Disclaimer

Following the publication of the Commission's Delegated Act containing implementing rules for Solvency II and the publication of EIOPA's Guidelines on Pillar I, reference should be made to the published Directive, Delegated Regulation and Guidelines as the basis for implementing Solvency II.

Questions regarding the submission of information during the preparatory phase can be submitted as part of the dedicated regulatory Q&A process on the Preparatory Guidelines on Submission of Information to National Competent Authorities.

EIOPA-14/210
30 April 2014

Technical Specification for the Preparatory Phase (Part II)

This document contains part II of the technical specifications for the preparatory phase. It needs to be applied in combination with part I of the technical specifications.

A number of simplifications and technical assumptions contained in this document have been made for pragmatic reasons and for the purpose of the preparatory phase only. The technical specifications therefore should not be seen as a complete implementation of the Solvency II framework.

This technical specifications have been drafted to reflect the content of the Directive 138/2009/EC and any amendments already agreed to it by the Omnibus II Directive, the content of the working documents of the (Level 2) Delegated Acts available at the time this document was drafted, and where relevant and necessary for the purpose of clarity, the working document of the (Level 3) Guidelines.

Several of the measures described in this Technical Specification will be subject to prior supervisory approval. The use of any of these measures by undertakings during the preparatory phase should not be taken to imply, or in any way pre-empt, the supervisor's decision to grant such approvals.

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1.1 Introduction

For the purpose of the preparatory phase, EIOPA provides all major discount curves for the 31/12/2014 and 30/09/2015, apart from those including a matching adjustment or a transitional adjustment, as both of these are company specific.

This section provides insights on:

- how the Basic Risk-Free term structures have been derived;
- how the relevant risk-free term structures including a Volatility Adjustment are to be applied (details on the derivation of the volatility adjustment are provided in Appendix VA1 and details of the Fundamental Spreads used to perform the risk-correction of the spread are in Appendix FS1 and DC1);
- how the transitional risk-free term structures are to be derived and applied;
- how the matching adjustment is to be derived and applied (details of the Fundamental Spreads are in Appendix FS1 and DC1).

1.2 Methodology for determining the basic risk-free interest rate term structures provided by EIOPA

The assumptions set out in this section (e.g. Ultimate Forward Rate, Last Liquid Point, Credit Risk Adjustment) reflect the fact that the final methodologies are currently under development. Therefore none of those assumptions should be seen as indicating the final implementation, but rather as a pragmatic approach chosen for the preparatory phase only.

1.2.1 Choice of reference instruments and determination of the Last Liquid Point

For each currency and maturity, the basic risk-free interest rates have been derived on the basis of interest rate swap rates for interest rates of that currency, adjusted for credit risk (see subsection 1.2.2). However, for each currency, for maturities where interest rate swap rates were not available from deep, liquid and transparent financial markets the rates of government bonds issued in that currency, adjusted to take account of the credit risk of government bonds, have been used to derive the basic risk-free interest rates where they were available from deep, liquid and transparent financial markets.

The choice of reference instruments and the values for the Last Liquid Points (LLPs) have been based on EIOPA analysis of the depth, liquidity and transparency of the relevant markets and the ability of undertakings to match their liabilities with bonds. The exact choice of reference instrument and LLP by currency, for the purpose of the preparatory phase only, is presented in appendix DC1.

As regards quotes for swap data, the swap mid rate will be used in the determination of the basic risk-free interest rate term structure.[1]

1.2.2 Adjustment for credit risk

The reference instruments used to derive the basic risk-free interest rate term structure need to be adjusted for credit risk.

1.2.2.1 Adjustment for credit risk for interest rate swaps

For the purpose of the preparatory phase, the adjustment for credit risk is applied as a fixed deduction across all maturities of the observed swap term structure.

In particular, the adjustment takes into account the credit risk that is embedded in the determination of the floating rate leg of the swap deal, i.e. the credit risk pertaining to uncollateralised interbank market. Thus, the credit risk adjustment depends on the credit quality of the banks that, via interbank transactions, determine the basis for the floating leg in swap contracts.

The adjustment for credit risk to the basic risk-free interest rates has been derived from market rates that capture the credit risk reflected in the floating rate of interest rate swaps. In particular for the euro, the market rates correspond to interbank offered rates for a 3 month tenor.

The adjustment has been determined on the basis of the difference between rates capturing the credit risk reflected in the floating rate of interest rate swaps and overnight indexed swap rates of the same maturity, where both rates are available from deep, liquid and transparent financial markets. The calculation of the adjustment has been based on 50 percent of the average of that difference over a time period of one year. Where necessary The adjustment is subject to a cap and a floor to ensure that it is not lower than 10 basis points or higher than 35 basis points.See Appendix DC1 for further details on the adjustments applied for the different reference dates.

1.2.2.2 Adjustment of credit risk for government bonds

For the purposes of the preparatory phase, the Credit Risk Adjustment for government bonds at the various reference dates are as set out in Appendix DC1.

1.2.3 Treatment of currencies pegged to the euro

For those currencies pegged to the euro, an adequate currency risk adjustment should be added together with the credit risk adjustment of the risk free term structure for the euro.

The currency risk adjustment shall correspond to the cost of hedging against the risk that the value in the pegged currency of an investment denominated in euro decreases because of changes in the level of the exchange rate

[1] The bid-offer spread will be small for reference instruments traded in deep, liquid and transparent markets.

between the euro and the pegged currency. The adjustment shall be the same for all insurance and reinsurance undertakings.

Due to limited currency risk nowadays existing in the insurance markets whose currencies are pegged to the euro, and hence the limited amount of the currency risk adjustment, the assessment of this adjustment has followed the evidence available. Therefore, these technical specifications do not pre-empt a further update, if needed.

For the purposes of this exercise a currency risk adjustment has been made for Denmark and Bulgaria. For Lithuania the euro curve has been applied having in mind its nearby integration into the euro.

1.2.4 Extrapolation Methodology

The appropriate risk-free interest rate term structure will in practice be constructed from a finite number of liquid market data points. Therefore, both interpolation between these data points and extrapolation beyond the last liquid point (LLP) are required.

The interpolation between data points and extrapolation beyond the LLP has been done using the Smith-Wilson method. This is the same method as was used for the LTGA. More information about the Smith-Wilson method is included in Appendix DC3.

1.2.5 Parameterisation

1.2.5.1 The ultimate forward rate (UFR)

The ultimate forward rate (UFR) is the percentage rate that the forward curve converges to at the pre-specified maturity. The UFR is a function of long-term expectations of the inflation rate, and of the long-term average of the short-term real rate. As this value is assessed in line with long-term economic expectations it is expected to be stable over time and only change due to changes in long-term expectations.

For the purpose of the preparatory phase it is assumed that the UFR for each currency is based only on the estimate of the expected inflation and the estimate of the long-term average of the short-term real rate.

For pragmatic reasons, since it is very difficult to differentiate between long-term economic expectations of different currency areas in a globalized economy, for the purpose of the preparatory phase it is assumed that the UFR for each currency is equal to 4.2% (i.e. 2.2% long term growth rate and 2% inflation rate assumption). The exceptions are domestic currencies of Liechtenstein, Switzerland and Japan where the UFR is 3.2%.

1.2.5.2 The speed of convergence to the UFR

The alpha parameter in the Smith-Wilson method determines both the speed of convergence to the UFR in the extrapolated part, and the smoothness of the curve in the interpolated part. Larger values of alpha give greater weight to the UFR, while smaller values of alpha give more weight to the liquid market data.

For the purpose of the preparatory phase, the alpha parameter is calibrated so that the extrapolated part of the forward curve converges to within 1 bps from the UFR at a specified number of years from the LLP. Details of the convergence periods used for each currency are set out in Appendix DC1.

1.3 Volatility Adjustment

Member States may require prior approval by supervisory authorities for insurance and reinsurance undertakings to apply a volatility adjustment. In this case, where an undertaking applies the Volatility Adjustment for the purposes of the preparatory phase, this shall in no way be taken to pre-empt the supervisor's decision as to whether to grant approval.

1.3.1 Determination of the relevant risk-free interest rate term structure including Volatility Adjustment

For the purpose of the preparatory phase, EIOPA has provided the relevant risk free curves including Volatility Adjustment for major currencies. These curves were determined as follows:

- Basic risk-free curves were constructed according to the methodology set out in section 1.2 above;
- The Volatility Adjustment for each major currency (and country, where relevant) was calculated using the reference portfolios and formulae set out in Appendix VA1 and the Fundamental Spreads set out in Appendix DC1;
- The Volatility Adjustment was added to the zero coupon spot rates of the basic risk-free curve in the liquid part of the curve only (i.e. only until the LLP);
- The resulting rates were input to the Smith-Wilson extrapolation model again to produce the full zero-coupon curves of the relevant risk-free rate including Volatility Adjustment.

Because the Volatility Adjustment is applied to the liquid zero coupon rates of the Basic Risk Free curve, the final discount curves provided by EIOPA show a parallel shift until the LLP. There is no parallel shift after the LLP since both the Basic and Relevant Risk-Free curves ultimately converge to the same UFR, irrespective of the Volatility Adjustment.

The approach described above to determine the relevant risk-free curve including Volatility Adjustment is under further technical consideration and might be changed in the future.

1.3.2 Scope of Application of the Volatility Adjustment

Undertakings that apply a Volatility Adjustment to the relevant risk-free interest rate terms structure to calculate the best estimate of a portfolio of insurance or reinsurance obligations shall not apply a Matching Adjustment to those obligations.

1.3.3 Interaction with the SCR calculation

The Volatility Adjustment should not respond to SCR shocks; that is, the amount of the Volatility Adjustment should be assumed to be the same before and after the application of an SCR shock.

1.4 Transitional measure on risk free rates

The use of this measure under the Solvency II regime will be subject to prior supervisory approval. If an undertaking applies the transitional measure for the purposes of the preparatory phase, this shall in no way be taken to pre-empt the supervisor's decision as to whether to grant approval.

A transitional measure on the risk free rate aims to introduce the full effect of Solvency II only gradually over a sufficiently long time-period. In practice this means that undertakings would value their technical provisions according to Solvency II principles, however applying a transitional adjustment to the relevant risk-free rate term structure with respect to admissible insurance and reinsurance obligations, taking into account the level of Solvency I interest rates.

For the preparatory phase undertakings are allowed to include the transitional into their calculations, as if it were applied at the beginning of Solvency II (i.e. assuming that undertakings are zero years into the transitional process).

The scope of admissible obligations to which the transitional can be applied is set out in subsection 1.4.1. The determination of this adjustment is specified in subsection 1.4.2. Finally, subsections 1.4.3 and 1.4.4. describe the application of the transitional, and its interaction with other measures.

1.4.1 Scope of transitional measure

The admissible insurance and reinsurance obligations to which the transitional can be applied shall only comprise obligations that meet the following requirements:

- The contracts that give rise to the insurance and reinsurance obligations were concluded before 31/12/2014, excluding contract renewals on or after that date;
- until 31/12/2014, technical provisions for the insurance and reinsurance obligations were determined in accordance with the laws, regulations and administrative provisions which are adopted pursuant to Article 20 of Directive 2002/83/EC;
- the matching adjustment is not applied to the insurance or reinsurance obligations.

Undertakings applying the transitional adjustment to the risk-free rate term structure shall not apply the transitional adjustment to technical provisions as defined in Section 2.

1.4.2 Construction of the transitional discount curve

This subsection describes the construction of the transitional curve over the transitional period of 16 years. However, it should be noted that for the purpose of the preparatory phase it is assumed that undertakings are zero years into the transitional process. The construction of the transitional discount curve affords the use of Solvency I interest rates. Undertakings need to provide these Solvency I discount rates themselves as they would

have been used for the respective obligations at 31/12/2014 according to the current national regulatory framework.

Guidance on how the construction of the transitional curve may be performed is outlined in the box below:

1. For each currency, the adjusted risk-free rate interest term structure ($i_k^{SII,Adj}$) shall be determined as

$$i_k^{SII,Adj} = i_k^{SII} + \Delta$$

where

   a. (i_k^{SII}) denotes the relevant risk-free rate term-structure (including, where applicable, a volatility adjustment) at maturity k;
   b. Δ denotes the transitional adjustment to the risk-free rate term structure.

2. The adjustment Δ shall be calculated as follows:

$$\Delta = i^{SI} - i^{SII}$$

where:

   a. i^{SI} denotes the interest rate as determined by the insurance or reinsurance undertaking in accordance with the laws, regulations and administrative provisions which are adopted pursuant to Article 20 of Directive 2002/83/EC;
   b. i^{SII} denotes the annual effective rate, calculated as the single discount rate that, where applied to the cash-flows of the portfolio of admissible insurance and reinsurance obligations, results in a value that is equal to the value of the best estimate of the portfolio of admissible insurance and reinsurance obligations where the time value is taken into account using the relevant risk-free interest rate term structure referred to in Article 77(2).

   Where Member States have adopted laws, regulations and administrative provisions pursuant to Article 20.B.a.ii. of Directive 2002/83/EC, the interest rate referred to in point (a) shall be determined using the methods used by the insurance or reinsurance undertaking at the last date of the application of Directive 2002/83/EC.

3. The interest rates i^{SI} and i^{SII} may be calculated according to the paragraphs 4 to 6 as follows:
4. The interest rate i^{SII} may be calculated as the single discount rate such that the following equation holds:

$$\sum_k \frac{CF_k}{(1+i^{SII})^k} = BE^{SII}$$

where:

   a. The Cash-Flows CF_k denote the expected undiscounted value of future cash-flows of the portfolio of admissible insurance and reinsurance obligations, relating to maturity *k* (not including cash flows relating to future discretionary benefits related to these obligations)
   b. BE^{SII} denotes the value of the best estimate of the portfolio of admissible insurance and reinsurance obligations (not including the value of future discretionary benefits) where the time value is taken into account using the relevant risk-free interest rate term structure referred to in Article 77(2) (including, where applicable, the volatility adjustment).

5. In case there is one single interest rate determined by the insurance or reinsurance undertaking in accordance with Article 20 of Directive 2002/83/EC applicable to all admissible insurance and reinsurance obligations, i^{SI} shall be set at that single interest rate.

6. Where there are more than one interest rates determined by the insurance or reinsurance undertaking in accordance with Article 20 of Directive 2002/83/EC applicable to all admissible insurance and reinsurance obligations, the interest rate i^{SI} may be calculated as the single discount rate such that the following equation holds:

$$\sum_k \frac{CF_k}{(1+i^{SI})^k} = \sum_j \sum_k \frac{CF_k^j}{(1+i_k^{j,SI})^k}$$

where the summation j runs over the different classes j of interest rates and where:

a. The Cash-Flows CF_k are defined as above

b. for each class j of interest rates, $i_k^{j,SI}$ denotes the interest rate as determined by the undertaking in accordance with the laws, regulations and administrative provisions pursuant to Article 20 of Directive 2002/83/EC relating to maturity k for all contracts in this class.

c. for each class j of interest rates, the Cash-Flows CF_k^j are defined as the expected undiscounted value of future cash-flows of the portfolio of those admissible insurance and reinsurance obligations to which the interest rate $i_k^{j,SI}$ applies, relating to maturity k (not including cash flows relating to future discretionary benefits related to these obligations). Note that, for each k, $CF_k = \sum_j CF_k^j$.

1.4.3 Application of the transitional measure

The transitional measure is to be used to calculate technical provisions for admissible obligations for the Solvency II balance sheet. Admissible obligations are those meeting the criteria set out in 1.4.1.

1.4.4 Interaction with the SCR calculation

For the purposes of calculating the Solvency Capital Requirement, as in case of the transitional measure on technical provisions described in section 2, undertakings shall assume that the amount of the transitional adjustment to the risk free interest rate term structure remains unchanged following an SCR stress scenario. For the calculation of the interest rate risk sub-module as set out in SCR.5.23, the specified shocks should apply to the basic risk-free interest rates without any adjustment.

1.5 Matching Adjustment

The use of this measure under the Solvency II regime will be subject to prior supervisory approval. If an undertaking applies the Matching Adjustment for the purposes of the preparatory phase, this shall in no way be taken to pre-empt the supervisor's decision as to whether to grant approval.

The assumption taken in this section have been made for practicality reasons only and should not be seen as an indication for the final approach to be implemented under Solvency II.

In the context of the preparatory phase, the Matching Adjustment is to be applied as a parallel shift to the entire basic risk-free term structure as provided by EIOPA in Appendix DC2, i.e. it is not varying by maturity. Details regarding the determination of the amount of the Matching Adjustment are provided in the next section.

It should be noted that different Matching Adjustment amounts might apply to different portfolios of liabilities.

1.5.1 Requirements for applying a matching adjustment

Insurance and reinsurance undertakings may apply a matching adjustment to the relevant risk-free interest rate term structure to calculate the best estimate of a portfolio of life insurance or reinsurance obligations, including annuities stemming from non-life insurance or reinsurance contracts where the following conditions are met:

(a) the insurance or reinsurance undertaking has assigned a portfolio of assets, consisting of bonds and other assets with similar cash-flow characteristics, to cover the best estimate of the portfolio of insurance or reinsurance obligations and maintains that assignment over the lifetime of the obligations, except for the purpose of maintaining the replication of expected cash-flows between assets and liabilities where the cash-flows have materially changed;

(b) the portfolio of insurance or reinsurance obligations to which the matching adjustment is applied and the assigned portfolio of assets are identified, organised and managed separately from other activities of the undertakings, and the assigned portfolio of assets cannot be used to cover losses arising from other activities of the undertakings;

(c) the expected cash-flows of the assigned portfolio of assets replicate each of the expected cash-flows of the portfolio of insurance or reinsurance obligations in the same currency and any mismatch does not give rise to risks which are material in relation to the risks inherent in the insurance business to which the matching adjustment is applied;

(d) the insurance or reinsurance contracts underlying the portfolio of insurance or reinsurance obligations do not give rise to future premium payments;

(e) the only underwriting risks connected to the portfolio of insurance or reinsurance obligations are longevity risk, expense risk, revision risk and mortality risk;

(f) where the underwriting risk connected to the portfolio of insurance or reinsurance obligations include mortality, the best estimate of the portfolio of insurance or reinsurance obligations does not increase by more than 5% under a mortality risk shock that is calculated in accordance with section 1.5.2.

(g) the contracts underlying the insurance or reinsurance obligations include no options for the policy holder or only a surrender option where the surrender value does not exceed the value of the assets, valued in accordance with the relevant valuation provisions of the Technical Specification (Part I), covering the insurance or reinsurance obligations at the time the surrender option is exercised;

(h) the cash-flows of the assigned portfolio of assets are fixed and cannot be changed by the issuers of the assets or any third parties;

(j) the insurance or reinsurance obligations of an insurance or reinsurance contract are not split into different parts when composing the portfolio of insurance or reinsurance obligations for the purpose of this paragraph.

Notwithstanding point (h), insurance or reinsurance undertakings may use assets where the cash-flows are fixed except for a dependence on inflation, provided that those assets replicate the cash-flows of the portfolio of insurance or reinsurance obligations that depend on inflation.

In the event that issuers or third parties have the right to change the cash-flows of an asset in such a manner that the investor receives sufficient compensation to allow it to obtain the same cash-flows by re-investing in assets of an equivalent or better credit quality, the right to change the cash-flows shall not disqualify the asset for admissibility to the assigned portfolio in accordance with point (h).

1.5.2 Interaction with other measures

The matching adjustment shall not be applied with respect to insurance or reinsurance obligations where the relevant risk-free interest rate term structure to calculate the best estimate for those obligations includes a volatility adjustment or transitional measure on the risk-free interest rates.

1.5.3 Mortality Risk Shock for Matching Adjustment

1.5.3.1 The mortality risk shock referred to in section 1.5.1 paragraph (f) shall be the more adverse of the following two shocks:

(i) an instantaneous permanent increase of 15% in the mortality rates used for the calculation of the best estimate;

(ii) an instantaneous increase of 0.15 percentage points to the mortality rates (expressed as percentages) which are used in the calculation of technical provisions to reflect the mortality experience in the following 12 months.

1.5.3.2 For each of these shocks the increase in mortality rates shall only apply to those insurance policies for which the increase in mortality rates leads to an increase in technical provisions taking into account the following:

(i) Multiple insurance policies in respect of the same insured person may be treated as if they were one insurance policy;

(ii) Where the calculation of technical provisions is based on homogeneous risk groups of policies, the identification of the policies for which technical provisions increase under an increase of mortality rates may also be based on those groups of policies instead of single policies, provided that it would give approximately the same result.

1.5.3.3 With regard to reinsurance policies, the identification of the policies for which technical provisions increase under an increase of mortality rates shall apply to the underlying insurance policies only and shall be carried out in accordance with the paragraph 1.5.3.2.

1.5.4 Adjustments to Own Funds and the SCR

1.5.4.1 For the purposes of the matching adjustment the reduced transferability and scope for diversification between the assigned portfolio and the remainder of the undertaking needs to be reflected in adjustments to own funds and the Solvency Capital Requirement.

1.5.4.2 Insurance and reinsurance undertakings should determine the amount by which the reconciliation reserve should be reduced by comparing the following amounts:

(a) the restricted own-fund items within the matching adjustment portfolio;

(b) the notional Solvency Capital Requirement for the matching adjustment portfolio.

1.5.4.3 Where the insurance or reinsurance undertaking calculates the Solvency Capital Requirement using the standard formula, the notional Solvency Capital Requirement in paragraph 1.5.4.2(b) should be calculated in accordance with paragraphs SCR.10.20, SCR.10.21, SCR.10.23 and SCR.10.24 of the Technical Specification (Part I), but with the phrase 'ring-fenced fund' being replaced by 'matching adjustment portfolio'. The Solvency Capital Requirement for the undertaking as a whole should be calculated as the sum of the notional Solvency Capital Requirements for each matching adjustment portfolio and each ring-fenced fund and the notional Solvency Capital Requirement for the rest of the undertaking.

1.5.4.4. Where the undertaking calculates the Solvency Capital Requirement using an internal model, the notional Solvency Capital Requirement in paragraph 1.5.4.2(b) should be calculated using that internal model, as if the undertaking pursued only the business included in the matching adjustment portfolio.

1.5.5 1.5.4.5. For Groups where one or more solo entities use a matching adjustment, the calculation of Group solvency should be made according to the relevant provisions of the Technical Specification (Part I) Section 5.Calculation of the matching adjustment

1.5.5.1 For each currency the matching adjustment shall be calculated in accordance with the following principles:

(a) the matching adjustment shall be equal to the difference of the following:

(i) the annual effective rate, calculated as the single discount rate that, where applied to the cash-flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value, determined in accordance with the relevant valuation provisions of Technical Specification (I), of the portfolio of assigned assets;

(ii) the annual effective rate, calculated as the single discount rate that, where applied to the cash-flows of the portfolio of insurance or reinsurance obligations, results in a value that is equal to the value of

the best estimate of the portfolio of insurance or reinsurance obligations where the time value is taken into account using the basic risk-free interest rate term structure;

(b) the matching adjustment shall not include the fundamental spread reflecting the risks retained by the insurance or reinsurance undertaking;

(c) notwithstanding point (a), the fundamental spread shall be increased where necessary to ensure that the matching adjustment for assets with sub investment grade credit quality does not exceed the matching adjustments for assets of investment grade credit quality and the same duration and asset class;

(d) the use of external credit assessments in the calculation of the matching adjustment shall be in line with the specifications referred to in Article 111(1)(n) of the Directive 2009/138/EC.

1.5.5.2 The fundamental spreads for each asset class, rating and duration have been provided by EIOPA (see Appendix FS1and DC1 for more detail).

1.5.5.3 For the purpose of calculating the annual effective rate in 1.5.5.1(a)(i), insurance and reinsurance undertakings should only consider the assigned assets whose expected cash-flows are required to replicate the cash-flows of the portfolio of insurance and reinsurance obligations, excluding any assets in excess of that.

1.5.5.4 The 'expected cash-flow' of an asset means the cash-flow of the asset adjusted to allow for either:

(a) the probability of default of the asset that corresponds to the element of the fundamental spread set out in Appendix DC1, or

(b) where no reliable credit spread can be derived from the default statistics, as per paragraph FS.2 of Appendix FS1, the probability of default of the asset that corresponds to the entirety of the fundamental spread.

1.5.5.5 The deduction of the fundamental spread, referred to in 1.5.5.1(b), from the result of the calculation set out in 1.5.5.1(a), shall include only the portion of the fundamental spread that has not already been allowed for by adjusting the cash-flows of the assigned portfolio of assets in accordance with paragraph 1.5.5.4.

1.5.6 Interaction with the SCR calculation

1.5.6.1 In the context of the SCR submodule for interest rate risk, it should be noted that the shocks should be applied not taking into account the Matching Adjustment.

1.5.6.2 Where insurance undertakings apply the matching adjustment, they should carry out the scenario based calculation for spread risk as follows:

(a) the assets in the assigned portfolio shall be subject to the instantaneous decrease in value for spread risk set out in the Technical Specification (Part I) provisions corresponding to SCR.5.8;

(b) the technical provisions shall be recalculated to take into account the impact on the amount of the matching adjustment of the instantaneous decrease in value of the assigned portfolio of assets. In particular, the fundamental spread shall increase, by an absolute amount that is calculated as the product of:

(i) the absolute increase in spread that, multiplied by the modified duration of the relevant asset, would result in the relevant risk factor stressi referred to in the Technical Specification (Part I) provisions corresponding to SCR.5.8, and

(ii) a reduction factor, depending on the credit quality as set out in the following table:

Credit quality step	0	1	2	3	4	5	6
Reduction factor	45 %	50 %	60 %	75 %	100 %	100 %	100 %

2 Transitional Measure on Technical Provisions

The use and amount of this measure under the Solvency II regime will be subject to prior supervisory approval. If an undertaking applies the transitional measure for the purposes of the preparatory phase, this shall in no way be taken to pre-empt the supervisor's decision as to whether to grant approval.

2.1 Scope of the Transitional on Technical Provisions

Insurance and reinsurance undertakings may apply a transitional deduction to technical provisions. This deduction may be applied at the level of homogeneous risk groups. A homogeneous risk group encompasses a collection of policies with similar risk characteristics (see also the definition of homogeneous risk group in Annex K of the Technical specifications Part I).

2.2 Calculation of the Transitional Deduction

The transitional deduction shall correspond to a portion of the difference between the

following two amounts:

(a) the technical provisions after deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles, calculated in accordance with Technical Specification (Part I) at 31/12/2014;

(b) the technical provisions after deduction of the amounts recoverable from reinsurance contracts calculated in accordance with the laws, regulations and administrative provisions which are adopted pursuant to Article 20 of Directive 2002/83/EC, Article 15 of Directive 73/239/EEC and Article 32 of Directive 2005/68/EC at 31/12/2014.

The maximum portion deductible shall decrease linearly at the end of each year, from 100% during the first year following its application to 0% as of 16 years after that date.

For the purpose of this exercise, the transitional on the technical provisions should be applied assuming that undertakings are zero years into the transition at the valuation date. This means that the maximum portion deductible should be 100% for this exercise.

Where insurance and reinsurance undertakings apply the volatility adjustment, the amount referred to in point (a) shall be calculated with the volatility adjustment at 31/12/2014.

The transitional deduction may be limited by the supervisory authority if its application could result in a reduction to the financial resources requirements that apply to the undertaking when compared with those calculated in accordance with the laws, regulations and administrative provisions which are adopted pursuant to Directive 2002/83/EC, Directive 73/239/EEC and Directive 2005/68/EC at 31/12/2014.

Undertakings that believe they may be subject to a limit on the amount of the transitional deduction in accordance with the paragraph above should discuss this with the relevant National Supervisory Authorities.

2.3 Interaction with other Measures

Insurance and reinsurance undertakings applying the transitional deduction from technical provisions shall not apply the transitional measure on the risk free rates.

2.4 Interaction with SCR

For the purposes of calculating the Solvency Capital Requirement, undertakings shall assume that the transitional deduction remains unchanged following a SCR stress. That is, the amount of the transitional deduction to technical provisions will be the same before and after a SCR stress.

Appendix VA1: Formula to calculate the spread underlying the volatility adjustment

The formula used in the context of these technical specifications is designed to calculate the spread on government bonds and corporate bonds, securitisations and loans including mortgage loans in the reference portfolio which is not attributable to any risk, i.e. the risk-corrected spread.

The spread is defined as the spread between the interest rate that could be earned from assets included in the reference portfolio and the rates of the relevant basic risk-free interest rate term structure. This spread is calculated for each relevant currency and for each relevant country. For the purposes of this exercise, the reference portfolios are unchanged from those used during the LTGA.

The spread referred to in the previous paragraph should be corrected to remove the portion of that spread that is attributable to a realistic assessment of expected losses, unexpected credit risk or any other risks, of the assets. This portion has been calculated in the same manner as the Fundamental Spread for the matching adjustment. The Fundamental Spreads for each asset class, credit quality and duration are in Appendix DC1.

Risk-corrected currency spread

The currency risk-corrected spread should be calculated separately for each currency and should be equal to the following:

$$S_{RC-currency} = \left(w_{gov} \cdot \max\left(S_{gov},0\right) - w_{gov} \cdot RC_{gov}\right) + \left(w_{corp} \cdot \max\left(S_{corp},0\right) - w_{corp} \cdot RC_{corp}\right)$$

Where:

(a) w_{gov} denotes the ratio of the value of government bonds included in the reference portfolio of assets for that currency and the value of all the assets included in that reference portfolio;

(b) w_{corp} denotes the ratio of the value of bonds other than government bonds, loans and securitisations included in the reference portfolio of assets for that currency and the value of all the assets included in that reference portfolio;

(c) S_{gov} denotes the average currency spread on government bonds included in the representative portfolio of assets of that currency;

(d) S_{corp} denotes the average currency spread on bonds other that government bonds included in the reference portfolio of assets for that currency;

(e) RC_{gov} denotes the portion of that spread that is attributable to a realistic assessment of expected losses, unexpected credit risk or any other risks, of the government bonds included in the reference portfolio of assets for that currency (i.e. the risk correction, which is calculated in the same manner as the fundamental spread for the Matching Adjustment);

(f) RC_{corp} denotes the portion of that spread that is attributable to a realistic assessment of expected losses, unexpected credit risk or any other risks, of the bonds other than government bonds, loans and securitisations included in the reference portfolio of assets for that currency (i.e. the risk correction, which is calculated in the same manner as the fundamental spread for the Matching Adjustment).

Risk-corrected country spread

The country risk-corrected spread should be calculated for each relevant national market. It should be calculated using the same formula than the currency risk-corrected spread but the terms w_{gov},w_{corp}, S_{gov}, S_{corp}, RC_{gov} and RC_{corp} should be based on a reference portfolio that is representative for the assets which insurance and reinsurance undertakings are invested in to cover the best estimate for insurance or reinsurance obligations sold in the insurance market in the insurance market of the country concerned and denominated in the currency of that country.

Formula to calculate the volatility adjustment

Where the country risk-corrected spread, noted $S_{RC\text{-}Country}$ is lower than 100 basis points, the volatility adjustment should be calculated as follows:

$$VA = S_{RC\text{-}Currency} * 0.65$$

Where $S_{RC\text{-}Currency}$ denotes the currency risk-corrected spread.

Where the country risk-corrected spread, noted $S_{RC\text{-}Country}$, is higher than 100 basis points and is higher than $2* S_{RC\text{-}Currency}$, the volatility adjustment should be calculated as follows:

$$VA = [S_{RC\text{-}Currency} + (S_{RC\text{-}Country} - 2 * S_{RC\text{-}Currency})] * 0.65$$

Appendix MA1: Association of credit assessments with credit quality steps

The credit assessments of an External Credit Assessment Institution (ECAI) are to be associated with the following credit quality steps:

Credit assessment provided by ECAIs		Credit quality steps associated
Standard & Poor's/Fitch	**Moody's**	
AAA	Aaa	0
AA	Aa	1
A	A	2
BBB	Baa	3
BB	Ba	4
Lower than BB, unrated	Lower than Ba, unrated	5-6, -

Appendix FS1: Fundamental Spreads provided by EIOPA

Please see separately provided spreadsheet DC1. Undertakings should contact their NSA via the Q&A process in case relevant government bond fundamental spread data are missing, EIOPA might be able to provide these upon request.

It should also be noted that for all currencies apart from GBP, the EUR fundamental spreads should be applied for corporate bonds.

FS1. In determining the fundamental spread relevant to each asset class, credit quality and duration, EIOPA has assumed that the fundamental spread is:

(a) equal to the sum of the following:

(i) the credit spread corresponding to the probability of default of the assets;

(ii) the credit spread corresponding to the expected loss resulting from downgrading of the assets;

(b) for exposures to Member States' central governments and central banks, no lower than 30% of the long term average of the spread over the risk-free interest rate of assets of the same duration, credit quality and asset class, as observed in financial markets;

(c) for assets other than exposures to Member States' central governments and central banks, no lower than 35 % of the long term average of the spread over the risk-free interest rate of assets of the same duration, credit quality and asset class, as observed in financial markets.

The probability of default referred to in point (a) (i) has been based on long-term default statistics that are relevant for the asset in relation to its duration, credit quality and asset class.

FS2. Where no reliable credit spread can be derived from the default statistics referred to in point FS1.(a) the fundamental spread was set equal to the portion of the long term average of the spread over the risk-free interest rate set out in points (b) and (c).

Appendix DC1: Summary of data sources and input parameters for all currencies

	Currency	LLP	Convergence	UFR %	Instrument
'Euro'	'EUR'	20	40	4.2	'SWP'
'Croatia'	'HRK'	7	40	4.2	'GVT'
'Czech Republic'	'CZK'	15	40	4.2	'SWP'
'Denmark'	'EUR'	20	40	4.2	'SWP'
'Hungary'	'HUF'	15	40	4.2	'GVT'
'Iceland'	'ISK'	20	40	4.2	'GVT'
'Liechtenstein'	'LIC'	25	35	3.2	'SWP'
'Norway'	'NOK'	10	40	4.2	'SWP'
'Poland'	'PLN'	15	40	4.2	'GVT'
'Romania'	'RON'	10	40	4.2	'SWP'
'Russia'	'RUB'	10	40	4.2	'SWP'
'Sweden'	'SEK'	10	10	4.2	'SWP'
'Switzerland'	'CHF'	25	35	3.2	'SWP'
'United Kingdom'	'GBP'	50	40	4.2	'SWP'
'Argentina'	'ARS'	10	40	4.2	'SWP'
'Australia'	'AUD'	25	35	4.2	'SWP'
'Brazil'	'BRL'	10	40	4.2	'GVT'
'Canada'	'CAD'	30	30	4.2	'SWP'
'Chile'	'CLP'	10	40	4.2	'SWP'
China, People's Rep'	'CNY'	15	40	4.2	'SWP'
'Colombia'	'COP'	10	40	4.2	'SWP'
'Hong Kong'	'HKD'	15	40	4.2	'SWP'
'India'	'INR'	10	40	4.2	'SWP'
'Japan'	'JPY'	20	40	3.2	'SWP'
'Malaysia'	'MYR'	20	40	4.2	'SWP'
'Mexico'	'MXN'	10	40	4.2	'GVT'
'New Zealand'	'NZD'	10	40	4.2	'SWP'
'Singapore'	'SGD'	30	30	4.2	'SWP'
'South Africa'	'ZAR'	30	30	4.2	'SWP'

'Korea, South'	'KRW'	20	40	4.2	'SWP'
'Taiwan'	[]	15	40	4.2	'SWP'
'Thailand'	'THB'	20	40	4.2	'SWP'
'Turkey'	'TRY'	20	40	4.2	'GVT'
United States America'	'USD'	50	40	4.2	'SWP'

For Bulgarian currency the euro curve shall apply. Currency adjustment = 0.07 basis points

For Danish currency the euro curve shall apply. Currency adjustment = 2.63 basis points

For Estonia and Lithuanian currencies the euro curve shall apply. No currency adjustment

Appendix DC2: Discount curves provided by EIOPA

See separate spreadsheet containing the relevant discount curves. Undertakings should contact their NSA via the Q&A process in case relevant currencies are missing, EIOPA might be able to provide these upon request. Alternatively, EIOPA can also provide the "MatLab" implementation code of the Smith-Wilson model for undertakings to construct those missing curves themselves.

Appendix DC3: Background material on the Smith-Wilson method

This appendix briefly describes how the Smith-Wilson (SW) extrapolation method has been implemented to calculate discount curves relevant for the LTGA.

The SW method applied here follows closely the implementation structure outlined in the EIOPA document entitled "Risk-free interest rates – Extrapolation method", which was drafted to support the QIS5 exercise.

At the outset, SW assumes that the price of a zero coupon rate can be expressed in the following way:

$$P(\tau_t) = e^{-UFR*\tau_t} + \sum_{k=1}^{K} z_k * \sum_{j=1}^{J} c_{k,j} * W(\tau_t, \tau_j) + e(\tau_t), \qquad [1]$$

as a function of coupon paying bonds. The variable P denotes the price of a zero coupon bond, e is the exponential function, z_k denotes a set of parameter to be estimated (one parameter for each k), and K is equal to the number of observed bonds/rate points on the maturity scale. There are two maturity counting variables, τ_t and τ_j, that both span the whole set of maturities, at which bonds/rates are observed. The first maturity variable, τ_t, maps the rows of the Wilson function W, and the other maturity variable, τ_j, maps the columns of W: where the former can be interpreted as the maturities at which the final curves is observed, i.e. comprising observed, interpolated and extrapolated maturities, and where the latter contains the maturities at which bond coupon payments are observed. W in the Wilson function serves a purpose akin to the loading matrix in a "traditional" yield curve factor model, e.g. the Nelson-Siegel model or an affine multifactor yield curve model. However, whereas yield curve models traditionally are formulated and estimated on the basis of yield curve data, the Smith-Wilson model is calibrated to the prices of the corresponding fixed income securities. And, the matrix W therefore represents "loadings" for prices at different maturities, and not for yields directly. In other words, the Smith-Wilson methods calibrates the observed rates to the discount function rather than to the yield curve, however, as there if a simple mapping between these two metrics, it is easy to convert the extrapolated discount function to the corresponding discount rate term structure.

The Wilson function is defined in the following way:

$$W(\tau_t, \tau_j) = e^{-UFR*(\tau_t+\tau_j)} * \left\{ a * min(\tau_t, \tau_j) - e^{-a*\max(\tau_t,\tau_j)} * sinh\left[a * min(\tau_t, \tau_j)\right] \right\}. \qquad [2]$$

It is observed that this function is symmetric, and approaches zero as τ_t and τ_j increases in value (goes to infinity). It is this latter attribute that facilitates the convergence of the discount curve to the UFR, as seen in equation 1. While these features of the Wilson function may not be immediately clear when inspecting equation 2, a graphical representation can provide some added insights.

Figure 1: An example of the Wilson function

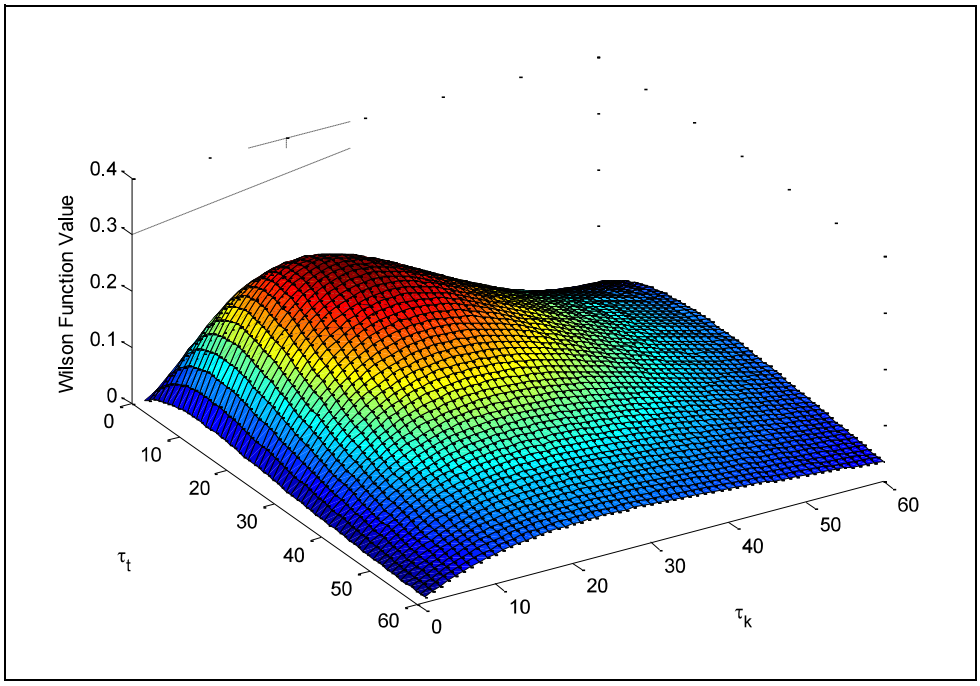

Figure 1 shows an example of the Wilson function for maturities from 1 to 60 years, using a convergence speed of a=0.10.

For the practical application of the Smith-Wilson model it is advantageous to work in matrix notation. As seen in Figure 1, the Wilson function is a symmetric matrix W, defined on the basis of maturity vectors. For the calibration work (τ_j) is be set equal to the maturities at which the calculation basis rate is observed. For the calculation of the final interpolated and extrapolated discount curve (τ_t) is set equal to maturities from 0 to 150 years, where steps of one month is used for maturities below one year, and steps of one year is used for the remaining maturities.

Following the above mentioned EIOPA QIS5 document, the Smith-Wilson method can be written in matrix form as:

$$M = C * u + (C * W * C') * z. \qquad [3]$$

Where M is a vector of ones, expressing that the observed coupon paying bonds are priced at par. This assumption is true under normal market circumstances for bonds, and probably true in general for our implementation that is based on swap rates. C is a matrix that contains the coupon payments for each bond/swap rate. Effectively, C is a K-by-J matrix, W is the Wilson function and u collects the values of the exponential function in.

It follows from [3] that the SW parameters contained in z can be calculated in the following way:

$$z = (C * W * C')^{-1} * (m - C * u). \qquad [4]$$

Armed with the z values, the SW interpolation and extrapolation method follows the matrix version of [1]:

$$P = u + (C * W) * z. \qquad [5]$$

The resulting vector P is converted into a discount rate curve by $r_c = \frac{1}{\tau_t} * log\left(\frac{1}{\hat{p}}\right)$, if continuously compounded rates are needed, and $r_d = \left(\frac{1}{\hat{p}}\right)^{\frac{1}{\tau_t}} - 1$, if annually compounded rates are needed.