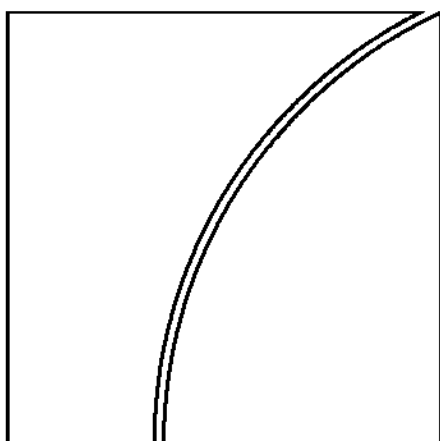


Basel Committee on Banking Supervision



Interpretive issues with respect to the revisions to the market risk framework

November 2011



BANK FOR INTERNATIONAL SETTLEMENTS

Copies of publications are available from:

Bank for International Settlements
Communications
CH-4002 Basel, Switzerland

E-mail: publications@bis.org

Fax: +41 61 280 9100 and +41 61 280 8100

This publication is available on the BIS website (www.bis.org).

© *Bank for International Settlements 2011. All rights reserved. Brief excerpts may be reproduced or translated provided the source is stated.*

ISBN print: 92-9131-867-1

ISBN web: 92-9197-867-1

Contents

1.	Interpretive issues regarding stressed value-at-risk.....	1
2.	Interpretive issues regarding the incremental risk capital (IRC) and comprehensive risk capital charges	4
2.1	Definition and scope.....	4
2.2	Incremental and comprehensive risk models.....	7
2.3	Qualitative requirements and IRC Guidelines	11
2.4	Specific risk/IRC and stressed VaR	13
3.	Interpretive issues regarding the standardised measurement method.....	13
3.1	General	13
3.2	Basis of assessment for securitisation positions: Application of market value.....	17
3.3	Application of maximum possible loss principle (“Max Loss”); and off-setting provisions of paragraphs 713 to 715 of the Basel II framework	17
4.	Other interpretive issues	19

Interpretive issues with respect to the revisions to the market risk framework

In this document, the Basel Committee on Banking Supervision (“the Committee”)¹ provides responses to interpretive issues regarding the *Revisions to the Basel II market risk framework* (“the Revisions”)² and the *Guidelines for computing capital for incremental risk in the trading book* (“the IRC Guidelines”).³ Updated versions of this document will be published on the Committee’s website if and when additional interpretive issues arise.

Unless stated otherwise, paragraph numbers given in the remainder of this document refer to the *International convergence of capital measurement and capital standards: A revised framework, comprehensive version*, June 2006, as amended through the *Revisions to the Basel II market risk framework (updated as of 31 December 2010)*, February 2011.

Questions which have been added since the previous version of the FAQs are shaded yellow, changes are shaded red.

1. Interpretive issues regarding stressed value-at-risk

1. *Does the stressed VaR apply to all risks included in the VaR model, or only to the general market risk component of that model?*

The stressed VaR applies to all risks (eg general interest rate risk; specific interest rate risk; commodity risk) for which the bank in question has approval from its supervisor to use an internal VaR model.

2. *Should the stressed VaR period be fixed (or stable) and the stressed VaR only respond to changes in the composition of the portfolio, or may the stressed-VaR also adjust to changes in risk factors (and if so, how much)?*

The intention of the stressed VaR requirement is to deliver the charge that the bank’s current VaR model would generate if the bank was experiencing a period of financial stress relevant to its portfolio. Therefore, the time-series data upon which the stressed VaR is calculated should be stable. However, the period used must be regularly reviewed by the bank and approved by the supervisor to ensure that it still represents a period of significant financial stress relevant to the bank’s portfolio.

¹ The Basel Committee on Banking Supervision consists of senior representatives of bank supervisory authorities and central banks from Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong SAR, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. It usually meets at the Bank for International Settlements (BIS) in Basel, Switzerland, where its permanent Secretariat is located.

² Basel Committee on Banking Supervision, *Revisions to the Basel II market risk framework, updated as of 31 December 2010*, February 2011.

³ Basel Committee on Banking Supervision, *Guidelines for computing capital for incremental risk in the trading book*, July 2009.

Also, to the extent that time series' data are used in the factor assessments, then these will also be fixed as a result of fixing the time series' data. However, to the extent that a bank changes its VaR engine, or risk factor approach, then these changes should be reflected in changes to the model used to calculate the stressed VaR measure.

3. *The text requires “a continuous 12-month period of significant financial stress”. Would this mean that supervisors exclude any period that would be less than 12 months even if particularly relevant to the portfolios and extremely stressful? Or are supervisors targeting a continuous 12-month period that includes a significant financial stress event (the latter lasting possibly less than 12 months)?*

The latter – supervisors are targeting a 12-month period that includes an appropriate financial stress.

4. *What exactly is meant by “anti-thetic” and “applying absolute rather than relative volatilities”? In the latter case, what is the reference period for determining whether the data is absolute or relative?*

Anti-thetic in this context means that price movements are considered relevant irrespective of their direction. For example, if a time series included a significant upward spike in equity prices, the model could apply significant movements in equity prices both upwards and downwards. This might be particularly relevant if a bank's portfolio is the “right way” to a period of financial stress (ie is long equities in a period of stock market surge); the model used should reflect that open risk positions (in either direction) are vulnerable to stressed variables.

5. *For the scenarios requiring no simulation from banks, the existing paragraph 718(Lxxxix) specifies that the loss information could be compared to the level of capital that results from a bank's internal measurement system. It should be specified whether this is only valid for the VaR component of the capital charge or for all components of the capital charge (VaR, stressed VaR, IRC and comprehensive risk capital charge).*

This paragraph is for supervisory use and could be used in a number of different ways, depending upon the data requested by the relevant supervisor. Supervisors would expect that the most relevant use would be a comparison of losses to the overall capital charge, but that does not preclude individual supervisors asking for information in different forms.

6. *If a bank should decide to use anti-thetic data to deliver the stressed value-at-risk, should it also use it to select the stressed period? That might make selecting the stressed period considerably more difficult because of the many possible combinations of the risk factors.*

No, see question 9 below.

7. *Does “using a weighting scheme that is not fully consistent with (d)” (footnote to paragraph 718(Lxxvii) (d)) include various methods to render the VaR model more reactive to market changes like, for example, models with time-dependent volatilities which use a period of less than a year to calibrate current volatility?*

Yes.

8. *If a bank opts for such a scheme, should it then use the same reactive scheme also for stressed VaR?*

No. The weighting scheme should not be used for stressed VaR.

9. *Regarding question 4 above, does this mean that banks in calculating stressed VaR, given the time period of one year (250 observations), have to consider an additional 250 observations by changing the sign of the risk factor movements?*

The stressed VaR charge is intended to deliver a capital charge based on a measure of VaR that would be applicable to the bank's current portfolio in a period of stress relevant to that portfolio. In principle, the easiest way to do this is to run the current VaR model based on historical data from a period of financial stress. However, there are two particular cases where this might be inappropriate:

- If a period of financial stress (which may be indicated by significantly higher volatilities) corresponds to directional moves which would lead to the bank making money, based on the current portfolio. In these circumstances, it might be appropriate to apply the risk factor movements in both the direction which is indicated by the historical data, and the opposite direction (anti-thetic) to ensure that the period of high volatility becomes more relevant to the bank's portfolio.
- In stressed periods, there are some price factors (eg credit spreads) which tend to have higher absolute values. Therefore, an increase in absolute volatility in these factors (ie large movements) might not correspond to significant increases in relative volatility (ie because the absolute level of the parameter is also higher). If the bank's current VaR model tracks relative shifts in these price factors, then the relevant period of stress applied in benign periods (ie when the absolute values of credit spreads are smaller) might not deliver a VaR measure which accurately reflects what the VaR would be in a period of stress. The bank should therefore consider modifying its VaR model to account for large absolute factor moves that can occur in times of stress.

This does not mean that the bank needs to look at a different 250-day period or an additional 250-day period by changing the sign of risk factor movements, but that it needs to think intelligently about how it translates the data from a 250-day period of stress into a stressed VaR measure.

10. *Is the stressed VaR also subject to a "use-test"?*

Yes, the VaR engine used to generate stressed VaR is subject to a use-test through the use of the current VaR calculated using the same engine. However, it may be that the stressed VaR output is not used in the day-to-day risk management decisions, because a different VaR measure is used.

2. Interpretive issues regarding the incremental risk capital (IRC) and comprehensive risk capital charges

2.1 Definition and scope

1. *What exactly is meant by “[...] that do not provide a pro-rata share in the proceeds of a securitisation tranche [...]” in paragraph 689(iv)?*

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.

2. *The text specifies that “positions which reference a claim on a special purpose entity are not included either”. However, in the context of a securitisations operation, notes issued by an SPV are claims on this SPV/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 SPVs/SPEs.*

The intent is to ensure that the SPV 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 SPV-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 SPV 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).

3. *The reference to mortgage-backed securities in paragraph 718(Lxxv) suggests they can remain within an internal models based approach and in VaR (the internal models approach); however, paragraph 9 of the Revisions indicates that the standardised measurement method should be used for all securitised products except for certain correlation trading activities for which a comprehensive risk capital charge can be calculated. Can non-correlation trading securitisations be incorporated in an internal models based approach?*

Securitisations which are not part of the correlation trading portfolio are subject to a general market risk charge and the standardised charge for specific risk. These positions must be included in the bank’s VaR model for general market risk or be subject to the standardised measurement charge for general market risk. While the positions may be included in the bank’s internal specific risk model, the specific risk capital charge for securitisations according to the standardised measurement method will apply as well.

4. *Should sovereign bonds be included in the IRC charge?*

Yes.

The definition of specific risk in paragraph 709(iii), first sentence, is quite generic. Consequently, it does not scope out any particular securities. When an acceptable IRC model identifies sovereign bonds as subject to migration and default risk, the capital charge should be determined accordingly. Even if certain sovereign bonds are subject to a risk weight of 0% under the standardised approach (cf. paragraph 710), they cannot be considered as free of default and migration risk. Therefore,

sovereign risk should be included in the scope of the incremental risk capital charge. Sovereign bonds must therefore be included in the relevant model. A general partial use of the standardised approach for sovereign bonds, ie exclusion of positions subject to a risk weight of 0% under the standardised approach from IRC, will not be granted. Accordingly, they will attract a capital charge under the IRC, except where the output of the model happens not to imply a capital charge for these positions.

5. *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 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 charge 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 charge). Supervisors should consider the risks of cherry picking if they allow partial use.

6. *Should Pfandbriefe (ie debt securities backed by cash flows from mortgage or public sector loans) be excluded from IRC?*

Pfandbriefe and other covered bonds that do not qualify as securitisations should be included in IRC.

7. *Due to paragraph 718(Lxxxvii-1-) the specific capital charges for securitisation exposures and n-th-to-default credit derivatives can not be calculated with an internal model. Paragraph 718(xciv) allows an exception to this only for positions in the correlation trading portfolio, if certain criteria are fulfilled. For positions where the specific risk capital charges can not be calculated with an internal model, the standardised measurement method applies. “Securitisation exposures” and “n-th-to-default credit derivatives” are relevant in different paragraphs of the trading book rules (paragraphs 709(ii), 709(ii-1-) and 718). Due to some cross references and the different use of “securitisation exposures” and “n-th-to-default credit derivatives” the question occurs if the max long/short treatment applies to securitisation exposures and n-th-to-default credit derivatives or only to securitisation exposures.*

The max long/short treatment applies not just to securitisation exposures, but also to n-th-to-default credit derivatives.

In detail: The overall capital charge for specific risk of all securitisation exposures and n-th-to-default credit derivatives in the correlation trading portfolio is calculated using the max long/short treatment. The overall capital charge for specific risk of all securitisation exposures and n-th-to-default credit derivatives outside the correlation trading portfolio may be calculated using the max long/short treatment only during a transitional period until 31 December 2013. After 31 December 2013 the overall

capital charge for specific risk of all securitisation exposures and n-th-to-default credit derivatives outside the correlation trading portfolio is calculated using the sum of the capital charge for the long positions and the capital charge for the short positions.

8. *Consider a risk position that is neither a securitisation position nor an n-th-to-default credit derivative, but which is included in the correlation trading portfolio (CTP) because a bank uses it to hedge a securitisation position or an n-th-to-default derivative of the CTP. The bank uses an internal model that incorporates specific risk and the risk position is included in this model.*

If the bank incorporates the CTP in a comprehensive risk measure as specified in paragraph 718(xcv), may it refrain from incorporating the risk position in the incremental risk charge (IRC) as specified in paragraphs 718(xcii) and 718(xciii)?

Yes. Paragraph 718(xcv) states: “For the exposures that the bank does incorporate in this internally developed approach, the bank will be required to subject them to a capital charge equal to the higher of the capital charge according to this internally developed approach and 8% of the capital charge for specific risk according to the standardised measurement method. It will not be required to subject these exposures to the treatment according to paragraph 718(xciii).” The reference to paragraph 718(xciii) should be read as referring to both paragraphs 718(xcii) and 718(xciii), as these two paragraphs together define the IRC.

9. *What is the rationale for the exclusion of synthetically leveraged super-senior tranches from the IRC 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 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.

An example in Annex 1 highlights the inconsistency between the leveraged super-senior tranche and the super-senior tranche that leads to the exclusion of the former.

10. *Should banks exclude positions (eg bonds, structured notes) issued by other group members from IRC?*

No, positions issued by other group members should be included in the IRC to ensure that the IRC captures a complete view of default and migration risk in the trading book.

11. *Should repos and reverse repos be included in the IRC, or the CRM?*

Yes. A security used in a sale and repurchase agreement (repo) transaction should still attract a charge under the IRC or the CRM, if it were to attract a capital charge under the rules for market risk, including specific risk. This is because the repo transaction does not alter the migration or default risk from the point of the seller of the security. Receiving a security through a reverse repo transaction will not, by

itself, create a position in the security. The migration or default risk stays with the seller of the security.

12. *Can a bank include hedges in its non-correlation trading securitisation portfolio (heuristically defined in paragraph 709 (ii-1-) in the same way as in the correlation trading portfolio)?*

No. Paragraph 709(ii-1-) specifically refers only to “securitisation instruments which are not included in the correlation trading portfolio” (which would include n-th-to-default credit derivatives that are not included in the correlation trading portfolio). Positions in such securitisation instruments are not defined to include hedges of these positions.

13. *Should bonds that have already defaulted be excluded from IRC? What about CDS that reference defaulted bonds?*

No, bonds that have defaulted may increase in value, or may be substituted by another bond that increases in value, later on. Also, the lack of a consistent and uniform definition of “default” makes it difficult to exclude positions based on this criterion. As long as the bond is held in the trading account it should be included in the IRC. In terms of a CDS contract referencing a defaulted bond, these should also be included in the IRC until such time that settlement occurs. If a credit event is deemed to occur by the determination committee and settlement occurs then it can be removed from the IRC model.

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

According to paragraph 718(Lxx), 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 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 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.

2.2 Incremental and comprehensive risk models

1. *It would be important for banks to be allowed to enhance the IRC model to leave the correlation book inside (ie, try to comply with the comprehensive risk measure but within the IRC model). Would it be acceptable to extend the IRC framework to comply with the comprehensive risk measure and perform a single calculation?*

Banks are allowed to enhance the IRC model to comply with the requirements for the comprehensive risk measure. However, they are not allowed to perform a single

calculation covering exposures subject to the IRC charge and exposures subject to the comprehensive risk capital charge. Disallowing a single calculation has the effect of not allowing any diversification between the portfolios.

2. *Do all of the correlation trading risks listed in paragraph 718(xcv) need to be included in a single model, or could a bank treat them outside the main modelling framework with supervisory approval? Can the bank use separate models for different products, or separate models for different risk factors?*

While in principle an integrated modelling approach is desirable, supervisors need to be realistic, and there are practical issues that banks will face to deliver an integrated model. Supervisors may permit approaches that capitalise different risks differently (eg via an add-on approach), provided that this can be undertaken conservatively and it does not undermine the strength of risk management. However, the capital charges calculated with the different models would have to be added using a simple sum and banks should be strongly encouraged to develop an integrated approach over time.

3. *What is the link between the liquidity horizon and issuer concentration? Would it be better to address issuer concentration through the correlation assumptions? (See IRC Guidelines, paragraph 23.)*

No. Where a bank has concentrated positions in terms of the market this should be reflected in a longer liquidity horizon – consistent with the view that it takes longer to liquidate concentrated positions. Concentrated positions in terms of the bank's portfolio would be reflected in the correlations inherent in the model.

4. *Would it be possible for an institution to use for purposes of the comprehensive risk capital charge a model substantially different from the IRC model? For example, a VaR model (99.9%, 1 year).*

In principle, the model could be substantially different from that used for IRC. However, a 99.9% one-year VaR would have serious shortcomings as a measure to capture the set of comprehensive risks required by this charge. These risks would need to be addressed if any bank were thinking of applying a VaR-type approach for the comprehensive risk measure. Just extending the current VaR measure to a 99.9% one-year VaR is not sufficient.

5. *Paragraph 718(xcv) requires a bank to capture “the cumulative risk arising from multiple defaults, including the ordering of defaults, in tranching products”. Is it really necessary to model the ordering of defaults? The value of a tranche at a predetermined date (eg at the liquidity horizon) should only depend on the number of defaults in this period but not on the order. Do we have any examples where the order of default determines the price (risk) of a tranche?*

If the order of defaults does not have a price impact, the CRM simulation does not need to take the order into account.

6. *Normal copula assumptions*

Is it accepted that banks model issuer interdependence assuming multivariate normal distributions or normal copula (eg between asset values, credit spreads or default times) or must they show that such model assumptions do not underestimate risk? (Reference: paragraph 718(xciii) for IRC; paragraph 718(xcv) in combination with the relevant rules on IRC)

Background: It is very hard to find clear empirical support for any particular copula. Among various modelling choices, the normal copula is often chosen for its simplicity (for example within the regulatory IRB framework). However, it is known to provide very thin tails in the loss distribution and may thus provide significantly smaller loss estimates than other choices.

The onus is on the bank to justify the modelling choices and their impact to the national supervisor. Normal distributions or normal copula may not be assumed uncritically. The impact of such modelling choices must be analysed in the validation.

7. *The revised market risk framework mentions only tranches and n-th-to-default products explicitly, but not n-th to n+m-th-to-default products (eg the value depends on the default of the 5th, 6th, 7th and 8th default in a pool; only in specific cases such as the same nominal for all underlyings can this product be represented by, for example, a 5% to 8% tranche). Are n-th to n+m-th-to-default products covered in the framework? (Reference: paragraph 718)*

Yes. Such products are to be decomposed into individual n-th-to-default products and the rules for n-th-to-default products in paragraph 718 apply. The answer to question 2.1.7 applies as well.

In the example cited above, the capital charge for a basket default swap covering defaults 5 through 8 would be calculated as the sum of the capital charges for a 5th-to-default swap, a 6th-to-default swap, a 7th-to-default swap and an 8th-to-default swap.

8. *Are there any specific regulatory requirements on the level of pro-cyclicality of an IRC model (on the continuum between reactive “point-in-time” and stable “through-the-cycle”)?*

There are no particular regulatory standards on what level of cyclicity of the estimates from an IRC model are acceptable.

9. *Are banks expected to perform their own evaluation of the (joint) distributional assumptions in their IRC model (including the structure of stochastic dependencies and copulas/correlations, as well as the number of stochastic factors)?*

Yes. Despite the relatively limited amount of relevant historical data, the (joint) distributional assumptions in an IRC model should not remain unchallenged, because of their material impact on the IRC figure.

The justification of these distributional assumptions forms an element in the justification of the IRC model's design, since the entirety of interlinked modelling choices establishes whether an IRC model is suitable for estimating losses at the 99.9% confidence level.

10. *An IRC model could employ input parameters which are related to IRB parameters (such as PDs/LGDs) or come from external sources (such as credit spreads and estimates of default/loss rates). Should banks justify the applicability of such exposure-dependent inputs within their IRC model?*

Yes. Banks should evidence the appropriateness of exposure-related parameters as inputs to their IRC model. Depending on their IRC model's design, this could concern parameters such as credit rating data, IRB PDs/LGDs and other estimates

of default/loss rates, credit spreads, mappings (eg from ratings to credit spreads), rating transition matrices, etc.

As mentioned in the answer on question 2.2.9, the justification of the parameters employed forms an element in the justification of the IRC model's design.

Furthermore, paragraph 28 of the IRC Guidelines explicitly requires that significant basis risks should be reflected in the IRC model.

11. *Referring to question 2.2.2, should the comprehensive risk measure take all risk factors into account, and not only those explicitly listed in paragraph 718(xcv), hence, also foreign exchange, equity, commodity risk, etc?*

Yes. The implementation of a comprehensive risk measure is required to capture all material risks in a bank's portfolio, including significant basis risks, and should therefore take into account all (material) risk factors. Approaches which capitalise different risk factors differently (eg via add-ons) may be permitted, provided that this can be undertaken conservatively and it does not undermine the strength of risk management, as mentioned in the answer to question 2.2.2.

12. *When we talk about migration risk, is it the risk of a downgrade of the internal rating that a bank gives to a debtor in the IRB framework, or is it the risk of the downgrade of an external rating of a debtor in the trading book? If it is external, should the bank choose a rating agency as the standard for the definition of migration?*

According to paragraph 11 of the IRC Guidelines the credit migration risk part of the charge can be determined on the basis of migrations of internal or external ratings. The bank's choice may be guided in particular by an assessment of which kind of ratings are closer related to the changes of credit spreads that the bank observes in the market. The bank must apply its methodology in a consistent and well-reasoned way. Subject to this constraint the bank need not give priority to any particular external rating agency.

13. *Should banks underpin that, if applicable, the number of Monte Carlo simulations within their IRC model is sufficiently high (for instance by providing a convergence graph to demonstrate that the intermediate results become relatively stable), and that – if applicable – the discretisation (of a continuous evolution equation) is sufficiently fine-grained?*

Yes. The onus is on the bank to justify such choices and their impact to the national supervisor. Whichever approach a bank chooses, it must demonstrate in the validation of the model that the choice is prudent. Furthermore, referring to the answer to question 15 below, banks are encouraged to quantify all model uncertainties, including any simulation and discretisation errors.

14. *Which roles should be played by parameters such as IRB LGDs and other (issuer- or position-specific) estimates of loss rates, credit spreads, market price variations, etc in the IRC model?*

If multiple modelling choices are deemed feasible, banks should at least estimate their impact on the IRC figure. For instance, banks could compare approaches using issuer-specific downturn LGDs (taken from the IRB context) with approaches relevant using historical market price movements of positions which are deemed representative. Furthermore, the bank's evaluation of the prudence of its assumptions could encompass elements such as the lengths of historical time

series, the coverage of stressed historical time periods and the functions used for fitting.

15. *How should banks deal with the IRC figure's sensitivity with respect to the diverse model choices? Which benchmarks could banks use as yardsticks to substantiate that, despite the model uncertainty, the resulting IRC figure is representative for sufficiently stressed circumstances?*

Banks are encouraged to review and provide evidence on the uncertainty around the outcomes of their IRC model, for example by identifying the most significant assumptions, evaluating the (statistical) techniques employed, assessing alternatives, estimating uncertainty bounds and quantifying the resulting impact on the IRC figure.

16. *Definition of migration risk as opposed to market risk: Migration risk is often modelled by assuming that a rating migration goes together with a change in credit spread from the average spread level of rating 1 to the average spread level of rating 2. Is this sufficient to cover migration risk in IRC or must IRC include the risk of losses due to temporary and/or idiosyncratic deviations of credit spreads from average spread levels? One could argue that these are market risks and are already captured in VaR. The question is particularly material in relation to the basis between long and short positions.*

It is acceptable to define migration risk as the risk of a change in credit spread from an average spread level 1 to an average spread level 2. The reason is that the Basel II framework implicitly includes a capital charge for a change of credit spreads from rating migrations. It does not include a capital charge for changes of credit spreads that may occur without a rating migration (see paragraph 718(xciii); paragraphs 12 and 13 of the IRC Guidelines).

Moreover, it would be difficult to capture idiosyncratic risk in the one-year IRC horizon.

In the context of this question, the bank should specifically evaluate the representativeness of the average spread levels, mappings from ratings to credit spreads, rating transition matrices, spread homogeneity in the partition class (eg a rating group) etc.

The method for establishing ratings should fully reflect positions in the bank's portfolios.

2.3 Qualitative requirements and IRC Guidelines

1. *The following questions relate to the interpretation of the netting requirement that positions must "refer to the same financial instrument" as set out in paragraph 27 of the IRC Guidelines: Can bonds that are deliverable into a CDS be netted against those CDS? Can (otherwise identical) CDS with different maturities be netted? Does the answer change if both CDS have residual maturities beyond the one year capital horizon? Can total return swaps (TRS) be netted with the instruments that they reference? The standard specific risk rules do not require maturity matches for such netting. Is this also the case for IRC?*

The offsetting treatment described in paragraphs 713 to 715 under the standardised measurement method is not applicable to modelled approaches. As stated in

paragraph 27 of the IRC Guidelines, within the IRC model, exposure amounts may be netted only when long and short positions refer to the same financial instrument. (Note that under the IRC – in contrast to the standardised measurement method – a TRS can only be netted against the underlying reference obligation when there is no maturity mismatch, ie when the TRS is of the same maturity as the underlying.) When long and short positions do not refer to the same financial instrument, exposure amounts must be captured in the IRC model on a “non-netted” basis. (A CDS is, of course, not the same financial instrument as a bond that is deliverable into the CDS.) In other words all short and long positions must be captured and modelled separately in order to reflect basis risks in the model.

2. *Do the IRC Guidelines apply to the comprehensive risk modelling approach? There seems to be only a requirement to meet a standard comparable to IRB under the constant level of risk assumption.*

Where relevant, yes.

3. *Does the IRC guidance on dynamic hedging apply to CRM and, if so, does it have identical implications for CRM compared to IRC?*

The CRM rule (paragraph 718(xcv) last bullet point) states that, to the extent the comprehensive risk measure incorporates benefits from dynamic hedging, CRM modelling should capture the risk of hedge slippage and the potential costs of rebalancing such hedges. Thus, the IRC guidance applies to CRM with the necessary modifications.

4. *Given ad hoc aspects of the treatment of the correlation trading portfolio, is there a ‘use test’ requirement associated with the comprehensive risk measure?*

Supervisors would expect that the modelling engine used in the comprehensive risk measure as well as the inputs and outputs of the model to be used in risk management decisions.

5. *How should the IRC model be backtested?*

As stated in the IRC Guidelines, owing to the high confidence standard and long capital horizon of the IRC, robust direct validation of the IRC model through standard backtesting methods at the 99.9%/one-year soundness standard will not be possible. Accordingly, validation of an IRC model necessarily must rely more heavily on indirect methods including but not limited to stress tests, sensitivity analyses and scenario analyses, to assess its qualitative and quantitative reasonableness. Also, supervisors would in general look at the validation process regarding the input parameters to the models.

6. *What is meant by paragraph 32 of the IRC Guidelines which states that the IRC model for measuring default and migration risks over the liquidity horizon should include comparison of risk estimates for a rebalanced portfolio with that of a portfolio with fixed positions?*

This refers to the fact that a bank might be able to make assumptions of portfolio rebalancing in its assessment of IRC. If this is the case, then this requirement relates to the bank comparing those results with the results that would have applied if the positions were held constant over the relevant liquidity horizon.

7. *Do the more stringent modelling standards for the comprehensive risk model also apply to the specific VaR modelling of correlation trading products?*

The introduction of the CRM (as well as the IRC) is a necessary development intended to address some of the known flaws embedded in the VaR methodology. Accordingly, VaR and CRM methodologies are quite different in nature. In particular, CRM standards related to time horizon or level of confidence cannot be applied to specific VaR modelling. However, to the extent that both VaR and the CRM are required to capture all material risks in a portfolio, other aspects of the CRM standards, apart from liquidity horizon or level of confidence, related to risk capture might be relevant for specific VaR as well.

2.4 Specific risk/IRC and stressed VaR

1. *If a bank applies the comprehensive risk modelling approach to the correlation portfolio, does it also need to incorporate the specific risks of this model within its VaR and stressed VaR models?*

Yes. The IRC, comprehensive risk measure and stressed VaR should be viewed as supplemental capital measures that generally **do not** affect the current capital framework for VaR and specific risk. However, banks need not capture default and migration risks for positions subject to the incremental risk capital charge referred to in paragraphs 718(xcii) and 718(xciii) (see footnote to paragraph 718(Lxxxviii)).

In addition, the incremental risk capital charge covers default and migration risks (paragraph 718(xcii)), whereas the comprehensive risk capital charge covers all price risks (paragraph 718(xcv)). The Committee's fundamental review may address these and other double counting issues.

2. *Taking into account that both migration and default risks have to be captured in IRC, is it necessary to still model default and migration in VaR and stressed VaR?*

Not necessarily.

The new footnote to the first sentence of paragraph 718(Lxxxviii) states that, for specific risk modelling, banks need not capture default and migration risks for positions subject to the incremental risk capital charge referred to in paragraphs 718(xcii) and 718(xciii). This is also the case for stressed VaR, since VaR and SVaR methodologies should be aligned.

At the same time specific risk for credit spread models are meant to capture idiosyncratic risk in terms of credit spreads. Specific risk models can include spread jumps and may therefore include rating migrations. The same applies to VaR and stressed VaR though the impact in stressed VaR may be greater than in VaR.

3. Interpretive issues regarding the standardised measurement method

3.1 General

1. *What could be the conditions under which trading book positions that are subject to interest rate specific risk could be netted in order to derive either the net long*

position or the net short position? Are the rules considering a perfect hedge only? Is it allowed to net cash and synthetic securitisations for the purpose of the capital calculation for structured products under the standardised approach for correlation trading?

Netting is only allowed under limited circumstances for interest rate specific risk as explained in paragraph 709(iii):

“offsetting will be restricted to matched positions in the identical issue (including positions in derivatives). Even if the issuer is the same, no offsetting will be permitted between different issues since differences in coupon rates, liquidity, call features, etc means that prices may diverge in the short run.”

In addition, partial offsetting is allowed in two other sets of circumstances:

1. One set of circumstances is described in paragraph 718 and concerns n-th-to-default basket products.
2. The other set of circumstances described in paragraphs 713 to 715 pertains to offsetting between a credit derivative (whether total return swap or credit default swap) and the underlying exposure (ie cash position). Although this treatment applies generally in a one-for-one fashion, it is possible that multiple instruments could combine to create a hedge that would be eligible for consideration for partial offsetting. Supervisors should recognise that, in the case of multiple instruments comprising one side of the position, necessary conditions (ie value of two legs moving in opposite directions, key contractual features of the credit derivative, identical reference obligations and currency/maturity mismatches) will be extremely difficult to meet, in practice.

2. *In the Revisions, the text envisages the possibility of using the supervisory formula approach for securitisation positions, with inputs for Kirb consistent with the IRC principles, notably in terms of PD and LGD. However, the IRC Guidelines are silent on these aspects (even if mentioning broadly that the soundness of the approach should be comparable to IRB). In addition, securitisation positions are specifically excluded from the IRC Guidelines, producing a sort of inconsistency. How in practice could IRC be used as a basis for the supervisory formula approach without further specifications?*

Under the IRC the banks may have estimates, say, for PDs with a forecasting horizon for less than a year, eg when the liquidity horizon is three months banks may also estimate PDs over a horizon of three months in the first instance. The internal ratings-based approach, however, requires PD estimates over a one-year horizon. Applied to this example the rules permit the bank to map its PD from a three-months horizon to a one-year horizon, if this is done in a reasonable way. The rules deliberately refrain from giving any detail to avoid unduly restricting banks in the approach they use for this mapping.

3. *According to paragraph 712(vi)(c), banks can apply the concentration ratio to the securitised exposures under the standardised approach. Can this approach apply to banks that are on foundation or advanced IRB approaches?*

Yes. Subject to supervisory approval, any bank not applying the Supervisory Formula Approach (either using IRB inputs under 712(vi)(a) or IRC inputs under

712(vi)(b)) is permitted to use the concentration ratio approach outlined in 712(vi)(c). It should be noted that this approach requires that weightings which would be applicable under the standardised approach be used in conjunction with the concentration ratio, even if the bank would normally apply the IRB approach to securitisation positions in the banking book.

4. *Can the approach of taking the larger of the specific risk capital charges for net long positions and the specific risk capital charge for net short positions be applied to leveraged securitisation positions or option products on securitisation positions?*

No. Leveraged securitisation positions and option products on securitisation positions are securitisation positions. They are not admissible for the CTP according to paragraph 689(iv). Therefore, the max long/short treatment can only be applied during a transitional period ending 31 December 2013, according to paragraph 709(ii-1-). After 31 December 2013 the capital requirement for specific risk will be determined as the sum of the capital charges for specific risk against net long and net short positions.

5. *Paragraph 718 lit (b) does not allow any offsetting with the use of second- or more-to-default credit derivatives. However, for the banking book, paragraph 209 allows offsetting by a second-to-default credit derivative if a bank has first-to-default-protection or one of the assets within the basket has already defaulted. This would be an inconsistency between trading book and banking book.*

This is factually correct, but the Committee has specifically removed this previous treatment of second- or more-to-default credit derivatives because it over-states the hedging benefits of these products.

If an n-th-to-default credit derivative is currently a first-to-default credit derivative as a result of n-1 reference names in the basket having defaulted, then the offsetting as described under paragraph 718 lit (a) for first-to-default credit derivatives would be permitted.

6. *The banking book regime recognises the effects of guarantees (eg, through substitution), but the trading book does not. If supervisors are applying the banking book charges for securitisation positions in the trading book, does that imply that guarantees of such positions would be recognised in the trading book the way they are in the banking book?*

The rule states (paragraph 712(iii)) that the banking book charges have to be applied to the “net positions” (either long or short) in securitisations:

*“The specific risk of securitisation positions as defined in paragraphs 538 to 542 which are held in the trading book is to be calculated according to the method used for such positions in the banking book unless specified otherwise below. To that effect, the risk weight has to be calculated as specified below **and applied to the net positions** in securitisation instruments in the trading book.”*

The concept of long/short “net positions” is applied in the trading book framework to determine the “open risk” positions which are subject to market risk capital charges. The banking book framework does not apply the same concept of “net position”, ie it is a long-only framework where short positions are only contemplated as risk mitigants to be applied under strict credit risk mitigation (CRM) rules. These CRM rules in the banking book do not apply in the trading book.

Consequently, the “net positions” in securitisations have to be calculated according to trading book rules, and, therefore, any “guarantee” that does not comply with the trading book rules would be treated as an open position subject to capital charges. Once the long and/or short net positions have been obtained, the banking book charges will be applied.

7. *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 CRM charge because of unhedged positions and increasing the floor for CRM 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 CRM modelling on an ongoing basis.

From a regulatory perspective this exclusion may also be acceptable. Paragraph 689(iv) 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, CRM models do not have to incorporate **all** the securitisation exposures and n-th-to-default credit derivatives which meet the criteria to be “modelled”.

8. *According to paragraphs 713 to 715, the offsetting treatment is only applied to a cash position that is hedged by a credit derivative. Can this treatment be applied to a credit derivative that is hedged by another credit derivative, assuming there is an exact match in terms of the reference obligations?*

Yes.

Paragraphs 713 to 715 are applicable not only when the underlying position being hedged is a cash position, but also when the position being hedged is a CDS or other credit derivative. They also apply regardless of whether the cash positions or reference obligations of the credit derivative are single-name or securitisation exposures.

For example, when a long cash position is hedged using a CDS, the 80% offset treatment of paragraph 714 (the partial allowance treatment of paragraph 715) generally applies when the reference obligation of the CDS is the cash instrument being hedged and the currencies and remaining maturities of the two positions are (are not) identical. Similarly, when a purchased CDS is hedged with a sold CDS, the 80% offset treatment (the partial allowance treatment) generally applies when both the long and short CDSs have the same reference obligations and the currencies and remaining maturities of the long and short CDSs are (are not) identical. The full allowance (100% offset) treatment generally applies only when there is zero basis risk between the instrument being hedged and the hedging instrument, such as when a cash position is hedged with a total rate of return swap referencing the same cash instrument and there is no currency mismatch, or when a purchased CDS position is hedged by selling a CDS with identical terms in all respects, including reference obligation, currency, maturity, documentation clauses (eg credit payout

events, methods for determining payouts for credit events, etc), and structure of fixed and variable payments over time.

As explained in question 1 above, it is worth noting that the conditions under which partial or full offsetting of risk positions that are subject to interest rate specific risk are narrowly defined. In practice, offsets between securitisation positions and credit derivatives are unlikely to be recognised in most cases due to the explicit requirements in paragraphs 713 to 715 on reference names etc.

3.2 Basis of assessment for securitisation positions: Application of market value

Cash positions

The bank holds externally rated, net long securitisation positions that have already incurred large MTM write-downs and that have been severely downgraded by the rating agency. It is argued that these positions incur excessive capital charges under the RBA because external ratings focus either on the probability of losses relative to contractual terms (S&P and Fitch), or on expected losses relative to contractual terms (Moody's), rather than on the likelihood or expected level of future losses beyond those already recognised.

- *Suppose a bank holds a long position in an ABS that initially was rated AAA, but subsequently has been downgraded. Suppose the ABS has been written down from (\$100=par value) to \$65. If the ABS currently is C-rated, the bank applies the RBA and determines that it must deduct \$65 from capital. Alternatively, if the current rating is BB-flat (425% RW), the bank calculates its capital charge to be \$22.10 (=4.25x0.08x\$65) → RWA of \$276.25.*

The agreed treatment is that the market value of cash positions is used as the basis of the “position” to which the standard measurement method (SMM) capital charges apply. The correct treatment is, therefore, applied in the above example.

- *Suppose in the above example that the bank holds a net short securitisation position rather than a net long position. The bank calculates the capital charge for this position based on (the absolute value of) the market value. If the ABS has fallen in value from \$100=par value to \$65, this implies unrealised gains on the short position of \$35. If the ABS currently is C-rated, the bank applies the RBA and determines that it must deduct \$65 from capital. Alternatively, if the current rating is BB-flat (425% RW), the bank calculates its capital charge to be \$22.10 (=4.25x0.08x\$65) → RWA of \$276.25. The capital charge for a short position in an ABS therefore equals the capital charge of a long position.*

The agreed treatment is that the market value is used as the basis of the “position” to which the standard measurement method (SMM) capital charges apply. The correct treatment is, therefore, applied in the above example.

3.3 Application of maximum possible loss principle (“Max Loss”); and off-setting provisions of paragraphs 713 to 715 of the Basel II framework

When a bank buys credit protection for an ABS tranche and (due to netting rules) the bank is treated as having a net short position, QIS respondents note that the standardised capital charge for the net short position is often determined by the max potential loss. This is particularly true when the underlying ABS tranche has been severely downgraded and written down. In particular, banks note that if the underlying ABS continues to deteriorate, the

overall capital charge progressively increases and is dominated by the charge against the short side of the hedged position.

Some examples (without and with off-set) illustrate how the Max Loss principle should apply:

Max Loss without offset

Suppose the bank has net long and net short positions that reference similar, but not the same, underlying assets. In other words the bank hedges an A-rated mezzanine RMBS tranche (notional=\$100) with a CDS on a similar but different A-rated mezzanine RMBS (also having notional=\$100).

Suppose the RMBS tranche owned by the bank is now rated C, and has value \$15. Also assume that the value of the CDS on the different RMBS has a current value of \$80. Further, suppose that the current value of the RMBS underlying this CDS is \$20 and is also rated C. Finally, suppose that the CDS would be valued at -\$2 if the underlying RMBS tranche were to recover unexpectedly and become risk free.

The correct treatment is as follows:

$$\min(\$15, \$15) + \min(\$20, \$82) = \$35.$$

(Long Leg) (Short Leg)

No off-set would be permissible in this example, because the same underlying asset has not been hedged. The capital charge should, therefore, be calculated by summing the charges against the long and short legs. The maximum loss principle would apply to each individual position.

Please note that the market value of the underlying has been applied in determining the exposure value of the CDS.

Max Loss with offset

Suppose the bank hedges an A-rated mezzanine RMBS tranche with a CDS referencing the same RMBS having notional of \$100. Suppose the RMBS tranche is now rated C, and has value \$15, while the current value of the CDS is \$85. Suppose that the value of the CDS would equal -\$2 if the RMBS tranche were to recover unexpectedly and become risk free.

In this example, if the CDS exactly matched the RMBS in tenor, then off-setting could potentially apply. In that instance, the capital charge should equal 20% of $\max\{\min(\$15, \$15), \min(\$15, \$87)\} = \$3$.

If the tenors were not matched (ie maturity mismatch), then the capital charge should equal $\max\{\min(\$15, \$15), \min(\$15, \$87)\} = \$15$.

Please note that the maximum loss principle cannot be applied on a portfolio basis.

4. Other interpretive issues

1. *Should valuation adjustments be performed on a portfolio level (ie adjustments to be made in the form of a reserve for a portfolio of exposures and not to be reflected in the valuation of the individual transactions) or on a transaction level (ie adjustments to be reflected in the valuation of the individual transactions)?*

Paragraphs 718(cviii) to (cxii).

Supervisors expect that the valuation adjustment will be considered for positions individually.

2. *Should the positions in a securitisation warehouse for which the bank has elected fair value be subject to the banking book regulatory capital charges?*

Positions that belong to a securitisation warehouse do not meet the definition of the trading book. This applies irrespective of their accounting treatment.

3. *According to paragraph 718(Lxxxvii-1-) even a bank that includes securitisation exposures or n-th-to-default credit derivatives in its value-at-risk measure, must hold additional capital for these products according to the standardised measurement method, with the exceptions noted in paragraphs 718(xcv) to 718(xcvii) (CRM). With respect to general market risk the bank may still be allowed to determine the capital charge for those products using a value-at-risk model according to paragraph 718(Lxxvi) (k). This leads to the question which risks are considered general market risk with respect to value-at-risk 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.

Annex 1

Example to question 2.1.9

The following example highlights the inconsistency between the leveraged super-senior tranche and the super-senior tranche that leads to its exclusion.⁴

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 CDS 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.

⁴ 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.