

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

**THE BASEL COMMITTEE'S PROPOSALS  
FOR REVISED CAPITAL STANDARDS:  
MARK 2 AND THE STATE OF PLAY**

*Andrew Cornford*

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**DISCUSSION PAPERS**

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## **THE BASEL COMMITTEE'S PROPOSALS FOR REVISED CAPITAL STANDARDS: MARK 2 AND THE STATE OF PLAY**

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### **Abstract**

*The new 500-page consultative document on capital standards of the Basel Committee on Banking Supervision (BCBS), "The New Basel Capital Accord", gives what is likely to prove a reasonable idea of the eventual shape of the new capital accord. However, many detailed issues remain to be resolved before completion of the drafting process in 2002. The scale and duration of this process reflects both the increasing complexity of banking operations and the role of the BCBS as the institution responsible for globally applicable standards for banking regulation and supervision. The basic structure of the 2001 consultative document follows that of the June 1999 proposals, in particular three Pillars treating the calculation of capital requirements, supervisory review, and the disclosure necessary for effective market discipline. But the 2001 proposals are much more concrete and detailed.*

*In their present form the proposals of the New Accord raise several concerns likely to apply to all countries but in some respects particularly to developing ones. One set of concerns relates to the New Accord's impact on supervisory divergences among countries, cross-border competition between banks, and cooperation between national supervisors. The New Accord has been crafted to accommodate banks of very different levels of sophistication. Yet this may compromise its basic objective of enhancing competitive equality by actually creating regulatory divergences in some areas of banking practice both within and between different countries. As a result the difficulties of achieving effective cross-border cooperation amongst supervisors may well increase. A second set of concerns involves the relation of the New Accord to ongoing exercises involving codes and standards. Here the key standard is the BCBS's Core Principles for Effective Banking Supervision for which the capital adequacy requirements of the Basle Capital Accord provide the principal benchmark. The New Accord will represent a quantum increase in the complexity of supervisors' responsibilities in most countries, and the resulting administrative burden will be aggravated by its incorporation in assessment exercises regarding compliance with the key standards. Furthermore, the link between the New Accord and key standards for financial systems also implies that implementation will become a subject for IMF Article IV surveillance and part of the conditionality associated with the IMF's new CCL facility. A further set of issues involves possible effects on regulatory arbitrage, since the comprehensiveness and detailed character of the rules of the New Accord will almost inevitably be a source of new opportunities for such arbitrage. Finally, there are concerns as to the effects of the New Accord on economic activity and international capital flows. The proposed risk weights of the IRB approach would lead to substantial rises in interest rates for lending to borrowers with low credit ratings both within countries and internationally – rises likely to affect borrowers from several developing countries. Moreover, owing to their links to the ratings of credit rating agencies and to observed default rates, the risk weights proposed in the New Accord are capable of contributing to the pro-cyclical character of bank lending both within countries and across borders, since they would be likely to translate higher credit risks in more difficult times into increased capital requirements (and thus more restrictive lending policies). Prudential rules which would minimize such dangers can be sketched but would nonetheless be difficult to incorporate in the design of regulatory systems.*

## I. INTRODUCTION

The new, nine-part, 500-page consultative document on capital standards of the Basel Committee on Banking Supervision (BCBS), issued in January 2001, gives what is likely to prove a reasonable idea of the eventual shape of the new capital accord.<sup>1</sup> However, the paper is still a report of work in progress and many detailed issues remain to be resolved during the last lap of the drafting process, which is to be completed in 2001.<sup>2</sup> The scale and duration of this process reflect partly the increasing complexity of banking operations, but also the role of the BCBS as the institution responsible for globally applicable standards for banking regulation and supervision. At the time of the 1988 Basel Capital Accord no such role was assumed, and the Accord was directed at the internationally active banks of the BCBS's member countries. But during the decade which followed its application was extended much more widely to other jurisdictions and banks. Several factors contributed to this extension, such as the closely parallel regulatory initiatives of the EEC/EU, the BCBS's own proselytizing of other supervisors and supervisory groups, and the internationalization of banking itself since the granting of the market access to foreign banks has become widely conditional on the standards of the regulatory regimes in their home countries – standards for which the rules enunciated by the BCBS are now accepted as a model. Even among developed countries the range of sophistication of banking firms is wide and this point applies *a fortiori* to the international economy as a whole. The number of issues which the BCBS must confront has become correspondingly greater, and the consultation associated with its statements of standards correspondingly more inclusive and lengthy.

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<sup>1</sup> The full list of consultative documents issued in January 2001 is as follows: the core document, *The New Basel Capital Accord* (133 pages), which is accompanied by a more summary statement, *Overview of The New Basel Capital Accord* (37 pages), as well as a note resembling a press release, *The New Basel Accord: An Explanatory Note* (12 pages), and seven more specialized supporting documents, *The Standardised Approach to Credit Risk* (52 pages), *The Internal Ratings-Based Approach* (102 pages), *Pillar 2 (Supervisory Review Process)* (14 pages), *Pillar 3 (Market Discipline)* (59 pages), *Principles for the Management and Supervision of Interest Rate Risk* (39 pages), *Operational Risk* (26 pages), and *Asset Securitisation* (28 pages). The different documents in this package are referred to by their titles in the sequel and are not included in the References at the end of the paper.

<sup>2</sup> The definitive version of the new Accord was to have been published at the end of 2001, but this deadline has been extended to the end of 2002. The target date for implementation is 2005.

## II. THE FLAWS OF THE 1988 BASEL CAPITAL ACCORD<sup>3</sup>

The basic objectives of the 1988 Basel Capital Accord were to strengthen the international banking system and to promote convergence of national capital standards, thus removing competitive inequalities among banks resulting from differences on this front. Its key features were a common measure of qualifying capital, a common framework for the valuation of bank assets in accordance with their associated credit risks<sup>4</sup> (including those classified as off-balance-sheet), and a minimum level of capital determined by a ratio of 8 per cent of qualifying capital to aggregate risk-weighted assets. In the following years a series of amendments and interpretations were issued concerning various parts of the Accord: these extended the definition and purview of qualifying capital, recognized the reductions in risk exposure which could be achieved by bilateral netting<sup>5</sup> meeting certain conditions, interpreted the Accord's application to multilateral netting schemes, allowed for the effects on risk exposure of collateralization with securities issued by selected OECD public-sector entities, and reduced the risk weights for exposures to regulated securities firms. Simultaneously, the BCBS continued its work on other banking risks of which the main practical outcome was the amendment of the 1988 Accord to cover market risk<sup>6</sup> adopted in 1996. But the 1988 Capital Accord lacked explicit provisions for capital to cover banks' interest-rate risks not included under the heading of market risk and their operational risks.

From the moment when it was unveiled the 1988 Basel Capital Accord was the subject of criticism which increased with the passage of time. The importance attributed to different weaknesses of the Accord varied among the different countries and other parties affected. But three points were particularly prominent in the criticisms: firstly, the Accord's failure to make adequate allowance for the degree of reduction in risk exposure achievable through diversification; secondly, the possibility that the Accord would lead banks to restrict their lending (particularly if the new capital requirements were introduced in

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<sup>3</sup> The discussion of the 1988 Basel Capital Accord and of the 1999 proposal for a *New Capital Adequacy Framework* which follows draws heavily on two sources, Cornford (2000) and Matten (2000, Part Three). The latter source goes beyond commentators' usual concentration on legal and accounting issues, placing banks' regulatory capital squarely in the context of the other dimensions of capital management intended to achieve objectives of risk control and economic performance.

<sup>4</sup> Credit risk results from the possibility that a bank's counterparty will default on its obligations.

<sup>5</sup> Netting refers to the amalgamation of sums due to and from a bank for the purpose of estimating its net risk exposure. Such netting can be bilateral, in which case it applies to the mutual obligations of the counterparties, or multilateral, in which case it applies to the mutual obligations originating within a group of counterparties (net amounts due being settled through a central clearing house). So long as they are supported by appropriate legal rules, such netting arrangements can reduce banks' risk exposure, and the BCBS's role here has consisted in specifying when such a reduction should be reflected in lower capital requirements for banks.

<sup>6</sup> Market risk is that of loss due to changes in the market value of a bank's assets before they can be liquidated or offset in some way.

deflationary conditions characterized by downward pressure on their profits); and thirdly, its arbitrary and indiscriminating calibration of credit risks.<sup>7</sup> The last point involved one of a number of features of the Accord which led to regulatory arbitrage resulting from misalignments between regulatory rules and economic incentives. In this case banks were tempted to take advantage of the opportunities afforded by the Accord's calibration of risk to increase their holdings of higher-yielding but also higher-risk assets for a given level of regulatory capital. Other features of the Accord exploited for the purpose of regulatory arbitrage are the possibilities that the Accord offers for reducing regulatory capital through rolling over loans to banks in non-OECD countries to avoid maturities exceeding one year and (after 1996) through shifting exposures from the banking to the trading book.<sup>8</sup>

Another area of concern to both banks and their supervisors was the growing divergence between the framework of the 1988 Basel Capital Accord and innovations affecting the management of credit risk. Some of these innovations were concerned with the modelling of credit risk for the purpose of better measurement and control. Others involved new techniques for the reduction or mitigation of such risk. Of special importance here were credit derivatives, whose use expanded rapidly in the 1990s.

Stripped to their essentials, most credit derivatives are OTC transactions, structured as swaps, options or embedded securities, under which one party (the seller of protection or buyer of risk) receives a premium and in return enters into a commitment to provide the other party (the buyer of protection or seller of risk) with a payment or transfer of value triggered by a specified deterioration in the performance of a third party or parties (the Reference Entity or Entities) under specified debt or securities obligations (Reference Obligations), or by changes in the creditworthiness of the Reference Entity or Entities (see, for example, Henderson, 1999). The opportunities provided by credit derivatives for disaggregating and transferring credit risk are used for various purposes such as the management of credit lines, reduction of the capital required by regulation, the hedging and diversification of portfolios, and pure risk reduction (Reoch, 1997).

Practices regarding regulation of these instruments have yet to become firmly established and are still subject to significant variations at the national level. The key issues to be confronted by regulators

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<sup>7</sup> The differentiation of sovereign risk in the 1988 Accord between OECD and non-OECD countries (with the attribution of lower risk weights to selected categories of entity in the former) was the subject of objections as to its unjustifiably discriminatory character on the part of a number of developing countries. This differentiation was the result of a political agreement within the BCBS, whose somewhat arbitrary character it acknowledged (Cornford, 2000: 10).

<sup>8</sup> During the recent period the BCBS's definition of a bank's trading book consisted of its "proprietary positions in financial instruments ... intentionally held for short-term resale and/or ... taken on by the bank with the intention of benefitting in the short-term from actual and/or expected differences between their buying and selling prices, or from other price or interest-rate variations, and positions in financial instruments arising from matched principal brokering and market making, or positions taken in order to hedge other elements of the trading book". Its other assets and off-balance-sheet exposures are classified as its banking book (BCBS, 1996, Introduction, sect. I). Concerning elaboration of the definition of the trading book in the 2001 consultative paper, see section IV.L below.

include whether particular contracts should be part of the banking or trading book, the treatment of the underlying Reference Entities or Reference Obligations, and the treatment of the counterparty risk associated with the derivative itself (Kasapi, 1999, chap. 7). The rules adopted in some jurisdictions have had the result that a bank buying credit protection through a credit derivative may actually be faced with an increase in regulatory capital even where the transaction has led to a reduction in its risk owing to the lack of a sufficiently close match between the hedging instrument and the underlying exposure (Matten, 2000: 124–125). Moreover owing to lack of regulatory uniformity the trading of credit derivatives is another area providing opportunities for regulatory arbitrage (Tavakoli, 1998: 237).

The financial crises of the 1990s drew attention to the ineffectiveness of the 1988 Basel Capital Accord on its own as an instrument for the achievement of banking stability and to incentives which it provided to categories of lending generally believed to have contributed to countries' financial vulnerability. With respect to these issues the concerns regarding, as well as the concerns of, developing countries achieved much greater prominence. There was of course always awareness of the dependence of the different elements of regulatory frameworks for banking on the quality of supervisory implementation and on the extent to which the framework's standards were incorporated into the norms of the banking sector's operations and management. And both sorts of dependence were known to be crucially linked to financial reporting and accounting practices, subjects classified under the heading of "transparency", on which both supervisors and lenders and investors rely for the satisfactory performance of their responsibilities. But the financial crises of the 1990s in emerging-market countries underlined the importance of these factors with a vengeance. In some of the Asian countries affected by the region's crisis, for example, capital standards based on the model of the 1988 Basel Accord had been or were being introduced but provided little protection to banking systems owing to poor accounting standards and weak supervision.<sup>9</sup> The exercise which led to the issuance of the BCBS's *Core Principles for Effective Banking Supervision* in 1997 is intended to be a remedy for such supervisory weaknesses but there is also a widespread belief that the supervisory prerequisites for effective capital regulation should be an explicit part of future international initiatives in this area. And there has been a similar feeling about the need for more explicit recognition of the role of transparency.

As to the contribution of international bank lending to recent crises in emerging markets attention is often drawn to the tendency for countries affected to manifest a high level of dependence on short-term borrowing. Since this dependence may reflect creditors' deteriorating confidence in a borrower's creditworthiness, the autonomous contribution of short-term borrowing to a financial crisis may be difficult to identify. Nevertheless, short-term borrowing sometimes becomes a major part of countries' capital

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<sup>9</sup> For more concrete description of standards of financial reporting by Asian banks at the time of the region's financial crisis by an observer on the spot professionally involved in the rating of banks see Delhaise (1998, especially chap. 3).

inflows well in advance of an eventual crisis, and in the case of several Asian countries such dependence was also accompanied by high levels of dependence on interbank lending (BCBS, 1999a, Annex 3 and p. 3). It is generally assumed that the two features of short-term and interbank borrowing were connected, much of it being driven by interest-rate arbitrage. Thus the attribution of a risk weight to short-term international interbank lending better consonant with its real risks has become part of the agenda of reform of the 1988 Basel Capital Accord in order to restrain the destabilizing potential of such lending (as well as to reduce the opportunities for regulatory arbitrage through the manipulation of its maturity classification mentioned above).

Among developing countries there is a widespread view that the regulatory regime for banks' capital should be capable of making a contribution to the stability of capital flows which goes beyond improved risk weights for international interbank lending. One of the more concrete proposals along these lines is that supervisors in major countries should vary the capital requirements on banks' international lending in response to changes in the risk of different borrowers. In several countries the regulatory authorities have powers enabling them to influence banks' provisions for country risk.<sup>10</sup> Now that supervisory review is explicitly included in the revised accord (see section IV.B), guidelines in this area might more appropriately be included under this heading than under numerical capital standards.

### **III. THE 1999 CONSULTATIVE PAPER**

#### ***A. General approach***

Much of the BCBS's document (BCBS, 1999b), *A New Capital Adequacy Framework* (henceforth New Framework), was drafted with a broad brush, and many of its proposals were clearly tentative. Where the New Framework was more concrete or precise, it did not generally depart fundamentally from the approach of the 1988 Accord, though its amendments were extensive and many new options were broached. The objectives of the 1988 Accord were restated but the New Framework also accepted that while the focus of a revised accord should be internationally active banks, "its underlying principles should be suitable for application to banks of varying levels of complexity and sophistication", thus explicitly acknowledging the BCBS's expanded role as a global standard setter. The revised accord was also to "constitute a more comprehensive approach to addressing risks", in particular addressing more explicitly operational risk and interest-rate risk in the banking book.

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<sup>10</sup> For a survey of 14 industrial countries containing information on regulatory authority in the area of banks' provision for country risk as of 1994, see Price Waterhouse (1995).

The scope of application of a revised accord at the level of industrial structure would be extended in the New Framework from banks on a consolidated basis (i.e. including subsidiaries undertaking banking and other financial business) to holding companies that are parents of banking groups. This change reflects what is already the scope of the supervisory practice in some of the BCBS's member countries. Moreover the revised accord would be applied on a sub-consolidated basis to all internationally active banks below the top level of the banking group; and supervisors would ensure that each bank within the group is adequately capitalized individually.

The response of the New Framework to concerns mentioned above as to the quality of supervision and of financial reporting was to include fully fleshed-out sections (Pillars 2 and 3) on supervisory review and market discipline. In a consultative paper issued in early 2000 (BCBS, 2000), the BCBS elaborated the recommendations of the New Framework concerning the nature of information to be discussed under Pillar 3.

The definition of capital in the New Framework remained unchanged from that of the original Accord (as amended and clarified since 1988). With respect to the amount of capital the New Framework included among the objectives of a revised accord that it "should at least maintain the current overall level of capital in the system". This would imply that new and more explicit capital charges for operational risk and interest-rate risk in the banking book should on average be expected to offset any reductions due to changes in requirements for credit risk.

Regarding the treatment of different categories of exposure the New Framework proposed two approaches, a standardized and an internal ratings-based approach, some aspects of which are discussed in somewhat more detail below. The first of these, intended for use by less sophisticated banks, was the filial, amended successor of the approach used in the 1988 Accord. The level of risk-weighted assets for the purpose of setting regulatory capital requirements was (as before) to be estimated as the product of risk weights and corresponding exposures. The second approach reflected an acknowledgement of the innovations by banks in their measurement and control of credit risk since 1988. But this approach fell short of allowing banks to deploy their own internal models of risk to set their capital changes in a manner analogous to that allowed for market risks under the 1996 amendment of the 1988 Accord (BCBS, 1996). In its treatment of different categories of exposure the New Framework also addressed some new subjects such as new rules for securitization and ways to address new techniques of credit mitigation such as credit derivatives.

## ***B. Some specific features***

Key characteristics of the standardized approach were a slightly extended range of risk weights for exposures and recourse for the classification of exposures to the ratings of “external credit assessment institutions” (ECAIs), which could be credit rating agencies fulfilling certain criteria of eligibility or the export credit agencies of major countries. For sovereign risk this approach would have the result of ending the reliance under the 1988 Accord on the distinction between OECD and non-OECD exposures. Of the other two major categories of exposure, banks and corporates, two options were proposed for the former: under the first private banks would receive a rating one category less favourable than that of the applicable sovereign or its central bank (subject to ceilings); and under the second recourse would be had to agencies’ ratings of banks with a floor for risk weights of 20 per cent and a ceiling of 150 per cent. Under the second option special (and more favourable) provision would be made for interbank loans but on a basis more restrictive than in the 1988 Accord, since it would apply only to loans with an original maturity of up to 6 months rather than to those with a residual maturity of up to one year. Other changes in comparison with the 1988 Accord involved the risk weights for short-term off-balance-sheet items and for securitized assets. In both cases the New Framework’s target was regulatory arbitrage: for the first item banks’ practice of rolling over commitments with a term of up to one year to avoid the higher risk weighting of exposures with longer maturities, and for the second item banks’ use of asset securitization to reduce their capital requirements, while not necessarily achieving a corresponding reduction in their true exposure to credit risk.

As already mentioned, the BCBS was unwilling to accept an approach to setting capital charges for credit risk based on banks’ own internal models. This is the direction in which much of the banking industry itself would clearly like to move. Such an approach would facilitate alignment of the management of regulatory capital with other dimensions of banks’ capital management, making possible a closer matching of capital and risk on a comparable basis across transactions, markets and counterparties. However, not many banks have yet developed comprehensive models for risk capital, and their alignment with global standards is still at an early stage. In a review of credit risk modelling the BCBS itself has discussed its shortcomings at some length, in particular those associated with data limitations and model validation (BCBS, 1999c). Unlike those in the case of the modelling of market risk, predictions for models of credit risk cannot rely on statistical projections based on long historical time series. Owing to the resulting dependence on simplifying assumptions and proxy data, an understanding of the sensitivity of models of credit risk to structural assumptions and parameter estimates is essential to their validation. But the time frame required for such validation, which should cover a number of credit cycles (and thus a sufficient number of default events), requires testing on the basis of large amounts of data – so large,

indeed, as to be impractical for individual institutions and thus as to necessitate cooperative efforts from the industry which are currently still only at an early stage.

Thus instead of capital charges estimated with bank's own internal models the New Framework came out in favour of an internal ratings-based (IRB) approach involving "risk buckets". Under this approach particular categories of exposure would be assigned a risk weight, as in the 1988 Accord, but in this case through a mapping from exposures to risk weights based wholly or partly on banks' own estimates of risk. These procedures would be subject to supervisory review. While the New Framework endorsed this approach, it did not put forward a detailed blueprint but committed the BCBS to further examination of the issues with a view to developing a new concrete proposal as part of the next stage of its work.

On techniques of credit risk mitigation likewise the New Framework refrained from detailed proposals, committing the BCBS to consultations on new developments such as credit derivatives as part of a broader review of all the major different techniques under this heading (including those included in the 1988 Accord).

### *C. Some reactions*

The obviously provisional nature of the New Framework and the associated absence of detailed rules concerning many subjects tended to concentrate public response on particular areas. For example, commentators noted that the standardized approach entailed only a limited extension of the calibration of credit risk, which in consequence was still fairly crude. By far the most controversial idea in the New Framework was the proposed recourse to ECAIs which most commentators took to mean the major credit rating agencies. One reaction, common among those attempting to predict the impact of the New Framework on developing countries, was to identify likely beneficiaries and losers among countries as a result of the attribution of risk weights on the basis of agencies' ratings of sovereign risk. In this discussion there was a tendency to forget that the New Framework's proposal concerned the establishment of minimum risk weights whose correspondence to the weights actually used by banks in their capital allocation for credit risk might or might not be close. A second criticism of recourse to ECAIs' ratings focussed on the pro-cyclicality of the ratings of major agencies. Only if the announcements of the agencies concerning changes in creditworthiness preceded changes in market conditions such as borrowing costs, would it seem reasonable to rely on their ex-ante capacity to rate credit risk. But the results of econometric research and the agencies' track record during the Asian financial crisis of 1997

provided weak support for this proposition.<sup>11</sup> Indeed, there was widespread concern among developing countries that if the agencies' announcements simply parallel changes in market sentiment or, worse still, follow such changes, recourse to their ratings for setting risk weights for capital standards might actually exacerbate the instability of bank lending. A third point, also of particular concern to developing countries, concerned the coverage of major agencies' ratings. In India, for example, in early 1999 out of 9,640 borrowers enjoying fund-based working capital facilities from banks only 300 had been rated by any of the major agencies (RBI, 2000: 13–14). This led to calls for more attention to the possibility of recourse to the ratings of domestic (as opposed to major international) agencies – a proposal not excluded by the New Framework so long as the agencies in question meet the criteria required.

#### IV. THE 2001 DRAFT (MARK 2)

##### A. *Introduction*<sup>12</sup>

The basic structure of the 2001 consultative document, *The New Basel Capital Accord* and supporting material (henceforth *New Accord*), follows that of the June 1999 proposals: an unchanged definition of items counting as capital; three Pillars; a number of alternative options for numerical standards under Pillar 1; increased risk sensitivity for the risk weights; explicit recognition of operational risk and interest-rate risk in the banking book; and new approaches to the treatment of asset securitization and credit-risk mitigation. But the proposals are now much more concrete and detailed: the most notable change is the fleshing-out of the IRB approach for numerical standards, two options now being put forward – “foundation” and “advanced” – partly in order to increase the number of banks' in a position to choose the IRB as opposed to the standardized approach. Explicit links between the Pillars have now been strengthened: a bank's eligibility for more sophisticated approaches proposed under numerical standards for capital is dependent on the meeting of certain standards specified under the headings of supervisory review and transparency; and interest-rate risk in the banking book is now handled under supervisory review. Moreover, under the IRB approach and the most advanced approach to estimating the capital requirement for operational risk, banks are required to integrate their internal risk measurement into their business operations.

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<sup>11</sup> On the agencies' performance during the Asian crisis see BCBS (1999a: 20–23), and for a review of the evidence concerning the pro-cyclicality of their ratings see Cornford (2000, sect. VI.A).

<sup>12</sup> For two useful summaries of the BCBS's 2001 consultative document see Jeanneau (2001) and SEC et al. (2001).

However, despite the detail the New Accord still contains many loose ends on which further work is projected for the final revision. This applies particularly to various parts of the IRB approach such as the treatment of banks' equity portfolios, their retail and project-finance exposures, and the best way to incorporate risks linked to exposures' maturity.

Since several of the rules concerning the numerical capital standards depend on the fulfilment of requirements under Pillars 2 and 3, the discussion of major features of the New Accord which follows reverses the order of the consultative document itself and starts with these two Pillars.

## ***B. Pillar 2***

The key concepts of the New Accord's treatment of supervisory review are embodied in the following four principles: (1) banks should have a process for assessing their overall capital in relation to their risk profile and a strategy for maintaining their capital levels; (2) supervisors should evaluate banks' policies and actions for these purposes, and should take appropriate supervisory action if they are not satisfied with the results; (3) supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum; and (4) supervisors should seek early intervention to prevent capital from falling below the minimum levels required by a bank's risk characteristics, and should require remedial action if capital is not maintained or restored. The detailed discussion of these four principles in the New Accord consists largely of a check-list of policies and actions required for their fulfilment.

Principles 1 and 2 are linked to the criteria banks must meet if they are to be eligible to use the more sophisticated methods for setting capital requirements under the IRB approach and with respect to operational risk. Closely related to these criteria is the requirement implicit in the discussion of Pillar 2 but taken up explicitly in the relevant parts of the rules for numerical capital standards that banks integrate their internal risk measurement, undertaken as part of the IRB approach or of the evaluation of operational risks, into their business decisions concerning such subjects as the pricing of credit risk, the setting of internal exposure limits, incentive compensation plans, and capital allocation. Principle 4 bears on the treatment of interest-rate risk in the banking book. Comments during the consultation process indicated to the BCBS that the nature of the risks faced by banks under this heading and the methods of monitoring and managing them were too heterogeneous for the establishment of numerical capital standards under this heading. Instead the approach chosen is to handle interest-rate risk in the banking book under Pillar 2 through supervisory review of banks' internal measurement systems. If supervisors determine that a bank is not holding capital commensurate with its interest-rate risks, they are to require it to reduce its risk, to hold additional capital, or to implement some combination of these two actions.

Unsurprisingly the key principles under Pillar 2 are linked to criteria for assessment of compliance with the BCBS's *Core Principles for Effective Banking Supervision* in the areas of capital adequacy and risk measurement, management and control as set out in the BCBS's *Core Principles Methodology* (especially Principles 6 to 13) (BCBS, 1999d). These assessments to be carried out not by the BCBS but by other parties such as the IMF, the World Bank, regional development banks, regional supervisory organizations and even private consultants or as part of "peer reviews" in which supervisors of one country assess another and vice versa. The role of the IMF here will be related to its encouragement of compliance with the Core Principles in the context of its surveillance mandate which now includes implementation of financial standards.

On the face of it the process envisaged here may seem a natural part of global and regional efforts to promote financial stability but closer examination points to possibly problematic aspects of linking the New Accord to these assessment exercises. Firstly, limited supervisory capacity is likely to be stretched by these exercises even while the 1988 Basel Capital Accord still applies. But the New Accord will represent a quantum increase in the complexity of supervisors' responsibilities in most countries, and probably a corresponding increase in the tasks involved in assessment exercises. This suggests that the ambitious character of the New Accord may necessitate some rethinking of the way in which the assessment exercises are carried out. A second point which needs to be considered here concerns the way in which assessment exercises that eventually include the New Accord relate to IMF conditionality. Under the IMF's Contingency Credit Line (CCL), established in 1999, short-term balance-of-payments financing is available to countries from the IMF to meet problems due to international financial contagion. Countries can pre-qualify for the CCL on the basis of conditions which include a positive assessment during the most recent consultations under IMF Article IV surveillance of progress in adhering to internationally accepted standards, one set of which relate to banking supervision.<sup>13</sup> It seems legitimate here to raise the question of the desirability as well as possibly the feasibility of linking an initiative as technically complex as the New Accord to a feature of international financial governance as politically contentious as IMF conditionality.

### ***C. Pillar 3***

The New Accord contains a wide-ranging list of subjects to be covered by its disclosure requirements, including a banks' capital, accounting policies, risk exposures and risk management. A distinction is drawn between disclosures classified as "core", on the one hand, which convey information vital for the operation of market discipline, and those classified as "supplementary, on the other hand,

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<sup>13</sup> On the CCL see IMF (1999: 51), and on the role of standards in IMF surveillance *ibid.* (p. 45).

which are not necessarily of crucial importance for all institutions but should be made by “sophisticated internationally active” banks. The New Accord also includes more comprehensive disclosure as a criterion for eligibility for use of the IRB approach for estimating capital requirements, the coverage of subjects being more extensive in certain areas for the “advanced” than for the “foundation” version. Moreover under both the standardized and the IRB approaches banks are only to benefit from the provisions of the New Accord regarding the treatment of credit-risk mitigation and asset securitization if they meet disclosure requirements about the deployment, monitoring and expected impact of the techniques and transactions involved.

In its background remarks the BCBS refers to various problems related to transparency and its effectiveness. One of these concerns proprietary information which, if disclosed, might reduce the value of banks’ investments in certain areas or undermine its competitive position. Amongst the subjects which spring to mind here are interest-rate risk in the banking book and the management of operational risk.

Under the first heading the disclosure of certain information about a bank’s position and strategy regarding interest-rate risk could be advantageous to other market participants in their transactions with it. Thus the disclosure requirements for interest-rate risk in the banking book are of a fairly general character and focus heavily on management and measurement systems as well as on the methods used for scenario analysis and stress testing. Operational risk may prove to be a source of still greater difficulties, partly owing to the fact that measurement and control are still at a much earlier stage of development than for interest-rate risk in the banking book (a matter discussed further below in section IV.L). These considerations explain the still tentative approach of the BCBS to certain aspects of this subject: for example, its proposal that “ultimately” disclosure requirements will be a precondition for using sophisticated approaches to setting capital requirements for operational risk (*Pillar 3 [Market Discipline]*: 17) and its acknowledgment that a requirement to publish loss data might serve as a disincentive to the development of more sophisticated approaches to operational risk (*Pillar 3 [Market Discipline]*: 52).

The BCBS stresses the dependence of disclosures’ usefulness on their frequency. Its basic guideline is that disclosures should be made on a semi-annual basis but that owing to the rapidity of changes in certain categories of exposure such as market risk more frequent disclosure may be necessary in some cases – quarterly disclosures, for example, for internationally active banks. But even quarterly reporting does not solve difficulties regarding the effectiveness of transparency to which William McDonough, Chairman of the BCBS, drew attention years ago in the following frequently quoted remarks: “formerly you could look at the balance sheet of a financial institution and quickly get a sense of exposure and risks. Today balance-sheet information is clearly inadequate for this purpose. ... the fast pace of activity in today’s market renders financial statements stale almost before they can be prepared” (Leach et al., 1993: 15–16).

The burden of the disclosure requirements of Pillar 3 will often be considerable. The disclosures are to apply to banking groups on a consolidated basis, significant amounts of information also being required concerning entities within the group on a sub-consolidated basis as well as concerning other entities related to the groups but not included in the consolidation. The changes in their reporting systems entailed by these requirements may be only incremental for most internationally active banks. Greater changes will be necessary for groups undertaking mergers and acquisitions but mostly ones that would be a part of the integration of reporting systems which would take place in any event. For less sophisticated banks – and the majority of banks in developing countries may fall into this category – the situation may often be more difficult. The BCBS’s awareness of this problem is reflected in its distinction between “core” and “supplementary” disclosures under which only the first would be obligatory for less sophisticated banks. Even so implementation can often be expected to be slow and difficult, since, *inter alia*, it may depend on upgrading of accounting and auditing standards, itself a far from negligible task. It should also be remembered that in several developing and transition economies the new disclosure requirements will have to apply to state-owned banks or banks controlled by small groups which have previously been subject to at best tax rules concerning transparency.

There would appear to be widespread agreement that new standards of transparency regarding bank capital were one of the beneficial consequences of the 1988 Basel Capital Accord, and that the 8-per-cent ratio is now generally taken to be a minimum by investors in major financial markets.<sup>14</sup> The hope is that the New Accord will build on this. But the types of transparency required by the New Accord are only a part (though a major part) of transparency more generally concerning banks’ operations, and there is a continuing need for a sense of proportion as to what this can achieve. The BCBS itself notes that during its consultative process “respondents ... pointed out that the release of too much information could blur the key signals to the market” (*Overview of The New Basel Capital Accord*: 35), and the recent financial history of developed countries provides many examples of transparency’s limits in preventing financial instability.

#### ***D. The standardized approach to credit risk: (1) the main risk weightings***

The rules for the risk weights of major categories of exposure under the standardized approach follow the general lines of those in the 1999 New Framework, but the New Accord also fleshes out here in detail the treatment of credit risk mitigation and asset securitization (subjects taken up in the following section). The main changes in the rules for risk weights since the 1999 paper involve a tightening of the

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<sup>14</sup> This view is that of the BCBS itself (BCBS, 1999b: 8–9). But disentangling the impact on banks’ capital levels of market discipline, regulatory pressure and other factors bearing on the management of their balance sheets is analytically difficult (BCBS, 1999e: 6–10).

definition of short-term interbank loans subject to more favourable treatment, greater differentiation in the calibration of risks for corporates, further definition of the contents of the high (150-per-cent) risk category, abandonment of the requirement of adherence to key codes and standards<sup>15</sup> as a precondition of eligibility for certain preferential risk weights, abandonment also of the floor for the risk weights of highly rated banks and corporates determined by the sovereign rating of their territory of incorporation, more detail on the way in which the credit assessments of export credit agencies would be used, and procedures for handling cases where there are divergences in the risk weights based on the credit assessment of different ECAIs.

The revised risk weights of the New Accord for the three major categories of exposure<sup>16</sup> are shown in table 1. The mapping from ECAIs' credit assessments to risk weights for sovereigns follows that of the 1999 New Framework. Export credit agencies adhering to the OECD's methodology for setting benchmarks for minimum export insurance premiums for country risk and publishing their risk scores are now recognized as eligible ECAIs for the purpose of setting risk weights for sovereigns but not for the other categories of exposure.<sup>17</sup> For corporates the mapping from credit assessments to risk weights has changed somewhat from that in the New Framework: a weight of 50 per cent has been added for entities with credit assessments in the range A+ to A-; corporates can now receive a risk weight higher than that of their territory of incorporation where this is indicated by their respective credit assessments; and the greater detail concerning the higher (150-per-cent) risk categories includes the attribution of a risk weight of 150 per cent to the unsecured part of any asset that is past due for more than 90 days (net of a bank's specific provisions for loan losses). The 100-per-cent weight for unrated corporates is retained despite the resulting incentive for certain borrowers to avoid or give up their ratings. Here the BCBS's overriding concern is to avoid "an unwarranted increase in the cost of funding for small and medium-sized businesses, which in most countries are a primary source of job creation and economic growth" (*The Standardised Approach to Credit Risk*: 8).

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<sup>15</sup> The codes and standards in question are the IMF's Special Data Dissemination Standards (SDDS), the BCBS's Core Principles for Effective Banking Supervision, and IOSCO's 30 Objectives and Principles of Securities Regulation.

<sup>16</sup> Other institutions such as various public-sector entities and multilateral development banks receive risk weights determined by the degree of resemblance of their risk profiles to those of institutions belonging to the three major categories, their credit ratings, their relations with their shareholders, their capital and liquidity, and their lending and financial policies.

<sup>17</sup> For the OECD's methodology (intended to foster convergence amongst member countries in the setting of premia for export credit insurance) see OECD (1997).

**Table 1**

***Risk weights of BCBS's New Basel Capital Accord  
exemplified with notation of Standard Poor's<sup>a</sup>  
(Percentage)***

<i>Claim</i>	<i>Credit assessment</i>					
	<i>AAA to AA-</i>	<i>A+ to A-</i>	<i>BBB+ to BBB-</i>	<i>BB+ to B-</i>	<i>Below B-</i>	<i>Unrated</i>
Sovereign	0	20	50	100	150	100
Banks: option 1 <sup>b</sup>	20	50	100	100	150	100
option 2 <sup>c</sup>	20	50	50	100	150	50
(Short-term claims) <sup>d</sup>	(20)	(20)	(20)	(50)	(150)	(20)

  

<i>Corporates</i>	<i>Credit assessment</i>				
	<i>AAA to AA-</i>	<i>A+ to A-</i>	<i>BBB+ to BBB-</i>	<i>Below BB-</i>	<i>Unrated</i>
	20	50	100	150	100

**Source:** BCBS (2001, Part 2, section II.A).

- a** The notations are those of Standard & Poors used as an example only and could have been replaced by those of other credit rating agencies.
- b** Based on weighting of sovereign in which bank is incorporated.
- c** Based on credit assessment of the individual bank.
- d** Applicable under option 2 to claims having an original maturity of three months or less of banks with a risk weight below 150 per cent..

Under the first option for banks, as in the 1999 New Framework, entities in a given country are assigned a weight one category less favourable than their sovereign of incorporation subject to specified ceilings. Under the second option the risk weight is based on the bank's own rating subject to a floor of 20 per cent but with the difference in comparison with the New Framework that the risk weight of a bank can be lower than that of its sovereign of incorporation when this is justified by their respective credit assessments. The original maturity of short-term interbank claims eligible (under option 2) for the preferential risk weight shown in table 1 has been reduced from six months or less to three months or less on the grounds that "in practice the upper maturity bound in the short-term inter-bank market is generally three months" (ibid.: 7). There will also be discretion for countries under both options for banks to assign to claims with an original maturity of three months or less and funded in domestic currency a risk weight which is one category less favourable than that of the sovereign of incorporation, subject to the condition

that a lower risk weight than in table 1 is applied to bank's exposures to the sovereign of incorporation itself which are denominated and funded in domestic currency.

The mapping of ECAIs' credit assessments into the risk weights is to be the responsibility of bank supervisors. Rules are specified for the procedures to be followed when there are two or more assessments by different ECAIs corresponding to different risk weights: where there are two such assessments, the higher risk weight applies; and where there are more than two, the two assessments corresponding to the lowest risk weights are the relevant ones and, in the event of their differing, the higher weight should be used.

Thus, despite the reservations expressed concerning the use of agencies' ratings under the standardized approach (see section III.C above), the BCBS has stuck to its guns in the absence of an easily identifiable alternative.<sup>18</sup> But it has designed its IRB approach, in particular its "foundation" and "advanced" versions, in a way which would appear to be intended for use by a larger number of banks than that envisaged in the 1999 New Framework. If successful, this should reduce the number of banks undertaking substantial international lending (including to developing countries) whose credit assessment and risk weights are linked to those of credit rating agencies as set out in the standardized approach. More generally the BCBS believes that the benefits of more risk-sensitive capital requirements for banks outweigh costs due to their potential for amplifying lending cycles (*Overview of The New Basel Capital Accord*: 40). Concretely these benefits would presumably be reflected in a long-term tendency towards lower risk premia in interest rates owing to a reduced incidence of periods of financial instability, which would outweigh short-term increases in premia during such periods. Long historical experience suggests that this may not be much more than a pious hope. Nonetheless, there may be ways (sketched but not elaborated in section V) of supplementing or modifying the BCBS's new proposals which could reduce the contribution they may make to pro-cyclicality in lending.

#### ***E. The standardized approach to credit risk: (2) credit risk mitigation***

The 1999 New Framework promised an approach to the treatment of credit risk mitigation based on a review of the major techniques and instruments used for this purpose, namely collateral, netting, guarantees and credit derivatives. The section of the New Accord on netting generalizes the 1998 proposal for amendment of the 1988 Basle Capital Accord concerning the subject, allocating risk weights to exposures due to sums covered by netting agreements for loans and deposits on a basis similar to that for collateralized exposures (BCBS, 1998). In the 1988 Capital Accord recognition of collateral and guarantees took the form of substituting the risk weight of the issuer or guarantor for that of the original

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<sup>18</sup> The risk assessments of export credit agencies are widely viewed as manifesting the same tendency as credit-rating agencies to follow rather than anticipate cycles in financing, though subject frequently to a greater degree of inertia. This point is emphasized in Griffith-Jones and Spratt (2001: 6-7).

obligor. The New Accord now also admits recognition of collateral in a different way, namely the reduction of exposure by a measure of the value of eligible collateral. The approach in the New Accord to guarantees and credit derivatives builds on the substitution approach of the 1988 Accord, the risk weight for exposures becoming a weighted average of those of the guarantor or supplier of credit protection and of the underlying obligor.

For collateral the New Accord proposes two alternative approaches, a “comprehensive” and a “simple” one. Under both approaches the categories of eligible financial instruments (cash, gold, specified debt instruments, equities, and units issued by UCITS or mutual funds) are broadened in comparison with the 1988 Accord. Moreover minimum standards and conditions for these instruments must be met regarding such matters as legal certainty and associated risk management and revaluation procedures.

Under the “comprehensive” approach the underlying risk exposure is reduced by a conservative estimate of the value of the collateral. The risks due to price volatility of the collateral and the time needed for its liquidation are handled through “haircuts” or reductions in the collateral’s value which may be calculated either in accordance with standard supervisory rules or by banks themselves satisfying certain minimum standards. For many categories of collateral there are also residual risks due to possible continuing exposure to the obligor owing to legal difficulties concerning title or to other reasons causing the effective worthlessness of the collateral. Account is taken of these residual risks through a floor capital requirement (denoted  $w$ ) reflecting an irreducible dependence on the underlying obligor’s credit quality.<sup>19</sup>  $w$  is set at zero for exposures associated with low-risk transactions involving the borrowing and lending of government securities meeting certain conditions.

Under the “simple” approach the substitution of the risk weight of the collateral issuer is substituted for that of the obligor as in the 1988 Accord. To be eligible for this approach, the collateral must be pledged for the life of the exposure (so that there is no maturity mismatch) and must be revalued through marking to market at least every six months (but there is no obligation for “haircuts”). Except in cases where certain risk-reducing conditions are met, the risk weight for the collateralized part of an exposure is subject to a floor of 20 per cent. The BCBS expects recourse to the “simple” approach to lead to higher capital requirements, that will thus act as an incentive to the adoption of the “comprehensive” approach except for banks which engage to only a limited extent in collateralized transactions of the kind being targeted and for which applying “haircuts” on a transaction-by-transaction basis would be unduly costly.

The treatment of guarantees and credit derivatives is a modified version of that of the former in the 1988 Accord, where the risk of the guarantor was substituted for that of the obligor. In contrast to the

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<sup>19</sup> The operation of these rules can be illustrated algebraically for the case where the value of the uncollateralized exposure ( $E$ ) exceeds that of the value of the collateral ( $C_A$ ) adjusted for “haircuts”. Here  $r^* \times E$  (the risk-weighted exposure) =  $r [E - (1 - w) C_A]$ , where  $r^*$  is the risk weight after allowance for risk reduction due to collateralization,  $r$  is the risk weight of the uncollateralized exposure, and  $w$  is the floor factor explained in the text.

treatment of the latter in the 1988 Accord allowance is made in the New Accord for residual risks linked to the underlying obligor even for that part of an exposure covered by the protection due to the guarantee or the credit derivative (for reasons similar to those given above in the case of collateral). Once again there are minimum requirements to be met for recognition of the degree of credit mitigation due to the guarantees or credit derivatives: these concern such matters as relevant features of banks' risk management, disclosure, operational requirements for the contracts involved, and the identity of eligible guarantors and protection providers. Moreover in the case of credit derivatives only transactions classified as credit default swaps and total return swaps are to be eligible for recognition.<sup>20</sup> The risk weight after allowance for the risk reduction due to the guarantee or credit derivative is then a weighted average of the risk weights of the guarantor or supplier of protection and of the underlying obligor, where the weight of the latter is intended to cover the residual risks mentioned above.<sup>21</sup>

The New Accord sets rules covering some but not all of the issues mentioned in section A concerning which the regulation of credit derivatives is still in flux and subject to variation among major national financial markets. For example, when there are mismatches between the exposure and the reference asset whose performance triggers payments under the credit derivative, restrictive conditions regarding the relation between this asset and that issued by the underlying obligor must be met if protection afforded by the credit derivative is to be recognized in setting capital requirements. The BCBS accepts that in the case of a protected exposure the bank suffers a loss only if both the obligor and the supplier of credit protection default. However, in the absence of a satisfactory proxy for the "double default effect", there is no broader recognition of the effects of the lack of correlation between these two risks of default in the New Accord (which will have implications for the costs of different hedges of credit risk). Currency mismatches between the hedging instrument and the exposure are admitted: these are not

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<sup>20</sup> Under a total return swap the seller of risk/buyer of protection pays to the buyer of risk/seller of protection the cashflows generated by a reference asset (including both coupon payments and appreciations in capital value) in return for its cost of funding plus an amount for losses on the asset in the event of a "credit event" that triggers them. Under a credit default swap the buyer of risk receives a premium in return for the obligation to pay an amount linked to losses due to a "credit event". In the case of another generic credit derivative, the credit-linked note, which is not recognized for treatment as a credit derivative in the New Accord, the buyer of risk pays the face value of the note in return for an agreed rate of return until the occurrence of a "credit event", at which time the note is redeemed by the issuer (seller of risk) at a price less than that at its original issue. In the New Accord, when a bank issues such notes to hedge exposures in its banking book, the hedge is treated as collateralization of the exposure by cash and is subject to the capital requirements specified for this technique.

<sup>21</sup> This can be illustrated algebraically for the case in which the unprotected exposure ( $E$ ) is greater than the value of the guarantee or credit protection ( $G_A$ ) so that  $E \times r^* = (E - G_A) \times r + G_A [w \times r + (1 - w) \times g]$ , where  $r^*$  is the effective risk weight for the exposure after allowance for protection,  $r$  is the risk weight of the obligor,  $g$  the risk weight of the protection provider, and  $w$  the factor to cover the residual risk of the obligor.  $w = 0.15$  for all credit derivatives recognized as providing protection and for all guarantees except those provided by sovereigns, central banks and banks for which  $w = 0$ . The logic of the exception made only for certain guarantees is not self-evident: if guarantees provided by banks qualify for a zero  $w$ , it may be asked why this rule should not also apply to credit derivatives from the same source.

a source of outright foreign-exchange risk but of contingent risk since a bank suffers loss only if the borrower fails to pay and the exchange rate moves adversely for the buyer of protection under the hedge. The existence of risk due to currency mismatches is handled in the same way as in the case of collateral, namely through “haircuts” or reductions in the value of credit protection provided. While the requirements of the New Accord regarding credit derivatives constitute a step in the direction of greater regulatory uniformity, they would appear still to leave significant latitude for variation at the national level (and thus also for regulatory arbitrage by banks). Further progress in this area will depend on the improved understanding that will result from more extended experience of these instruments.

***F. The standardized approach to credit risk: (3) asset securitization***

In the New Framework the BCBS proposed that capital charges for asset securitizations should be based on the ratings of ECAIs. This was designed to address investments in paper issued by special purpose vehicles (SPVs) secured on pools of assets in the global market for such paper in which many internationally active banks participate. The proposal on the subject in the New Accord is considerably more detailed and designed to cover the different categories of risk that remain with banks in their roles as originators and providers of credit enhancements as well as investors in the market for securitized assets.

For banks’ investments in securitized assets the BCBS retains the reliance of the New Framework on the ratings of ECAIs for the attribution of risk weights, the relation between such weights and ratings above BBB- being the same as for interbank exposures under the first option of the standardized approach and more stringent treatment being reserved for assets rated BB+ and lower. Much of the rest of the New Framework’s treatment of investments in securitized assets concerns the conditions for the applicability of the so-called “look-through approach” to unrated securitization structures, under which they may be classified as indirect holdings of the underlying asset pools. These conditions are designed to ensure that investors are exposed to these pools and not to the issuer.

Regarding banks’ role as originators of securitized assets and as providers of credit enhancements the New Accord sets out the conditions to be met for securitized assets to be removed from a bank’s balance sheet and the capital requirements for the risks remaining with the bank after securitization. The condition for the assets’ removal from the balance sheet is that there should be a “clean break” between the bank originating the securitization, on the one hand, and the assets after the securitization has taken place, on the other, through their transfer by means of a true sale or subparticipation. The specific requirements are also intended to minimize the subsequent reputational risks to a bank. The remaining rules cover the capital requirements for circumstances where there is no such “clean break” as well as disclosure requirements concerning the scale and nature of a bank’s role in asset securitization which

must be met in order for it to gain more favourable capital treatment for asset securitizations. The circumstances where there is no “clean break” include obligations to provide short-term liquidity in the market for the securitized assets and revolving securitizations with early amortisation features, i.e. securitizations involving loans drawn under commitments to lend, which include, for example, credit-card securitizations as well as commercial loans drawn down under long-term commitments. Early amortisation features here require the originating bank to provide funding at a time when the credit quality of the asset pool is deteriorating and in some cases may lead to situations where the originator’s interest in the securitized assets is effectively subordinated to that of other investors by the formula for the allocation of payments.

Not only originating but also sponsoring banks may provide credit enhancements or liquidity facilities to asset securitizations. Moreover banks may provide various forms of implicit recourse to an asset securitization even where the transaction meets criteria for a “clean break”. The New Accord specifies rules and capital requirements for such situations, while also noting that they involve a number of grey areas concerning which further work is to be carried out as part of the final stage of the consultation process.

### ***G. The IRB approach to credit risk: (1) “foundation”, “advanced” and risk components***

The basic elements of the IRB approach are a classification of exposure by a set of broad categories, for each of these exposure categories the estimation of risk components which in combination determine the risk-weights and the risk-weighted assets for the purpose of estimating capital requirements, and minimum conditions (varying somewhat for the different categories of exposure) to be met if a bank is to be eligible for the different versions of the IRB approach.

The six broad categories of risk exposure under the IRB approach are corporates, sovereigns, banks, retail, project finance, and equity. These differ from the categories of the standardized approach (sovereigns, corporates and banks) but are intended to be more consistent with industry practice and thus more appropriate for the IRB approach.

For exposures to corporates, sovereigns and banks the estimation of risk-weighted assets follows similar lines in each case. The basic inputs into this estimation are probability of default (PD), loss given default (LGD), in some cases maturity (M), and exposure at default (EAD). The first three determine the risk-weight (RW) applying to an exposure. The product of RW and EAD then gives the risk-weighted assets determining capital requirements. Reliance on internal ratings for these inputs differs between the “foundation” and “advanced” versions of the IRB approach. Under the “foundation” version a bank estimates internally the PDs associated with different exposures but relies on supervisory rules for its estimates of the other inputs. Under the “advanced” version banks use their internal estimates of LGD

and EAD (as well as of the effects on their exposure of guarantees and credit derivatives). The proposed treatment of M in the New Accord is still somewhat provisional: the BCBS is leaning towards a requirement under the “advanced” version that assessments of M be provided by banks themselves, while under the “foundation” version it is considering the two alternative options of a uniform assessment of maturity of three years or of explicit maturity adjustments set by supervisors.<sup>22</sup> For reasons explained below the disaggregation of the determinants of the level of risk-weighted assets used for corporates, banks and sovereigns is not considered appropriate or feasible for retail, project-finance and equity exposures. When a bank meets the conditions for any one of the elements belonging to the “advanced” version of the IRB approach, it may adopt this version for the element in question. However, once it has made this move, supervisors would expect it to take the steps required for it to be able to adopt all the elements of the “advanced” version within a reasonably short period of time.

In view of the role of PD, LGD, EAD and M in determining levels of risk-weighted assets the problems involved in generating dependable estimates for each are worth examining in more detail. Such an examination also throws light on some of the difficulties which confront the design of models of credit risk (and which explain the BCBS’s unwillingness to accept banks’ own models for setting their capital charges).

Regarding PD banks themselves have large amounts of data on the frequency of defaults (often covering substantial historical periods) which make possible estimates of default probability for different categories of borrowers. Default rates (cumulative and marginal)<sup>23</sup> are also a subject on which large amounts of data are available from credit rating agencies. The BCBS collected from major banking organisations and trade associations information on their internal capital allocation for large corporate loans. The data were then used to estimate implied risk weights (relative economic capital requirements) attributed by banks to corporate loans with given PD, LGD and M configurations. The exercise indicated broad comparability across banks in the relation between PDs and relative economic capital (for fixed LGD and M) (*Internal Ratings-Based Approach*: 35). A similarly acceptable level of comparability in the measurement of PD for interbank exposures was indicated by the BCBS’ review of internal management in this area (*ibid.*: 73).<sup>24</sup> Banks’ estimates of PD for sovereigns rely heavily on the credit

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<sup>22</sup> The procedures for the treatment of M appear more clear-cut in *The New Basel Capital Accord* (p. 44) itself than in the supporting document, *The Internal Ratings - Based Approach* (pp. 25–27), where there is more emphasis on their provisional character.

<sup>23</sup> The cumulative risk of default measures the total default probability for a counterparty during a specified period (typically the term of an obligation), while the marginal risk of default measures the change in default probability during a shorter period (typically a year).

<sup>24</sup> The nature of the BCBS’s review of banks’ management of interbank exposures is not clear from the description here. But for obvious reasons this is a subject concerning which the BCBS has vast accumulated experience.

assessments of rating agencies, data on credit spreads, and (less frequently) on statistical models, and are also characterized by a reasonable degree of comparability (ibid.: 75). These findings underline the BCBS's decision to accept banks' own estimates of PD for these three categories of exposure in the "foundation" version.

Estimating LGD is less straightforward. LGD depends on the recovery rate, the time taken for and other costs associated with recovery, the value of collateral or of the protection afforded by other techniques of credit mitigation, and the exposure's seniority. The distinction between LGD and EAD is not completely clear-cut. For example, netting, the technique of credit-risk mitigation discussed above in section IV.E, is usually allowed for by means of the resulting reduction under EAD, but an alternative approach via its impact on LGD could equally be envisaged in principle. Some of the difficulties in estimating LGD are due to legal uncertainties limited to default and restructuring, and others to problems of modelling the effects on LGD of collateralization and other techniques of credit-risk mitigation. Despite these difficulties, in the case of exposures to corporates the BCBS's survey of data from major banking organisations, and trade associations indicated that banks' implied risk weights (relative economic capital requirements) "were reasonably proportional" to their assumptions concerning LGD (ibid.: 35). However, its finding for LGD in the case of sovereigns, is that banks' assessments are not yet well developed, partly owing to the scarcity of data on loan recovery (ibid.: 75). Its conclusion concerning LGD for exposures to corporates, banks and sovereigns is that existing measurement practices only justify recourse to banks' own estimates subject to the more stringent requirements of the "advanced" version of the IRB approach.

The data on default rates of rating agencies indicate the dependence of marginal default rates on the maturity of obligations. The typical pattern for publicly issued bonds is that marginal default rates increase with the length of the period considered for entities with high ratings but decrease for those with more speculative ones. A frequent explanation of this pattern is that small and growing firms as well as maturer firms shifting their capital structures in the direction of a greater share for debt face considerable near-term uncertainty regarding their ability to meet their obligations but that, once past these obstacles, often experience an improvement in their outlook. Firms with better ratings, on the other hand, face very low default risk in the near term but further into the future their credit outlook is more uncertain.<sup>25</sup> Nonetheless the process determining the change in marginal default risk through time is not yet considered well understood, and there is a question as to how far the experience of default risk for bonds (the principal subject of rating agencies' analyses) is an appropriate indication for that of loans in the banking book which are intended to be held until maturity. In its review of banks' practices the BCBS found a lack of consensus as to the appropriate adjustment of M for maturity between a mark-to-market (MTM) approach, on the one hand, and a default-mode (DM) approach, on the other: under the former a loan's

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<sup>25</sup> See, for example, the review of Moody's default studies in Fons (1998).

risk rating is linked to an assumed market-based credit spread, an approach which can accommodate data on the marginal default risk of publicly issued bonds, while under the latter the assumption that loan is held until maturity (or default) is thought to require a basis for estimating the risk of loss different from its market-based credit spread (*The Internal Ratings-Based Approach*: 36–40).

The EAD for a drawn loan with a fixed repayment schedule is simple to estimate, and a similar approach focussing on nominal values can be used for other on-balance sheet exposures. Off-balance sheet exposures such as those due to undrawn credit commitments, guarantees, and OTC derivative transactions are more complex. For OTC derivatives the credit risk is limited to the cost of replacing the cash flow (on contracts with a positive value) if the counterparty defaults. Although this amount is often only a small percentage of the nominal amount of the transaction, total net exposure on this count for a bank can be large and hard to estimate owing to its dependence on assumptions about future interest rates and asset prices.<sup>26</sup> Here too the BCBS has concluded that recourse to banks' own estimates of EAD should be conditional on the more stringent requirements of the "advanced" version of the IRB approach.

While for corporate exposures banks' systems typically assign specific ratings to borrowers and loans which can be linked to a schedule of default probabilities, for retail loans<sup>27</sup> banks rely on division of their portfolios into segments consisting of exposures with similar risk characteristics. PD and LGD or expected loss (EL) (determined by PD and LGD)<sup>28</sup> are then assessed and quantified at the level of segments rather than of individual exposures, an important role here often being played by scoring practices used for managing approval, monitoring, control and collection. The BCBS's survey of industry practice regarding banks' retail exposures showed substantial diversity in the way in which key concepts are given operational form. Nevertheless such are the availability and usefulness of data on risk and borrowers' performance for this category of exposure that subject to specified conditions the BCBS decided to admit use of banks' own estimates of the key inputs to the estimation of risk-weighted assets, a decision which would entail no distinction between "foundation" and "advanced" versions of the IRB

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<sup>26</sup> Matten (2000: 197–199) illustrated the skewed, non-linear time pattern of a bank's exposure under a single receive-fixed/pay-floating interest-rate swap with an initial maturity of 10 years.

<sup>27</sup> The BCBS's definition of retail exposures is based on criteria intended "to capture homogeneous portfolios comprising a large number of small, low value loans with either a consumer or business focus and where the incremental risk of any single exposure is small" (*The Internal Ratings-Based Approach*: 55–56).

<sup>28</sup> It should be noted that under the New Accord an operational distinction is not drawn between expected losses (i.e. the average level expected from a set of exposures during a given period) and unexpected losses, estimated as a measure of the volatility of expected losses. This is in contrast to the literature of the subject and to widespread practice under which expected losses are treated as a cost of doing business and often covered by reserves set aside for the purpose, while unexpected losses are covered by risk capital. The reason for the BCBS's decision is the lack of uniformity among different countries' regimes in the definition of provisions for losses or loan loss reserves as well the inclusion of general provisions for losses in capital under the 1988 Basel Capital Accord. Risk weights in the New Accord are thus calibrated to include expected as well as unexpected losses, but the definitive treatment of this issue is a subject on which the BCBS is inviting further comment during the final stage of the consultation process (ibid.: 40–41).

approach. These inputs are EAD and either PD and LGD or EL. The option of single EL estimates is accepted on the grounds that, where banks use this combined figure for risk rating, the incremental benefits often do not justify disaggregation into the separate determinants, PD and LGD. M. is not explicitly recognized as a separate input for retail exposures.

Project finance covers lending where the performance of the project “is intended to warrant the debt service and, accordingly, serves as the primary source of repayment”(ibid.: 85). It is a major source of financing for sectors such as natural resources, mining, power, transport infrastructure, construction, telecommunications, and commercial real estate. Several features of project financing differentiate the determination of PD, LGD, EL and EAD from that for corporate exposures, including the degree of uniqueness of transactions (which implies the lack of a track record for assessing risk), the structuring of the project in such a way that its cash flows can meet the obligations of debt service, banks’ willingness to accept debt restructuring in the event of difficulties in meeting these obligations, and the intensity of the interactions between PD, LGD and EAD. M is once again a relevant risk input for project financing. As a result of these considerations the approach of the New Accord to the subject is still tentative and provisional, and a decision has not been taken as to whether a distinction will be needed between “foundation” and “advanced” versions of the IRB approach.

The discussion in the New Accord of possible ways to treat equity holdings in the banking book is still more tentative. Unsurprisingly in view of the inapplicability of the legal concept of default to equity holdings, approaches based on the risk inputs, PD, LGD and EL are not common features of industry practice. The BCBS notes that a number of international banks estimate exposure under this heading through approaches based on market risk and stress testing. But its description of these approaches is sketchy, and (as mentioned above) equity holdings in the banking bank are a subject concerning which the BCBS is seeking further feedback during the final stage of the consultation process.

#### ***H. The IRB approach: (2) risk-weighted assets***

As already described, risk-weighted assets are estimated under the IRB approach as the product of RW and EAD, where RW is a function of PD, LGD and M, the objective being a figure more finely tuned to the risks of different exposures than under the standardized approach. For exposures to corporates, sovereigns and banks the basic formula for RW is the smaller of  $(LGD/50) \times BRW_c(PD)$  or  $12.5 \times LGD$ , multiplied by  $[1 + b(PD) \times (M-3)]$  (where the subscript c denotes corporates exposures and  $b(PD)$  is a maturity adjustment factor depending on PD).  $BRW_c$  is a continuous function of PD selected on the basis of pooled survey and model-based evidence to represent the relation between PD and RW for a benchmark loan with a three-year maturity and LGD of 50 per cent. It is itself the product of three factors: the first represents the sum of expected and unexpected losses associated with a

hypothetical portfolio of one-year loans with LGD of 100 per cent, the second an adjustment to reflect the calibration of the IRB benchmark RW to a three-year average M, and the third a scaling factor set so that the IRB benchmark RW is 100 per cent for values of PD and LGD of 0.7 per cent and 50 per cent.  $(LGD/50)$  is a factor designed to adjust  $BRW_c$  for the difference between actual LGD and the 50 per cent level for the benchmark loan, and  $[1 + b(PD) \times (M-3)]$  a factor to adjust for maturities other than three years.  $b(PD)$  is non-negative, so that RW increases for longer maturities.

To be eligible for the IRB approach a bank must meet requirements regarding its differentiation of credit risk and the completeness and integrity of its ratings, the oversight of its rating system, its rating criteria, its estimation of PD, its data collection and information systems, the incorporation of its internal ratings into its management and financial decisions, its system for validating the consistency and accuracy of its ratings, and disclosure. Additional minimum requirements must be met for banks' eligibility for the "advanced" as opposed to the "foundation" version of the IRB approach.

Some of the eligibility requirements merit more detailed discussion here owing to the light thus thrown on the meaning of the terms in the algebraic expressions above. Under both versions of the IRB approach rating systems should have two dimensions, one to cover the risk of default and the other transaction-specific factors such as collateral and other associated conditions. There should be a minimum of between six and nine grades for performing loans, and a minimum of two grades for non-performing ones, and avoidance of excessive concentration of loans in any one grade. A key input of the IRB approach is a one-year estimate of PD for different categories of exposure. Such an estimate should be based on a conservative view of the long-run average (using an observation period of at least five years), and can be generated by three techniques, (i) internal default experience, (ii) mapping to external data, and (iii) statistical default models. Moreover the estimate should be based on a reference definition of the events constituting default (*The New Basel Capital Accord: 52*).

Under the "foundation" version of the IRB approach banks are to estimate LGD and EAD in accordance with standard supervisory rules. In the case of LGD senior claims without specifically recognized collateral are assigned a figure of 50 per cent, and subordinated claims without such collateral a figure of 75 per cent. The rules for the recognition of collateral are similar to those of the "comprehensive" approach to this subject under the standardized approach to credit risk described above in section IV.E. However, the supervisory rules under the "foundation" version of the IRB approach also admit as eligible capital commercial and residential real estate that meets minimum conditions regarding the value of the collateral in relation to that of the exposure. Owing to the wide variety of practice, recovery and loss experience among countries, the standard supervisory rules do not admit other real collateral such as inventory, accounts receivable, and plant and equipment. The EAD of on-balance sheet exposures is valued under the supervisory rules of the "foundation" version at their nominal amounts (subject to allowance for netting of loans and deposits). The EAD of off-balance sheet exposures

involving transactions with an uncertain future drawdown is to be 75 per cent of the off-balance sheet amount for commitments and similar revolving credits, and is estimated with a set of credit conversion factors for various other items (direct credit substitutes, transaction-related contingent items such as performance bonds, short-term self-liquidating trade-related contingent items, sale and repurchase agreements and asset sales with recourse, various forward commitments, and note issuance and revolving underwriting facilities). The EAD of OTC derivatives is estimated as in the 1988 Basel Capital Accord on the basis of the replacement cost plus specified “add-ons” varying by transaction type and residual maturity to reflect potential future exposure. As mentioned in section IV.G, for M under the “foundation” version of the IRB approach the BCBS puts forward two possible options: treatment of all exposures as having the same (conservatively assessed) maturity of three years – which is equivalent to a maturity adjustment of zero in the expression for RW and BRW above; or, secondly, an estimate of maturity implemented by supervisors along the lines proposed for the “advanced” version of the IRB approach.

Many of the requirements under the “advanced” version for banks’ eligibility for use of their internal estimates of LGD and EAD are similar to those for estimates of PD under the “foundation” version, and concern standards to be met by banks’ rating assignments, oversight, internal validation, disclosure etc. For LGD they also explicitly address estimation difficulties mentioned in section IV.G such as those due to legal regimes (especially for insolvency) and those of costs resulting from the time required for recovery. Owing to the greater uncertainty of estimates of LGD and the smaller amount of available external information capable of serving as benchmarks than for PD, the minimum observation period for the data to be used in estimating LGD is to be seven years. As in the case of the supervisory rules under the “foundation” version of the IRB approach, for collateral under LGD the “advanced” version builds on the “comprehensive” approach to the subject of the standardized approach to credit risk. However, eligible collateral is no longer limited to specified categories of financial instrument and real estate, and includes a wider range of types of real collateral. Moreover the recognition of possible sources of impairment of the collateral’s value does not have to be through the system of “haircuts” described in section IV.E. Nor is there any floor factor to take account of minimum residual risk exposure. For EAD too under the “advanced” version of the IRB approach the minimum observation period for data used in estimation is to be seven years. Banks are to provide their own estimates of EAD for instruments with uncertain drawdown and for OTC derivatives.

Under the “advanced” version of the IRB approach banks are required to include explicit estimates of exposures’ M in their RW (and are thus not permitted to use the standard conservative estimate of three years mentioned earlier). M is defined as the greater of one year or either (i) the maximum remaining time that a borrower has to discharge his contractual obligations (normally a loan’s nominal maturity) or (ii) the weighted average of the periods when principal is contractually payable (the weights

being the amounts of principal due). Under both the latter definitions M is capped at seven years owing to research indicating that for M greater than this the method for adjusting RW specified at the beginning of this section begins to overstate maturity's impact on the risk of loss.

As already mentioned, estimation of risk-weighted assets for banks and sovereigns follows lines very similar to those for corporates, one difference being that PD for sovereigns (which are often effectively free of credit risk) is not subject to the floor of 0.03 per cent applying to loans to corporates not covered by a third-party guarantee or credit protection. However, for reasons already discussed in section IV.G, the proposals of the New Accord for retail, project-finance and equity exposures are still much less well developed (in the case of the last two categories markedly so).

For retail exposures the principal option for RW proposed in the New Accord is of a form similar to that for corporates, i.e. the smaller of  $(LGD/50) \times BRW_R (PD)$  or  $12.5 \times LGD$  (where the subscript R refers to retail exposures).  $BRW_R (PD)$  is again a product of three factors as in the case of the corresponding function for corporates but with different values for some of the parameters, so that a given PD generates a lower  $BRW_R$  than  $BRW_C$ . As mentioned in section IV.G, the BCBS is also proposing to allow an estimate of RW for retail exposures which incorporates as an input expected loss, EL, as opposed to its two determinants, PD and LGD, but has yet to decide on a formula for this purpose. One of the advantages of the IRB approach in the case of retail exposures is the scale and usefulness of source data on risk and borrower performance available to many banks. In view of this the BCBS does not differentiate for such exposures between a "foundation" and an "advanced" version, so that here all eligible banks are required to provide data on LGD and EAD as well as on PD. Thus, for example, eligible banks are expected to provide their own estimates of EAD for off-balance-sheet items such as unused commitments with uncertain drawdown. As in the case of corporate exposures, the benchmark average maturity used to derive the expression for RW is three years. But on the basis of surveys of industry practice the BCBS has decided not to include in this expression an adjustment factor to allow for maturities other than three years.

For project-finance exposures the BCBS sketches three possible options for calculating risk-weighted assets: the first would be based on banks' internal estimates of the inputs, PD, LGD and EAD, but would have to confront difficulties due to the lack of data of a quality comparable to that for retail exposures and to often higher correlations among the three inputs; the second option would be based on banks' own estimates of EL and EAD; and the third option would allow use of both of the first two (similarly to retail exposures). In the case of project finance, owing to the scale and duration of the activities involved, an explicit adjustment for M would be required for the estimation of RW. For equity exposures in the banking book the proposals in the New Accord are still more underdeveloped, the alternatives proposed being a framework for equity as far as possible analogous to that for corporate debt or one involving values based on estimates of market risk.

Empirical research on the distribution of a bank's exposures by rating grade points to a frequent tendency to clustering in a few (often two or three) of grades.<sup>29</sup> This coarseness or lack of "granularity", to use the BCBS' term, can indicate residual risks due to the concentration of exposures above a threshold size to borrowers or other counterparties with similar characteristics. As a safeguard against the underestimation of risk owing to such interdependence the New Accord makes an allowance in the IRB approach by means of an adjustment applied to all exposures other than retail.<sup>30</sup> Firstly, IRB risk weights are calibrated for a hypothetical bank with a benchmark level of "granularity" in its exposures. Then the adjustment is calculated as the difference between indicators of "granularity" for an actual bank and for the hypothetical one. If the difference is unfavourable to the actual bank, its risk-weighted assets are increased by the adjustment, but if favourable, they are reduced.

### ***I. The IRB approach: (3) credit risk mitigation and asset securitization***

The rules for the treatment of collateral under the IRB approach are described above in section IV.H in connection with LGD. For the other forms of credit risk mitigation, guarantees and credit derivatives, the treatment in the standardized approach to credit risk and the "foundation" version of the IRB approach are effectively the same, and in the "advanced" version the basic concepts are also the same but banks have greater latitude regarding the estimation of risk parameters and eligible guarantors.

Under the supervisory rules for guarantees and credit derivatives in the "foundation" version of the IRB approach the estimation of the credit protection provided "draws heavily upon the treatment of guarantees and credit derivatives in the standardized approach", under which the modified RW is a weighted average of that of the guarantor or protection provider and of the original obligor (*The Internal Ratings-Based Approach*: 16). Indeed, the only difference would appear to concern the range of eligible guarantors and protection providers, the "foundation" version of the IRB approach including certain unrated but highly creditworthy companies as well as the sovereign entities, public-sector enterprises, banks with a lower RW than the underlying obligor, and corporates rated A or better (which are admitted for this purpose in the standardized approach).

Under the "advanced" version of the IRB approach (described by the BCBS as still provisional in some respects) the bank would make its own adjustment of its estimate of risk-weighted assets to reflect the effect of the guarantee or credit derivative. But under this "substitution ceiling" approach the "notching" of the rating of the exposure would not be allowed to go beyond the better of the grade of the

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<sup>29</sup> For a summary of such research findings in the case of United States see Matten (2000: 204–205).

<sup>30</sup> The exclusion of retail exposures from the "granularity" adjustment is due to their small size and to mutual correlations typically lower than for corporate exposures, factors which result in their having at most limited effects on the "granularity" of banks' portfolios.

guarantor or protection provider. Thus here too the BCBS is refusing to recognize the “double default effect”, the term mentioned in section IV.E which covers the possible effect on the risk of an exposure covered by a guarantee or credit derivative of the low correlation of the risk of simultaneous default by both obligor and guarantor or provider of credit protection. The same restrictive conditions as in the standardized approach and the “foundation” version of the IRB approach apply to recognition of mismatches between underlying exposures and the reference assets used for credit risk mitigation.<sup>31</sup> However, under the “advanced” version of the IRB approach no allowance would be required for the residual risk of the obligor, and there would be no limits on the range of eligible guarantors (though this additional flexibility is not specified for the suppliers of credit derivatives).

For asset securitization the IRB approach (with no distinction here between “foundation” and “advanced” versions) follows rules similar to those for the standardized approach (but rules still considered by the BCBS as requiring further elaboration). For issuing banks retained first-loss positions would be deducted fully from capital. In the case of banks’ investing in securitized assets, as for the standardized approach, primary reliance would be placed on the ratings of ECAIs, but here these ratings would be mapped into banks’ own estimates of PD with the aim of achieving greater risk sensitivity. LGD is provisionally set at 100 per cent.<sup>32</sup>

#### ***J. The IRB approach: (4) pro-cyclicality and the costs of international lending***

As described in section III.C above, the concerns aroused by the New Framework of 1999 included its possible effects on the costs of international lending for different countries and the additional impulse to procyclicality in such lending which might be expected from use of rating agencies’ credit ratings in setting the risk weights for banks’ exposures. The question naturally arises whether similar concerns are justified in the case of the fleshed-out IRB approach of the New Accord. As Helmut Reisen of the OECD Development Centre has pointed out, this question can be addressed tentatively on the basis of the mapping in the New Accord from default rates (PD) for corporates to corresponding risk weights

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<sup>31</sup> Surprisingly reference assets in the treatment of guarantees and credit derivatives in *The Internal Ratings-Based Approach* (p. 17) are specified as applying to both guarantees and credit derivatives, whereas in *The Standardised Approach to Credit Risk* (p. 33–34) they are discussed only as part of the operational requirements for credit derivatives.

<sup>32</sup> In *Asset Securitisation* (pp. 15–16) the BCBS also addresses the treatment of synthetic securitization, namely transactions in which credit derivatives (sometimes in conjunction with collateralization) are employed to shift credit risks between banks, SPVs and other investors. The problem here is to devise a treatment of the exposures involved (in particular the risks remaining with banks) which is consistent with the New Accord’s rules for credit risk mitigation and asset securitization.

(BRW<sub>c</sub>) for loans with the bench-mark maturity of three years and LGD of 50 per cent (Reisen, 2001).<sup>33</sup> Since default rates can in turn be mapped in the credit ratings of an agency such as Moody's, a correspondence can be established between agency ratings and risk weights. This correspondence is illustrated in table 2 (which is taken from Reisen's paper).

As Reisen notes, only 22 of more than 50 non-OECD rated sovereigns have credit ratings of investment grade (BBB-) or higher, the remaining members of the group being rated as of speculative grade. One-year default rates for speculative grade issuers in Moody's Global Database have oscillated during the last 30 years between 1 per cent in calm periods and 10 per cent in years of crisis. Although one-year default rates do not correspond to the parameters of the mapping between PD and BRW<sub>c</sub> in the New Accord, this experience does point to the likelihood of substantial pro-cyclical shifts in risk weights for the cross-border borrowing of the majority of developing countries.

In the case of the costs of financing an exercise based on the mapping in table 2 points to declines for sovereigns with ratings of BBB or higher but sharp increases for those with ratings below investment grade. In this exercise borrowers with different ratings are assigned different spreads over LIBOR which are assumed to correspond to "break-even" or normal levels for banks' lending to the countries in question. This spread is then divided by the new level of capital corresponding to the risk weights of the IRB approach to estimate a new "risk adjusted return". The consequent rise (fall) in the country's cost of borrowing (the change in "the break-even spread") in basis points<sup>34</sup> is then calculated as the decrease (increase) in the "risk adjusted rate of return" compared with that under the 1988 Basel Accord multiplied by the assumed level of capital under the New Accord.

For a BBB sovereign the calculation works as follows: the assumed LIBOR spread is 100 basis points and under the 1988 Accord required capital per \$100 of exposure would be \$8 and the "risk adjusted return" would be 1/8 or 12.5 per cent, while under the IRB approach required capital (corresponding to a fall in risk weight from 100 to 40) would be only \$3.2 per \$100 of exposure and the "risk adjusted return" would rise to 1/3.2, or 31.3 per cent; and the fall in borrowing costs (or in the "break-even spread") is then  $(31.3-12.5) \times 3.2 = 60$  basis points.<sup>35</sup> For a BB (below-investment-grade) sovereign, for which the assumed LIBOR spread is 400 basis points, required capital (corresponding to

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<sup>33</sup> The mapping used by Reisen is an interpolation estimated from a regression equation based on the observations for PD and BRW<sub>c</sub> in *The Internal Ratings-Based Approach* (table 3, p. 33).

<sup>34</sup> A basis point is 0.01 of a rate of interest or rate of return measured in per cent.

<sup>35</sup> Under the IRB approach the BCBS does not directly address the issue of incentives to short-term international (particularly interbank) lending. However, as Reisen points out, here also tentative conclusions are possible on the basis of the mapping from PD to BRW<sub>c</sub>. Data from Moody's point to a level for PD likely to correspond to significantly lower BRW<sub>c</sub> and RW than under the 1988 Basel Accord and thus to be translated into lower required capital. For a given spread above LIBOR this in turn would increase the "risk adjusted return" and thus also the incentives associated with such lending.

**Table 2**  
**Proposed IRB risk weights for hypothetical corporate exposures**  
**with LGD of 50 per cent**

	<i>Agency rating</i>	<i>Probability of default (per cent)<sup>a</sup></i>	<i>Risk weight<sup>b</sup></i>
Investment grade	AAA	0	0
	AA+	0	0
	AA	0.07	7.0
	AA-	0.21	20.8
	A+	0.37	36.2
	A	0.16	15.9
	A-	0.28	27.6
	BBB+	0.59	56.9
	BBB	0.41	40.0
	BBB-	1.28	118.1
Speculative grade	BB+	3.77	293.9
	BB	5.46	378.7
	BB-	11.76	529.9
	B+	15.03	559.9
	B	19.85	630.3
	B-	27.79	1063.5
	CCC and below	31.38	1493.1

**Source:** BCBS, *The Internal Ratings-Based Approach* (pp. 32–33); Reisen’s interpolation; and Moody’s Investors Services as reproduced in Reisen (2001).

**a** Average three-year cumulative historical probability of default for corporates during 1980–1998

**b** Reisen’s calculation of  $BRW_c$  by interpolation from a third-degree curve estimated by regression from the numbers in the mapping from PD to  $BRW_c$  in BCBS, *op. cit.* (table 3, p. 33).

a rise in risk weight from 100 to 379) would increase from \$8 to \$30.3 per \$100 of exposure, and the “risk adjusted return” would fall from 50 per cent to 13.2 per cent, requiring an increase in borrowing costs (or in the “break-even spread”) of  $(50 - 13.2) \times 30.3 = 1115$  basis points. The estimated rise in borrowing costs for a sovereign rated B, for which the assumed LIBOR spread is 700 basis points and the rise in the risk weight under the IRB approach would be from 100 to 630, would be more than three times that for the BB sovereign.

As Reisen himself readily acknowledges, his estimates are only indicative of tendencies implicit in the figures provided by the BCBS and “market spreads are unlikely to react as dramatically” as in his examples. To the extent that perceptions of risk associated with lending to developing-country sovereigns with below-investment-grade ratings do not correspond to risk levels associated by market participants

with the rates of return in the illustrative examples, the rules of the IRB approach could be expected to lead to extensive recourse to interest-rate arbitrage, which would be likely to involve, *inter alia*, financial intermediaries and other parties such as suppliers whose lending would not be covered by the New Accord. Moreover there would be several avenues under the New Accord itself for lowering the cost of lending to developing countries. These would include use of collateralization and guarantees. Thus Reisen's calculations may point as much to an area in which the New Accord furnishes substantial incentives to regulatory arbitrage and credit risk mitigation as they do to the likelihood of substantial rises in borrowing costs for many developing countries.

### ***K. Operational risk***

Surveys conducted for the BCBS have suggested that quantification of operational risk for the purpose of capital allocation and risk management is still at a fairly underdeveloped stage in most banks (*Operational Risk*, Annex 1), and the 3-option approach of the New Accord is intended to accommodate this situation. Even the definition of operational risk remains subject to considerable variation. For the purpose of the New Accord, it is defined as "the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events". This elastic definition would clearly cover the category of "event" risks under the overall heading of operational risks but not necessarily other categories proposed in some quarters such as "business risks" (which are those due to strategic errors in decision making).<sup>36</sup> "Event" risks include those due to human error and fraud, the failure of computer systems, the breakdown of systems of internal control, disruptions of relations with external suppliers (for example, public utilities and suppliers of other inputs), and natural disasters. The categories would obviously cover well publicized cases such as the fraudulent trading at Barings and Daiwa Bank, as well as risks associated with banks' ongoing adoption of new technology in a growing number of their activities and their diversification into new areas such as brokerage and insurance. However, the New Accord excludes strategic or reputational risks in its definition of operational risks for the purpose of setting a capital charge.

For reasons similar to those in the IRB approach (and discussed in footnote 28) the BCBS intends its capital charges for operational risk to cover expected as well as unexpected losses, though it proposes to allow some (still unspecified) recognition for provisioning linked to operational risks. On the basis of a survey of a sample of banks with methods for determining and allocating capital under this heading the BCBS attributes a key role to a figure of 20 per cent of minimum regulatory capital in the estimate of capital charges under two of the three options in the New Accord.

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<sup>36</sup> For a survey of alternative definitions of operational risk see Matten (2000: 208–212).

Under the simplest of these options banks would hold capital for operational risk equal to a percentage (denoted alpha) of gross income (i.e. net interest income and net non-interest income excluding extraordinary and irregular items but before deductions for operational losses). The provisional proposal of the New Accord is that alpha should be set at 30 per cent, and the BCBS's expectation appears to be that this will lead to levels of capital for operational risk amounting to about 20 per cent of minimum regulatory capital (*Operational Risk: 6*).

Under the second option, the standardized approach, banks' activities are classified, firstly, by business units (investment banking, banking, and others) and, secondly, under each of these units by business lines, those specified for banking, for example, being retail banking, commercial banking, and payments and settlement. For each business unit/business line an indicator (such as annual average assets for retail and commercial banking or annual settlement throughput for payments and settlement) is specified as a rough proxy for the amount of associated business risk. The capital charge for each business line is calculated by multiplying the indicator by the capital factor (beta) assigned to it, and the total capital charge is the sum of regulatory capital charges for a bank's different business lines. The betas are to be set by supervisors but the BCBS provides illustrative guidance as to how they should proceed. The first step is to estimate the relative weightings or importance of different business lines within a typical bank's total activities on the basis of available quantitative information. This weighting is then combined with information from the sample survey of banks with methods for determining and allocating capital for operational risk as follows: beta for a given business line is equal to the line's relative weighting multiplied by the ratio of 20 per cent of the total current minimum regulatory capital for banks in the sample to the sum of the values of the financial indicator for the business line for these banks. But it is not altogether clear how these procedures would be embodied in actual supervisory rules. If the intention is that national supervisory bodies would estimate the beta on the basis of local data, the result may be wide international variations in betas. If, on the other hand, the estimates are to be based on data for a sample of benchmark internationally active banks, guidelines on the way these are to be incorporated in national supervisory rules will surely be necessary.

While the requirements for eligibility for the standardized approach are more stringent than those expected of banks using the basic indicator approach, they are still fairly simple and would appear to be intended to act as an incentive to the establishment of a basic independent management infrastructure for the control of operational risk. The requirements for eligibility for the third option, the internal measurement approach, are altogether more demanding and include more fully developed data and measurement systems for operational risks and adequate staff with the appropriate skills.

Under the internal measurement approach a bank's activities are classified into the same business units/business lines as in the standardized approach. A set of types of operational losses (for example, write-downs, loss of recourse, restitution, legal liability, regulatory and compliance-related, and loss of or

damage to assets) is then applied to each business line and linked to an exposure indicator (EI) (for example, volume of transactions for losses due to write-downs in the case of commercial banking) specified by the bank's supervisor. The bank provides internal estimates for each business line/loss type of the probability of the loss event (PE) and of the loss given that event (LGE). The product of EI, PE and LGE is then calculated as the expected loss (EL). The supervisor provides the factor ( $\gamma$ ) which is multiplied by EL to give the capital charge for each business line/loss type. The total capital charge is the sum of those for different business lines/loss types (subject to a minimum amount of "floor" set in accordance with supervisory rules). The simple summation reflects the fact that the BCBS does not believe that measurement and control of operational risks has yet reached a stage of development where "portfolio effects" reflecting diversification of a bank's operational risks can be admitted for the purpose of reducing capital charges.

The BCBS acknowledges that quantification and control of operational risk is a subject where practice is changing especially rapidly. In particular it refers in this context to a more sophisticated "internal methodology", the Loss Distribution Approach (LDA), now being developed, under which, on the basis of internal estimates of probability distribution functions for each business line/risk type for the impact and frequency of loss events, the bank estimates the probability distribution of cumulative operational loss, capital charges then being set on the basis of losses exceeding a probability threshold. But the BCBS considers that further development and experience of LDA is necessary before it can be admitted as an option for supervisory capital requirements.

Unsurprisingly industry concerns are especially wide-ranging in an area where the development both of its own practices and of supervisory rules is at an early stage. One target of such concerns are the capital factors,  $\beta$  under the standardized approach and  $\gamma$  under the internal measurement approach, whose levels are capable of substantially affecting the profitability of different business lines. Another is disclosure (a subject already touched on in section IV.C). Here the BCBS recommends that "banks should publicly, and in a timely fashion, disclose detailed information about the process used to manage and control their operational risks and the regulatory capital allocation they use"; and puts forward the suggestion that "in the longer term such disclosures will form part of the qualifying criteria to use internal approaches" (ibid.: 4). A problem here is that the very rapidity of the development of techniques for measuring and controlling operational risks renders them a potential source of competitive advantage for banks with the result that this is an area for possible disagreements as to the respective weights to be given to transparency, on the one hand, and legitimate demands for the right not to disclose certain proprietary information, on the other.

## **L. The definition and valuation of items in the trading book**

The New Accord contains a section on “Trading Book Issues” which covers definitional matters, guidance on valuation, and revisions to the provisions of the 1996 *Amendment to the Capital Accord to Incorporate Market Risks* covering capital charges for specific risks associated with certain financial instruments. Elaborating the definition of the trading book is presumably, *inter alia*, intended to help in preventing regulatory arbitrage through the shifting of items between the banking and trading books and in helping supervisors in the assignment of new financial instruments such as credit derivatives to one or the other (both issues mentioned in section II). The guidance on valuation is presumably a response to the growing importance to banks of traded assets for which liquidity can be drastically reduced, on occasion to the point of virtual disappearance in disorderly markets. In such situations difficulties regarding the valuation of traders’ positions can contribute to market panic.<sup>37</sup>

The revised definition of the trading book fleshes out the meaning of “the trading intent” associated with items belonging to it by specifying policies and procedures acceptable as evidence of such intent. The definition of a hedge is elaborated to “a position that materially or entirely offsets the component risk elements of another trading book position or a set of positions” (*The New Basel Capital Accord*: 100).

In the 1996 *Amendment to the Capital Accord to Incorporate Market Risks* the rule is that all items should be marked to market for the purpose of measuring market risk (BCBS, 1996, para. 5). Under the New Accord this procedure is still to be followed “as much as possible”, but when this is not feasible, “banks may mark to model”, this procedure being defined “as any valuation which has to be benchmarked, extrapolated or otherwise calculated from a market input”. Recourse to marking to model has “to be demonstrated to be prudent”, and supervisors are directed to consider the fulfilment of a number of requirements in deciding whether this condition is met, in particular regarding the validation of the models used as well as the awareness of a bank’s senior management of the items subject to marking to model and of the materiality of the uncertainty thus created in the reporting of risk and performance (*The New Basel Capital Accord*: 100–101). Explicit regulatory recognition of valuation problems usefully draws attention to a subject closely related to possible fault-lines in financial markets during episodes of financial

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<sup>37</sup> Henry Kaufman has usefully summarized such valuation difficulties as follows: “Alongside the development of securitization, there has been a rapid expansion in the practice of marking to market. ... Even so, it is important to recognize that marking to market is an imperfect process, especially under difficult market conditions. Generally speaking, it tends to *overstate* values and to offer investors a kind of false comfort. When market conditions deteriorate and liquidity seizes up, no one can really claim that the last quoted price in organized markets (such as the NYSE) or quoted by dealers in the over-the-counter market is the real market value – at least not without taking into consideration the size of an intended trade, the credit quality of the issuer, the activity of other market participants, and related dimensions of the transaction” (Kaufman, 2000: 316–317).

instability but has nonetheless to confront limitations on the likely effectiveness of guidance due to human understanding and the state of the art as to measurement and modelling.<sup>38</sup>

## V. CONTINUING CONCERNS

The documents setting out *The New Basel Capital Accord* are impressive in the scope of their coverage despite the still provisional or unfinished character of parts of the blueprint. Yet the proposals also raise several concerns, not all of which will be easy to address within the present framework of the proposals. One set of concerns relates to the New Accord's impact on supervisory divergences among countries, cross-border competition between banks, and cooperation between national supervisors. Another potential source of problems for global financial governance is the relation of the New Accord to ongoing exercises involving codes and standards. And a further set of issues involve the possible effects of the New Accord on banking operations, in particular on regulatory arbitrage (the reduction of which is one of the targets of the whole exercise) and on economic activity and international capital flows.

As noted in sections I and III, the BCBS now finds itself in the role of global standard setter for banks. In consequence the proposals of the New Accord have been crafted to accommodate banks of very different levels of sophistication. Yet the effort to achieve this aim may compromise in ways difficult to predict the New Accord's basic objective of enhancing competitive equality by actually creating regulatory divergences in some areas of banking practice and both within and between different countries.<sup>39</sup> To the extent that the outcome is a multi-track regime for prudential capital internationally, characterized by significant differences among countries in the sophistication of supervision, the difficulties of achieving effective cross-border cooperation amongst supervisors are likely to increase. These difficulties are capable of spilling over into areas for supervisory cooperation other than prudential capital requirements such as information sharing and mutual recognition of regulatory standards.

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<sup>38</sup> To quote Henry Kaufman again: "Mathematics and the computer technology that permits financial market participants to exploit its power have a dark side. ... What we all know now is that historical trading patterns are a useful starting point for assessing risk, but only a starting point. Most instances of sudden deterioration in credit standing of a corporate or government borrower are not predictable. They reflect submerged weaknesses in underlying economic or financial structures that are not captured by the available data. Models are basically backward looking and are essentially useless when the underlying structure changes. One of the key structural changes is the loss of liquidity. In the case of managing elaborate positions of options and other complex financial derivatives, models that provide good formulas for conducting dynamic hedging under normal circumstances are of no assistance when transactions cannot be made without huge price concessions" (Kaufman, 2000: 316–317).

<sup>39</sup> The need to include "within" as well as "between" here can be illustrated from the case of the United States where only about 20 out of 9000 banks have the set of characteristics necessary for their characterization as "large, complex and internationally active". The remainder vary between banks of medium size and community banks (Meyer, 2001).

As noted in section IV.B, the New Accord poses new problems in the context of the implementation of key standards for financial systems, a major component of international initiatives to strengthen the so-called international financial architecture.<sup>40</sup> In the case of banking the key standard is the BCBS's *Core Principles for Effective Banking Supervision*. Under the heading of "development and implementation of prudential regulations and requirements" these Principles include the setting of "prudent and appropriate minimum capital adequacy requirements for all banks" which "at least for internationally active banks ... must not be less than those established in the Basle Capital Accord and its amendments" (BCBS, 1997, sect. IV.B.I). In practice the New Accord is likely to provide the framework for setting levels of capital adequacy for all banks<sup>41</sup>, and in this role to have an integral connection to key standards for financial systems. Attention was drawn in section IV.B to the resulting administrative burden for developing countries: not only will supervisors in these countries face a substantial increase in the complexity of their primary responsibilities as a result of the New Accord but they will also have to cope with the additional administrative burden due to its incorporation in assessment exercises regarding compliance with the key standards. As also mentioned in section IV.B, the link between the New Accord and key standards for financial systems also implies that implementation will become a subject for IMF Article IV surveillance and part of the conditionality associated with the IMF's new CCL facility.

A major objective of the exercise leading to the New Accord is the reduction of regulatory arbitrage due to banks' pursuit of economic incentives within a framework of regulatory rules, which leads to outcomes at variance with the framework's objectives. However, the very comprehensiveness and detailed character of the rules of the New Accord will almost inevitably be a source of new opportunities for regulatory arbitrage (some of which were mentioned above, for example, in the discussion in section IV.J of the New Accord's effects on the cost of lending to developing countries). It is difficult to visualize how this could be avoided, but regulatory arbitrage is likely in future to be a source of continuing pressures for further amendments to the New Accord.<sup>42</sup>

As mentioned in section IV.J, the proposed risk weights of the IRB approach are capable of leading to substantial rises in interest rates for lending to borrowers with low credit ratings both within countries

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<sup>40</sup> For a survey of the themes of these key standards and issues regarding their implementation, see UNCTAD (2001, Part Two, chap. IV).

<sup>41</sup> As stated in *Overview of The New Basel Capital Accord* (p. 7), "The Accord should focus on internationally active banks, although its underlying principles should be suitable for application to banks of varying levels of complexity and sophistication".

<sup>42</sup> In conversation with the author one senior risk manager, after quoting Chris Matten on the creation of "a cottage industry in regulatory capital arbitrage" in response to the 1988 Basel Capital Accord (Matten, 2000: 90), expressed the view that the New Accord risked being the source of "an industrial revolution in regulatory capital arbitrage".

and internationally – an issue of concern to several developing countries. While the effects may not be as drastic as in the hypothetical examples given owing to regulatory arbitrage and credit risk mitigation, they could impose what may be regarded as excessively restrictive limits on the access to international borrowing of certain countries. As a result consideration may need to be given to ceilings for risk weights even under the IRB approach.

More generally, owing to their links to the ratings of credit rating agencies and to observed default rates, the risk weights proposed in the New Accord are capable of contributing to the pro-cyclical character of bank lending both within countries and across borders. Lending cycles connected to pro-cyclical credit risk are a long-standing feature of business cycles and of economic instability, and the danger on the regulatory front comes from prudential rules which translate higher credit risks in more difficult times into increased capital requirements (and thus more restrictive lending policies). Prudential rules which would minimize such dangers can be sketched but would nonetheless be difficult to incorporate in the actual design of regulatory systems.

An approach to this problem, which might almost be characterized as a biblical injunction, would be based on the principal of setting aside reserves in good times to meet the exigencies of harder ones. In practice this approach might involve various alternatives.<sup>43</sup> Under one alternative supervisors might prescribe average levels of capital for banks significantly in excess of minimum levels, insisting on higher levels during periods of buoyant economic activity and bank profits and permitting lower levels in recession.<sup>44</sup> Another alternative would be to establish guidelines for the appropriate level of banks' general provisions<sup>45</sup> which would include provisions designed to cushion the impact of macroeconomic fluctuations.<sup>46</sup> It is possible to visualize supervisory guidelines intended to achieve in a rough-and-ready way the objective of the first alternative, though the difficulty would have to be confronted that the duration and intensity of economic fluctuations are hard to forecast so that the setting of appropriate variable levels of capital would also be only approximate. The alternative of including an allowance in

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<sup>43</sup> For a comprehensive account of accounting for loan losses and its relation to regulatory capital and provisioning, see Beattie et al. (1995). This source contains a wealth of information on industrial countries' regulatory and tax policies towards banks' provisions, exemplifying the international differences to which the BCBS refers (see below).

<sup>44</sup> It will be recalled that under Pillar 2 of the New Accord supervisors should expect banks to maintain their capital at levels above regulatory minima.

<sup>45</sup> Although the distinction can be blurred in practice, specific provisions refer to those associated with particular loans or pools of loans, while general provisions are those based on estimated expected future loan losses for a whole portfolio. The character of the loan analysis used to make this distinction is described in Beattie et al. (1995: 21–25).

<sup>46</sup> Somewhat disconcertingly the book cited in the previous footnote provides evidence for the United Kingdom in the late 1980s and early 1990s that banks' provisioning was actually reactive, general provisions increasing during a period of poor loan performance (Beattie et al., 1995: 111–114).

general provisions for the effect of changes in macroeconomic conditions would face the same problem. But this alternative also has the potential to provoke a more fundamental rethinking of the rationale and design of prudential capital requirements in this area by reopening questions concerning the appropriate relations between capital and provisioning, on the one hand, and expected and unexpected loan losses, on the other. As noted earlier, the approach of the BCBS, to a significant extent dictated by the diversity of national legal regimes concerning provisioning for loan losses, is to aggregate expected and unexpected losses under the headings of credit and operational risks for the purpose of setting capital requirements (capital here being permitted to include general reserves up to a certain ceiling). Eventual modification of this approach can be envisaged in principle, though the associated practical problems should be evident from the discussion above, and one reason might be an eventually perceived need to mitigate the procyclical effects of variations in banks' capital requirements.

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