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Deutsche Bank comments on issues raised in the ANPR, issued by OCC, FED, FDIC and OTS on August 4, 2003

Please note: page numbers refer to the ANPR-version available at www.federalreserve.gov.

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Roman Numeral I – Section C : Other Considerations / Boundary Issues
Deutsche Bank comments:
Basic definitions are insufficient between Credit Risk and Operational Risk (OR). More clarity needs to be exhibited if the readers are to understand exactly what is a Credit Risk loss versus an Operational Risk loss.
Having this clarity, will eliminate the possibility of double counting as well as interpretation issues whenever a loss occurs resulting from the credit function that has OR loss implications; f.e. an accounts receivable write-off to the allowance for doubtful receivables where the write-off is due to insufficient collection controls.

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The Agencies are interested in comment on the extent to which alternative approaches to regulatory capital that are implemented across national boundaries might create burdensome implementation costs for the U.S. subsidiaries of foreign banks.

Deutsche Bank comments:
Internationally active banks operating subsidiaries in various countries would be affected in several ways:
1. Recognition of internal methodologies (A-IRB and AMA) by each host country regulator would add significant costs, could lead to conflicting interpretations by the various regulators and would consume scarce resources during the complex implementation phase. Therefore, Deutsche Bank requests that the home regulator should be responsible for global recognition of internal methodologies and co-ordinate with host regulator the mutual recognition.
2. Different interpretation in cases of national discretion would burden internationally active banks with more complex reporting requirements and create competitive imbalances.

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1. *Given the general principle that the advanced approaches are expected to be implemented at the same time across all material portfolios, business lines, and geographic regions, to what degree should the Agencies be concerned that, for example, data may not be available for key portfolios, business lines, or regions? Is there a need for further transitional arrangements? Please be specific, including suggested durations for such transitions.*
2. *Do the projected dates provide an adequate timeframe for core banks to be ready to implement the advanced approaches? What other options should the Agencies consider?*
3. *The Agencies seek comment on appropriate thresholds for determining whether a portfolio, business line, or geographic exposure would be material. Considerations should include relative asset size, percentages of capital, and associated levels of risk for a given portfolio, business line, or geographic region.*

Deutsche Bank comments:

Ad 1 Deutsche Bank would ask for transitional arrangements (temporary Partial Use) over a 10 year time horizon. It also appears necessary to respond flexible to changes in organizational and business line structure (f.e. at bank mergers), possibly leading to an extension of the transitional arrangement originally granted.

Ad 3 It is of mayor importance how the ruling on not-material portfolios is put into practical life. We propose the following scheme to draw a border-line on not-material portfolios:
As per Basel CP-3 para 228, an asset class can be exempted from IRB-treatment on a permanent basis, if it is not-material with regard to size and risk profile. To reflect both characteristics, the materiality aspect should in the following be linked to the following parameters: (i) limits and (ii) risk weighted assets.
As 'asset class' should be treated at least those asset classes which are defined in the Basel CP-3 for IRB-treatment (corporate, sovereigns, banks, retail, equity participations etc) and the respective sub-classes (project finance, object finance, commodity finance, commercial real state , qual. revolving loans, other retail, SME, purchased assets etc.). In addition, it should be possible for banks to exempt certain asset groups within the sub-asset classes, given (i) endorsement by regulator and (ii) that these groups can be realistically told apart (f.e. certain products the bank does not offer any longer).
Deutsche Bank proposes that permanent Partial Use should be allowed for a bank /banking group, as far as the sum of all asset classes exempt from IRB-treatment permanently does not exceed 20% of the total of all asset classes held by the bank / banking group (measured by the two parameters given above). Possible scenarios are (inter alia):
-> a bank exempts one or several asset classes permanently from IRB-treatment
-> in a banking group, the parent company exempts a subsidiary permanently from IRB-treatment with respect to one or several asset classes.
->in a banking group, the parent company exempts a subsidiary permanently from IRB-treatment for all asset classes.
->in a banking group, one or several asset classes are permanently exempt from IRB treatment for all companies belonging to this banking group.
If the threshold is exceeded temporary, this should be handled bank-individually by the regulator under Pillar-2. Banking groups should be requested to evidence regularly (but max. once a year under normal circumstances) that they are below the 20% threshold.
It appears that the UK FSA is planning to apply a 20% or 15% - threshold.

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The Agencies seek comment on the conceptual basis of the A-IRB approach, including all of the aspects just described. What are the advantages and disadvantages of the A-IRB approach relative to alternatives, including those that would allow greater flexibility to use internal models and those that would be more cautious in incorporating statistical techniques (such as greater use of credit ratings by external rating agencies)? The Agencies also encourage comment on the extent to which the necessary conditions of the conceptual justification for the A-IRB approach are reasonably met, and if not, what adjustments or alternative approach would be warranted.

Should the A-IRB capital regime be based on a framework that allocates capital to EL plus UL, or to UL only? Which approach would more closely align the regulatory framework to the internal capital allocation techniques currently used by large institutions? If the framework were re-calibrated solely to UL, modifications to the rest of the A-IRB framework would be required. The Agencies seek commenters' views on issues that would arise as a result of such re-calibration.

Deutsche Bank comments:
The majority of banks uses either a KMV-like / Riskmetrics-like model or a derivative of CreditRisk+ for economic capital calculation. The results of the different model calculations are essentially comparable i.e. the difference in results is well understood. Therefore, one can say that market standards for those internal models do exist. The use of internal models for regulatory credit risk quantification would be consistent with market and operational risk treatment under BIS rules and has the following advantages:

- Stresses / hot spots in a portfolio are compensated better by an internal model than by the Basel-2 one-factor IRB function. This is because internal models take into account the specific granularity,

correlations within, concentration or diversification of bank-individual portfolios with regard to industries and countries concerned.

- Based on the fact that internal models are already integrated in bank-internal processes, the usage of internal models will create an increased acceptance for the new regulatory framework within banks.

However, it has to be considered that internal models are more complex to validate and regulate than the current A-IRB model. Though we still strongly suggest to allow an opening clause for acceptance of internal credit risk models.

There are a lot of concerns regarding the above-mentioned greater use of credit ratings by external rating agencies. Some of them are:

- The use of external ratings by too many banks could lead to increasing homogeneity among market participants and eventually results into increasing systemic risk.
- The assignment of default probabilities to external ratings implies statistical uncertainty (e.g. banks generally use point-in-time ratings whereas most of the external rating agencies use through-the-cycle ratings).
- The semantic of the rating scale used by external rating agencies might be not in line with bank internal or regulatory requirements (e.g. LGD components might be included).

As expected losses (EL) are already covered by provisions and should be included in the pricing of a loan, covering them with capital is double charging.
The elimination of capital charges for EL leads to a flattening of the risk weight curve(s). Since EL increases with increasing default rate (i.e. within an economic downturn), the exclusion of EL from the risk weight function would have a smoothening effect on capital requirements over time. It is therefore an additional mean to mitigate the pro-cyclical effect of the IRB risk weight function. Implementation can be easily made by an adjustment to the risk weight formula. Please note that a lower capital requirement for qualifying revolving retail exposures (via recognition of FMI) is already accepted in the 3^{d} Basel Consultative Paper (CP-3).

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If the Agencies include a SME adjustment, are the $50 million threshold and the proposed approach to measurement of borrower size appropriate? What standards should be applied to the borrower size measurement (for example, frequency of measurement, use of size buckets rather than precise measurements)?

Does the proposed borrower size adjustment add a meaningful element of risk sensitivity sufficient to balance the costs associated with its computation? The Agencies are interested in comments on whether it is necessary to include an SME adjustment in the A-IRB approach. Data supporting views is encouraged.

Deutsche Bank comments:
According to internal studies as well as industry know-how (e.g. size indicator implemented in KMV software) the risk weight reduction implemented in the Basel 2 formula is not steep enough. This might be due to the fact that it comes on top of the reduction of the asset correlation parameter with an increase in PD (which is, according to regulatory studies, not justified). We therefore suggest to apply a re-parametrization after an industry survey.

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The Agencies invite comment on ways to deal with cyclicality in LGDs. How can risk sensitivity be achieved without creating undue burden?

Deutsche Bank comments:
As we see, in an unfavorable market condition, the collateral value may drop by 10% which can - depending on the LGD's for the collateralized and un-collateralized portion of the exposure - increase the capital requirement by up to a factor 5 (given we had a fully collateralized exposure before and then a 10% un-covered portion). A more realistic number might be a doubling of regulatory capital requirements if collateral value falls by 10%. We dampen this fluctuation in our internal model calculation by using long-term averages for LGD.

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The Agencies are seeking comment on the wholesale A-IRB capital formulas and the resulting capital requirements. Would this approach provide a meaningful and appropriate increase in risk sensitivity in the sense that the results are consistent with alternative assessments of the credit risks associated with such exposures or the capital needed to support them? If not, where are there material inconsistencies?

Does the proposed A-IRB maturity adjustment appropriately address the risk differences between loans with differing maturities?

Deutsche Bank comments:

In general, Deutsche Bank regards the maturity adjustment suggested in Basel CP-3 as not justified. Deutsche Bank has published a study in RISK containing our position on the maturity issue (The maturity effect on credit risk capital, RISK, 07/2002, Michael Kalkbrenner / Ludger Overbeck; attached for your convenience).

In addition, Deutsche Bank believes that the issue of potential pro-cyclicality aggravates with such steep maturity adjustments for the following reasons:

1. The steep curve will incentivise lenders to lend short rather than long.
2. Any change in the macro-economic environment will therefore bring lenders in the position to reduce their portfolio, initiating or intensifying a credit crunch.

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The Agencies are interested in comment on whether the proposed $1 million threshold provides the appropriate dividing line between those SME exposures that banking organizations should be allowed to treat on a pooled basis under the retail A-IRB framework and those SME exposures that should be rated individually and treated under the wholesale A-IRB framework.

Deutsche Bank comments:

Deutsche Bank believes that a separation into segments via exposure size is not justified. Firstly, in our opinion exposure size is not a primary risk driver. Secondly, it creates implementation issues i.e. the exposure size has to be measured as part of the regulatory reporting process. Thirdly, it creates incentives to distribute smaller size loans of the same counterparty over many banks rather than a limited number of banks which can monitor this client sufficiently.

Furthermore, we think that the proposed use test that only exposure under a retail approach would qualify is also not justified since it creates an incentive to use a simpler approach in order to save regulatory capital.

Please note that the original Basel document gives the 1 million amount denominated in Euro (CP-3 para. 199), the ANPR in US-Dollar.

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The Agencies are interested in views on whether partial recognition of FMI should be permitted in cases where the amount of eligible FMI fails to meet the required minimum. The Agencies also are interested in views on the level of portfolio segmentation at which it would be appropriate to perform the FMI calculation. Would a requirement that FMI eligibility calculations be performed separately for each portfolio segment effectively allow FMI to offset EL capital requirements for QREs?

Deutsche Bank comments:

Deutsche Bank believes that the recognition of FMI is only a patch for a problem which is created by the Basel CP-3 still demanding covering of EL with regulatory capital in the first place. Therefore, if EL is to be excluded of the RWA formula, the problem would not be there. It is our understanding that regulators have now agreed on the position i.e. that EL is no longer part of the RW function.

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The Agencies seek comments on the methods set forth above for determining EAD, as well as on the proposed back-testing regime and possible alternatives banking organizations might find more consistent with their internal risk management processes for these transactions. The Agencies also request comment on whether banking organizations should be permitted to use the standard supervisory haircuts or own estimates haircuts methodologies that are proposed in the New Accord.

Deutsche Bank comments:
We appreciate the current proposal as a step to reflect the nature of the security lending business more adequately in the regulatory capital framework. In this context, we would like to take the opportunity to comment on some of the issues raised in this proposal:

- Master Netting Agreements for Repo-Style Transactions
  We welcome the proposal to recognize Master Netting Agreements for repo-style transactions which allows banks to calculate their credit risk exposure in the regulatory framework more closely to the common industry practice.
- VaR-Based Measure for Repo-Style Transactions
  From our point of view, an exposure measure for repo-style transactions based on market risk VaR models (acc. to the 1996 Market Risk Amendment) would overestimate the risk arising from such transactions.
  VaR is a measure of the *potential loss* a bank may experience over a given interval. Applying a 95^{th} or 99^{th} percentile those potential losses can be considered as a very conservative estimate of adverse market movements. Using those estimates as counterparty exposure measure within a credit risk framework would always assume that the default of an obligor is correlated with adverse market conditions and vice versa which is as such not observable in the market. Those assumptions produce unjustifiable regulatory capital charges for repo-style transactions which could cause unpredictable negative effects in the security lending market. In this context, we do not see the market risk VaR models as an adequate solution for measuring counterparty credit exposure.
- Own internal estimates of haircuts
  Similar considerations would apply to *own internal estimates of haircuts* (based on a 99^{th} percentile and a one-year historical observation period) where even more the disavowal of diversification effects enforce the critical thoughts outlined above.
  Based on our internal observations as to date, the best possible measure (for derivatives and repo transactions alike) seems to be an average expected exposure, which uses the average of each single risk parameter which determines the counterparty credit risk exposure.
- Back-testing VaR Measures
  If regulators feel that the market risk VaR models are imperative for the estimation of counterparty credit exposure it has been to consider that back-testing for credit risk related figures is entirely different to back-testing for market risk.
  If regulators insist on developing a rigorous and separate back-testing regime for calculated counterparty VaRs which is additionally subject to regulatory approval we would like to mention that the implementation costs caused could easily overcompensate any beneficial effects banks expect when using sophisticated counterparty exposure estimation tools.
  In addition, requesting a comprehensive back-testing process for counterparty exposure similar to the market risk framework seems to be inappropriate considering the impact of counterparty exposure measures on the regulatory capital charge.

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Industry comment is sought on whether a more uniform method of adjusting PD or LGD estimates should be adopted for various types of guarantees to minimize inconsistencies in treatment across institutions and, if so, views on what methods would best reflect industry practices. In this regard, the Agencies would be particularly interested in information on how banking organizations are currently treating various forms of guarantees within their economic capital allocation systems and the methods used to adjust PD, LGD, EAD, and any combination thereof.

Deutsche Bank comments:
Industry standard is to take double-default into account. With the regulatory replacement approach this is not the case. We acknowledge that this approach is discussed between regulators (e.g. the paper by Erik Heitfield / Norah Berger from FED). We, therefore, suggest to re-consider the current approach and adopt one which takes the double-default risk into account.

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Comments are invited on the circumstances under which the retention of the treatment in the general risk-based capital rules for residual interests for banking organizations using the A-IRB approach to securitization would be appropriate.

Should the Agencies require originators to hold dollar-for-dollar capital against all retained securitization exposures, even if this treatment would result in an aggregate amount of capital required of the originator that exceeded the pool's A-IRB capital charge plus any applicable deductions? Please provide the underlying rationale.

Deutsche Bank comments:
Two main requirements should be kept in mind:

1. Capital neutrality of the regulatory treatment on securitization (that is, regulatory capital charge after securitization for the originator stand alone resp. for the banking system in sum should be not higher then K_{IRB}).
2. Capital charge for externally rated tranches should be the same for all participants, irrespective of their status as an originator or investor, in order to maintain a level playing field and to avoid gaming techniques (i.e., BB-tranches below KIRB have to be deducted by originator, whereas an investor is allowed to apply external rating, even if investor knows K_{IRB}).

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The Agencies seek comment on the proposed treatment of securitization exposures held by originators. In particular, the Agencies seek comment on whether originating banking organizations should be permitted to calculate A-IRB capital charges for securitizations exposures below the KIRB threshold based on an external or inferred rating, when available.

The Agencies seek comment on whether deduction should be required for all non-rated positions above KIRB. What are the advantages and disadvantages of the SFA approach versus the deduction approach?

Deutsche Bank comments:

1. Capital charge for externally rated tranches should be the same for all participants, irrespective of their status as an originator or investor, in order to maintain a level playing field and to avoid gaming techniques (i.e., BB-tranches below KIRB have to be deducted by originator, whereas an investor is allowed to apply external rating, even if investor knows K_{IRB}).
2. Obviously the capital charge would be way to high if all non-rated positions above KIRB had to be deducted. SFA is the better approach but could be strengthened in two ways: assuring capital neutrality and reducing complexity.

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1. *The Agencies seek comment on the proposed treatment of securitization exposures under the RBA. For rated securitization exposures, is it appropriate to differentiate risk weights based on tranche thickness and pool granularity?*
2. *For non-retail securitizations, will investors generally have sufficient information to calculate the effective number of underlying exposures (N) ?*
3. *What are views on the thresholds, based on N and Q, for determining when the different risk weights apply in the RBA?*
4. *Are there concerns regarding the reliability of external ratings and their use in determining regulatory capital? How might the Agencies address any such potential concerns?*
5. *Unlike the A-IRB framework for wholesale exposures, there is no maturity adjustment within the proposed RBA. Is this reasonable in light of the criteria to assign external ratings?*

Deutsche Bank comments:

ad 1 Granularity adjustment means double accounting since the rating agencies already account for diversification through their rating models.
ad 2 Sufficient information should be available at the originator (otherwise the credit risk management is not capable of assessing implied and hidden concentration risk). Depending market usances the originator should furnish the investor with such information.
ad 3 See comments ad 1.
ad 4 Make use of bank's internal rating and tranching capabilities.
ad 5 The impact of different maturities is accounted for in the ratings of the ECAI's ("Through-the-cycle" Approach). Therefore, no special measures are necessary.

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The Agencies seek comment on the proposed SFA. How might it be simplified without sacrificing significant risk sensitivity? How useful are the alternative simplified computation methodologies for N and LGD.

Deutsche Bank comments:

No specific recommendation, but our general request that the new concept should assure capital neutrality of the regulatory treatment on securitization (that is, regulatory capital charge after securitization for the originator stand alone resp. for the banking system in sum should be not higher then K_{IRB}).

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The Agencies seek comment on the proposed treatment of eligible liquidity facilities, including the qualifying criteria for such facilities. Does the proposed Look- Through Approach -- to be available as a temporary measure -- satisfactorily address concerns that, in some cases, it may be impractical for providers of liquidity facilities to apply either the "bottom-up" or "top-down" approach for calculating KIRB? It would be helpful to understand the degree to which any potential obstacles are likely to persist.

Feedback also is sought on whether liquidity providers should be permitted to calculate A-IRB capital charges based on their internal risk ratings for such facilities in combination with the appropriate RBA risk weight. What are the advantages and disadvantages of such an approach, and how might the Agencies address concerns that the supervisory validation of such internal ratings would be difficult and burdensome? Under such an approach, would the lack of any maturity adjustment with the RBA be problematic for assigning reasonable risk weights to liquidity facilities backed by relatively short-term receivables, such as trade credit?

Deutsche Bank comments:

The bottom-up approach should not be possible on a regular basis for banks acting as provider for liquidity facilities since the needed rating details are not available (considering the time horizon for data collection and rating back-testing etc.)

Making use of bank's internal ratings (using top-down approach) and tranching capabilities should be considered. Without that know-how banks could engage themselves in such business.

The impact of different maturities is already accounted for in the ratings of the ECAI's ("Through-the-cycle" Approach) or, if applicable, in the internal ratings. Therefore, no special measures are necessary.

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Should the A-IRB capital treatment for securitization exposures that do not have a specific A-IRB treatment be the same for investors and originators? If so, which treatment should be applied – that used for investors (the RBA) or originators (the Alternative RBA)? The rationale for the response would be helpful.

Deutsche Bank comments:

1. Capital neutrality of the regulatory treatment on securitization (that is, regulatory capital charge after securitization for the originator stand alone resp. for the banking system in sum should be not higher then K_{IRB}). Capital charge for externally rated tranches should be the same for all participants, irrespective of their status as an originator or investor, in order to maintain a level playing field and to avoid gaming techniques.
2. It should be assessed whether the Alternative RBA does not result in to high capital charges, see bullet point 1. on capital neutrality.

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When providing servicer cash advances, are banking organizations obligated to advance funds up to a specified recoverable amount? If so, does the practice differ by asset type? Please provide a rationale for the response given.

Deutsche Bank comments:

Advancing is (at least in ABS-transactions of Deutsche Bank) restricted to amounts which are considered to be free of risk, i. e. resulting only form a technical delay etc. (otherwise no advancing would be made). Therefore, no specific measures are necessary.

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The Agencies propose to require banking organizations using the A-IRB approach for credit risk also to use the AMA to compute capital charges for operational risk. The Agencies are proposing the AMA to address operational risk for regulatory capital purposes. The Agencies are interested, however, in possible alternatives. Are there alternative concepts or approaches that might be equally or more effective in addressing operational risk? If so, please provide some discussion on possible alternatives.

Deutsche Bank comments:
Deutsche Bank has no comment to the request for possible alternatives to the AMA approach; however, we note the dependency between the AMA and the A-IRB but we fail to find the same connection under Basel II. Deutsche Bank is planning to implement the AMA as described in Pillar II of the Basel-2 accord.

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Does the broad structure that the Agencies have outlined incorporate all the key elements that should be factored into the operational risk framework for regulatory capital? If not, what other issues should be addressed? Are any elements included not directly relevant for operational risk measurement or management? The Agencies have not included indirect losses (for example, opportunity costs) in the definition of operational risk against which institutions would have to hold capital; because such losses can be substantial, should they be included in the definition of operational risk?

Deutsche Bank comments:
In reading the text on operational risk we note that the phrase "operational risk exposure" occurs many times. However, we are concerned that the regulators may read across to their definition of operational risk exposure based around a 99.9% confidence interval. This is a very narrow interpretation and could lead to confusion.
Deutsche Bank agrees that Indirect Losses should not be included in the calculation of OR Capital.

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The Agencies seek comment on the extent to which an appropriate balance has been struck between flexibility and comparability for the operational risk requirement. If this balance is not appropriate, what are the specific areas of imbalance and what is the potential impact of the identified imbalance?

The Agencies are considering additional measures to facilitate consistency in both the supervisory assessment of AMA frameworks and the enforcement of AMA standards across institutions. Specifically, the Agencies are considering enhancements to existing interagency operational and managerial standards to directly address operational risk and to articulate supervisory expectations for AMA frameworks. The Agencies seek comment on the need for and effectiveness of these additional measures.

The Agencies also seek comment on the supervisory standards. Do the standards cover the key elements of an operational risk framework?

Deutsche Bank comments:
If all Supervisory Standards have to be adopted before a bank can adopt the AMA, we request clarity on which regulator determines what the Standards are and if they have been met.
With reference to Supervisory Standards #22 and #23, Deutsche Bank would request additional clarification on the regulatory expectations regarding business environment and internal control assessments. In particular, clarification is requested in terms of method, approach, and timing of completion.
In addition, it must be clear within the Supervisory Standards that the criteria apply to the whole bank and not just to the individual subsidiaries and regulators.

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The Agencies are introducing the concept of an operational risk management function, while emphasizing the importance of the roles played by the board, management, lines of business, and audit. Are the responsibilities delineated for each of these functions sufficiently clear and would they result in a satisfactory process for managing the operational risk framework?

Deutsche Bank comments:
Deutsche Bank agrees with the three elements, however sees the need for further clarity around the third element – "independent testing and verification functions". This is much too broad and should point specifically to the internal audit function that historically has been mandated with such a role. Also is it in terms of "independent testing and verification" or is it more along the lines of monitoring and reviewing. Deutsche Bank would request clarification of the regulatory expectation on this.
We feel it needs to be clear that the audit function within a firm is responsible for monitoring the implementation of the OR framework to ensure it is implemented as per Basel-2 so that the Bank implements a sound and proactive ORM function and avoids regulatory criticism. Our recommendation is that the role be changed to independent monitoring and reviewing and that it expressly states that the audit function will perform this role.

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The Agencies seek comment on the reasonableness of the criteria for recognition of risk mitigants in reducing an institution's operational risk exposure. In particular, do the criteria allow for recognition of common insurance policies? If not, what criteria are most binding against current insurance products? Other than insurance, are there additional risk mitigation products that should be considered for operational risk?

Deutsche Bank comments:
The criteria lends itself to common insurance policies, but captive insurance should also be allowed. Captive insurance companies are well established not just in banking but more widely. The use of the captive insurance company offers opportunities for efficiencies in terms of pricing of risk transfer and the range of risks that are transferred. As a result, if the regulators deduct the capital invested by the bank into the captive from the bank's capital base, then the risk transfer should be recognized to the captive insurance company.
Additionally, we request further comment on the usage of capital market instruments that could be used to transfer the impact of operational risk events. The emergence of these instruments has been mentioned in a recent paper from the Joint Forum.

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The Agencies seek comment on the feasibility of such an approach to the disclosure of pertinent information and also whether commenters have any other suggestions regarding how best to present the required disclosures.

Comments are requested on whether the Agencies' description of the required formal disclosure policy is adequate, or whether additional guidance would be useful.

Comments are requested regarding whether any of the information sought by the Agencies to be disclosed raises any particular concerns regarding the disclosure of proprietary or confidential information. If a commenter believes certain of the required information would be proprietary or confidential, the Agencies seek comment on why that is so and alternatives that would meet the objectives of the required disclosure.

The Agencies also seek comment regarding the most efficient means for institutions to meet the disclosure requirements. Specifically, the Agencies are interested in comments about the feasibility of requiring institutions to provide all requested information in one location and also whether commenters have other suggestions on how to ensure that the requested information is readily available to market participants.

Deutsche Bank comments:

Deutsche Bank welcomes progress made over the last years aiming at the standardisation of disclosure as envisaged in the underlying principles described in the New Capital Adequacy Framework. We, however, continue to believe that a lower level of detailed disclosure will serve better.
Disclosure requirements should be flexible enough to accommodate future changes esp. in the accounting regime. In addition, we recommend that the Basel Committee should closely work with accounting standard setters in order to expedite convergence between the regulatory and the accounting framework.
Furthermore, Deutsche Bank recommends to seek closer alignment with other already existing disclosure rule-sets, f.e. for US stock exchange listed companies (SEC filing form 10-K resp. 20-F) .

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The maturity effect on credit risk capital

In a mark-to-market approach to credit risk capital, ratings or spread volatility has the effect of making longer-maturity loans more capital-intensive. This is incorporated in the current Basel II proposals via a maturity adjustment factor. Arguing that regulatory capital rules should focus on extreme risks rather than migration risk, Michael Kalkbrener and Ludger Overbeck simulate the effect of various migration data on model portfolios, and conclude that the Basel II maturity factor should be set considerably lower

In this article, we analyse maturity effects on the risk capital for credit portfolios. Conceptually, we deal with the question of how the risk capital of a loan or bond with maturity m_1, eg, three years, differs from the risk capital of a loan with maturity m_2, eg, seven years. These maturity factors are important in light of the Basel II discussion (Basel Committee on Banking Supervision, 2001). Since internal credit risk models are not accepted, regulatory authorities suggest capturing maturity effects in terms of multipliers. Basel II allows measurement of the risk of a standard asset (with a maturity of three years) by internal ratings. The impact of other maturities should then be expressed in terms of fixed multipliers applied to the capital of the three-year asset. This article attempts to give some insight into the derivation and size of these factors. In general, our adjustments are lower than in the mark-to-market approach of the current Basel II proposal.

To be consistent with industry standards and the formal derivation of the risk weight function in the Basel II consultation paper, we assume that risk capital is based on a planning horizon of one year. Our setting for calculating risk capital is similar to the CreditMetrics/KMV approach (JP Morgan, 1997, Vasicek, 1997, Kealhofer, 1995, and Overbeck & Stahl, 2001). The rating or creditworthiness of all counterparties at year one is determined by an underlying multivariate variable $\vec{A}$, which might be called the 'asset-value process' or, more generally, the 'ability-to-pay process'. A loss distribution of the credit portfolio is calculated by revaluation based on the ability-to-pay process and the maturity structure of the portfolio. The risk capital of the portfolio corresponds to a quantile of its loss distribution. Details of this model are given below.

We present two different approaches to analyse maturity effects. The first, called the 'one-particle approach', is based on a notion of contributory capital of an individual credit in a portfolio. The second approach considers how the capital of an entire portfolio changes if the maturity of all loans in the portfolio change.

In the one-particle approach, we construct a diversified portfolio of loans with different ratings and maturities. We add one loan C and calculate its contributory economic capital E_1. Then the maturity of the loan is changed and its contributory economic capital E_2 is calculated again. The quotient between E_1 and E_2 measures the maturity effect for the rating class of C. This analysis is done for all rating classes.

We use two definitions of contributory capital, namely one based on the covariance of a loan with the portfolio and one based on contributory expected shortfall, ie, the average contribution of a loan to very large portfolio losses. Both capital allocation techniques are based on Monte Carlo simulation. The covariance approach is independent of the quantile chosen for the definition of capital and is – in our opinion – not suitable for the calculation of maturity adjustments. In contrast, contributory expected shortfall is sensitive to the quantile. It turns out that with higher quantiles, ie, if capital is defined in terms of extreme risk, the influence of maturity decreases significantly.

The second approach, the 'portfolio approach', focuses on portfolios that consist of loans of the same credit quality and maturity. Capital is defined as the credit-VAR of the entire portfolio. Maturity adjustments are determined by varying the maturity of the portfolio and calculating corresponding changes in portfolio capital. We use Monte Carlo simulation to calculate maturity adjustments for portfolios of different rating and size and give evidence that adjustments converge if portfolio size increases. The limits are the maturity adjustments for infinite portfolios, which we calculate by an analytic generalisation of the risk weight function BRW (benchmark risk weight) in the Basel proposal (Basel Committee on Banking Supervision, 2001). In general, maturity adjustments obtained by this homogeneous portfolio approach are similar to those based on contributory expected shortfall in the one-particle approach.

☐ **Main results.** Maturity effects increase with credit quality, ie, higher ratings have higher maturity adjustments than lower ratings. This qualitative result can easily be verified by each of the estimation techniques used in this article. It is also in line with the adjustments proposed in the Basel II consultation paper. However, the quantification of maturity effects is a more challenging task. One problem is that maturity adjustments heavily depend on estimation techniques and parameter settings. In this article, we experiment with the following parameters:

■ Migration matrices. We use the one-year migration matrix presented by Standard & Poor's (S&P, 1999), the KMV matrix (Kealhofer, Kwok & Weng, 1998) and a matrix (abbreviated as GC) constructed from migration data on German corporates (see Appendix: transition matrices). In all tests, the choice of the migration matrix is critical. The KMV matrix produces the highest and the S&P matrix the lowest maturity adjustments.

■ Spreads. The revaluation of the portfolio at the end of the one-year planning period is based on credit spreads and their corresponding multi-year default probabilities. The spreads are either market spreads or are derived from migration matrices (and therefore based on historical data). Despite the fact that a proper mark-to-market of traded credit products has to be based on market spreads, we believe that historical spreads have some advantages for the analysis of maturity effects: historical spreads are less volatile and they do not reflect liquidity risk and risk aversion (including the cost of risk capital that we intend to derive). Another argument against market spreads is the fact that most loans are not liquid assets. In our analysis, we use historical spreads as well as market spreads (see Appendix: corporate bond spreads). Results show that maturity adjustments are sensitive to the choice of spreads. In particular, the comparatively high spreads in September 2001 lead to higher adjustments.

■ Quantiles. Expected shortfall contributions for single exposures and credit-VAR for portfolios are defined with respect to specific quantiles. We show

that maturity effects rapidly decrease if higher quantiles are considered.

■ Other parameters. We experiment with different government yield curves, recovery assumptions, one- and multi-factor correlation models, and different average asset correlations. The variations in results are minor compared with matrix, spread and quantile effects.

We use different estimation techniques for maturity adjustments:

■ Although the VAR/CoVAR technique has obvious disadvantages if applied to fat tail distributions, it is the standard technique for allocating credit economic capital (EC). We therefore use VAR/CoVAR allocation in the one-particle approach: this approach based on covariance produces maturity adjustments that are significantly higher than those calculated with other techniques. The results are independent of the quantile chosen for the definition of capital.

■ The one-particle approach based on shortfall contributions and the homogeneous portfolio approach give consistent results. For instance, we obtain the following factors between a one-year facility and a seven-year facility for the best rating class[1] with the GC matrix (see tables E and G): 2.68 and 2.22 respectively for the 99.9065% and 99.98% quantile with the one-particle-approach, and 2.43 and 1.97 with the portfolio approach.

Our results show that the impact of maturity decreases if the confidence level for capital is increased. This is consistent with the evidence that extreme loss events in credit risk are predominately caused by defaults (see JP Morgan, 1997). Our findings therefore give evidence that at least for regulatory purposes, which should focus on systemic extreme risk, the adjustments in the mark-to-market approach of the current Basel II consultation paper are too high. Based on the results in this article, our recommendation is to cap maturity adjustments between one and seven years at 2.5. In our opinion, higher adjustments would lead to a misallocation of capital, namely against the volatility of migration and not against extreme losses.

Basic model

The calculation of maturity adjustments is based on risk capital and risk contributions, which are derived from the underlying loss variables of the portfolio and individual exposures. This section presents the basic model.

☐ **Loss variables.** Each loan C_i in the portfolio has a loss variable L_i, which specifies the value of the loan at the planning horizon of one year. The portfolio loss is defined by the random variable $L = \sum_{i=1}^{N} L_i$, where N is the number of facilities in the portfolio.

☐ **Ability to pay.** Let $\vec{A}$ be an N-variate standardised[2] normally distributed random variable with correlation matrix R. We call the i-th component of $\vec{A}$ the 'ability to pay' of loan C_i. The general model is $L_i = L(A_i, m_i)$, ie, the value and the loss function of the loan depends solely on the ability to pay of the counterparty and the maturity m_i of the loan.[3] In the KMV concept, L is a continuous function of A_i. For simplicity, we assume in this article that it is a step function, ie, only a finite number of values can be obtained. In credit risk modelling, it is common to identify these finitely many states with credit ratings.

☐ **Ratings and transition matrices.** We use the S&P rating scheme consisting of the rating classes AAA, AA, A, BBB, BB, B and CCC. These ratings are identified with numbers one to seven, and the additional rating class default with eight. A one-year migration matrix $M = (p_{ij})_{i,j=1,\dots,8}$ specifies the probabilities p_{ij} that a company migrates from rating i to rating j in a one-year period. We use three different transition matrices for our analysis: the S&P matrix in Standard & Poor's (1999), the KMV matrix in Kealhofer, Kwok & Weng (1998) and a transition matrix GC derived from migration data on German corporates. The exact definition of these three matrices is given in 'Appendix: transition matrices'.

The values of the 'ability-to-pay' processes $A_1, \dots, A_N$ in one year determine the ratings of the loans: the rating migration is simulated by defining thresholds $D_{k,i}$ in the distribution of the A_i such that the event 'counterparty i migrates to rating k' coincides with the event 'the value of A_i in one year lies between $D_{k,i}$ and $D_{k+1,i}$'.

☐ **Revaluation techniques and spreads.** We assume that each facility C_i in the portfolio has the cashflow profile of a bullet bond at par. Each C_i is revaluated under the assumption that it is rated $k = 1, \dots, 8$ in one year, yielding eight different values $V_1, \dots, V_8$ of C_i. The revaluation formula is based on government bond yields and multi-year default probabilities, which are derived from transition matrices[4] or corporate bond spreads (see 'Appendix: corporate bond spreads' for the specification of spreads used in this article). The loss variable L_i is defined by subtracting the vector $(V_1, \dots, V_8)$ from the value $\bar{V}$ of C_i if its current rating has not changed.

☐ **Economic capital.** The economic capital of the portfolio is either defined as a quantile of the loss variable L or as a quantile minus the mean of L. We have used both definitions in our analysis and have not found a significant impact on maturity adjustments.

One-particle approach

Here we construct a diversified portfolio with different ratings and maturities. We add one loan C and calculate its contributory economic capital E_1. In the next step, the maturity of the loan is changed and its contributory economic capital E_2 is calculated again. The quotient between E_1 and E_2 measures the maturity effect for the rating class of C.

☐ **Construction of a diversified portfolio.** Let {0.03, 0.05, 0.1, 0.2, 1, 3.3, 15} be a set of default probabilities (in per cent) and {1, 2, 3, 4, 5, 6, 7} a set of maturities (in years). We consider a portfolio P that consists of 98 loans, each possible default probability and maturity combination appearing twice. Now we add a single loan $C_{p,m}$ to the portfolio with default probability $p \in \{0.03, 0.05, 0.1, 0.2, 1, 3.3, 15\}$ and maturity $m \in \{1, 3, 7\}$. In this way, 21 different portfolios $P_{p,m} := P \cup \{C_{p,m}\}$ are obtained. It is assumed that all loans have the same notional. In the initial test scenario, the recovery rate of each loan is 50% and the correlation structure is specified by a one-factor model with all asset correlations equal to 35%.

☐ **Contributory EC based on VAR/CoVAR.** The VAR/CoVAR contribution technique is the standard approach developed in the capital asset pricing model. Risk contributions are proportional to covariances of loss variables of individual loans and portfolios. Since we are not interested in absolute contributory EC numbers but only in ratios of contributory economic capital, we proceed as follows. For each $p \in \{0.03, 0.05, 0.1, 0.2, 1, 3.3, 15\}$ and $m \in \{1, 3, 7\}$ the loss variables of loan $C_{p,m}$ and portfolio $P_{p,m}$ are simulated[5] and the covariance $cov_{p,m}$ is calculated. In accordance with the definition of maturity adjustments in the Basel proposal, risk contributions are normalised at three years, ie, we calculate $cov_{p,m}/cov_{p,3}$. Note that the results are independent of the quantile chosen for the capital definition.

■ Test: GC matrix. We derive migration probabilities and multi-year default probabilities from the GC matrix and obtain the results shown in table A. This table is structured as follows: the rows correspond to the different default probabilities 0.03%, 0.05%, 0.1%, 0.2%, 1%, 3.3% and 15% and the columns correspond to the considered maturities one, three and seven years. Since the table is normalised to the three-year capital, all entries in the second column are one. As an example, the first entry, '0.42', in the first row means that the capital for a one-year deal with a default probability of 0.03 is 42% of the capital for a three-year deal with the same default probability.

Note that, since not all of the default probabilities 0.03%, 0.05%, 0.1%, 0.2%, 1%, 3.3% and 15% correspond to GC ratings, the transition probabilities of some loans are calculated by interpolation in the GC matrix. For instance, the transition probabilities for a loan with $PD = 0.1$ are obtained

[1] *The best rating class has a one-year default probability of 3bp*

[2] *This means that all standard deviations are one*

[3] *We assume that all loans have the same valuation function, ie, have the same product specification but only different maturities*

[4] *Note that the last column of each transition matrix M specifies the one-year default probabilities for all rating classes. Under the assumption that the rating process is a time-homogeneous Markov process, the t-year default probabilities can be obtained from the last column of the t-th power of M*

[5] *Our results are based on 400,000 Monte Carlo simulations*

by linear interpolation between the transition probabilities of the rating class 1 ($PD = 0.07$) and rating class 2 ($PD = 0.2$).

Table A shows that maturity effects increase with credit quality. This qualitative result has been verified with each of the estimation techniques used in this article. In the following we will therefore focus on adjustments for the senior rating class ($PD = 0.03$). Full results for all rating classes are presented in an extended version of this paper (Kalkbrener & Overbeck, 2001).

■ Tests: S&P and KMV matrix. We repeat the above test with the same portfolio but use the S&P and KMV matrix instead of the German corporates. Table B shows the maturity adjustments for the senior rating class obtained with each of the three matrices.

The differences are significant. The factors between one and seven years are 4.21 for the GC matrix, 2.93 for the S&P matrix and 9.66 for the KMV matrix. There are two main reasons for these differences:

1) migration volatility, which can be read off the diagonal of the migration matrix. KMV postulates a very high migration probability. For instance, only 66% remain in the best rating class compared with 91% in the S&P matrix. Higher migration probabilities induce higher capital requirements; and

2) revaluation, which is driven by the last column of the migration matrix. The impact of migration varies since the differences in the default probabilities of different ratings are important. The steepest gradient can be found in the S&P matrix. The default probabilities range from 0.01–20%, whereas KMV only covers 0.02–10.13%. The GC matrix shows the most stable repricing, the range being from 0.07–6%.

Obviously, the high maturity adjustments obtained with the KMV matrix are caused by its high migration volatility, which is not fully compensated by its less volatile repricing (compared with S&P).

■ Tests: S&P with market spreads. In the previous tests, revaluation was based on multi-year default probabilities obtained from historical transition matrices. Here, multi-year default probabilities are derived from the corporate bond spreads in 'Appendix: corporate bond spreads'. Since these bond spreads are based on the S&P rating system, we use the S&P transition matrix for the specification of the one-year migration probabilities (results are shown in table C). Note that the comparatively high spreads on September 25, 2001 lead to higher adjustments.

■ Additional tests. We did additional tests with the GC matrix by: using different government yield curves; changing the recovery rate to 70%; varying average asset correlations between 20% and 50%; replacing the one-factor model by a 10-factor model[6]; and using randomly generated portfolios.[7] Our results show that these changes have little effect compared with differences caused by using different transition matrices and spreads.

☐ Contributory EC based on expected shortfall.

■ Alternative economic capital definition. From a risk management point of view, holding the economic capital based on a quantile, say the 99.5% quantile, as a cushion against the portfolio means that on average in 199 out of 200 years the capital would cover all losses. The disadvantage of this definition is that it does not take the size of the losses in the extreme 0.5% tail into account. Hence, this approach towards economic capital resembles an 'all or nothing' rule. In particular, in a 'bad' year (one out of 200) the capital does not cushion the losses. An alternative to EC based on quantiles is the following capital definition, which focuses on large portfolio losses. Consider those losses that exceed a given amount K and let economic capital (based on shortfall) be defined by:

$$EC_K(S) := E\left[L \middle| L > K\right]$$

Hence, economic capital based on shortfall covers the average 'bad' loss. This approach also motivates the following definition of contributory capital based on coherent risk measures.

Coherency is analysed in detail by Artzner *et al* (1999) and Delbaen (2001). They show that for continuous distributions, $EC_K(S)$ is coherent if

A. VAR/CoVAR: GC matrix

	1	3	7
0.03	0.42	1	1.77
0.05	0.45	1	1.73
0.10	0.57	1	1.58
0.20	0.74	1	1.37
1.00	0.75	1	1.23
3.30	0.83	1	1.13
15.00	0.97	1	1.03

B. VAR/CoVAR: different matrices

GC			S&P			KMV		
1	3	7	1	3	7	1	3	7
0.42	1	1.77	0.57	1	1.67	0.29	1	2.80

C. VAR/CoVAR: different spreads

Spreads 97			Spreads 01		
1	3	7	1	3	7
0.55	1	1.92	0.34	1	2.59

D. Expected shortfall

GC			S&P			KMV			Spreads 97			Spreads 01		
1	3	7	1	3	7	1	3	7	1	3	7	1	3	7
0.56	1	1.50	0.69	1	1.39	0.54	1	1.73	0.67	1	1.75	0.61	1	1.87

E. Expected shortfall: different quantiles

	GC	S&P	KMV	S'97	S'01
VAR/CoVAR	4.21	2.93	9.66	3.49	7.62
99.50%	2.94	2.16	4.35	2.92	5.40
99.91%	2.68	2.01	3.20	2.61	3.07
99.98%	2.22	1.74	2.60	1.74	2.36

K is a quantile of L. Coherency requires a risk measure to satisfy a set of axioms or first principles that a reasonable risk measure should obey. These axioms include sublinearity. It is also shown that the risk measures defined in terms of quantiles are not coherent in general.

■ Risk contributions. An important advantage of $EC_K(S)$ is the simple allocation of risk capital to a single transaction (see Overbeck, 2000). The contribution to shortfall risk, *CSR*, or shortfall contribution is defined by:

$$CSR_i = E\left[L_i \middle| L > K\right]$$

that is, the capital for a single loan is its average loss in bad years. Hence, a capital quota of more than 100% is impossible, in contrast to the classical VAR/CoVAR approach.

■ Tests with different matrices and spreads. We calculate the shortfall contributions of the loans $C_{p,m}$ in the portfolios $P_{p,m}$. The threshold K is defined by $E[L|L > K] = \alpha\text{-}quantile$, where $\alpha = 99.9065\%$. Table D shows the results obtained with all three matrices and two sets of market spreads.

[6] Factor loadings are randomly generated such that average correlation is close to 35%

[7] Portfolios consist of 98 loans. Possible PDs are 0.03, 0.05, 0.1, 0.2, 1, 3.3 and 15% and maturities are from one to seven years. Exposure size varies between 10 and 100. Exposures and maturities are uniformly distributed in each rating class

F. Convergence

100 loans			400 loans			∞ loans		
1	3	7	1	3	7	1	3	7
0.64	1	1.37	0.61	1	1.44	0.60	1	1.46

G. Infinite granular portfolio

	GC	S&P	KMV	S'97	S'01
99.50%	3.46	2.57	6.10	2.46	5.41
99.91%	2.43	2.09	3.73	1.95	3.54
99.98%	1.97	1.82	2.72	1.69	2.69

These maturity adjustments are considerably smaller than those implied by the standard allocation technique based on covariances. For instance, the KMV factor between one and seven years for the senior rating decreased from 9.66 to 3.2. This result is not surprising from an economic point of view. Migration increases volatility, but not necessarily 'extreme' or 'tail' risk, which is the basis for expected shortfall and also the main concern of regulators. This becomes particularly obvious for the KMV matrix, which has high migration volatility.

To analyse the quantile effect, calculations are repeated for the 99.5% and 99.98% quantiles. Table E compares factors between one and seven years for the senior rating.

The structure of results is consistent across transition matrices and spreads. The highest factors are obtained in the VAR/CoVAR approach. Factors significantly decrease if higher quantiles are considered (between 1.74 and 2.6 for the 99.98% quantile).

Portfolio approach

☐ **Construction of homogeneous portfolios.** Here, we consider portfolios that are not diversified in terms of maturities, ie, all loans in the portfolio have the same maturity. Furthermore, we make the additional assumption that all loans in a portfolio have the same rating. Of course, this is not a realistic assumption but is similar to the one used in the Basel proposal. In this proposal, the regulatory capital charge of a single loan with default probability p equals the quantile of a percentage loss distribution of an infinitely large homogeneous portfolio with default probability p and asset correlation 20%. This is consistent with a one-factor model for an infinite granular portfolio. Since the one-factor model is portfolio invariant, there is no differentiation between different portfolios. In particular, it is not sensitive to diversification efforts.

We consider 21 homogeneous portfolios $P_{p,m}, p \in \{0.03, 0.05, 0.1, 0.2, 1, 3.3, 15\}$ and $m \in \{1, 3, 7\}$, each consisting of 100 loans with default probability p and maturity m. It is assumed that the correlation structure is specified by a one-factor model with all asset correlations equal to ρ. Capital is defined as the credit-VAR of the entire portfolio. The maturity effect is determined by varying the maturity of the portfolio and calculating corresponding changes in portfolio capital.[8]

☐ **Tests with portfolios of different size.** The first three numbers, 0.64, 1, 1.37, in table F are the ratios:

$$q\text{-}quantile\left(P_{p,m}\right) / q\text{-}quantile\left(P_{p,3}\right) \qquad m = 1,3,7$$

for q = 99.9065% and the senior rating p = 0.03. The asset correlation ρ = 35% is used. Rating migration and multi-year default probabilities are specified by the GC matrix. The calculations are repeated for portfolios consisting of 400 loans. The last three numbers correspond to portfolios with an infinite number of loans. For these infinite portfolios the portfolio loss variable equals (see Finger, 1999, Lucas *et al*, 2001, and Kalkbrener & Overbeck, 2001):

$$L_i(1) + \sum_{j=1}^{7} \left(L_i(j+1) - L_i(j)\right) N\left(\left(c_j - \sqrt{\rho}Y\right) / \sqrt{1-\rho}\right) \qquad (1)$$

where $L_i(1), \ldots, L_i(8)$ and $p_i(1), \ldots, p_i(8)$ respectively specify the loss function and the one-year migration probabilities of the individual loans C_i,[9] Y is a standard normally distributed variable, N denotes the standard normal distribution function and:

$$c_j := N^{-1}\left(\sum_{l=1+j}^{8} p_i(l)\right) \qquad (2)$$

Since the correlation structure is specified by a one-factor model, the credit-VAR can be calculated analytically. In contrast, the results for the finite portfolios have been obtained by 400,000 Monte Carlo simulations.

As expected, maturity adjustments converge to the limit specified by the infinite portfolio. Note that the results are similar to those obtained by shortfall contribution. This similarity can also be observed for the other matrices, spreads and quantiles. Table G displays factors between one and seven years for the senior rating calculated with analytic formula (1). Note that these adjustments have the same magnitude as the maturity adjustments based on contributory expected shortfall in the 'one-particle approach' (see table E).

Conclusion

For regulatory purposes, the required capital is formally based on a 99.9065% quantile. Taking all add-ons into account, actual capital requirements correspond to a much higher quantile. The results in this article support the view that on this extreme security level, migration and therefore maturity are of minor importance. Maturity adjustments calculated with methods sensitive to quantiles are significantly lower than adjustments obtained with the classical VAR/CoVAR contribution technique. Our results show that if capital requirements are based on high quantiles a maturity adjustment factor of 2.5 between one year and seven years is a conservative setting even for the best rating classes. ■

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[8] Note that in this model the contributory capital of each loan equals the total risk capital divided by the number of loans regardless of the capital allocation technique used

[9] As defined in 'Basic model', the seven non-default rating classes correspond to 1, ... , 7 and default corresponds to 8

Appendix: corporate bond spreads

We use the following corporate bond spreads under normal and distressed market conditions:

	Spreads 97					Spreads 01				
	1y	2y	3y	5y	7y	1y	2y	3y	5y	7y
AAA	0.16	0.18	0.22	0.25	0.31	0.40	0.45	0.50	0.60	0.74
AA	0.20	0.22	0.26	0.30	0.35	0.53	0.60	0.65	0.76	0.90
A	0.27	0.30	0.32	0.37	0.42	0.80	0.90	1.01	1.18	1.36
BBB	0.44	0.46	0.50	0.52	0.56	1.21	1.30	1.41	1.59	1.79
BB	0.89	1.06	1.20	1.41	1.59	2.58	2.91	3.16	3.50	3.73
B	1.50	1.63	1.83	2.11	2.37	4.41	4.83	5.41	6.25	6.98
CCC	2.55	3.00	4.00	5.00	6.00	6.00	6.50	8.00	9.00	10.25

Spreads 97 are the spreads of US industrial bonds over government yields on July 11, 1997 and Spreads 01 are the same on September 25, 2001. The rating system is S&P. The data source is file SPRDCRV.TXT from CreditMetrics. Spreads 97 have also been used in Gordy & Heitfield (2001)

Appendix: transition matrices

We use three different transition matrices for our analysis. The following transition matrix is based on Standard & Poor's (1999):

	AAA	AA	A	BBB	BB	B	CCC	Def
AAA	91.39	7.91	0.52	0.08	0.04	0.03	0.02	0.01
AA	0.72	91.62	6.77	0.64	0.07	0.12	0.03	0.03
A	0.08	2.40	91.05	5.45	0.66	0.28	0.01	0.07
BBB	0.05	0.30	6.03	86.66	5.36	1.22	0.18	0.20
BB	0.02	0.13	0.66	7.49	80.78	8.86	1.04	1.02
B	0.00	0.08	0.35	0.50	6.67	83.56	3.68	5.16
CCC	0.13	0.00	0.34	0.69	1.71	12.50	64.63	20.00
Def	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

Kealhofer, Kwok & Weng (1998) question that rating changes are a good indicator for credit quality changes. In particular, they claim that rating agencies are too slow in changing ratings and therefore the probability of staying in a grade overstates the true probability of keeping approximately the same credit quality. Therefore, the following approach based on KMV's expected default frequencies (EDFs) is proposed. Firms are classified based upon non-overlapping ranges of default probabilities. Each of these ranges corresponds to a rating class, ie, firms with default rates less than or equal to 0.02% are in AAA, 0.03% to 0.06% corresponds to AA, etc. The historical frequencies of changes from one range to another are calculated from the history of changes in default rates as measured by EDFs. This gives the following KMV one-year transition matrix:

	AAA	AA	A	BBB	BB	B	CCC	Def
AAA	66.26	22.22	7.37	2.45	0.86	0.67	0.15	0.02
AA	21.66	43.04	25.83	6.56	1.99	0.68	0.20	0.04
A	2.76	20.34	44.19	22.94	7.42	1.97	0.28	0.10
BBB	0.30	2.80	22.63	42.54	23.52	6.95	1.00	0.26
BB	0.08	0.24	3.69	22.93	44.41	24.53	3.41	0.71
B	0.01	0.05	0.39	3.48	20.47	53.01	20.58	2.01
CCC	0.00	0.01	0.09	0.26	1.79	17.77	69.95	10.13
Def	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

The third transition matrix, abbreviated as the GC matrix, is derived from migration data on German corporates (see also Machauer & Weber, 1998):

	AAA	AA	A	BBB	BB	B	CCC	Def
AAA	71.55	19.86	5.43	1.90	0.24	0.37	0.58	0.07
AA	2.18	71.06	21.14	4.14	0.70	0.29	0.29	0.20
A	0.18	6.43	69.72	19.47	2.54	0.80	0.51	0.35
BBB	0.06	1.10	16.43	64.74	11.26	3.84	1.77	0.80
BB	0.07	0.64	5.39	27.86	43.23	14.34	6.87	1.60
B	0.02	0.42	3.12	12.95	16.48	45.46	18.55	3.00
CCC	0.16	0.61	2.36	3.75	4.26	8.67	74.19	6.00
Def	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

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Standard & Poor's, 1999
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Guidelines for the submission of technical articles

Risk welcomes the submission of technical articles on topics relevant to our readership. Core areas include market and credit risk measurement and management, the pricing and hedging of derivatives and/or structured securities, and the theoretical modelling and empirical observation of markets and portfolios. This list is not an exhaustive one.

The most important publication criteria are originality, exclusivity and relevance – we attempt to strike a balance between these. Given that *Risk* technical articles are shorter than those in dedicated academic journals, clarity of exposition is another yardstick for publication. Once received by the technical editor and his team, submissions are logged, and checked against the criteria above. Articles that fail to meet the criteria are rejected at this stage.

Articles are then sent to one or more anonymous referees for peer review. Our referees are drawn from the research groups, risk management departments and trading desks of major financial institutions, in addition to academia. Many have already published articles in *Risk*. Depending on the feedback from referees, the technical editor makes a decision to reject or accept the submitted article. His decision is final.

Submissions should be sent, preferably by e-mail, to the technical editor, Nicholas Dunbar (ndunbar@riskwaters.com). The preferred format is MS Word, although Adobe PDFs are acceptable. The maximum recommended length for articles is 3,500 words, with some allowance for charts and/or formulas. We expect all articles to contain references to previous literature. We reserve the right to cut accepted articles to satisfy production considerations. Authors should allow four to eight weeks for the refereeing process.