



Institute
and Faculty
of Actuaries

DP1/16: Equity Release Mortgages

IFoA response to the Prudential Regulation
Authority

3 June 2016

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The Institute and Faculty of Actuaries is the chartered professional body for actuaries in the United Kingdom. A rigorous examination system is supported by a programme of continuous professional development and a professional code of conduct supports high standards, reflecting the significant role of the Profession in society.

Actuaries' training is founded on mathematical and statistical techniques used in insurance, pension fund management and investment and then builds the management skills associated with the application of these techniques. The training includes the derivation and application of 'mortality tables' used to assess probabilities of death or survival. It also includes the financial mathematics of interest and risk associated with different investment vehicles – from simple deposits through to complex stock market derivatives.

Actuaries provide commercial, financial and prudential advice on the management of a business' assets and liabilities, especially where long term management and planning are critical to the success of any business venture. A majority of actuaries work for insurance companies or pension funds – either as their direct employees or in firms which undertake work on a consultancy basis – but they also advise individuals and offer comment on social and public interest issues. Members of the profession have a statutory role in the supervision of pension funds and life insurance companies as well as a statutory role to provide actuarial opinions for managing agents at Lloyd's.



Equity Release Mortgages: DP1/16 Response
Abigail Caldwell
Prudential Regulation Authority
20 Moorgate
London
EC2R 6DA

3 June 2016

Dear Abigail,

IFoA response to PRA DP1/16: Equity Release Mortgages

1. The Institute and Faculty of Actuaries (IFoA) welcomes the opportunity to respond to the Prudential Regulation Authority's (PRA) Discussion paper on Equity Release Mortgages (ERMs). The IFoA's Equity Release Members Interest Group (ER MIG) and Life Board have been involved in the drafting of this response. The contributors to this response include members who are actively engaged with use of equity release assets by life insurers.
2. In the Annex we have provided our response to the specific questions raised in the discussion paper. The most important issues are noted below.
3. First of all, although this is a relatively new market and its future development is uncertain, applying standard actuarial methods and approaches should enable companies to analyse the risks they carry. This will allow them to set aside adequate capital and to release profits with appropriate timing.
4. The valuation of a No Negative Equity Guarantee (NNEG) requires long term assumptions. Actuaries are experienced and well placed in making such estimates considering the range of available data and including expert opinions to form such a view. Should the Bank of England publish its own long term forecast from its economic models of property assumptions then actuaries would be able to factor in such data to the analysis. Within a range, different views of long term property growth can be equally valid given the uncertainty in this area. Individual firms will also have differing assumptions to reflect company specific adjustments to take account of the level of underwriting, case size, experience of dilapidation and other factors.
5. Decrement experience is limited, particularly for smaller companies. We would welcome a centralised investigation of mortality, movement into long term care and early redemptions where the experience (split into homogeneous groups) is shared amongst providers; the Continuous Mortality Investigation (CMI) provides a similar service on other product areas. If the PRA were unable to gather this data, the IFoA's ER MIG could potentially help. We note however that success or otherwise will depend on the willingness of companies to share information and the analysis being granular enough (e.g. cause of early repayment) to apply to their own portfolio characteristics.
6. As there is no deep and liquid market for equity release portfolios, any use of transaction information should be treated with care. A common approach deriving from accounting

principles found in IFRS is to eliminate the day-1 gain as at point of sale or transaction, but the roll forward thereafter varies significantly in terms of methodology by firm. There is no demonstrably 'right' answer, and as such different approaches should be assessed on the justification provided.

7. We consider that in many cases, the use of Black-Scholes or similar closed form solutions (the Black model derived from Black-Scholes being one) is proportionate, and has many advantages in terms of its understanding, ease of calculation and transparency. Firms with more material exposures to NNEG justify the approach used. The methods used may add insight into adjustments that should be made to the volatility and discount rates used by Black-Scholes formulae. Given the lack of data available to calibrate any model with specific assumptions for ERM assets, we consider it appropriate to use a proportionate approach.
8. The Effective Value concept is potentially useful as one of a wider range of statistics but cannot be used in isolation. Each restructuring is unique as are the requirements of each Matching Adjustment (MA) portfolio. The Effective Value could be used to confirm that the asset value of the restructured and unstructured ERMs including frictional costs are unchanged; it could also be used to verify (or otherwise) that the MA benefit of restructured ERMs does not exceed the 'day 1 gain', (though there is no reasonable case for restricting the MA benefit any further).
9. As mentioned above, more detailed consideration and analysis to support this response is given in the Annex. The IFoA is currently looking at research topics in Equity Release relevant to our members, and this research may also support the work of the PRA: please let us know if this is of interest. In addition, we would be happy to clarify/elaborate on any of our responses within the Annex.

Should you wish to discuss any of the points raised in further detail please contact Steven Graham, Technical Policy Manager (steven.graham@actuaries.org.uk / 0207 632 2146) in the first instance.

Yours sincerely



Andrew Chamberlain
Deputy Chair, IFoA Life Board

Annex – Response to Questions Raised in the Discussion Paper

Question 1:

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

1. The restructure of ERMs is the most significant challenge due to the highly complex structures which result, and consequent circular transactions to support liquidity and timing. The fundamental risk is not altered on the loans themselves, but a layer of legal complexity is inserted.
2. Determining valuation assumptions for ERM is in some respects similar to the approach applied to other illiquid assets and liabilities that share many of the same attributes; for example, uncertain timing (as applies to all mortality risks), persistency (as is common in many life assurance risks) and real property risk (most frequently seen in commercial property risk). However, there are many areas that require material expert judgments in deriving appropriate assumptions:
 - establishing appropriate calibration of the property growth rate and property volatility, given the long term nature of the assumptions needed to model property prices to the time the customer dies
 - the relative immaturity of this market means that there is limited data available to understand likely borrower behaviour at older ages, which in any case is likely to vary between generations. This means that it is difficult to predict reliably how this changes factors such as: the use of drawdown; early pre-payment; optional interest payment; movement into long-term care; and dilapidation rates, through the entire future lifetime of the loan. These factors could change significantly dependent on individual circumstances, the general economic state and social changes. The availability of data will improve over time, but the variation over time must be taken into account when setting assumptions using both expert judgement, and sensitivities
 - allowing for specific property characteristics of ERM portfolio versus general residential housing
 - modelling of different interest payment patterns is a key requirement in modelling the portfolio where such options for the borrower exist. Again, the availability of data will improve over time.
3. Setting risk capital charges is another area of subjectivity; particular in the light of sustained macroeconomic factors (such as low interest rates and properties being bought to let). These factors have led to sharp increases in UK residential property prices. In this context, analysis of past data to determine future assumptions requires care. Indicative Solvency II (SII) stresses and sensitivities suggest drawdown and early repayment uncertainty are not as significant financial risks as the underlying property risk.

(ii) What additional challenges should be considered?

4. The future of the ERM market in the UK is uncertain given the continued uncertainty regarding regulatory treatment under SII. Life insurers' desire for long term assets to match long term liabilities provides a significant source of demand for such assets. However, this demand could materially diminish should the regulatory treatment for such assets be less favourable than for other alternative assets. This has to be set against the demand, and the social advantages, for the access to the equity locked into the homes of older people.
5. The impact on prospective customers of lower demand from life insurers could be less availability and higher cost, with an increased the burden on the state to support asset-rich, cash-poor customers.

6. The ERM market has also been impacted with the Capital Requirements Directive IV/ Basel III leading to the withdrawal of banks/building societies with wholesale funding no longer readily available.
7. A number of recently sold ERMs do have options for making early repayments free of fees. Although recent experience shows a low take-up rate, it is possible that this could (absent other influences) become a more significant feature of the market going forward given the recent relaxation of affordability assessments for ERMs by the FCA. This aspect is a very significant challenge as it can have a significant bearing on the cashflow stream generated, particularly in early years. This can impact on liquidity requirements and cashflow matching for annuity writers. Thus it should be a concern for PRA, notwithstanding the attractiveness for borrowers.

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

8. Industry-wide convergence on some aspects of valuation, assumptions setting and capital scenarios would improve consistency across the industry and provide insurers with greater certainty. The Equity Release Council is moving toward establishing best practice in some areas, and this should be based where possible on market indicators. The IFoA, through its members, also conducts research into areas of interest to its members. The following topics are potential areas of research that could be considered in the future:

- appropriateness of stress scenarios, particularly property and mortality
- list of credible data sources providers should consider
- consideration of the alternative approaches restructuring ERM assets into eligible form.

It would also be beneficial to firms for the PRA to express its own thoughts on the first two of these matters.

9. Making use of an anonymous survey to gather decrement experience may be helpful for companies to benchmark their own basis, so long as the key features underlying assets of the experience being compared were sensible. However, we note the various factors that influence voluntary repayments would reduce the ability to utilise this particular decrement directly. It does however remain the case that there is likely to be little observable data until relevant experience of these loans builds up. Expert judgement will therefore still be required for all loans.
10. Whilst there are factors such as dilapidation that would tend to reduce the house price value of dilapidated properties below that implied by index movements, the use of a professional sales process can lead to higher prices being achieved. It is therefore not necessarily the case that an ERM portfolio would underperform an index.
11. Longer term, the European legislation leading to the regulatory treatment of ERMs under SII and the requirement to restructure to make such assets eligible for the MA should be revisited, to assess whether the complexity and corresponding costs are necessary to protect policyholders.

Question 2:

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

12. Level 1 inputs: none.

13. Level 2 inputs: Interest swap and inflation swap yield curves.

14. Level 3 inputs:

- published house price indices (e.g. Halifax, Nationwide, Land Registry)
- published house price projections (e.g. Office for Budget Responsibility, and Bank of England quarterly Inflation report)
- mortality and morbidity tables (e.g. annuitant tables published by CMI)
- voluntary prepayment assumptions based on firm's own experience and/or experience of similar assets (e.g. UK ERM securitisation investor reports)
- property volatility implied by historical house price data
- spread over risk-free rate used to discount ERM cashflows, and potentially the initial property value.

15. We note here that the Bank of England does have a house price growth assumption, (for example Bank of England Inflation Report). In addition, 5 year House Price Index (HPI) forecasts in Forecasts for the UK Economy are published by the Treasury each month. The Office for Budget Responsibility provides 5 year HPI projection twice yearly with each budget statement. Consideration should be given to the use of these as inputs or validation tools.

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

16. By far the most significant input to the valuation is the discount rate used to discount the ERM cash-flows, which is typically expressed as the swap yield curve plus the assumed spread over swaps (to the extent that value can be passed through to lower liabilities that will mitigate this effect).

17. Other significant assumptions include HPI, propriety volatility and the discount rates used to value the NNEG.

(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)?

18. The market value of an individual ERM loan may differ significantly from the price that a willing market participant would pay for a well-diversified portfolio of ERM loans. Traditionally this could have been allowed for in the risk discount rate used. However, in the current regulatory environment, when calculating the fundamental spread for an illiquid asset, we must map the asset to a corporate bond of a given duration, credit quality and finance/ non-finance type. So for some purposes there is a restructured ERM to corporate bond risk mapping. However, that link is made at the default risk level and does not necessarily extend to liquidity premium. It is difficult to rationalise a link between the market observable spreads on corporate bonds and that on a well-diversified portfolio of mortgage loans and therefore we would not recommend that such a link is required of the valuation inputs. It is perfectly possible that corporate bond spreads may narrow or widen with no link whatsoever to a market participants' view of what they would pay for a portfolio of mortgage loans. It is not clear how to allow for this as it is likely to be unique to each portfolio.

19. A further issue is that the primary and secondary ERM markets have very different participants and are therefore structurally dislocated. Implied spreads on new retail/primary business are therefore not necessarily a direct guide to how back books should be treated.

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.

20. The smaller the ERM portfolio, the greater the extent that a firm's cashflows are exposed to deviations in expected exit rates versus actual exit rates. This is a statistical point that applies to wider demographic assumptions; for example, we have seen reference to volumes around 1,000 at which it begins to become credible.
21. Good practice would be to produce sensitivities based on variations to the exit rates which would naturally be wider for small portfolios. These sensitivities can be used to confirm materiality with reference to a firm's ability to meet its liabilities as they fall due.
22. It should also be noted that a smaller portfolio means that this uncertainty is likely to be a small absolute amount in cash terms. Therefore, the level of valuation uncertainty should be considered but it in many cases it would be likely to fall significantly below the level of materiality applied across the firm's balance sheet valuation. The assessment should take into context the overall asset portfolio.
23. The smaller a portfolio, the lower the degree of pooling of risk, and the more exposure there is to deviations in expected versus actual experience. Consider the extreme case of a single loan:
- it is assumed that the borrower dies aged 75 in 10 years' time
 - it is also assumed that a NNEG does not bite, and the lender receives the full loan value in 10 years' time (sale value > loan value)
 - however, actual experience is such that the borrower lives to age 95, the NNEG bites materially and so the firm receives less than loan value i.e. loan value less NNEG, with sale value < loan value) in 30 years' time.

This is a significant difference not only in face value of amount received but timing. With a large portfolio the behaviour of this one loan could be in line with what was expected from the underlying distribution which derives the assumption (the underlying distribution assumes that say 1 in every 10,000 borrowers lives to age 95).

Question 4:

**Please rank the three types of exit (mortality, long-term care and early repayments) by:
(i) financial impact**

24. Early repayments - the financial impact of interest rate movements may be mitigated by early redemption charges, but the 'lost' liquidity premium could be significant, as the charge would not typically cover this loss, unless the redemption charge is also designed to capture this loss.
25. Mortality – a financial impact arises from an increase in losses due to negative equity if mortality is lower, and a lesser liquidity premium if higher. Note that for small deviations this may be countered by higher profits made from the loan accruing interest such that it more than offsets any increased costs of NNEG and vice versa, depending upon the moneyness of the NNEG.

26. Long-term care has a similar impact to that of mortality, but is more likely to be a second order impact through advancing the underlying mortality; consequently its financial impact is smaller.
27. The balance sheet impact depends on the approach to setting the assumptions and the extent to which the ERMs are hypothecated to the liabilities (post restructure). If a 'no day 1 gain' approach is applied which back-solves the illiquidity premium to achieve the day 1 value, then there may be different aspects to consider (with more prudence in the decrements effectively reducing the illiquidity premium).

(ii) 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.

28. Early repayment rates - data on early repayment does exist and shows that the repayments have been very steady over a period of abnormal conditions in terms of interest rates and house prices. However, many ERM portfolios are relatively new, and as ERM products become more commoditised and early prepayment charges potentially run out, borrower (and financial advisor) behaviour could change significantly in ways that are not yet anticipated. However there is little 'own benefit' incentive to make this switch.
29. Long-term care rates – these vary significantly by company suggesting there is uncertainty in the assumptions in addition to company specific differences in portfolio. Many ERM portfolios are relatively young and experience is therefore limited. Furthermore, these are often allowed for by applying an uplift as a percentage of the assumed mortality rate. The uplifts should consider a firm's own experience, where credible data exists. If credible data does not exist the assumption should be based on independent analysis e.g. the ERM Actuarial Working party report 2007.
30. Mortality rates - large amount of credible data for similar pensioner lives, though these may not be directly applicable.

Question 5:

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

31. As with any other assumption, the value of ERMs should be viewed on several sets of decrement assumptions when reaching a value. The overall value and importance will depend on many different portfolio characteristics, particularly early redemption penalties. As for the above, any increase in the assumptions to allow prudently for uncertainty serves to reduce the illiquidity premium where a 'no day 1 gain' approach is taken to setting the illiquidity premium.

Question 6:

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

32. Generally, the ERM valuation should take into account the present value cost of the NNEG. The NNEG should be calculated based on a mark-to-model basis in the absence of a deep and liquid market in NNEG insurance, and should take account of the optionality e.g. by using a full stochastic simulation or suitable closed form solution such as Black-Scholes.

33. For the second relationship in paragraph 4.9 to hold, in theory, there needs to be a deep and liquid market. Otherwise the implication is that the average value of the HPI assumption is less than or equal to the discount rate assumed in the valuation of the NNEG. In practice, the approach to setting the HPI assumption varies significantly from firm to firm. The most important consideration is to ensure that the assumptions are internally consistent, and that an argument can be made to justify the assumptions.
34. If risk free rates are used to discount the NNEG (i.e. with no illiquidity premium), then in practice HPI assumptions for growth tend to be set higher than this discount rate.

(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?

35. Possible circumstances are:

- the assertion in paragraph 4.9 is a statement of 'value' and applies to any individual. However this is not necessarily true in terms of the exchange value. Leaving aside idiosyncratic circumstances, if one hypothecates a situation where population is expanding then the demand for property will rise and the values may rise accordingly. If so it is not necessarily true, however, that the current market value will reflect this, as there may be a surplus of property in the meantime and the cost of carry may be sufficient to make it unattractive to hold in anticipation of the rise. Furthermore, different investors or users may have different discount rates to apply to that assertion and thus it may be difficult to apply the statement in practice to market prices driven by those with a higher implied discount rate
- in a negative yield curve scenario, the relationship would fail as the premise that deferral could lead to a lower present value no longer holds
- illiquidity premia on residential property.

Question 7:

(i) If alternative valuation methods are used (i.e. 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'?

36. Given there is no deep and liquid market for ERM, a mark-to-model approach is an alternative valuation method to determine a fair value. The NNEG risk should be determined on a loan by loan basis. For each loan, the loan to value is projected forwards to calculate the NNEG risk exposure at each future time step using a stochastic model (or closed form solution).
37. The approach to setting the parameters varies, for example:
- decrements based on experience analysis or benchmarking where little data is available (typically best estimate)
 - in theory, an allowance for market rental yields could be used in the context of an arbitrage free market consistent approach. However, both rental yields and property management costs are only concerns for directly held investment property. Residential property is not purely an investment asset; most valuations do not rely on rental yields in determining residential property values as most properties on which loans are made are of a type that is normally owner occupied. Residential property is also likely to have a higher utility than equity investment, hence there can be benefit above economic value. Property management costs tend to be based on a level of

judgement and are not deemed to be a material assumption – these costs would not be incurred by the provider of ERMs in the same way as say a landlord

- HPI assumptions vary: such as use of risk free (market consistent approach); RPI with an adjustment; CPI with an adjustment; historic indices. Adjustments to HPI and CPI can be made based on historic market correlations between these indices and property indices.

38. The most common approach to calibrating the model is to set the illiquidity premium in order to ensure 'no day 1 gain' either at inception of the single policy or at the date of transaction of a block of policies. Illiquidity premiums are then either fixed or changed with market perception of liquidity (possibly driven by bond spreads (though this is hard to justify given little or no link) or illiquidity premiums on new business (which is equally hard to justify given the wide range of different motivations)).

39. For the former approach the use of illiquidity premiums which differ by contract/cohort needs to be explained in the context of an approach which would satisfy Article 75 (i.e. that the value on which the asset could be transacted be at a fair value). In our experience of transactions, the approach to valuing the NNEG can vary from applying a risk free approach to HPI and the discount rate, to using a more real-world HPI assumption; academic theory is not always the driver of transaction prices. Typically buyers and sellers have widely different drivers of value.

40. One further consideration is determining which up-front expenses can be included in the initial amount.

(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.

41. There are a variety of approaches that can constitute good practice. The sample below illustrates methods our members use which we would consider as good practice:

- current house price valuations:
 - consideration of the latest valuation survey
 - drive-by valuations
 - independent 3rd party valuation of each property using automated valuation model (AVM). The AVM is used to capture the individual property characteristics to either validate the indexed value or used directly
 - monitoring of actual dilapidation costs including dilapidation risk. Note however that this is not necessarily an easy task, and an AVM will not indicate whether a property is dilapidated - it can only estimate a value given the address and size of property
 - roll forward based on published regional house price indices (rather than national price indices)
 - an allowance for initial valuation error may be made
 - allowance for individual property volatility and index under-performance (or dilapidation)
 - sales costs may vary by type of property.
- future house prices / house price growth:
 - short term projections of house prices can utilise independent forecasts from market and government sources. Office for Budget Responsibility (OBR) gives a 5 year house price forecast taking into account macro-economic factors and the impact of HM Treasury budget proposals on the housing market e.g. Help to Buy, ISA. The Bank of England quarterly inflation forecast provides a 3 year house price projection

- over longer terms, house price growth can be based on the long-term relationship between RPI and other 'real' measures (such as earnings inflation), and house prices. House prices have been shown to exhibit high correlation with inflation (greater than 95%), when measured over long time periods (such as greater than 10 years)
- growth forecasts/analyses should be based on residential property markets which may differ materially from commercial property prices
- practice is to not take an approach which assumes total return is risk free and then adjust for rental income, and this can be supported by the proportion of owner occupied housing, particularly if excluding social housing, being so dominant.
- property volatility:
 - quantitative analysis of historical house price indices forms the base level of volatility. This should then be adjusted to allow for specific factors of the equity release portfolio
 - the additional volatility of individual prices versus volatility of these indices
 - consideration of de-smoothing (though actual transactions in residential property to exhibit a degree of smoothing)
 - consideration of increasing the volatility to remove short-term auto-correlation effects
 - quantitative analysis of firms' own property sales experience can measure idiosyncratic volatility of sale prices achieved (relative to those expected to be achieved through a normal sales process).
- dilapidation:
 - dilapidation of individual properties can be considered, preferably explicitly
 - dilapidation applies only for a small proportion of the ERM portfolio; use of average dilapidation assumptions across the portfolio may understate the true costs due to the NNEG that is more likely to apply on a dilapidated property
 - adjustments for dilapidation could possibly be linked to age, socio-economic group and Loan to Value (LTV); there are potential relationships to whether any partial repayments, or interest payments have been made either recently or within (say) the last 5 years.
- property sales costs
 - the sales costs can be high and should be justified and benchmarked against those actually experienced in sales.
- timing to sale:
 - the period to achieve a sale is not typically a material assumption. The period should be set prudently consider that when the loan is accruing interest and no NNEG applies it would be prudent to assume a short period, whereas a loan without interest or where NNEG applies a long period to sale would be prudent.

(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.

42. Other parameters that may be relevant are allowance for:

- future drawdowns (including future interest rates and rates and proportion drawn down)
- further advances
- initial overvaluation of residential property in general (necessary if the house price growth assumption is set solely by reference to long term assumptions)
- current and future customer interest rates.

43. A more theoretical and granular approach would be to consider regional variations and intrinsic value of the property as a whole. For example, a £5m property might have different growth prospects to a £100k property; likewise a flat in Sheffield versus a house in Exeter. Location could be considered to allow for events risk e.g. flood risk, industry decline, migration trends. However, it is likely that any attempt at modelling this level of granularity would be spurious.

Question 8:

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

44. We are not aware of any UK *residential* house price property derivatives. There are short duration UK commercial property futures contracts available on the Eurex Exchange and similar offerings are available elsewhere.
45. In the United States, the Federal Government provides a partial NNEG guarantee on ERM. House price futures, and options are also available there. One example is <http://www.cmegroup.com/trading/real-estate/residential/SandP-case-shiller-home-price-index.html>.

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

46. These are index based derivatives. We are not aware of any 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?

47. We are not aware of any Over-the-Counter providers willing to provide NNEG options. A limited number of banks will quote for HPI derivatives in smaller sizes. However we do not believe there is enough market liquidity to hedge a large equity release book.
48. There have been historic examples of companies providing NNEG hedges, such as bespoke house price derivatives on reversion mortgage portfolios.

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

49. The pricing considerations would be the same parameters listed in our response to question 7(iii). House prices are modelled in a similar manner to the approach used for inflation products. In addition, the provider would consider whether the margins in the parameters were adequate given their risk appetite and return expectations. There would be a charge for risk capital, which would be significant, and a profit margin.

(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?

50. Banks were initially interested in these solutions. However, experience was that after protracted negotiations, they generally backed away at the point they understood how long they would be exposed to this risk on their own balance sheet, and how little understanding of the risk there was (from their perspective).

51. Hence consideration of the hedging costs cannot be calculated directly given the lack of market data. However, an allowance for charges for hedges (based on the diversified portfolio risk capital required) could be allowed for in the key parameters such as house prices and volatility based on expert judgement.

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?

52. In our view it is the calibration of the model which is the most important aspect over and above the choice of model.

53. A Black-Scholes based closed form is an approximation to a full stochastic solution. We consider this a reasonable approximation relative to the materiality of the NNEG risk, subject to the asset not having a complex structure which results in further asymmetry. The expert judgement has been subject to independent scrutiny which confirmed the approach was reasonable. The alternative full stochastic approach may provide further scenario outputs, but is also driven by expert judgement in setting the key property and demographic parameters.

54. Advantages of a full stochastic model include:

- the ability to allow for dynamic decrements (although there is limited data to set the dynamic link)
- the 'shape' of outputs can be scrutinised
- a full stochastic model allows the modelling of mean reversion which could result in lower NNEG valuation.

55. However, there are disadvantages in relation to cost, complexity and understanding of such models that may outweigh the benefits.

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

56. It is possible to allow for unknown terms in the model based on decrement assumptions. See also the response to Question 5. Note a similar point around unknown term applies in the setting of assumptions for annuities (for which the ERM assets are purchased to provide appropriate matching cashflows).

(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?

57. The NNEG should be valued assuming fully drawn down, where future mortgage drawdowns will not support the NNEG cost on the marginal advance. However, it should be considered that drawdowns are generally not a contractually guaranteed facility and therefore the provider can decline further drawdowns; in particular should there be fall in house prices. The undrawn facility is generally not valued as part of the ERM.

58. Alternatively, it is possible to adjust the relevant Black-Scholes to allow for uncertainty of future drawdowns, though the assertion in the question does depend upon detailed product design.

59. In some instances, it may be that Black-Scholes does not reflect non linearity sufficiently (i.e. the risk drivers are not sufficiently linearly independent).
60. For material blocks of business, decisions should be made based on testing of alternative approaches, which can be done without a full implementation.

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?

61. The volatility assumption used in the Black-Scholes framework can be adjusted upwards to reflect the mean reversion behaviour of property price series. As such we consider Geometric Brownian Motion to be a reasonable approximation subject to issues around parameterising volatility, to make appropriate allowance for auto-correlation and mean reversion. See also the response to question 9.

Question 11:

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

62. Generally we believe Black Scholes to be reasonable. However, for material exposures, other models that can allow for more complex features of ERMs should also be considered, to demonstrate that any deficiencies in the model are not material.

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

63. The most common method of adjustment is through the property volatility parameter.

(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?

64. Any alternative frameworks should not be overly theoretical and should be limited to those which can be demonstrated to impact on transaction prices.

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?

65. The valuation should consider firm specific factors of the ERM portfolio to derive appropriate assumptions. Such factors include the:
- strength of their property underwriting
 - geographical distribution of properties
 - different type of properties
 - experience of the book
 - initial valuation error
 - volatility of the portfolio versus the index

- under / over performance of the portfolio relative to the index.
66. For larger portfolios this could lead to the use of a more sophisticated model, but a proportionate approach should be taken with testing of various approaches being performed.
67. It would be preferable for firms to make the deduction for dilapidation explicit and ensure consistency between assumptions i.e. property growth would need to be pre-dilapidation. As an example, an approach for this could be:
- firms derive a per annum dilapidation amount which allows for their own specific circumstances, which may include the degree to which a prevention policy is used, in advance of trigger events
 - this is applied retrospectively for the period from the current date back to the last full (internal and external) surveyor valuation, and applied after any generic indexation (such as Nationwide, AVM), to derive the starting property value
 - this would provide a clear basis on which to take decisions about whether to commission full revaluations of specific property, as to do so would remove the dilapidation haircut (and replace it with the surveyor valuation)
 - the same per annum adjustment is used within the projection of future property prices as with the deduction to a generic house price growth assumption
 - there is likely to be an upper limit to the amount that should be allowed for dilapidation to reflect costs of modernisation, only to the extent required to attain reasonable value from the property
 - firms using a risk free approach to growth need not take account of dilapidation.

Question 13:

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

68. There are reasons why statistical independence would not be appropriate. For example, early pre-payment may be linked to property prices amongst other factors. However, given the absence of any credible data to support the linkage between decrements and house prices, any correlation would be heavily judgement based.
69. If ERM becomes a standard commoditised product, we may see links between pre-payment rates and many economic factors; interest rates on these products have been relatively uniform both between competitors and through time. In addition, if house prices change significantly, we could see the borrower selecting between keeping the loan as it is, making a partial pre-payment or moving. It is important to bear in mind that the borrower/beneficiary still has an interest (possibly the majority one) in the property.
70. Furthermore, early repayment is linked to house price and LTV and the ability to repay the loan: *re-broking* early repayment is linked to a customer's interest rate and rate on a re-brokered loan; *all* forms for early repayment are linked to early redemption charge terms and conditions. However, a lack of data to model dependence gives rise to relatively blunt assumptions. Allowing for dependence may not necessarily result in a lower asset value. Assuming higher deaths in an economic downturn may accelerate exits in that scenario, and reduce the NNEG value as the loan accumulated is lower, resulting in an overall higher asset value.

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?

71. This is difficult to calibrate and there will be more than one justifiable approach to take, particularly as the basis on which NNEG applies can vary, and the way in which drawdown applies will vary accordingly.
72. One possible approach would be to assume loans are fully drawn down when valuing NNEG, so that no other allowance is needed. However, in general the drawdowns are not contractually guaranteed. Alternatively, the incidence and quantum of projected drawdowns can be calibrated in relation to a firm's own experience. There may be difficulties for less mature portfolios in modelling the decline in the incidence of drawdowns over time.
73. We would not expect there to be a clear link between drawdown, economic conditions and property prices that could be modelled.

Question 15:

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

74. Porting is not generally a material decrement, as an overriding propensity for ERM borrowers is often to remain in their home and not downsize. For the small proportion of customers wishing to port their mortgage, this should not affect the value as the port will be to a property that is underwritten and should therefore meet lending criteria or otherwise require a part repayment of the ERM. There should be risk control in the policy terms and conditions to keep the loan on the new property in line with risk appetite.

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?

75. Properties should be revalued regularly and this is a requirement under SII to ensure the mortgages meet the criteria to be classified as appropriate collateral.
76. Whilst over short periods it is appropriate to revalue properties using indices, this would not be regarded as reliable for individual property values over a longer period. We would expect the use of AVMs to be appropriate. Full valuations may also be necessary to validate a sample of values to ensure the AVMs do not materially under or overstate property values.
77. Full revaluations should be considered every 3-5 years for properties where the NNEG and for large unusual properties where the AVMs may not generate sufficiently accurate property values. On-site inspections should only be used in cases of material NNEG risk. On-site valuations would risk a bad customer outcome, potentially causing unnecessary stress and inconvenience for the borrower.
78. An alternative is the use of 'drive-by' valuations which may be as effective at detecting dilapidation risks.

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?

79. Valuation uncertainty should be assessed with consideration of the materiality of the uncertainty in the Level 3 inputs. A disclosure of the sensitivity of the Level 3 assets to key

parameters should be provided in the accounts.

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?

80. There is no data on published transactions as they are typically private bilateral agreements between firms. In any event, such market data would need to be treated with care and the circumstances of the transactions would be taken into account (especially if these are one-offs rather than the result of an active liquid market). The market does not tend to use this information, as it is not a deep and liquid market.

(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)?

81. There are too many idiosyncratic features in different portfolios, with different pressures affecting the buyer / seller, and a low volume of transactions, for a 'going rate' to be established. Hypothetical quotes would unlikely be good representations of the prices that buyers would actually transact at, and therefore we would consider in-house assessments to be appropriate where they are conducted by suitably knowledgeable individuals.

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?

82. The following approaches would be reasonable to monitor emerging risks:

- expert in-house or external legal resources to monitor legal implications
- expert in-house regulation teams monitor changes in: mortgage regulation; implications of budget changes (e.g. help to buy ISA, lifetime ISA, stamp duty, changes to planning laws); housing market and house price projections provided by Office for Budget Responsibility; general mortgage market conditions based on Bank of England MPC and Council of Mortgage lenders (CML)
- underwriting and environmental risk monitored based on in-house or external expert opinion
- expertise in-house to monitor such as legal, tax and market changes
- external support in specific cases where necessary.

83. In some cases the risks may be insurable, for example flood risk.

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.

84. The factors to be stressed would correspond to those most material to the valuation as discussed in other questions:

- property stresses, including house price, house price inflation and volatility
- early repayments
- interest rates (key from a pure asset value perspective, but not necessarily in the context of a liability valuation)
- illiquidity premium (where the approach taken implies a stress to the illiquidity is appropriate)
- mortality
- long-term care.

Question 21:

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

85. Where possible relevant statistical analysis should be used based on:

- empirical house price data and implied volatility
- insurance industry mortality data and projections
- the firm's own experience data, where credible.

86. Where there is insufficient data, or to allow for effects that are not observed within the data, the use of expert judgement would be required.

87. The statistical distributions for the key parameters would need to be considered and appropriate statistical tests performed to establish that the assumed distributions are a good fit for the data.

Question 22:

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

88. Validation of the capital models in accordance with SII standards for internal models would be appropriate:

- comparison with external rating agency rating scenarios for ERM
- stress and scenario testing of specific property scenarios (property crashes and long sustained depressions in property markets)
- consistency of the longevity stresses used for ERM with those applied to annuitant liabilities (allowing for differences in underwriting and other factors that affect mortality)
- comparison with industry peers
- external independent review
- for capital models approved for the purpose of calculating a company's SCR, they would additionally undergo regulatory review as part of an IMAP submission process.

Question 23:

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

89. Other metrics that can be used to measure ERM risks are the:

- number of loans without complete documentation including SHIP certificate (SHIP: the ERC's predecessor body)
- number of upheld and on-going complaints, in particular mis-selling complaints
- number/ amount of loans that have relied on indemnity insurance to where the borrower has lapsed buildings insurance
- number/ amount of loans that have relied on title insurance to where the validity of the legal charge has been disputed
- own data on actual NNEG cases
- Financial Ombudsman complaint data.

90. Although not identical to ERM, looking at the spreads on actively traded residential mortgage-backed security instruments is a possible indicator, though as these are much more dependent on the repayment potential of homeowners the comparison is imperfect, and lending criteria can be wildly different. Market indices of HPI such as the Halifax index can also be used to assess the health of the property market in the near term.

Question 24:

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

91. There is no simple metric that can be applied to companies due to the different characteristics of the ERM portfolios and the associated liabilities that they are being used to cashflow match. For example, the longer duration inflation linked liabilities generated through defined benefit buy-out and buy-in transactions would typically support higher amounts of equity release than standard retirement annuities. Conversely, short term care annuities have very low capability to support equity release asset cashflows. Overall it is probably better to look at the extent to which cash flows in each future year are dependent upon ERM cash flows in that year.

92. The following items would be useful to consider in assessing the level and exposure:

- analysis of liquidity risk arising from investing in illiquid assets such as ERMs
- stress and scenario testing
- risk appetite statements around concentration risk
- run-off analysis of the company balance sheet and capital requirements
- matching of ERM and liability cashflows
- economic analysis of the expected return and variance (Sharpe ratio analysis)
- review of return and volatility of return
- monitoring and capping of LTVs.

93. A detailed risk assessment of the underlying mortgage assets should be undertaken, such as on geographic distribution, size of loan and age of borrower, to ensure as diverse a portfolio as possible.

94. In the last financial crisis, US sub-prime companies experienced difficulties as there had not been sufficient consideration of the quality and diversity of the underlying mortgages at time of underwriting. ERMs are naturally different as they do not require the borrower to service the interest payments. In addition, the US sub-prime crisis arose as there were no underwriting standards in place. Under ERM, there is not the same underwriting process, as there is no obligation on the borrower to prepay; therefore the security of the collateral and the LTV is relevant. Furthermore, risk assessment should be relative to other risks and consideration of what forms of real world scenario would lead to such outcomes.

(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?

95. The exposure to restructured ERM is to a series of notes collateralised by a large number of underlying ERMs. Therefore, the exposure to the entity that issues the notes is not material, given it is operating as a pass-through vehicle in an intra-entity arrangement.
96. Restructured ERMs are a legal construct channelling the cashflows on the underlying asset into a structured drip-feed. In an internal transaction the exposure is effectively to the underlying asset, not to the note issuer.
97. If restructured ERMs are held, a further level of analysis and risk assessment is required in relation to the liquidity facility. In addition to the impact interest rates may have on the borrower behaviour in relation to the underlying ERM, the level of interest rates will also impact the interest payments on the liquidity facility (both drawn and undrawn). Sensitivity and scenario analysis on the impact of interest rates on the sustainability of any liquidity facility is required.

Question 25:

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

98. This risk should be managed within the setting of Strategic Asset Allocation (SAA). The SAA would consider the distribution of the asset portfolio over time and consider the liquidity risk implications when recommending a target allocation for illiquid assets including ERMs. However the risk is reduced when a sufficient restraint on cash flows from ERM in each future year taken into account is used as an indicator.
99. We note that it is not usual for draw-downs to be on guaranteed terms which can mitigate this risk, although these may be treated as very likely to occur.
100. Sensitivity/scenario testing against the run-off of the portfolio of liabilities needs to be carried out (i.e. asset liability modelling). From this, a maximum limit of the proportion of the asset portfolio which can be held today in ERM should be determined. This may be lower than might be considered initially, as the duration of ERM tends to be longer than that for annuities, as the payoff tends to be at the end of the policy as opposed to regular payments throughout. If the liability portfolio were open this analysis should be performed on a regular basis (at least annually), to check whether the chosen limit is still applicable or otherwise.

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.

101. The macroeconomic implications on the residential property are currently monitored on a monthly basis by the Bank of England MPC, on a quarterly basis as part of the Bank of England quarterly inflation report, and at least every 6 months by the OBR Economic and Fiscal Outlook. This analysis is based on inputs from market participants including the Council of Mortgage Lenders (CML), Halifax and Nationwide house price indices.

102. The outlook for the residential property market is reviewed regularly by a variety of Government and industry bodies. However, the focus of such reviews tends to be too short term for the nature of the NNEG risk which typically is low in the short term.
103. With respect to new business, the ERM risk can be managed via changes to underwriting standards on new business (e.g. LTV), interest rates and eligible properties criteria. With respect to existing business, the lender has the ability to stop further advances to mitigate property risk. Firms should have risk appetite levels by property type and region against which regular MI is provided.

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.

104. It may be possible to value individual properties by desktop AVM, at least on an annual basis, to monitor under/over performance versus regional house price indices (or by 'drive-by' valuation). This approach will take into account property type and local conditions. Where this is not considered reliable, a full valuation maybe required.
105. A heat map of NNEG on a loan by loan basis can be used to identify high risk cases. This information can be used to inform further lending decisions and whether on-site inspection is necessary to protect the lenders' interest.
106. Companies should have appropriately detailed risk appetite statements covering such as property types, regions, property values and LTVs.

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?

107. There is usually a legal requirement as part of the loan terms and conditions on the borrower to maintain buildings insurance and to maintain the property in a good state of repair. This can be monitored via the annual statement where the borrower is asked to confirm they still have valid insurance and that the property is in a good state of repair (although this is not always collected annually). Clearly this is only effective if enforced, and generally this is most effective if done early, and before NNEG would apply.
108. As ERM is still a developing market, companies may not fully understand the risks. This is an aspect which needs monitoring from the perspective of good market 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?

109. With respect to building insurance, this risk can be mitigated by taking a portfolio indemnity cover to insure the lender against such losses arising in the event that the borrower is in breach.

110. There is a range of penalties that could be levied. On an ongoing basis annual penalty fees could apply (to restore cover and enforce maintenance). If no proper upkeep or insurance cover is in place, then ultimately NNEG could be deemed to void, or else the borrower may be in default and have to repay or rectify – although this introduces further risks, such as reputational risk.

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?

111. The equation of value should mean that:

$$\text{Unrestructured ERM} = \text{Restructured ERM} + \text{Frictional Costs incurred}$$

The equation of value must hold in base and stress cases as economically nothing has changed post restructure.

112. We see merits and potential issues with the Effective Value approach. The approach could be used to:

- verify that the asset value of the restructured and unrestructured ERMs including frictional costs are unchanged
- compare the MA benefit of restructured ERMs against the IFRS provision for 'day 1 gain' to ensure that the MA benefit does not exceed amount of 'day 1 gain' (though there is no reasonable case for restricting the MA benefit any further)
- track the change over time or as a short-hand expression of stress results.

113. The definition of the equation of value should be clarified to state that the value of the unrestructured ERM should be equal to either the transaction price paid for the ERMs (where ERMs are traded in a secondary market) or the initial loan amount advanced.

114. From a negative perspective, it is less clear that comparison of Effective Values at a point in time is helpful.

115. We recognise the purpose of the proposed Effective Value measure for restructured ERMs which could be used as a tool to compare the MA benefit between firms with different cash flows within the MA eligible tranche, different spreads and different credit ratings. However, we are unsure at this stage whether it can achieve its aim of comparability, given the number of firm and securitisation specific factors involved in both the valuation of lifetime mortgages and the calculation of the MA.

116. The MA component will vary depending on whether a firm allocates the senior tranche(s) to their assigned matching portfolio or the additional portfolio of eligible assets that are assigned under stresses. The overall capital benefit from the MA is measured under stress will largely depend on the firms' fundamental spread stress and total credit spread stress. The characteristics of the liabilities which are been matched by the ERMs may also impact the Effective Value metric. Idiosyncratic differences between assets (e.g. due to vastly different underwriting standards applied at different times) would typically be reflected in the asset valuations and credit rating assessments, making direct comparison between securitisations difficult. A single comparative metric such as Effective Value would not allow fair comparison for portfolios of ERMs assets with varying duration.

117. It may be a useful tool to monitor change in a single securitisation, or to understand how each separate restructure would respond, or has responded to, particular economic changes. However, even within a single company, it would not necessarily be a useful comparator between different generations of securitisations.

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

118. Effective Value is potentially useful as one of a wider range of statistics. Each restructuring is unique as are the requirements of each MA portfolio. Sufficient information should be provided to ensure a proper match.

119. Each securitisation will have a different structure and risk profile which reduces use as a comparator. In addition, it is more important is to know the component parts of effective value and to understand the calculation of the component parts (the blocks in Figure 2 are helpful in determining the components).

120. Whilst ERMs are the focus of this discussion paper, the effective value concept should be applied consistently to other asset classes that have similar valuation uncertainty within the MA portfolio.

(iii) Do you believe indicative theoretical boundaries on MA benefit or Effective Value could be expressed in relation to components of the valuation of unstructured 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?

121. It is not possible to state a generic view on the size of MA. The indicative boundary would be that the MA benefit should not exceed the 'day 1 gain'. It is not possible or helpful to set further generic boundaries given the:

- risk profile of the underlying ERM portfolio will vary depending on a number of individual factors including product type, when it was originated, borrower age profile
- design of the restructured ERMs will vary between firms leading to different risk sensitivities e.g. note cash flow profile, waterfall structure, credit facilities, liquidity facilities.

122. The boundaries in Question 6 would still apply subject to a negative interest rate scenario.

(iv) How should such boundaries be determined?

123. Such boundaries should be determined on a case by case basis. This would recognise the risk profile of the restructured ERMs and the value of the unstructured ERMs that would have been generated under the previous ICAS regime.

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.

124. Boundaries should only be set where there is clear economic rationale for the boundary condition.

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.

125. Good practice for assigning internal credit ratings to restructured ERMs and other illiquid assets includes:
- documented internal credit rating framework with defined governance processes
 - review by the relevant governance committee at least on annual basis and on material triggers (see below)
 - a balance of both quantitative and qualitative analysis
 - description of key risk factors and rating scenarios for different target ratings
 - quantitative analysis of cashflows and the ability to repay performed using deterministic or stochastic scenarios
 - sensitivity of the rating to key risk factors
 - second line risk management validation of the rating framework and actual ratings proposed
 - consideration of expert judgement in addition to model results.
126. The internal rating process should be validated based on:
- comparison with the publically available ERM methodologies used by external rating agencies
 - rating methodologies used by external rating agencies
 - comparison with applicable banking stress tests applied by the PRA
 - comparison with the Internal Model methodology and assumptions
 - external rating of comparable debt notes issued by relevant ERM securitisations
 - back testing of historic ERM default experience where possible.
127. For the most material exposures it may also be appropriate to consider independent assurance review or bring the scope of internal ratings into the annual audit. However, the costs of such an approach would need to be considered against the potential exposure to an incorrect rating being applied.
128. The qualitative events that may trigger a review of the rating methodology include:
- material change in the legal enforceability of the ERM loans
 - material change in UK economic outlook as identified by the Office for Budget Responsibility and/or Bank of England Quarterly Inflation Report
 - material change to the Internal Model Application methodology and/or assumptions for ERM
 - the default or material regulatory breach by the ERM loan servicer(s)
 - the default or material regulatory breach by the loan originator(s).
129. The appropriateness of the internal rating will depend on the performance of the underlying collateral, the ERM portfolio. In order to monitor the internal credit rating will require monitoring of the key credit risk factors (which include the material assumptions used in the valuation of ERM assets).
130. Expert Judgment used in the internal rating process should consider the following factors:
- available, relevant and credible quantitative results
 - relevant subject matter experts

- independent 3rd party analysis / legal opinion
- observable comparable market data, including external ratings from rating agencies.

Question 32:

Do you consider that an 'equation of value' between unstructured and restructured ERMs should hold?

131. We agree that this equation of value 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 unstructured ERMs less frictional costs. In which circumstances do you think is it more appropriate to consider the senior or junior tranche as the residual?

132. The junior note would typically be assumed to be the residual given they rank bottom of the waterfall structure, and so the corresponding return will be determined by the performance of the Special Purpose Vehicle and its ability to meet obligations to the senior tranches.

133. The senior tranches will also typically be easier to value; by construction they transfer lower risk than the other tranches. The idea of the junior notes taking the residual value is also aligned with the construction whereby the junior notes absorb the majority of the risk and their value is what is left over, after having paid out the more senior tranches.

134. However, having a robust valuation approach that can be benchmarked against observable data is arguably more important than the determination of which component is residual. In any case, the residual value should be validated for its reasonableness and as a check against the valuation of the other tranches.

Question 34:

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

135. The senior tranches should be valued independently of the junior tranches. The only relationship is that the equation of value should hold. The relationship will be driven by company specific factors reflecting the:

- target rating of the notes
- illiquidity premium which is passed through as an MA
- extent to which longevity risk is retained within the matching portfolio
- capital requirements on the senior and junior tranches.

136. Optimisation of different elements will lead to different relationships on the proportion of senior and junior notes required.

137. One approach is to consider the rating of the restructuring that is to be targeted. The rating tests will then target the required probability of default and maximise the percentage of the cashflows that can be assigned to this note. The remaining cashflows can then be considered and a new probability of default targeted for the next more junior note.

(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?

138. Due to the lack of observable market data the spreads for the senior tranches should be derived applying expert judgement considering factors such as:

- spreads on equivalently rated assets that are the closest in maturity and risk profile
- the underlying spread on the unstructured ERM assets
- spreads on other illiquid assets
- rating sensitivity analysis of the tranches to assist in setting the spread.

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?

139. Once restructured, the MA-eligible assets are a fixed stream of cashflows similar to a corporate bond with an associated Credit Quality Step (CQS). There does not seem to be any justification to treat these cash flows any differently to the treatment of a standard corporate bond under stress and in the capital calculations as set out by the PRA. Under stressed scenarios, the probability of default would increase and the notes would be revalued based on the revised credit quality step and the revised illiquidity premium. This would then lead to a revised MA.

140. The junior note would then be revalued in accordance with the residual value of the ERM.

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?

141. The actions available will be to some extent firm-specific and the appropriateness of actions would vary based on the underlying cause of the deterioration. Examples of the actions available include:

- adding new ERMs to the structure to support the rating and value of the junior tranche
- substituting loans in the SPV with performance poorer than expected with new ERM loans, in order to maintain the underlying asset pool in the SPV. Note this is a common feature in securitisation structures
- firms could increase the liquidity facility available to the SPV
- additional equity could be injected to the structure
- adjustment to the target rating of the portfolio
- in extreme events, it may be necessary to restructure the notes to reduced amounts or wind up the SPV and create an alternative vehicle.

(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.

142. MA portfolios typically allow assets such as corporate bonds to be traded for good risk management purposes and similar principles should apply to restructured ERMs. All actions should be in line with the firm's risk management framework and taken in the overall best interests of borrower protection. These risk management actions should not affect MA eligibility of the senior tranches as it would support maintaining MA eligibility going forward.

143. With regard to the specific actions noted above:

- a capital/cash injection should not be difficult for MA eligibility, and neither should increasing the size of support provided by this liquidity facility
- adding / substituting new business is viable and would not affect eligibility, but this action relies upon new ERMs available to add into the structure, and the legal documentation of the SPV permitting it
- increasing the liquidity facility is only viable provided the expected cashflows to arise from the underlying ERM portfolio are sufficient to repay the liquidity facility provider in full. A liquidity facility is not a form of credit enhancement.

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 unstructured ERMs.)

144. The main additional risks that arise from the restructure are the additional complexity of both modelling and understanding. The restructure through splitting of ERMs into bond-like and equity-like components creates artificial risks that did not exist prior to the restructuring as they were not present in the underlying ERMs.

145. Other risks created from the structure include the management of a liquidity facility to support the payments due on the notes, though this is actually all within a closed system and does not increase the real risks to the firm.

(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)?

146. The liquidity risks of the restructured ERMs should be monitored in line with the liquidity policy of the MA portfolio, whether or not the liquidity facility is inside or outside the MA portfolio, as this facility is integral to supporting the fixity of the restructured MA cashflows. This means regular monitoring and stress and scenario testing to ensure the size of the liquidity facility remains sufficient. It should, however, be remembered that this is a closed system and thus no new liquidity risk is, in reality, created; thus it is inappropriate to burden the firm with disproportionate activity over and above that inherent in the ERM assets themselves.

147. Liquidity risks on future advances should consider reasonable maximum advance amounts, to ensure the firm retains sufficient liquid assets to fund such advances.