, appropriate discount rates need to be set for the cashflows being valued. Some of these challenges are explored in the chapters that follow.

3.13 The former Individual Capital Adequacy Standards (ICAS) regime permitted insurers to derive a liquidity premium directly from ERMs. Where appropriate, this led to a reduction in the value of liabilities backed by ERMs. The current Solvency II regime has a similar concept in the form of the matching adjustment, but with more prescriptive rules than ICAS. In particular, ERMs do not have fixed cashflows and so do not meet the Solvency II eligibility criteria for inclusion in an MA portfolio. This has led some firms to restructure their ERM portfolios to meet these eligibility criteria, as discussed further in Chapter 7. To assist with the transition from ICAS to Solvency II, the PRA published guidance to firms on ERM restructuring, for example in the Insurance Supervision Executive Director's letter of 20 February 2015.[1]

Question 1: (i) Which of the challenges in paragraphs 3.12 and 3.13 do you consider to be the most and least significant?

(ii) What additional challenges should be considered?

(iii) Where you have identified significant challenges in parts (i) and (ii) above, what solutions would you recommend?

4 ERM valuation – use of relevant market inputs

4.1 In this DP, the PRA is primarily concerned with 'fair' value to the extent it impacts prudential requirements for valuation. For insurers, the PRA's rules on valuation are set out in Valuation 2.1 of the PRA Rulebook, and the requirement is to value 'assets at the amount for which they could be exchanged between knowledgeable willing parties in an arm's length transaction'. IFRS 13 defines fair value as 'the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date'. For firms reporting under UK GAAP, FRS 102 defines fair value as 'the amount for which an asset could be exchanged, a liability settled, or an equity instrument granted could be exchanged, between knowledgeable, willing parties in an arm's length transaction'.

4.2 ERMs have uncertain cashflows, complex-to-value embedded features (for example, the NNEG) and are not actively traded. The lack of active trading means fair valuation is usually on a 'mark-to-model' basis, with a requirement to maximise the use of observable market inputs, and, depending on the purpose of the valuation, with adjustments applied. IFRS 13 states that 'valuation techniques used to measure fair value shall maximise the use of relevant observable inputs and minimise the use of unobservable inputs'.

4.3 The PRA has observed that firms writing ERMs typically restrict the initial valuation to the amount lent (which is a transaction price observed in a market), for example by including a spread of appropriate size when discounting ERM cashflows, and updating the valuation (including the spread, where appropriate) to allow for new information affecting the valuation as it emerges.

1 See www.bankofengland.co.uk/pra/Documents/solvency2/fisherermletterfeb15.pdf.

4.4 As noted in paragraph 3.13, insurers that restructure their ERM holdings to be eligible for the Solvency II MA are able, where MA approval is granted, to reduce the value of eligible liabilities backed by the restructured ERMs. The PRA has observed that this reduction on the liability side partially offsets the reduction in asset-side value arising from the restriction of the initial value of unrestructured ERMs to a transaction price (highlighted above in paragraph 4.3). This is discussed further in Chapter 7.

4.5 IFRS 13 establishes a fair value hierarchy that categorises the inputs to valuation techniques used to measure fair value into three levels. These range from quoted prices in active markets (Level 1 inputs) to unobservable inputs (Level 3 inputs). The fair value measurement of assets is then categorised at the lowest level input that is significant to the entire measurement.

Question 2: (i) Which ERM valuation inputs do you think should be classified as Level 1, 2 and 3?

(ii) Which of these are, in your view, most significant to the valuation?

(iii) What other considerations and controls do you believe should be in place when classifying the valuation of inputs and the ERMs as Level 1, 2 or 3 (as defined in IFRS 13)?

Exit uncertainty

4.6 Assumptions about exit dates affect the valuation of repayments, charges and expenses, as well as the valuation of the NNEG.

4.7 The exit date for any particular ERM is highly uncertain, depending on the mortality, entry into long-term care or early repayment decisions of the individual borrower. Pooling a substantial number of ERMs leads to greater confidence around the proportion of the portfolio that might exit in each future period, although some uncertainty remains. Furthermore, even if the portfolio is large enough that actual exit rates experienced in future years will be materially the same as the rates of mortality, long-term care and early repayments in the relevant population generally, there remains considerable uncertainty around the estimates of the population exit rates themselves.

Question 3: To what extent could a small portfolio lead to a material concern about the experienced exit rates? Do you think a small portfolio size should be considered a source of valuation uncertainty? Please outline any quantitative analysis or research that would justify your views.

Question 4: Please rank the three types of exit (mortality, long-term care and early repayments) by (1) financial impact and (2) degree of uncertainty, and provide commentary for the rankings. The PRA invites submission of examples of what you consider to be good practice in respect of setting assumptions for long-term care rates, as there is generally less data available to forecast long-term care rates than rates for the other exit types.

Question 5: How should fair values of ERMs reflect compensation for the uncertainty in exit rates? Please share evidence from actual transactions, if possible.

NNEG

4.8 The valuation of the NNEG is central to the valuation of the ERM as a whole. Many firms regard the NNEG as consisting of a series of written 'put options'. This is because the firm waives any excess of the loan amount above the value of the property on exit, which can be regarded as selling the property to the firm for a minimum of the loan amount even when the property is worth less than this. The put options are conditional on exit taking place in a given future period, with the probability of exit being applied to the NNEG cost conditional on exit.

4.9 The following two relationships hold regardless of whether or not the NNEG is construed as a series of put options, or whether it is valued any other way. First, the present value of an ERM payoff at an assumed exit date cannot exceed the present value of receiving the property at that date where a NNEG applies (because the NNEG restricts the loan repayment to the value of the property, as discussed in paragraphs 3.9 and 3.10). Second, the value of having immediate possession of the property is higher than the present value of receiving the property at some point in the future (put differently, deferral of possession leads to a reduction in current value, arising from foregone income or inability to use an asset).

Question 6: (i) How should ERM valuation reflect the relationships in paragraph 4.9?

(ii) Other than cases where the loan advance is used to improve the property, are there any circumstances in which you believe these relationships would not hold?

Question 7: (i) If alternative valuation methods are used (ie where quoted market prices in active markets are not available), how should the parameters of valuation models be calibrated in a way that demonstrates consistency with the requirement of Solvency II Delegated Regulation ((EU) 2015/35) Article 10(6) to 'make maximum use of relevant market inputs'?

(ii) Please include a discussion of what you consider is good practice in relation to deriving appropriate inputs for current and future property prices (including how the assumed total return is shown to be appropriate, having regard to assumptions around rental yields, reduced to allow for expected associated management costs and void periods), property volatility, dilapidation adjustments, sales costs, timing of sales and the discount rate.

(iii) The list of parameters in (ii) is based on valuation methodologies the PRA has seen used by the life insurance industry and in academic papers. Please include any other parameters that you consider may be relevant to the valuation of the NNEG.

4.10 Regarding the valuation of the NNEG, or the allowance for the NNEG in the valuation of the ERM, both IFRS 13 and Solvency II Delegated Regulation Article 10(6) refer to the use of unobservable inputs reflecting the assumptions that market participants would use when pricing the asset or liability, including assumptions about risk. In the absence of deep, liquid and transparent markets, market participants typically consider criteria or factors such as the risk premium that might be required by a hedge provider, frictional costs, cost of the capital required to bear any non-hedgeable risk, likely bid-offer spreads, etc.

Question 8: (i) What types of property derivatives are you aware of currently, either in the UK or in other territories?

(ii) Are these index derivatives or derivatives on individual properties?

(iii) Are you aware of over-the-counter providers who could fully or partially hedge the risk drivers of the NNEG?

(iv) What factors do you think participants in such a market should consider when pricing options similar to the NNEG?

(v) To what extent should unobservable inputs such as hedging costs be reflected in the valuation of the NNEG, having regard to the requirements of IFRS13 and Solvency II Delegated Regulation Article 10(6), and how, in your view, should this be done in practice?

5 ERM valuation – framework and calibration

5.1 In principle, there are several techniques that could be used to value the NNEG, each informed to varying degrees by financial economics, econometrics, actuarial science and other disciplines. The PRA notes that in practice some firms value the NNEG as put options using the Black-Scholes model, where the underlying asset is the mortgaged property.[1] There are also variations in which the Black-76 model is used. For simplicity the term Black-Scholes will be taken to include Black-76 in this DP. The PRA is aware of option-pricing methods other than Black-Scholes, and notes that such methods, and techniques applied in capital markets more generally, may provide helpful insight into the valuation of the NNEG provided methods are adapted appropriately to accommodate specific features of residential property and ERMs.

5.2 The discussion starts with Black-Scholes, since it is used in practice by some firms. The PRA considers it is helpful to distinguish between the Black-Scholes framework (the rationale that underpins the Black-Scholes model) and the way in which it is calibrated, ie the way in which assumptions are set and the extent to which they reflect the characteristics of the underlying mortgage property.

Framework

Question 9: (i) To what extent do you consider the Black-Scholes model assumptions to be reasonable for the case of ERM valuation? For example, to what extent are the put options hedgeable if the underlying mortgaged property is not traded?

(ii) To what extent does the unknown term (or exit date) of individual loans matter?

(iii) For products that permit future drawdowns, the strike price of the put options is also indeterminate – what impact do you believe this has on the applicability of the Black-Scholes framework?

1 See for example 'Equity release report 2005. Volume 2: Technical supplement on pricing considerations', Institute of Actuaries, 2005; https://www.actuaries.org.uk/documents/equity-release-report-2005-volume-2-technical-supplement-pricing-considerations.

Question 10: One of the assumptions of the Black-Scholes framework is that the underlying asset follows a geometric Brownian motion. How appropriate do you consider this assumption is to residential property, given there is evidence that residential property prices display time series effects such as mean-reversion and volatility clustering?[1]

Question 11: (i) In light of these observations, do you believe is it reasonable to use the Black-Scholes framework?

(ii) If so, what adjustments should be made, either to the framework itself, or to its calibration?

(iii) If not, what do you consider are the alternative frameworks or models that could be used, for example other option-pricing frameworks, valuation frameworks designed for incomplete markets, or frameworks which aim to establish reasonable ranges of prices having regard to investor risk preferences?

Calibration

5.3 The NNEG is written on individual properties that may well behave differently to a property index, or to the average performance of the portfolio of properties as a whole (for example, a basket of options written on individual properties is not equivalent to an option on a basket of properties). However, index data is normally the most accessible and reliable source available.

Question 12: How do you consider the idiosyncratic nature of risks associated with the valuation of the NNEG, including (but not limited to) the dilapidation risk, should be taken into account in the valuation?

5.4 The valuation of ERMs is often simplified by assuming that exit rates in each future period are statistically independent of house prices in that period, ie that long-term trends in mortality, long-term care and early repayments are not statistically associated with long-term trends in house prices.

Question 13: Do you think the assumption of statistical independence is appropriate, and if not, what adjustments should be made?

Question 14: How do you consider the assumed level of any future advances on existing loans (such as drawdowns, where permitted) should be calibrated? To what extent do you believe future drawdown rates depend economically or statistically on the performance of the underlying property?

1 See Siu-Hang Li, Johnny and Hardy, Mary R. and Tan, Ken Seng, On Pricing and Hedging the No-Negative-Equity Guarantee in Equity Release Mechanisms. Journal of Risk and Insurance, Vol. 77, Issue 2, pp. 499-522, June 2010. Available at SSRN: http://dx.doi.org/10.1111/j.1539-6975.2009.01344.x.

Question 15: How do you consider 'porting' an ERM from one property to another should be taken into account in the valuation of ERMs?

Question 16: How often do you consider the properties underlying ERMs should be revalued? What do you believe the mix of on-site and desk-based revaluation should be, balancing accuracy, timeliness and proportionality to the risk?

5.5 Article 263(d) of the Solvency II Delegated Regulation requires an assessment of valuation uncertainty where alternative valuation methods are used, and Article 267(1) states that firms should have a process to verify that the valuation model inputs are appropriate and reliable. IFRS 13 states that it might be necessary to include a risk adjustment when there is significant measurement uncertainty in Level 3 inputs.

Question 17: How do you consider valuation uncertainty should be assessed and what considerations should inform the size of the risk adjustment required under IFRS 13?

Question 18: (i) Where you are aware of secondary market transactions, to what extent do these prices form inputs into the ongoing development of valuation models?

(ii) How do you think price transparency could be improved (perhaps by market data providers aggregating hypothetical quotations for portfolios, industry surveys or some other means)?

6 Risk management of ERMs

6.1 Good risk management of ERMs is central to demonstrating an overall system of control over investments, and is relevant to all firms with ERM exposures. There are many aspects of ERMs where this is relevant, such as valuation uncertainty, the monitoring of LTVs over time, and ensuring the liquidity of the overall asset portfolio.

6.2 Article 79 of the Capital Requirements Directive (2013/36/EU) (CRD) requires competent authorities to ensure that, with respect to firms within the scope of the CRD: (i) credit granting is based on sound and well-defined criteria; (ii) institutions have internal methodologies that enable them to assess the credit risk of exposures to individual obligors, securities or securitisation positions and credit risk at the portfolio level; and (iii) diversification of credit portfolios is adequate given an institution's target markets and overall credit strategy, among other things.

6.3 Risk Control 2.1 in the PRA Rulebook states that a firm must establish, implement and maintain adequate risk management policies and procedures, including effective procedures for risk assessment, which identify the risks relating to the firm's activities.

6.4 Article 406 of the Capital Requirements Regulation ((EU) No 575/2013) (CRR) requires that, before becoming exposed to the risk of a securitisation, institutions subject to the CRR shall demonstrate they have a comprehensive and thorough understanding of: (i) the risk characteristics of the individual securitisation and the underlying exposures; and (ii) all structural features of the securitisation that can materially impact the performance of the institutions' securitisation positions, among other things.

6.5 For insurers, there are also specific requirements. The Prudent Person Principle (PPP) set out in Investments 2.1 in the PRA Rulebook states that a firm must only invest in assets and instruments the risks of which it can properly identify, measure, monitor, manage, control and report.

6.6 Readers are referred to Investments 5.2 in the PRA Rulebook. This relates to investments where the investment risk is not borne by the policyholder, such as where ERMs are used to back non-with profits annuity liabilities. Part of Investments 5.2 is reproduced below for ease of reference:

- 'investments and assets which are not admitted to trading on a regulated market must be kept to prudent levels;
- assets must be properly diversified in such a way as to avoid (a) excessive reliance on any particular asset, issuer, group of undertakings or geographical area; and (b) excessive accumulation of risk in the portfolio as a whole; and
- investments in assets issued by the same issuer, or issuers belonging to the same group, must not expose the firm to excessive risk concentration.'

6.7 ERMs and ERM-backed assets are generally not admitted to trading on regulated markets, although the PRA is aware of some securitisations of ERMs being traded.

6.8 Restructuring a portfolio of ERMs is likely to transform exposure to a large number of individual loan assets into an exposure to the entity which issues the restructured assets. The requirements to diversify properly and avoid excessive risk concentration may therefore be particularly relevant to firms that hold restructured ERMs.

Risk identification

Question 19: What do you consider are the approaches and techniques that should be used to identify and monitor emerging risks to ERMs, such as changes in flood risk and other environmental issues, legal changes, changes to the taxation of residential property or associated mortgages, changes to political or social attitudes to long-term care, or changes in the market for ordinary mortgages?

Capital requirements and risk measurement

6.9 The PRA welcomes examples of good practice applicable to the calculation, scrutiny and validation of capital requirements for ERMs.

Question 20: Where capital calculations are carried out by performing stress or scenario tests, which parameters, in order of materiality, do you consider should be stressed? The PRA invites responses in respect of all relevant capital regimes. Relevant regimes would include, without limitation:

(a) the standard formula, internal model and own risk and solvency assessment (ORSA), for Solvency II firms;

(b) the CRR, for firms subject to it; and

(c) for all firms, any other forms of capital calculation, whether for internal purposes, to comply with other regulatory regimes, for rating agency purposes, or any other relevant reason.

Question 21: What do you believe are the most relevant considerations and techniques for calibrating the parameters of ERM capital models?

Question 22: What tools and metrics do you consider should be used to validate ERM capital models?

6.10 Capital requirements are not the only tool, and other metrics and indicators can also be useful, particularly if they are risk sensitive and widely understood.

Question 23: Beyond capital requirements, what metrics and indicators do you consider can be used to measure ERM risks?

Risk management, monitoring and control

Question 24: (i) What techniques do you consider should be used to determine whether the level and type of exposure to ERMs is prudent?

(ii) What techniques do you believe should be used to determine whether the level and type of exposure to restructured ERMs is prudent, given the considerations in paragraph 6.8?

6.11 There is a risk that the illiquidity, long duration and any future advances (for example drawdown facilities) of ERMs may lead to mixed asset portfolios becoming increasingly concentrated in ERMs or restructured ERMs over time (and as a result becoming increasingly illiquid), particularly if volumes of new business on the liability side are low or zero.

Question 25: How do you think the risk in paragraph 6.11 should be managed?

Question 26: How do you consider the risks of residential property as an asset class should be monitored and managed? Please include a discussion of changes in demand and supply for residential property, changes to the taxation of property, and macroeconomic features such as interest rates and inflation.

Question 27: How do you think the risk of individual property underperformance should be monitored and managed? Please include a discussion of regional performance variations, variations related to specific types of property, and dilapidation risk.

Question 28: (i) Where risk controls are in place, how do you believe secondary risks should be monitored and managed? For example, the PRA understands that many providers impose a requirement on the borrowers to maintain buildings insurance and keep the property in good repair. How practicable do you think it is to enforce such requirements in practice?

(ii) What controls and mitigation measures do you believe could be applied in cases where these requirements cannot practicably be enforced, or are breached?

7 Restructuring for the Solvency II matching adjustment

7.1 This chapter is of particular relevance to insurers subject to the Solvency II regime that have restructured, or are considering restructuring, ERMs for the purpose of satisfying the matching adjustment (MA) eligibility criteria in regulation 42(4) to (6) of The Solvency 2 Regulations 2015 (SI 2015/575).

7.2 The MA allows liability cashflows to be discounted at a rate in excess of the basic risk-free rate (reducing their present value), provided the eligibility criteria continue to be satisfied (or, if not, compliance is restored within two months). In particular, the liabilities and backing assets must be eligible for the MA and the risk-adjusted asset cashflows must be closely matched to the expected liability cashflows.

7.3 Unrestructured ERM cashflows are not eligible for MA, as noted in the Insurance Supervision Executive Director's letter of 20 February 2015.[1] However, as noted in the same letter, in principle it is possible to restructure ERM cashflows to produce eligible assets. One method of restructuring is to pool and tranche ERMs such that the most secure ERM cashflows are included within the MA portfolio and the cashflows with most of the property and repayment risk are excluded from the MA portfolio. For the rest of this DP, which uses this type of restructuring as an example, the PRA has referred to the restructuring as a 'securitisation'. However, this should not be understood to mean that such a securitisation is the only way to restructure ERMs to meet the MA eligibility criteria.

7.4 The size of the MA arising from restructured ERMs depends on the restructured eligible cashflows, their value, and the Fundamental Spread (FS)[2] arising from the sector and Credit Quality Step (CQS) for the eligible cashflows. The restructuring can be regarded as producing eligible cashflows, and the FS reflects the risks retained within the more senior tranches, including the default and downgrade risk associated with the MA eligible cashflows.

1 See www.bankofengland.co.uk/pra/Documents/solvency2/fisherermletterfeb15.pdf.

2 See Technical Provisions 7 in the PRA Rulebook. At the time of writing, European Insurance and Occupational Pensions Authority publish the methodology for calculating the elements of the FS, and values of the FS, at https://eiopa.europa.eu/regulation-supervision/insurance/solvency-ii-technical-information/risk-free-interest-rate-term-structures.

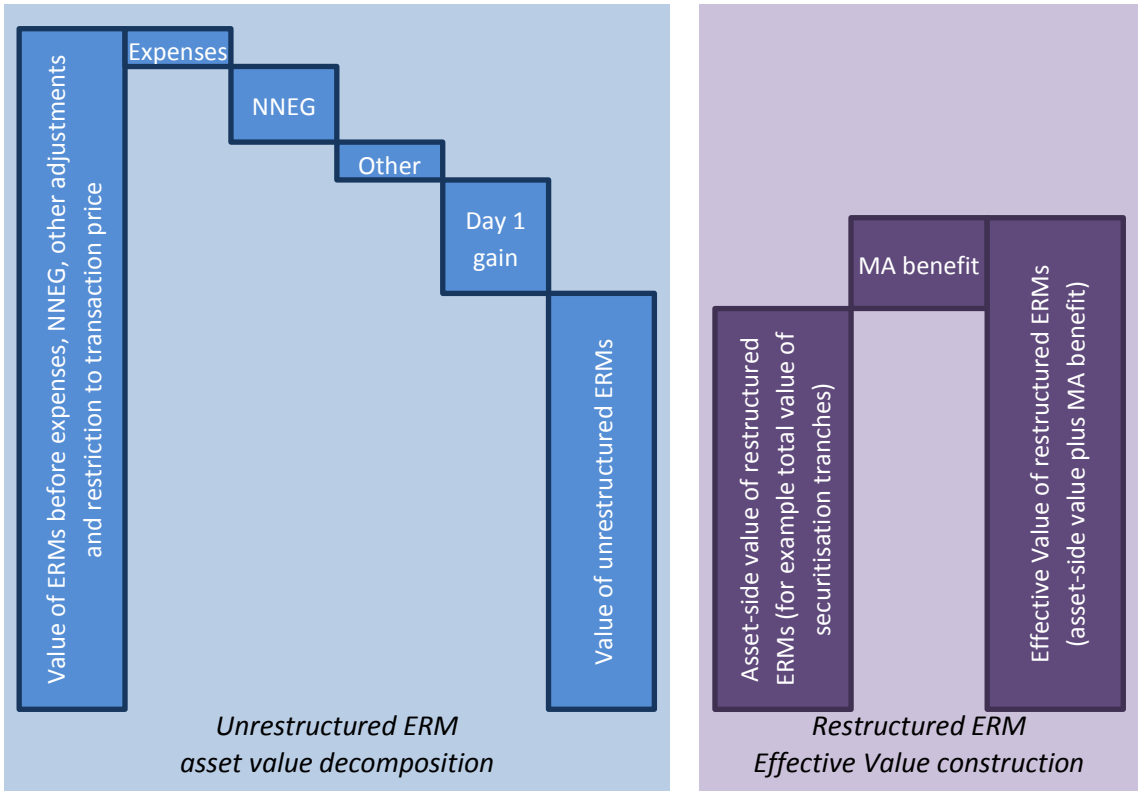
7.5 The size and shape of MA eligible cashflows are chosen by the insurer when the securitisation is set up and are not expected to change thereafter. Typically, the MA eligible cashflows are more senior and are scheduled to be paid earlier than the non-MA eligible cashflows. An alternative structure with higher MA eligible cashflows would potentially increase the amount of liability cashflows that may be backed by the senior tranche, which would increase the value of the MA benefit, other things being equal. However, this would also increase the risk within the MA portfolio and could lead to a lower credit rating and therefore a higher FS, thereby reducing the value of the MA benefit.

7.6 There is a risk that firms may choose assumptions for the valuation and rating of the MA eligible tranches that are not aligned with their risk profile, thereby leading to a FS that does not reflect the risks retained. For example, firms need to determine how the total balance sheet value of the tranches should be split into MA eligible tranches and non-MA eligible tranches. A lower value (higher spread) of the MA eligible tranches will increase the MA benefit and will be less prudent than a higher value (lower spread).

7.7 The FS assumptions provided by EIOPA from time to time are calibrated by reference to historic default, migration and spread statistics on corporate bonds, and the 30% recovery rate assumption specified in Article 54(2) of the Solvency II Delegated Regulation. Restructured ERMs are not corporate bonds, and firms will generally need to consider how they have derived the sector and CQS assigned to the eligible cashflows arising from restructured ERMs in order to satisfy rules set out in Solvency II Firms – Technical Provisions 7.2(2) and 7.3(1) in the PRA Rulebook. Generally this involves two stages: (i) assigning a credit rating (internal or external), and (ii) mapping this rating onto a sector and CQS.

7.8 In assessing the size of the MA benefit, the PRA considers that it may be helpful to introduce a concept of the 'Effective Value' of restructured ERMs. This is the total value of all tranches of the restructured ERMs on the asset side of the balance sheet, plus the MA benefit arising from the restructured ERMs on the liability side of the balance sheet. The Effective Value would be used to compare the MA benefit between firms with different cashflows within the MA eligible tranche, spreads and credit ratings. Figure 2 illustrates the construction of Effective Value, alongside an illustration of one way in which the value of unrestructured ERMs can be decomposed. For the avoidance of doubt, Figure 2 is only intended to illustrate the Effective Value concept and is not intended to be to scale. Further, the relationships in the diagram are, to some extent, a function of market conditions and could change significantly over time. For example, in the event of a widespread downturn in the property market, the NNEG would increase significantly and might in principle create a 'day 1 loss' if the ERMs had been written on the same terms in the distressed conditions.

Figure 2: Illustration of the construction of Effective Value



7.9 On the left-hand side of Figure 2, the value of unrestructured ERMs has been illustratively decomposed into the value of ERM cashflows prior to expenses, NNEG, any other adjustments (for example the impact of any early repayment charge inadequacy), and the effect of restricting the value to a transaction price, sometimes referred to as eliminating day 1 gain. On the right-hand side, the Effective Value of the restructured ERMs is constructed from the total value of the securitisation tranches and the MA benefit arising on the liability side from the MA eligible tranches. The total value of the securitisation tranches is illustrated as being somewhat lower than the value of the unrestructured ERMs, to reflect the frictional costs of restructuring, on the assumption that an equation of value holds as discussed in paragraph 7.11.

7.10 As noted in paragraph 4.4, the MA benefit has been illustrated in Figure 2 as partially offsetting the impact of restricting the mark-to-model value to a transaction price (labelled as 'Day 1 gain' in Figure 2 for brevity).

Size of MA benefit

Question 29: (i) In light of the significant judgment required to derive an appropriate MA benefit for ERM securitisations and the potential for inconsistency in approach between firms, how do you consider those assessments (made by firms, their advisors and auditors) could make use of quantitative comparators, such as the Effective Value concept introduced above?

(ii) If you consider the Effective Value concept is not helpful, do you have any alternative suggestions?

(iii) Do you believe indicative theoretical boundaries on MA benefit or Effective Value could be expressed in relation to components of the valuation of unrestructured or restructured ERMs, in relation to other boundaries such as those discussed in paragraph 4.9 and Question 6, in relation to the size of MA benefit available on other asset classes, or in other ways?

(iv) How should such boundaries be determined?

Question 30: Are there any forms of boundary that you consider to be inappropriate or which, in your view, would have a disproportionate impact in relation to the risk profile of the restructured ERMs? Please include impact assessments in your response where relevant.

Credit ratings of restructured ERMs

Question 31: What do you consider would constitute good practice in respect of assigning credit ratings at the time of restructuring ERMs, and other illiquid assets? Respondents may wish to draw on the experience of internally rating or restructuring other types of assets, or of rating agencies. Comments on mapping ratings to CQSs are also invited.

Valuation of restructured ERMs

7.11 The PRA has observed that firms that are exposed to restructured ERMs have generally used an 'equation of value' approach, in which the total value of unrestructured ERMs less the frictional costs of restructuring plus any additional assets held in the structure equals the total value of the restructured ERMs (ie the total value of the securitisation tranches).

Question 32: Do you consider that an 'equation of value' between unrestructured and restructured ERMs should hold?

Question 33: Where an 'equation of value' holds, one of the tranches can be considered to be a 'residual' and valued by subtracting the value of the other tranches from the total value of unrestructured ERMs less frictional costs. In which circumstances do you think is it more appropriate to consider the senior or junior tranche as the residual?

Question 34: (i) What do you consider the relationship between the values of senior and junior tranches in the restructured ERMs should be?

(ii) How, in your view, should the values (or, equivalently, spreads) of these tranches be derived, and how should values or spreads be validated in relation to each other, and in relation to the ratings discussed in Question 31?

Changes to ratings and valuations over time

7.12 As well as establishing initial ratings and valuations, it is necessary to update valuations and ratings over time to reflect new information, and in particular to reflect the impact of stressed conditions. Modest changes in conditions might only be expected to affect valuations (through movements in credit spreads), with ratings remaining unchanged, but the PRA considers that larger changes might reasonably be expected to affect ratings as well.

7.13 The PRA provided information about MA under stress for insurers with internal models in the Insurance Supervision Executive Director's letter of 9 March 2015.[1]

Question 35: For securitised ERM cashflows, how do you believe changes in the value of ERMs, and in the amount and timing of ERM cashflows under the stresses that apply to the capital calculations (as considered in Question 20), should impact the ratings and values of the various securitisation tranches, and how should changes affect the resulting MA benefit?

7.14 Under certain conditions, the PRA considers that it may be possible to take credible management actions to maintain the credit quality of the MA-eligible assets arising from restructured ERMs. Such management actions could be reflected in an internal model, subject to meeting the relevant tests and standards.

Question 36: (i) What management actions do you believe are available to firms that are exposed to restructured ERMs whose value or credit rating has deteriorated under stress?

(ii) Under what circumstances do you consider these actions to be viable? Please include a discussion of how you consider such actions might affect eligibility for the MA and how eligibility could be maintained.

1 See www.bankofengland.co.uk/pra/Documents/solvency2/intmodmaupdatemar2015.pdf.

Risk management

Question 37: (i) What do you believe are the additional risk management issues that arise from the process of restructuring ERMs? (See Chapter 6 for a discussion of issues for unrestructured ERMs.)

(ii) In particular, how do you consider the liquidity risks of restructured ERMs should be identified, measured, monitored, managed, controlled and reported, including without limitation any liquidity risks arising from future advances on existing loans (for example drawdowns)?

Appendix: List of questions

Question 1: (i) Which of the challenges in paragraphs 3.12 and 3.13 do you consider to be the most and least significant?

(ii) What additional challenges should be considered?

(iii) Where you have identified significant challenges in parts (i) and (ii) above, what solutions would you recommend?

Question 2: (i) Which ERM valuation inputs do you think should be classified as Level 1, 2 and 3?

(ii) Which of these are, in your view, most significant to the valuation?

(iii) What other considerations and controls do you believe should be in place when classifying the valuation of inputs and the ERMs as Level 1, 2 or 3 (as defined in IFRS 13)?

Question 3: To what extent could a small portfolio lead to a material concern about the experienced exit rates? Do you think a small portfolio size should be considered a source of valuation uncertainty? Please outline any quantitative analysis or research that would justify your views.

Question 4: Please rank the three types of exit (mortality, long-term care and early repayments) by (1) financial impact and (2) degree of uncertainty, and provide commentary for the rankings. The PRA invites submission of examples of what you consider to be good practice in respect of setting assumptions for long-term care rates, as there is generally less data available to forecast long-term care rates than rates for the other exit types.

Question 5: How should fair values of ERMs reflect compensation for the uncertainty in exit rates? Please share evidence from actual transactions, if possible.

Question 6: (i) How should ERM valuation reflect the relationships in paragraph 4.9?

(ii) Other than cases where the loan advance is used to improve the property, are there any circumstances in which you believe these relationships would not hold?

Question 7: (i) If alternative valuation methods are used (ie where quoted market prices in active markets are not available), how should the parameters of valuation models be calibrated in a way that demonstrates consistency with the requirement of Solvency II Delegated Regulation ((EU) 2015/35) Article 10(6) to 'make maximum use of relevant market inputs'?

(ii) Please include a discussion of what you consider is good practice in relation to deriving appropriate inputs for current and future property prices (including how the assumed total return is shown to be appropriate, having regard to assumptions around rental yields, reduced to allow for expected associated management costs and void periods), property volatility, dilapidation adjustments, sales costs, timing of sales and the discount rate.

(iii) The list of parameters in (ii) is based on valuation methodologies the PRA has seen used by the life insurance industry and in academic papers. Please include any other parameters that you consider may be relevant to the valuation of the NNEG.

Question 8: (i) What types of property derivatives are you aware of currently, either in the UK or in other territories?

(ii) Are these index derivatives or derivatives on individual properties?

(iii) Are you aware of over-the-counter providers who could fully or partially hedge the risk drivers of the NNEG?

(iv) What factors do you think participants in such a market should consider when pricing options similar to the NNEG?

(v) To what extent should unobservable inputs such as hedging costs be reflected in the valuation of the NNEG, having regard to the requirements of IFRS13 and Solvency II Delegated Regulation Article 10(6), and how, in your view, should this be done in practice?

Question 9: (i) To what extent do you consider the Black-Scholes model assumptions to be reasonable for the case of ERM valuation? For example, to what extent are the put options hedgeable if the underlying mortgaged property is not traded?

(ii) To what extent does the unknown term (or exit date) of individual loans matter?

(iii) For products that permit future drawdowns, the strike price of the put options is also indeterminate – what impact do you believe this has on the applicability of the Black-Scholes framework?

Question 10: One of the assumptions of the Black-Scholes model is that the underlying asset follows a geometric Brownian motion. How appropriate do you consider this assumption is to residential property, given there is evidence that residential property prices display time series effects such as mean-reversion and volatility clustering?[1]

Question 11: (i) In light of these observations, do you believe is it reasonable to use the Black-Scholes framework?

(ii) If so, what adjustments should be made, either to the framework itself, or to its calibration?

(iii) If not, what do you consider are the alternative frameworks or models that could be used, for example other option-pricing frameworks, valuation frameworks designed for incomplete markets, or frameworks which aim to establish reasonable ranges of prices having regard to investor risk preferences?

Question 12: How do you consider the idiosyncratic nature of risks associated with the valuation of the NNEG, including (but not limited to) the dilapidation risk, should be taken into account in the valuation?

Question 13: Do you think the assumption of statistical independence is appropriate, and if not, what adjustments should be made?

Question 14: How do you consider the assumed level of any future advances on existing loans (such as drawdowns, where permitted) should be calibrated? To what extent do you believe future drawdown rates depend economically or statistically on the performance of the underlying property?

Question 15: How do you consider 'porting' an ERM from one property to another should be taken into account in the valuation of ERMs?

Question 16: How often do you consider the properties underlying ERMs should be revalued? What do you believe the mix of on-site and desk-based revaluation should be, balancing accuracy, timeliness and proportionality to the risk?

1 See Siu-Hang Li, Johnny and Hardy, Mary R. and Tan, Ken Seng, On Pricing and Hedging the No-Negative-Equity Guarantee in Equity Release Mechanisms. Journal of Risk and Insurance, Vol. 77, Issue 2, pp. 499-522, June 2010. Available at SSRN: http://dx.doi.org/10.1111/j.1539-6975.2009.01344.x.

Question 17: How do you consider valuation uncertainty should be assessed and what considerations should inform the size of the risk adjustment required under IFRS 13?

Question 18: (i) Where you are aware of secondary market transactions, to what extent do these prices form inputs into the ongoing development of valuation models?

(ii) How do you think price transparency could be improved (perhaps by market data providers aggregating hypothetical quotations for portfolios, industry surveys or some other means)?

Question 19: What do you consider are the approaches and techniques that should be used to identify and monitor emerging risks to ERMs, such as changes in flood risk and other environmental issues, legal changes, changes to the taxation of residential property or associated mortgages, changes to political or social attitudes to long-term care, or changes in the market for ordinary mortgages?

Question 20: Where capital calculations are carried out by performing stress or scenario tests, which parameters, in order of materiality, do you consider should be stressed? The PRA invites responses in respect of all relevant capital regimes. Relevant regimes would include, without limitation:

(a) the standard formula, internal model and own risk and solvency assessment (ORSA), for Solvency II firms;

(b) the CRR, for firms subject to it; and

(c) for all firms, any other forms of capital calculation, whether for internal purposes, to comply with other regulatory regimes, for rating agency purposes, or any other relevant reason.

Question 21: What do you believe are the most relevant considerations and techniques for calibrating the parameters of ERM capital models?

Question 22: What tools and metrics do you consider should be used to validate ERM capital models?

Question 23: Beyond capital requirements, what metrics and indicators do you consider can be used to measure ERM risks?

Question 24: (i) What techniques do you consider should be used to determine whether the level and type of exposure to ERMs is prudent?

(ii) What techniques do you believe should be used to determine whether the level and type of exposure to restructured ERMs is prudent, given the considerations in paragraph 6.8?

Question 25: How do you think the risk in paragraph 6.11 should be managed?

Question 26: How do you consider the risks of residential property as an asset class should be monitored and managed? Please include a discussion of changes in demand and supply for residential property, changes to the taxation of property, and macroeconomic features such as interest rates and inflation.

Question 27: How do you think the risk of individual property underperformance should be monitored and managed? Please include a discussion of regional performance variations, variations related to specific types of property, and dilapidation risk.

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