

September 10, 2015

Prometeia's response to BCBS Consultative Document on Interest rate risk in the banking book (June 2015)

Prometeia is a consultancy firm with more than 20 years of experience in ALM, operating in the EMEA market, providing banks with advisory and IT solutions for measurement and management of IRRBB.

Based on our experience, deep knowledge of the European market and frequent discussions in international ALM groups (ALM and risk managers associations), we welcome the opportunity to contribute to the discussion about the proposed changes to the capital and supervisory treatment of IRRBB by providing our comments on the Consultative Document.

Main Remarks on the proposed standardised metric for measurement of IRRBB

As a premise, we understand the attempt of the BCBS to promote comparability and transparency for IRRBB across different banks and jurisdictions, by means of a standardised and simplified approach. At the same time, we are convinced that a common concern for a standardised model is that, given the peculiarities of banking products and customers' behaviour in different countries, especially in the retail market, standardisation is not suitable for IRRBB.

This is of course a general argument in favour of a pillar 2 approach. However, we fear that also in the proposed pillar 2 framework there could still be scope for the so-called "fallback" model in the Regulator's intention.

Starting from this premise, we would like to contribute to the discussion by addressing two main issues of the proposed standardised simplified model, which in our opinion represents a potential source of mismeasurement. The first one has to do with the technical specification of slotting in the time buckets the notional repricing cash flows, **including the spread component of interest cash flows**. The second one relates to the choice of very restrictive **constraints to the modelling of NMDs**, especially those received from retail customers.

As we will subsequently explain, mistreating of these two issues might have the unintended consequence of producing a measure of EV sensitivity not consistent with the measure of NII sensitivity, and may ultimately be incorrect. We observe that NII sensitivity can be broadly backtested against realised NII results and has shown, for instance mainly in Italy but not only, a

long history of positive correlation to market rate movements (i.e. when market rates go up, the NII increases reaching a new “equilibrium” at a higher level). This is also the common opinion among practitioners. Consistently, we should expect that a bank which structurally benefits from a raise in interest rates in terms of NII (i.e. has a positive NII sensitivity), should show a positive EV sensitivity (economic value gains) under the same scenario.

Based on various analyses that we have carried out with our clients, our understanding is that models of NII and EV sensitivity should not lead to diverging measures of interest rate risk, provided that a consistent set of assumptions can be guaranteed.

Spread component of interest cash flows

The instructions for allocating notional repricing cash flows in time buckets require slotting all coupon cash flows, including the spread component (when material).

Taking into account coupon cash flows is of course necessary in order to calculate the present value of any balance sheet item and is related to PV (or EV) sensitivity. Nonetheless we believe that a clear distinction should be made about the different risk drivers underlying the interest coupons of the banking book position when measuring interest rate risk. In fact, the EV sensitivity arising from a stream of credit spreads or commercial margins should not be ascribed to interest rate risk.

We will try to clarify our point by means of some examples.

Let's consider a commercial bank lending a floating rate bullet loan to a customer, with 10-year maturity, priced at Euribor 3m plus 250bps and funding it with a 3-year, floating rate bullet liability, priced at Euribor 3m plus 100bps.

Alternatively, we can consider another example, where the bank lends at a fixed rate, pricing at the 10-year swap rate plus 250bps, and then hedging the position by entering into a 10-year interest rate swap.

In both cases, the bank is not holding any open position in terms of interest rate risk, be it repricing risk, basis risk or any other dimension of interest rate risk. Nonetheless, applying the methodology prescribed in the simplified approach would highlight in both cases an open interest rate risk position: we would observe a duration of the loan significantly longer than the duration of the liability in the first case¹, and a partial hedging of the swap in the second one.

The paradox would be that, in order to completely eliminate such risk position (in terms of EV sensitivity, under the simplified model), it would be necessary in the first example to fund the floating loan with a liability that has a longer repricing time (i.e. duration), while in the second example it would need an “extra hedge”, pay fixed and receive floating, to cover the spread component of the loan (which is obviously unrealistic). The ultimate result would be to introduce a mismatch in the repricing profile of the bank, i.e. an open interest rate risk position, while pursuing a strategy to minimise internal capital for this risk.

In addition, we would like to point out that the spread component, especially for lending, is the *gross* income expected to remunerate other specific risk drivers, i.e. credit risk, and/or to cover operating costs. This means that representing in time buckets only the coupon *inflows* (the

¹ The impact of the credit spread component on the overall duration of a floating rate loan is actually significant: for example, a 6 month floating loan, 15-year maturity, with 250bps spread would be treated as having a duration of approximately 1.3 years, as compared to the 6 month duration of the pure base rate component.

revenue) would fail to recognise the associated *outflows*, or costs, represented by expected losses and operational costs².

The difference between EV measures including or excluding the spread component in our experience may range from 3% to 6% of regulatory capital for a 200bp parallel shock (of course figures depend on the Balance Sheet structure of the bank).

Finally, although risk management purposes should prevail on the accounting treatment and constraints, we observe that excluding the spread component is also consistent with the current approach adopted for hedge accounting in the definition of the hedged item and the calculation of its changing fair value (net of spread, to consider only the hedged risk, i.e. interest rate risk).

Modelling of Non Maturity Deposit

The proposed Time Series Approach allows the use of internal estimates for modelling NMDs, but is subject to cap and floors in the parameters³. The bottom line is that it leads to a constraint in terms of total average duration of no longer than 1.8 years for transactional retail deposits and even shorter for the remaining categories.

We are aware that a great deal has been written and discussed on this topic, along with plenty of empirical evidence of the stability and stickiness of this source of funding. It is also our belief, given the analysis that we have carried out in the last two decades when modelling these positions for many financial institutions in the EMEA region and based on our evidence, overall average duration for retail NMDs may range up to 3 or 4 years (including more volatile and short duration components).

The impact on EV measures of the proposed constraints compared to the unconstrained use of internal models could be quite significant. Case studies performed on Italian banks show differences of up to more than 10% of regulatory capital for a 200bp parallel shock (subject to the particularities of each bank).

Furthermore, it should not be ignored that a distribution capped at 6 years, regardless of the final average duration, would keep from recognising the natural hedge in a longer time bucket for fixed rate loans, leading to a distortive measure especially when performing non-parallel shocks analysis.

Implications for EV measures

The two issues discussed above – constraints on NMD's modelling and the inclusion of the spread component – individually taken into account would lead to a significant mismeasurement of EV sensitivity. Furthermore, considering them together would lead to the unpleasant consequence of an inconsistent measure of EV sensitivity with the evidence of NII measures. The contradiction between NII and EV measures – a bank gaining money in terms of NII while losing it in terms of EV, under the same scenario, and vice versa - is counterintuitive and difficult to explain.

² The inconsistency is most evident for the credit risk component of the spread when a risk free interest rate curve is then used for discounting.

³ Caps on the stable part and to the maximum and average maturity of the core component; floors on the pass-through rate.

In fact, we can observe a long series of evidence showing that, in Italy as well as in many other banks in EMEA, a period of rising interest rates has brought on average higher interest margins for banks, and vice versa. This evidence is consistent with an overall ALM position of banks where assets – on average, but *structurally*⁴ – reprice more quickly than liabilities, or in other words, where the financial duration of assets is shorter than the financial duration of liabilities.

In this situation, we would expect that models for measuring interest rate risk should provide consistent information given that assets reprice more quickly than liabilities. NII sensitivity should be positive with respect to a rise of interest rates, which is in fact a common finding. Consequently, the measure of EV sensitivity should provide the same type of information, which is to say, in the case of rising interest rates EV should increase (or at least should not be completely diverging as it would be with the proposed metric).

Instead, when relevant constraints and/or assumptions are imposed to the metric used for calculating EV sensitivity, especially when affecting cash flows in longer time buckets, the outcome could be significantly distorted. In fact, all else equal, the slotting of spread components would lead to erroneously measuring a longer duration for portfolios of long term loans; while at the same time, constraining the maximum maturity and duration of NMDs would lead to a shorter duration for liabilities.

Ultimately, the total effect could turn out to be that NII sensitivity – given a scenario of rising interest rates – still remains *positive*, because in the short term there would be no major changes to the model and assets would keep repricing more quickly than liabilities. While on the other hand the EV sensitivity might actually result to be *negative* because of assets' longer duration and liabilities' shorter duration, eventually changing the sign of the measure, showing that in the case of interest rates rising the EV of the bank would decline.

Equity capital investment assumptions

In addition to the above, we are aware that there is a third controversial issue that is evident when reconciling measures of NII and EV sensitivity, and it refers to the assumptions made for investment of equity capital⁵. It is unquestionable that investing own capital in long term duration assets will lead to a stable flow of revenue, together with a higher EV volatility of the assets themselves. In this case, there is no way to recompose the dichotomy: the ultimate risk position embedded in such a strategy depends on the point of view that the bank and the regulator are willing to adopt. If we look at the bank from a *going concern* point of view, then it would be more appropriate to assess risk in terms of NII sensitivity (there is no need to close the investment position). On the opposite side from a *gone concern* point of view, where the objective is to look at the bank in terms of liquidating value, the EV sensitivity would be the right measure.

Should the former approach prevail (*going concern*), which is the case in the everyday management of IRRBB, then it would be correct to take into account equity capital by explicit modelling (as long term funding), both in NII and EV metrics. Doing so, both models would catch

⁴ “Structurally” means that it is not just a short term effect, but that higher interest rates lead to long-lasting higher NII for banks.

⁵ To be more precise, we think that investment assumptions should be made with reference to free capital only, i.e. the portion of equity that directly funds interest rate bearing assets. This is also in line with recent EBA guidelines on this topic (*Guidelines on the management of interest rate risk arising from non-trading activities*, EBA/GL/2015/08).

the earning stabilisation effect of the investment strategy, leading once again to measures of NII and EV sensitivity consistent with one another⁶.

Other issues

In this section we would like to provide some short comments about specific features of the proposed standardised model that, in our opinion, could be made more in line with current industry practices for the measurement of interest rate risk.

a) Behavioural modelling for prepayment options in retail loans

The proposed standard model allows banks to use their internal estimates for prepayment rates, but then set a number of fixed parameters (multipliers) to shock those prepayment rates under different scenarios. We observe that, while interest rate shocks may vary over time, depending on volatility and level of interest rates, prepayment rate multipliers are constant for each scenario. In other words, we could say that prepayment rates are intended to be *scenario* dependent, but not *shock* dependent⁷.

We also observe that the phenomenon of prepayment is not limited to *fixed* rate portfolios, but it is also relevant for *floating* rate loans, which for instance in Italy represent a large majority of retail loans. The impact of prepayment on floating rate loans could be significant and should, therefore, be taken into account especially in the case in which the Committee should confirm the metric based on EV including spread⁸.

b) Behavioural modelling of exposures other than NMDs

We notice that behavioural models for NMDs are explicitly taken into account, although with some caveats, thus recognising the common practice for interest rate risk management of

⁶ Please note that NII sensitivity, in our understanding, is not limited to a short-term time horizon analysis, where particular repricing dynamics might have – in the very short term – different impacts, eventually diverging with respect to the overall IRR position of the bank over the entire time horizon. Nonetheless, regardless of the very short-term dynamics, when extending the NII analysis to a longer time horizon, the two metrics should lead to broadly consistent outcomes.

After all, measuring NII sensitivity over the long-term time horizon, and taking its present value, must lead to analogous results than using an EV approach, being the two metrics are just different ways to look at the same phenomenon.

Finally, we must underline that what is discussed here, about the comparability of NII and EV measures, refers to **static models**. We are aware that ALM frameworks often encompass dynamic B/S simulation for the measurement of earnings volatility, based on new business assumptions: new business is not relevant in terms of interest rate risk for market-priced positions, while it might be quite significant for non-interest bearing deposits (or equity). In this case, a NII dynamic model is able to catch and measure a component of interest rate risk, which is neglected when relying only on static models. On the other hand, dynamic models based on new business assumptions can be applied only to a limited time period (no more than 3 or 5 years), in order for the assumptions to be realistic: this means that dynamic simulation is not suited to measure the interest rate position of the bank over the entire time horizon.

⁷ For example, the multiplier implicit in an internal model would be 0.84 for a +100bp parallel shock, and 0.69 for a +200bp parallel shock, while the proposed scenario multiplier is 0.75.

⁸ In fact, excluding the spread component, a portfolio of floating rate loans would have a very short duration, equal to the average repricing time, regardless of actual or behavioral maturity of the loans.

these exposures. However, there are other type of positions that are commonly managed by means of behavioural models but are treated at contractual terms in the proposed metrics. In particular we can mention non-maturity assets (NMAs) or overdraft, which can be modelled similarly to NMDs, leading to a behavioural maturity and duration different from the contractual one (which is overnight), and Term Deposits⁹.

Term Deposits in some jurisdictions represent an important source of funding from retail customers. Lacking an alternative, such as current or saving accounts despite their short term contractual maturity, they are subject to continuous roll-over at pricing conditions that are not (or not completely) market driven. In this case, the behavioural model allows representing them as a stable and sticky source of funding, not different from NMDs. The standard metric does not recognise so far such modelling, while considering to apply an early redemption rate (where relevant), further reducing the expected maturity of these positions and thus leading to a potential mismeasurement of interest rate risk.

c) Non-performing assets

According to the proposed standard model, interest rate risk is measured only for interest rate sensitive assets and liabilities. It is not specified, however, what should be the treatment of non-performing assets, which have, unfortunately, reached significant volumes (as is the case for the Italian banking sector). More specifically, we observe that there are different practices in the industry for managing these exposures for interest rate risk purposes. For example, in some cases, *bad loans* are treated as fixed rate assets (non-interest bearing), amortising according to the expected recovery schedule. In other cases, they are considered just like non-interest sensitive assets, and then excluded from the analysis (they are considered to be funded by equity, thus reducing the free capital component).

On the other hand, there is another component of non-performing loans, *past due* and so-called “*unlikely to pay*” exposures, which – from an accounting point of view – maintain their contractual interest rate characteristics, although the expected cash flows could be significantly different from the contractual ones.

We believe that it could be beneficial in terms of clarity and comparability to address this topic explicitly when defining a standard framework for interest rate risk.

d) Automatic Interest Rate Options (IRO)

The proposed standard model requires evaluating the EV sensitivity of IRO to interest rates and volatility shocks. However, the analysis is limited to *sold options* and to *bought options used to hedge a sold option*. It is not clear the reason for exclusion and the treatment of *bought options not used to hedge a sold option*. This could be for instance the case of embedded options in portfolios of floating rate loans with a floor. The floor is an option bought from customers and this type of product is quite common in the retail market.

⁹ This issue is probably well known, since the Committee is asking banks to provide their figures for NMAs and other exposures “less or not amenable to standardization” within the QIS exercise (panel F)

Neglecting to include these specific options in the analysis can lead to a mismeasurement of interest rate risk¹⁰.

Furthermore, the proposed standard model fails to evaluate the impact of automatic options on NII measures, while their impact on NII dynamic can be substantial.

Contacts:

andrea.partesotti@prometeia.com

alina.preger@prometeia.com

¹⁰ Also in this case, the QIS exercise is collecting data for all Automatic Options.