



KeyCorp's Response to The New Basel Capital Accord Consultative Paper dated April 2003 (CP 3)

Introduction

KeyCorp considers itself privileged to be able to comment on the Basel Committee's Third Consultative Paper (April 2003) on Capital Adequacy Framework, which clearly creates a milestone in regulatory oversight for financial institutions all over the world.

KeyCorp has actively participated with industry groups such as IIF and RMA in constructing their responses to the Consultative Paper. We are honored to have had the opportunity to work with them, as well as all other participating financial institutions. Also, as an individual institution, we have discussed and advanced concepts, analysis and models on numerous occasions and on various topics to regulators active in the Basel II process.

We are in general agreement with the positions taken in the RMA industry group's response to the April 2003 Consultative paper. Listed below are some issues (pertaining to both Pillar 1 and Pillar 2) we believe may not have been adequately covered by the industry working groups, or that we think deserve extra emphasis.

First is an Executive summary, followed by comments in greater detail the Consultative Paper's treatment of expected loss, credit risk mitigation, short-term maturity exposures, the need for a separate risk-weight curve for home equity products, CP3 requirements for parameter validation, securitization capital, and we conclude with a discussion of operational risk capital.

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Executive Summary

- **Definition of Capital:** Regulatory capital should not include expected loss (EL) because this is already “covered” by bank income. We recommend that banks be required to meet their capital requirements with Tier 1 capital only, provided the solvency standard is set at a reasonable level.
- **Guaranties:** Within the banking book, guaranties can be used to reduce the regulatory capital charge only to the level associated with the guarantor, giving no benefit to either the double-default or double-recovery effect of guarantees. CP3 recognizes neither of these two risk reduction benefits. We understand that there are important supervisory concerns over the use of guaranteed credits or credit derivatives that function as guarantees. We believe that these supervisory concerns can be appropriately treated within the Pillar 2 process, while a suitable analytical framework can be implemented relatively quickly within Pillar 1.
- **One-year PD:** The current proposal uses one-year PDs for all exposures. Yet exposures with short-term maturities (remaining maturities of less than 1 year) by definition have less than 1 year to default. Capital requirements for these short-term exposures will be unjustifiably overestimated. We suggest that, for all exposures with remaining maturity less than one year, the one-year PD should be adjusted downwards to reflect the remaining maturity.
- **Home Equity Products:** We contend that a separate risk weight curve is needed for home equity products. The asset correlation assumptions for residential first mortgages are simply too high for home equity products for two reasons: i) asset correlation for residential mortgages is set to a high level to compensate for the long maturities of first mortgage loans because the Basel retail model does not have a maturity adjustment factor; ii) the mortgages banks keep on their books in the U.S. are generally those that do not qualify for resale to the government sponsored mortgage agencies. The diversity of this set of assets allows for a much lower asset correlation assumption. Therefore, we strongly urge that that a separate risk weight curve for Home Equity be considered.

We fully appreciate that a regulatory capital formulation has to limit the number of product categories and the number of fundamentally different formulae. If the Basel Committee is averse to creating one more risk weight curve then our suggestion is that the “Other Retail” risk weight curve be used for Home Equity.

- **Parameter validation:** The section on parameter validation requires that “banks regularly compare realised default rates with estimated PDs for each grade and be able

to demonstrate that the realised default rates are within the expected range for that grade.” But, PD is an average of future default rates under all possible scenarios, and it is meaningless to compare this average with default rates under one realized scenario. We believe that this particular requirement of back-testing should be removed.

- **Securitization capital:** We applaud the Basel Committee’s efforts in developing securitization capital rules that truly reflect the underlying collateral risk but believe that there are a few additional steps that should be taken to more accurately quantify this risk. In particular, we recommend that:
 1. Originating banks should be required to use the Supervisory Formula Approach. SFA is superior to the Ratings Based Approach in describing the risk underlying a securitization tranche, and therefore should be given priority over RBA whenever possible. While RBA is useful for investors--who typically do not have complete information on the underlying pool of collateral--originators do have this information.
 2. We suggest that the SFA should be formula based with no over-rides. If not removed completely, the floor should be reduced significantly.
 3. RBA capital factors should be recalibrated. The overall level of capital factors is too high for high ratings (AAA, AA) and too low for low ratings (BBB and below).
- **Operational risk:** Given the current state of intellectual development and practical awareness surrounding operational risk, KeyCorp believes the Basel Committee is correct to propose a flexible framework wherein individual institutions have considerable room to develop their own internal models. KeyCorp also stands firmly behind the Basel Committee in its recommendation of an explicit capital charge for operational risk under Pillar 1. Nevertheless there are a number of issues that need clarification or improvement. Specifically:
 1. Clarity is needed regarding the inclusion or exclusion of expected loss (EL) in the operating capital charge.
 2. Default correlations should be less than 100%. Adding operational risk capital estimates across the individual buckets of loss types--and perhaps business lines--amounts to setting the correlation between these various risk processes to 100%. This runs counter to common experience that correlations among most operational risk buckets are typically very small.
 3. Stronger guidance is needed on the use of external data. For the purposes of Advanced Management Approach there should be one aggregate industry database (whether maintained by the industry or the national supervisors) and all institutions adopting AMA should be required to take into account all events in this database with relevancy for their particular institution factored in. This would go a long way in insuring uniformity.

4. The scope for External Data & Scenario Analysis should be expanded beyond high-impact "tail" events.. We believe that External Data & Scenario Analysis provide a rational framework to create "virtual events" that should be used to fill any gaps in data.
5. The Insurance Mitigation floor of 20% appears arbitrary. Given the already stringent requirements for an insurance coverage to be eligible as risk mitigation, why should the reduction be limited to 20% of the total operational risk capital charge?



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Detailed Comments

1. Definition of Capital

Reference: Paragraphs 202, 241, 298-301, 342-348.

The Basel proposal seeks to align regulatory capital with economic capital where economic capital is defined as loss at the confidence level (LCL) of 99.9% on the cumulative loss distribution generated by the Basel AIRB model. This measure does not subtract expected loss (EL) from LCL as is the common practice in the banking industry. (The only exception is for qualifying revolving retail exposures, where 75% of EL is subtracted.) Like other banks, Key uses calculations of EL and target return on capital to set required future margin income. Thus expected loss is already "covered" by income.

We suggest the committee redefine regulatory capital to cover unexpected loss only, because it is simpler and would correspond to the way most bank think about economic capital. If regulatory capital were to be redefined as suggested, then it would be appropriate to allow banks to meet their requirement with Tier 1 capital only, provided the solvency standard is set at a reasonable level. (RMA has suggested 99.5% as a reasonable minimum standard.)

2. Guarantees

Reference: Paragraph 444.

Within the banking book, guarantees can be used to reduce the regulatory capital charge only to the level associated with the guarantor, giving no benefit to either the double-default or double-recovery effect of guarantees. That is, in order for a loss to occur on a guaranteed credit, both the underlying obligor and the guarantor would have to fail. This probability is likely to be significantly lower than the probability of either one failing, therefore the economic capital allocation for the guaranteed credit should be considerably lower than for either a direct obligation of the guarantor or the actual underlying credit. Moreover, some credit guarantees are written in such a manner that the bank, in the unlikely event of double default, can seek recoveries from both the underlying obligor and the guarantor. CP3 recognizes neither of these two risk reduction benefits.

An excellent treatment of this subject can be found in a recent white paper produced by staff at the Federal Reserve Board.¹ The paper describes an appropriate analytical approach to the issue (in the context of the asymptotic single risk factor model currently being used by Basel's Advanced IRB approach) and lays out the important supervisory concerns over the use of guaranteed credits or credit derivatives that function as guarantees. **We believe that these supervisory concerns can be appropriately treated within the Pillar 2 process, while the analytical framework can be implemented relatively quickly within Pillar 1.**

The analytical framework in the FRB paper points out that the final capital allocation would depend not only on the PDs of both the obligor and the guarantor but also on three types of correlation: the obligor's asset correlation (given by the Basel equation as a function of the obligor's PD), the guarantor's asset correlation (given by the Basel equation as a function of the guarantor's PD) and the extra correlation between asset returns of the obligor and the guarantor. This extra correlation arises due to the sensitivity of both the obligor's and the guarantor's asset returns to a risk factor other than the systematic risk factor and is responsible for the so-called "wrong-way" risk.

3. Short-term Maturity

Reference: Paragraphs 254, 289-291.

Under CP3, the maturity adjustment for commercial loans has a lower bound of 1 year. The maturity adjustment is a proxy for mark-to-market definition of capital where losses are defined via change of value at the 1 year horizon. This change of value includes both defaults and downgrades before the horizon. For exposures with remaining maturity shorter than 1 year (short-term maturity), downgrades will not produce economic loss at the horizon because, if there is no default, such exposure simply will not exist at the horizon. Thus we agree with the CP3's definition of the maturity adjustment.

However, while CP3 insist on using one-year PDs for all exposures, exposures with short-term maturity (remaining maturity less than 1 year) have less time to default than 1 year. Therefore, capital requirements for short-term exposures will be unjustifiably overestimated. **We suggest that, for all exposures with remaining maturity less than one year, one-year PD should be adjusted downwards to reflect the remaining maturity.** Under certain assumptions, there is a simple formula for this adjustment. Let us assume that, when we divide the one-year interval into an arbitrary number of smaller periods of equal length, conditionally on surviving up to the beginning of the period, probability of obligor defaulting during each period is the same. Then, probability of default over time t (maturity of short-term exposure in years) PD(t), and probability of default over one year (time horizon) PD(1) are related by this formula:

$$PD(t) = 1 - \exp(\ln[1-PD(1)] t) = 1 - [1-PD(1)]^t$$

¹ See Erik Heitfield and Norah Barger, *Treatment of Double-Default and Double-Recovery Effects for Hedged Exposures under Pillar 1 of the Proposed New Capital Accord*, Board of Governors, Federal Reserve System, June 2003.

This simple formula is very popular amongst practitioners and is used in KMV Portfolio Manager and would be a sound choice for the PD term adjustment.

4. Home Equity Loans and Lines

Reference: Paragraphs 199, 298.

Home equity is one of the fastest growing segments of the consumer credit market. In the US, home equity products are already large and if the growth rate continues will be one of the largest segments of the retail world in the near future. In CP3, home equity loans and lines are treated under residential mortgages category. We believe that there are at least two conceptual arguments in favor of separate risk weight curve for home equity products.

One of the reasons why asset correlation for residential mortgages is set at such a high level is to take into account long-term nature of mortgage loans. Basel retail model does not have the maturity adjustment factor, and the effect of longer maturity on capital is incorporated into the model through higher asset correlation. Since typical maturity for home equity loans (10-15 years) is smaller than one for first mortgages (30 years) by at least a factor of two, the effective asset correlation for home equity loans should be lower than the one for first mortgages.

The majority of residential mortgages in the United States are conforming mortgages, i.e. mortgages underwritten by government sponsored mortgage agencies and not kept by banks in their books. The mortgages banks keep in their books are those that do not qualify for the government insurance (issued to either consumers with poor credit quality or consumers who buy expensive houses). Home equity loans and lines of credit are based on all kinds of mortgages and thus have a much more diverse customer base than non-conforming first mortgages. Therefore, the asset correlation for home equity products should be lower than the one for first mortgages.

Based on the arguments presented above, we believe that a separate risk weight curve needs to be parameterized (essentially, parameters of the correlation function) for home equity loans and lines.

We fully appreciate that a regulatory capital formulation has to limit the number of product categories and the number of fundamentally different formulae. If the Basel Committee is averse to creating one more risk weight curve, then our suggestion is that the “other Retail” risk weight curve be used for Home Equity.

5. Validation of Parameters

Reference: Paragraphs 463-468.

CP3 requires that IRB banks back-test their estimates of the required inputs: PD, LGD, EAD. Particularly, paragraph 464 states: “*Banks must regularly compare realised default rates with estimated PDs for each grade and be able to demonstrate that the realised default rates are within the expected range for that grade.*” This statement is based on an incorrect premise that PDs are good predictors of default rates. PDs are indeed expectations (conditional on all information currently available) of default rates. However, future default rates strongly depend on the state of the economy one year from today. If the future economy is strong, default rates will be low, if it is weak, default rates will be high. PD is an average of future default rates under all possible scenarios, and it is meaningless to compare this average with default rates under one realized scenario. As an illustration of the inappropriateness of such a comparison, one could, for a given rating, compare annual default rates for Moody’s rated bonds with the average default rate. Let us consider, for example, Moody’s history of default rates for their Ba rating from 1970 to 2001.² While the average default rate for Ba rating is 1.21%, the minimum of 0.00% was observed in years 1972, 1973, 1974, 1980, 1981, 1996, and the maximum of 5.43% was observed in year 1991.

We believe that this particular requirement of back-testing should be removed or reconsidered.

6. Treatment of Securitizations

Reference: Paragraphs 576, 577, 579, 585, 589-592.

The treatment of asset securitizations in CP3 is a major improvement since Basel’s first working paper on securitizations (WP1). The major problem of WP1 was that capital requirements were set rather arbitrarily. In CP3, IRB capital requirements are derived (to a certain extent) from a conceptually meaningful quantitative portfolio model (Gordy/Jones). Moreover, this model is consistent with the model used for other credit exposures.

Although we applaud to Basel’s efforts in developing securitization capital rules that would reflect the underlying risk, we believe that there are few more steps Basel needs to make to achieve this goal. Below, we outline these steps.

1. **Originating banks should always use Supervisory Formula Approach.** There are two IRB approaches available to banks: ratings based approach (RBA) and supervisory formula approach (SFA). Currently, both investing banks and originating

² See Moody’s Investors Service, *Default and Recovery Rates of Corporate Bond Issuers*, Global Credit Research, February 2002.

banks are required to use RBA whenever external ratings of a tranche are available. Only when no external rating available, originating banks are allowed to use SFA. However, RBA is necessarily inferior to SFA in terms of describing the risk underlying a securitization tranche, and, therefore, SFA should be given priority over RBA whenever possible. SFA is based on the Gordy/Jones model, which provides accurate description of the risk underlying a given tranche. This risk depends on the tranche's credit enhancement level and thickness, as well as on the underlying pool's granularity, credit quality and asset correlations. Therefore, capital cannot be determined by rating alone, and RBA cannot adequately describe the underlying risk regardless of its calibration. While RBA is useful for investors, who typically do not have complete information on the underlying pool, the superior SFA should always be used by originators, who do have this information.

2. **Supervisory overrides should be removed from the SFA.** SFA is based on the Gordy/Jones model with two added supervisory overrides: (i) dollar-for-dollar capital up to K_{IRB} and (ii) the floor which sets minimum capital of 0.56% for any tranche. Neither of the overrides can be justified conceptually and both of them lead to significant disparity between the capital charge and the underlying risk. We are particularly concerned with the floor because model-based capital for most senior and super-senior tranches is one or two orders of magnitude less than the floor. On the other hand, dollar-for-dollar capital up to K_{IRB} leads to overestimation of capital for narrow mezzanine tranches with credit enhancement levels in the vicinity of K_{IRB} by a factor of two. Therefore, we believe that both supervisory overrides should be removed from SFA. As an additional benefit, this removal would significantly simplify the supervisory formula.³ If not removed completely, the floor should be reduced to a few basis points at the very least.
3. **RBA capital factors should be recalibrated.** Apart from its dependence upon rating, tranche capital depends on underlying pool's granularity, credit quality and asset correlations, as well as tranche thickness. Thus, RBA is necessarily less accurate than SFA. However, accuracy of RBA can be improved if some of this dependence is taken into account. This is what was attempted in CP3 via introduction of three separate capital factors for each rating. We believe that the Basel Committee is on the right track here, but disagree on the calibration. These are our observations and suggestions.
 - One difficulty of calibrating RBA is different meaning of ratings provided by different agencies. For example, Moody's rating reflects their opinion on the tranche's expected loss, while S&P rating reflects probability of tranche's credit enhancement level being hit by pool losses. The two quantities are equivalent only for infinitesimally thin tranches.
 - Let us first consider S&P rating system. All feasible tranches with the same S&P rating on a given pool will have the same credit enhancement level regardless of their thickness. On the other hand, if we consider a set

³ The capital for a tranche with credit enhancement level L and thickness T would be just $K(L+T) - K(L)$, where function K is defined in paragraph 590 on page 117.

of tranches with the same credit enhancement level and different thickness, thicker tranches will be obviously less riskier. Therefore, capital requirements for S&P rated tranches should decrease with tranche thickness.

- Let us now consider Moody's rating system. All tranches with the same Moody's rating will have the same expected loss, but different thickness and credit enhancement level. If we consider a set of feasible tranches on a given pool all having the same Moody's rating, it is not obvious what tranches will require higher capital. It has been shown that, for highly rated mezzanine tranches, capital requirements increase with thickness, while for low rated tranches they decrease.⁴

Therefore, it is not possible to take into account the dependence of capital on tranche thickness without distinguishing between rating systems based on expected loss and ones based on "probability of default".

- We have computed capital according to our own model⁵ and the Gordy/Jones model for underlying pools of different granularity and considered tranches of different ratings. We used Moody's table that relates ratings to expected losses⁶ and considered only infinitesimally thin tranches to remove the difference between the Moody's and S&P rating systems. Our calculations clearly show that ***granularity has much stronger effect on capital than RBA capital factors suggest, particularly for highly rated tranches.***
- Another result of our calculations is that ***overall level of capital factors is too high for high ratings (AAA, AA) and too low for low ratings (BBB and below).***

7. Operational Risk Capital Treatment in CP3

KeyCorp strongly supports the overall regulatory framework for operational risk measurement and management, proposed in the Third Consultative Document (CP3) of the New Basel Accord. We confine our comments to the Advanced Measurement Approaches (AMA) as 1) only this approach is likely to be offered in the US, and 2) we aim to practice the advanced approach.

Given the current state of intellectual development and practical awareness surrounding operational risk, the Basel Committee has quite rightly proposed a flexible framework wherein individual institutions have considerable room to develop their own internal models.

⁴ See Michael Pykhtin and Ashish Dev, *Credit Risk in Asset Securitizations: an Analytical Model*, Risk, May 2002, pages S16-S20.

⁵ See Michael Pykhtin and Ashish Dev, *Course Grained CDOs*, Risk, Jan 2003, pages 113-116.

⁶ See Table 2 in Moody's Special Report *The Lognormal Method Applied to ABS Analysis*, July 27, 2000.

KeyCorp stands firmly behind the Basel Committee in its recommendation of an explicit capital charge for operational risk under Pillar 1. Our support rests on the following arguments:

- Moving op risk charge to Pillar 2 would necessitate raising the credit risk charge in Pillar 1 in accordance with the principle of maintaining the overall capital charge. Banks with significantly more credit risk, compared operational risk, would be at a disadvantage.
- Having an explicit capital charge for operational risk will foster convergence in the methodologies for measuring and managing operational risk. This is a good thing for the industry. Such convergence is likely to flounder if each institution's treatment of operational risk is isolated from the rest of the industry. Our past experience with market risk lends support to this viewpoint.
- Pillar 1 capital charge creates a level playing field among the banks that are either required to join the new Basel regime or plan to opt-in. Inclusion of op risk charge as a Pillar 2 component would introduce an unacceptable level of subjectivity.
- Pillar 1 capital charge is consistent with a comprehensive enterprise-wide risk view, with credit, market and operational risk as the three major risk types. All of these risks lend themselves to measurement and similar statistical techniques for analysis, in particular computation of economic capital. Furthermore, operational risk is intimately linked with both credit and market risk (by way of operations in the credit and market areas). It stands to reason that the goal of fully understanding the risk profile of an institution, and the management of that risk, would immensely benefit from requiring that operational risk be subjected to the same rigor and supervisory treatment as are credit risk and market risk.

Notwithstanding our support for the general direction of CP3, there are a number of issues that we seek clarification for or would like to comment on.

Expected Losses: Further Guidance.

Reference: Paragraph 629b.

The guidance regarding the inclusion/exclusion of expected loss (EL) in the capital charge remains unclear. A list of potentially acceptable ways to demonstrate the coverage of EL by internal business practices would be very useful.

Correlations: Effective Correlations should be less than 100%.

Reference: Paragraph 629d.

Adding operational risk capital estimates across the individual buckets of loss types (and perhaps business lines) amounts to setting the correlation between these various risk processes to 100%. Even though there is likely to be some correlation between the individual

operational risk categories, in most cases it is guaranteed to be very small. For example, the correlation between Internal Fraud risk and Damage to Physical Assets risk is going to be close to zero. The situation is likely to be similar for all loss category pairs, perhaps with the exception of 1) Internal Fraud and External Fraud, and 2) Clients, Products & Business Practices and Execution, Delivery & Process Management. As such, taking perfect correlation as a starting point and insisting on rigorous procedures to demonstrate otherwise, leads to an excessively conservative viewpoint with significant overestimation of the true overall operational risk.

External Data: Identifying a minimum uniform set.

Reference: Paragraph 634.

While we understand the value (and indeed the necessity) of using external data, leaving the gate wide-open in terms of the particular data institutions would use—“relevant external data (either public data and/or pooled industry data)”—jeopardizes the comparability of the internal models across institutions. Presumably, supervisory oversight under Pillar 2 would ensure a level playing field in the use of external data. Nonetheless, this may not be sufficient comfort to institutions that are peers and competitors.

For the purposes of AMA there should be **one** aggregate industry database (whether maintained by the industry or the national supervisors) and all institutions adopting AMA should be required to take into account all events in this database, with relevancy for their particular institution factored in. This is a tall order but one that would go a long way in insuring uniformity.

External Data & Scenario Analysis: Scope should be expanded.

Reference: Paragraphs 634 & 635.

The current language of CP3 gives the impression that External Data & Scenario Analysis are to be used only for high severity events. What does one do in cases where there is almost no data in a certain risk bucket, e.g. Damage to Physical Assets? We believe that External Data & Scenario Analysis provide a rational framework to create “virtual events” and should be used to fill any gaps in data. Typically, most of the gaps will be toward the high severity end. But the principle of generating loss information using External Data & Scenario Analysis remains valid for all potential events.

Insurance Mitigation: Floor of 20% is arbitrary.

Reference: Paragraphs 637, 638 & 639.

Given the already stringent requirements for an insurance coverage to be eligible as risk mitigation, why should the reduction be limited to 20% of the total operational risk capital charge? We understand the need for a haircut on insurance coverage, as definitely there is a

non-zero probability of an insurance payment not coming through. However, a haircut of 80% seems too high. More transparency, on part of the Basel Committee, about the data and rationale leading to the 20% impact limitation would be in order.