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Measures of Credit Risk under the Second Pillar of Basel II Set Out by Taiwan’s Banking Authorities and Assistance Planned by JCIC

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1. Foreword

Taiwan is scheduled to implement the New Basel Capital Accord (Basel II) next year (2007). The discussion on Basel II among banks and banking supervisors also extends gradually from first pillar (Minimum Capital Requirement) to second pillar (Supervisory Review) and third pillar (Market Discipline). This paper aims to introduce the measures of credit risk (qualitative and quantitative) proposed by the Interna[1] Ratings Based Approach Joint Research Taskforce[1] (called the IRB Taskforce below), and provide a detailed description of JCIC’s plan to assist banks in the quantification of risk measures.

2. Second Pillar - Supervisory Review Process

The objectives of the second pillar of Basel II - supervisory review are to ensure that banks have adequate capital to support all the risks in their business, and to encourage banks to develop and use advanced risk management techniques in monitoring and managing their risks. Supervisory review has four key

[1] In response to the implementation of Basel II, the Banking Bureau under the Financial Supervisory Commission and the Bankers Association invited Joint Credit Information Center (JCIC) and domestic banks to establish a Joint Research Taskforce in October 2002. The Taskforce holds irregular meetings to discuss Basel II issues. Up to December 2006, the Taskforce has set up seven teams to study respectively the topics of credit risk standardized approach, credit risk IRB approach, market risk, market risk internal model approach, operational risk, supervisory review, market discipline, and asset securitization. JCIC is the organizer of credit risk IRB approach team. Currently 20 banks participate in the work of the team.

risks. Supervisory review has four key principles as described below [2]：

Principle 1: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.

With respect to the directive for banks to establish a rigorous capital assessment process to make sure banks have adequate capital in relation to their risk profile, the process should contain at least the five features described below:

- Board and senior management oversight;
- Sound capital assessment;
- Comprehensive assessment of risks;
- Monitoring and reporting; and
- Internal control review.

Principle 2: Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their compliance with regulatory capital ratios. Supervisors should take appropriate supervisory action if they are not satisfied with the result of this process.

With respect to the directive for supervisors to review periodically bank's capital adequacy assessment process, risk position, capital charge, and quality of capital held, the review can involve the combination of:

- On-site examinations or inspections;
- Off-site review;
- Discussions with bank management;
- Review of external audit report (on capital issues); and
- Periodic reporting.

Principle 3: Supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum.

There are several means available to supervisors for ensuring that individual banks are operating with adequate levels of capital. For example, the supervisor may set trigger and target capital ratios or define categories above minimum ratios (e.g. well capitalized and adequately capitalized). Banks typically operate with a buffer, over and above the Pillar 1 standard, because:

- Banks would, for their own reasons, seek a credit rating higher than the Pillar 1 minimums. For example, most international banks appear to prefer to be highly rated by

[2] The discussion on the principles for supervisory review below are excerpts from Paragraphs 725 to 760 in November 2005 update of Basel II

internationally recognized rating agencies. Thus, banks are likely to choose to operate above Pillar 1 minimums for competitive reasons.

- In the normal course of business, the type and volume of activities will change, as will the different risk exposures, causing fluctuations in the overall capital ratio.
- It may be costly for banks to raise additional capital, especially if this needs to be done quickly or at a time when market conditions are unfavourable.
- For banks to fall below minimum regulatory capital requirements is a serious matter. It may place banks in breach of the relevant law and/or prompt non-discretionary corrective action on the part of supervisors.
- There may be risks, either specific to individual banks, or more generally to an economy at large, that are not taken into account in Pillar 1.

Principle 4: Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a particular bank and should require rapid remedial action if capital is not maintained or restored.

With respect to the directive for supervisors to consider a range of actions when a bank fails to meet the requirements set forth in the supervisory principles outline above, these actions may include intensifying the monitoring of the bank, restricting the payment of dividends, requiring the bank to prepare and implement a satisfactory capital adequacy restoration plan, and requiring the bank to raise additional capital immediately. Supervisors should have the discretion to use the tools best suited to the circumstances of the bank and its operating environment. The permanent solution to banks' difficulties is not always increased capital. However, some of the required measures (such as improving systems and controls) may take a period of time to implement. Therefore, increased capital might be used as an interim measure while permanent measures to improve the bank's position are being put in place. Once these permanent measures have been put in place and have been seen by supervisors to be effective, the interim increase in capital requirements can be removed.

3.Taiwan's Planning for the Implementation of Second Pillar

With regard to Principle 1 of Second

Pillar on bank's development of own capital assessment process, banks can refer to the Bank Risk Management Practice Specimen - Guidelines for Internal Assessment of Capital Adequacy jointly published by the Bankers Association and JCIC. For Principles 2 ~ 4, Banking Bureau plans to set out qualitative and quantitative measures for different types of risks and ask banks to file periodic reports for review by the competent authority. The Banking Bureau will also draft differentiated risk management measures based on the review outcome to guide step-by-step banks with high risk exposure to improve their asset portfolio, which is vital to the sound development of our financial markets.

The following sections introduce the qualitative and quantitative measures of credit risk in relation to the Second Pillar the banking authority has proposed, and JCIC's plan to assist banks in the development of quantitative measures.

4. Qualitative Measures of Credit Risk under the Second Pillar

Our qualitative measures of credit risk under the Second Pillar were developed in reference to a discussion paper Principles for the Management of Credit Risk published by Basel in September 2000. The paper sets out the guidelines for assessing bank's management of credit risk in five areas and 17 principles. Excluding the directive for supervisors, there are four areas and sixteen principles targeted for qualitative measures as described below[3] :

Area 1: Establishing an appropriate credit risk environment

Principle 1: The board of directors should have responsibility for approving and periodically (at least annually) reviewing the credit risk strategy and significant credit risk policies of the bank. The strategy should reflect the bank's tolerance for risk and the level of profitability the bank expects to achieve for incurring various credit risks.

Principle 2: Senior management should have responsibility for implementing the credit risk strategy approved by the board of directors and for developing policies and procedures for identifying, measuring, monitoring and controlling credit risk. Such policies and procedures should address credit risk in all of the bank's activities and at both the individual credit and portfolio levels.

Principle 3: Banks should identify and manage credit risk inherent in all products and activities. Banks should ensure that the risks

[3] This paper describes only the area and principles of assessment. The measures under each principles will not be elaborated here.

of products and activities new to them are subject to adequate risk management procedures and controls before being introduced or undertaken, and approved in advance by the board of directors or its appropriate committee.

Area 2: Operating under a sound credit granting process

Principle 4: Banks must operate within sound, well-defined credit-granting criteria. These criteria should include a clear indication of the bank's target market and a thorough understanding of the borrower or counterparty, as well as the purpose and structure of the credit, and its source of repayment.

Principle 5: Banks should establish overall credit limits at the level of individual borrowers and counterparties, and groups of connected counterparties that aggregate in a comparable and meaningful manner different types of exposures, both in the banking and trading book and on and off the balance sheet.

Principle 6: Banks should have a clearly-established process in place for approving new credits as well as the amendment, renewal and re-financing of existing credits.

Principle 7: All extensions of credit must be made on an arm's-length basis. In particular, credits to related companies and individuals must be authorized on an exception basis, monitored with particular care and other appropriate steps taken to control or mitigate the risks of non-arm's length lending.

Area 3: Maintaining an appropriate credit administration, measurement and monitoring process

Principle 8: Banks should have in place a system for the ongoing administration of their various credit risk-bearing portfolios.

Principle 9: Banks must have in place a system for monitoring the condition of individual credits, including determining the adequacy of provisions and reserves.

Principle 10: Banks are encouraged to develop and utilize an internal risk rating system in managing credit risk. The rating system should be consistent with the nature, size and complexity of a bank's activities.

Principle11: Banks must have information systems and analytical techniques that enable management to measure the credit risk inherent in all on- and off-balance sheet activities. The management information system should provide adequate information on the composition of the credit portfolio, including identification of any concentrations of risk.

Principle 12: Banks must have in place a system for monitoring the overall composition and quality of the credit portfolio.

Principle13: Banks should take into consideration potential future changes in economic conditions when assessing individual credits and their credit portfolios, and should assess their credit risk exposures under stressful conditions.

Area 4: Ensuring adequate controls over credit risk

Principle 14: Banks must establish a system of independent, ongoing assessment of the bank's credit risk management processes and the results of such reviews should be communicated directly to the board of directors and senior management.

Principle 15: Banks must ensure that the credit-granting function is being properly managed and that credit exposures are within levels consistent with prudential standards and internal limits. Banks should establish and enforce internal controls and other practices to ensure that exceptions to policies, procedures and limits are reported in a timely manner to the appropriate level of management for action.

Principle 16: Banks must have a system in place for early remedial action on deteriorating credits, managing problem credits and similar workout situations.

The banking authority has developed 86 qualitative measures based on the aforementioned principles, which contain many advanced risk measures (e.g. whether the bank has developed and uses an internal risk rating system in line with its business characteristics, scale and sophistication for credit risk management). Many domestic banks have repeated their position that it will be difficult for them to meet all the requirements in the short run after the second pillar is implemented in the first quarter of 2008. But the Banking Bureau reiterates that banks are only required to faithfully state the facts of their current practice according to the measures, and the fact that they are unable to meet all the requirements at the present time does not mean they cannot in the future. In essence, banks are encouraged to adopt a stepwise approach to introduce ultimately advanced risk management system.

5. Quantitative Measures of Credit Risk under the Second Pillar

Our quantitative measures of credit risk under the Second Pillar cover five areas, including:

- Delay status: This is the main basis for observing the quality of bank assets.

- Business growth: This is to observe the growth of bank's major businesses and high-risk businesses.
- Stress testing: Banks are required to conduct at least scenario analysis and stress testing to determine whether the capital held by the bank is sufficient to withstand stress events.
- Assessment of risks and returns: This is to assess the risk-adjusted return on capital of the banks to determine whether the bank engages in excessive price competition while ignoring possible risk exposure in the future.
- Concentration: This is to observe whether the bank business is concentrated on a few borrowers, same industries, or a few group enterprises.

The measures under each area are detailed in Table 1 below:

The reporting of quantitative credit risk measures allows the competent authority to determine whether the measures reasonably reflect the actual performance of banks with more rigorous and sound risk management system (i.e. banks that meet most qualitative measures). It should be stressed that the reporting does not mean to make comparison among banks (as evidenced in Note 4 that the banking authority does not set uniform definitions of bank businesses). Thus banks need not dwell on every word and ask the competent authority to give specific, uniform definition on every item. Risk management is the most critical part of a bank's internal operation. Banks should define on their own terms (e.g. group enterprise) in relation to their business practice and provide the competent authority with the information that reflect most genuinely the true picture of their operation

Of the quantitative measures of credit risk, risk-adjusted return on capital (RAROC) is an advanced measurement of performance adopted by more advanced banks on the international scene. It is also a nagging item the majority of domestic bank believe they might have problem with in the future. Thus JCIC has devised a variety of approaches in the hope to assist banks in the calculation of RAROC.

6. Methods for Banks to Calculate RAROC

In the early days, banks evaluated the performance of their salespersons by simply tallying up the volume of business each salesperson generates, and based on which, determined their pay. Later on as banks realized that different products make starkly different contributions to earnings, they began

Table 1 Quantitative Measures of Credit Risk under Second Pillar

Management area	Measure	Definitions	Remark
Delay status	Non-performing loan ratio	Non-performing loan/total loan	N/A
	Provisioning coverage ratio	Bad debt provision/ non-performing loan (including receivable on demand)	
Business growth[4]	Growth rate of home loan	[Yn Qm -Yn-1 Qm]/ [iYn-1 Qm]	Report growth rate over 12 quarters; each quarter is compared to the same quarter the year before.
	Growth rate of credit card business		
	Growth rate of cash card business		
	Growth rate of small-sum unsecured loan		
	Growth rate of construction loan		
	Growth rate of loan pledged by stocks		
	Growth rate of other loans		
Stress test	Historical scenario1	The 921 earthquake in 1999	The scenarios will be finalized after discussion with Banking Bureau.
	Historical scenario 2	The Asian financial storm in 1997	
	Historical scenario 3	The SARS episode in 2003	
Assessment of risks and returns	RAROC[5]	(Expected profit - expected loss) /economic capital	Banks that do not have the ability to estimate on their own can seek the assistance of JCIC. See Section 6 with regard to the planned assistance.
	RAROC of the year		
	Comparison of previous year's RAROC with actual performance	Previous year's RAROC	
		Actual profit/loss of previous year	
		Disparity analysis	
Concentration	Borrower concentration	Exposure to top 10 borrowers /bank's networth	
	Industry concentration[6]	Exposure to top 3 industries / bank's net worth	
	Group concentratio	Exposure to top 10 groups / bank's net worth	

[4].Bank should describe the internal definition of each business (there are no uniform definitions across bank). If the businesses used as measure do not cover the major assets of the bank, bank should itemize their major businesses under "Other loans."

[5].RAROC is the abbreviation for Risk Adjusted Return on Capital.

[6].Industries are classified according to Table 3 - Mapping of Industry Classification for Corporate Banking and Standard Business Classification by Directorate-General of Budget, Accounting and Statistics.

to factor in profit margin and delay status in the calculation of pay of their salespersons. For instance, underwriting a $3 million home loan generates 1% profit margin, while extending a $500,000 small-sum unsecured loan generates 8% profit margin. Taking into account the term of loan and other factors, a bank might set the rule that in the calculation of business volume, a small-sum unsecured loan may be multiplied by 3. In the case of example cited, total loan volume = $3,000,000 + $500,000 X 3＝$4,500,000. As some customers might default right after the grant of loan, which cuts deeply into the bank's profit picture, most banks then set out the rule that if the customer a salesperson brought in defaulted within the first half a year of the loan, the bonus said salesperson has received will be deducted from his or her pay. This system prompts salespersons to be more selective of their customers. Such "quasi-expert judgment" approach to performance evaluation is still widely adopted by domestic banks. However if the customer and business risks can be quantified, performance valuation can be made more precise and rid of the "quasi-expert judgment" practice, which tends to induce salespersons to ignore potential risk in the pursuit of business that is rewarded more handsomely.

The RAROC methodology was developed by Bankers Trust in the 1970s for performance evaluation. In comparison with conventional evaluation methods, such as ROA (return on asset) and ROC (return on equity), RAROC takes into account risk exposure that reflects the operating performance of banks more accurately.

RAROC = (revenue —operating cost - expected loss)/economic capital, in which the revenue includes margin income and non-interest income; operating cost is bank's cost of operation and management. To calculate expected loss and economic capital, the bank must have the ability to estimate risk components, which are PD (Probability of Default), LGD (Loss Given Default), EAD (Exposure at Default), and M (Maturity).

As described above, RAROC that takes into account risk factors provides a practical and objective measure of performance evaluation. However in actual practice, banks that have inadequate ability in risk quantification are unable to calculate RAROC accurately. The key points in the planning of RAROC calculation are described below:

- Expected profit (revenue - operating cost): Estimated by bank based on its historical profit/loss and prediction of the future macroeconomic situation.
- Expected loss (PD×LGD×EAD):
  PD- Estimated by bank's internal model, JCIC model, or the historical default rate of industry or product;

LGD- Estimated by bank's internal model, empirical value, or supervisory value;
EAD- Estimated by bank's internal model, empirical value, or supervisory value;

- Economic capital (unexpected loss): Estimated based on the Basel II formula under IRB approach, bank's own portfolio model, or the portfolio model built by corporations on JCIC platform.

JCIC offers a variety of assistance to the calculation of RAROC by banks. For instance, bank can use JCIC's commercial and consumer banking models for the estimation of PD. For banks that have some reserve over external models, they can refer to the historical default rates by industry and consumer banking product periodically published by JCIC in combination with their own view of economic outlook[7] . The reason why JCIC offers alternative calculation methods is hoping that the RAROC calculated could truly reflect the risk profile of banks and be used as reference in bank's decision making.

The available methods for calculating the components of RAROC are illustrated in Table 2.

For banks that use the historical default rates by industry published by JCIC for estimation of PD, refer to Table 3 - Mapping of Industry Classification for Corporate Banking and Standard Business Classification by Directorate-General of Budget, Accounting and Statistics (DGBAS).

For banks that might use the historical default rates of consumer banking products published by JCIC to calculate probability of default, the products are classified as depicted in Table 4[8] .

[7]. The historical default rates by industry and consumer banking product published by JCIC are generated based on data reported by banks. If individual banks wish to observe the historical performance of own customers by industry and product, or undertake more refined segmentation (e.g. home loan business by area), they can contact JCIC for additional services.

[8]. JCIC will publish the method and logic for classifying industry and consumer banking products and statistics of historical default rates in the next publication to provide reference for social public.

Table 2 Calculation of RAROC Components

1. Expected profit	Bank's own estimate (revenue - operating cost)				
2. Expected loss= PDXNLGDXEAD	(1) Corporate banking	① PD	A. Bank's internal model (not limited to IRB banks)		
			B. JCIC model	a. Use the JCIC model output directly.	Exclusions: listed companies, finance industry, insurance industry, securities industry, and state-run enterprises (by the weights under standardized approach)
				b. Internal adjustment by bank (e.g. the treatment of a customer having default at another bank, but not at the bank)	
			C. Historical default rates by industry of all banks (5-year average)		See Table 3 for the classification of industries
			D. Historical default rates by industry of individual banks (5-year average)		
		②LGD	A. Bank's internal model (not limited to IRB banks)		
			B. Bank's empirical value		
			C. Supervisory value		
		③EAD (CCF)	A. Bank's internal model (not limited to IRB banks)		
			B. Supervisory value		
	(2) Consumer banking	① PD	A. Bank's internal model (not limited to IRB banks)		
			B. JCIC model		
			C. Historical default rates by product (5-year average) published		See Table 4 for the method and logic for classifying consumer banking products
			D. Historical default rates of products of individual banks (5-year average)		
		②LGD	A. Bank's internal model (not limited to IRB banks)		
			B. Bank's empirical value		
		③EAD (CCF)	A. Bank's internal model (not limited to IRB banks)		
			B. Bank's empirical value		
3. Economic capital (unexpected loss)	(1)Basel II formula under IRB approach		Bank's own estimate		
			JCIC Data Research Service Platform		
	(2) Portfolio model		① Bank's own portfolio model		
			② Portfolio model built by corporations on JCIC Data Research Service Platform		

Table 3 Mapping of Industry Classification for Corporate Banking and Standard Business Classification by Directorate-General of Budget, Accounting and Statistics

Industry	DGBAS Business Classification (2001)
Food	08 Food Products and Beverages Mfg. ,09 Tobacco Mfg.
Textile, Leather, Fur and Products	10 Textile, 11 Clothing, Apparel and Other Apparel Mfg., 12 Leather, Fur and Products
Wood, Bamboo Products and Furniture Manufacturing	13 Wood and Bamboo Products Mfg., 14 Furniture and Fixtures Mfg.
Paper Printing	15 Pulp, Paper and Paper Product Mfg.,16 Printing and Supporting Services
Non-metal Products	17 Chemical Material Mfg., 18 Chemical Product Mfg., 19 Petroleum and Coal Product Mfg., 20 Rubber Products Mfg., 21 Plastic Products Mfg., 22 Non-metallic Mineral Products Mfg.
Metal Products	23 Metal Basic Industries, 24 Cutlery, Hand Tools and General Hardware Mfg.
Instrument	25 Machinery and Equipment Mfg., 28Electrical Machinery, Apparatus, Appliance and Supplies Mfg., 29Transport Equipment Mfg., 30 Precision, Optical, Medical Equipment, Watch and Clock Mfg.
Computer, Communication, Video and Radio Electronic Products Manufacturing	26 Computer, Communication, Video and Radio Electronic Product Mfg., 7321 Network Information Supply
Photonics and Semiconductor	271 Semiconductor Mfg., 7102 Integrated Circuit Design, 2792 Photonic Materials and Components Mfg.
Other Electronic Parts and Components	272Electronic Parts and Components Mfg., 273 Printed Circuit Board Mfg., 2791 Electronic Tube Mfg., 2799 Unclassified Other Electronic Parts and Components Mfg.
Construction	38 Infrastructure Construction, 39 Buildings Construction, 40 Mechanics, Electricity, and Pipe Lines Construction, 41 Building Furnishing, 42 Other Construction
Real Estate	66 Real Estate
Wholesale --- Food, Textile	441 Wholesale of Agricultural, Husbandry and Aquatic Products, 442 Wholesale of Food and Grocery Products, 443 Wholesale of Fabrics, Clothes and Apparel Accessories
Wholesale ---General Merchandise	444 Wholesale of Home Appliance, Equipment and Articles, 445 Wholesale of Drugs, Cosmetics and Cleaning Preparations
Wholesale ---Electronic Instrument	454 Wholesale of Machinery and Equipment, 455 Wholesale of Automobiles, Motorcycles, Parts and Supply

Wholesale--- Others	451 Wholesale of Building Materials, 452 Wholesale of Chemical Materials and Products, 453 Whole sale of Fuel Products, 446 Wholesale of Educational and Entertainment Articles, 447 Watches, Clocks and Spectacles Wholesale, 448 Jewelry and Precious Metals Wholesale, 456 Wholesale of General Merchandise, 457 Merchandise Brokerage, 459 Other Wholesale
Retail--- Food and Textile	461 Retail of Agricultural, Husbandry and Aquatic Products, 462 Retail of Food and Grocery Products ,463 Retail of Fabrics, Clothes and Apparel Accessories
Retail--- General Merchandise	464 Retail of Machinery and Equipment, 465 Retail of Drugs, Cosmetics and Cleaning Products, 475 Retail of General Merchandise
Retail--- Electronic Instrument	473 Retail of Machinery and Equipment, 474 Retail of Automobiles, Motorcycles, Parts and Supply
Retail--- Others	471 Retail of Building Materials, 472 Retail of Fuel Products, 466 Retail of Educational and Entertainment Articles, 467 Watches, Clocks and Spectacles Retail, 468 Jewelry and Precious Metals Retail, 479 Other Retails, 481 Non-store Retail
Services	50 Accommodation, 51 Eating and Drinking Places, 53 Land Transport, 54 Waterway Transport, 55 Air Transport, 56 Storage and Distribution, 57 Transport Supporting and Auxiliary Services, 58 Storage and Warehousing, 59 Post and Express Delivery, 60 Telecommunication
Agriculture, Forestry, Fishing & Animal Husbandry, Mining, Electricity, Gs & Water and Quarrying	01 Agriculture and Husbandry, 02 Forestry and Logging, 03 Fishery, 04 Energy and Mining, 05 Other Mining, 06 Quarrying, 31 Other Industrial Product Mfg., 33 Power Supply, 34 Gas Fuel Supply, 35 Heat Energy Supply, 36 Water Supply
Leasing and Other Services	67 Leasing, 69 Legal and Accounting Services, 70 Architectural And Engineering Technical Services, 7101 Interior Design, 7109 Other Design Services, 72 Computer System Design Services, 731 Data Processing Services, 7322 News Syndicates, 7329 Other Information Supply Services, 74 Consulting Services, 75 Research and Development Services, 76 Advertising, 77 Other Professional, Scientific & Technical Services, 79 Educational Services, 81 Healthcare Services, 82 Social Welfare Services, 84 Publishing, 85 Movie, 86 Broadcasting and Television, 87Art, Culture and Sports Services, 88 Museum and File Preservation, 89 Museum, Historical Site and Like-Kind Institutions, 90 Leisure Services, 92 Supporting Services, 93 Sanitary and Pollution Prevention Services, 94 Religious, Trade and Like-kind Organization, 95 Maintenance and Repair Services, 96 Other Non-classified Services, 98 Public Agency and National Defense, 99 International Organization and Extra-territorial Bodies
Finance	62 Finance and Auxiliary Services, 63 Securities and Futures, 64 Insurance (excluding I6294 Financial Investment)
Investment	I6294 Financial Investment

Table 4 Method and Logic for Classifying Consumer Banking Products

Business	Subclassification	Classification Principle
Credit	--	Loans noted in the account as not fully secured and the collateral being credit only.
Auto loan	--	1. Mid-term loan and the initial loan amount or initial loan outstanding being less than $1 million, or the current loan outstanding and approved loan amount being less than $1 million. 2. Mid-term loan with "auto" furnished as collateral.
Home loan	Mid- and long-term secured loan	Loans with a term of over one year and fully secured, and the initial loan amount or initial loan outstanding being greater than $ 1 million, or the current loan outstanding and approved loan amount being greater than $ 1 million.
	Short-term secured loan	Loans with a term of less than one year and fully secured, and the initial loan amount or initial loan outstanding being greater than $ 1 million, or the current loan outstanding and approved loan amount being greater than $ 1 million.
	Others	Loans with "real estate" furnished as collateral.
Secured loan	Long-term	Loans with a term of more than 7 years and fully secured.
	Short and mid-term	Loans with a term of less than 7 years and fully secured.
Credit card	--	Credit card business.
Cash card	--	Cash card business.
Student loan	--	Student loan.
Others	Long-term loan	Loans with a term of more than 7 years and not belonging to any of the businesses described above.
	Mid-term loan	Loans with a term of one to seven years and not belonging to any of the businesses described above.
	Short-term loan	Loans with a term of less than on year and not belonging to any of the businesses described above.

7. Conclusion

The finalized Basel II agreement can be regarded as the most important international compilation of risk management mechanisms for banks. The new Basel provisions adopt more precise approaches to the calculation of minimum capital requirement under the First Pillar, and furthermore, set out supervisory review under the Second Pillar and market disclosure under the Third Pillar to make sure banks present more truthfully their risk profile to provide better reference for market participants. Taiwan has set year 2007 for the initial implementation of Basel II. Most banks elect to use standardized approach to the calculation of capital charge, which is an improvement over Basel I for the more precise measurement of credit risk, but still quite a departure from the realm of reflecting "true risk profile", hence making the Second Pillar all the more important [9].

Banks will be required to report to the competent authority their operational information in relation to the measures of credit risk according to the directives of the Second Pillar. If banks take this job merely as a regulatory requirement and intend to beautify their performance so as to obtain better supervisory review results, the work of preparing dozens of qualitative and quantitative measures will undoubtedly be a meaningless torture and burden to the bank. However, if a bank takes on this job as the chance to examine closely its risk management system and performance, it will bring the bank considerable benefits, tangible and intangible, for the improvement and enhancement of risk management system will surely be reflected in the profitability of a bank.

With respect to the quantitative measure of credit risk RAROC, if a bank can do its own calculation with its internally developed model, and apply the model output to its daily business management, it means the bank has the capability to conduct the most precise performance evaluation by taking into account both risk and return. A few banks in Taiwan have garnered the ability to calculate RAROC on its own. Banks that have not yet developed such ability can begin with trial calculation of RAROC for each product or business unit along with the implementation of the Second

[9]. The implementation of Second Pillar in Taiwan is tentatively set for the first quarter of 2008. With regard to the calculation of economic capital, which is the denominator in the formula for RAROC, the competent authority might give banks more time before setting a specific directive. This requirement is not yet finalized until it is officially announced by the competent authority.

Pillar to accumulate experience and make plans for the future. JCIC assistance in this area during the transition period is supportive in nature. As the method for calculating RAROC by banks might vary significantly in line with the bank ’s organizational pattern and the pricing of capital, banks should give thorough consideration to the internal application of such information so as to fully utilize its own and market data and set out the most pertinent calculation rules.