INTEREST RATE RISK IN THE BANKING BOOK (IRRBB): HOW BCBS 368 WILL AFFECT ALM
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One of the defining features of a bank’s business model lies in the fact that its assets and liabilities do not have the same maturities. The structural tenor mismatch arising from the maturity transformation is an important contributor to a bank’s Net Interest Margin (NIM), yet it also makes the bank susceptible to changes in interest rates and their term structure. Interest rate risk in the banking book (IRRBB) therefore reflects both the bank’s fundamental business model and its Asset-/Liability-Management (ALM) strategy.

Conceptually, this risk is covered by Pillar II capital as part of the ICAAP process, interacting with capital requirements through EBA’s Pillar 1 plus approach as well as minimum capital requirements (both hard and stressed) resulting from the SREP framework. Against the backdrop of the regulatory initiatives as well as the episode of low interest rates triggered by the financial crisis, it comes as no surprise that the principles-based approach to IRRBB, established in BCBS 108 and its subsequent national implementations, was to receive an upgrade.

Basel’s upgraded rules for IRRBB contain four key elements:

- Enhanced guidance on the expectations around a bank’s IRRBB process
- Extended quantitative and qualitative disclosure requirements for the effects on the bank’s economic value and earnings due to interest rate movements, using standardized scenarios
- A standardized framework for the calculation of the economic value effect
- A reduced threshold for the identification of outlier banks

While IRRBB continues to be covered by Pillar II capital, renewed attention as well as tightening of some rules can, in cases, lead to higher SREP capital requirements. Hence the rules outlined in BCBS 368 are set to shape banks’ ALM practices for years to come.

On EVE an NII

While it has been standard practice to use PV-based economic value effects alongside measures for earnings volatility, Basel requires the two measures to be disclosed in a specific way. The metric for the economic value effect, ΔEVE, can be calculated in the bank’s internal measurement system (IMS), which is considered the standard procedure under BCBS 108 and also remains necessary for risk management. A bank ought to use such a model unless otherwise instructed by the regulator, or decide to adopt the standardized framework on its own. The metric for the earnings effect, ΔNII, is always based on the bank’s IMS.

ΔEVE is defined as the maximum change in the present value of interest-bearing assets, liabilities (excluding capital), and off-balance sheet items across six standardized, instantaneous interest rate shocks. Due to the heterogeneity of banking book products between different countries, the standardized approach contains rules for the scenario-dependent treatment of behavioral options in loans and deposits with a fixed repricing tenor, non-maturity deposits, and embedded automatic options.

The treatment of automatic options under the standardized approach brings about the requirement to have data on a single record level, which is anyway advisable for fixed and floating rate contracts.

While under BCBS 108 the economic value effect had the interpretation of discounted future total NII, ΔEVE under BCBS 368 also allows for stripping cash flows of commercial margins, thus yielding a discounted future treasury NII. This can be done either directly, by discounting cash flows at a risk-free curve (hereafter denoted as approach A), or indirectly, by discounting cash flows at client rates with a risk-free curve, to which commercial margins were added (or approach B). As of today, cash flows at client rate are discounted with a risk-free curve, which is still permitted but carries significant disadvantages, notably the reduced outlier limit.

In both approach A and B, a Funds Transfer Pricing (FTP) methodology reflecting Basel’s interpretation of funding rates and commercial margins needs to be used. Effectively, this specific view on ΔEVE amounts to a PV sensitivity under funding rates, hence for consistency reasons, the FTP methodology employed for the split between funding rates and commercial margins should be based on the same cash flows used for normal PV calculations. The resulting ΔEVE at funding rates represents tenor mismatch in its purest form, as no risk of future commercial margin volatility (e.g., coming from savings deposits, the margins of which can vary substantially over a rates cycle) is implied in the metric, and it represents the treasury’s view on IRRBB.

Of the two approaches, approach A is preferable due to its methodical consistency and reduced operational complexity, as well as its uses for hedging/management purposes (see below). The decision to make use of this additional element of choice is in no small part influenced by areas of national discretion in the implementation of BCBS 368. In particular, potential additional caps on the modeling of non-maturity products or potentially stricter scenarios than proposed by Basel, coupled with the reduction of the outlier limit from 20 percent of Tier 1 capital to 15 percent, can effectively limit the risk-taking capacity of a bank (alongside potentially higher capital requirements). As a partial remedy, ΔEVE under the treasury view (stripping cash flows of commercial margins) can help mitigate the effect of what amounts to tougher rules. The phenomenon behind this lies in the fact that future margin volatility can have a sizeable impact on economic value volatility, and this...
distinction is useful from a management and treasury perspective too (see below).

\( \Delta NII \), on the other hand, is always based on cash flows at client rates and thus represents total NII. Its aim is to identify earnings volatility over a 12-month-horizon against the two instantaneous parallel shock scenarios. This metric needs to be calculated on a constant balance sheet (i.e., its composition and volumes remain constant and all maturing contracts are replaced by contracts with similar characteristics in terms of maturity and margins).

Many banks already disclose such metrics in their annual reports, and they are frequently required by regulators as part of stress testing exercises. However, these figures are a far cry from a “true” forward-looking income effect, as they lack crucial ingredients affecting NII, such as volume changes and rate-dependent product switches within the balance sheet. Furthermore, instantaneous parallel shocks, while important, are not the only relevant scenarios from an income perspective, where gradual changes in shape and levels can cause more harm in the long run.

Consequently, it is highly advisable to calculate the \( \Delta NII \) measure as a “mere” special case of a full-blown balance sheet simulation, where changes in the customer behavior, volumes and margins are fully rate-dependent. To get meaningful results, such simulations need to be based on very granular data, which are then projected into the future using a full-revaluation approach (i.e., where maturing contracts are replaced by a new-business simulation logic). Based on this, forward-looking \( \Delta EVE \) metrics can be analyzed too, which allows you to look at future developments of these metrics under different business and tenor mismatch strategies. Due to the maximum operator inherent to the \( \Delta EVE \) metric, this is a major consideration, particularly when implementing a sophisticated tenor mismatch strategy or in an environment of hefty interactions between interest rate movements and customer behavior.

The standardized approach as a benchmark

The standardized approach has multiple interpretations. On the one hand, a bank may adopt it on its own, or it may be forced to adopt it by its supervisor(s). On the other hand, it serves as a benchmark for a bank’s IMS, effectively rendering the standardized approach into an implicit requirement. Hence, when considering the impact of the standardized approach, a bank may be forced to work with three different models in its ALM infrastructure.

- An IMS, where the bank
  - Calculates its ALM figures for balance sheet management purposes, and performs the tasks for the qualitative parts of IRRBB
  - Runs \( \Delta EVE \) and \( \Delta NII \) on their respective assumptions, whereby the assumptions for \( \Delta EVE \) are inspired by the standard approach (e.g., prepayment models, treatment of capital, etc.)
- A model which purely reflects the standardized approach
  Additionally, these models, a robust mechanism for stripping margins may be required too. To comply with these requirements, a bank must rely on a flexible platform providing functionalities commonly associated with an ALM system (i.e., calculation of cash flows; PVs; forward-looking simulation capabilities including new business generation; and a robust FTP methodology) coupled to powerful reporting and analytics functionalities. Due to the added complexity from the models for risk management and regulatory reporting/disclosure, mechanisms to explain differences between the resulting different metrics ought to be included too.

From IRRBB to CSRBB

The main driver for IRRBB in the specific interpretation of BCBS 368 lies in changes in market interest rates. Changes in shape, slope and level of a yield curve as well as basis risks lead to economic value effects, which amount to IRRBB in its pure form from a treasury view. Since the revenue from commercial margins represents a large contribution of NII and NIM, future changes to margins (i.e., margin risk) can have severe consequences that ought to be controlled too. In the BCBS 368 disclosure, this is covered by \( \Delta (\text{total}) \) NII; more generally speaking, any income effect representation or comparisons between economic value effects at external rates vis-à-vis the treasury view represents these phenomena.

For balance sheet items held at fair value, market liquidity and credit spreads are an additional important risk factor contributing to IRRBB. Driven by market perceptions about the credit quality not otherwise explained by IRRBB or by credit risk, CSRBB needs to be monitored and assessed using both economic value- as well as earnings-based methods. While the former is usually done using spread-curve shocks on the existing portfolio, best practices for the latter usually involve balance sheet simulations incorporating IFRS accounting treatment for assets and liabilities susceptible to CSRBB, returning a realistic NII with full consideration of OCI effects under different balance sheet, rates and spread scenarios. Based on this, you can establish a true credit-adjusted income with projected credit losses as a next step.

ALM under BCBS 368

How will the field of ALM be affected by BCBS 368?

Depending on the specific circumstances of a bank, the new rules on IRRBB can act as a constraint on the risk-taking and revenue-generating part of IRRBB. Understood this way, you cannot separate BCBS 368 from the time and circumstances in which it was written and from the time it will be implemented by banks.

From an ALM perspective, banks and their treasuries need to take important decisions on whether, when, and how they would like to position themselves for a new rates cycle. These decisions mainly concern the structure of a bank’s tenor mismatch, which in times of low interest rates becomes a major revenue and NIM driver, as margins on liabilities, particularly savings deposits, rapidly erode.

After nearly a decade of low, lower and even negative interest rates, any decision on the tenor mismatch strategy at the dawn of a new rate cycle is likely to shape NII and its volatility for the next decade or so. Based on the ensuing dynamics of margins, maturity preferences of clients and their effect onto the tenor mismatch, and other factors, a strategy for the tenor mismatch can have objectives ranging from boosting NII to stabilizing...
it over the entire future rates cycle. Understood as a hedge across the entire balance sheet and the entire rate cycle, this makes ALM exciting and more importantly, a necessity for future profitability.

To properly understand what happens to commercial margins and the income from the tenor mismatch itself (the treasury NII) and how this affects total NII, the treasury view on IRRBB provides the framework necessary to successfully implement a tenor mismatch strategy. Approach A outlined above allows a bank to fully implement a full treasury view on IRRBB from both the economic value and NII perspective. Not only does this provide transparency over drivers of NII and NIM, but in simulations it allows you to proactively analyze their respective volatilities. As the economic value perspective and the PVs associated with it can be problematic and even biased (e.g., when margins on savings deposits are negative), you can deduce important signals for avoiding expensive over-hedging by looking at these numbers from the treasury view.

By the same token, the vagaries of over-hedging against rising rates towards the peak of the rate cycle can be avoided too. Crucially though, transparency over the effect of hedging decisions is increased. Be it considerations over the choice of instruments (derivatives or “physical” hedges, such as long-dated bond issues), the exact mechanics behind the reduction of earnings volatility, benchmarking of treasury performance against the cost of capital for IRRBB, justifying the replication strategy for non-maturity deposits, or dedicated risk control on the tenor mismatch strategy, the treasury view on IRRBB provides exactly the toolkit for successfully positioning the balance sheet for the future.

Furthermore, you can overcome challenges in explaining differences between risk figures old and new, internal and regulatory, by looking at NII, historical and forecast, in a treasury view too. Last, but not least, establishing the treasury view allows you to incorporate the cost of capital for IRRBB and the constraints this puts on risk-taking into the bank’s overall FTP framework, thus putting a price to excessive IRRBB coming from certain lines of business.

Conclusion

BCBS 368 brings significant changes to IRRBB modeling in banks and requires a robust ALM platform. Thorough balance sheet simulations based on granular data are a prerequisite for many of the qualitative and risk appetite aspects of BCBS 368, as well as the actual management of IRRBB and the tenor mismatch strategies devised to manage NII and NIM over a rate cycle.

The treasury view on IRRBB, which forms the intellectual centerpiece of the concept behind the new ΔEVE rules, allows banks to design, implement and control effective ALM strategies.

Low rates certainly did not help both commercial margins and treasury NII, so while BCBS 368 inevitably places a burden on banks’ ALM and treasury practices, the timing of the new regulation coincides with a moment where significant decisions for shaping the future ALM strategy come up. Implemented and controlled correctly, a well-thought-out tenor mismatch strategy can initially boost net interest income and over the rate cycle act as a hedge against both margin pressure from a flattening yield curve at the cycle’s peak as well as the negative effects from falling rates towards the cycle’s end.

With attention to IRRBB likely to be high, higher capital requirements as part of the Pillar 1 plus approach can effectively limit exposures going forward, which makes it all the more necessary to make this risk discipline an integral part of the overall capital management process and properly benchmark its returns.

To put it another way, we are dealing with a rare opportunity where the process of re-thinking the exposure and risk-taking affecting a key value driver is fully synchronized with regulatory change. This is all the more important because unlike many other regulations more akin to a tax on certain lines of business, any constraints from BCBS 368 are likely to affect a bank’s profitability at its very heart from day one, which makes getting it right a top priority.

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