



BASEL 2 AT A TIME OF FINANCIAL PERIL

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I. Introduction

At the best of times introduction of rules as complex as those of Basel 2 was going to be a drawn-out, uneven process. Basel 2 sets levels of minimum regulatory capital for three categories of banking risk – credit, market and operational – according to rules which include a multiplicity of different approaches. (See Box 1.) This multiplicity reflects the objective of the Basel Committee on Banking Supervision (BCBS) to accommodate within these rules banks of very different levels of sophistication as well as points raised by critics during the long process of drafting Basel 2. But these are times when rules for the management of banking risks cannot avoid particularly searching scrutiny. 2007 witnessed the spread of a credit crisis originating in housing finance in United States to financial markets and institutions in many other countries. This crisis has raised questions concerning the distribution, management and regulation of financial risks – including under the last heading Basel 2.

Plans for the introduction of Basel 2 have now acquired what appears to be unstoppable momentum. Thus Basel 2 will have global implications for banking practice and regulation. This paper focuses principally on six aspects of the initiative: (1) its rationale and origins; (2) the process which led to the Basel 2 agreement, including the way in which problems and criticisms which emerged during drafting were handled; (3) data on the global plans for the introduction of Basel 2, including detailed discussion of the position in some major industrialised and developing countries; (4) the quantitative exercises designed to estimate Basel 2's effects; (5) reasons for the global pattern of introduction of Basel 2; (6) outstanding issues already being or likely soon to be addressed by the BCBS, including questions raised by the credit crisis; and (7) the agenda for possible future actions concerning subjects closely related to Basel 2.

Box 1. The Basel capital accords

Basel 2 is designed to replace the 1988 Basel Capital Accord (Basel 1). Both agreements were drawn up by the Basel Committee on Banking Supervision (BCBS), a body of banking regulators of the countries of the G10 and selected other developed countries, originally established in 1974 and linked geographically and organisationally to the Bank for International Settlements in Basel (an organisation which dates from 1930 primarily to serve the functions of bank and meeting-place for national central banks).

Basel 1 and Basel 2 are agreements on frameworks for assessing the capital adequacy of banks. The framework sets rules for the allocation of capital to banks' exposures to risks through its lending and other operations. The agreements have two objectives. One is prudential, namely to help to ensure the strength and soundness of banking systems. The other is to help to equalise cross-border competition between banks (provide "a level playing field") by eliminating competitive advantages due to differences among countries in their regimes for capital adequacy (a special concern of United States and European banks vis-à-vis competitors from Japan in the 1980s).

As a measure of the difference between the value of a bank's assets and liabilities capital serves as a buffer against future, unidentified losses. The capital of banks consists of equity and other financial instruments which have the properties of being available to support an institution in times of crisis. Financial instruments classified as capital are usually associated with higher rates of return, and are thus a more costly way of financing banks' assets than other liabilities such as deposits. The rate of return on capital is a determinant of banks' pricing of loans and of other transactions involving

exposure to risk and as such is a factor in their competitiveness vis-à-vis other banks. (See Box 2 for a more schematic description of the pricing of a bank's transactions.)

Capital under the initial version of Basel 1 agreed in 1988 was to serve as a buffer against credit risk, i.e. that of the failure of borrowers or parties to the other banking transactions to meet their obligations. Under the accord capital was to constitute 8 per cent of banks' risk-weighted assets.

Measurement of these risk-weighted assets was based on the attribution of weights reflecting the credit risk of different classes of counterparty (sovereign, OECD or non-OECD, other public sector, corporate, etc.). Off-balance-sheet exposures (such as guarantees, various contingent liabilities, and interest-rate and exchange-rate derivatives) were converted to their on-balance-sheet equivalents by multiplying them by factors specified for this purpose. The resulting figures were then weighted according to the class of counterparty as for on-balance-sheet exposures. For example, collateralised documentary credits received a credit conversion factor of 20 per cent and the resulting on-balance-sheet equivalent would be multiplied by the risk weight of the counterparty to which the documentary credit was made available.

The attribution of credit risk weights (0, 10, 20, 50 and 100 per cent) followed a scheme which favoured governments and certain other entities from OECD countries over those from non-OECD countries, and banks over other commercial borrowers. Thus a weight of 0 per cent was attributed to claims on OECD governments and central banks, and one of 20 per cent to claims on banks incorporated in OECD countries and to banks incorporated in non-OECD countries with a residual maturity of up to one year. A weight of 100 per cent was attributed to claims on private sector entities not otherwise specified such as non-financial corporations and non-OECD governments.

Through an amendment in 1996 Basel 1 was extended to cover market risks, i.e. those due to the impact on a bank's portfolio of tradable assets of adverse changes in interest and exchange rates and in the prices of stocks and other financial instruments. The amendment accommodated two alternative ways of setting minimum capital levels for market risk. One involved the use by banks of their own internal risk-management models, and the other a standardized methodology under which capital requirements are estimated separately for different categories of market risk and then summed to give an overall capital charge (as for credit risks).

Basel 1 was originally designed for internationally active banks. However, by the second half of the 1990s it had become a global standard and had been incorporated into the prudential regimes of more than 100 countries. But for reasons explained in section II Basel 1 was also the subject of increasingly widespread dissatisfaction so that a decision was taken to initiate what proved to be the lengthy process of drafting a successor agreement. The definitive version of the new accord, Basel 2, became available in mid-2006.

Basel 2 consists of three Pillars. Under Pillar 1 minimum regulatory capital requirements for credit risk are calculated according to two alternative approaches, the Standardized and the Internal Ratings-Based. Under the simpler of the two, the Standardized Approach, the measurement of credit risk is based on ratings provided by external credit assessment institutions. According to the text of the agreement export credit agencies as well as credit rating agencies are indicated for this purpose. However, the expectation of both the BCBS and of national authorities is clearly that the role will most frequently be assumed by credit rating agencies. Owing to perceived shortcomings in the performance of the major credit rating agencies, which are discussed below, this choice has proved controversial.

Under the Standardized Approach of Basel 2 entities from OECD countries are no longer favoured over those from non-OECD countries. Both banks and non-financial corporations are now differentiated according to their credit ratings (of which the BCBS uses those of Standard & Poor's for illustrative purposes). Thus non-financial corporate borrowers rated between AAA and AA- are attributed a weight of 20 per cent, those rated between A+ and A- one of 50 per cent, those rated between BBB+ and BB- one of 100 per cent, and those rated below BB- one of 150 per cent. Unrated non-financial corporate borrowers are attributed a weight of 100 per cent.

Under the Internal Ratings-Based approach, subject to supervisory approval as to the satisfaction of certain conditions, banks use their own rating systems to measure some or all of the determinants of credit risk, i.e. the probability of default, loss given default, exposure at default and the remaining maturity of the exposure. Under the Foundation version of the Internal Ratings-Based Approach, banks calculate the probability of default on the basis of their own ratings but rely on their supervisors for measures of the other determinants of credit risk. Under the Advanced version of the Internal Ratings-Based Approach, banks also estimate their own measures of all the determinants of credit risk, i.e. the loss to a loan or other exposure given default and the exposure at default as well as the probability of default. (A more technical characterisation of key features of the IRBA is provided in the annex to this paper.) Pillar 1 also contains rules for regulatory capital requirements for market risk which follow those of Basel 1.

Unlike Basel 1, Basel 2 contains regulatory capital requirements for operational risk which covers losses due to events such as human errors or fraudulent behaviour, computer failures, or disruptions from external events such as earthquakes. Under the Basic Indicator Approach, the simplest of the three options in Basel 2, the capital charge for operational risk is a percentage of banks' gross income. Under the Standardized Approach to operational risk the capital charge is the sum of specified percentages of banks' gross income or loans for eight business lines. Under the Advanced Measurement Approach to operational risk, the most sophisticated option of Basel 2, subject to the satisfaction of more stringent supervisory criteria, banks estimate the required capital with their own internal measurement systems.

Also unlike Basel 1, Basel 2 contains detailed rules concerning securitisation exposures, i.e. the exposures for a bank after the transfer of the risks of assets on its balance sheet to outside investors, a category of risk which was omitted from Basel 1. The rules of Basel 2 are intended to establish stringent conditions for the recognition of the transfer of risk from banks' balance sheets and to set regulatory capital charges for the risks remaining with banks.

Under Basel 2 the minimum regulatory capital ratio remains at the 8-per-cent figure of Basel 1. The denominator of this ratio consists of estimated exposures for credit, market and operational risk. The numerator consists of capital as in Basel 1 but after adjustment in certain ways. Conceptually the most important of these adjustments is the exclusion of risks corresponding to several categories of expected losses from the denominator of the ratio and of banks' corresponding loss provisions from capital in the numerator. This exclusion brings Basel 2 more into line with traditional banking practice according to which expected losses are covered by loss provisions, while capital is intended to cover unexpected losses.

Pillars 2 and 3 of Basel 2 are concerned with supervisory review of capital adequacy and the achievement of discipline in banks' risk management through disclosure to investors. Under the guidelines of Pillar 2 supervisors are to prescribe additional regulatory capital not only for the credit, market and operational risks of Pillar 1 if they judge this to be necessary for supervisory reasons but also for risks not covered under these three headings, such as liquidity risk (which covers banks'

ability to obtain funding and the prices at which it can sell assets in financial markets) and interest-rate risks due to changes in the margins between the rates at which banks lend and borrow.

Pillar 3 specifies rules for the disclosure of information concerning banks' capital and risk management. These rules are intended to enable financial market participants as well as supervisors to subject these to scrutiny which will reinforce the effectiveness of Pillars 1 and 2.

II. Rationale and origins

Major reasons for dissatisfaction with Basel 1 were its crude calibration of credit risks and the growing gap between regulatory rules for bank capital and actual practices for the management and supervision of such risks. The rules of Basel 1 also discriminated unjustifiably in favour of borrowers from OECD countries in comparison with borrowers not belonging to this group.

Regulators' dissatisfaction focussed especially on the perverse incentives created by risk calibration according to which more profitable but also riskier loans and other exposures were not necessarily associated with higher regulatory capital charges. This created incentives to regulatory arbitrage under which banks could reduce their holdings of less profitable assets whose risks were overestimated under the capital charges of Basel 1 and increase their holdings of more profitable assets whose risks were underestimated, thus increasing profits without a corresponding allocation of capital to cover the greater exposure to credit risk (losses from which would probably take time to appear). Regulators were also aware that changes to Basel 1 were needed to take fuller account of new banking techniques resulting from financial innovation.

The different sources of regulatory concern overlapped in the case of securitization in the form of operations by which banks pool loans and other debt obligations and then sell to investors interests in the pool (asset-backed securities or ABS), thus managing their own exposures to credit risks and pocketing fees. Securitization of assets by banks increased substantially in the 1990s.

Large-scale securitization of mortgage loans antedated Basel 1. But the rapid expansion of the 1990s also involved non-mortgage debt. In March 1998 outstanding non-mortgage securitizations by the 10 largest United States banks amounted to more than 25 per cent of their loans (measured after appropriate adjustment for risk). The securitizations carried out by European banks increased from USD 8.5 billion in 1995 to USD 41 billion in 1997. Much of the securitization of mortgage debt would no doubt have taken place even in the absence of Basel 1. However, a 1999 report of a working group of the BCBS itself attributed a major part of the expansion of the securitization of non-mortgage debt to regulatory capital arbitrage.¹

The lack of internationally agreed rules concerning securitisation exposures was thus considered by banking regulators to be a major lacuna in Basel 1, and its remedy was a major objective of Basel 2. (Securitization and the associated exposures to risk for banks and investors are described in Box 4.)

Major banks' dissatisfaction with Basel 1 was due to their belief that it did not reflect advances in their internal management and measurement of credit risk. In the 1996 Market Risk Amendment of Basel 1 banks were accorded the right, subject to certain conditions, to use of their own internal models to measure and allocate capital for market risks, i.e. those due to the effects of adverse changes in financial markets on the value of their holdings of tradable assets (see Box 1). Rules permitting them also to rely on their internal systems to measure and set regulatory capital charges for credit risks, the banks believed, would enable them to achieve an allocation of capital better

¹ See *Capital Requirements and Bank Behaviour: the Impact of the Basle Accord*, Basle Committee on Banking Supervision Working Paper No.1 (Basel: Bank for International Settlements, April 1999), pp. 3-4.

reflecting such risks, and would have the additional advantage that overall minimum required levels of capital would be lower, with potentially favourable implications for their rates of return.

In pursuit of this objective some bankers supported the application to credit risk of the “precommitment” approach to capital requirements which had originally been proposed, but not accepted by regulators, for market risk. Under this approach a bank would “precommit” to a maximum loss during a designated period. This loss would be the basis for its regulatory capital charge. At the expiration of the period the bank's supervisor would verify whether its losses had exceeded the limit. If so, the bank would be subject to a penalty such as a fine or a higher future capital charge. It would also experience damage to its reputation due to disclosure of these penalties.

In the event the BCBS went part of the way towards allowing banks to use their internal systems of measurement of key determinants of credit risk in some of the options permitted in Basel 2. But it stopped short of accepting estimates of a bank's total credit risk generated by these models.

There were several reasons for this unwillingness. One was the lack of homogeneity and comparability of the measurement and modelling of credit risks at different banks, a lack which would complicate the task of setting generally applicable supervisory standards. Another was the fact that the data used to model credit risks were peculiar to individual banks and not, as in the case of market risks, for the most part publicly available.

The shortcomings of banks' models were found by regulators to be particularly important in the measurement of correlations of the determinants of credit risk. An important determinant of the total credit risk of a bank's portfolio is the degree to which the risks of individual loans and other exposures are correlated. A more diversified portfolio – i.e. a portfolio with less correlated risks – contains a lower level of total risk than a less diversified one. But risk correlations can be unstable, jumping from low to extremely high levels during periods of volatility in financial markets and thus making dependence on modelled estimates of correlation problematic.

III. Early drafts and critical reactions

The Russian and Long Term Capital Management (LTCM) crises of the autumn of 1998 brought additional urgency to the revision of the Basel capital standards. It is difficult to overstate the shock caused by these crises to financial regulators and policy makers. At the time the accepted wisdom was that robust financial markets characterised by high levels of liquidity and by diversified participants and instruments were more or less inoculated against financial crises. As a former manager of the BIS exclaimed, "Then how is it that the Russian crisis produced in [the United States] market the possibility of a credit crunch, a virtual standstill in bond issues for almost a month...? How can one explain the dramatically increased demand for liquidity protection ? Why did the Fed have to step in to prevent fire sales by LTCM that led to disruptions in a purportedly highly liquid, deep and transparent bond market and that risked 'triggering excessive price movements' ?"²

The institutions most directly threatened by the crisis of 1998 included securities firms which were not the primary focus of Basel capital requirements. But banks were also exposed to the crisis through their lending to these firms and through their own securities activities. Erosion of the distinctions between different categories of financial institution had long been under way and was already reflected, for example, in Basel 1's inclusion in 1996 of capital requirements for banks' market, i.e. trading, risks.

² A.Lamfalussy, *Financial Crises in Emerging Markets*, New Haven and London: Yale University Press, 2000, p. 140

A preliminary outline of Basel 2 was published in 1999. This was followed in 2001 by a massive first draft attempting a comprehensive – but in its details still incomplete – blueprint which included in addition to the core document seven more specialised papers concerning different topics covered by Basel 2. Outstanding features of this draft were the multiple options for setting minimum regulatory capital requirements for credit and operational risks, and the explicit objective of bringing regulatory capital more into line with economic capital, i.e. the capital which banks themselves allocate to different risks and to which regulatory capital establishes a floor. (Concerning the distinction between regulatory and economic capital see Box 2.)

This blueprint provided the framework which was retained in the final draft. Major features of the blueprint were the multiple options for setting the levels of minimum required capital and the attempt to achieve greater convergence between regulatory and economic capital, the lack of which had been one of the weaknesses of Basel 1 and one of the reasons for its incentives to regulatory arbitrage.

Box 2. Economic and regulatory capital

The distinction between economic and regulatory capital is often at the root of misunderstandings in discussion of the relation between banks' capital and the pricing of their loans and other services. Economic capital reflects decisions taken concerning the appropriate level for the buffer against unidentified future losses solely in response to expected future revenues and losses and in abstraction from regulatory rules except to the extent that these constitute a floor. When considering the internal allocation of a bank's capital to different loans, 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 determine the price of the loan so long as the bank's total capital exceeds the regulatory minimum.

This can be illustrated with a simple numerical example of a loan of USD 100.³ The rate of interest on the loan is the sum of the interest cost of the deposits or other debt (at a rate of interest of 10 per cent), operating costs (2 per cent), reserves for expected (as opposed to unidentified future) losses (1 per cent), and the cost of capital (25 per cent), assumed to consist entirely of equity (since the cost is then the bank's target rate of return on equity). If capital is set at the regulatory minimum of 8 per cent under Basel 1 and thus deposits and other debt finance 92 per cent of the loan, the rate of interest to the borrower is 14.2 per cent, i.e. $(2 + 1 + 0.1 \times 92 + 0.25 \times 8)$ per cent. But if economic capital is set at a level higher than regulatory capital (which will be the case for many loans), say 12 per cent so that debt finances 88 instead of 92 per cent of the loan, the rate of interest rises to 14.8 per cent.

It is not expected that the greater convergence of economic and regulatory capital resulting from Basel 2 will lead banks to price their loans and other services on the basis of the latter rather than the former. Banks hold capital typically at levels above regulatory minima, a practice which the BCBS neither expected nor wished to change. Rather the objective of Basel 2 is to achieve a closer alignment between economic and regulatory capital in the measurement of the relative risks of different loans and other exposures in banks' portfolios

The 2001 draft provoked widespread and sometimes vehement criticism on several counts.

- The rules were seen as dauntingly complex.

³ This numerical example is based on J.Bessis, *Risk Management in Banking* (Chichester: John Wiley, 2002), pp. 682-683.

- There was a danger that, by providing incentives in the form of lower capital charges for its more sophisticated approaches, Basel 2 was providing a competitive advantage to bigger banks which would be better equipped to adopt them.
- There was an all-or-none quality of the rules for the adoption of the different approaches to setting capital charges, only very limited scope being proposed for partial adoption of the more advanced approaches alongside of use of the simpler options.
- There was a fear that the attribution to borrowers of higher weights for credit risk during economic downturns, which could be expected from the closer alignment of regulatory and economic capital under Basel 2, would increase the procyclicality of bank lending.
- There were criticisms of the appropriateness or fairness of the risk weights likely to be attributed to particular borrowers.
- Attention was drawn to shortcomings of particular rules.

Many of the points raised here led to changes or elaboration between 2001 and the publication of the definitive draft in June 2006.⁴

IV. Revisions and greater flexibility

The BCBS has tried to meet criticisms of the complexity of Basel 2, only partially successfully, by a gradual improvement in the clarity of successive drafts and by the publication of additional specialised documents that help to explain the more difficult issues. But in spite of these efforts on the part of the BCBS the complexity of Basel 2 is still going to make enormous demands on the human resources responsible for implementation, both supervisors and banks' own staff.

Particular rules such as those for the capital requirements for operational risk have been extensively revised. The recognition of collateral eligible as a condition for according lower risk weights for collateralised loans has been extended in a way likely to bring the rules into better agreement with the situations prevailing in most developing countries. The rules relating to derivatives and to banks' trading books (i.e. financial instruments or commodities held for trading or to hedge trading positions) have been elaborated to take account of developments in market practice and risk measurement since the initiation of the Basel 2 process at the end of the 1990s. Moreover the proposed timetable for implementation of Basel 2 has been relaxed.

In one especially interesting case revision of Basel 2 was the response to high-profile political pressures. German objections led the BCBS to revisit the issue of Basel 2's likely impact on the relative weights for the credit risk of loans to small and medium-sized enterprises (SMEs). In Germany enterprises in this category provide about 70 per cent of employment and are highly dependent on bank financing. Estimates of the effects of the expected adoption of the Internal Ratings-based Approach by German banks indicated that on average SMEs would incur an interest rate substantially higher than larger firms. This led Chancellor Schröder to declare that Basel 2 would be unacceptable without major changes, and in mid-2001 an all-party motion passed by the Bundestag specified minimum conditions which should be met by Basel 2. These were directed not only at the cost of loan financing but also at other rules such as the transition periods for the application of the Internal Ratings-based Approach.

In mid-2002 Schröder declared that a compromise had been reached and that Germany would withdraw its objections. A central element in the revisions was a downward adjustment to the

⁴ The definitive Basel 2 is BCBS, *International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version* (Basel: BIS, 2006). Regarding credit and operational risks this is a version of the draft of mid-2004 with the same title revised to extend the treatment of a number of technical issues. A commentary on the 2004 draft is provided by A.Cornford, "Basel II: the revised framework of June 2004", *UNCTAD Discussion Papers No. 178*.

indicator for correlation in the formula for estimating credit risk for SMEs, which has the effect of lowering the risk weight for such lending. This adjustment was justified as reflecting the high level of diversification of credit risk in lending to SMEs.

In the 2001 draft of Basel 2 banks meeting the supervisory conditions for adoption of the Internal Ratings-based Approach for some of the exposures in their portfolios were expected to apply it to all of them in a short time. This requirement has subsequently been replaced by greater flexibility. Banks may now take advantage of provisions permitting a phased adoption of this approach, which is likely in practice to permit adoption of it initially only for categories of lending for which a bank is best prepared.

In combination with the relatively low risk weights for lending to SMEs and for retail lending, increased flexibility permitting adoption of the Internal Ratings-based Approach only for their major lending lines is likely to assist smaller banks and specialised lending institutions. It has thus served to counter the fear that Basel 2 would harm smaller banks in competition with larger ones in industrial countries, and appears to have blunted an important source of potential political opposition. But there will be fewer benefits from this change for small banks in the developing countries whose authorities adopt the simple Standardised rather than the Internal Ratings-Based Approach to credit risk, as will widely be the case (see section VI).

No adjustment has been made to alleviate increases in the possible cost of international lending to developing countries, another subject widely raised during the Basel 2 consultation process. Here there were obstacles reflecting the considerations that developing countries are not a homogeneous group for this purpose and that, as was not true of SMEs, international lending to them had contributed importantly to financial crises since the 1980s.

Several emerging-market countries (especially in East Asia and Central and Eastern Europe) are in fact likely to benefit from Basel 2. Their relative risk weights will now be based on the ratings of credit rating agencies under the Standardised Approach or similarly favourable ratings generated by banks' own models under the Internal Ratings-Based Approach rather than on conditions such as membership of the OECD. However, a number of other developing countries, lacking a political champion capable of exerting political pressure on the scale of the German Chancellor, may be less fortunate and subject to higher costs, though Basel 2 does accommodate several techniques (mitigants of credit risk such as guarantees, collateralisation, etc.) which can be used to lower interest rates on their cross-border borrowing. (See Box 3.)

That Basel 2 does little to alleviate the procyclicality of bank lending and may sometimes exacerbate it has been acknowledged by the BCBS. In the case of the Standardised Approach the risk of procyclicality is associated with the use of the ratings of credit rating agencies to set the weights for credit risk. The rating agencies do not have a good track record for forecasting changes in credit risk. Movements in their ratings often lag such changes, and when they are made, they can be drastic. During the Asian crisis of 1997-1998 major downgradings by the agencies in relatively short periods for Thailand, Indonesia and South Korea were widely considered to have unnecessarily exacerbated the unfavourable financial conditions confronting these countries. Better risk calibration in the Standardised Approach to credit risk under Basel 2 will thus depend on improvements in the procedures of the credit rating agencies.

In the case of the Internal Ratings-Based Approach the BCBS has introduced technical changes to the formula for estimating borrowers' probability of default and thus their credit risk weights with the aim of alleviating cyclicity. Otherwise Basel 2 leaves responsibility for this problem to banks' own stress testing (simulations with computer models of the response of their portfolios of assets and

liabilities to different types of financial distress) and risk management as well as to supervision at the national level under Pillar 2. One possibility for national action, which has been flagged by senior officials of the BCBS, is “dynamic provisioning” under which 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 smoothing procyclical pressures on bank lending. Rules embodying dynamic provisioning were adopted by Spain in 2000.

Box 3. Basel 2 estimates of default probabilities and developing countries’ borrowing costs

Many critics who have attempted to predict the impact of Basel 2 on developing countries have drawn attention to the attribution of risk weights which could result in higher costs on their cross-border borrowing from banks. In the case of borrowing from banks which choose the Standardised Approach such higher costs would apply only to countries with a credit rating from Standard & Poor’s below B-, a small minority of the countries with ratings. However, in the case of banks which choose the Internal Ratings-Based Approach higher costs could result for countries with a less than investment-grade rating (BBB). This possibility is indicated by an exercise in which increases and decreases in regulatory capital are estimated for countries with different credit ratings on the basis of a mapping between probabilities of default estimated for the purpose of the Internal Ratings-Based Approach, on the one hand, and the agencies’ ratings for a benchmark loan with a given maturity, on the other.⁵

Roughly 50 per cent of a sample of 71 emerging-market countries or territories for which JP Morgan publishes credit ratings currently have ratings of investment grade: in East Asia China, Hong Kong SAR, India, Republic of Korea, Malaysia, Singapore, Taiwan (China), and Thailand; in Latin America and the Caribbean Barbados, Chile, Mexico, and Trinidad & Tobago; and in Europe, Africa and West Asia Bahrain, Botswana, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Israel, Kazakhstan, Kuwait, Latvia, Lithuania, Oman, Poland, Qatar, Romania, Russia, Saudi Arabia, Slovak Republic, Slovenia, South Africa and Tunisia. Several other emerging-market countries which would also be classified as “developing” are within striking distance of investment-grade ratings.⁶

The results of this exercise have understandably attracted much attention but as a method for predicting actual outcomes the exercise is subject to shortcomings. For example, it assumes that in pricing their loans banks take as their cost of equity a target rate of return on minimum required regulatory capital rather than on economic capital (the distinction between which is explained in Box 2). While one of Basel 2’s objectives is to achieve greater convergence between regulatory and economic capital, an estimate linking changes in loan pricing due to Basel 2 to changes in minimum regulatory capital is likely to be subject to a significant margin of error. Moreover the exercise does not take account of the support to banks’ lending to low-rated sovereign borrowers which can be afforded by mitigants of credit risk such as guarantees or insurance from official or private sources. These would reduce the capital charge under the Internal Ratings-Based Approach of Basel 2. This is an example of the more general difficulty of an exercise of this kind that its conclusions are based on limited coverage of loans of different types and carrying different maturities and other terms.

VI. Progress with introduction of Basel 2

⁵ For a more detailed discussion of a much cited exercise of Helmut Reisen of the OECD Development Centre see A.Cornford, “The Basel Committee’s proposals for revised capital standards: Mark 2 and the state of play”, *UNCTAD Discussion Paper No. 156*, September 2001, pp. 29-32

⁶ See JPMorgan, *Emerging Markets Outlook and Strategy*, 1 February 2008.

By the end of the drafting process it was evident that Basel 2 was going to be introduced in a very large number of countries, though frequently according to schedules involving more extended time limits than those envisaged in the text of the agreement.

Two surveys of the Financial Stability Institute in 2004 and 2006 covered the plans of regulators in non-BCBS countries for the introduction of Basel 2.⁷ Major findings of the 2006 survey were that 82 of the 98 responding countries (not named in the survey) planned to implement Basel 2, a proportion very close to that in the 2004 survey. This figure rises to 95 when the 13 member countries of the BCBS are added.

- Of the different regions only for the Caribbean was the proportion of responding countries planning introduction of Basel 2 less than 70 per cent. In a picture marked none the less by considerable variation among the six regions the proportions were a little more than 70 per cent for respondents from Africa, 100 per cent for Asia, 57 per cent for the Caribbean, 86 per cent for Latin America, 100 per cent for the Middle East, and 83 per cent for non-BCBS Europe.
- In comparison with the 2004 survey, the planned schedule for introduction was less ambitious in many countries for options under Pillar 1 and for meeting the obligations of Pillar 2 and Pillar 3. At least half of respondents expected to introduce the simple Standardised Approach for credit risk by 2009 in each region except Latin America and the simple Basic Indicator Approach for operational risk in each region except Africa and Latin America by the same date. 50 per cent of Asian and Middle Eastern respondents and 73 per cent of those in non-BCBS Europe also intended to introduce the more advanced Foundation version of the Internal Ratings-Based Approach by 2009.
- Except for Latin America there were marked increases in comparison with the 2004 survey in the proportions of respondents planning to meet the obligations of Pillar 2 (supervisory review) and Pillar 3 (transparency) by 2009. Indeed, the data on Pillars 2 and 3 suggest a widespread and understandable tendency among responding countries to give first priority in plans for the introduction of Basel 2 to strengthening supervisory capacity and disclosure standards.

More detailed information available as of mid-2006 for 50 countries indicated that 70 per cent had set 2008 or earlier as the date for introduction of Basel 2, while the timing for the remainder was still uncertain.⁸ A high proportion of those already having set introduction dates belonged to the EU, of which the new Capital Requirements Directive, designed to translate Basel 2 into EU law, was ratified in October 2005. For banks using the simpler approaches of Basel 2, this directive comes into force at the beginning of 2007; and for those using the different versions of the Internal Ratings-Based Approach for credit risk and the Advanced Measurement Approach for operational risk, it comes into force at the beginning of 2008. However, the complexity of the Capital Requirements Directive (which is nearly 500 pages long) is already leading to delays in implementation so that adherence to the timetable envisaged by the Directive may not prove feasible throughout the EU, in particular in the newer Member States.

⁷ See Financial Stability Institute, *Implementation of the New Capital Adequacy Framework in non-Basel Committee Member Countries*, Occasional Paper No. 4 (Basel: BIS, July 2004) and *id.*, *Implementation of the New Capital Adequacy Framework in non-Basel Committee Member Countries. Summary of the Responses to the 2006 Follow-Up Questionnaire on Basel II Implementation*, Occasional Paper No. 6 (Basel: BIS, September 2006). The Financial Stability Institute 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.

⁸ For more details see "Basel 2 at mid-2006: prospects for implementation and other recent developments", WWW.FMCENTER.ORG (web site of the Financial Markets Center).

The state of play in a number of other key developing and industrialised countries as of mid 2006 is of special interest. India planned to start introduction of Basel 2 in 2007. The options chosen under Pillar 1 were the Standardised Approach for credit risk and the simple Basic Indicator Approach for operational risk. Basel 2 was to apply to the 88 commercial banks which account for about 82 per cent of the assets of the financial sector. China was to phase in Basel 2 over a period of years. New capital rules introduced in March 2004 included an adjusted version of Basel 1 with the use of external credit ratings for international claims, implementation of the 1996 Amendment (of Basel 1) to Incorporate Market Risks, the introduction of Pillar 2 and Pillar 3 of Basel 2, and revised rules for provisions for loan losses.

In Japan amendments to banking regulations to incorporate Basel 2 were to follow the publication of the definitive draft of Basel 2 of June 2006, and implementation of approaches other than the most advanced was expected to start in 2007. The amendments would address the definition of default (in a country where rescue operations for banks have recently been frequent) and the treatment of losses on loans in default in the Internal Ratings-Based Approach for credit risk (taking account of the country's exceptionally time-consuming procedures for loan recovery). Large banks were expected to adopt the Foundation version of the Internal Ratings-Based Approach owing to the difficulty of accumulating in the aftermath of the many recent mergers and restructurings in the country's banking sector time series of bank-specific data for losses on loans in default sufficiently long to meet Basel 2's conditions for adoption of the Advanced version of the Internal Ratings-Based Approach to credit risk. (Concerning the data requirements for this approach see the technical annex to this paper.)

Only in July 2007 did the four United States banking regulators (the Federal Reserve, the Office of the Comptroller of the Currency, the Office of Thrift Supervision, and the Federal Deposit Insurance Corporation) announce agreement on the implementation of Basel 2. This announcement followed a long period marked by disagreements as to the contents of rules applying Basel 2 in the United States and as to the interpretation of the results of quantitative studies of Basel 2's impact (see section VII). Disagreements among the regulators were accompanied by controversy within the banking sector about the benefits of the variants of the advanced approaches to credit and operational risks proposed by the country's regulators for United States banks and about the competitive advantages which would accrue to larger banks as a result of rules which would have restricted smaller banks to remaining on Basel 1.

Under the proposals now agreed the introduction of Basel 2 will begin in 2008. Banks with consolidated total assets of at least USD 250 billion or consolidated total on-balance-sheet foreign exposure of at least USD 10 billion ("core banking organisations") will be required to adopt the Advanced version of the Internal Ratings-Based Approach for credit risk and the Advanced Measurement Approach for operational risk. Other banks ("opt-in banks") will be permitted to adopt these advanced approaches if they meet the qualification requirements. Foreign banks will be subject to the same threshold criteria as United States Banks. For banks not adopting the advanced approaches two alternative options will be available: (1) to remain on Basel 1; or (2) to adopt a Standardised Approach closely based on Basel 2 but on which work is not yet complete.

The Advanced version of the Internal Ratings-Based Approach destined for large United States banks does not contain the adjustment in the version of the BCBS which is designed to produce lower capital requirements for lending to SMEs than for loans to larger businesses (see section IV). This omission may be a regulatory response to the fears of small banks concerning large banks' potential competitive advantage in lending to SMEs when they adopt the advanced options of the BCBS version of Basel 2. Moreover United States banks, regardless of the capital rules which they adopt,

will remain subject to minimum leverage and other requirements which will result in their holding levels of capital in relation to assets above international regulatory minima.

VII. Estimates of Basel 2's quantitative impact

During the drafting process the BCBS itself and several countries carried out exercises (quantitative impact studies or QIS) designed to assess the effects of the adoption of the Basel 2 on banks' minimum required capital⁹. both in the aggregate and at the level of different categories of loan or risk. The BCBS's ultimate exercise (QIS5) included returns from more than 380 banks (ranging from large, internationally active institutions to smaller, more specialised ones) in 32 countries (G10 and non-G10 European countries and seven others, mostly relatively advanced emerging markets).

The findings of QIS5 were that capital would be reduced for most banks, regions, and for most options for credit risk. Important contributions to these reductions were made by retail lending, an activity with relatively low credit weighting. The exceptions to this pattern were the smaller banks from countries not belonging to either the G10 or Europe (and including some smaller banks from the emerging markets). Macroeconomic conditions were favourable in most countries during the period covered by QIS5, exerting an influence on the results which may have been significant but which the BCBS none the less felt unable to quantify.

Twenty six large banks participated in the national QIS4 of the United States. Estimates of the effects of Basel 2 were limited to the most advanced approaches to credit and operational risk, since only these were to be permitted for the minority of banks which would introduce Basel 2 under the regulatory proposals applicable at the time of QIS4 (see section VI). The results showed a reduction in aggregate minimum capital requirements of 15.5 per cent, a figure substantially larger than that recorded in an earlier exercise of the BCBS). There was substantial dispersion in the figures for different banks.

These results for the United States can be compared with those of a corresponding exercise for Switzerland. Seventy-seven institutions (70 banks and seven securities dealers) participated in QIS-CH.¹⁰ The results of the exercise indicated a reduction in required capital of 2.34 percent. The median change was an increase in required capital of 1.01 percent (which suggests that reductions in required capital were concentrated among larger institutions).

The Swiss Federal Banking Commission attributes the reductions to lower capital requirements for residential mortgages, collateralized (Lombard) loans, and lending to retail customers and SMEs.. The Commission sets a threshold for the banks' capital requirements which exceeds regulatory minima by 20 per cent. Banks facing increases in capital requirements according to the estimates of QIS-CH in most cases already had capital well in excess of this threshold.

VIII. The pattern of introduction and objectives of Basel 2

⁹ Minimum required capital for this exercise is that corresponding to estimated risk-weighted assets adjusted for differences between banks' provisions and their expected losses and for other deductions from capital under the rules of Basel 2. The QIS was not intended to estimate changes in banks' actual - as opposed to minimum regulatory - capital.

¹⁰ See Swiss Federal Banking Commission, "Results of the National Quantitative Impact Study (QIS-CH) of Basel II."

Basel 2 is thus to be introduced in a very large number of countries. However, flexibility built into the agreement during the long consultation process which facilitated acceptance is itself proving a source of problems for cross-border cooperation in Basel 2 implementation. Moreover the pattern of rules for introducing Basel 2 at national level may compromise the second major objective of Basel 2, "maintaining sufficient consistency that capital adequacy will not be a significant source of competitive inequality among internationally active banks" (paragraph 4).

Cross-border introduction of Basel 2 on a consolidated basis can be accompanied by differences of approach between regulators in different countries. The way in which these differences are resolved can have significant implications for bank regulation in developing countries.

Such differences can arise if the supervisor of an international bank in its parent country and the supervisor of that bank's subsidiary or branch in a host country follow different rules concerning the options regarding capital requirements which they are prepared to accept in their respective jurisdictions. Responding to limitations on its supervisory capacity, the regulator in a host country may be unwilling to accept adoption of the Internal Ratings-based Approach in its jurisdiction. Owing to the danger of adverse competitive effects for domestic banks the refusal could apply to foreign banks for which adoption of this approach had none the less been approved by the regulator in its parent country. In such a case an internationally active bank might face the obligation (and the resulting additional costs) of estimating its capital requirements in different countries in accordance with different approaches and options under Basel 2.

Under the 1983 Basel Concordat of the BCBS, which prescribes the distribution of supervisory responsibilities for a bank with cross-border operations, responsibility for solvency, which includes responsibility for capital, differs for branches and (locally incorporated) subsidiaries. In the case of the latter the host regulator would have the right to prescribe the Standardised Approach regardless of approval of alternatives by the parent regulator of a foreign bank. But for branches priority regarding responsibility for solvency is accorded to the foreign bank's parent regulator. However, the rules of the 1983 Concordat were not designed to deal with situations where the issue is competition between domestic and foreign banks, and thus will not necessarily be acceptable as a guideline for cross-border implementation of Basel 2 for foreign branches.

There have been various approaches to dealing with this problem so far. In the EU the problem is covered by the application of the principles of mutual recognition and home country control which underlie the single financial market: authorization of different approaches and options under the Capital Requirements Directive, which is the vehicle for the introduction of Basel 2 in the EU, will be carried out by the consolidating supervisor, i.e. the supervisor with the primary responsibility for oversight of a cross-border banking group. Several host regulators in other countries (for example, Malaysia, New Zealand, Panama, Singapore and Thailand) have decided to permit foreign banks' subsidiaries or branches (or both) to adopt approaches approved by their parent regulators or to accept the parent supervisor's assessment of their capital adequacy.

The BCBS's approach to achieving the regulatory and supervisory convergence required by Basel 2 has been to rely on its Accord Implementation Group, a working group of supervisors, to promote consistency through the exchange of information on Basel 2 implementation between regulators.

However, reliance on supervisory cooperation may still be difficult for the many other, often heterogeneous countries. Problems are potentially more contentious, for example, when supervisory cooperation is required between countries with economies and banking sectors of markedly different sizes and levels of sophistication. This could be true not only for the branches but

also for the locally incorporated subsidiaries of large international banks where priority with respect to key parts of supervision is attributed by the Basel Concordat to supervisors in the host country.

In small countries or countries with underdeveloped banking sectors the manager of a subsidiary may take the position (which is not in accord with the Concordat) that both supervision and internal control are already carried out in the bank's parent country so that local supervision is nothing but a nuisance and a source of unnecessary paperwork. Yet these arguments often do not reflect the true situation. Internal auditing may be carried out perfunctorily from the bank's Head Office, and external auditing may lack the rigour required for a proper assessment of the subsidiary's true condition. In such cases insistence by host regulators on their right to apply rules which reflect the sophistication of the local banking sector and their own supervisory capacity may complicate the cross-border implementation of Basel 2. But the alternative entails the danger that the host regulator will be marginalised and the quality of supervision will suffer.

The global pattern of implementation of Basel 2 will reflect divergences due not only to the multiple options under Pillar 1 for minimum regulatory capital requirements for credit, market and operational risk but also to variation in the timetables for adoption and in other rules linked to introduction at a national level. For example, there is considerable latitude in Basel 2 for variation in rules under Pillar 2. Moreover regulatory minima can vary for different countries as a result of the prescription of additional capital by supervisors at levels not uniform for risks considered as not covered, or not adequately covered, under Pillar 1.

As a result global regulation of banks' capital under Basel 2 will remain something of a patchwork. This has advantages for developing countries since such a patchwork entails recognition of countries' need for space in which to adopt policies toward the regulation of banks' capital adapted to national needs.

IX. Basel 2 and the control of banking risks

Regarding the achievement of Basel 2's other objective, the control of banking risks by banks and their supervisors – and thus its impact on "the soundness and stability of the international banking system" - the proof of the pudding must await the eating, i.e. experience in practice. However, the level of ambition implied by plans for introduction has been queried by some commentators. Moreover the credit crisis of 2007 has already led commentators to raise questions as to the appropriateness and adequacy of Basel 2's approach to some aspects of the supervision and control of banking risks.

The discussion which follows takes up four subjects: (1) pressures on supervisory capacity and banks' internal controls due to Basel 2; (2) risks due to the change in the model of lender-borrower relations owing to the introduction of Basel 2; (3) the Basel 2 rules for securitisation exposures; and (4) the overlapping of credit and liquidity risks in relation to Basel 2. The first two of these subjects are of special interest to developing countries, while the other two have been brought to the fore in discussion of implications for strengthening the framework of banking regulation in response to the credit crisis which began in summer 2007.

A. Supervisory capacity and internal controls

To assess the pressures on supervisory capacity and internal controls resulting from Basel 2 it is worth examining in more detail some of the findings of the Financial Stability Institute's 2006 survey of plans for introducing Basel 2 in non-BCBS countries described in section VI.

82 Of the 98 respondents intend to introduce Basel 2. Of these countries 59 plan to introduce the simple Standardised Approach for credit risk, 32 the Foundation version of the Internal Ratings-Based Approach, and 27 the Advanced version of the Internal Ratings-Based Approach by 2008, and the corresponding figures for 2009 are 62 for the Standardised Approach, 40 for the Foundation version, and 32 for the Advanced version of the Internal Ratings-Based Approach.¹¹

The relatively high totals for the Standardised Approach are not particularly surprising since this approach follows lines broadly similar to Basel 1, though fleshed out with greater detail to provide a more sensitive calibration of credit risk. The Approach avoids the requirement of the Internal Ratings-Based Approach for use by banks of models and large amounts of data on the different determinants of credit risk.

The countries planning to introduce the Foundation version of the Internal Ratings-Based Approach are concentrated in non-BCBS Europe: 20 by 2008 and 22 by 2009. These results reflect the influence of introduction of the EU's Capital Requirements Directive. By far the greatest number of countries from other regions planning to introduce the Foundation version of the Internal Ratings-Based Approach are in Asia, a region with several countries with relatively sophisticated banking sectors and relatively developed banking supervision. The regional distribution of countries planning to introduce the Advanced version of the Internal Ratings-Based Approach is similar, though the totals are a little lower.

In view of the widespread attention during the drafting process for Basel 2 to the limitations on the technical capacity of banks and supervisors it is natural to ask the question whether the plans in the replies to the Financial Stability Institute's survey are realistic. As part of a necessarily tentative reply to this question a number of points are pertinent.

(1) The technical capacity of banks and supervisors in developing countries in comparison with their counterparts in industrialised countries should not be underestimated. Events during the last decade – and more especially during the last few months - have drawn attention to the sometimes egregious shortcomings of both banks and supervisors in industrial countries. Particularly notable have been revelations concerning internal banking controls, and some of the worst problems appear to be in the largest banks, which of course are those expected to introduce the most advanced options of Basel 2.

Consider, for example, the following characterisation by one of the firm's senior risk managers of risk management in the huge financial conglomerate, Citigroup, after the mergers which led to its current structure: "Some 200 people made up just one of several risk groups, Risk Architecture – those who would build the risk management and reporting systems. The budget for risk management climbed past \$40 million just for the fixed income division's share. More than 20 people sat on the risk management committee. Meetings required up to four video hook-ups...The complexity of an organisation of this scale has obvious consequences. More layers of management put distance between data gatherers and users in senior management. Information gets lost in the compression and transmission of data...And having more people in the process inevitably means junior people, who have fewer skills and less authority and are further from the action."¹²

¹¹ The findings of the Financial Stability Institute's survey also cover 2010-2015. These figures for this period are necessarily more tentative than for 2008 and 2009 but taking account of them would not change the conclusions in the text.

¹² R. Bookstaber, *A Demon of Our Own Design: Markets, Hedge Funds, and the Perils of Financial Innovation* (Hoboken, N.J.: John Wiley, 2007), pp. 126-127.

(2) In a comparison of risk management capabilities of the large international banks of industrial countries and of banks of developing countries, especially those with more advanced financial sectors which include institutions planning to introduce versions of the Internal Ratings-Based Approach for credit risk, it is also important to remember that the activities of the latter are generally more focussed on traditional commercial banking and less on the new products and services which are proving more difficult to manage and control.

(3) Nevertheless, the strains of introducing Basel 2 in developing countries should not be underestimated. The potential scale of these strains in the case of supervision is indicated by some information for France, an industrial country where it is reasonable to expect widespread adoption of the IRBA for credit risk as well as the more advanced options for operational risk: as part of initiatives carried out by the Commission bancaire for the implementation of Basel 2 over 30 on-site inspections will have been carried out by the end of 2007 at 20 institutions, involving up to 100 inspectors at a time.¹³ Other information bearing on the scale of these strains is contained in the Financial Stability Institute's 2004 survey of plans for implementing Basel 2 which found that non-BCBS countries expected training on Basel 2-related topics would be necessary for about 9,400 supervisors or almost 25 per cent of the countries' supervisory staff.¹⁴

(4) The tasks in developing countries entailed by the introduction of the Standardised Approach for credit risk (such as deciding which local credit rating agencies should be recognised for the attribution of weights for credit risk) are considerable but manageable. The requirements for introducing the Foundation and Advanced versions of the IRBA as well as the more advanced approaches for operational risk, are a potential source of greater difficulties.

As explained in the technical annex to this paper, these approaches require data covering substantial periods and the meeting of standards for validation. In the absence of internal sources for the data and models required for validation, banks can have recourse to external providers subject to carefully defined conditions.¹⁵ In developing countries where key inputs to the Foundation version of the Internal Ratings-Based Approach for credit risk (loss given default and exposure at default) are to be provided not by banks but by supervisors, lack of required data and models may also mean that supervisors as well as banks need to have recourse to outside vendors. A danger here is that pressures associated with implementation of the more advanced options of Basel 2 according to a preset timetable may lead to failures to meet proper validation standards for external data and models. In the extreme case where only one or two vendors are used the incorporation of the same modelling errors in the risk estimates of a large number of banks could be a source of increased systemic risk for the financial sector as a whole.¹⁶

B. Models of borrower-lender relations

Basel 2 incorporates fundamental assumptions about the nature of the relationship between a bank and its counterparties which are part of the now generally accepted business model for banking in

¹³ Speech of Christian Noyer, Governor of the Bank of France, before the Bank of Algeria and the Algerian financial community, Algiers, 16 December 2007 (reprinted in *BIS Review* 11/2008).

¹⁴ Financial Stability Institute, *Implementation of the New Capital Adequacy Framework in non-Basel Committee Member Countries*, Occasional Paper No. 4, Basel, BIS, 2004, p. 10.

¹⁵ These conditions are part of the rules of Basel 2 itself and have also been elaborated in newsletters of the BCBS on the work of its Accord Implementation Group. See BCBS, "Update on the work of the Accord Implementation Group related to validation under the Basel II Framework", *Basel Committee Newsletter No. 4* (January 2005) and id. "Use of Vendor Products in the Basel II Framework", *Basel Committee Newsletter No. 8* (March 2006).

¹⁶ Attention has been drawn to this danger by Michael Taylor, head of banking policy at the Hong Kong Monetary Authority. See M. Taylor, "Basel travel bag", *Financial World*, July/August 2007.

BCBS countries and the developed world but which diverge to varying degrees from those in several emerging-market countries. In Basel 2 the assumed relationship is arms-length, and decisions about lending and the provision of other banking services are based on reasoned analysis of the counterparty's capacity to meet interest obligations and of other dimensions of creditworthiness as measured by objective rating or scoring systems.

A different model of borrower-lender relations has often prevailed in emerging-market countries - Asian countries being especially frequently cited in this context. This model involves practices which go by names such as policy or directed lending, relationship or name lending, and collateral-based lending. As part of such practices loans are made on the basis of criteria different from those underlying Basel 2, and the assumptions about risk sharing between a bank and its borrowers involve a relationship that is less arms-length and in some cases more like an equity investment.

At issue here is not a single model since such practices have actually been parts of different models in different countries.

At one extreme is the case of Indonesia where, before the Asian crisis of 1997, relationship lending was an important feature of the country's "crony capitalism". Much of this lending was especially vulnerable to the turbulence which followed a huge devaluation of the rupiah and huge increases in interest rates - turbulence which was to lead to estimates that at one point 80 per cent of the total loans of the banking system had become non-performing.

The model applied in South Korea before reforms beginning in 1997 attributed a major role to policy or directed lending. Here large business groups maintained close relations with a "principal transactions bank" which served as a vehicle for controlling the allocation of credit in accordance with government policy and whose role in corporate restructurings also followed government-set parameters. Relations between large business groups and their "principal transactions banks" did not generally involve shareholdings.

Another model prevailed in Japan during the long period of its rapid postwar economic growth, and was widely admired until it began to fall apart in the second half of the 1980s. This model involved policy and directed lending, emphasis on the importance of long-term relationships between lenders and borrowers, and confidence in the willingness of the different actors in the system to provide mutual support when needed. Administrative guidance as to sectors of national importance played a large role in the direction of lending, and close relationships (including shareholdings) between the constituent business entities (including banks) of business combines (keiretsu) were widespread.

Eventually the system began to serve Japan's interests less well, as its industrial structure became more diversified and as banks' decisions began to be distorted by the dramatic effects on asset values of the Japanese property and stock-market booms of the 1980s. In the changed conditions the deeply embedded network of relations between banks and their borrowers and between banks and their supervisors which were once the basis of the successful functioning of the model was to prove an obstacle to change and reform.

But the important point about such models here is not their historical success or shortcomings at different times but the problems which they are capable of posing in the context of the introduction of Basel 2. Where borrower-lender relations different from those assumed by Basel 2 are deeply rooted in national practices, the risks from too abrupt an adoption of Basel 2 could be substantial. Especially in Asia but also to varying degrees in many other developing countries a major source of economic growth has been firms, often family-owned or-controlled, which would not necessarily achieve high credit ratings according to objective criteria. Higher borrowing costs or a credit crunch

for such firms following the introduction of Basel 2 could result in unfavourable macroeconomic knock-on effects and weaken economic structures with longer-term adverse implications for countries' development prospects.¹⁷

C. Securitization exposures.

Securitization denotes a number of different financial operations involving the substitution of securities for other debt. In its now most important form securitization is a technique through which the risks of assets on a bank's balance sheet are completely or partially transferred to outside investors, most often through the establishment of a special purpose entity (SPE) which receives the assets in question (or the risks associated with them in a so-called synthetic securitization)) and then issues securities as claims against them. (See Box 4.)

A bank's exposures to securitized assets comprise on-balance-sheet or off-balance-sheet credit exposures due to traditional or synthetic securitizations. There is extensive discussion in Basel 2 of the various forms of securitization exposure. One category is due to retention on the bank's own balance sheet of a percentage of the claims due to a securitization of which it was itself the arranger. Another is associated with its role as a sponsor of vehicles which are themselves the originators of short-term liabilities backed by longer-term assets, in which case the bank is not the arranger. Sponsorship denotes a role as manager and adviser, responsibility for placement of the asset-backed securities (often asset-backed commercial paper or ABCP) among investors, and provision of credit enhancements of the asset pool to increase the saleability of the securities to investors. Both arrangement of securitizations and sponsorship are classified as "origination" in Basel 2 (thus eliminating the incentives to assume the role of sponsor rather than arranger which characterise some countries' current regulatory capital requirements). A bank may also have securitization exposures owing to its investments in securitized claims originated by other banks. Its capital requirements as an investor under Basel 2 differ in only minor ways from those which apply to it as originator.

As described in section II, Basel 1's lack of rules for banks' securitisation exposures was one of the shortcomings which led to the decision to revise the 1988 accord. Faced with various national regulatory approaches to securitization, the BCBS opted in Basel 2 for rules based on economic substance rather than legal form, one of its objectives being to ensure that securitization exposures do not reflect simply the artificial incentives of regulatory arbitrage. But the attempt to ensure that the capital requirements for securitization exposures in Basel 2 correspond to their credit risks has led to a particularly complex set of rules.

In these rules the reality of risk transfer serves as the basis for stringent conditions which must be met if an operation is to be accepted as a securitization. If these conditions are not met, Basel 2's capital requirements are set as if the securitization operation had not occurred and the assets were an on-balance-sheet position. The effectiveness of Basel 2's classification of operations can only be judged on the basis of eventual experience of the associated transfer or non-transfer of risk.

Basel 2 specifies a number of alternative ways of measuring the credit risk of securitization exposures. Under the Standardised Approach to securitization exposures the rules follow lines similar to those for the attribution of risk weights under the Standardised Approach to the credit risk of non-securitised positions with some differences in the correspondence between the weights for

¹⁷ Particular attention has been drawn to these risks by Chris Matten, a well-known expert on banks' capital and risk management who has been an adviser to several Asian countries on introducing Basel 2. See C.Matten "Application and Implementation in Asia-Pacific" in J.Tattersall and R.Smith (ed.), *A Practitioner's Guide to the Basel Accord* (Old Woking, United Kingdom: City & Financial Publishing, 2005), pp. 268-269.

credit risk and the external ratings of credit rating agencies. Under the Internal Ratings-Based Approach to securitization exposures there are three options. The Ratings-Based Approach (like the simpler Standardised Approach) maps external ratings into weights for credit risk but on the basis of a finer calibration of risk than for non-securitized exposures as well as of rules which also take account of the seniority of the tranche of asset-backed securities and of concentrations of risks in the pool of underlying assets (the “non-granularity” of the pool, to use Basel 2’s own baroque term). The Internal Assessment Approach applies mainly to exposures due to sponsorship of securitizations where investments are liquid asset-backed commercial paper (ABCP) and where a bank’s own internal ratings of the exposures can be mapped into the external ones of a credit rating agency. When neither of these procedures is possible, recourse is to be had to a third option, the Supervisory Formula.

Two points about these rules are worth making. Firstly, most of the rules depend directly or indirectly on credit ratings and thus on the integrity of the rating process. Secondly, although the rules are designed to provide much improved estimates of the risks, the different forms of securitization as such are accepted as an inevitable part of modern banking practice.

However, at the national level more restrictive approaches to securitization have also been tried. Spain, for example, has adopted rules which mandate the same regulatory capital requirements for securitized and on-balance-sheet exposures, thus removing a major incentive for banks to participate in the “originate and distribute process” for securitized assets which led to the subprime crisis.¹⁸

In the supervisory guidelines for securitization exposures under Pillar 2 the emphasis is on supervisory discretion. In a section entitled “significance of risk transfer” Basel 2 states that “If the risk transfer is considered to be insufficient or non-existent, the supervisory authority can require the application of a higher capital requirement than prescribed under Pillar 1 or, alternatively, may deny a bank from obtaining any capital relief from the securitisations” (paragraph 786). However, no general guidelines (as opposed to a number of examples) are provided concerning the significance of risk transfer. This is a subject which the BCBS can be expected to revisit in the light of recent experience.

Box 4. Securitization and structured notes

The term, “securitisation”, can denote any one of a number of different financial operations involving the substitution of securities for other debt or the decomposition of large loans into loan shares or participations for distribution among financial institutions. The best known form of securitization consists of the pooling of loans and other debt obligations by banks and other financial institutions and of the sale to investors (which may be other banks) of interests in the pool (asset-backed securities). By means of this technique banks and other originating institutions are enabled to manage their exposure to credit risks and to pocket fees associated with managing the process.

Bonds collateralised by pools of mortgage loans were first issued in the United States in the 1880s but the practice was discontinued in the depression of the 1890s.¹⁹ Such pools re-emerged in the 1970s in the form of securities backed by mortgages issued by or with the approval of three Federal agencies, the Government National Mortgage Association (“Ginnie Mae”), the Federal Home Loan Mortgage Corporation (“Freddie Mac”), and the Federal National Mortgage Association. In the 1980s the asset backing of securitization was extended to several other kinds of debt such as computer

¹⁸ See G.Tett, “Spain’s banks weather credit crisis”, *Financial Times*, 31 January 2008.

¹⁹ For early history see C.Pavel, *Securitization The Analysis and Development of The Loan-Based/Asset-Backed Securities markets* (Chicago: Probus Publishing, 1989), chapter 3.

leases, automobile and truck loans, credit cards, trade receivables, junk bonds, and unsecured consumer loans. Initially the mortgages in the pools of asset-backed securities were overwhelmingly prime, i.e. made to individuals with good credit histories. With the expansion of markets for assets with higher credit risk in the 1990s the pools began to include subprime mortgages made to individuals with less highly rated credit histories. Initial development of markets for asset-backed securities took place in the United States but more recently such markets have also taken off in other countries including some developing ones.

Owing to the different categories of debt obligation included in asset-backed securities and to the development of legal terminology associated with their regulation securitization is associated with a bewildering - not always consistent - terminology, which includes several different acronyms (CMOs, CLOs, REMICs, CDOs, etc.) The discussion which follows focuses primarily on Collateralised Debt Obligations (CDOs) here used as a generic term to cover pools of debt instruments serving as the collateral of asset-backed securities.

In cash-flow CDOs debt instruments are transferred by a bank or another institution (such as the captive finance company of a large financial firm, an insurance company or, in the United States, a mortgage bank) to a special purpose entity (SPE), a legal structure established to sell shares in the asset-backed securities to investors. The SPEs come in various shapes and forms, and include the "conduits" and "structured investment vehicles (SIVs)" recently much in the news, through which short-term liabilities (asset-backed commercial paper or ABCP) are issued to investors.

Payments due to the investors through these SPEs are made according to various formulae of which the simplest is pass through. In this case investors have a pro-rata share in the pooled assets and a corresponding pro-rata share in the cash flows which they generate.

Under tranching or pay-through arrangements the CDOs are sold to investors after reconfiguration of the cash flows from the original assets into a number of tranches in the form of structured notes. While each tranche is entitled to payments from the pool, this entitlement is subject to different degrees of seniority. Likewise losses are allocated according to rules under which the first losses up to a specified percentage are born by the most junior (equity) tranche and subsequent proportions successively by the mezzanine and senior tranches. The rates of return for investors in the tranches reflect the different risk levels and thus are substantially higher for lower-grade tranches.

Most asset-backed securities are credit-enhanced through various methods. These include overcollateralization, i.e. structuring the securitization in such a way that the asset backing (collateral) has a value greater than the securities. Credit enhancement can also be provided by the issuer through retention of the equity tranche or by third parties through guarantees or insurance. Credit rating agencies take account of the credit enhancement in their attribution of ratings to the asset-backed securities (see below).

The principles involved in tranching can be illustrated with a simple numerical example in which four tranches or structured notes are created from a pool of loans and bonds.²⁰ The first ("equity") tranche is based on 5 per cent of the total pool and absorbs losses from the pool until they have reached 5 per cent. The second tranche is based on the next 10 per cent of the pool and absorbs losses in excess of 5 per cent up to a maximum of 15 per cent. The third tranche absorbs losses in excess of 15 per cent of the pool up to a maximum of 25 per cent. The fourth tranche absorbs residual losses in excess of 25 per cent of the pool.

²⁰ The example is taken from J.C. Hull, *Options, Futures, and Other Derivatives*, sixth edition, (Upper Saddle River, N.J.: Pearson Prentice Hall, 2006), pp. 516-517.

Under the resulting distribution of risks a one-per-cent loss for the pool as a whole becomes a 20-per-cent loss for investors in the equity tranche. The return on their investment, which may be as much or more than twice that on the second tranche and a much higher multiple of the return on the senior fourth tranche, will henceforth be paid only on 80 per cent of their initial investment. A 5-per-cent loss on the pool wipes out the first tranche and with it the return to investors, and a 10-per-cent loss also wipes out 50 per cent of the value of investments in the second tranche. And so on.

Such a distribution of risks can be lethal for funds sold to investors which are backed primarily or only by the riskier tranches of the asset-backed securities of a given pool. In recent months the values of some funds of this kind have experienced drastic declines or in extreme cases have even been completely wiped out in response to rates of default in the underlying asset pool not exceeding 25 per cent.

Various alternatives to classic, cash-flow CDOs are also available. For example, in synthetic CDOs the risks associated with a pool of assets rather than the assets themselves are transferred to the SPE, payments from the bank to the SPE and from the SPE to investors being made on the basis of credit derivatives. These CDOS have the potential disadvantage of being even less well understood by investors and bank analysts than cash-flow CDOs.

The role of credit rating agencies regarding the structured notes corresponding to the different tranches is to provide a rating together with other information to investors who mostly lack the resources to carry out their own analyses. Ratings are required to turn the notes into tradable investments and to render them eligible for inclusion in the portfolios of certain categories of institutional investor.

The rating process tests the resilience of different tranches of the CDO to potentially loss-generating risk factors. For mortgages in the pool these risk factors would include delays in payments, losses for the lender due to defaults and recoveries through sales of the mortgage collateral, and variations in the average return on the mortgage pool.

The tests can be carried out in various ways. One is stress testing, i.e. computer-based simulations designed examine the response of a portfolio of assets to various distress scenarios. The loss probabilities (default rates) estimated in this way are then mapped into a table which matches default rates with the agency's credit ratings (for example, an average yearly default rate of 0.05 per cent corresponding to a Moody's rating of Aa). A second more elaborate test requires more articulated modelling of the risks to the underlying pool of assets and then examining the effects of alternative scenarios for these risks on the cash flows to the notes, allocating losses according to the notes' seniority. Analytical shortcuts intended to incorporate the essential features of the more comprehensive methods are also used.²¹

Two features of these tests are noteworthy. One concerns the effects on ratings of higher default correlation among debts in the pool. Higher correlation is like a contagious disease which increases the vulnerability to default of obligations throughout the pool. In consequence, to be awarded the rating associated with a given probability of default (once again, say, the Aa associated with an annual default rate of 0.05 per cent) when the default correlation is increased, a structured note must still be able to avoid default when the pool as a whole is experiencing the higher default rates.

²¹ The alternative conceptual approaches to rating structured notes are explained in Bessis, *op. cit.*, chapter 60, and the methods used by Standard & Poor's and Moody's in A.de Servigny and O.Renault, *Measuring and Managing Credit Risk* (New York: McGraw-Hill. 2004), pp. 369-376..

The second noteworthy feature may seem counter-intuitive. Owing to the ceilings on the losses which can be incurred by individual notes, the mean or expected losses of the notes can each be inferior to the mean or expected loss on the pool as a whole. This feature enables senior notes to have ratings higher than that of the pool of obligations backing the CDO.

The procedures used for rating leave significant scope for judgement on the part of the credit rating agencies. For example, in the design of the scenarios for the resilience testing, risk factors due to clustered defaults can be filtered out and optimistic estimates of default correlations can be used.²²

The performance of the credit rating agencies has been widely criticised since the outbreak of the credit crisis. Attention has been drawn to the agencies' incentives to shade their ratings in the direction of higher grades in response to conflicts of interest due to their combined role as advisers as well as raters in structured finance.²³ Recently the chorus of criticism had been growing louder as the high fees associated with securitization led to the creation of CDOs based on increasingly questionable variants of the agencies' rating procedures.

The new products have names such as CDO Squared and Mezzanine CDO, and were designed as a vehicle for increasing the saleability to investors of an increasing excess supply of mezzanine (i.e. subordinated) tranches which might otherwise have been difficult to market. The products were created by the repackaging of the mezzanine tranches in new CDOs which were provided with their own credit enhancements and rerated by the agencies. The high ratings attributed to senior tranches were justified on the basis of their seniority in the new CDO and the diversification of risks by originating institution and by geography, arguments which were to be contradicted by subsequent experience characterised by high default correlations within a homogeneous asset class.²⁴

A more general point raised by critics of the agencies' ratings for structured finance is that the use of the same ratings scale as for traditional ratings of debt instruments (Moody's Aaa to C, Standard & Poor's AAA to CC, etc.) is misleading since the risk profiles do not depend on the same factors in the two cases. Traditional ratings are based solely on the intrinsic qualities of issues and issuers. However, the ratings of structured notes depend not only on the quality of the debt instruments in the underlying pool but also on their default correlations and on seniority. The ratings are consequently vulnerable to changes in the level of the notes' subordination. In an extreme example recently cited by the Governor of the Bank of France, an AAA-rated structured note was downgraded nine notches (differences in rating levels) in a single day.²⁵

²² These points are fully developed in C.Stracke (of the independent research firm Credit Sights), "CDO ratings hit troubled waters", *The Banker*, January 2008.

²³ This potential conflict of interest was raised by the Committee on the Global Financial System in its 2005 review of the rating process for structured finance. The conclusion of the Committee was that it was outweighed by the agencies' concerns with their professional reputation but that the conflicts of interest could become more important as the categories of business carried out by the agencies for rated firms multiplied. See Committee on the Global Financial System, *The Role of Ratings in Structured Finance: Issues and Implications* (Basel: Bank for International Settlements, January 2005), pp. 25-27.

²⁴ For more detail on CDOs Squared and Mezzanine CDOs see the testimony of J. Kyle Bass, Managing Partner, Hayman Advisors L.P. before the United States House of Representatives Committee on Financial Services, Subcommittee on Capital Markets, Insurance and Government Sponsored Enterprises, 27 September 2007.

²⁵ Speech of Christian Noyer at the Symposium on financial ratings organised by the Cercle France-Amériques, Paris, 12 December 2007 (reprinted in *BIS Review* 2/2008).

D. Liquidity risk

The main objectives of Basel 2 concern credit, market and operational risks. However, during periods of stress in financial markets or conditions threatening the survival of financial institutions liquidity risk comes to the fore. Liquidity risk is due to periodic needs for liquid funds which cannot be forecast precisely in advance. It reflects the capacity of a financial institution to refinance maturing liabilities on acceptable terms. Liquidity risk thus has a number of dimensions: the institution's expected cash flows, its capacity to borrow, and its holdings of readily marketable assets.

Banking risks are typically related through various channels, and this is particularly true of liquidity, credit and market risk. Adequate liquidity can enable a bank to continue operating despite a weak balance sheet. Likewise a bank which is solvent (i.e. a bank with assets greater than its liabilities) can none the less be threatened by the disappearance of liquidity. Generally, however, liquidity and solvency problems go together and can be mutually reinforcing: a weak balance sheet often triggers a reduction in a bank's capacity to borrow; and reduced access to financing, perhaps initially a response to problems elsewhere in a bank, can threaten its solvency through forcing mark-downs of its assets. Similarly market risk (due to adverse price changes in financial markets) obviously affects a bank's ability to refinance itself through sales of tradable assets.

Traditional regulatory approaches to liquidity risk generally take the form of prescribing levels of liquid assets (typically in the range of 5-25 per cent) in relation to liabilities and of supervisory surveillance of banks' balance sheets. Banks' management of liquidity risk includes control over gaps between the maturities of its assets and liabilities, and stress testing through computerised scenario analysis. Pillar 2 of Basel 2 takes note of the two-way mutual dependence of satisfactory liquidity and capital positions, and recommends that "Banks should evaluate the adequacy of capital given their own liquidity profile and the liquidity of the markets in which they operate" (paragraph 741) without providing more specific guidelines.

The official regulatory response to the current credit crisis clearly reflects the view that current approaches to the supervision and management of liquidity risk are no longer adequate. In a report of February 2008 the Working Group of the Financial Stability Forum on Market and Institutional Resilience attributes a role in amplifying the crisis to "actions by firms to fund contingent commitments and/or in anticipation of the increased likelihood they would be called on to fund such commitments".²⁶ Its recommendations include the following: (1) larger and more robust liquidity buffers; (2) strengthening standards for the management of liquidity risk including stress testing, plans for contingency funding, and the disclosure and control of intra-day risks; and (3) the development of a more robust and internationally consistent approach to liquidity risk supervision for cross-border banks. There is also a reference to the ongoing development by the BCBS of recommendations on the management of liquidity risk independently of Basel 2 (an initial draft of its recommendations being contained in an almost contemporaneous publication)²⁷.

Prominent among the new official concerns would appear to be liquidity risks due to off-balance commitments. Traditional regulation as well as banks' own management of liquidity risks were based on the idea that the risks would mostly be reflected in a bank's on-balance-sheet positions.

²⁶ Financial Stability Forum, *Interim Report of the FSF Working Group on Market and Institutional Resilience to the G7 Finance Ministers and Central Bank Governors*, February 2007. The Financial Stability Forum brings together representatives of the national financial authorities (central banks, ministries of finance and supervisory authorities) of Australia, Canada, France, Germany, Hong Kong, Italy, Japan, Netherlands, Singapore, Switzerland, United Kingdom and United States as well as of international financial institutions and international standard-setting, regulatory, and supervisory groupings.

²⁷ BCBS, *Liquidity Risk: Management and Supervisory Challenges* (Basel: Bank for International Settlements, February 2008).

However, liquidity risks now also reflect to an increasing extent commitments stemming from holdings of derivatives or from securitizations, both of which are off-balance-sheet.

Liquidity risks due to securitization have been a major feature of the current credit crisis. The SPEs in securitizations can be thought of as off-balance-sheet banks whose liabilities, like those of traditional banks, consist of a sliver of equity and of debt, the latter being the notes sold to investors.²⁸ However, these off-balance-sheet banks are not subject to regulation and supervision. The SPEs can be a source of liquidity risks to their originating or sponsoring banks if these feel constrained for reputational or other reasons to provide them with emergency financing or restore the SPEs' assets to their own balance sheets in the event of difficulties in rolling over the SPEs' liabilities.

X. Elements of a future agenda

Senior participants in the drafting of Basel 2 often state that Basel 2 should be considered as a process rather than a destination. This reflects the idea that its rules should - and will - be continuously updated in response to feedback on the working of the agreement and to continuing developments in banking practice at institutional and transactional levels.

Before consideration of possible developments in such a continuing process some of Basel 2's inherent limitations should be recalled. Most importantly prudential regulation of banks' capital is only part, albeit a major part, of prudential regulation. Attention was drawn above to the essential complementary role of the regulation of liquidity risks. More generally, as the Deputy General Manager of the Bank for International Settlements has put it, "Basel II is not by itself the miracle cure of all financial sector ills. Its successful implementation depends critically on the existence of an adequate institutional infrastructure for the prudential framework as well as adherence to international standards of best practice by both the prudential authorities and market practitioners".²⁹

It is worth returning for a moment to best practices on the part of market practitioners in relation to the observations about crises involving internal controls in large banks of industrial countries already made in section IX.A. These crises appear to be due not only to cumbersome and inadequate organisational structures but also to incentives geared to the achievement of short-term profits and a closely related weakening of the ethical framework for decision taking. Admittedly unsystematic information suggests that the representations of those responsible for risk management and compliance in some large banks are now often ignored, and that the weight accorded to different views in decision taking reflects the direct contribution to the banks' profits of those expressing them. Effective regulation and supervision are obviously more difficult in such an environment.

The excesses in the financial sector revealed during the credit crisis and their consequences for the rest of the economy may even now be provoking a backlash which will lead to a generally more restrictive regulatory framework than which has emerged from the wave of financial deregulation which began in industrial countries in the 1960s and then progressively spread to much of the rest of the world. In the brief remarks which follow, however, the focus will be on a number of specific issues with evident links to the introduction, effectiveness and further development of Basel 2.

²⁸ For this characterisation of the SPEs in securitizations as off-balance-sheet banks see the testimony before the United States Congress of J. Kyle Bass cited in footnote 23 above.

²⁹ Keynote address by Hervé Hannoun at the 41st Conference of the SEACEN Governors Bandar Seri Begawan, Brunei Darussalam, 4 March 2006., p. 7.

Two of these issues have already been mentioned above: the danger that Basel 2 will not contribute to a smoothing of the procyclicality of bank lending but may even increase it; and the need for complementary measures to control liquidity risks.

As mentioned in section IV above, senior regulators associated with the Basel 2 process have endorsed dynamic provisioning for the purpose of smoothing bank lending. Two academic authorities on banking have recently put forward a more radical proposal along similar lines for getting banks to restrain bank lending during booms in asset prices and build up reserves so that they are available to be released during depressions.³⁰ For existing rules on capital requirements and those of Basel 2 the authors would substitute requirements of which the greater part would consist of capital that would vary in response to indicators of bank lending and asset prices. Replacement of Basel 2 by rules along these lines is unlikely but as the authors point out, the principles underlying their proposal could be incorporated in the supervisory guidance of Pillar 2. In this way they could become one of the determinants of the supplementary capital requirements imposed in response to risks for which national regulators believe that the minimum capital requirements of Pillar 1 are inadequate. However, as the authors also admit, their proposal would also require rules which would prevent banks from simply off-loading loans through securitization during booms.

The need for an expanded framework for the control of liquidity risk has been recognised by international regulatory bodies (see section IX.D). The February 2008 paper of the BCBS focuses largely on diagnostics. Its recommendations for future work parallel closely the subjects singled out by the Financial Stability Forum in the paper of its Working Group on Market and Institutional Resilience (risk identification, strengthened stress testing, more attention to the implications for liquidity risk of cross-border financial flows, improved cross-border supervisory cooperation, etc.). The eventual success of this agenda will depend on the feed-back process between new national measures to strengthen regulation in areas such as securitization and off-balance sheet positions and their reflection in strengthened cross-border supervisory cooperation.

Two other subject likely to be affected by responses to recent events are the accounting treatment of financial instruments and credit rating agencies.

Anomalies revealed by the credit crisis have intensified criticisms of fair value accounting for financial instruments, under which values are estimated from the instruments' market prices or those of similar instruments or, failing these methods, by the use of an accepted valuation model (marking-to-model). A standard criticism of fair-value accounting is that it introduces an undesirable degree of volatility into estimates of a bank's assets and liabilities. Such volatility is accentuated during periods of exceptional instability in financial markets. Moreover during such periods the values produced by marking-to-model risk becoming increasingly unreal.

A more detailed discussion of accounting issues is beyond the scope of this paper. However, the connection between fair value accounting and liquidity risks deserves a mention. More stringent and more conservative valuation rules for instruments requiring marking-to-model are likely to have a particularly important effect on holdings of instruments lacking a ready market, i.e. subject to relatively high liquidity risk. Such rules could act as a useful disincentive to holdings of complex financial instruments which are difficult to understand for both traders and investors.

The discussion Basel 2 above indicates that its rules are crucially dependent on the integrity of the credit rating process. The agencies' practices have long been the subject of criticisms on the part of cognoscenti. But more recently the criticisms have started to have a greater impact at governmental and inter-governmental levels.

³⁰ C.Goodhart and A.Persaud, "A proposal for how to avoid the next crash" *Financial Times*, 31 January 2008.

The agencies themselves have begun to advance proposals for reform clearly at least partly intended to pre-empt official action. For example, both Moody's and Standard & Poor's have proposed ways of differentiating their ratings of structured notes from those applying to more traditional instruments. But whether greater self-regulation will assuage their official critics only time will show.

At present there seems to be little consensus on forms which additional official regulation of credit rating agencies might take. Ideas which have been floated include the establishment of some collective institution or pool financed by issuers of securities which would be responsible for assigning agencies for rating particular issues and for paying them. This idea is aimed at eliminating conflicts of interest which arise because of the dual role of rater and adviser currently assumed by the same agency for some issues. Interestingly, similar proposals for the establishment of an independent entity which would assign audits and receive fees from audited firms have also been put forward for dealing with potential conflicts of interest in the case of major accounting firms which combine auditing and consulting roles. But so far in neither case do proposals along these lines seem to have acquired traction in official circles.

What does seem likely is that in response to increased need for credit ratings in a large number of countries (partly due to the requirements of Basel 2) the industry will expand to include several new agencies, particularly in emerging-market countries. This will eventually have the desirable effect of reducing the market power of the majors, Moody's, Standard & Poor's and Fitch.

For developing countries the transition periods for introducing Basel 2 provide opportunities for avoiding potentially damaging curtailment of bank lending to medium-sized enterprises which might result from the shift from relationship-based banking models hitherto prevailing to the more arms-length model of borrower-lender relations of Basel 2. If surveillance of bank lending during the transition period suggests that such a curtailment is taking place, greater flexibility can be built into the national version of Basel 2 rules to accommodate national policy goals. Precedents for the adjustment of Basel 2 rules to fit them to national contexts and problems are already provided by the actions of various countries (including those of the United States discussed above in section VI).

Basel 2 shares with financial regulation more generally dependence for its effectiveness on supervisors' capacity to apply the rules and thus on their understanding of the structure and operations of the institutions which they supervise. As a general rule this implies that the authorities in developing countries should only license institutions and authorise operations for which they are capable of providing adequate supervision.

One example of a vehicle for exerting pressure on developing countries to permit operations which are unsuitable from this point of view is provided by paragraph 7 of the Understanding on Commitments on Financial Services of the WTO General Agreement on Trade in Services according to which "A Member shall permit financial service suppliers of any other Member established in its territory to offer in its territory any new financial service". Fortunately countries participating in WTO negotiations are not obliged to make offers or to schedule commitments in accordance with the Understanding which otherwise might be capable of serving as a Trojan Horse for banking operations that a developing country might have difficulty understanding and regulating.

Of still greater general importance is maintenance of the freedom to control cross-border capital transactions which are now often effected through or accompanied by derivatives and other complex structures. Hedging instruments have been used in international commerce since before 1000 B.C. and in many, if not the majority, of instances of their use serve the genuinely useful function of controlling risks. However, several recent law cases illustrate the potential of complex

cross-border capital transactions for misleading customers, supervisors and tax authorities in developing countries. The authorities in these countries need to retain the power to react to such cases with appropriate regulation which has the aim of preventing such transactions and of minimising the incidence of other transactions based on similar principles.

Annex. Analytics and supervisory requirements of the IRBA

For banks using the Internal Ratings-Based Approach (IRBA) to set levels of capital for credit risk for corporate, sovereign, bank, and retail exposures risk-weighted assets are calculated according to the following formula:

$$\text{UDR} \times \text{LGD} \times \text{EAD} \times \text{MatAd.}^{31}$$

UDR is the unexpected default rate. i.e. the excess of the worst case 1-year default rate at the confidence level of 99.9 per cent over the expected 1-year default rate. LGD is the percentage loss given default (the loss after taking account of any loan recovery by the creditor). EAD is the value of the exposure at default. MatAd is an adjustment for the maturity of the exposure.

For UDR an estimate of the 1-year probability of default (PD) and the correlation between defaults in the exposure class (corporate, sovereign, bank, and retail) are required. The estimate of PD is based on data sources fulfilling certain conditions and covering a period of at least five years. The correlation factors in UDR are in the form of mathematical functions of PD for corporate, sovereign and bank exposures or of externally given figures for certain categories of retail exposure. MatAd is calculated in accordance with rules specified by the BCBS.

For retail exposures banks determine LGD and EAD internally. Banks using the Advanced version of the IRBA also determine LGD and EAD internally. The estimate of LGD must be based on an observation period which should include one complete economic cycle and should not be less than seven years for at least one of the data sources used. Similar requirements apply to EAD. For banks using the Foundation version of the IRBA LGD and EAD are set by their supervisors according to criteria to which Basel 2 devotes little attention but which would presumably be based on historical data for the banking sector as a whole and models chosen for the purpose.

Special rules apply to equity exposures, i.e. direct and indirect ownership interests in commercial firms which meet the conditions usually specified for a financial instrument to be classified as equity. Special rules also cover a number of other cases which do not fit into the general framework set out above. For example, five subclasses of specialised lending are singled out under corporate exposures: project finance, object finance (commonly employed for the acquisition of ships, aircraft, satellites and railcars where debt service depends on the assets in question), commodities finance (where debt service depends of the sale of the commodities), financing of income-producing real estate (where debt service also depends on cash flows generated by the asset), and financing for high-volatility commercial real estate. The need for special rules for the five subclasses is due to the likelihood that banks otherwise meeting the requirements for providing their own estimates of PD under the IRBA will not necessarily also be able to meet these requirements for these five subclasses.

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³¹ This notation, which is simpler than that of the text of Basel 2, is taken from Hull, *op. cit.* (at note 20), p.501.