

Basel 2 at mid-2006: prospects for implementation and other recent developments

<i>Contents</i>	<i>Page</i>
I. Introduction	2
II. Review of plans for implementation	2
<i>A. Recapitulation of the FSI survey</i>	
<i>B. Implementation at national level: intentions and planned dates</i>	
<i>C. Implementation at national level: supplementary information</i>	
III. Cross-border supervisory convergence and cooperation	9
IV. Quantitative Impact Studies	10
<i>A. QIS5</i>	
<i>B. QIS4</i>	
V. Pace and character of implementation: preliminary conclusions	12
Annex 1. Sources	14
Annex 2. Results of QIS5	15

I. Introduction

This paper begins with a review of information concerning current expectations concerning implementation of Basel 2 (section II). This concerns mainly individual countries and thus fleshes out the data on expectations in the 2004 survey of the Financial Stability Institute (FSI) for major regions in which the countries were anonymous. An overview is followed by more detailed information concerning selected countries' plans for implementation, which includes dates, coverage and selection of different options under Basel 2. The Basel Committee on Banking Supervision (BCBS) and its Accord Implementation Group (AIG) have recently devoted considerable attention to achieving convergence in the way in which regulators in different countries intend to implement Basel 2, and to cross-border supervisory cooperation for this purpose. Developments on this front are discussed in section III. In section IV there is a review of a survey of the BCBS's Quantitative Impact Study 5 (QIS5) and of two national studies undertaken as part of QIS4, that of the United States which has affected the pace and form of the country's prospective implementation of Basel 2 and that of Switzerland which is interest for the purpose of comparison. Section V of the paper concludes with some reflections on the implications of current plans for implementation for the attainment of Basel 2's objectives.

II. Review of plans for implementation

A. Recapitulation of the FSI survey

The FSI's 2004 survey of non-BCBS countries remains the most comprehensive source for expectations as to the implementation of Basel 2.¹ Major findings of this survey were the following.

- 88 of the 107 respondents to the FSI questionnaire intend to implement Basel 2. If member countries of the BCBS are added to this total, the figure rises to over 100 countries.
- The banking assets in countries intending to implement Basel 2 exceed 90 per cent of the regional totals for Africa, Latin America, the Middle East and non-BCBS Europe and reach almost 90 per cent for Asia.
- Of the different options for setting the capital requirements for credit risk (see Box 1) the foundation version of the internal ratings-based approach (FIRBA) is expected to be the most widely used, the Standardised Approach (SA) (including the simplified version) coming close behind. By 2009 banks representing 50 per cent or more of total assets in all regions except the Caribbean expect to be using the FIRBA. By this date only a small proportion of banking assets is expected to be covered by the advanced version of the internal ratings-based approach (AIRBA). This proportion is expected to increase to about 25 per cent by 2015.
- As of the end of 2009 the most commonly used option for setting capital requirements for operational risk is expected to be the simplest Basic Indicator Approach (BIA). But the expectations by regions vary, the proportion of banking assets being covered by the Standardised Approach (SAOR) being especially high for Latin America. The BIA is expected to remain the most widely used approach in

¹ See FSI, "Implementation of the new capital adequacy framework in non-Basel Committee member countries", *Occasional Paper No. 4* (Basel: BIS, July 2004), www.bis.org/fsi/fsipapers04.htm. The FSI survey is reviewed in detail in "The global implementation of Basel II: prospects and outstanding problems", June 2005, www.fmcenter.org and www.g24.org/research.

2015, though some increase in the Advanced Measurement Approach (AMA) is expected by then.

Box 1. The alternative approaches and options of Basel II

Under Pillar 1 of Basel 2 regulatory capital requirements for credit risk are calculated according to two alternative approaches, the Standardised and the Internal Ratings-Based. Under the Standardised Approach (SA) the measurement of credit risk is based on external credit assessments provided by external credit assessment institutions (ECAIs) such as credit rating agencies or export credit agencies. Under the Simplified Standardised approach Basel 2 assembles in one place the simplest options of the Standardised approach with the objective of simplifying choices for some banks and supervisors. Under the internal ratings-based approach (IRBA), subject to supervisory approval as to the satisfaction of certain conditions, banks would use their own rating systems to measure some or all of the determinants of credit risk. Under the foundation version (FIRBA) banks calculate the probability of default (PD) 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 (AIRBA) banks also estimate their own measures of all the determinants of credit risk, including loss given default (LGD) and exposure at default (EAD).

Under the regulatory capital requirements for operational risk there are three options of progressively greater sophistication. Under the Basic Indicator Approach (BIA) the capital charge is a percentage of banks' gross income. Under the Standardised Approach (SAOR) the capital charge is the sum of specified percentages of banks' gross income from eight business lines (or alternatively for two of these business lines, retail and commercial banking, of different percentages of loans and advances). Under the Advanced Measurement Approach (AMA), subject to the satisfaction of more stringent supervisory criteria, banks estimate the required capital with their own internal systems for measuring operational risk.

Pillars 2 and 3 of Basel 2 are concerned with supervisory review of capital adequacy and the achievement of market discipline through disclosure.

B. Implementation at national level: intentions and planned dates

Other more piecemeal information is available concerning decisions to implement Basel 2 in selected countries. Its main features are summarised below: all the countries covered intend to implement Basel 2 for all or the greater part of their banking sectors; and they are categorised by the availability or absence of information concerning projected implementation dates *in the sources used*.² The dates usually but not invariably refer to the beginning of years, and greater precision is provided where this possible. In the case of the member countries of the EU the new Capital Requirements Directive (CRD), which broadly follows Basel 2, is to be implemented at the beginning of 2007 for banks using the simpler, standardised approaches to capital requirements, and at the beginning of 2008 for banks using the advanced approaches. There are doubts (see section II.C) as to whether it will be feasible to meet these targets throughout the EU. Thus for EU countries the date is specified below as "2007/2008

² These sources are given in Annex 1.

(EU)". For other countries or territories the approaches permitted or expected to be adopted (SA, IRBA, FIRBA, AIRBA, and occasionally those adopted for operational risk) are specified in parentheses next to the projected date if the information is available - which is generally not the case for the options for the capital requirements for operational risk – or next to "n.d." if it is not. Where countries have indicated that they intend to carry out parallel calculations (see section II.C) during a period before authorisation of use of the IRBA but without indicating an expected date for such authorisation, this denoted by PC. In view of the inclusion of the recently revised 1996 Amendment of the Capital Accord to Incorporate Market Risks in QIS5 (discussed in section IV) the summary below also includes data concerning countries' adoption of the 1996 Amendment: if banks are subject to capital requirements for market risk, this is denoted by "MR"; and if they are also permitted to use internal models to set these requirements, this is denoted by "MR/IM".

Countries with a projected date of implementation

Australia: end-2007(all approaches)/MR/IM
Austria: 2007/2008(EU); MR/IM
Bahrain: 2008/2009; MR/IM
Belgium: 2007/2008(EU); MR/IM
Canada: December 2007(SA,IRBA), MR/IM
Czech Republic: 2007/2008(EU); MR/IM
Denmark: 2007/2008(EU); MR/IM
Finland: 2007/2008(EU); MR/IM
France: 2007/2008(EU); MR/IM
Germany: 2007/2008(EU); MR/IM
Greece: 2007/2008 (EU); MR
Hong Kong: 2007(SA),2008(IRBA);MR/IM
India: March 2007(SA,BIA); MR
Ireland: 2007/2008(EU); MR/IM
Italy: 2007/2008(EU); MR/IM
Latvia: 2007/2008(EU); MR
Luxembourg: 2007/2008(EU); MR/IM
Malaysia: 2008(SA, BIA),2010(FIRBA)
New Zealand: January 2008(SA,IRBA)
Netherlands: 2007/2008(EU); MR/IM
Norway: 2007/2008(EU); MR/IM
Poland: 2007/2008(EU); MR/IM
Philippines: 2007(SA); MR/IM
Portugal: 2007/2008(EU); MR/IM
Singapore: end-2006(all approaches); MR/IM
South Africa: 2008(SA,PC); MR/IM
South Korea: end-2007(all approaches)
Spain: 2007/2008(EU); MR/IM
Sri Lanka: 2008(SA,PC)
Sweden: 2007/2008(EU); MR/IM
Switzerland: 2007/2008(all aproaches); MR/IM
Taiwan: end-2006
Thailand: end-2006(SA)
United Kingdom: 2007/2008(EU); MR/IM
United States: 2008(AIRBA, AMA); MR/IM

Countries for which a projected date of implementation is lacking

Albania

Argentina: MR

Bermuda: MR

Bulgaria

Chile: n.d.(SA,IRBA)

China: n.d.(SA,IRBA)

Croatia

Israel: MR/IM

Japan: n.d.(SA,FIRBA); MR/IM

Mauritius: n.d. (SA, IRBA)

Panama

Romania: MR

Turkey: MR/IM

Uruguay

C. Implementation at national level: supplementary information

The following information complements the summary data in section II.B.

European Union

The CRD, which translates Basel 2 into EU law, was ratified in October 2005. The geographical scope of the Directive will be the European Economic Area (EEA). i.e. Norway, Iceland and Liechtenstein as well as the member countries of the EU. CRD applies not only to banks and other credit institutions such as cooperatives but also to investment firms as defined in the Investment Services Directive³, a term which includes broker/dealers, asset managers, arrangers and transmitters of securities orders, and underwriters of securities issues. For banks using the simpler approaches it comes into force at the beginning of 2007, and for those using the IRBA and AMA at the beginning of 2008. However, the complexity of CRD (which is nearly 500 pages long) is already leading to delays in implementation so that adherence to the timetable at national level may not prove feasible throughout the EU.

Capital requirements for the market risks of different financial instruments for banks and investment firms in the EU were introduced by the 1993 capital adequacy directive.⁴ The rules were extended to cover the use of firm's own internal models to estimate capital requirements for this purpose (as provided for by the BCBS's 1996 Amendment of the Capital Accord to Incorporate Market Risks) by a 1998 directive amending that of 1993.⁵

Parallel calculations

During transition periods banks which adopt the FIRBA, AIRBA and/or the AMA are required under Basel 2 to calculate their capital requirements using not only these approaches but also the rules of the 1988 Basel Capital Accord. References to parallel calculations in the country information concerning implementation of Basel 2 can be interpreted as statements of intention to permit banks' eventual use of these options.

³ Council Directive 93/22/EEC of 10 May 1993 on investment services in the securities field.

⁴ Council Directive 93/6/EEC of 15 March 1993 on the capital adequacy of investment firms and credit institutions.

⁵ European Parliament and Council Directive 98/31/EC of 22 June 1998 amending Council Directive 93/6/1993 on the capital adequacy of investment firms and credit institutions.

Islamic banks

As part of its response to Basel 2 the Islamic Financial Services Board has issued standards on risk management and capital adequacy which are recommended for implementation in 2007.

Argentina

The regulatory authorities may phase in Basel 2 with transitional periods during which banks continue to use the 1988 Basel Capital Accord.

Australia

Initially less complex banks are expected to adopt the simpler options of Basel 2.

Bahrain

Most banks intend to adopt SA.

Canada

The Office of the Superintendent of Financial Institutions expects large internationally active banks to adopt the AIRBA.

China

Basel 2 is to be phased in over a period of years. In March 2004 new capital rules for banks were introduced. These included an adjusted version of the Basel Capital Accord of 1988 with the use of the ratings of ECAs for international claims, implementation of the 1996 Amendment of the Capital Accord to Incorporate Market Risks, the introduction of Pillars 2 and 3 of Basel 2, and adequate provision for loan losses.

Denmark

The phasing-in of Basel 2 began in January 2005 in conjunction with the introduction of International Financial reporting Standards (IFRS).

Greece

The Bank of Greece is involved in discussions concerning cross-border cooperation and convergence as part of the expansion of some of the country's banks into neighbouring Balkan countries.

Hong Kong

The Hong Kong Monetary Authority (HKMA) is not prepared to support the use of AMA at least initially. Surveys indicate that the majority of locally incorporated banks will adopt SA. For small, simple institutions the HKMA will make available a Basic Approach to estimate capital requirements for credit risk which will combine the rules of the 1988 Basel Capital Accord with changes to bring them into closer alignment with Basel 2.

India

Basel 2 will apply to commercial banks from 31 March 2007, though flexibility regarding this timetable will probably be necessary. Cooperative Banks will continue to be regulated under the rules of the 1988 Basel Capital Accord, and Regional Rural Banks in accordance with a simpler minimum capital requirement.

Italy

Basel 2 is being introduced during 2005-2007 in conjunction with IFRS.

Japan

Amendments to banking regulations to incorporate Basel 2 will become available only after the release of the definitive draft by the BCBS. Problems to be addressed include the definition of default (in a country where rescue operations are frequent) and the treatment of LGD (in view of the country's exceptionally time-consuming procedures for loan recovery). Large banks are expected to adopt FIRBA owing to the difficulty of accumulating long series of data for LGD estimation in the aftermath of the many recent mergers and restructurings in the banking sector.

Malaysia

Implementation of the SA at the beginning of 2008 and of FIRBA at the beginning of 2010 will be preceded by periods of a year in which banks will be required to report in accordance with these approaches on a shadow basis to the Bank Negara Malaysia (BNM). Guidelines have yet to be decided on approaches other than BIA to operational risk.

Mauritius

Consultations are taking place between regulators and banks on the implementation of Basel 2. Special concerns are (1) the lack of a culture for rating borrowers in the country, (2) regulatory convergence between Mauritius and the parent countries of its foreign banks, and (3) various technical issues relevant to IRBA such as the effectiveness of supervisory validation of key parameters and the quality of banks' stress testing.

Singapore

Local subsidiaries of foreign banks with restricted banking licenses are not currently subject to capital adequacy requirements (though they are subject to regulatory criteria for net worth, etc.) This exemption is likely eventually to change with the implementation of Basel 2.

South Africa

Parallel calculations will take place during 2007.

Sri Lanka

Parallel calculations("test runs in parallel with Basel I") are beginning in 2006.

Switzerland

In addition to the approaches of Basel 2 Swiss banks will be able to choose a Swiss Standardised Approach ("Swiss Finish") designed for banks with a domestic as opposed to international business orientation. This requires more limited changes than those of Basel 2 in comparison with the capital regime already in force.

Taiwan SAR

Implementation is envisaged according to the timetable laid down by the BCBS.

Thailand

At least initially Basel 2 will apply only to commercial banks, whose licenses cover all permitted banking activities, but not to retail banks, which are restricted mainly to providing services to SMEs and low-income customers.

Turkey

A transitional period during which banks may remain on the 1988 Basel Capital Accord is being considered.

United States

Only banks with total assets or total cross-border assets above specified thresholds will be required to adopt the AIRBA and AMA. A number of other large banks are also expected to adopt Basel 2 on the basis of these approaches. However, the consultation process concerning Basel 2 has been prolonged owing to regulators' need for time to draw lessons from analysis of the results of QIS4US (see section IV) and to continuing concerns as to possible unfavourable competitive effects of a regime limiting Basel 2 to a minority of banks. Further delays may result from Public Law No. 109-173 which was adopted in February 2006 and mandates an evaluation of Basel 2 by the General Accounting Office (GAO)⁶. Implementation of Basel 2 is currently not expected to begin before January 2008. Amendments (Basel IA) to current rules based on the 1988 Basel Capital Accord, which will continue to apply to the majority of United States banks, are also under consideration. These are likely to increase the risk sensitivity of capital requirements in comparison with existing rules – and thus, *inter alia*, to reduce distortions in competition among the country's banks which may result from restriction of the lower capital charges associated with the risk calibration of Basel 2 to a few large institutions.⁷ Regulatory proposals for this purpose are expected by the summer of 2006.

Box 2. Minimum required capital for banks in Russia

For the Russian version of the 1988 Basel Capital Accord the Central Bank of the Russian Federation (CBR) set five basic categories of risk weight for estimating minimum required capital. These weights (0, 10, 20, 50 and 100 per cent) broadly follow those of the 1988 Accord with some exceptions:

- residential mortgages are given a weight of 100 per cent rather than the 50 per cent in the Accord owing to the difficulty under the Russian Civil Code of evicting certain categories of dwellers in the event of default;
- the risk weight of 20 per cent is used as a proxy for the more elaborate methods of the 1996 Amendment of the Capital Accord to Incorporate Market Risks;
- since January 2004 the rules include methods for estimating the credit risk of some off-balance-sheet items such as guarantees and other contingent liabilities involving credit risk. These rules also cover derivative contracts, although at the date of their introduction the legal enforceability of derivative contracts was still uncertain.⁸

⁶ In the study the Comptroller General is to report on several issues: (a) whether Basel 2 would reduce capital requirements; (b) whether it could hinder enforcement of prompt corrective action; (c) whether it would have implications for the safety and soundness of the country's financial system; (d) its costs for both banks and regulators; (e) the feasibility and appropriateness of its models; (f) regulators' ability to oversee banks' compliance with Basel 2; and (g) the ability of the regulatory institutions to attract and retain supervisors with the necessary expertise.

⁷ As a result of revisions since 2001, under Basel 2 supervisors may now allow a phased roll-out of IRBA across asset classes. This would appear to allow banks to adopt IRBA only for categories of exposure such as retail or SME for which higher capital charges under the 1988 Basel Capital Accord or SA of Basel 2 leave them vulnerable to large competitors that adopt IRBA for all their business. United States regulators' rejection of an approach to Basel 2 that includes approval of IRBA limited to certain categories of banks' exposures may be due to reasons such as a shortage of supervisors to oversee IRBA for institutions adopting such a more limited version that might number thousands, and the difficulties of meeting standards regarding the availability of data required by IRBA for many of the country's banks.

⁸ See W.Tompson, "Banking reform in Russia: problems and prospects", *OECD Economics Department Working Paper No. 410* (November 2004), Annex 2, [www.oelis.oecd.org/olis/2004doc.nsf/linkto/eo-wkp\(2004\).33](http://www.oelis.oecd.org/olis/2004doc.nsf/linkto/eo-wkp(2004).33).

Since the beginning of 2005 the CBR has begun consultations and other preparation for the implementation of Basel 2. It is also introducing rules for capital requirements for market risk that include both the standardised method of estimating risk weights of the 1996 Amendment and the method based on estimating Value at Risk with internal models.⁹

III. Cross-border supervisory convergence and cooperation

One of the objectives of Basel 2, like its predecessor the 1988 Basel Capital Accord, is to ensure a degree of consistency in the regulation of international banks' capital adequacy sufficient to prevent the rules from being a source of significant competitive inequality. This objective is to be achieved in ways which accommodate the variety of approaches to capital requirements for credit and operational risk under Pillar 1 as well as the latitude under Pillar 2 for supervisors in their reviews of banks' internal risk controls to prescribe regulatory capital in excess of Pillar 1's minima. In the case of banks with cross-border operations Basel 2 is to be applied through a framework of consolidated supervision which could lead to difficulties if the supervisor of an international bank in its parent country and that of a subsidiary or branch in a host country apply different rules. Difficulties could arise, for example, if there were differences in the options regarding capital requirements which the parent and host supervisors were prepared to permit in their respective jurisdictions. Such differences have the potential to impose on banks the obligation and the resulting additional costs of estimating the capital requirements of entities in different countries in accordance with different rules.

The BCBS's approach to achieving regulatory and supervisory convergence has been to rely on the the Accord Implementation Group (AIG), a working group of supervisors, to promote consistency through the exchange of information between supervisors on Basel 2 implementation. The AIG has also undertaken a series of case studies, which in some cases have become the basis for actual planning of cross-border supervisory cooperation regarding implementation. A finding of these case studies is that lacunae regarding Basel 2 planning exist not only at the level of cooperation between supervisors in different countries but also at that of information flows between the different entities of international banks.¹⁰ In mid-2006 the BCBS issued a paper on cross-border information sharing between supervisors in which it described the requirements for such sharing between the home supervisors of international banks and the host supervisors of their subsidiaries, acknowledging that similar requirements could also be applied to the home and host supervisors of branches.¹¹ The paper's recommendations flesh out the high-level principles for the cross-border implementation of Basel 2 set out by the BCBS in 2003.¹²

Information is now also available on how various regulators and supervisors will approach the problem of supervisory convergence in their jurisdictions.

⁹ Central Bank of the Russian Federation, *Banking Supervision Report 2004*, p. 67, www.cbr.ru/eng/main.asp.

¹⁰ See J. Caruana (Chairman of the BCBS), "What's next for Basel", remarks at the "Basel II: Reality Check" Conference sponsored by the Financial Times and the Banker Magazine, London, 10 November 2004, www.bis.org.

¹¹ See BCBS, *Home-Host Information Sharing for Effective Basel II Implementation* (Basel: BIS, June 2006), <http://www.bis.org/publ/bcbs125>.

¹² See BCBS, *High Level Principles for the Cross-Border Implementation of the New Accord* (Basel: BIS, August 2003), <http://www.bis.org/publ/bcbs100>. This document is summarised in "Basel II: the Revised Framework of June 2004", July 2004, www.fmcenter.org.

- In the *EU/EEA*, in accordance with the principles of mutual recognition and home country control, the application of CRD – including authorisation of different approaches and options – will be carried out by the consolidating supervisor, i.e. the supervisor with the primary responsibility for supervision of a cross-border banking group.
- The authorities in *Malaysia* will allow foreign banking subsidiaries which are required to use the IRBA by their parent supervisor to adopt the same approach for calculating their local capital requirements. (Local incorporation is required of foreign banks, so that there are no foreign branches in Malaysia.) Domestic banks are to be permitted to use the FIRBA only from the beginning of 2010 – which, under the rules, may be later than the date for some foreign banks.¹³
- Banks in *New Zealand* which are parts of international groups, as most are, will be permitted to base their capital requirements on the internal models of their parent banks subject to satisfying the Reserve Bank that these models are appropriate to local conditions. The Reserve Bank has agreed with the Australian Prudential Regulation Authority on Terms of Engagement establishing high-level principles for cross-border implementation of Basel 2.¹⁴
- In *Panama* branches of foreign banks will be able to implement Basel 2 according to choices of their head offices.¹⁵
- In *Singapore* the implementation of Basel 2 for branches of foreign banks licensed to provide the full range of banking services will be based on the approach adopted by their home supervisors.¹⁶
- Supervisors in *Thailand* will rely on the home supervisor's assessment of the capital adequacy of the branches of foreign banks.¹⁷

IV. Quantitative Impact Studies

A. QIS5

In the text issued in June 2004 (Revised Framework) the BCBS stated its intention to conduct a further review of the impact of Basel 2 to verify that the objective of maintaining minimum regulatory capital requirements unchanged overall would be met.¹⁸ If necessary, the BCBS would require application of a scaling factor to capital requirements of the IRBA of which its best estimate based on its earlier Quantitative Impact Study (QIS3) was 1.06. In spring 2006 the BCBS announced the results of QIS5 (which are analysed in greater detail in Annex 2). According to the QIS5 estimates there would be a reduction in required capital for banks in G10 countries under IRBA which is larger for AIRBA than for FIRBA, and similar results were found for banks in non-G10 countries belonging to the EEA and in countries which are

¹³ See C.Matten, "Application and implementation in Asia-Pacific", in J.Tattersall and R.Smith, *A Practitioner's Guide to the Basel Accord* (London: City and Financial Publishing, 2005), p.279, and Z.Akhtar Aziz, "Cross-border challenges in implementing Basel II in emerging economies", keynote address at the Public-Private Dialogue Session of the 7th SEACEN Conference of Directors of Supervision of Asia Pacific Economies, Kuala Lumpur, 4 August 2005, www.bis.org.

¹⁴ See A.Orr, "Bank capital, risk management and the economy", speech to the Retail Financial Services Forum, Auckland, 10 April 2006, www.bis.org, and Institute of International Bankers, *Global Survey 2005 Regulatory and Market Developemnts* (New York, September 2005), p.39, www.iib.org/GS2005.

¹⁵ See Institute of International Bankers, *op. cit.* (at note 14), p. 125.

¹⁶ See Matten, *op. cit.* (at note 13), p.282.

¹⁷ See *ibid.*, p.284.

¹⁸ BCBS, *International Convergence of Capital Measurements and Capital Standards A Revised Framework* (Basel: BIS, June 2004 and updated November 2005), para. 14, <http://www.bis.org/publ/bcbs118>.

candidates for accession to the EU.¹⁹ For the few Group 1 banks (i.e. large, diversified and internationally active banks with Tier 1 capital above Euros 3 billion) in G10 countries that adopt SA there would be an increase in required capital. For G10 Group 2 banks (smaller, more specialised banks) there would be reductions in required capital under all approaches (SA, FIRBA, and AIRBA) due to the greater proportion amongst their assets of retail exposures carrying lower capital charges, and similar results were also obtained for banks in non-G10 EEA and EU-candidate countries. Banks in non-G10 countries which participated in QIS5 show substantial dispersion in required capital both within and among countries but here too on average there are reductions in minimum required capital for banks under IRBA (but increases under SA). The BCBS conducted an analysis of the cyclicity of Basel 2's capital requirements but was unable to reach a conclusion as to how far the benign economic conditions prevailing during QIS5 had influenced the results. On the basis of the QIS5 results the BCBS has decided that no adjustment of the scaling factor of 1.06 is warranted at this stage. This decision may be revised as the results of national parallel calculations (see section II.C) become available.

B. QIS4

During the period following the publication of the Revised Framework a number of countries undertook studies of the national impact of Basel 2, collectively denoted as QIS4. The study of the United States (QIS4US) has been the subject of special attention owing to disagreements concerning Basel 2 amongst the country's different regulators and criticism in Congress. A summary of the results of the United States QIS4 is followed here by one for Switzerland (QIS-CH), a country whose banking sector, like that of the United States, comprises several largely domestic banks as well as institutions with an international scope.

26 firms participated in QIS4US and estimates of the effects of Basel 2 were limited to the most advanced approaches since only these will be permitted for United States banks.²⁰ The results showed a reduction in aggregate minimum capital requirements of 15.5 per cent (the median reduction being 26 per cent), a figure substantially larger than the 6 per cent recorded in an earlier exercise (QIS3). There was also substantial dispersion in the figures for different banks, and this dispersion was also evident in the inputs to the estimates of capital requirements, PD and LGD. Although the results of QIS4 are considered more reliable than those of QIS3, some of the participating banks acknowledged their difficulties in making some of the estimates and the less than fully developed state of their systems for implementing Basel 2.

Major findings of an analysis of these results by United States regulators were the following:

1. *Owing to the favourable economic environment* while QIS4US was being conducted the estimated capital requirements were lower than they would have been in more stressful conditions. In this context particular attention was paid to the considerable variation in the LGD parameters used by different banks (compare point 3 below): in some cases these parameters were not based on experience over a whole economic

¹⁹ "Basel Committee maintains calibration of Basel II framework", BIS press release, 24 May 2006, www.bis.org/press/p060524, and BCBS, *Results of the Fifth Quantitative Impact Study (QIS5)* (Basel: BIS, June 2006), www.bis.org/bcbs/qis/qis5.

²⁰ See "Federal regulators release summary findings of the Fourth Quantitative Impact Study", Joint Press Release of the Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, and Office of Thrift Supervision, 24 February 2006, www.federalreserve.gov/BoardDocs/Press/bcreg.

cycle and thus did not incorporate loss levels characteristic of downturns. (As discussed in section IV.A, the QIS5 estimates of the BCBS were affected by similar problems.)

2. *Differences in the composition and credit quality of banks' assets* contributed to the dispersion of estimated capital requirements.
3. More important influences on this dispersion were *differences among banks in methods used and estimates of key parameters*. Analysis of the results for corporate credits and residential mortgages showed that there was significant variation in the treatment of similar exposures by different banks.

To help banks address the problem of LGD estimates which do not properly reflect economic downturns United States regulators have proposed a mapping function designed to "stress" these estimates. This generates an input to the calculation of minimum required capital which conforms to Basel 2.²¹

77 institutions (70 banks and 7 securities dealers) participated in QIS-CH and comprised all those (including foreign firms) seeking approval for use of IRBA or AMA. Swiss banks participating in QIS5 were not required to participate in QIS-CH.²² The results of the exercise indicate a reduction in required capital of 2.34 per cent for the group as a whole (which is equivalent to the weighted average change). The median change was an increase in required capital of 1.01 per cent and the unweighted change was an increase of 8.24 per cent (which indicates that reductions in required capital were concentrated amongst larger institutions). The Swiss Federal Banking Commission (SFBC) attributes the reductions to lower capital requirements for residential mortgages, collateralised (Lombard) loans, and lending to retail customers and SMEs. Banks using the Swiss SA ("Swiss Finish") had higher required capital than those using the BCBS's own version of the SA. The SFBC actually imposes a threshold for capital requirements which exceeds regulatory minima by 20 per cent. QIS-CH showed an increase in the number of banks failing to meet this threshold as a result of the new capital requirements from two to four. Banks facing increases in capital requirements in most cases had capital buffers well in excess of the threshold.

V. Pace and character of implementation: preliminary conclusions

According to the account in this paper global implementation of Basel 2 will be uneven, and the schedule in the Revised Framework with its starting date of the beginning of 2007 will be met in only a minority of countries. Issues still outstanding at the time of the publication of the Revised Framework in June 2004 have been treated in a number of documents of the BCBS since that date and an updated version of the Framework itself was published in November 2005.²³

It is natural to ask how far the process we are witnessing constitutes a successful outcome for an initiative that has already taken considerably longer than the BCBS initially envisaged. The answer to the more technical part of this question, namely the impact of Basel 2 on the control of banking risks by banks themselves and their supervisors - and thus on "the soundness and stability of the international banking system" in the words of the Revised Framework (para. 4)

²¹ See S.S.Bies, "Addressing challenges raised by Basel II implementation", remarks at the Risk Capital Forum, Paris, 4 July 2006, www.bis.org.

²² See Swiss Federal Banking Commission, "Results of the national Quantitative Impact Study (QIS-CH) of Basel II", www.sfbs.admin.ch.

²³ These revisions will be covered in a separate technical commentary.

- must await experience of Basel 2 in practice. But some observations on other issues are worth making even at this early stage, several of which bear on the second major objective of Basel 2 (already mentioned in section III), "maintaining sufficient consistency that capital adequacy will not be a significant source of competitive inequality among internationally active banks" (ibid.).

- Many of changes in Basel 2 since the publication of the first technically articulated version²⁴ have been in the direction of greater flexibility in its detailed application. Such flexibility implies variation in the rules as between different banks and thus may compromise Basel 2's second objective of avoiding competitive distortions due to minima for regulatory capital. This flexibility was partly a result of acknowledgement by the BCBS that globally Basel 2 would be widely applied to domestic as well as internationally active banks, and thus rules including variation designed to respond to the needs of a broad spectrum of institutions of different levels of sophistication were indispensable.
- The BCBS itself has accepted that in many countries Basel 2 may not be a regulatory priority. The resulting delays in implementation as well as the non-adoption of Basel 2 in some countries for all or substantial parts of their banking sectors mean that global regulation of banks' capital will remain a patchwork. The difficulties and restrictions regarding implementation in the United States (see section II) have been raised as being likely to have an adverse impact on Basel 2's prospects. While delay in implementation could have adverse short-term effects on the competitiveness of United States international banks, it is not evident that this will have major spill-over effects in other countries. Approaches to implementation which include new, locally designed rules similar to the United States' Basel IA are also to be tried elsewhere (for example, in Hong Kong and Switzerland). But such actions at the country level need not have much bearing on the success or failure of Basel 2 unless they are widespread and involve major deviations from Basel capital rules.
- The evidence in this paper none the less suggests that Basel 2 will be implemented very widely. In the EEA this will be the result of legislation. But in emerging-market and developing countries the driving force appears to be emulation and the objective of installing internationally agreed best practices.
- As mentioned in section III, problems related to cross-border supervisory convergence and cooperation with respect to the adoption of the different approaches and options of Basel 2, which have a bearing on competition in the banking sector both cross-border and within countries, are the subject of continuing work involving the AIG. Cases discussed in section III suggest that these difficulties can be resolved. However, networks of supervisory cooperation become more difficult to manage as the countries involved become more numerous and heterogeneous. Problems may be more contentious, for example, when supervisory cooperation is required between countries with economies and banking sectors of very different sizes.
- Basel 2 like the 1988 Basel Capital Accord enunciates only rules for minimum required capital. These minima are compatible with considerable variation in the levels of economic capital actually set by banks themselves to meet banking risks. Moreover, as mentioned in section III, under Pillar 2 unspecified levels of additional capital are actually prescribed to cover risks not covered - or not fully covered – under Pillar 1. The consequent variations in banks' capital will complicate assessment of the

²⁴ See BCBS, *The New Basel Capital Accord* (Basel: BIS, January 2001), www.bis.org/bcbs/bcbscp2.

extent to which Basel 2 contributes to the avoidance of competitive distortions in international banking.

- Removal of distortions of cross-border competition in international banking - the so-called level playing field – is only one aspect of the framework of standards for banks' supervision and internal controls increasingly being installed worldwide. These standards presuppose global acceptance of more uniform models of banking practice than have previously prevailed. Ultimate assessment of Basel 2 will be closely associated with that of the success (or failure) of the framework of which it is intended to be a key part.

Annex 1. Sources

Institute of International Bankers (IIB), *Global Survey 2005 Regulatory and Market Developments* (New York, September 2005) was a source of information on the implementation of Basel 2 in the EU and the following countries/territories: Argentina, Australia, Austria, Bahrain, Belgium, Bermuda, Canada, Chile, Czech Republic, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Latvia, Luxembourg, Netherlands, Norway, Philippines, Portugal, Singapore, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States. The same publication includes information on whether these countries/territories have introduced capital requirements for market risk and whether internal models are permitted for this purpose.

The following other sources were also used for the countries/territories covered in sections II.B and II.C²⁵:

Albania: *A.Fullani (Governor of the Bank of Albania), speech at the Southeastern European Financial Forum, Bucharest, 11 November 2005; P.M.Nagy, "Emerging Europe faces Basel upheaval", *The Banker*, October 2005.

Bulgaria: Nagy, *op.cit.* (under Albania).

Canada: *N. Le Pan (Superintendent, Office of the Superintendent of Financial Institutions, Canada), remarks at the 7th Annual Global Association of Risk Professionals 2006, New York, 28 February 2006.

China: C.Matten, "Application and implementation in Asia-Pacific", in J.Tattersall and R.Smith, *A Practitioner's Guide to the Basel Accord* (London: City and Financial Publishing, 2005); S.Timewell, "Chinese banks need foreign competition", *The Banker*, December 2005.

Croatia: Nagy, *op.cit.* (under Albania).

Denmark: *B.N.Andersen (Governor of the National Bank of Denmark), speech at the Annual Meeting of the Danish Bankers Association, Copenhagen, 1 December 2004.

Greece: *P.Thomopoulos (Deputy Governor of the Bank of Greece), speech at an event organised by the European Bank Training Network and the Hellenic Bank Association, Athens, 4 May 2006.

Hong Kong: Matten, *op.cit.* (under China); *S.Topping (Executive Director, Banking Policy, HKMA), speech at the ACIHK The Financial Markets Association Basel II Seminar, Hong Kong, 27 September 2005.

India: Matten, *op. cit.* (under China); *Y.V.Reddy (Governor of the Reserve Bank of India), remarks at the Seminar on "Challenges and implications of Basel II for Asia" as part of the Asian Development Bank's 39th Annual Meeting of the Board of Governors, Hyderabad, 3 May 2006; and *id., "Reforming India's financial sector: changing dimensions and emerging

²⁵ * denotes availability among central bankers speeches at www.bis.org.

issues", public lecture for the International Center for Monetary and Banking Studies, IUHEI, Geneva, 9 May 2006.

Islamic banks: *Z. Akhtar Aziz (Governor of the Central Bank of Malaysia), keynote address at the 2nd International Conference on Islamic Banking, Kuala Lumpur, 7 February 2006.

Italy: *P.Ciocca (Deputy Director General of the Bank of Italy), speech at the ABI Convention "Implementing Basel 2 and IAS: Tendencies, Problems, Solutions", Rome, 29 November 2004.

Japan: Matten, *op. cit.* (under China).

Malaysia: Matten, *op. cit.* (under China).

Mauritius: *B.R.Gujadhur (First Deputy Governor of the Bank of Mauritius), remarks at the Workshop on "Challenges and Solutions to Implementing Internationally Compliant and Domestically Robust Banking Regulations in Emerging Economies" in collaboration with the Commonwealth Secretariat, Balaclava, 6-7 April 2006.

New Zealand: *A.Orr (Deputy Governor of the Reserve Bank of New Zealand), speech to the Retail Financial Services Forum, Auckland, 10 April 2006.

Singapore: Matten, *op. cit.* (under China).

South Africa: *T.T.Mboweni (Governor of the South African Reserve Bank), address at the year-end media cocktail function, Johannesburg, 14 December 2004.

Sri Lanka: *S.Mendis (Governor of the Central Bank of Sri Lanka), keynote address at the SEACEN Seminar on Basel II: Preparation of Implementation in the Asia-Pacific Region, Colombo, 7-10 December 2005.

Switzerland: A.Lattali, "Les effets de Bâle II sur les banques", *Flash Financial Services*, PricewaterhouseCoopers, avril 2006.

Taiwan SAR: Matten, *op. cit.* (under China).

Thailand: Matten, *op. cit.* (under China).

United States: *S.S.Bies (Member of the Board of Governors of the US Federal Reserve System), remarks at the Institute of International Bankers Annual Washington Conference, Washington, DC, 14 March 2005; *id., testimony before the Subcommittee on Domestic and International Monetary Policy, Trade, and Technology and the Subcommittee on Financial Institutions and Consumer Credit, Committee on Financial Services, US House of Representatives, 11 May 2005; *id., remarks at the Standard & Poor's North American Financial Institutions Conference, New York, 30 November 2005; id., remarks at the International Center for Business Information's Risk Management Conference: Basel Summit, Geneva, 6 December 2005; *id., remarks at the America's Community Bankers Risk Management and Finance Forum, Naples, Florida, 10 April 2006.

Uruguay: J.Mitchell, "Banking reform will reinforce recovery", *The Banker*, April 2005.

Annex 2. Results of QIS5

Table 1. Average change in total minimum required capital relative to the 1988 Basel Capital Accord (per cent)

	SA	FIRBA	AIRBA	Most likely approach
G10 Group 1	1.7	-1.3	-7.1	-6.8
G10 Group 2	-1.3	-12.3	-26.7	-11.3
CEBS Group 1	-0.9	-3.2	-8.3	-7.7
CEBS Group 2	-3.0	-16.6	-26.6	-15.4
Other non-G10 Group 1	1.8	-16.2	-29.0	-20.7
Other non-G10 Group 2	38.2	11.4	-1.0	19.5

Notes

Sample

QIS5 was undertaken in 31 countries, results being received from 56 Group 1 banks and 146 Group 2 banks in G10 countries other than United States, and from 154 banks from non-G10 banks. Limited data from QIS4US in United States, which covered a further 26 Group 1 banks, were included in the results where possible.

Country Groups

The G10 (Group of 10) includes the 13 members of the BCBS: Belgium, Canada, France, Germany; Italy, Japan, Luxembourg, Netherlands, Spain, Sweden, Switzerland, United Kingdom, and United States. The Committee of European Banking Supervisors (CEBS) consists of EEA countries and EU accession candidates. Non-G10 members of this group are the following: Bulgaria, Cyprus, Czech Republic, Finland, Greece, Hungary, Ireland, Malta, Norway, Poland and Portugal. Other non-G10 countries participating in QIS5 were the following: Australia, Bahrain, Brazil, Chile, India, Indonesia, Peru and Singapore.

Bank Groups

Group 1 banks fulfil all of the three following criteria: (1) have Tier 1 capital in excess of 3 billion Euros; (2) are diversified; and (3) are internationally active. Group 2 are other banks.

Approaches

For SA, FIRBA and AIRBA see Box 1. The most likely approach is that which a bank is expected to adopt after the implementation of Basel 2 and is typically the most sophisticated approach on which it provided data as part of QIS5.

Exposures

Risk-weighted assets were calculated in accordance with the Revised Framework (see note 16) and include the 1.06 scaling factor in the case of the IRBA (see IV.A). Minimum required capital includes that for market risk (for which the BCBS has recently issued revised rules)²⁶ and for operational risk.

Table 2 Contribution of operational risk to total minimum required capital by approach (per cent)

	BIA	SAOR	AMA
G10 Group 1	6.3	5.7	7.2
G10 Group 2	8.3	7.6	-
CEBS Group 1	-	5.5	5.9
CEBS Group 2	8.9	7.9	5.4
Other non-G10 Group 1	-	4.0	4.7
Other non-G10 Group 2	13.5	5.2	-

Notes

For the sample and for country and bank groups see notes to table 1. The figures in table 2 do not include those from QIS4US. For BIA, SAOR and AMA see Box 1.

- denotes the absence of banks in the group applying the approach.

²⁶ See BCBS, *Amendment to the Capital Accord to Incorporate Market Risks Updated November 2005* (Basel: BIS, November 2005), www.bis.org/publ/bcbs119.

Commentary

- Within most groups in table 1 minimum required capital decreases for the IRBA but the pattern is less uniform for the SA, for which, for example, there is a small increase for the few G10 Group 1 banks expected to adopt this approach.
- The structure of incentives for the adoption of the different approaches indicated by the results of QIS5 accords with that intended by the BCBS: the percentage reductions in minimum required capital for the six country/bank groupings vary from 8.1 per cent to 20.6 per cent for FIRBA in relation to SA, and from 5.1 per cent to 11 per cent for AIRBA in relation to FIRBA.²⁷
- Macroeconomic conditions were favourable in most countries during the period covered by QIS5 with an influence on the results which the BCBS is unable to quantify. The influence is likely to have been particularly significant for many banks' estimates of LGD which take inadequate account of the effects of economic downturns owing to the lack of historical data.
- Under SA retail exposures make a substantial contribution to decreases in minimum required capital, residential mortgages being especially important under this heading. Significant increases are due to operational risk (not separately accounted for in the 1988 Basel Capital Accord), whereas the contributions of market risk to changes in minimum required capital are negligible.
- Sectoral breakdowns of the contributions to changes in minimum required capital for IRBA are provided only for the most likely IRBA (FIRBA or AIRBA) of banks expected to adopt IRBA. As in the case of SA, for all banks except those of Other Non-G10 Group 2 retail exposures (and under this heading residential mortgages) make important contributions to the reductions in minimum required capital. Wholesale corporate exposures (i.e. to firms not small enough to be classified as SME retail) also make significant contributions to these reductions. For Other Non-G10 Group 2 banks major reductions in minimum required capital are due to wholesale corporate exposures and to market risk, the latter being the consequence of a shift of some banks in the group from standardised to internal models for the calculation of capital requirements under this heading. Retail exposures contribute an actual increase in minimum required capital owing to higher average PDs and higher shares of defaulted exposures than for other banking groups of QIS5.
- For Other Non-G10 banks the estimates of changes in minimum required capital show greater dispersion for SA and their most likely IRBA, and a larger share of this dispersion than for other groups is attributable to increases. These results are due to variation both within and among countries, and reflect more specialised profiles of risk exposure among participating banks as well as country-specific circumstances.
- Banks were at different stages of their development of their systems for operational risk, and this was reflected in high dispersion of the estimates of contributions to changes in minimum required capital. For G10 Group 1 banks estimates for AMA varied from 1.2 per cent to 17.8 per cent, and for G10 Group 2 banks estimates for SAOR varied from 2.5 per cent to 64.2 per cent and for BIA from zero to 43.5 per cent. For Other Non-G10 Group 2 banks estimates for BIA ranged from 5.3 per cent to 34.3 per cent and for SAOR from 0.4 per cent to 27.7 per cent.

Andrew Cornford
Financial Markets Center, Geneva
July 2006

²⁷ The figures refer only to banks providing data for both of the approaches being compared.