

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

DISCUSSION PAPERS

BASEL II:  
THE REVISED FRAMEWORK OF  
JUNE 2004

No. 178  
April 2005



UNITED NATIONS



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*Andrew Cornford*

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*Acknowledgement: The author is indebted to Anthony Travis for illuminating conversations about the background to Basel II. The views expressed and remaining errors are his responsibility.*

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***JEL classification:*** F36, G15, G18, G21, G28

## Contents

|  | <i>Page</i> |
|--|-------------|
| <i>Abstract</i> .....  | 1           |
| A. THE DEVELOPMENT OF BASEL II .....   | 2           |
| B. RF AND THE OBJECTIVES OF BASEL II .....   | 3           |
| C. SALIENT FEATURES OF PILLAR I .....  | 5           |
| 1. Calculation of minimum capital requirements .....   | 5           |
| 2. The standardised approach to credit risk .....  | 7           |
| 3. The IRB approach .....  | 11          |
| 4. Securitisation .....  | 16          |
| 5. Operational risk .....  | 18          |
| 6. Trading book issues .....   | 19          |
| D. PILLAR 2 .....  | 20          |
| E. PILLAR 3 .....  | 22          |
| F. CONSOLIDATED SUPERVISION AND CROSS-BORDER<br>SUPERVISORY COOPERATION .....                  | 22          |
| G. INITIAL EXPECTATIONS AS TO THE PACE AND REQUIREMENTS OF<br>IMPLEMENTATION OF BASEL II ..... | 24          |
| H. THE BCBS RESPONSES TO COMMENTS AND SOME OUTSTANDING ISSUES .....                            | 26          |
| Annex:   |             |
| SUMMARY OF QIS3 .....  | 30          |
| REFERENCES .....   | 32          |

## Abbreviations

|              |   |
|--------------|---|
| <b>ALM</b>   | asset and liability management  |
| <b>AMA</b>   | Advanced Measurement Approach   |
| <b>BCBS</b>  | Basel Committee on Banking Supervision of the BIS   |
| <b>BIS</b>   | Bank for International Settlements, Basel, Switzerland                                      |
| <b>CF</b>    | commodities finance   |
| <b>CP1</b>   | A New Capital Adequacy Framework, BCBS 1999   |
| <b>CP2</b>   | The New Basel Capital Accord, BCBS, January 2001  |
| <b>CP3</b>   | The New Basel Capital Accord, BCBS, April 2003  |
| <b>EAD</b>   | exposure at default   |
| <b>ECAIs</b> | external credit assessment institutions   |
| <b>ECAs</b>  | export credit agencies  |
| <b>EL</b>    | expected losses   |
| <b>FSI</b>   | Financial Stability Institute of the BIS  |
| <b>HVCRE</b> | high-volatility commercial real estate  |
| <b>IAA</b>   | internal assessments approach   |
| <b>IASB</b>  | International Accounting Standards Board  |
| <b>IASCF</b> | International Accounting Standards Committee Foundation                                     |
| <b>ICBA</b>  | Independent Community Bankers of America  |
| <b>IOSCO</b> | International Organisation of Securities Commissions  |
| <b>IPRE</b>  | income-producing real estate  |
| <b>IRB</b>   | internal ratings-based approach of the BCBS   |
| <b>LGD</b>   | loss given default  |
| <b>M</b>     | maturity  |
| <b>OF</b>    | object finance  |
| <b>OTC</b>   | over the counter derivatives  |
| <b>PD</b>    | probability of default  |
| <b>PF</b>    | project finance   |
| <b>QIS3</b>  | Quantitative Impact Study 3   |
| <b>QRREs</b> | qualifying revolving retail exposures   |
| <b>RBA</b>   | ratings-based approach  |
| <b>RF</b>    | International Convergence of Capital Measurement and Capital Standards: a Revised Framework |
| <b>SF</b>    | Supervisory Formula   |
| <b>SMEs</b>  | small and medium-sized enterprises  |
| <b>SPE</b>   | special purpose entity  |
| <b>UL</b>    | unexpected losses   |

## **BASEL II: THE REVISED FRAMEWORK OF JUNE 2004**

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### ***Abstract***

*The June 2004 document of the Basel Committee on Banking Supervision (BCBS), International Convergence of Capital Measurement and Capital Standards: a Revised Framework (RF), is designed to be the culmination of the process beginning in 1999 to replace the 1988 Basel Capital Accord of 1988 with a New Basel Capital Accord (Basel II). The basic components of Basel II were first fleshed out in the consultative paper of 2001. These consist of three Pillars and a number of alternative approaches to the setting of numerical capital requirements. Under the first Pillar these components include two basic approaches to the numerical capital requirements for credit risk, the Standardised and the Internal Ratings-Based (IRB) approaches, and alternative options for the capital requirements for operational risk. Under the Standardised approach the calibration of risk is based on the assessments of external credit assessment institutions (ECAIs), an important role for this purpose being attributed to credit rating agencies. Under the IRB approach there are two basic versions of different degrees of sophistication, "foundation" and "advanced", reliance on banks' own internal ratings for the inputs used to estimate risk weights and exposures being greater under the latter than under the former. Conditions for eligibility for the two versions of the IRB approach and the three alternative options for operational risk are also spelled out. The second and third Pillars are supervisory review of capital adequacy and market discipline through standards for disclosure.*

*A major aim of Basel II has been to revise the rules of the 1988 Basel Capital Accord in such a way as to align banks' regulatory capital more closely with their risks, taking account of progress in the measurement and management of risk and of the opportunities which these provide for strengthened supervision. Achievement of this aim has involved the incorporation in Basel II of methods for quantifying banking risks introduced since the late 1980s. The task of the designers of Basel II has been complicated by the way in which the BCBS's rules for banks' capital, originally intended for the internationally active banks of its member countries, have become a global standard widely applied in developing as well as developed countries. Acceptance of this role by the BCBS has entailed a global consultation process, whose results have been reflected in three consultative papers and the RF, and the different approaches and options for setting numerical capital requirements which are intended to accommodate banks and supervisors of different levels of sophistication.*

*As well as providing a commentary on the main features of the RF this paper documents the response of the BCBS to some of the more important points which were raised during this consultation process, including the outcome of decisions taken at a meeting in Madrid in October 2003 following comments on the consultative paper of April 2003, and summarises the results of the most recent of the BCBS's initiatives to estimate the quantitative impact of the Basel II rules on banks' capital. This discussion includes a review of papers issued by the BCBS as part of the last stage of its work preceding the RF.*

*Implementation of Basel II will be a large-scale exercise, making major demands on bank supervisors and requiring extensive technical assistance, especially for developing countries. The paper summarises the published results of a questionnaire of the Financial Stability Institute sent to more than 100 non-BCBS countries with the intention of providing an idea of the extent and envisaged timeframe for implementation of Basel II as well as of other issues such as choices of different approaches and options for the setting of capital requirements.*

## A. THE DEVELOPMENT OF BASEL II

The June 2004 document of the Basel Committee on Banking Supervision (BCBS), *International Convergence of Capital Measurement and Capital Standards: a Revised Framework* (henceforth RF), follows a series of three consultative papers on a New Basel Capital Accord (Basel II) stretching back to 1999.

The first of these papers, *A New Capital Adequacy Framework* (CP1), contained a sketch of basic components of the subsequent, progressively more elaborated versions of Basel II.<sup>1</sup> Under the first so-called Pillar these components included two basic approaches to the numerical standards for banks' capital adequacy, the Standardised and the Internal Ratings-Based (IRB) approaches. Under the standardised approach the calibration of risk was finer than in the 1988 Basel Capital Accord and was to rely on the assessments of external credit assessment institutions (ECAIs), an important role for this purpose being attributed to credit rating agencies. The second and third Pillars were supervisory review of capital adequacy and market discipline through standards for disclosure. More explicit recognition than in the 1988 Basel Capital Accord – if feasible through quantitative capital charges – was proposed for interest-rate risk in the banking book and for operational risk. The paper also included new approaches to the treatment of securitised assets and of credit risk mitigation.

The nine-part, 500-page *The New Basel Capital Accord* of January 2001 (CP2), provided a more fleshed-out picture of the likely eventual shape of Basel II.<sup>2</sup> However, many of the detailed proposals were acknowledged to be still provisional or lacking important elements. Under the IRB approach there were two basic versions of different degrees of sophistication, “foundation” and “advanced”, reliance on banks' own internal ratings for the inputs used to estimate risk weights and exposures being greater under the latter than under the former. Moreover there was a classification of exposures by six broad categories: corporate, sovereign, bank, retail, project finance, and equity. Conditions for eligibility for the two versions of the IRB approach were spelled out. And three options also of progressively greater sophistication were proposed for quantifying the capital required for operational risk.

The third in the series, also entitled *The New Basel Capital Accord* (CP3), was issued in April 2003 and was a step forward in comparison with CP2 in both coherence and completeness.<sup>3</sup> But greater coherence was not accompanied by a reduction in complexity. Much of this complexity has been due to the attempt to set global standards for the regulatory capital of banks at different levels of sophistication. It has also reflected the BCBS's response to continuing rapid financial innovation and evident weaknesses of existing regulations, which have led to some proposed rules whose variety and esotericism sometimes match those of the practices they are intended to regulate.

The reactions to CP3 were mixed. On the one hand many major banks have undertaken large and costly exercises to overhaul their systems of internal control and capital allocation in response to Basel II, their assumption being that the final outcome of the work on a new accord will be broadly along the

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<sup>1</sup> BCBS (1999a). For the author's commentary see Cornford (2000).

<sup>2</sup> BCBS (2001) which is accompanied by seven specialised supporting documents. For the author's commentary see Cornford (2001).

<sup>3</sup> BCBS (2003a). For the author's commentary see Cornford (2004).



lines set out in CP3.<sup>4</sup> However, CP3 also elicited a new round of comments. Moreover three important countries distanced themselves from commitments to implementation. The United States announced that it was going to limit Basel II's application to the country's major international banks, the remainder of the sector being permitted to continue to operate under the rules based on the 1988 Basel Capital Accord.<sup>5</sup> China and India announced that the regimes for their banks would continue to be those of the 1988 Accord (though the latter has recently modified its position and now accepts Basel II but intends implementation to proceed at a pace appropriate to the country's specific needs).<sup>6</sup>

At a meeting in Madrid in October 2003<sup>7</sup> the BCBS extended the period for further work on the new accord until no later than mid-2004. In its communiqué the BCBS singled out a number of subjects for this work: (1) the treatment of expected and unexpected losses (EL and UL) in relation to capital requirements; (2) simplifying the treatment of securitisation; and (3) revisiting credit risk mitigation, one matter of particular concern under this heading being the conservatism of CP3's treatment of "double default risk", namely the risk that both borrower and protection provider will default on the same obligation. The output of this further work included the publication in January 2004 of three specialised documents on modifications to the treatment of expected and unexpected losses, cross-border supervisory recognition of the most advanced approach to setting capital requirements for operational risk, and a simplification of the treatment of securitisation exposures.<sup>8</sup>

Two further new documents bearing on the implementation of Basel II were issued by Basel bodies shortly after the publication of the RF. That of the BCBS itself consisted largely of an elaboration of issues related to implementation already raised in the RF.<sup>9</sup> That of the Financial Stability Institute (FSI) summarised the responses to a questionnaire sent to 115 jurisdictions on implementation of Basel in non-BCBS countries.<sup>10</sup> Replies to this questionnaire were received from 107 jurisdictions with more than 90 per cent of the banking assets of non-BCBS countries. The questionnaire covered the extent and the envisaged timeframe of implementation of Basel II, choices among the different options available for setting capital requirements for credit and operational risk, and miscellaneous supervisory problems posed by Basel II such as needs for supervisory resources and training.

## **B. RF AND THE OBJECTIVES OF BASEL II**

The major objective of Basel II has been to revise the rules of the 1988 Basel Capital Accord in such a way as to align banks' regulatory capital more closely with their risks, taking account of progress in the measurement and management of risk and of the opportunities which these provide for strengthened supervision. This process involves bringing regulatory capital into closer correspondence with economic capital, levels of which reflect banks' own decisions in the light of their expectations as to revenues and losses in abstraction from regulatory rules, and extending the coverage of capital

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<sup>4</sup> There are reports of many banks allocating 8–15 per cent of their budgets for information technology and operations to Basel II compliance. See "Basel II a new competitive landscape", supplement to *The Banker*, October 2003, p. 4. A survey of major financial firms conducted for the United Kingdom's Institute of Financial Services indicated expenditure per institution in the range of £6–90 million to achieve compliance. See Gandy (2003).

<sup>5</sup> The United States is proposing to permit any bank meeting the requirements of Basel II's most advanced approaches for credit and operational risk (discussed below) to follow Basel II. The expectation is that this will include about 20 institutions with about 99 per cent of the foreign assets held by United States banks. See, for example, Ferguson (2003).

<sup>6</sup> See the editorial in the *Financial Times*, 15 September 2003, and "Basel II 2007 deadline unlikely", *The Banker*, September 2003. On the change in India's shift to acceptance of Basel II see Udeshi (2004).

<sup>7</sup> BIS (2003).

<sup>8</sup> BCBS (2004a, 2004b and 2004c).

<sup>9</sup> BCBS (2004d).

<sup>10</sup> The Financial Stability Institute (FSI 2004) was created by the BIS and the BCBS in 1999 to assist financial supervisors through the provision of the latest information on financial products, practices and techniques and through the organisation of seminars and workshops.

requirements to operational as well as credit risk. The BCBS intends that the new rules should leave the level of minimum capital requirements unchanged in the aggregate, while also providing incentives to banks to adopt the more risk-sensitive approaches of Basel II. In the light of the Madrid decisions of October 2003 mentioned above the BCBS has set out in RF a new framework for the calculation of risk weights which involves fuller recognition of provisions before estimation of capital under the IRB approach: (as described in more detail under different headings below) EL are deducted from a key multiplicand of the formulae for several categories of exposure and can be covered by provisions specified as eligible for this purpose.

The BCBS intends to carry out a further review of the impact of Basel II as embodied in RF prior to implementation. If this review indicates that its objective of unchanged minimum capital requirements overall will not be met, then it will require the application of a scaling factor, which could be less than rather than greater than one, to the capital requirement of the IRB approach. Its current best estimate of this scaling factor, which is based on a study of the effect of the new approach to EL and UL using data from its own earlier Quantitative Impact Study 3 (QIS3), is 1.06.

Other major adjustments during the Basel II exercise have involved the capital requirements for operational risk, changes in the formulae for risk weights for several categories of exposure in response to criticisms of those proposed in CP2, provisions for partial implementation of variants of the IRB approach and of the advanced approach to operational risk, elaboration of the approach to securitisation exposures, and relaxation of the timetable for implementation. Many of these adjustments are in the direction of greater flexibility. The relaxation of the timetable is connected to an acknowledgement of the problems posed by implementation of so complex and wide-ranging an agreement. In CP3 the target date for implementation was the end of 2006. The BCBS now recognises that in many countries adoption procedures will involve additional assessments of the impact of RF as well as opportunities for comment by interested parties and national legislative changes.<sup>11</sup> As a result it accepts that the end of the transition period for implementation of the more advanced approaches will be the end of 2008.<sup>12</sup> It also recognises that adoption of Basel II may not be the first priority of the authorities in many non-G10 countries, which will thus set different timetables from that envisaged in RF. While the new timetable provides additional flexibility to national policy makers, it also carries the danger that before the completion of the implementation process some features of risk management incorporated in Basel II may have been overtaken by new developments.

The new timetable also underlines the drawn-out character of the Basel II exercise and the complexity of its final product. Although, as mentioned above, CP3 and the RF represent a substantial advance on CP2 in expository completeness, the impression still remains that the organisation of the text could have been improved.<sup>13</sup> The FSI in coordination with the BCBS is to undertake an extensive programme of technical assistance on implementation of Basel II, including seminars and online

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<sup>11</sup> The need for such changes in several countries and issues which may need to be scrutinised as part of such a process are discussed in more detail in BCBS (2004d, pp. 3 and 23–24).

<sup>12</sup> The language of RF is not very clear regarding transition arrangements. “The Committee intends the Framework set out here to be available for implementation as of year-end 2006. However, the Committee feels that one further year of impact studies or parallel calculations will be needed for the most advanced approaches, and these therefore will be available for implementation as of year-end 2007” (RF, para. 2). The term, “parallel calculations”, refers to the requirement that banks adopting advanced approaches also calculate their capital requirements according to the 1988 Basel Capital Accord during a transition period, for the latter part of which their capital requirements under the new approaches are subject to a floor consisting of tapering percentages of those under the 1988 Accord. In the event of the emergence of additional problems, as part of measures to address them, the BCBS will be prepared to extend the period during which the floors apply (RF, paras. 45–48).

<sup>13</sup> One of Basel II’s most persistent critics, John Hawke, United States Comptroller of the Currency, described CP3 as “mind-numbing in its complexity”. See his address to the American Academy in Berlin, 15 December 2003.

tutorials.<sup>14</sup> This programme will contribute to the understanding required for implementation but comprehension and acceptance more generally would have none the less have been facilitated by a more accessible foundation text. The opening paragraphs of the different sections in RF, for example, would often have benefited from fuller descriptions of the banking operations covered and their associated risks. In this respect it is of interest to compare Basel II with the initiative on International Financial Reporting Standards. In the latter a major effort is made to explain the objectives and scope of the different standards and to provide definitions of pertinent terms, areas in which Basel II falls short.<sup>15</sup>

The discussion which follows provides characterisations of the key parts of RF. The structure of Basel II has retained the same major features since CP2: 3 Pillars – minimum capital requirements, supervisory review, and market discipline (transparency). As in CP2, under Pillar 1 there are two basic approaches to the measurement of credit risk, a less sophisticated Standardised approach and a more advanced IRB approach, and three approaches of progressively greater sophistication to the measurement of operational risk. Under both the Standardised and the IRB approaches there are further sub-variants: in the case of the latter primarily regarding the relative dependence on internal estimates as opposed to estimates provided externally by supervisors; and, in the case of the former regarding alternative options for taking account of techniques for reducing exposure through credit risk mitigation. As compared with CP2, for securitisation exposures there is a distinct set of methods for estimating capital requirements which involve these exposures' own standardised and IRB approaches, three different variants being available under the latter. The discussion also reviews the response of the BCBS to major points raised during the long consultation process leading to Basel II, including issues to which fully satisfactory solutions have still not yet been found, and summarises the results of the most recent of the BCBS's initiatives to estimate the quantitative impact of its new rules for banks' capital.

## C. SALIENT FEATURES OF PILLAR 1

### 1. *Calculation of minimum capital requirements*

This calculation includes credit, market and operational risk. *Credit risk*, which is the most pervasive of banking risks, is due to the possibility that a bank's counterparty will be unable to meet its obligations – in the simplest case payments due on a loan. *Market risk* is that of loss resulting from changes in the market value of its assets before the positions in question can be offset or liquidated. *Operational risk* can refer to any of several of risks to which a bank is exposed simply through being in business. In Basel II such risk is defined as that of loss due to failed or inadequate internal processes, people and systems or from external events.

For the purpose of calculating a bank's capital ratio the denominator consists of risk-weighted assets determined as the sum of the risk-weighted on- and off-balance-sheet positions estimated for credit risk and of the capital requirements for market and operational risks times 12.5, the reciprocal of the Basel Capital Accord's minimum capital ratio of 8 per cent.<sup>16</sup> The numerator consists of eligible capital whose definition for the approaches other than the IRB has not changed since that of the 1988 Basel Capital Accord and subsequent clarifications and amendments but for the IRB approach

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<sup>14</sup> Financial Stability Institute (2004, pp. 12–13 and Annexes 9 and 10).

<sup>15</sup> International Accounting Standards Board (2003).

<sup>16</sup> As in the 1988 Basel Capital off-balance-sheet exposures are converted to on-balance sheet equivalents by multiplication of nominal amounts by factors specified for different categories of such exposure.

incorporates the new distinction between EL and UL. This numerator must at least 8 per cent of risk-weighted assets.

Items included in capital under the 1988 Accord and its extensions have to serve the objective of being available to support an institution in times of crisis as well as that of contributing to its funding. Three basic categories of financial instrument meet these requirements to varying degrees: equity, certain types of debt, and so-called hybrid capital (which combine features of the other two). Debt is the least well suited to fulfil these requirements since most forms carry fixed funding costs whose suspension constitutes a breach of the terms of the debt contract and cease to be available in the event of insolvency. Hybrid capital such as certain convertible bonds and cumulative preference shares have funding costs which may be suspended in certain conditions, thus providing a layer of protection for other senior creditors.<sup>17</sup> In the case of equity, although many forms exist, the investment is locked in if insolvency occurs.

The solution adopted in the 1988 Basel Capital Accord involved distinguishing between the following two Tiers of capital:

- *Tier 1* consists of items qualifying as core capital and meeting three criteria: that they are common to all member countries' banking systems; that they are wholly visible in banks' published accounts; and that they have an important bearing on banks' profit margins and ability to compete. The items include issued and fully paid equity, retained earnings, non-cumulative perpetual preference shares, and disclosed reserves meeting certain conditions.
- *Tier 2* consists of less pure forms of capital, a measure of discretion being left in several cases to national regulators. It includes items such as undisclosed reserves (subject to the condition that they be freely available to meet unforeseen losses), asset revaluation reserves (for securities with a market value exceeding their historic cost but subject to a discount of 55 per cent of this difference to reflect risks due to price volatility or forced sale), general provisions or loan-loss reserves held against future unidentified losses and freely available to meet such losses as they materialise, and hybrid securities (such as convertible bonds and cumulative preference shares) and subordinated debt – in both cases subject to certain conditions.

The 1996 amendment to incorporate market risks extended the definition of qualifying items to *Tier 3* capital consisting of shorter-dated debt instruments in recognition of the fact that the liquidation of positions exposed to losses due to such risks is typically much quicker than in the case of business exposed to traditional credit risk.<sup>18</sup>

At least 50 per cent of total capital must be Tier 1 and there are additional ceilings for individual Tier 2 items. Tier 3 cannot exceed 250 per cent of Tier 1 capital assigned to market risk (i.e. 250 per cent of the difference between Tier 1 capital assigned to credit risk and total Tier 1 capital, which is available to meet market risk). Eligible capital then consists of the sum of Tier 1, Tier 2, and Tier 3 after deductions of unamortised goodwill, investments in unconsolidated banking subsidiaries, and (subject to national supervisory discretion) investments in other banks and financial institutions.

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<sup>17</sup> A wide range of financial instruments found in practice have long combined features of debt and equity. This can be illustrated with the list of securities deviating from normal patterns – a list of no less than 18 pages – in Graham and Dodd (1934), note 3. Regrettably the note was not updated and repeated in subsequent editions of this classic work.

<sup>18</sup> BCBS (1996).

For exposures whose credit risk weights are estimated under the IRB approach EL are deducted from risk-weighted assets to the extent that they are covered by eligible provisions such as specific and certain general provisions. When EL exceed eligible provisions, the difference must be deducted from the numerator of the ratio of capital to risk-weighted assets (in proportions of 50 per cent from Tier 1 capital and 50 per cent from Tier 2), and when EL is less than eligible provisions, the excess provisions may be recognised as part of Tier 2 capital up to a specified proportion of risk-weighted assets. This new treatment reflects the objective of the BCBS to bring regulatory capital more into line with economic capital. (For the distinction between regulatory and economic capital see Box 1.) In the literature on the subject such capital is intended to cover UL, while EL is covered by loan-loss reserves or provisions.

## **2. *The standardised approach to credit risk***

### *(a) Calibration of credit risk*

Since CP1 the BCBS's proposals for revised calibration of credit risk for the estimation of risk-weighted assets under the Standardised approach has been based on the ratings of ECAIs which would in practice be either credit rating agencies fulfilling certain conditions or the export credit agencies (ECAs) of major industrial countries. The calibration of risk-weighted assets is expressed as percentages of exposures' nominal values, varying between zero for the highest rated exposures and 150 per cent – or more in certain cases – for the lowest rated. There are two options for claims on banks: (i) under the first banks are assigned a rating one category less favourable than that of the country in which they are located subject to a floor for less favourably rated and unrated countries; and (ii) under the second they are assigned a rating based on their own external credit assessments or, in the case of unrated banks, one of 50 per cent. This calibration of credit risk is designed to replace the coarser one of the 1988 Basel Capital Accord which was characterised by very limited differentiation of private-sector firms and assigned mostly lower weights to exposures to OECD borrowers than to those not from this country grouping.

### *(b) ECAIs*

The rules for using the ratings of ECAIs have been retained since CP1 despite widespread misgivings as to the performance of major credit rating agencies – misgivings which have focused on their failure to identify declining creditworthiness before the event in recent cases such as the Asian financial crisis of 1997 and the collapse of Enron.<sup>19</sup> It should be noted that the eligibility criteria for ECAIs include the following (RF, para. 91): “In order to be eligible for recognition, an ECAI does not have to assess firms in more than one country”. This should have the important consequence of opening the way for credit rating agencies other than the majors, in particular those of developing countries.

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<sup>19</sup> For a fuller discussion of the danger that recourse to the ratings of credit rating agencies under the standardised approach to estimating risk weights may exacerbate the pro-cyclicality of banks' lending see Cornford (2000, section VI.A).

**Box 1****The functions of regulatory and economic capital**

The concept of capital which is the subject of the BCBS's rules for banks' capital is regulatory capital, i.e. instruments qualifying for this purpose according to official rules based on a view as to required minimum levels reflecting industry-wide historical experience. In standard treatments in the technical literature on banks' financial management banks provide for loan losses through reserves for this purpose and through capital, EL being covered by the former and UL by the latter. The rules of the 1988 Basel Capital Accord and the early drafts of Basel II deviated from this treatment because the distinction between expected and unexpected losses is difficult to define in practice and in law and there is a resulting lack of uniformity in regulatory and tax regimes. Thus in the 1988 Basel Capital Accord the BCBS avoided attempting a regulatory definition of this distinction and allowed for the inclusion in capital of a part of loan-loss reserves in capital. Only in the June 2004 document on Basel II has the BCBS finally adopted an approach to capital under which, subject to some specified exceptions, it is allocated to UL, while EL are to be covered by loan-loss reserves.<sup>1</sup>

A key concept in banks' pricing is economic capital, which is the outcome of decisions taken solely in response to expectations as to revenues and losses and in abstraction from regulatory rules. In consideration of the allocation of banks' capital to different categories of claim the distinction between regulatory and economic capital should not be lost from sight since, in cases where the two differ, economic rather than regulatory capital will generally determine the price of a loan or other service. The implications of this can be illustrated with a schematic example involving a loan. In this example the rate of interest on the loan is the sum of the cost of debt, operating costs, the reserves for expected losses, and the cost of capital (this last being assumed to consist entirely of equity so that its cost can be estimated from the bank's target rate of return on equity). The loan is of \$100; the operating costs are 2 per cent of this amount and the reserves for expected losses 1 per cent; the rate of interest on debt financing is 10 per cent; and the target rate of return on capital is 25 per cent. If regulatory capital of 8 per cent – and thus debt financing of 92 per cent – is used to price the loan, the resulting rate of interest is 14.2 per cent, i.e.  $(2 + 1 + 0.1 \times 92 + 0.25 \times 8)$  per cent. But if economic capital of 12 per cent and debt financing of 88 per cent are used, the resulting rate of interest is 14.8 per cent: and if economic capital of 4 per cent and debt financing of 96 per cent are used, the resulting rate of interest is 13.6 per cent.<sup>2</sup>

<sup>1</sup> A still fuller treatment of losses may distinguish between those in excess of expected losses up to a percentile limit of the probability distribution for losses, on the one hand, and those beyond this limit, on the other hand, which are classified as exceptional losses and, for the purpose of risk management, are the subject of special stress testing and modeling. See Bessis (2002, pp. 90–91 and 630–631).

<sup>2</sup> This example is adapted from *ibid.*, pp. 682–683.

*(c) Short-term inter-bank lending*

Owing to the observation that at the time of currency crises countries typically manifest a high degree of dependence on short-term borrowing as well as to the belief that much of this borrowing is inter-bank and often driven by interest-rate arbitrage, the rules for the assignment of preferentially lower risk weights to inter-bank exposures have been tightened in comparison with the 1988 Basel Capital Accord to bring them into closer consonance with real risks. Preferentially lower risk weights are now available only under the second option for banks and apply only to loans with an original maturity of three months or less, whereas in the original Basel Capital Accord they applied to exposures to banks incorporated in non-OECD countries with a residual (not original) maturity of up to one year.

*(d) Claims on corporations*

In the interest of greater flexibility and discretion for national policy there is a stipulation under which supervisors may allow banks to weight all corporate claims at 100 per cent without regard to external ratings.

(e) *Retail claims and claims secured on residential property*

There is a special risk weighting of 75 per cent for retail exposures. This is to take account of the high level of risk diversification possible for such exposures, if sufficiently small and uncorrelated. Moreover the risk weight for mortgages secured on residential property is now 35 per cent (in comparison with 50 per cent in CP2).

(f) *Past due loans*

The risk weights for the parts of past due loans which are unsecured by collateral or guarantees vary according to the proportion covered by specific provisions.

(g) *Credit risk mitigation*

This term refers to the reduction of credit risk through the use of collateral, guarantees and stand-by facilities, credit derivatives (Box 2), and netting. Banks are sellers as well as buyers of instruments designed to provide credit risk mitigation and beneficiaries of the risk protection which such instruments can provide. But the main focus of Basel II under this heading is on the reduction of the credit risk of banks' own exposures by means of these instruments.

The risks due to banks' role as sellers of such instruments are treated under the heading of off-balance items which include contingent claims and such derivatives as are held in the banking book (see section C.6). Contingent claims are converted by multiplication of their nominal value by a credit conversion factor in order to estimate their asset equivalents, which are then treated in the same way as on-balance-sheet exposures. Derivatives in the banking book are mostly valued by means of the "current exposure method", i.e. as the sum of their market value (if positive) or zero (if this value is negative) and an add-on amount to reflect the potential increase in value during the time until maturity. Perhaps because the financial innovation since the 1988 Basel Capital Accord which involves the techniques of credit risk mitigation has mostly affected instruments usually held in the trading rather than the banking book, the treatment of risk weights of banks positions due to their sale is surprisingly brief. For example, one might have expected an explicit reference to credit derivatives under this heading.

Regarding the effect of credit risk mitigation on banks' own exposures for *collateralised transactions* Basel II specifies two alternative approaches, "simple" and "comprehensive", to risk weighting. Under the former the risk weight of the issuer of collateral is substituted for that of that of the obligor (as in the 1988 Basel Capital Accord); and under the latter the underlying risk exposures are reduced by a conservative estimate of the value of the collateral. Risks under the "comprehensive" approach due to price volatility and the time needed for liquidation are handled through "haircuts" (reductions in the collateral's value), which may be calculated in accordance with supervisory rules or by banks themselves (so long as they meet certain minimum standards).

The rules concerning collateral have been the focus of considerable attention during the Basel II exercise. Banks in developing countries often give more weight in lending decisions to the provision of collateral than those in advanced economies, and there is greater flexibility as to the categories of asset acceptable as collateral. Guiding principles under Basel II in the face of such variation of national practices have included assurance that "the legal basis for the enforcement of collateral is

### **Box 2**

#### **Credit derivatives**

Credit derivatives are new instruments for credit risk mitigation serving purposes similar to guarantees and insurance. The most common credit derivatives are credit default swaps, total return swaps, and credit-linked notes.

- A *credit default swap* is a contract under which the buyer of risk/seller of protection receives a premium in return for the obligation to compensate the seller of risk/buyer of protection for financial losses incurred following a “credit event” affecting a financial obligation such as a bond or loan or some other “reference amount”.
- Under a *total return swap* the seller pays to the buyer of risk the economic returns and also the risks associated with a set of assets in return for an amount linked to the cost of funding.<sup>1</sup> This is now a frequently used technique (for example, by Enron) to transfer assets from the balance sheet of the risk buyer which still retains the returns and capital gains on them.
- The buyer of risk in the case of a *credit-linked note* is an investor which pays its face value in exchange for a return high enough to take account of the exposure to the risk of a fall in its value due a “credit event”. Such notes are frequently issued through special purpose entities (SPEs) and linked to the securitisation of assets (see section C.4).

<sup>1</sup> A total return swap is in fact a hybrid instrument offering protection not only against credit events but also against other fluctuations in the value of assets (which might equally be classified under market risk).

effective” and “the existence of liquid markets to obtain reliable collateral valuations”. Changes in the treatment of collateral since CP2, which were clearly a response to representations during the consultation process, include the following:

- the definition of eligible collateral is extended, *inter alia*, to include certain debt securities not rated by a recognised ECAI (thus providing additional flexibility which may be important for some developing countries);
- and the formula for the risk-weighted exposure after allowance for collateralisation under the “comprehensive” approach is changed in various ways. In particular there is no longer a floor of less than 100 per cent to the proportion of the collateral (after taking account of “haircuts”) which can be deducted from the nominal value of the exposure.

The approach to *guarantees and credit derivatives* involves substitution of the risk weight of the guarantor or issuer of credit derivatives for that of the obligor. Under credit derivatives only credit default swaps and total return swaps are eligible for the purpose of credit risk mitigation. Detailed changes since CP2 include allowing complete substitution of the risk weight of the protection provider for the obligor (and thus dropping the formula in CP2 under which the risk weight after taking account of credit risk mitigation was a weighted average of the weights of the protection provider and of the obligor); and the elimination of the floor on the proportion of the credit protection taken into account (a floor similar to that previously applying also to collateral). Both these changes accorded with representations from the financial sector. The BCBS has, however, not responded to representations concerning the “double default effect” mentioned earlier, the term covering the probability of default by both obligor and provider of credit protection: RF does not recognise a reduction of credit risk due to the lower probability of such joint defaults owing to the absence of a satisfactory way to measure it.

*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 two 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, netting can reduce banks' risk exposure, and the BCBS's pronouncements under the 1988 Basel Capital Accord concerned the conditions under which such a reduction should be reflected in lower capital requirements. Basel II subsumes netting under the rules for the "comprehensive" approach to collateralisation, the bank's assets being treated as such and its liabilities as collateral.

*(h) The simplified standardised approach*

Many banks, especially in developing countries, are expected to choose the standardised approach owing to difficulties in meeting the requirements for eligibility for the alternatives or a balancing of the associated costs and benefits. In this context Annex 9 of RF assembles in one place the simplest options under most headings of the standardised approach for calculating risk-weighted assets together with a simplified version of the standardised approach to estimating risk-weighted exposures for securitisations.

### **3. The IRB approach**

*(a) Estimation of inputs under alternative options*

As in CP2, the major elements of the IRB approach are a classification of exposures into a set of broad categories, and two alternative versions, "foundation" and "advanced", for setting the values of the inputs into the estimation of risk-weighted assets, namely probability of default (PD), loss given default (LGD), exposure at default (EAD), and maturity (M).

Under the "foundation" version banks provide their own estimates of PD and, subject to national supervisory discretion, of M. Under the "advanced" version banks also provide their own estimates of other key inputs. In CP2 banks meeting the supervisory conditions for adoption of the IRB approach for some of its exposures were expected to apply it to all their exposures in a short time. This requirement has now been replaced by greater flexibility, under which banks may adopt "a phased rollout of the IRB approach", for example, adopting the IRB approach across asset classes within the same business unit or across business units within the same banking group, or moving from the "foundation" to the "advanced" version only for some inputs to risk-weighted assets. For its equity exposures a bank will be required to employ one of the IRB approaches (see C.3(g)) once it has adopted the IRB approach for all or any part of its exposure classes. This flexibility due to the possibility of "phased roll-out" may facilitate adoption of the IRB approach for less sophisticated banks, a feature likely to be important in certain developing countries.

*(b) Exposure classes*

The categorisation of exposures under the IRB approach has been reorganised since CP2. The basic categories are now (1) corporate, (2) sovereign, (3) bank, (4) retail, and (5) equity.<sup>20</sup> Within the corporate class five subclasses of specialised lending are specified: project finance (PF) (a method of financing where the revenues generated by the project are expected to be the principal source of funds for servicing the debt); object finance (OF) (where the physical assets financed – such as ships, aircraft, or satellites – are expected to be the principal source of debt service); commodities finance

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<sup>20</sup> For the purpose of estimating risk weights RF also distinguishes the separate category of "purchased receivables". These are then classified as retail or corporate and, subject to certain adjustments reflecting the specific features of receivables, are assigned risk weights on the basis of the methods used for corporate and retail exposures under the IRB approach.

(CF) (short-term lending where repayment is met from the proceeds of the sales of the commodities); income-producing real estate (IPRE) (where debt service is again expected to be met primarily by cash flows generated by the asset and which for this reason can be distinguished from other collateralised corporate exposures where this link is less strong); and high-volatility commercial real estate (HVCRE) (which includes much of the financing of land acquisition, development, and construction where the source of repayment at the origination of the exposure is substantially uncertain). Retail exposures are classified into three subclasses: (i) residential mortgages to individuals, (ii) other exposures to individuals, and (iii) loans of up to €1 million which are managed as retail exposures. The limit for the last of these three subclasses is likely to increase in small and developing economies the share of lending to businesses classified as retail exposures.

*(c) The formula for risk-weighted assets for corporate, sovereign and bank exposures*

As in CP2, the formula for risk-weighted assets is somewhat cumbersome, being the product of 12.5 (the reciprocal of the minimum capital ratio of 8 per cent), EAD, and a factor K, of which the last is itself the product of three multiplicands, LGD, a second expression related to the conditional probability of default at a specified threshold value for the variation in the assets of the borrower or counterparty (which is itself determined by LGD, PD and a term reflecting the correlation of asset values in the exposure category) minus the expected loss at default (PD times LGD), and a third expression designed to take account of the effect of exposures' maturity.<sup>21</sup> For corporate and bank exposures PD is the greater of the one-year PD for the internal rating to which the counterparty is assigned or 0.03; for sovereign exposures PD is the one-year PD for the relevant internal rating; and for borrowers in default PD is 100 per cent.

*(d) Adjustment of risk weights for SMEs*

One widely expressed criticism of the IRB approach formula for corporate exposures in CP2, with important political implications in some major member countries of the BCBS, was that it was capable of imposing punitive interest charges on lending to small and medium-sized enterprises (SMEs).<sup>22</sup> The BCBS's response to this is a downward adjustment to the correlation variable in the factor K of the formula above when applied to SMEs. This has the effect of lowering the risk weight of the bank's portfolio of corporate exposures to reflect the greater risk diversification of loans to SMEs.

Annex 3 of RF illustrates the impact of this adjustment on the risk weights for UL of SMEs with a numerical simulation of the risk weight for an exposure with a maturity of 2.5 years to a firm with a

<sup>21</sup> The somewhat daunting formula for K in its algebraic form (before particular values are specified for its parameters) can be derived relatively simply from a model in which the variation in the asset value of a claim on a borrower (and thus the corresponding exposure) is a linear combination of a systematic factor affecting all borrowers and a factor depending on the borrower's idiosyncratic risk, and in which default is triggered if this asset value hits a threshold. The parameter values for K and the expression giving the adjustment for maturity are set by the BCBS, presumably in consonance with certain benchmarks and on the basis of statistical evidence. For the derivation of the analogous formula in CP2, which preceded the BCBS's decision to set risk weights after deducting EL, see Resti (2002, pp. 4–8), or Fabi et al. (2004, pp. 62–66).

<sup>22</sup> In Germany, a country whose SMEs provide about 70 per cent of employment and are highly dependent on bank financing, estimates of the effects of the IRBA in CP2 indicated that on average SMEs would incur an interest rate of 1.5 per cent higher than larger firms. This led Chancellor Schröder to declare that the New Basel Capital Accord would be unacceptable without major changes, and in mid-2001 an all-party motion passed by the Bundestag specified minimum conditions to be met by the Accord. These were directed not only at the cost of loan financing but also at flexible transition periods for the application of the IRBA, the broadening of the definition of eligible collateral, and rules to ensure that the risk weights for equity holdings in the banking book were not excessive. In mid-2002 Schröder declared that a compromise had been reached with changes sufficient for Germany to withdraw its objections (see Engelen (2002) and Imeson (2002)). Under the standardised approach to credit risk the BCBS assigned a relatively low risk weight to unrated corporations precisely because of its concern to avoid an unwarranted increase in the cost of financing for SMEs. However, the German banking sector has been experiencing strong competitive pressures to adopt the IRB approach.

turnover of €5 million for different levels of PD. The risk weight is reduced by 20–25 per cent for PD in the range of 0.03 per cent to 20 per cent.

*(e) Specialised lending*

Not all banks otherwise qualifying for the “foundation” version of the IRB approach for corporations are expected to meet the supervisory requirements for estimating PD for PF, CF, OF, and IPRE. In this case banks calculate UL and EL in accordance with two separate supervisory scales. For UL they map their own internal gradings into a scale of supervisory categories (strong, good, satisfactory, weak and default), each with an assigned risk weight (playing the same role as K in the formula for the IRB approach) based on a set of supervisory slotting criteria identifying economic, political, and contractual conditions associated with each of the supervisory categories (conditions for which are set out in greater detail in Annex 4).<sup>23</sup> HVCRE exposures are singled out for special treatment and higher risk weights according to the scale of supervisory categories, presumably because of the role often played by speculative property development in financial booms and busts. EL (PD x LGD) are measured in accordance with another supervisory scale. Any shortfall of eligible provisions in comparison with EL is deducted from capital, and any excess is added to Tier-2 capital.

In the case of banks which do meet the requirements for estimating PD under the IRB approach the correlation term in the factor K is increased for HVCRE, thus raising its risk weight owing to HVCRE’s lower risk diversification.

*(f) Retail exposures*

Under retail exposures three different categories are distinguished: (1) residential mortgage loans, (2) qualifying revolving retail exposures (QRREs) (revolving, unsecured exposures to individuals with a value up to €100,000, which would include much credit-card business), and (3) other retail exposures (which can include loans to SMEs up to a ceiling of €1 million). The different formulae used to calculate risk-weighted assets for each of three categories apply to pools of exposures, not to individual loans. None of the formulae include an adjustment for the exposure’s maturity. The variation between the formulae for the different categories of retail exposure is due to the correlation term in the factor K, which has in each case a lower value than the corresponding terms for corporate, sovereign and bank exposures. To the extent that banks in developing countries use the IRB approach, a higher proportion of lending to SMEs than in developed countries may be covered under the category, “other retail”, than under the SME version of corporate exposures.

*(g) Equity exposures*

A bank’s equity exposures may be in its trading or its banking book (a distinction discussed in section C.6). If the latter exposures exceed a threshold of materiality defined as 10 per cent of regulatory capital or less for investments that are highly concentrated, they are included in the capital requirement for credit risk and may be assigned risk weights according to two alternatives under a “market-based approach” or under a PD/LGD approach. Under the “market-based approach” the first alternative, the “simple risk weight method”, involves the use of externally set risk weights of 300 per cent for shares

<sup>23</sup> For example, for PF exposures these conditions are classified under the following five major headings: financial strength, political and legal environment, transaction characteristics, strength of sponsor, and security package. Under the heading of financial strength the subheadings are market conditions, financial ratios (debt service coverage ratio, loan life coverage ratio, project life coverage ratio, and debt-to-equity ratio), stress analysis, duration of the credit compared to duration of the project, and amortisation schedule. And so on.

which are publicly traded and 400 per cent for other holdings. Under this approach the second alternative, “the internal models method”, would be based on use of value-at-risk models analogous to that for the calculation of capital requirements for market risk.<sup>24</sup> In both cases the resulting estimate of equity exposures is taken to correspond to UL, so that for setting capital requirements there is no adjustment for EL and eligible provisions.

Under the PD/LGD approach, subject to certain restrictions, risk weights would be set on the basis of banks’ own estimates of PD, an externally assigned LGD of 90 per cent, and the value of the position shown in financial statements. EL (PD x LGD x EAD) are then deducted from capital (no allowance being made for eligible provisions under this heading), and the remainder of the risk-weighted assets (corresponding to UL) are subject to the regulatory capital charge.

Banks’ equity holdings can be excluded from capital requirements if they are the result of “legislated programmes that provide significant subsidies for the investment to the bank and involve some form of government oversight and restrictions on the equity investments” which are associated with limits to the potential risk of the investment to the bank (RF, para. 357). CP3 mentions here promotion of specified sectors of the economy as a possible reason for such programmes. An exemption of this kind might facilitate various industrial or sectoral policies in developing countries so long as some at least of the banks in the countries in question had adopted the IRB approach. Equity holdings benefiting from exclusion from capital requirements might also be associated with investments linked to the restructuring of balance sheets in the aftermath of financial crises such as those experienced by several Asian and Latin American countries in the 1990.

*(h) Purchased receivables*

This category of exposure is singled out for special attention owing to its association with dilution as well as default risk and with banks’ dependence for their estimates of PD and LGD on external data concerning defaults and losses for certain categories of exposure rather than their own internal data (and their consequent need for recourse to a “top-down” approach to estimating risk-weighted assets rather than a “bottom-up” one starting from their individual exposures). The rules for purchased receivables then make possible the application to them of the IRB approach for corporate and retail exposures. Dilution risk refers to cases in which the amount of receivables is reduced owing to offsets or allowances due to returns of goods sold, disputes regarding product quality, and other related exposures to the different parties involved. Banks are to estimate EL for such risk, any excess over eligible provisions being deducted from capital and any shortfall allowing a corresponding increase in Tier-2 capital up to a specified ceiling.

*(i) Credit risk mitigation*

Under the IRB approach credit risk mitigation through collateral, guarantees, or credit derivatives is handled through its effects on LGD or (as an alternative possibility in the “advanced” version) on PD. Under the “foundation” version the estimates follow lines similar to those in the “comprehensive” approach under the Standardised approach to estimating risk weights. As in CP2, eligible collateral includes commercial and residential property meeting certain restrictions but has also been extended to receivables and other physical collateral for which easily identifiable prices exist. Under the

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<sup>24</sup> Value-at-risk is a method for measuring risk (and for setting capital requirements under the 1996 amendment of the 1988 Basel Capital Accord to incorporate market risks) which estimates the potential loss from movements in asset prices during a specified period at a given level of probability or confidence.

“advanced” version of the IRB approach a bank’s own estimates of LGD (or PD) would take account of credit risk mitigation.

As in the case of the Standardised approach, the focus of the treatment of credit risk mitigation under the IRB approach is on the effects of risk transfer associated with the different techniques on banks’ exposures which are covered by them. Less attention is devoted to risk-weighted assets consisting of positions due to banks’ sale of instruments for credit risk mitigation to other counterparties to the extent that they are carried in the banking as opposed to the trading book (see section C.6). Contingent claims of this kind are converted by multiplication of their nominal value by a credit conversion factor in order to estimate their asset equivalents as explained in section C.2(g).

*(j) Requirements for eligibility for the IRB approach*

RF describes at considerable length the requirements which a bank must meet if it is to be eligible to use the IRBA. These cover internal controls, internal and external audit, the design and operation of rating systems, other aspects of corporate governance, the quantification of risk, stress testing, etc. A few subjects merit special attention here.

- Banks have to demonstrate that they have been using systems of credit rating broadly in line with the requirements set out in RF for at least three years prior to qualification for the IRB approach (RF, para. 445).
- The period of data used to estimate PD must be at least five years (RF, para. 463). For corporate, inter-bank, and retail exposures banks typically have large amounts of internally generated data, but estimating PD for sovereigns may be more problematic and necessitate greater reliance on external assessments such as those of ECAIs. In its detailed guidelines for implementation of Basel II the BCBS acknowledges that these requirements are substantial and that “in practical terms banks will be expected to have in place – or be actively developing – a data ‘warehouse’, that is, a process that enables a bank to collect, store and draw upon loss statistics in an efficient manner over time”.<sup>25</sup>
- The definition of default is self-evidently an essential element in the setting of standards related to the quantification of credit risk. However, this is not as simple as it might appear and varies among legal regimes.<sup>26</sup> The operational definition of RF (RF, para. 452) is based either on the bank’s own evaluation of an obligor’s ability to meet its obligations in full or on the more objective indication that the obligor is overdue more than 90 days on a material obligation to the bank;
- RF (RF, para. 417) emphasises that its guidelines for statistical and other mechanical methods for estimating PD, LGD and EAD are in themselves insufficient for minimising rating errors: “human judgement and human oversight is {also} necessary to ensure that all relevant information, including that which is outside the scope of the model, is also taken into consideration, and that the model is used appropriately”.

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<sup>25</sup> BCBS (2004d, p. 15).

<sup>26</sup> Countries typically classify problem loans into a number of different categories such as substandard, doubtful, and loss, each of which is linked to rules as to the corresponding amount of specific provisions to be set aside. Only loans classified as loss are assigned an extremely low probability of collectibility. But loans in other categories applied in several countries would be classified as in default under the definition of RF. For variation in the classification of problem loans in some Asian countries and recent moves towards greater convergence see Golin (2001, Chapter 10).

#### 4. *Securitisation*

Securitisation is the complete or partial transfer of the risks of assets on a bank's balance sheet to outside investors, most often through the establishment of a special purpose entity (SPE) which receives the assets in question (or risks associated with them) and then issues securities as claims against them. The securities issued to investors are frequently divided into tranches carrying successively higher levels of risk and correspondingly higher rates of return, since the lower-risk tranches have priority in the allocation of the cash flows from the underlying securitised assets. The money available to meet investors' claims is sometimes graphically described as a waterfall of cash flows which cascades in progressively decreasing amounts through tranches of successive levels of seniority. Banks themselves may retain the highest-risk tranche (the first-loss position) and perhaps part of the other more junior tranches for the purpose of credit enhancement.

The techniques used and the conditions associated with securitisation have been the subject of substantial development and innovation in recent years. The role of shifts of assets off the balance sheet in recent corporate scandals involving non-financial firms such as Enron has presumably heightened the attention also paid by financial regulators to techniques used for this purpose. Moreover recent experience has shown that during periods of financial stress certain forms of securitisation can be disrupted with serious effects on the liquidity and cash flow of banks dependent on this business. Such disruption occurred in the United States during the second half of 1998 when there was a sharp reduction in investors' willingness to hold risky assets. At that time many subprime mortgage banks were unable to securitise mortgage assets and were forced instead to sell them at discounts in an unfavourable wholesale market. The difficulties on the asset side of their balance sheets were matched by a drying-up of their access to borrowing on the liability side. The resulting illiquidity led many institutions to declare bankruptcy.<sup>27</sup>

The objectives of Basel II are to ensure that securitisations should have a proper economic justification and should not reflect artificial incentives. But the attempt to ensure that the capital requirements of securitisation exposures reflect their credit risks has led to a set of highly complex rules corresponding to the transactions and structures. The section of RF dealing with securitisation includes an extended treatment of definitions that serves as the basis for setting conditions defining the degree of risk transfer achieved. It should be noted here that securitisation now may involve not only the transfer of the underlying assets such as commercial loans and credit-card receipts to SPEs ("traditional securitisation") but also the transfer to SPEs of guarantees or credit derivatives linked to these assets ("synthetic securitisation").

Since CP3 the treatment of securitisation exposures has undergone a number of changes. Some of these are in the direction of greater coherence and of simplification (though parts of the discussion continue to be hard to follow).<sup>28</sup> Moreover the treatment had to be made consistent with the new approach to EL and UL.

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<sup>27</sup> Ryan (2002, p. 162).

<sup>28</sup> For the rationale of these changes see BCBS (2004b).

- No attempt is made to distinguish between EL and UL, and specific provisions held against securitisation exposures are not included in eligible provisions.<sup>29</sup> One must assume that this decision reflects the lack of developed and generally accepted techniques as part of banks' risk management in this area.
- Since the risks associated with securitisation exposures do not depend on the holder of the position, distinctions in the estimation of risk weights between originating and investing banks have been largely dropped.
- A third option for setting risk weights, the internal assessments approach (IAA), has been introduced under the IRB approach for securitisation exposures. The weights of the ratings-based approach (RBA) option under the IRB approach to securitisation exposures have been revised.

However, the proposal for a simplified version of the Supervisory Formula (SF) (section C.4(b)) has been abandoned and that of CP3 (whose complexity defies intuitive explanation of its rationale) has been retained.<sup>30</sup>

*(a) Standardised approach*

Banks applying the Standardised approach to categories of underlying exposures must also apply the Standardised approach to securitisation exposures for these categories. The rules for many securitisation exposures follow lines similar to those for the attribution of risk weights under the Standardised approach for non-securitised positions, though the weights corresponding to the ratings of the ECAIs differ. For example, lower-quality and unrated exposures are allocated higher risk weights than in the case of non-securitised exposures (or must be deducted from capital) since in securitisations these are intended to absorb substantial proportions of the losses on assets in an SPE. There are several different rules for different categories of securitisation exposures reflecting the gradation of their associated risks, some of the most complex referring to certain continuing off-balance-sheet exposures such as back-up liquidity facilities and early amortisation provisions (which are mechanisms allowing investors in certain circumstances to be paid off prior to the stated maturity of the securities held by them). Recognition of the risk reduction for securitisation exposures due to credit risk mitigation in the form of guarantees and credit derivatives follows the rules for non-securitised assets, and it is interesting in the context of revelations in recent corporate scandals that SPEs are explicitly excluded here as eligible providers of credit protection through guarantees and credit derivatives, though not in the form of collateral (RF, paras. 585–586).

*(b) IRB approach*

Banks applying the IRB approach to categories of underlying exposures must also apply the IRB approach to securitisation exposures for these categories. The rules are intended to be more risk-sensitive than those of the Standardised approach.

Under the IRB approach there is a hierarchy of options.

- The first in the hierarchy, *RBA*, is used when the exposures are rated by an ECAI or when a rating can be inferred in accordance with certain requirements. The calibration of the risk

<sup>29</sup> There is one technical exception to the disregard of specific provisions which applies to the calculation of  $K_{IRB}$  (see below) and is described in RF, para. 629.

<sup>30</sup> Concerning the arguments in favour of and against the simplified SF see BCBS (2004b, pp. 3–4). Supporters of the latter would appear to have prevailed.

weights is finer than that under the Standardised approach to securitisation exposures and includes not only the external rating grade and maturity of the exposure but also its seniority (which reflects whether or not it is backed or secured by a first claim on the assets in the underlying securitised pool), and the “granularity” of the underlying pool (a measure of its risk concentration).

- The second in the hierarchy, *IAA*, applies to selected exposures linked to asset-backed commercial paper which lack external credit ratings but to which banks attribute internal ratings equivalent to investment grade. These internal assessments would then be used to assign risk weights corresponding to the equivalent RBA-based weight.
- The third in the hierarchy, *the SF*, is also intended for cases when external or inferred ratings are not available or possible. However, it can be applied to a much wider class of exposures than the IAA. Under the SF the capital charge is determined according to a formula containing the following inputs:  $K_{IRB}$ , the capital which would have been held against the exposure to the securitised assets, had the bank not securitised them and estimated the corresponding capital requirement under the IRB approach;  $L$ , the credit enhancement level of the credit tranche, i.e. the ratio of the amount of securitisation exposures subordinate to the tranche in question to the total exposures in the pool;  $T$ , the thickness of the tranche, the ratio of the amount of the tranche to the total exposures;  $N$ , a measure of the number of the pool’s exposures; and an exposure-weighted average LGD. The application of the SF to securitisation exposures with successive degrees of seniority is illustrated with arithmetical examples in Annex 5.<sup>31</sup> The figure arrived at through the use of the SF is in the form of a capital charge and can be translated into a corresponding figure for risk-weighted assets by multiplication by 12.5, the reciprocal of 8 per cent.

## 5. *Operational risk*

The setting of capital charges for operational risk has proved a particularly contentious part of the revision of the 1988 Basel Capital Accord, some commentators even arguing that such risk should not carry a capital charge but should be reserved for supervisory review under Pillar 2. RF retains the basic approach set out in CP2, namely three options of progressively greater sophistication (each with its qualifying criteria), but with revisions and, especially in the case of the most advanced option, considerable simplification.

Under the simplest (Basic Indicator) approach the capital charge would be equal to a proportion ( $\alpha$ ) of 15 per cent of the bank’s average annual gross income during the previous three years. The main change here in comparison with CP2 is a reduction in  $\alpha$  from 30 per cent. Under the second option, the Standardised approach, a bank’s activities are divided into eight business lines, each of which is assigned a factor,  $\beta_i$ , that relates the operational risk of line  $i$  to its gross income. The capital charge is then the sum over the  $i$  of the  $\beta_i$  times the gross income of business line  $i$ .<sup>32</sup> Here the main change

<sup>31</sup> Example 1 of the estimation of a capital charge without collateral or guarantees on p. 218 of Annex 5 involves a tranche which straddles the figure for  $K_{IRB}$ , a case covered explicitly in the rules for the IRB approach in CP3 (CP3, para. 576) but not in those of RF, thus weakening the link between the example and the description of the methods for estimating capital requirements in the main text.

<sup>32</sup> Comparison of the Basic Indicator with the Standardised approach provides a particularly simple example of the incentives which may lead to the adoption of the more sophisticated of the two approaches. Under the Standardised approach  $\beta_3$  for retail banking is 12 per cent or less than  $\alpha$  under the Basic Indicator approach and would thus act as an incentive to an institution whose activities are mostly retail banking to adopt the former approach. See Pritchard (2004, pp. 242–243).



compared with CP2 is a simplification of the classification of business lines and the use of a single proxy for operational risk rather than proxies varying with business lines.<sup>33</sup>

Under the most sophisticated Advanced Measurement Approach (AMA) the capital charge is generated by the bank's internal system for measuring operational risk (subject to its meeting specified supervisory criteria). The main change is in the direction of greater flexibility and simplicity, CP2 having specified a set of parameters which banks were to estimate as part of measuring their exposure to operational risk for different business lines. The greater flexibility of RF's AMA is designed to accommodate the rapid development of techniques for managing and measuring operational risk which the BCBS anticipates in the coming years. An interesting feature of the AMA is allowance of the recognition at the level of the banking group of the benefits of the diversification of operational risks among its constituent entities (RF, paras. 657 and 669(d)). Other changes compared with CP2 are permission for partial use of AMA, i.e. adoption of AMA for some parts of a bank's operations and the Basic Indicator or Standardised approach for the rest; and recognition of the risk mitigating impact of insurance up to a ceiling of 20 per cent of the capital charge for operational risk.

## 6. *Trading book issues*

This section of RF covers definitions, guidance on valuation of items in the trading book, and fleshed-out revisions of the provisions of the 1996 *Amendment to the Capital Accord to Incorporate Market Risks* of the 1988 Basel Capital Accord regarding the specific market (as opposed to the general market) risk<sup>34</sup> and the credit risk of certain items in the trading book.<sup>35</sup> Under the heading of specific market risk here RF also sets the rules for specific-risk capital charges for positions hedged with credit derivatives.

The definition of the trading book in Basel II, i.e. financial instruments and commodities held either with a trading intent or to hedge other elements of the trading book, is presumably intended to help to prevent regulatory arbitrage through shifting items between the trading and banking books to minimise capital charges and to assist supervisors in assigning new financial instruments such as credit derivatives to one or the other. The guidance on marking-to-model (used where marking-to-market valuation is not feasible, and involving valuation "which has to be benchmarked, extrapolated or otherwise calculated from a market input" (RF, para. 695)) gains interest from the use of this technique for the manipulation of reported earnings by firms in recent financial scandals. In comparison with CP2 a section on a requirement for price verification by a unit independent of the dealing room has been inserted. While such a requirement sounds fine in principle, there must be doubt as to how it will actually be achieved in many cases since the traders in a security or other instrument not traded on a daily basis will often be the only source of relevant information as to its valuation.

RF fleshes out the requirements for credit-risk charges of items such as repos and OTC derivatives in the trading book – charges separate from those for specific and general market risk and included in the Market Risk Amendment.<sup>36</sup> RF also sets rules for the treatment of cases in which a bank conducts an internal hedge of an exposure in the banking book through a credit derivative in the trading book. If

<sup>33</sup> National supervisors are permitted to opt for an alternative standardised approach which for the business lines, retail and commercial banking, would substitute a fixed factor times a three-year average of outstanding loans and advances.

<sup>34</sup> General market risk refers to exposure to a generalised change in prices in financial markets, while specific market risk refers to exposure to a change in the price of a particular financial instrument independently of general market risk.

<sup>35</sup> BCBS (1996).

<sup>36</sup> *ibid.*, para. 13.

the bank is to benefit from a reduction in its capital charge for the exposure in its banking book, the credit risk in the trading book must be transferred to an outside party eligible to provide such credit protection. Once again it is possible to sense the influence of regulatory wariness concerning the possibilities for shifting risks between different parts of corporate structures.

In view of the increasing importance of issues related to the impact on a bank's risk profile of its distribution of positions in different instruments between its banking and trading books their treatment under trading book issues in RF may seem somewhat summary. For example, one concern under this heading is an observed tendency to include in banks' trading books positions for which liquid markets are lacking and for which the measurement of Value at Risk prescribed in the 1996 *Amendment to the Capital Accord to Incorporate Market Risk* is correspondingly more difficult. However, further consideration of these issues can be expected in the Trading Book Review being undertaken jointly by the BCBS and the International Organisation of Securities Commissions (IOSCO).<sup>37</sup>

#### **D. PILLAR 2**

The first part of RF's treatment of supervisory review follows closely that originally set out in CP2. It is centred around four principles concerning (1) banks' processes for evaluating their capital in relation to their risks, (2) supervisors' assessment of these processes and their capacity to take action as necessary, (3) the expectation of supervisors that banks will have capital in excess of that prescribed by minimum regulatory ratios, and (4) the need for supervisors to intervene to prevent banks' capital from falling below these minima. These key principles 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 management as set out in the BCBS's *Core Principles Methodology*.<sup>38</sup> In view of the role of such assessments in IMF Article IV surveillance, that now includes compliance with key financial standards of which that concerning bank supervision consists of the BCBS's Core Principles, the result will be to provide a link between this surveillance and the implementation of the New Capital Accord. While the logic of such a link may seem impeccable in principle, it could prove problematic in practice owing to the difficulty of assessing compliance with so complex an agreement in a context where compliance is already imposing a considerable new burden on most country's supervisors.<sup>39</sup>

Pillar 2 (para. 732) prescribes comprehensive assessment of risks as follows: "All material risks<sup>40</sup> faced by the bank should be addressed in the capital assessment process. While the Committee recognises that not all risks can be measured precisely, a process should be developed to estimate risks. Therefore, the following risk exposures, which by no means constitute a comprehensive list of *all* risks, should be considered". The risk classification which follows refers to credit risk, operational risk, market risk, interest-rate risk in the banking book, liquidity risk, and other risks such as reputational and strategic risk. Of the risks in this list the first three are covered under Pillar 1, while the second has been reserved for Pillar 2 for reasons described below. Liquidity risk has the two dimensions of funding risk and market liquidity risk: the first is due to periodic needs for funds which cannot be precisely forecast in advance; and the second is that the bank's sales or purchases of assets have an adverse effect on prices in their markets. The first is traditionally covered as part of banks'

<sup>37</sup> Bank of England (2004, pp. 75–76)

<sup>38</sup> BCBS (1997 and 1999b).

<sup>39</sup> In its supplementary guidance on implementation the BCBS notes that according to the IMF and World Bank future assessments of the financial sector will not include compliance with the RF if a country has not chosen to implement it (BCBS (2004d, p. 1)).

<sup>40</sup> A risk is classified as material if it is capable of having a significant effect on economic decisions.

asset and liability management rather than under capital (although like other banking risks it can be a source of unexpected losses) but the second is clearly related to market risk through its effects on valuations. Both dimensions are likely to be the subject of increased attention from regulators in the period following agreement on Basel II (see, for example, C.6 above). Reputational risk is that of a loss of confidence in a bank amongst its peers, customers or regulators, or in the markets in which it trades. The consequences are reduced access to credit, the loss of customers and of investor support, lower credit ratings, and the sacrifice of regulatory confidence. Strategic risk is that of losses due to strategic errors in business selection or management. This prescription poses a formidable challenge to banks, and its acceptance provides regulators and supervisors (including the BCBS itself) considerable leverage in their future dealings with banks.

In the discussion of subjects covered under Pillar 2 in Basel II two others deserve special attention:

- Firstly, amongst factors external to the bank, reference is made to the effects of business cycles as a subject suitable for incorporation in supervisory review (RF, para. 724). However, guidance here is limited to the general references to the need for a bank's management to take account of the stage of the business cycle in assessing capital adequacy (RF, para. 726) and for supervisors to do the same (RF, para. 752);
- Secondly, the BCBS has decided against prescribing a quantitative capital charge under Pillar 1 for interest-rate risk in the banking book owing to the lack of agreement among banks and their supervisors as to the appropriate way to set such a charge.<sup>41</sup> Interest-rate risk is instead singled out as a subject for Pillar 2, some particular guidelines for supervisory review being provided.

There are also references to subjects which are covered as part of the setting of risk weights under Pillar 1 but which are also considered to be of special importance to supervisory review, namely operational risks, stress testing, the definition of default, the residual risk remaining after credit risk mitigation, credit concentration risk, and securitisation. The treatment here is devoted to particular problems under the different headings which may in some cases indicate the need for capital charges additional to those assessed in accordance with the rules of Pillar 1 set out above.<sup>42</sup> Two matters here merit comment.

- Credit concentration is generally related to the effect of cyclical downturns on banks' risk profiles (although there is no explicit reference to business cycles as such here).
- The guidelines for supervisory review in the area of securitisation suggest the influence on regulatory thinking of recent innovations and corporate scandals and the role therein of shifts of assets and liabilities off the balance sheet. Under the heading of "market innovations" RF interestingly notes (RF, para. 789): "As the minimum capital requirements for securitisation may not be able to address all potential issues, supervisory authorities are expected to consider new features of securitisation transactions as they arise. Such assessments would include reviewing the impact new features may have on credit risk transfer ... A Pillar 1 response may be formulated to take account of market innovations".

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<sup>41</sup> A major difficulty here is that of defining the maturity of a bank's total core deposits: in legal terms this is treated as very short or sometimes as subject to some conventional but arbitrary amortisation process but in practice is better classified as more or less unlimited outside periods of high financial uncertainty. Interest-rate risk is typically managed and hedged as part of asset and liability management (ALM), which relies heavily on analysis of possible future scenarios for assets, liabilities and interest rates. Banks' ALM is a subject suitable for supervisory review.

<sup>42</sup> In response to queries from the banking industry the BCBS has emphasised that such additional capital charges would not be mandatory under Basel II but a matter for supervisory discretion (BIS 2004).

### **E. PILLAR 3**

Under disclosure the lists of subjects covered have been simplified in RF in comparison with CP2, and are now more easily related to the subject headings of Pillar 1. The distinction in CP2 between “core” disclosures (i.e. those essential for the operation of market discipline) and “supplementary” disclosures (not of crucial importance for all institutions but which are expected of sophisticated internationally active banks) has been dropped. The requirements for transparency under Pillar 3 should be seen in the context of increased links between banks’ internal controls and accounting and the contents of banking regulation, greater reporting requirements regarding their governance, and the demands placed on their information systems. These demands pose particularly difficult problems for banks with cross-border operations which require compliance with rules often differing among jurisdictions (and have occupied an especially prominent place in the discussion of Basel II in specialised industry publications).<sup>43</sup> The requirements of Pillar 3 cover the scope of application (corporate structure and possible impediments to the transfer of capital and funds within the corporate group), capital structure, capital adequacy and requirements, the different categories of banking risk (which include both actual exposures and banks’ methods for assigning risk weights under the standardised approach and the different versions of the IRB approach), and credit risk mitigation and securitisation (which include the parts of the bank’s portfolio involved and its policies and techniques under these headings).

The frequency specified for disclosure is semi-annual or, in the case of larger banks for information concerning overall capital adequacy, quarterly. Banks are also urged to “publish material information as soon as practicable” (RF, para. 818). This last seems a step, albeit tentative, towards the real-time disclosure mandated by the Sarbanes-Oxley Act in the United States, which requires timely disclosure of all material changes in a firm’s financial condition.<sup>44</sup>

### **F. CONSOLIDATED SUPERVISION AND CROSS-BORDER SUPERVISORY COOPERATION**

Basel II is intended to apply to banks on a consolidated basis. Since a major objective of banking supervision is the protection of depositors, supervisors will also be expected to ensure that the individual banking entities of a banking group also have adequate capital on a stand-alone basis.

However, consolidated supervision may be a source of difficulties for the implementation of Basel II for a bank with cross-border operations if the supervisor in its parent country approves its adoption of the IRB approach, while that in the host country of one of its foreign entities, which has prescribed adoption of the Standardised approach in its jurisdiction owing to constraints due to its supervisory capacity, is unwilling to accord such approval owing to fears about the adverse competitive effects on domestic banks. Such effects would be a consequence of the possibility acknowledged by the BCBS that “a variety of approaches for determining capital adequacy could justifiably result in different capital requirements for the same type of transaction”.<sup>45</sup>

Under the Basel Concordat of 1983,<sup>46</sup> which prescribes the distribution of supervisory responsibilities for a bank with cross-border operations, responsibility for the supervision of solvency, which includes that of capital, differs for branches and subsidiaries. For a branch (which is an integral part of its

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<sup>43</sup> See, for example, Gandy (2003 and 2004).

<sup>44</sup> “Each issuer shall disclose to the public on a rapid and current basis such additional information concerning material changes in the financial condition or operations of the issuer, in plain English, ... as the Commission {SEC} determines is necessary or useful for the protection of investors and in the public interest” (Section 409, Real Time Issuer Disclosures).

<sup>45</sup> BCBS (2004d, p. 7).

<sup>46</sup> BCBS (1983).

foreign parent and does not have a separate legal status) solvency is primarily the responsibility of supervisors in a bank's home country (although supervisors in the host country retain a general responsibility for monitoring the financial soundness of foreign branches). For a subsidiary (a wholly or majority-owned legally independent institution incorporated in the host country) supervision of solvency is a joint responsibility of home and host supervisors since the entity is legally incorporated in the host country but the bank's overseas exposures also need to be taken into account in the consolidated supervision performed by the home supervisor. However, these guidelines were designed to serve the objectives of prudential supervision and not to deal with problems posed for supervisory coordination by considerations of banking competition.

Thus in the case of a subsidiary the host supervisor would be acting in accord with its rights if it insisted on the Standardised approach. However, this would impose on the parent bank and the supervisor in its parent country the burden (and additional cost) of integrating the subsidiary's approach into the consolidated framework of its operations. In the case of a branch, according to a strict reading, the guidelines of the 1983 Basel Concordat do not accommodate the case in which a banking group's home supervisor has accepted its use of the IRB approach but a host supervisor in the country of one of its branches has decided that banking entities in its jurisdiction should use the Standardised approach.

RF, unlike CP3, does explicitly, though briefly, take up the issue of cross-border communication and cooperation in the implementation of Basel II (RF, paras. 780–783). However, it is limited to the following fairly general guidance.

- Enhanced cooperation between supervisors will be required, especially for the cross-border supervision of complex international banking groups.
- RF should not change the legal responsibilities of national supervisors or the arrangements for consolidated supervision set out in the existing standards of the BCBS.
- Supervisors should communicate the respective roles of home country and host country supervisors to banking groups with significant cross-border operations in multiple jurisdictions.
- A pragmatic approach of mutual recognition is recommended. This “implies recognising common capital adequacy approaches in host jurisdictions, as well as the desirability of minimising differences in the national capital adequacy regulations between home and host jurisdictions so that subsidiary banks are not subjected to excessive burden”.

This guidance is consistent with that in a paper of the BCBS of August 2003<sup>47</sup> where issues involving cross-border supervisory implementation of Basel II are addressed more fully: “where a banking group has operations in at least one country other than the home country, the implementation of the New Accord may require it to obtain approval for its use of certain approaches from relevant host country supervisors on an individual or sub-consolidated basis, as well as from its home country supervisor in respect of consolidated supervision”. The paper acknowledges that whereas “host country supervisors have an interest in accepting the methods and approval processes at the consolidated level, in order to reduce the compliance burden and avoid regulatory arbitrage,...[they] have other legitimate interests which may prevent them from recognising for use at the sub-consolidation level an approach approved at the group level”. Here too the general approach of the BCBS to the distribution of responsibilities for the supervision of bank capital is based on the 1983 Concordat with emphasis on enhanced

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<sup>47</sup> BCBS (2003b).

cooperation and information exchange between home and host supervisors.<sup>48</sup> But effective supervisory cooperation is not always easily achieved, and the difficulty may be greater when there are substantive divergences between the supervisors involved as in the case described above, i.e. divergences regarding acceptance of the Standardised and IRB approaches under Basel II. The BCBS is apparently evaluating case studies covering various aspects of supervisory cooperation regarding implementation of Basel II which may include the issues just raised and lead to more fleshed-out guidelines as to how to deal with them.<sup>49</sup>

Operational risk is a subject concerning which more concrete guidelines concerning the respective responsibilities of home and host supervisors in the context of consolidated implementation of Basel II have been published since CP3 but before RF.<sup>50</sup> Here the subject is the AMA to setting capital requirements for banks with cross-border operations involving subsidiaries, and it is reasonable to assume that these guidelines supplement the rules of RF. The concern of the BCBS results from the multiplicity of bank functions involved in the management of operational risk with the result that “in any banking group, some of these functions will be carried out at the group level, while others will be performed at the level of the individual entity”,<sup>51</sup> but that capital is not necessarily transferable within a banking group during times of stress.<sup>52</sup> In consequence the BCBS emphasises that the allocation mechanism for operational risk across business lines under the AMA should be approved by both the home and the host supervisor, and that the latter should retain the right to impose additional capital requirements if not satisfied that the capital allocated to the subsidiary in its jurisdiction is commensurate with its operational risk profile.

#### **G. INITIAL EXPECTATIONS AS TO THE PACE AND REQUIREMENTS OF IMPLEMENTATION OF BASEL II**

The FSI questionnaire for non-BCBS countries mentioned in section A provides initial indications as to expectations concerning implementation of Basel II, although it was sent out before the decision to extend the timetable for the more advanced options as specified in the RF.<sup>53</sup> The results of the questionnaire included the following.

- Eighty-eight of the 107 respondents, which represent 87 per cent of the total banking assets of these countries, intend to implement Basel II. If BCBS countries are added to this total, this means that over 100 countries expect to implement Basel II.
- Regionally the proportion of banking assets in countries intending to implement Basel II exceeds 90 per cent for Africa, Latin America, the Middle East and non-BCBS Europe and almost reaches 90 per cent for Asia. However, in the absence of a decision on the part of the country with the largest banking system in the region respondents from the Caribbean expecting to implement Basel II represent only 26 per cent of their total banking assets.
- Almost 2,500 banks representing about 45 per cent of the total banking assets in 31 non-BCBS countries are expected to be subject to Basel II by the end of 2006, this level of implementation being due mainly to Africa,<sup>54</sup> non-BCBS Europe, and Asia. By the end of 2009 these figures are

<sup>48</sup> As the paper puts it, “For initial and on-going validation and approval there is likely to be a particular need for cooperation between home country and host country supervisors because the nature of complex banking group structures increases the likelihood that different techniques will be used in different jurisdictions.” (ibid., para.16.)

<sup>49</sup> BIS (2004).

<sup>50</sup> BCBS (2004c).

<sup>51</sup> BCBS (2003b, para. 17).

<sup>52</sup> BCBS(2004c, para. 9).

<sup>53</sup> Financial Stability Institute (2004). Concerning the dates on which the questionnaire was sent out and responses were received see footnote 1 of the FSI paper.

<sup>54</sup> The figure for Africa is sharply reduced if the respondent with the largest banking system is removed from the group.

expected to rise to about 5,000 banks controlling about 75 per cent of the total banking assets of 73 non-BCBS countries. The increase slows during 2010–2015 to 5600 banks representing 77 per cent of banking assets in 82 non-BCBS countries at the end of the period.

- Much of the initial impetus for the adoption of Basel II is expected to come from foreign-controlled banks, one-third of the banking assets in non-BCBS Europe, the Middle East and Latin America and almost all of those in the Caribbean moving to Basel II by the end of 2009 being those of foreign-controlled banks.<sup>55</sup>
- Of the different options for setting the capital requirements for credit risk the foundation version of the IRB approach is expected to be the most widely used, the Standardised approach (including the simplified version) coming closely behind. By 2009 banks representing 50 per cent or more of total assets in all regions except the Caribbean covered by the questionnaire expect to be using the foundation version of the IRB approach. By this date only a small proportion of banking assets is expected to be covered by banks using the advanced version of the IRB approach. However, by 2015 25 per cent or more of banking assets are expected to be covered by banks using the advanced version of the IRB approach in Africa, Latin America and non-BCBS Europe.<sup>56</sup>
- As of the end of 2009 the most commonly used option for setting capital requirements for operational risk is expected to be the simplest Basic Indicator approach. But the expectations by regions vary, the proportion of banking assets being covered by the Standardised approach being especially high for Latin America. The Basic Indicator approach is expected to remain the most widely used approach in 2015, though some increase in the AMA is expected in 2010–2015.

Various issues related to Pillars 2 and 3 were raised in answers to the questionnaire. For example, under Pillar 2 concerns are widely expressed concerning the problems of achieving coordination of home- and host-country supervisors regarding cross-border implementation of Basel II. Under Pillar 3 several problems are raised: achieving an appropriate balance between transparency and legitimate needs for confidentiality is cited under this heading by several African, Asian and Latin American respondents; and there are references to the “cultural change” necessary for continuous disclosure and to the resources required to ensure that information is adequate and accurate.

But probably most important are the references to requirements on the front of supervisory resources. Training on Basel-related topics in non-BCBS countries is expected to be necessary for about 9,400 supervisors or almost 25 per cent of the total number of the countries’ supervisory staff. An issue raised in the same context by the BCBS is that of retaining qualified supervisory staff, a problem often mentioned in this context being the magnet which the higher pay in the private sector for personnel such as banks’ internal controllers constitutes here.<sup>57</sup> The BCBS’s proposed solutions include cross-border supervisory cooperation between countries with banks operating in both jurisdictions and secondments involving movement between the public and private sectors. The BCBS also points to the possibility of reliance on the services of external auditors, who are already accorded a significant role in several countries’ banking supervision.

<sup>55</sup> In the absence of a single agreed definition of “foreign controlled” the FSI allowed countries to provide information about such banks in accordance with their own rules and definitions. See *ibid.*, footnote 10.

<sup>56</sup> The proportions of banking assets covered by the two versions of the IRB approach for Africa are heavily influenced by those for the country with the largest banking system, whose removal thus leads to a substantial reduction.

<sup>57</sup> BCBS (2004d, pp. 25–26). The problem posed by the need for additional banking supervisors to implement Basel II is not limited to non-BCBS countries. In Germany there are estimates that more than 500 extra supervisors will be needed to implement Basel II. See editorial in *The Financial Regulator*, 6(1), June 2001.

## H. THE BCBS RESPONSES TO COMMENTS AND SOME OUTSTANDING ISSUES

As mentioned in section B, the BCBS has significantly relaxed the timetable for projected implementation of Basel II. This represents partly an acknowledgement that some countries (including the United States) have indicated their intention to conduct further studies of the likely impact of Basel II, and that, as already indicated in section G, implementation of so far-reaching a change in bank regulation will put a formidable strain on limited human resources in the form of bank supervisors and internal controllers in banks themselves. The adjustments to Basel II already made in response to comments during the extensive consultation exercise which has accompanied the work leading to RF cover several subjects and involve a number substantial changes. However, there remain issues where concerns are still outstanding, sometimes owing to the difficulty both of identifying and agreeing on appropriate measures and on including them in the framework of Basel II. Some of these issues are taken up here.

*Changes in capital requirements.* As part of the Basel II process the BCBS has made estimates of what effects the proposed new rules would have on the regulatory capital of a sample of banks, if applied to their existing portfolios and systems. The results of the latest stage of this exercise, Quantitative Impact Study 3 (QIS3), were published in May 2003 and included estimates of the changes not only in the banks' overall capital charges but also in those for credit and operational risk separately as well as for the major categories of exposure. (A summary of QIS3 is provided in the Annex to this paper.) However, these studies were based on the pre-October-2003 rules which involved including EL as well as UL in setting capital requirements and a correspondingly different way of taking account of banks provisions and reserves for loan losses. As noted in section B, the BCBS is to conduct further work on the effects on capital requirements of RF, and this is likely to be paralleled by national studies, including one in the United States whose regulators have expressed some dissatisfaction with QIS3.

*Reduction of risks through diversification.* A major criticism of the 1988 Basel Capital Accord was its failure to account for the reduction of credit which can be achieved through the diversification of banks' portfolios. This criticism has been addressed only up to a point in Basel II.

- The Standardised approach of Basel II is basically a new version of the 1988 Accord with a more elaborate calibration of credit risk and is thus open to similar criticisms.
- Under the IRB approach the correlation terms in the formulae for the risk weights are designed to take account of risk diversification within the different categories of assets specified. They have been adjusted during the Basel II exercise in response to representations from economic sectors and politicians. A well publicised example of such an adjustment was the reduction for SMEs discussed in section C.3(d).
- As a result of another change under the IRB approach since CP2 the correlation terms for corporate, sovereign, bank, and other retail exposures are now decreasing functions of PD to reflect the fact that the credit risk of riskier firms (i.e. those with a higher PD) is affected more by idiosyncratic factors and less by systematic, macroeconomic factors.<sup>58</sup>

None the less the correlation terms of the IRB approach of Basel II can only take account of diversification effects within the categories of assets specified and not across these classes. Diversification across these classes has been suggested as a vehicle for reducing the capital required for, and thus the interest rate on, international bank loans to developing countries, the proposal here

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<sup>58</sup> Resti (2002, pp. 12–13).



being based on estimates of the reduction in credit risk which could be achieved through a portfolio appropriately diversified across borrowers from developed and developing countries.<sup>59</sup> The inclusion of rules for the design of such a portfolio in Basel II can be conceived in principle but would have the effect of further complicating an already complex accord. Such design within the parameters of the IRB approach of Basel II could, however, be undertaken as part of implementation by national regulators and is perhaps best left to action at this level.

*Procyclicality.* There is a well recognised danger that the procyclicality of bank lending, which tends anyway to fluctuate with economic activity, will be increased by rules for banks' capital which align it more closely with credit risks. A major concern in the design of Basel II has been the mitigation of such effects. The problem here is that, if credit risk as measured in the rules of Basel II responds to indicators correlated with cyclical movements in lending, its regulatory capital requirements may exacerbate these movements through their effects on the price and other terms of lending.

The initial concerns as to the procyclical impact of Basel II focused on the Standardised approach to setting risk weights. As noted above in sections C.2(a) and C.2(b), this approach includes reliance on credit rating agencies for the assessment of credit risk and for the setting of risk weights. Commentators have drawn attention to the frequently poor record of the major agencies in forecasting crises and to widespread instances where ratings downgrades coincided with or even followed deteriorations in creditworthiness which were sometimes associated with crises.<sup>60</sup> The subsequent shift of attention under this heading towards the IRB approach does not necessarily mean alleviation of concerns as to the procyclicality of the Standardised approach, although it probably reflects greater awareness of options other than the major credit rating agencies under Basel II as to the choice of the ECAs whose ratings would be used to set risk weights, variations among ECAs in their ratings which makes generalisation about their effects more difficult, and perhaps belief that the majors will improve their forecasting performance in response to recent criticisms.

However, more recently under this heading the main focus of attention has been the IRB approach. The objective of this approach is to produce more risk-sensitive capital requirements than the Standardised approach, and it is precisely this greater risk-sensitivity which might make bank lending more procyclical. However, the likely strength of this effect is hard to gauge owing to the diversity of practices among banks regarding the relationship between regulatory capital, on the one hand, and the pricing and other terms of their lending, on the other. For example, if Basel II merely brings regulatory capital more into line with economic capital (see Box 1) and to pre-existing practices for the managing and pricing of credit risk, there will be little or no impact in the form of increased procyclicality of bank lending (though existing levels of procyclicality will not be reduced). Some commentators even believe that the improved risk management resulting from Basel II, in particular improved provisioning for loan losses, may actually serve to smooth the lending cycle.<sup>61</sup> Such optimism, however, probably underestimates competitive pressures on bank lending conducive to procyclicality.

Procyclical variation in risk weights can result from variation of both PD and LGD. In the case of Basel II attention has focused more on PD, although the usual view is that recovery rates on defaulted loans decline, and thus LGD rises, with the deterioration of the economic conditions surrounding the default for reasons such as falls in the value of collateral.<sup>62</sup> Part of the BCBS's efforts at mitigating possible procyclical effects of Basel II is contained in supervisory guidance under Pillar 2 as discussed

<sup>59</sup> Griffith-Jones et al. (2003).

<sup>60</sup> Evidence concerning the credit rating agencies' performance is reviewed in Cornford (2000, pp. 17–18).

<sup>61</sup> See, for example, Fabi et al. (2004, p. 36).

<sup>62</sup> See, for example, Matten (2000).

in section D. But various features of the risk weights of the IRB approach under Pillar 1 can also be expected to contribute to this objective.

- The length of the observation period for estimating PD must be at least five years and that for LGD and EAD seven years, and if the the observations for any of the sources used span a longer period, then the latter should be used.<sup>63</sup>
- As part of the changes following comments on CP2 the curve relating risk weights to PD has been flattened in many cases, thus reducing the potential increase in the capital charge for borrowers owing to credit-migration effects as their PD rises in response to a cyclical downturn.<sup>64</sup> One of these changes has already been mentioned, namely the revised specification of the correlation terms for many categories of borrower, the terms now decreasing with increases in PD. The new approach to EL and UL with its greater allowance for eligible provisions can be expected to reduce the importance in risk-weighted assets of defaulted loans during cyclical downturns when such loans increase as a proportion of banks' portfolios. For example, for corporate, sovereign and bank exposures the capital requirement (K in the formula described in section C.3(c)) for defaulted loans is now only the positive difference, if any, between LGD and EL (presumably assumed to be covered by eligible provisions).<sup>65</sup> Moreover another technical change since CP2 in the formula for the risk weights under the IRBA, the increase in the confidence level for the threshold change in the borrower's asset value which triggers default, also has the effect of flattening the curve for risk weights.

However, these features of Basel II are unlikely to lay to rest the issue of how the regulatory regime for banks' capital can be designed in such a way that it dampens rather than accentuates the procyclicality of bank lending. There are various measures for this purpose which could be adopted at national level and which are either consistent with Basel II or may contribute to its effectiveness.

One such action might be the adoption of *dynamic provisioning*. As a result of such provisioning a protective cushion of loss reserves is built up in good times so that it is available to be drawn down in bad times, thus mitigating procyclical pressures on bank lending from the negative correlation widely observed between banks' provisions and the business cycle. The key concept here is the latent risk of a loan at origination. If this risk is underestimated during an economic upturn owing to failure to give adequate weight to the impact of an eventual unfavourable change in economic conditions, then the provisions for possible losses on the loan will be underestimated. Extended to a portfolio of loans such underestimation can give a distorted picture of a bank's profitability and solvency. As the Chairman of the BCBS has put it, "the acknowledgement of latent losses is a prudent valuation principle (similar to the mathematical reserves set aside by insurance companies) that contributes to correcting the cyclical bias that currently exists in the profit and loss account".<sup>66</sup> Most of the recent writing about latent risks has referred to the underestimation of risks during upturns in the business cycle. The converse of this rule is the likelihood of overestimation of loan losses over a longer period during economic downturns owing to a failure to make proper allowance for an eventual economic upturn. There has been much interest recently in rules embodying dynamic provisioning adopted in Spain in July 2000, and as this experience is more widely studied, other countries may adopt similar systems.<sup>67</sup>

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<sup>63</sup> See RF, paras. 463, 472, and 478.

<sup>64</sup> See, for example, Fabi et al. (2004, pp. 37–42) and Catarineu-Rabell et al. (2003, pp. 13–15).

<sup>65</sup> See RF, paras. 272, 468 and 471.

<sup>66</sup> See Caruana (2002, p. 49).

<sup>67</sup> Concerning dynamic provisioning in Spain see *ibid.*, pp. 50–53, and Fernández de Lis et al., (2001, pp. 343–348).

National supervisors could also promote the use of *internal models leading to lower procyclicality*. Under the IRB approach the level of procyclicality of risk weights and capital requirements may depend on the modelling system used by a bank to set borrowers' risk ratings and thus to determine their migration between ratings in response to the business cycle. Various such systems are used, among them some intended to generate ratings similar to those of the major credit rating agencies and others (such as KMV Corporation's Credit Monitor) based on an option-theoretic model of default. Estimates reported by Bank of England economists indicate much lower variability for agency ratings – and thus also for those of systems mimicking them - than for option-theoretic systems.<sup>68</sup> This analysis indicates an area in which supervisory guidance regarding model specification may be capable of reducing procyclicality in banks' lending.<sup>69</sup>

*Effects on competition among banks.* Section F drew attention to possible problems posed for cross-border supervisory cooperation in cases where the host countries of foreign banking entities are unwilling to accept their use of the IRB approach sanctioned in their home countries owing to the consequent competitive disadvantage for domestic banks using the Standardised approach. This is an instance of the situations which can arise owing to rules designed to produce lower minimum levels of regulatory capital for banks using the IRB approach, while maintaining levels of such capital unchanged overall, since banks using the Standardised approach must in such conditions face higher minimum regulatory capital requirements. Possible effects of this kind are already proving a politically sensitive issue in the United States where smaller banks staying with the rules of the 1988 Basel Capital Accord as described in section A fear that Basel II will leave them at a competitive disadvantage.<sup>70</sup> The eventual effects of Basel II on competition among banks are in fact hard to predict since competitive advantage hinges on other factors in addition to differences in levels of regulatory capital.<sup>71</sup> However, the issue is likely eventually to be source of political controversy in countries other than the United States, particularly where the unequal adoption of the IRB approach under Basel II is perceived as adding to the competitive disadvantages under which smaller banks already perceive themselves as labouring vis-à-vis larger, more sophisticated institutions.

*Global diversity of financial markets.* Global diversity of banking systems and regimes has been a source of problems throughout the Basel II exercise and is reflected in many of the comments submitted to the BCBS by bodies in developing countries. It has been a source of long-standing problems for consolidated financial reporting and supervision. As mentioned in section E, it has complicated the re-design of banks' information systems required as part of the implementation of Basel II. Important problems under this heading are due to differences in financial systems which are inevitable consequences of differences in economic development. These differences can have significant implications for the application of the rules of Basel II to subjects such as valuation, whose procedures vary with the levels of development of markets for different assets. Similar problems have also had to address as part of other major initiatives regarding global rules such as that on International Financial Reporting Standards. Owing to the global diversity of financial markets the implementation of Basel II beyond the large, sophisticated banks of advanced economies which are already in many cases well prepared may still throw up difficulties not yet fully foreseen.

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<sup>68</sup> Catarineu-Rabell et al. (2003, pp. 16–23).

<sup>69</sup> On requirements to be met by models used to assign borrower ratings or to estimate PD see RF, para. 417.

<sup>70</sup> For the views of a group of smaller banks see Independent Community Bankers of America (ICBA, 2003).

<sup>71</sup> For a skeptical view of the importance of such differences in competition in the United States market for lending to SMEs see Berger (2004).

## Annex

## SUMMARY OF QIS3

QIS3, which was carried out during a period starting in October 2002, made estimates of the changes due to Basel II not only in the banks' overall capital charges but also in those for credit risk and operational risk separately as well as for the major categories of exposure.<sup>72</sup> For this exercise countries were broken down into three groups, G10 (which actually denotes the 13 member countries of the BCBS), EU (nine of whose 15 member countries at the time of QIS3 were also members of the BCBS), and Other (which includes a set of advanced and developing economies). Banks were split into two Groups 1 and 2, of which the first consists of large, diversified and internationally active banks with Tier 1 capital above €3 billion, and the second of smaller, frequently more specialised entities. Banks were invited to carry out the exercise for all three major approaches under Basel II, the Standardised approach and the foundation and advanced versions of the IRB approach. Unsurprisingly, however, the size of the samples decreased with the degree of sophistication of the approach: less than 25 per cent of banks in the category, Other, which completed estimates for the Standardised approach also did so for the foundation version of the IRB approach, and only a subset of those which completed estimates for the Foundation version of the IRB approach also did so for the advanced version.<sup>73</sup> A summary of the overall results is provided in Table 1.

**Table 1**  
Global results of QIS3: overall change in capital requirements  
(Per cent)

|              |                           | Standardised |                  |                  | IRB Foundation |                  |                  | IRB Advanced |                  |                  |
|--------------|---------------------------|--------------|------------------|------------------|----------------|------------------|------------------|--------------|------------------|------------------|
|              |                           | Ave-<br>rage | Max <sup>1</sup> | Min <sup>1</sup> | Ave-<br>rage   | Max <sup>1</sup> | Min <sup>1</sup> | Ave-<br>rage | Max <sup>1</sup> | Min <sup>1</sup> |
| <b>G10</b>   | Group 1 <sup>a</sup>      | <b>11</b>    | 84               | -15              | <b>3</b>       | 55               | -32              | <b>-2</b>    | 46               | -36              |
|              | Group 2 <sup>a</sup>      | <b>3</b>     | 81               | -23              | <b>-19</b>     | 41               | -58              |              |                  |                  |
| <b>EU</b>    | Group 1 <sup>a</sup>      | <b>6</b>     | 31               | -7               | <b>-4</b>      | 55               | -32              | <b>-6</b>    | 46               | -31              |
|              | Group 2 <sup>a</sup>      | <b>1</b>     | 81               | -67              | <b>-20</b>     | 41               | -58              |              |                  |                  |
| <b>Other</b> | Groups 1 & 2 <sup>b</sup> | <b>12</b>    | 103              | -17              | <b>4</b>       | 75               | -33              |              |                  |                  |

<sup>1</sup> Maximum and minimum figures relate to individual bank results. Operational risk figures were generally determined on the basis of the Standardised approach and for a few the Basic Indicator approach specified in CP3 but one bank used the Advanced Measurement approach.

<sup>a</sup> For these grouping see main text.

<sup>b</sup> The following countries are included in this grouping : Australia, Brazil, Bulgaria, Czech Republic, Chile, China, Hong Kong (China), Hungary, India, Indonesia, Korea Rep. of, Malaysia, Malta, Norway, Philippines, Poland, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, Tanzania, Thailand and Turkey.

In the BCBS's view the results of QIS3 indicated that Basel II would achieve its major objective of broadly unchanged minimum capital requirements for large internationally active banks which are likely to respond to the incentives to use the IRB approaches. There would also be substantially reduced requirements for smaller, more domestically oriented banks adopting these approaches as a result of the greater importance in their portfolios of retail exposures. The BCBS acknowledged that general conclusions as to the effect of Basel II on banks from countries in the Other category were more difficult owing to variation in market conditions and the relative importance of banks' different activities. Of the more detailed results a number seem worthy of special mention.

- Under the Standardised approach for G10 and EU banks belonging to Group 1 and for Other banks belonging to both groups overall capital charges for credit risk changed on average by at most limited amounts, while for G10 and EU banks belonging to Group 2 they were significantly reduced mainly as a result of larger contributions of their retail exposures to the declines in charges. The new charge for operational risk led to an increase in the combined capital charge for all categories of bank, outweighing the contribution of the reductions in the charge for credit risk when this applies.
- Under the foundation version of the IRB approach the overall charge for credit risk contributed to the decline in capital requirements of for all categories of banks, the largest contributions (minus 27

<sup>72</sup> BCBS (2003c).

<sup>73</sup> Of the G10 banks 185 provided estimates under the Standardised approach, 109 under the Foundation version of the IRB approach, and 57 under the Advanced version of the IRB approach. So few returns were received from banks belonging to Group 2 under the Advanced version of the IRB approach that the results are not shown in BCBS, *ibid*.

per cent) being recorded for G10 and EU banks belonging to Group 2, and smaller ones for G10 and EU banks belonging to Group1 (minus 7 and minus 13 per cent) and for Other banks (minus 3 per cent). In all cases the largest contribution to this reduction was due to retail exposures, smaller contributions for G10 and EU banks being made by exposures to SMEs and corporates. For G10 and EU banks belonging to Group 2 the increased charge for operational risk offsets only part of the reduction in the charge for credit risk, so that overall capital requirements decreased by 19 and 20 per cent. For G10 and EU banks belonging to Group 1 and for Other banks the contribution of operational risk offset part or all of that of credit risk, resulting in an increase in overall capital requirements for the first grouping (of 3 per cent), a decrease for the second (of 4 per cent), and an increase for the third (of 4 per cent).

- Under the advanced version of the IRB approach (for which only G10 and EU banks belonging to Group1 provided estimates) G10 banks recorded a reduction in the overall charge of 2 per cent and EU banks one of 6 per cent. Once again the largest contributions to the reductions in overall credit risk were due to retail exposures. In both cases the contribution of operational risk to increasing overall capital requirements offset part but not all of the decrease due to credit risk.
- G10 banks recorded large increases in capital for exposure to securitised assets under all three approaches and for exposure to the credit risk of equity positions under both IRB approaches. These increases reflected the omission from the 1988 Basel Capital Accord of proper accounting for activities under these two headings.<sup>74</sup> However, the exposures in both cases accounted for only small proportions of total capital.
- The portfolios of sovereign exposures of G10 banks providing estimates under the Standardised and foundation version of the IRB approach were of high quality: under the first approach 89 per cent of the exposures of banks in Group 1 and 99 per cent of the exposures of those belonging to Group 2 were rated BBB- or better (87 per cent of the exposures those in Group 1 and 99 per cent of those in Group 2 being rated A- or better); and under the second approach 90 per cent of the exposures of banks in Group 1 and 98 per cent of the exposures of those in Group 2 were accorded PD of less than 0.2 per cent, which generally corresponds to a rating better than A-.

These figures were based on the application of proposed Basel II rules to existing portfolios and systems.<sup>75</sup> This probably introduced upward biases in the figures for capital requirements. For example, under both the Standardised and foundation IRB approaches banks' replies indicated that they had under-reported levels of collateralisation owing to inadequate integration of their reporting systems for exposures and for collateral. Moreover – and perhaps more importantly – banks' existing portfolios correspond to pre-Basel II rules. These portfolios would be likely to be adjusted in response to the new rules once they were in place with consequent changes in the levels and distributions of required capital.

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<sup>74</sup> *ibid.*, p. 15.

<sup>75</sup> Although QIS3 began in October 2002, the rules used were those eventually incorporated in CP3. See *ibid.*, p. 1.

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