

Basel Committee on Banking Supervision

MAR

Calculation of RWA for
market risk

MAR10

Definition and application for
market risk

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First version in the format of the consolidated
framework.



BANK FOR INTERNATIONAL SETTLEMENTS

Definition of market risk

10.1 Market risk is defined as the risk of losses in on and off-balance-sheet positions arising from movements in market prices. The risks subject to this requirement are:

- (1) The risks pertaining to interest rate related instruments and equities in the trading book;
- (2) Foreign exchange risk and commodities risk throughout the bank.

Scope and coverage of the capital requirements

10.2 The capital requirements for interest rate related instruments and equities will apply to the current trading book items prudently valued by banks, alongside [CAP50](#). The definition of trading book is set out in [RBC25](#).

10.3 All transactions, including forward sales and purchases, shall be included in the calculation of capital requirements as from the date on which they were entered into. Although regular reporting will in principle take place only at intervals (in most countries quarterly), banks are expected to manage the market risk in their trading book in such a way that the capital requirements are being met on a continuous basis, ie at the close of each business day. Supervisory authorities have at their disposal a number of effective measures to ensure that banks do not "window-dress" by showing significantly lower market risk positions on reporting dates. Banks will also, of course, be expected to maintain strict risk management systems to ensure that intra-day exposures are not excessive. If a bank fails to meet the capital requirements, the national authority shall ensure that the bank takes immediate measures to rectify the situation.

10.4 The capital requirements for foreign exchange risk and for commodities risk will apply to banks' total currency and commodity positions, subject to some discretion to exclude structural foreign exchange positions. It is understood that some of these positions will be reported and hence evaluated at market value, but some may be reported and evaluated at book value.

10.5 A matched currency position will protect a bank against loss from movements in exchange rates, but will not necessarily protect its capital adequacy ratio. If a bank has its capital denominated in its domestic currency and has a portfolio of foreign currency assets and liabilities that is completely matched, its capital/asset ratio will fall if the domestic currency depreciates. By running a short position in the domestic currency the bank can protect its capital adequacy ratio, although the position would lead to a loss if the domestic currency were to appreciate.

10.6 Supervisory authorities are free to allow banks to protect their capital adequacy ratio in this way. Thus, any positions which a bank has deliberately taken in order to hedge partially or totally against the adverse effect of the exchange rate on its capital ratio may be excluded from the calculation of net open currency positions, subject to each of the following conditions being met:

- (1) such positions need to be of a "structural", ie of a non-dealing, nature (the precise definition to be set by national authorities according to national accounting standards and practices);
- (2) the national authority needs to be satisfied that the "structural" position excluded does no more than protect the bank's capital adequacy ratio;
- (3) any exclusion of the position needs to be applied consistently, with the treatment of the hedge remaining the same for the life of the assets or other items.

10.7 No capital requirements need apply to positions related to items that are deducted from a bank's capital when calculating its capital base, such as investments in non-consolidated subsidiaries, nor to other long-term participations denominated in foreign currencies which are reported in the published accounts at historic cost. These may also be treated as structural positions.

10.8 Positions in the bank's own eligible regulatory capital instruments are deducted from capital. Positions in other banks', securities firms', and other financial entities' eligible regulatory capital instruments, as well as intangible assets, will receive the same treatment as that set down by the national supervisor for such assets held in the banking book, which in many cases is deduction from capital. Where a bank demonstrates that it is an active market maker then a national supervisor may establish a dealer exception for holdings of other banks', securities firms', and other financial entities' capital instruments in the trading book. In order to qualify for the dealer exception, the bank must have adequate systems and controls surrounding the trading of financial institutions' eligible regulatory capital instruments.

10.9 In the same way as for credit risk, the capital requirements for market risk are to apply on a worldwide consolidated basis. Where appropriate, national authorities may permit banking and financial entities in a group which is running a global consolidated book and whose capital is being assessed on a global basis to report short and long positions in exactly the same instrument (eg currencies, commodities, equities or bonds), on a net basis, no matter where they are booked. ¹ Moreover, the offsetting rules as set out in this section may also be applied on a consolidated basis. Nonetheless, there will be circumstances in which supervisory authorities demand that the individual positions be taken into the measurement system without any offsetting or netting against positions in the remainder of the group. This may be needed, for example, where there are obstacles to the quick repatriation of profits from a foreign subsidiary or where there are legal and procedural difficulties in carrying out the timely management of risks on a consolidated basis. Moreover, all national authorities will retain the right to continue to monitor the market risks of individual entities on a non-consolidated basis to ensure that significant imbalances within a group do not escape supervision. Supervisory authorities will be especially vigilant in ensuring that banks do not pass positions on reporting dates in such a way as to escape measurement.

Footnotes

¹ *The positions of less than wholly-owned subsidiaries would be subject to the generally accepted accounting principles in the country where the parent company is supervised.*

Correlation trading portfolio

10.10 For the purposes of this framework, the correlation trading portfolio incorporates securitisation exposures and n-th-to-default credit derivatives that meet the following criteria:

- (1) The positions are neither resecuritisation positions, nor derivatives of securitisation exposures that do not provide a pro-rata share in the proceeds of a securitisation tranche (this therefore excludes options on a securitisation tranche, or a synthetically leveraged super-senior tranche); and

- (2) All reference obligations are single-name products, including single-name credit derivatives, for which a liquid two-way market exists. This will include commonly traded indices based on these reference obligations. A two-way market is deemed to exist where there are independent bona fide offers to buy and sell so that a price reasonably related to the last sales price or current bona fide competitive bid and offer quotations can be determined within one day and settled at such price within a relatively short time conforming to trade custom.
- (3) Positions which reference an underlying that would be treated as a retail exposure, a residential mortgage exposure or a commercial mortgage exposure under the standardised approach to credit risk are not included in the correlation trading portfolio.
- (4) Positions which reference a claim on a special purpose entity are not included either.
- (5) A bank may also include in the correlation trading portfolio positions that hedge the positions described above and which are neither securitisation exposures nor n-th-to-default credit derivatives and where a liquid two-way market as described above exists for the instrument or its underlyings.

FAQ

FAQ1

Leveraged super-senior tranches have to be treated according to standardised rules. We hedge leveraged super-senior tranches with non-leveraged super-senior tranches. This has the bad effect of increasing the credit risk capital requirement because of unhedged positions and increasing the floor for the comprehensive risk measure at the same time for the same reason. Can we treat the super-senior tranches which serve as hedges to leveraged super-senior tranches in the same way as leveraged super-senior tranches?

From an economical point it makes sense to treat positions and their hedges together for capital calculations. This may be acceptable as long as this is done in a consistent way and the supervisor can be reassured that no capital arbitrage is done by changing the scope of comprehensive risk measure modelling on an ongoing basis.

From a regulatory perspective this exclusion may also be acceptable. [MAR10.10](#) states that: "For the purposes of this framework, the correlation trading portfolio incorporates securitisation exposures and n-th-to-default credit derivatives that meet the following criteria: ..." Accordingly, credit risk capital requirement models do not have to incorporate all the securitisation exposures and n-th-to-default credit derivatives which meet the criteria to be "modelled".

FAQ2

What exactly is meant by "[...] that do not provide a pro-rata share in the proceeds of a securitisation tranche [...]" in [MAR10.10\(1\)](#)?

This provision is intended to capture any complex "double leverage" position, but which might not be captured by the definition of re-securitisation and therefore automatically excluded.

FAQ3

What is the rationale for the exclusion of synthetically leveraged super-senior tranches from the incremental risk capital (IRC) requirement and the correlation trading portfolio?

“Synthetically leveraged super-senior tranche” in this context refers specifically to a type of position that has a non-linear pay-off profile referencing a super-senior collateralised debt obligation (CDO) position. In any case, the non-linearity is driven by the fact that the super-senior tranche is leveraged. Beyond this, the non-linearity may also result from the presence of certain trigger events that can cause the pay-off from a leveraged super-senior position to be dislocated from that of the super-senior tranche to which it is referenced under certain scenarios. In this context, a synthetically leveraged super-senior position does not provide a pro-rata share in the proceeds of a securitisation tranche.

The following example highlights the inconsistency between the leveraged super-senior tranche and the super-senior tranche that leads to its exclusion. This example is stylised and is based on a description of leveraged super-senior tranches provided in A DeServigny and N Jost (ed), Handbook of Structured Finance, Standard and Poor’s.

Consider a CDO with 100 obligors. Suppose that the super-senior tranche is defined with an attachment point of 20% of pool losses and a detachment point of 100% of pool losses. Accordingly, a protection seller of a super-senior tranche receives a pre-specified payment over the life of the tranche, say five years, in return for protecting the protection buyer against all losses in excess of 20% of the pool’s notional value, say \$100m. Now consider a leveraged super-senior tranche that is structured as follows. The leveraged super-senior tranche is identified with an attachment point of 20% and a detachment point of 28%. Further the leveraged super-senior tranche is subject to a “trigger”. The trigger is a pre-specified event. The occurrence of the trigger events results in an “unwind”. In the event of an “unwind” the protection seller makes a cash payment to the protection buyer sufficient to purchase protection on losses from 29% to 100% of the pool. Consider the case of a weighted average spread (WAS) trigger in which case an “unwind” occurs if the WAS of all names in the CDO portfolio exceeds 200 basis points.

Now consider the following event. On the first day of the transaction, all credit default swap spreads on all obligors increase from 100 to 250 basis points and remain at that level until the end of year five. At the end of year five, no defaults have occurred in the portfolio.

In this case the protection seller of the super-senior tranche has received all premium payments and made no payments. Accordingly, the protection seller books a net profit. In the case of the leveraged super-senior tranche, the protection seller receives no premium payments and makes a payment on day one to purchase protection on the 28% to 100% portion of the super-senior tranche. Accordingly, the protection seller has booked a net loss.

This example illustrates that the proceeds from an investment in a super-senior and a leveraged super-senior tranche are not always proportional. Two specific points are worth noting here. First, the proceeds of two investment structures are considered to be proportional (pro rata) if this is the case in all possible scenarios. Proportionality makes no reference to the likelihood of any set of events. Second, in the case of leveraged super-senior tranches the non-proportionality is driven by the presence of trigger events that result in a divergence between the payoff of the super-senior tranche and the leveraged super-senior tranche. The example above has considered one particular sort of trigger. In general there are a variety of complex trigger events that are built into leveraged super-senior structures. Whenever these triggers result in a divergence of the payoffs of the leveraged super-senior tranche from the corresponding super-senior tranche the leveraged super-senior tranche would be excluded from the correlation trading portfolio.

FAQ4 [MAR10.10\(4\)](#) specifies that "positions which reference a claim on a special purpose entity are not included either". However, in the context of a securitisation operation, notes issued by a special purpose entity (SPE) are claims on this SPE (collateralised by asset portfolios). This may probably need further clarification. What was the exact purpose of the sentence? Certainly not to exclude all kind of structures using SPEs.

The intent is to ensure that the SPE structure is not used to evade the criteria limiting the types of positions that may be included in the correlation trading portfolio. Specifically, a bank must exclude from the correlation trading portfolio any SPE-issued instrument backed, directly or indirectly, by a position that would itself be excluded if held by the bank directly. Thus, notes issued by an SPE holding residential or commercial mortgages would not be eligible for inclusion in the correlation trading portfolio. However, a cash CDO position could be included in the correlation trading portfolio if the assets underlying the CDO met all of the relevant criteria (eg the underlyings are single-name corporate bonds having liquid two-way markets).

Methods of measuring market risks

10.11 Each bank subject to capital requirements for market risk will be expected to monitor and report the level of risk against which a capital requirement is to be applied. In measuring their market risks, a choice between two broad methodologies (described in [MAR20](#) and [MAR30](#), respectively) will be permitted, subject to the approval of the national authorities.

- (1) One alternative will be to measure the risks in a standardised manner, using the measurement frameworks described in [MAR20](#).
- (2) The alternative methodology, which is subject to the fulfilment of certain conditions and the use of which is therefore conditional upon the explicit approval of the bank's supervisory authority, is set out in [MAR30](#). This method allows banks to use risk measures derived from their own internal risk management models, subject to seven sets of general conditions, namely:
 - (a) certain general criteria concerning the adequacy of the risk management system;
 - (b) qualitative standards for internal oversight of the use of models, notably by management;
 - (c) guidelines for specifying an appropriate set of market risk factors (ie the market rates and prices that affect the value of banks' positions);
 - (d) quantitative standards setting out the use of common minimum statistical parameters for measuring risk;
 - (e) guidelines for stress testing;
 - (f) validation procedures for external oversight of the use of models;
 - (g) rules for banks which use a mixture of models and the standardised approach.

10.12 Unless a bank's exposure to a particular risk factor, such as commodity prices, is insignificant, the internal models approach will in principle require banks to have an integrated risk measurement system that captures the broad risk factor categories (ie interest rates, exchange rates (which may include gold), equity prices and commodity prices, with related options volatilities being included in each risk factor category). Thus, banks which start to use models for one or more risk factor categories will, over time, be expected to extend the models to all their market risks. A bank which has developed one or more models will no longer be able to revert to measuring the risk measured by those models according to the standardised methodology (unless the supervisory authority withdraws approval for that model). However, pending further experience regarding the process of changing to an internal models approach, no specific time limit will be set for banks which use a combination of internal models and the standardised approach to move to a comprehensive model. The following conditions will apply to banks using such combinations:

- (1) Each broad risk factor category must be assessed using a single approach (either internal models or the standardised approach), ie no combination of the two methods will in principle be permitted within a risk category or across banks' different entities for the same type of risk (but see [MAR10.12](#) above);²
- (2) All the criteria laid down in [MAR30](#) will apply to the models being used;
- (3) Banks may not modify the combination of the two approaches they use without justifying to their supervisory authority that they have a good reason for doing so;
- (4) No element of market risk may escape measurement, ie the exposure for all the various risk factors, whether calculated according to the standardised approach or internal models, would have to be captured;
- (5) The capital requirements assessed under the standardised approach and under the models approach are to be aggregated according to the simple sum method.

Footnotes

² *However, banks may incur risks in positions which are not captured by their models, for example, in remote locations, in minor currencies or in negligible business areas. Such risks should be measured according to the standardised methodology.*

FAQ

FAQ1

Will partial model approvals be allowed under the framework (eg, internal models for some credit positions, with standardised specific risk charges for positions not having approved incremental risk capital (IRC) or comprehensive risk models)?

Partial approval will be permitted on a case-by-case basis in line with local regulations. In particular, as new products and businesses arise supervisors may want to have the authority to restrict certain products from the IRC or comprehensive risk model. A simple model for partial approval would be:

- *One set of products are approved for IRC. For these products there is a single comprehensive, fully integrated model, not a set of IRC models taken one at a time. Likewise, a similar approach would be used for comprehensive risk models.*
- *The remaining products attract the fallback capital requirement according to the standardised measurement method.*

To clarify, this does not mean that a bank would be able to have "partial use" for any particular element of specific interest rate risk (eg include corporate positions in VaR for specific risk without including corporates in the IRC). Supervisors should consider the risks of cherry-picking if they allow partial use.

Types of market risk capital requirement

10.13 The minimum capital requirement for market risk is expressed in terms of:

- (1) general market risk; and
- (2) specific risk (ie risk associated with exposures to specific issuers of debt securities or equities).³

Footnotes

³ *Specific risk includes the risk that an individual debt or equity security moves by more or less than the general market in day-to-day trading (including periods when the whole market is volatile) and event risk (where the price of an individual debt or equity security moves precipitously relative to the general market, eg on a take-over bid or some other shock event; such events would also include the risk of “default”).*

Treatment of specific risk using the internal models approach

10.14 The standardised approach uses a “building-block” approach in which specific risk and the general market risk arising from debt and equity positions are calculated separately. The focus of most internal models is a bank’s general market risk exposure, typically leaving specific risk to be measured largely through separate credit risk measurement systems. Banks using models should be subject to capital requirements for the specific risk not captured by their models. Accordingly, a separate capital requirement for specific risk will apply to each bank using a model to the extent that the model does not capture specific risk. The capital requirement for banks which are modelling specific risk is set out in [MAR10.15](#) to [MAR10.18](#) and [MAR30.28](#) to [MAR30.43](#).

10.15 For equity positions, where a bank has a value-at-risk (VaR) measure that incorporates specific risk from equity risk positions and where a supervisor has determined that the bank meets all the qualitative and quantitative requirements for general market risk models, as well as the additional criteria and requirements set out in paragraphs [MAR30.28](#) to [MAR30.32](#), the bank is not required to subject its equity positions to the capital requirement according to the standardised measurement method as specified in [MAR20](#).

10.16 For interest rate risk positions other than securitisation exposures and n-th-to-default credit derivatives, the bank will not be required to subject these positions to the standardised capital requirement for specific risk, as specified in [MAR20.4](#) to [MAR20.21](#), when all of the following conditions hold:

- (1) The bank has a VaR measure that incorporates specific risk and the supervisor has determined that the bank meets all the qualitative and quantitative requirements for general market risk models, as well as the additional criteria and requirements set out in [MAR30.28](#) to [MAR30.32](#); and

- (2) The supervisor is satisfied that the bank's internally developed approach adequately captures incremental default and migration risks for positions subject to specific interest rate risk according to the standards laid out in [MAR30.33](#) and [MAR30.34](#).

FAQ

FAQ1 *Will partial model approvals be allowed under the framework (eg internal models for some credit positions, with standardised specific risk charges for positions not having approved incremental risk capital (IRC) or comprehensive risk models)?*

Partial approval will be permitted on a case-by-case basis in line with local regulations. In particular, as new products and businesses arise supervisors may want to have the authority to restrict certain products from the IRC or comprehensive risk model. A simple model for partial approval would be:

- *One set of products are approved for IRC. For these products there is a single comprehensive, fully integrated model, not a set of IRC models taken one at a time. Likewise, a similar approach would be used for comprehensive risk models.*
- *The remaining products attract the fallback capital requirement according to the standardised measurement method.*

To clarify, this does not mean that a bank would be able to have "partial use" for any particular element of specific interest rate risk (eg include corporate positions in VaR for specific risk without including corporates in the IRC). Supervisors should consider the risks of cherry-picking if they allow partial use.

FAQ2 *Do the products currently approved for specific risk under the current regime need to go through an approval process for the IRC requirement? Do banks need separate IRC requirement model approval for each product or will a blanket approval be granted for the IRC model for non-securitisation positions?*

According to [MAR30.2](#), the use of an internal model will be conditional upon the explicit approval of the bank's supervisors. Only when a bank holds the two supervisory approvals ((1) approval to use the market risk model which extends to specific interest rate risk; and (2) approval to use an IRC requirement model) can it avoid using the standardised approach for determining the minimum capital requirements for specific interest rate risk. The supervisor may grant both approvals in a single administrative act. As these approvals relate to different internal models, however, in practice the supervisor may perform the necessary assessments under distinct approval processes.

Whether banks need separate approval for each product for the IRC requirement model (and the market risk model for specific risk), or whether the supervisor grants a blanket approval, depends on the implementation of the market risk framework in the relevant jurisdiction.

10.17 For securitisation exposures and n-th-default credit derivatives, the bank is allowed to include its securitisation exposures and n-th-to-default credit derivatives in its VaR measure. Notwithstanding, it is still required to hold additional capital for these products according to the standardised approach, with the exceptions noted in [MAR30.35](#) to [MAR30.43](#).

FAQ
FAQ1

According to [MAR10.17](#), even a bank that includes securitisation exposures or n-th-to-default credit derivatives in its VaR measure must hold additional capital for these products according to the standardised measurement method, with the exceptions noted in [MAR30.35](#) to [MAR30.39](#). With respect to general market risk the bank may still be allowed to determine the capital requirement for those products using a VaR model according to [MAR30.15](#). This leads to the question which risks are considered general market risk with respect to VaR modelling. The main issue in this context is whether credit spread risks form part of specific risk or general market risk.

There is no unified approach across banks or across jurisdictions on how to make the distinction between general market risk and specific risks. Banks are invited to turn to their national supervisor for guidance.

- 10.18** For the correlation trading portfolio, the bank is allowed to include comprehensive risk of correlation trading portfolio in its internally developed approach as set out in [MAR30.35](#) only when the bank is active in buying and selling correlation trading portfolio products.