BASEL COMMITTEE ON BANKING SUPERVISION

BANK FOR INTERNATIONAL SETTLEMENTS

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Results of Quantitative Impact Study 2.5

In April 2001, the Basel Committee on Banking Supervision initiated a Quantitative Impact Study (QIS 2) involving a range of banks across the G10 and beyond. The objective of the study was to gather data necessary to allow the Committee to gauge the impact of the proposals for capital requirements set out in the January 2001 second consultative paper (CP2). The survey was completed by banks in the G10 and non-G10 and involved both large, internationally active, diversified institutions as well as smaller more specialised banks. It encompassed results on all three new approaches proposed by the Committee – Standardised, foundation IRB and advanced IRB.

The results of QIS 2 indicated that the foundation IRB approach would deliver more capital on average than the Current Accord.[1] Under the IRB foundation approach, minimum credit risk requirements would have been 14% higher. With a charge for operational risk, the overall increase in capital would have been 24%.

Given these results, and in light of the Basel Committee's objective to ensure that the foundation IRB approach provides a modest capital incentive relative to current capital requirements, over the summer the Committee explored the implications of several possible modifications to the January 2001 proposals.[2] To further assist the Committee in reaching decisions that affect the overall level of capital, an additional, more limited quantitative impact study (QIS 2.5) was undertaken. Banks were asked to assess the effects that some possible changes to the Basel II proposals would have on the amount of regulatory capital that banks would have to hold. The modifications considered were:

- Adjusted risk-weight functions for various portfolios under the IRB approach;
- A revised treatment of specific provisions under the IRB approach whereby specific provisions could be used to offset the EL portion of capital requirements of loans falling into the defaulted loan category.
- A revised treatment of general provisions, in which general provisions (in excess of the amount included as Tier 2 capital) could be offset against EL charges.
- Possible elimination of the granularity adjustment under the IRB approach;
- The removal of the w-factor when treating credit risk mitigation techniques (under Pillar 1).
- Greater recognition of collateral (i.e. receivables and physical collateral).

Except for these possible modifications, banks were asked to follow the approaches set out in the second consultation paper (CP2) and evaluated under QIS 2. The modifications were

1 *Results of the Second Quantitative Impact Study*, 5 November 2001.

2 *Potential Modifications to the Committee's Proposals*, 5 November 2001.

being tested to give an indication of the overall effect they would have on capital requirements as an input into further consideration of the most appropriate ways to amend the CP2 proposals.

Given the short time allowed for the exercise and the limited focus on the foundation IRB approach, the Committee decided to ask Group 1 banks (i.e. large, diversified and internationally active banks with Tier 1 capital over €3bn) to participate in QIS 2.5. Results from 38 banks were received; 35 of these banks had participated in QIS 2.

The Committee appreciates that the exercise represented a considerable burden on banks and is grateful for the commitment of resources from participating institutions – particularly given the limited time allowed for the exercise. As with QIS 2, within a relatively short period, participants not only had to apply the new proposals in the context of their institutions but also to extract from their systems a wide array of data not previously required for supervisory purposes. Some of the systems difficulties were insurmountable in the time available. As a result not all banks completed all parts of the questionnaire. In other cases estimates were used or simplifying assumptions were made. There has been an intense dialogue between banks and national supervisors and then among national supervisors to address questions regarding the data and to try and ensure consistency in the results. However, it has not been possible in the time available to resolve all issues surrounding the data and some questions remain. These are detailed below.

This paper sets out an overview of the results from the QIS 2.5 study. The focus of the analysis is on how credit risk capital charges using the modified proposals compare with the total charge under the Current Accord. As with QIS 2, banks were instructed to calculate these capital charges for consolidated group exposures on a worldwide basis. The results reflect calculations for the core portfolios – corporate, sovereign, bank and retail; the QIS 2.5 study did not examine the effects of Basel II on the securitised asset, specialised lending or equity portfolios. The results do not include an operational risk charge.

In addition, this paper compares the changes in credit risk capital requirements in QIS 2.5 with those of QIS 2. While the Committee believes it is useful to present these results, direct comparisons between the QIS 2 and QIS 2.5 results need to be qualified as set out below. Also, a quantitative impact study cannot provide a **precise** calculation of the effects of Basel II because of data limitations.

Summary of results

Overall, the QIS 2.5 results indicate that, on average across the banks sampled, the credit risk capital requirements for the core portfolios would decline relative to the Current Accord, when the potential modifications are made to the proposals in the second consultation paper. After including the operational risk charges this would leave requirements broadly flat on average compared with the sizeable increase seen in QIS 2 (using the CP2 proposals). For the purposes of this exercise and to illustrate the potential impact of the operational risk capital charge, table 1 reflects an operational risk charge of 10% of current minimum regulatory capital.

Table 1: Percentage change in credit risk capital requirements relative to the current Accord estimated in QIS 2.5 and QIS 2

	Percentage change relative to Current Accord using possible modifications	Percentage change under CP2 proposals relative to Current Accord
Credit risk requirements	-8%	14%
Overall	2%	24%

Across the G10 there was some variation across banks – see chart 1. However, the extent of the variations is less than seen in QIS 2 (chart 2). This may be because QIS 2.5 excluded certain portfolios (i.e. securitised assets, specialised lending, equity and receivables) which could affect the results considerably for some banks. The effect of these portfolios will be tested in a third quantitative impact study (QIS 3) scheduled for October 2002.

In QIS 2.5 the majority of banks showed a decrease against their current capital requirements. Of the 38 banks that participated, 24 banks found that capital charges would fall, with the largest decline in capital requirements estimated to be 35%. The other 14 banks found that requirements would increase; the maximum increase was 52%. In QIS 2, a majority of the same sample of banks found that capital requirements would increase – only 8 banks reported a decrease in requirements.

Chart 1: Overall change in capital requirements for individual G10 Group 1 banks – QIS 2.5

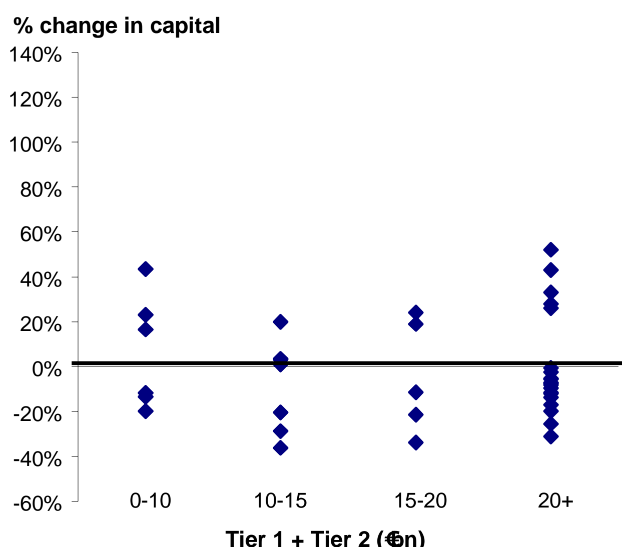
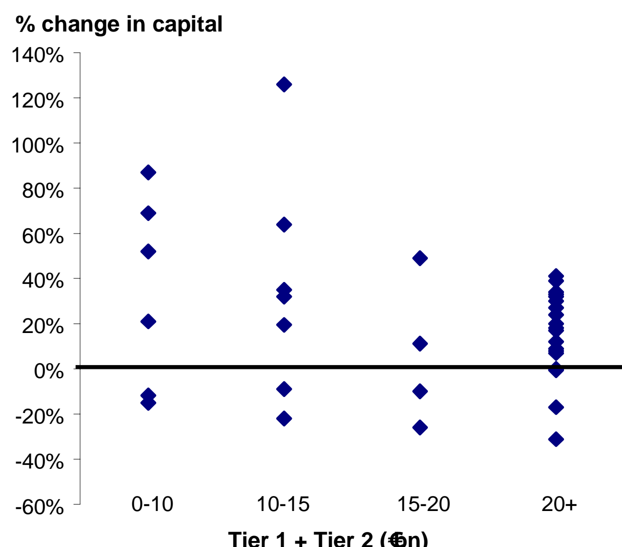


Chart 2: Overall change in capital requirements for individual G10 Group 1 banks – QIS 2



Commentary

At the G10 level, the decrease in capital requirements produced by the possible modifications to the CP2 proposals was driven mainly by the reductions in charges for the corporate portfolios. The flattening of the corporate risk-weight curve had a marked effect in reducing the contribution of the corporate portfolio: under the modified proposals in QIS 2.5, this portfolio contributes a decrease of -4% to the overall result – much less than the +14% contribution seen under the CP2 proposals in QIS 2 – see table 3. Moreover significant declines in capital requirements were seen for most banks. The substantial fall in capital requirements on the retail portfolios was also significant in reducing overall capital requirements (retail contributes -9% to the overall decrease). Both the sovereign and

interbank portfolios still show large increases in capital requirements relative to the Current Accord: even though the original capital requirements were relatively small the combined effect is to offset the overall reduction by around +6%.

Table 2: Relative contribution of each portfolio to overall change in capital requirements under the IRB foundation (using the possible modifications under consideration)

Portfolio	% of Assets	% of Current capital requirements	% Change under IRB foundation	Relative contribution* in QIS 2.5	Relative contribution* in QIS 2
Corporate	47%	65%	-7%	-4%	14%
Sovereign	10%	1%	215%	2%	3%
Interbank	21%	8%	47%	4%	4%
Retail	22%	26%	-37%	-9%	-7%
Overall				-8%	14%

* Increase/reduction relative to total current requirements, subject to rounding.

Table 3: Comparison of changes in credit risk requirements relative to the Current Accord under CP2 proposals and using the possible modifications under consideration

	Change in RWA using possible modifications relative to current	Change in RWA under CP2 relative to current
Corporate	-7%	22%
Sovereign	215%	238%
Bank	47%	49%
Retail	-37%	-28%
Overall	-8%	14%

Under the possible modifications, in particular the flatter risk-weight curve, capital requirements on *corporate* exposures fell relative to the Current Accord (-7%); in contrast capital requirements in QIS 2 (using the CP2 proposals) increased by 22%.

The increases in capital requirements for the *sovereign* and *interbank* portfolios were largely the same as they were using the CP2 proposals but these are relatively small portfolios.

Capital requirements for the *retail* portfolios fell substantially under the possible modifications relative to the Current Accord (-37%) – an even bigger reduction than under the CP2 proposals in QIS 2 (-28%). Capital requirements on retail portfolios decreased by more (relative to the Current Accord and QIS 2) for banks with a higher proportion of non-mortgage retail exposures. Within the G10, results for the retail portfolios also showed a high degree of variability.

Specific and general provisions

Under the possible modifications used in QIS 2.5, banks were allowed to offset specific provisions against the EL charge on defaulted assets for each portfolio other than non-

mortgage retail.[3] The average overall reduction in capital requirements arising from this offset for specific provisions was 12%. Also, under the possible modifications, banks were allowed to offset general provisions in excess of the limit allowable for capital purposes (i.e. 1.25% of risk-weighted assets) against expected losses. The average reduction in capital requirements from this modification was 1%. In fact, very few banks carry general provisions in excess of the limit allowable for capital purposes.

Collateral – wholesale portfolios

QIS 2.5 gave the Committee much more detailed information about the type and extent of collateral held by banks and the impact this has on capital requirements – see table 4. In general, the large majority of exposures in the corporate, sovereign and bank portfolios were reported as unsecured, although the proportions of unsecured exposures varied from bank to bank. Some banks held significant amounts of collateral against their corporate exposures – particularly for SME exposures included in the corporate portfolio.[4] On average across the G10, 33% of SME exposures were secured. The type of collateral (i.e. physical collateral, receivables, and real estate or financial collateral) held also varied considerably by bank.

Table 4 – G10 average percentage of collateralised drawn exposures for each portfolio

Country	Unsecured	Physical collateral	Receivables	Commercial real estate	Residential real estate	Financial collateral
Corporate (large)	77%	5%	4%	3%	0%	10%
Corporate (SME)	67%	8%	5%	11%	4%	5%
Sovereign	85%	8%	0%	0%	0%	7%
Interbank	82%	2%	0%	0%	0%	16%

It is unclear to what extent banks were able to reflect all of the eligible collateral they hold when calculating capital requirements in QIS 2.5. Several banks indicated that they were unable to reflect all the eligible collateral they currently hold against their wholesale exposures because it was not readily available in their systems.

Data quality

Banks and supervisors were subject to a demanding timetable. Banks were given less than one month to complete the QIS 2.5 requirements. Supervisors and banks have worked hard to limit any data problems but some uncertainty inevitably remains.

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[3] In QIS 2.5, there was no EL charge on the non-mortgage retail portfolio.

[4] In QIS 2.5, banks were able to split their corporate portfolio between exposures to “large” and “small- and medium-sized” corporates. The capital treatment of the two categories was identical. Banks used their own definitions that were the most appropriate according to their systems, or the definitions as prescribed by the national supervisors. Consequently, the type of exposures included in the SME category varied considerably from bank to bank.

It should also be noted that because of changes to the underlying data set, results in QIS 2 and QIS 2.5 are not directly comparable in some countries. Although many banks were able to include the same portfolios and business entities in QIS 2.5 as they did for QIS 2, others have been forced to exclude certain entities or portfolios. And, while some banks used data at the same reporting date for QIS 2.5 as they did for QIS 2, others used more recent data: changes to the underlying data set could have significantly affected the overall results. Also, in some countries the population of banks changed between QIS 2 and QIS 2.5.

Banks have continued efforts to improve the quality of their data and some of these adjustments will have affected capital requirements. These changes should have enhanced the reliability of the QIS 2.5 results but they will, to some extent, have affected comparability with QIS 2. A particular issue in QIS 2 was that some banks included commitments that were unconditionally cancellable in the calculations of capital – as much as possible, these have been excluded from QIS 2.5. Also, in some countries banks had found it difficult to allocate defaulted exposures accurately within portfolios; improvements in this process have been incorporated into QIS 2.5.

In addition, there remains a wide variation in the definitions of default used by banks. Some banks made more effort to align their definition of default with the Committee's reference definition but this remains a significant issue.

QIS 3

The Committee will be conducting another quantitative impact study (QIS 3) later this year. QIS 3 will be a comprehensive exercise, which will allow the Committee to assess the impact of various proposals, before a third consultation paper is published next year. The survey will involve banks in the G10 and non-G10; including both large, internationally active, diversified institutions as well as smaller more specialised banks. It will encompass results on all three new approaches proposed by the Committee – Standardised, foundation IRB and advanced IRB – and will analyse the effects of the new proposals on all portfolios.

The Committee appreciates that QIS 3 will be a large exercise and impose a significant burden on participating banks in terms of time and resources. Nevertheless, it encourages as many institutions as possible to take part to enable the Committee to understand the impact of the proposals on a wide population of banks. QIS will also be an important opportunity for banks to provide feedback to their national supervisors and the Committee on the proposals.

It is anticipated that QIS 3 will be released in October 2002, with submissions to be returned to national supervisors by year-end 2002. The Committee recognises the importance of providing banks adequate time to prepare their reports and that time has been a limiting factor in past surveys. The Committee will be providing participants with Excel spreadsheets that include embedded risk weights to make the calculation process easier. National supervisors will be working closely with banks to help them fulfil the requirements. In addition, the Committee has decided that, in order to alleviate the time constraint, it is important that banks can start collecting and mobilising data now. The Committee intends, therefore, to issue draft spreadsheets and information package (which will include detailed instructions) that will enable banks to start collecting data. These should be released in the early summer.