

# **Federal Reserve Bank of Chicago Response to B.I.S. Capital Proposal<sup>1</sup>**

## **Introduction**

The Federal Reserve Bank of Chicago supports the ongoing efforts of the Basel Committee on Banking Supervision to more closely align banks' economic risk and regulatory capital requirements in the New Basel Capital Accord. In March 2000, the Bank offered its comments on the First Consultative Package of the New Accord. Those comments observed that the Basel Committee is "...faced with the great challenge of harmonizing national standards...that are binding on the minority of risky banks, but not unduly burdensome to healthy and prudently managed banks, incorporate objective and neutral criteria, and achieve defensible compromise between administrative simplicity and theoretical accuracy." The challenge of meeting those policy objectives remains every bit as great in the proposed final version of the Accord.

The Bank's comments on the current proposal, the bulk of which address Pillar I of the proposal, are organized as follows: Section I discusses the proposed capital charges for credit risk, in particular the proposed Internal-Rating Based Approach ("IRB"); Section II discusses the need for expanding the recognition of risk mitigation for purposes of capital charges; and Section III discusses the proposed capital charges for operational risk.

## **Section I – Credit Risk**

The proposed Accord improves the risk sensitivity and incentive compatibility of bank capital standards for credit risk. Nonetheless, we are concerned that the quantitative standard described in the Advanced Approach may distort the incentives of banking institutions; in some cases the incentive provided would support neither the best interests of banks nor the best interests of the publics being served by bank regulators.<sup>2</sup> Therefore, we recommend that the risk weight function be recalibrated, as discussed below. We also make a number of suggestions and recommendations regarding implementation of the New Accord, which stand independent of our concerns with the risk weight function.

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<sup>2</sup> The problem that we identify cannot arise under the Foundation Approach, where supervisors supply conservative values of loss given default. Therefore, we endorse the Foundation Approach, while we urge the Committee to reconsider the risk weight function to consistently support both the Foundation and IRB Approaches.

## **Risk Weight Function**

The risk weight function described in the consultative document represents a substantial improvement over the current Accord, both in its risk sensitivity and its incentive compatibility. The new Accord would reward banks that enhance the credit quality of their portfolios. This reward comes about because the risk weight function is sensitive to both the expected default probability (PD) and expected loss-given default (LGD)<sup>3</sup>. Thus, banks are rewarded for pursuing higher quality credits and to pursue collateral and seniority in individual lending facilities.

The specified form of the risk weight function stems from RiskMetrics' CreditManager (also known as CreditMetrics), a highly regarded credit capital model. In CreditManager, each default entails an independent loss given default. Therefore, loss given default in a portfolio is assumed to be independent of whether conditions cause the default rate to be high or low. When applied to the diversified portfolio assumed in the New Capital Accord, realized losses from defaults will equal expected LGD. The risk weight function therefore specifies that the risk weight is a direct multiple of LGD itself.

This form of risk weight function is not specific to CreditManager. A similar risk weight function would result if it were developed from any of the other commercially available credit capital models. That is because all these first-generation credit models—not just CreditManager, but also others such as CreditRisk+, KMV PortfolioManager, and Credit PortfolioView—assume that loss given default is independent from the default rate. Only with difficulty would any of the models incorporate a positive correlation between loss given default and the default rate.

However, economic intuition suggests that realized losses tend to be higher when default rates are higher. That is, the same conditions that cause a greater default rate are apt to cause greater loss given default.<sup>4</sup> The capital required of low-LGD exposures has received little attention from regulators until now. One reason is that low LGD exposures have not constituted a large fraction of bank

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<sup>3</sup> We follow the notation of the New Capital Accord and use LGD to denote the expected loss given default. We use "loss given default" to denote the random loss that occurs in an individual default event.

<sup>4</sup> Research at the FRB-Chicago has produced credit models that allow for this correlation, but are otherwise similar to the model that underlies the risk weight function. The models imply relatively greater capital for exposures having low LGD. The difference is particularly great when LGD is below about 20%. See Frye, Jon Collateral Damage Risk, April 2000, pages 91-94 and Depressing Recoveries Risk, November 2000, pages 108-111.

lending. Instead, this business has been pursued by commercial finance companies, which require a large quantity of closely monitored collateral.

The issue of the capital required of low LGD exposures should be considered now. Increasingly, banks are willing to accept low LGD exposures through asset based lending involving certain forms of securitization. More importantly, future bank decisions will be strongly influenced by the risk weight function that is finally adopted. If too little capital is required for low LGD exposures, banks may pursue a risky line of business with inadequate capitalization.

We therefore request the Committee to reconsider the capital required for low LGD exposures. To focus on this issue we have prepared a comparison of two hypothetical loans. Loan (A) represents a medium level of LGD typical of many bank exposures, and loan (B) represents the low level of LGD that we believe may result in an incentive problem under the proposed risk weight function. We have parameterized these examples so that each has an expected loss equal to 1.00% of the loan balance.

	Probability of Default	Expected Loss Given Default	Expected Loss	Capital
Loan (A)	2%	50%	1%	15.4%
Loan (B)	20%	5%	1%	5.0%-5.3%

The obligor of Loan (A) has a 2% probability of default. Were the obligor to have a public rating, it might be near BB. The hypothetical lending facility is senior but not secured, and the bank estimates its LGD at 50%. The risk weight function assigns Loan (A) a capital charge equal to 15.4% of the outstanding loan balance.

In comparison, Loan (B) obtains a more favorable capital charge under the proposed Accord. Here the obligor has a much greater (20%) one-year probability of default. A public rating for such an obligor would probably be lower than B-. However, to bolster its creditworthiness, this obligor has offered substantial over-collateralization. Owing to this collateral, the bank expects to lose only 5% of the outstanding amount in case of default. The proposed risk weight function assigns a capital charge of 5.0% or 5.3% (depending on the application of the “LGD ceiling” discussed in ¶173 of the New Basel Capital Accord).

The proposed risk weights skew the capital charges for Loans A and B despite the equality of their expected losses. This result derives from an approach that—albeit consistent with an industry practice—assumes that the default rate and the realized losses given default are uncorrelated. However, we think that this correlation is important. When default rate and realized losses are positively

correlated, the variance of either portfolio is increased. Moreover, differences between variances of A-loan and B-loan portfolios may be much smaller than a zero correlation would suggest. Therefore, we recommend that expected loss is the most robust basis for a risk-weight function. We further suggest that it would be appropriate for the functional form of the risk weight to take account of the positive correlation between realized default rate and realized losses.

This suggestion builds on the Bank's comment of March 2000, which anticipated capital standards based on expected loss.

## **Competitive Equity and Implementation Issues**

We believe that the Basel Committee seeks comment on issues relating to competitive equity and implementation of minimum capital standards for credit risk. The FRB-Chicago has several suggestions and recommendations to make regarding these issues. These are independent of our concerns regarding the risk weight function, and relate to issues of adverse selection, back testing, and parameter estimation and mapping.

### **Adverse Selection**

The new Accord offers banks several alternative approaches to capital requirements. A given bank will have considerable latitude to choose which approach to use. This may lead to an adverse-selection problem in which banks comparing the requirements under alternative approaches choose the approach with the lowest amount of regulatory capital. Aggregating across a banking system this adverse selection can substantially reduce capital levels and thereby elevate the overall risks of that system.

A bank's ability to choose will have particular importance when it decides whether to progress to a more sophisticated approach: from Standardized to IRB, or from Foundation IRB to Advanced. In making their choice, banks will doubtless develop estimates of their required capital from their menu of approaches. Should it happen that the less sophisticated approach requires less capital, the bank will have little incentive to invest in the improvements required for the more sophisticated approach. For example, banks with very poor quality loan portfolios may prefer the Standardized Approach, because under that approach risk weights are capped at 100%, or 150% for firms having poor public ratings. No such cap exists within the IRB Approaches. In fact, Large Complex Banking Organizations (LCBOs) in our District report that there is a disincentive to adopt the Foundation IRB Approach because the capital requirements are lower under the Standardized Approach.

We believe that the problem of adverse selection must be handled through the supervisory process. Supervisors must be aware of the potential for adverse

selection by banks, and must know their institutions well enough to assess the risk of adverse selection. We encourage the Basel Committee to develop procedures that assist examiners in making this assessment and introduce options that reduce the potential harm caused by adverse selection.

### **Back testing**

The back testing of market risk models has greatly increased supervisory confidence in those models. We recognize that the back testing of credit risk rating systems cannot yet provide as great a contribution. A sample of historical credit data, even one encompassing ten or twenty years, might reflect several high default episodes, or it might reflect an unusually favorable credit environment. Therefore, a given credit rating system may perform well or poorly on a historical data sample, simply because of the credit environment from which the data was drawn. Thus, back testing may never be decisive in assessing the quality of a given rating system.

Nonetheless, it should be possible to devise an explicit back test, analogous but not identical to the back test of market risk models, that could distinguish between the best and the worst ratings systems, as they performed over the available data set. Such a back test would at a minimum draw supervisory attention to the worst-performing models; ideally, the back test would be sensitive enough to distinguish at least some rating systems that lack the rigor necessary to qualify for IRB treatment. However, we do not envision a back test of sufficient power to replace the supervisory understanding of bank rating systems and mappings.

We encourage the Basel Committee to develop and publish an explicit back test of bank rating systems. A back test distinguishing between the best and the worst rating systems would supply supervisors with important cross-sectional information on the performance of credit rating systems. In addition, this effort would contribute to the continued development of international bank capital standards.

### **Parameter Estimation and Mapping**

We encourage the Basel Committee to foster further innovations leading to improvements in banks' ability to estimate risk parameters and to map effectively to those parameters. This is an area of rapid growth for both the industry and for supervisors.

The consultative document gives some attention to the variation of the default rate through time. As economic conditions change, a set of consistently applied obligor ratings will result in varying expected rates of default. The consultative document suggests that, if the current default rate exceeds its long-term average, then obligor ratings should be mapped to a default rate that exceeds the long-

term average. We urge to Committee to consider greater coverage of this point. Ideally, the Committee can issue more specific guidance regarding when, and how far, the expected levels of PD should be adjusted in response to these instances.

Of even greater concern is LGD. LGD, as well as the default rate, appears to rise and fall along with the level of systematic credit risk. Thus the potential for “LGD downgrade” is as real as the potential for “PD downgrade,” and guidance is required to encourage banks to undertake these downgrades in a timely manner. This problem is particularly pressing, because many banks are only now beginning to rate explicitly for LGD. These banks often view LGD as simple functions of collateral type, seniority, and other variables that are unrelated to business conditions and therefore fail to capture time-variation in LGD resulting from changing macroeconomic conditions.

It is well acknowledged that LGD represents the weakest link in both bank-rating systems and in regulatory understanding. We therefore encourage the Basel Committee to foster the development of pooled industry data on LGD, to allow better estimation of average LGD and better adjustment of LGD when it becomes necessary to do so. The LCBOs of our District support this initiative.

## **Section II – Risk Mitigation**

Our March 2000 letter responding to the first draft of the proposed standards supports the principle that risk-mitigation techniques, once proven effective, should result in reductions in the level of required capital. We continue to believe that this should be a core principle for the Basel capital standards.

Improperly designed capital standards can exacerbate actual risk taking. As the Basel Committee has recognized, regulatory arbitrage arising from its 1988 Accord is a case in point. While recognizing the difficulties inherent in aligning criteria based on economic principles with those based on regulatory accounting, we do believe that closer alignment is possible.

We recommend that capital reductions for mitigation of market, credit and operational risks be permitted wherever banks can demonstrate that risk exposures are materially reduced. This necessarily puts the burden on the bank to develop and defend risk measurement and management models that quantify the extent of risk reductions undertaken. However, we believe that supervisors should not raise barriers by adopting excessively narrow definitions for what methods are or are not permissible. Such restrictions impede the development and application of risk mitigation techniques in the banking industry and thus undermine the very purpose of banking supervision and regulation.

The accounting for results obtained from risk management efforts requires models for the determination of suitable capital and offsets. This presupposes a well-developed models approach for capital determination such as we currently have for the internal models approach to market risk. It may thus be necessary to restrict the incorporation of capital adjustments for mitigated risks to banks using model-based approaches. For instance, banks using the Standardized Approach for credit risk capital determination would likely not be eligible for such consideration, though supervisors should nonetheless encourage the use of risk mitigation where appropriate through their qualitative review process.

In some cases, such as the operational risk area, models do not yet exist which would make quantification of capital offsets feasible. We feel it is important, however, that Basel articulate the principle that the goal is the development of such models and that once developed the use of risk mitigation techniques will be encouraged through appropriate reductions in capital charges. It may be the case that capital reductions are subject to minimum enterprise-wide capital levels as is alluded to elsewhere in this comment. Articulating this principle at this time and outlining the phase-in process for these techniques will provide a degree of regulatory certainty that efforts to manage and mitigate risks will be rewarded. This step will strengthen incentives for investing the resources needed in developing the necessary models.

### **Insurance**

We support the use of insurance as a tool for risk transfer and mitigation. We recognize, however, that insurance presents special problems as a risk mitigation tool. Settlement of claims may be delayed by litigation and the eventual recoveries may be uncertain, even when the actual insured loss is known. Thus, legal uncertainty and claims processing delays can result in a bank with an insured loss experiencing temporary liquidity problems or even insolvency as a result of losses that are ultimately covered by insurance. This problem makes insurance problematic as a risk mitigation method.

Similar issues of legal uncertainty have arisen recently with respect to credit derivatives and the definition of default events. In that case, the industry, led by the International Swaps and Derivatives Association, has moved to resolve legal uncertainties by developing standardized contracts. This process has been critical to the development of the credit derivatives market and is in the interests of all parties. We believe the same market forces can be brought to bear in this case.

Rather than prohibiting capital reductions for insured risks for the operational reasons cited, we propose that the insurance and banking industries be invited to develop remedies that resolve the legal uncertainties attendant to insurance claims settlement and to deal with the liquidity issues arising from possible delays in payout.

If suitable arrangements can be devised by the industry, subject to regulatory review, then operational risk exposures calculated under the Advanced Approach should be reduced to the extent that appropriate insurance policies are used.

Resulting credit risk exposures to insurance firms should then be handled under the credit risk framework.

### **Section III – Operational Risk**

The new Basel Proposal responds to the emerging importance of operational risks in risk management within banks and safety-and-soundness oversight by supervisors. This is consistent with recent, vigorous and on-going developments within the industry. Numerous organizations, including the British Bankers Association and the International Swaps and Derivatives Association are studying operational risk. Consulting firms such as Price Waterhouse Coopers and Algorithmics are building practices in this area and are developing tools for measuring and monitoring certain kinds of operational risks. Insurance companies, the traditional providers of operations risk insurance, are developing new products to cover broader classes of risks.

In the past, regulators have treated operational risks implicitly, rather than explicitly. The quality of operational risk management has been a component of the Management portion of the CAMELS ratings used by U.S. supervisors. Capital to guard against operations event losses has not previously been made explicit. Rather it was understood that capital assessments for credit and market risk contained sufficient buffers to guard against other risks including operational risks. As the industry moves toward closer mappings of risk and regulatory capital, less reliance can be placed on the former implicit procedure for operational risks. Instead, regulators must begin to move toward regimes that measure the risk of loss from operations and assess capital accordingly.

It is thus appropriate that a revised regulatory framework should explicitly recognize operational risk as a distinct problem in banking. The Federal Reserve Bank of Chicago considers the explicit discussion of how to deal with operational risks to be a positive step.

#### **The Need for a Capital Charge**

The proposal of the Basel Committee presupposes that it is necessary to impose an operational risk capital charge at this time. In part this appears to be due to concerns not about operational risk *per se* but that making market and credit risk more risk sensitive will permit some banks to hold “too little” capital. This line of reasoning suggests an unarticulated belief that a specific-risk-insensitive minimal capital level is needed—reasoning consistent with the 1988 Accord rather than the goals of the current Proposal for making capital risk sensitive.



The issue of minimal capital is an important one, particularly as we increasingly rely on imperfect and incomplete models of risk exposures. As our models for credit and market risk become more precise, our reliance on them will result in firms with little credit or market risk having insufficient capital to guard against other risks. However, other risks are not limited to operational risks. They include the full set of risks a firm faces including business, legal, regulatory and political risks as well as operational risk. All these risks can impose losses that threaten the soundness of individual institutions.

The Basel Committee has perhaps wisely decided not to engage in quantifying all risks. Nonetheless, it may be counterproductive avoid facing squarely the issue of minimal capital for all risks. Using an operational risk charge to mitigate the effects of other proposed changes in credit and market risk capital determination may be less defensible than adopting a straightforward minimal total capital requirement.

### **Discussion of Proposed Approaches**

Three approaches for assigning capital against operational risk are put forward in the Proposal. The Basic Approach ties the capital charge to a gross measure of business activity such as Gross Income. The Standardized Approach divides the firm into lines of business and ties line-of-business operational risk charges to line-of-business specific measures of business activity such as Gross Income or number of transactions. In both, the capital charge is the product of the business activity measure and a fixed but as yet undetermined multiplier. The third method, Internal Measurement Approach, allows banks having sufficiently well developed models to compute event probabilities and expected event severity on lines-of-business bases. These exposure measures would still be tied to the same business activity measures as in the Standardized Approach.

We feel that the proposed Basic and Standardized approaches to implementing separate capital charges for operational risk do not make much progress toward making capital charges risk sensitive. Nor do we believe that these two approaches provide effective incentives for banks to reduce risk exposures that raise safety and soundness concerns. Development of systems for the management and reduction of operational risk will necessitate the firm incurring expenses. However, these investments will not typically reduce gross income or the other activity measures contemplated under the Standardized Approach. As a result, firms undertaking these investments will receive no offsetting benefits under the proposed operational risk capital charges.

The proposed business activity measures for operational risk exposures appear to be *ad hoc*. Supporting documents to the proposal refer to conversations with banks, informal surveys and confidential studies. It may be that Gross Income is as good as any other proxy for operational risk exposure. But justification for this

activity measure is not present. Ease of measurement is a poor basis for adoption if Gross Income does not provide a reasonably good proxy for the risk being capitalized. A key question is whether it makes sense to use any such business activity measure as a measure of its operational risk.

It is the intention of the Committee to calibrate the exposure multipliers to encourage banks to move to more sophisticated operational risk measurement regimes. However, it is also apparent that few, if any, banks would currently qualify for treatment under the Internal Measurement Approach.

### **Issues of Data Collection and Model Development**

The Basel Committee envisions that by the time that the Proposal is implemented in 2004 some, and perhaps many, large banks will have developed the data and models necessary for adopting the Internal Measurement Approach.

We are doubtful. Operation risk covers a wide variety of qualitatively different risk types, ranging from relatively common and readily monitored events such as settlement failures to low frequency and difficult-to-quantify events such as major computer systems failures or large-scale fraud (e.g., Barings/Leeson). Definitions of operational risk categories continue to evolve, and while some banks and organizations have begun collecting data, this process has not been systematized. It is critically important, particularly as regards medium and low frequency risks, that data is aggregated across the industry, and preferably in collaboration with other (non-bank) financial institutions facing similar operational risks. Such systematic data collection needs to be centrally coordinated to ensure its consistency and usability. Current efforts within banks will provide firm-specific information of limited use.

We feel that Basel has an important role to play in coordinating and advancing operational risk measurement and data collection through Pillar III.

Our concern is that these efforts are not yet under way. That being the case, proposals based on their presumed availability in three years are ill advised. We therefore view the Internal Measurement Approach as unlikely to be implemented in the foreseeable future if credible standards for model verification and back-testing are used.

### **Critique of the Basic and Standardized Approaches and a Proposed Solution**

The Basic and Standardized Approaches, as they do not require collection of data or model development, can be implemented immediately. We are concerned, however, that basing capital charges for operational risk capital on business activity measures provides little incentive to manage these risks. A bank that does work to improve operational risk management can only move

from the Basic Approach to the Standardized Approach. While the Standardized Approach requires business activity multipliers for operational risk to be calibrated so as to provide lower capital for banks operating under the Standardized Approach *vis-à-vis* the Basic Approach, this can only be true on average. Depending on their business mix, some banks may even be penalized if they adopt the Standardized Approach.

We therefore recommend that the Basic and Standardized Approaches to operational risk capital determination based on business activity be replaced with a capital charge that relies on Pillar II (supervision) to assess the appropriate amount of capital to be held against operational risks.

To implement this process we propose that a base level of capital be determined using an exposure indicator developed by the Basel Committee in conjunction with the banking industry. This would provide a starting level of operational risk capital for each bank. This capital charge would be adjusted down to some floor or upwards as far as deemed appropriate after supervisory review of the bank's operational risk management practices and risk exposures in the light of evolving standards of best practice, model development and data availability. This approach enables supervisors to offer incentives to banks developing processes for the identification, monitoring, mitigation and measurement of operational risk. As the industry progresses, best practices will be developed and supervisors can reduce capital charges as banks adopt these practices.

We envision banks progressing with their identification, data collection, and mitigation of operational risk to the point where they would have the data and experience to build sound, robust operational risk models. These efforts would proceed in parallel with data collection of medium and low frequency risks by industry groups and or regulatory authorities. Banking organizations could begin move from our proposed supervisory approach to a full-models approach when measurement of operational risk exposures, models and management have evolved sufficiently. Such a move would be contingent on supervisory approval.

## **Summary**

The Bank's comments on the current proposal cover three areas. We expand on the comments transmitted in our March 2000 letter with a discussion of the proposed capital charges for credit risk, in particular the proposed Internal-Rating Based Approach ("IRB"). We reiterate our support for expansion of capital reductions when effective risk mitigation procedures are present. We discuss the proposed capital charges for operational risk.

Our letter endorses three principles:

- Capital charges should, wherever possible, be risk sensitive.
- The preferred role of a regime of capital charges is to provide incentives for banks to manage risks appropriately.
- Supervisory authorities should utilize capital charges that, when applied in conjunction with well-informed supervisory oversight, lead to the adoption of sound risk management practices.

These principles lead us to our three specific recommendations:

- Recalibrate the credit risk model based on expected loss.
- Encourage risk mitigation through appropriate reductions in required capital.
- Permit supervisory adjustment of operational risk capital charges to provide incentives for banks to identify and manage operational risks.

We thank the Basel Committee for this opportunity to comment and look forward to making further contributions in this very important area.