**Interest rate risk**

**AMICE´s Proposal**

We agree on EIOPA’s finding that the current way the interest rate down risk is calculated is faulty and needs improvements. Anyway, in EIOPA’s new proposal there is a lack of evidence backing the model and we believe the parameters and the model over estimates the interest rate down risk. For example, EIOPA has provided no evidence backing the numbers they are bringing in on the -200bps lower bound or on the way the model converges towards this (the model parameters). Also, the lower limit (-2%) has similar caveats than the current limit (i.e. +- 0%) in case this is reached someday.

We ask EIOPA to investigate a new option with the following features:

**Alternative framework for assessing interest rate down stress for maturity points until the LLP:**

This alternative approach has the following features:

a. There is always a downside risk but where there is no quantitative evidence this is set by using qualitative arguments. Backed by qualitative arguments, a fixed risk component can be found, for instance in range of -20 to -40bps. This would exist fully below a minimum level of interest rates, after which no data exists (**r\_low** in the image below).

b. We can quantify and therefore calibrate a Var 99.5 interest rate down risk from times when rates and volatility were in more normal levels, say 2 percentage points or such (**r\_normal** in the image). Also there is evidence that the Var 99,5% measure has radically increased during times of aggressive monetary policy in the Euro area \*\*\*\*.The quantitative interest rate down risk above this interest rate level would be equal to this calibrated risk but would reduce to zero as it gets closer to the minimal level (above in a.)

The interest rate down risk would then be based to the qualitative risk component above normal levels, the quantitative risk component below the low level and combination of these two between these levels. The interest rate shocks beyond the LLP is developed in paragraph 5.34 below.

The rationale for this model would be the following:

• It is possible to calibrate the interest rate risk parameters at the interest rate levels where data exists.

• We are generally aware of the dynamics behind the drivers of change (up or down) in risk free rates in Europe. Example of the topics to be included into a qualitative risk assessment can be found below \*.

• We consider that there is always a possibility that rates can go lower but, in low level of interest rates where there is a lack of data, the risk should reflect only the qualitative expert judgement on the risk dynamics.

• If interest rates were at a higher level, the risk of rates going down would be much higher and analysis of the risk would be supported by quantitative evidence.

The parameters for such a model could be identified using available data and appropriate expert judgement, e.g.

• historical Var 99.5 interest rate down risk

• the level after which the interest rate (relative) risk would no longer increase

• the interest rate low-end level

• suitable parameters for the qualitative risk component, also reflecting how these parameters might need to change in different maturity points

The consistency of the interest rate up parameters with this methodology would also require to be confirmed. Similar approach could be used even though more data exist for interest rates going up.

\*) A qualitative assessment of the interest rate risk profile is needed to set the level of the qualitative risk component. All main triggers to lower or increase the rates needs to be investigated. This could include the following topics measured by the historical impact, the possible future impact and the rapidity of that impact:

• ECB actions \*\*

o Change of the official rates; deposit facility and refinancing rate

o Quantitative easing

o Forward guidance, which impacts strongly on the inflation expectation and thus on the maturity premium demand on the long maturities

• Better risk-return profile from other liquid assets

o Investing into cash

o Investing into other highly qualified asset classes (HQLA as published by ECB) that are not strictly linked to the Euro risk free yield, Euro stock index for example

o Investing into alternative asset classes that are considered liquid (e.g. gold, raw materials)

• The rise of digital currencies

• Changes in how Euro-swaps are used in the market

o Individual citizens mortgage payment cap/floor hedges

o Institutional investors (economic) ALM purposes to hedge own funds \*\*\*

o Insurers to lower their SCR requirement

o Option pricing purposes

• Convexity bias makes the long forward rates fold down because of the interest rate volatility (delta)

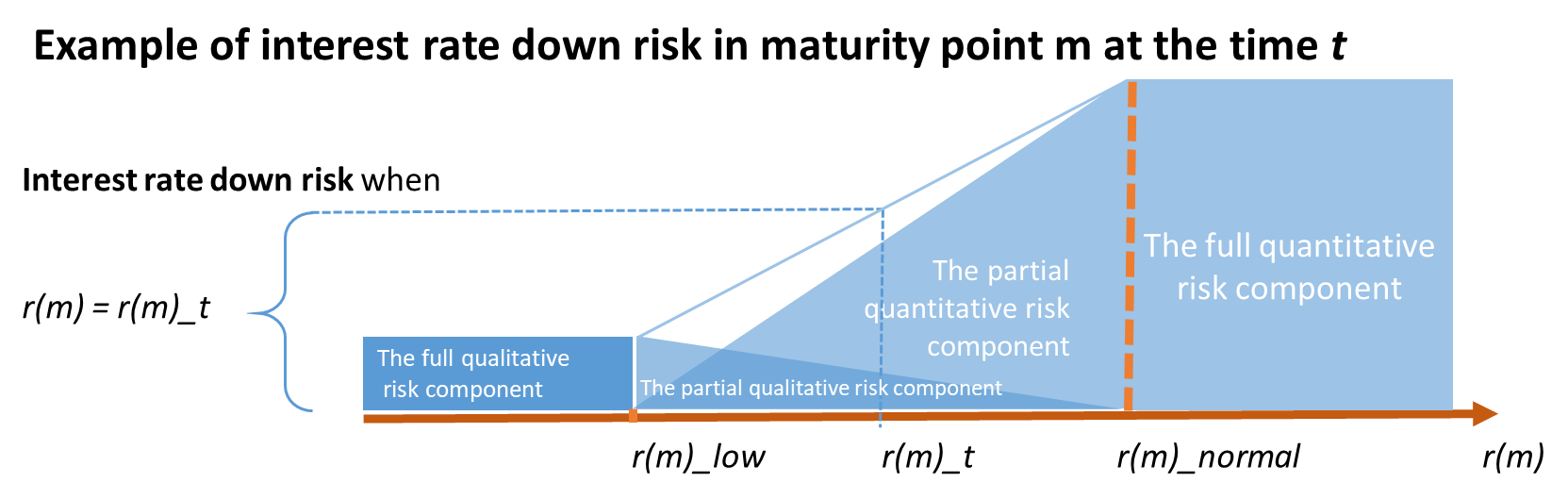
• Changes in overnight indexes (EONIA, ESTER in future)

\*\*) The ECB monetary policy has had a big impact on the Euro risk free rates over the last 5 years (-90bps for 2Y and -135bps for 10Y according to publications from ECB, Philiip Lane Nov 2019). If the expectation is that this monetary policy cannot continue the same way as today, we might see only a fraction of a similar decrease of risk-free rates because of ECB actions.

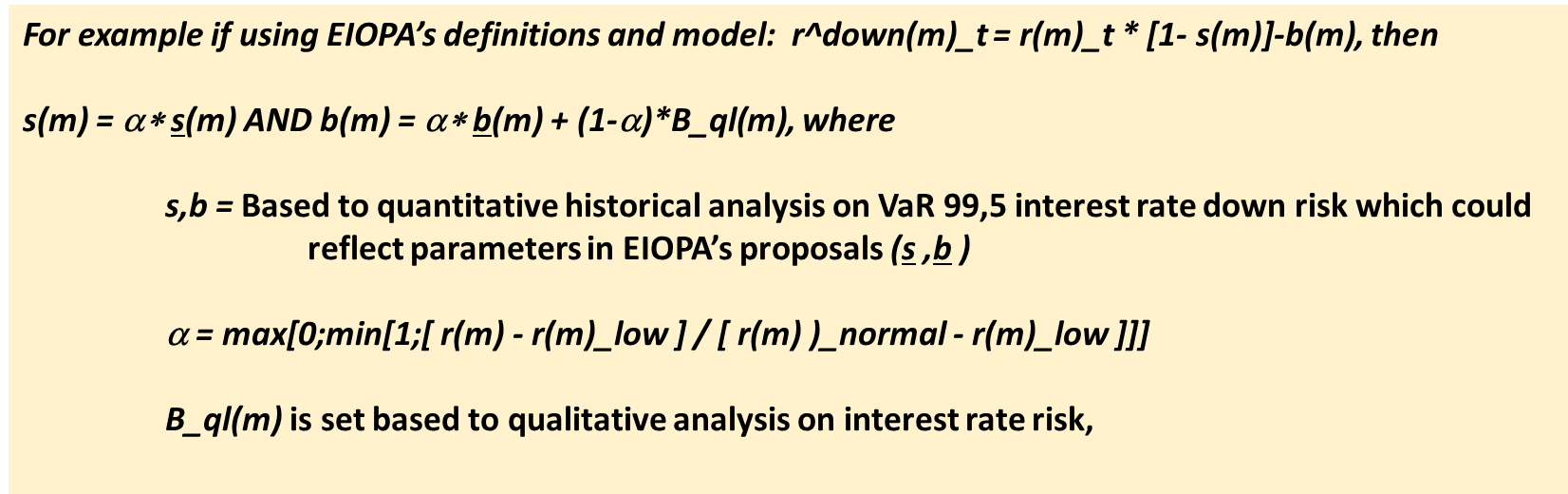
\*\*\*) Introducing a new interest rate risk module or substantial changes to RFF in the current low yield environment would most probably force part of the industry into serious interest rate hedging programs which in turn would bring the euro-swap down even more – this would create a vicious circle which will be very difficult to break.

\*\*\*\*) By analyzing the Euro-swap historical one-year changes one can find that the 1Y swap VaR 99,5 has increased from -130bps to -405bps during 2001, 2003 and the financial crisis (2008-2009). All year when ECB lowered the deposit facility rate aggressively. The impact is high in short maturities but disappears e.g. on the 10Y maturity point.

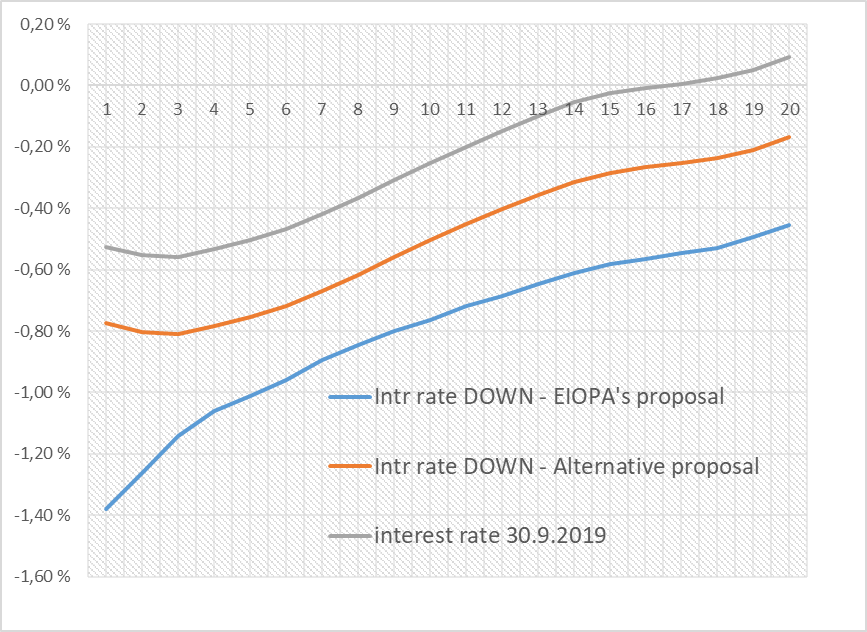
An example of a possible framework would be the following:



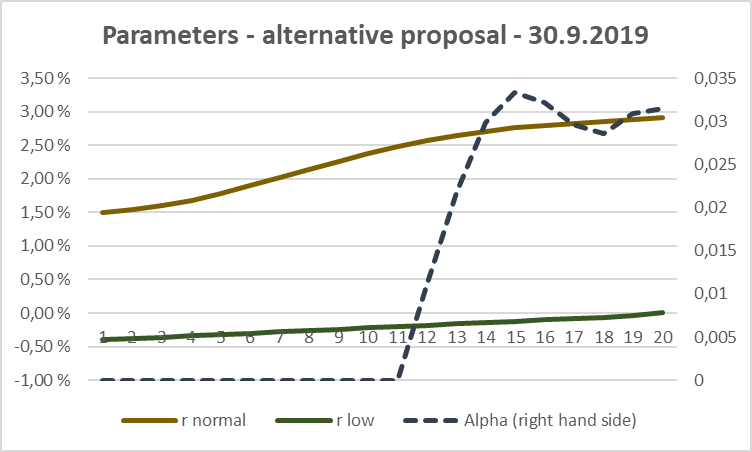
This model can be plugged into EIOPA´s proposal but is also can be parametrized separately. If EIOPA´s model and parameters are used for maturity points below the LLP (i.e. 20yr in here), then we can modify it in the following way:



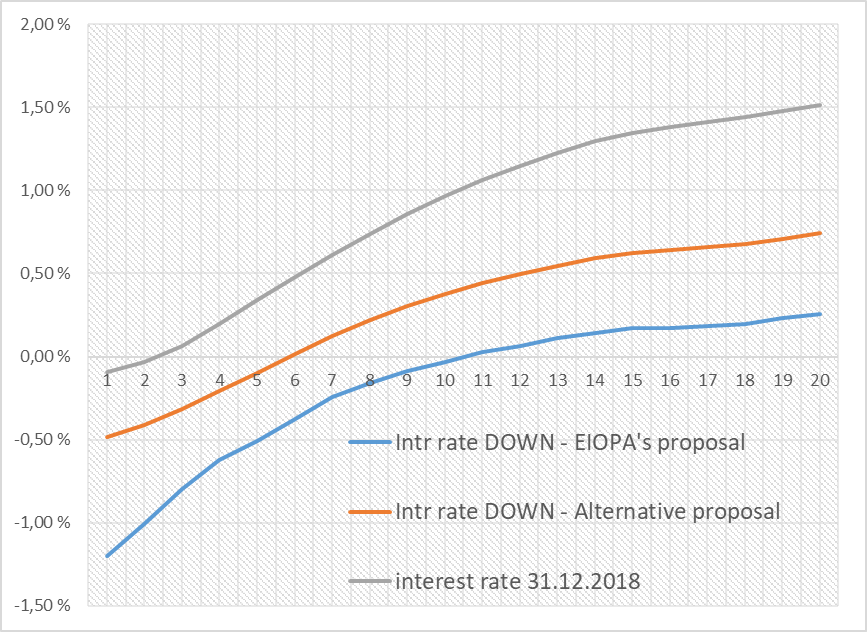
This gives us the following interest rate down risk against EIOPA´s proposal:

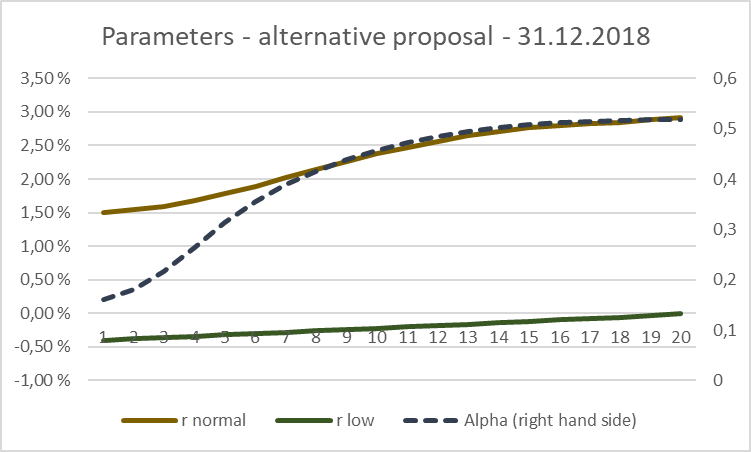


From here one can find that the interest rate down risk is on the minimum level nearly in all the maturity points (as alpha is zero or almost zero). The parameters (below) is set so that the r\_low increase to zero and the r\_normal starts from a 150bps 1Y level and then follow a term structure that could for instance be estimated from the history (by using nelson-siegel-mode etc.).



If making the same calibration for 31.12.2018 Euro-swap’s the we find that also then the interest rate down risk was close to r\_low in the very start of the curve but converges towards the EIOPA parametrization quite fastly.





This alternative model seems to keep interest rate down risk in the level where the qualitative parameter has been set when rates are low but requires additional parameters. The biggest need obviously would be the alpha-parameter which is a function of the reporting day Euro-swap curve. Anyway, Solvency II framework already has similar parameters affecting on the SCR, take Equity risk counter-cyclical premium for instance. Simplifications could be done but the main idea, that interest rate down risk when rates a historically low and data does not exist, seems to require a qualitative component and a balancing factor between the low and the normal levels of the rates.