

Unofficial Translation
With courtesy of the Association of International Banks
This translation is for the convenience of those unfamiliar with the Thai language.
Please refer to the Thai text for the official version.

Notification of the Bank of Thailand
No. SorNorSor. 42/2008
Re: Supervision Guideline on Interest Rate Risk for Banking Book of the
Financial Institutions

1. Rationale

Market risk means a risk that the financial institutions may incur loss as a result of the fluctuation of price of position in both trading book and banking book which financial institutions possess. Such positions are positions related to interest rate, exchange rate, equity instrument, and commodity. Possessing a large amount of instruments or position related to market risk may cause adverse impact to financial institutions' income and capital adequacy, especially if the market price of such positions are highly fluctuated.

In order to ensure that the supervision of financial institutions' market risk meets international standards and reflects the market risk efficiently, accurately, and completely, as well as, enable financial institutions to have an appropriate market risk management, the Bank of Thailand has issued a Notification to set out a guideline on supervision of financial institutions' market risk. Such guideline required financial institutions obtaining significantly large numbers of trading book transactions to maintain capital to correspond to market risk for 1) all positions related to interest rate and price of equity instruments on trading book and 2) all positions related to exchange rate and price of commodity of financial institutions. There are three methods to calculate the capital, 1) Standard Approach; 2) Internal Model or Simulation Approach; and, 3) Mixed Approach

In addition to the position on trading book, financial institutions' banking book may also be impacted from change of interest rate such as investing in debt security held to maturity, loan, deposit from public, etc. When the interest rate fluctuates, financial institutions' income and/or shareholders' equity value may be affected as well. In order to efficiently monitor interest rate risk on banking book and to ensure that financial institutions' interest risk management incurred from assets, liabilities and obligations correspond to the deposits, borrowings or money received from public, the Bank of Thailand has issued a Notification regarding supervision guideline on interest rate risk for banking book of financial institutions. Financial institutions shall apply such guideline for managing their interest rate risk and maintain appropriate capital to correspond to the level of risk. This Notification is also issued in accordance with the Financial Institutions Businesses Act B.E. 2551 while the essence of such guideline has not been changed from the existing principles.

2. Statutory Authority

By virtue of Sections 63 and 71 of the Financial Institutions Businesses Act B.E. 2551, the Bank of Thailand has imposed a guideline on managing interest rate risk for banking book and maintaining appropriate capital in accordance with the risk level of financial institutions so that the financial institution can comply with.

3. Scope of Application

This Notification shall apply to all financial institutions established in accordance with laws governing financial institutions businesses.

4. Repealed Notifications and Circulars

The Circular No. ThorPorTor. SorNorSor. (21) Wor. 2141/2004 dated 27 December 2004 Re: Supervision Policy on Interest Rate Risk for Banking Book for Financial Institutions and Relevant Reports are repealed.

5. Contents

5.1 In this Notification

“Banking Book” means position of financial instruments or other transactions not intended for trading purpose, or financial instruments which were intended, at the onset, to be held for a long period of time or until maturity.

“Interest rate risk on banking book” means damages to income and/or economic value of financial institutions as a result of changing of interest rate in banking book on both on-balance sheet and off-balance sheet. Details on types and impacts of interest rate risk are as prescribed on Attachment 1.

5.2 Guideline of efficient interest rate risk management

5.2.1 Efficient interest rate risk management of financial institutions must consist of 4 basic elements in the management of assets, liabilities and off-balance-sheet items as follows:

- (1) Appropriate oversight by the board of directors and senior management;
- (2) Adequate risk management policies and procedures;
- (3) Appropriate risk measurement, monitoring and control;
- (4) Efficient internal controls related to risk management.

5.2.2 How financial institutions apply these 4 elements mentioned in 5.2.1(1)-(4) in managing its interest rate risk may vary depending on the scope,

volume and complexity of the transactions, as well as the level of interest rate risk exposure of each financial institution. Therefore, the interest rate risk management practices may be diverse. For example, small financial institutions whose senior management closely supervises the day-to-day operations may use a less complex risk management process. Meanwhile, financial institutions whose transactions are more complex and diverse may need a more complex risk management process. Such financial institutions shall reports financial transactions to the senior management in order to monitor the daily operations, obtain adequate internal controls system that can ensure the accuracy of the information reported to the senior management in overseeing compliance with the established policies and risk limits.

5.3 Roles and Responsibilities of the Financial Institutions's Board of Directors and Senior Management

5.3.1 Financial institutions' board of directors is responsible for approving business strategies and policies on interest rate risk management and assigning the senior management to measure, control, monitor and report on the interest rate risks in accordance with the scope, volume and complexity of its transactions. Furthermore, the board of directors must receive adequate and appropriate information in a timely manner in order to assess the senior management's ability in managing interest rate risk in accordance with the set out policies.

5.3.2 Senior management shall ensure that the interest rate risk management system is suitable to the risk level and the activities of the financial institutions as well as establish risk limit, policies and procedures to control interest rate risk. Moreover, the senior management must allocate sufficient and appropriate resources and personnel for financial institutions' interest rate risk management.

5.3.3 Financial institutions shall establish a sub-committee or individuals who are responsible for managing interest rate risk and segregating roles, responsibilities and operating procedures of risk management units which perform risk assessment, controlling, monitoring, and reporting to ensure independence from the risk related business units in order to avoid conflict of interests and shall report directly to the senior management and financial institutions' boards of directors.

In this regard, details on roles and responsibilities of financial institutions' board of directors and senior management are prescribed on **Attachment 2**

5.4 Appropriate Risk Management Policies and Procedures

5.4.1 Financial institutions shall prepare written policies and procedures related to interest rate risk management and communicate to relevant parties so that the policies and procedures will be complied with, as well as, keeping such document so that examiners of the Bank of Thailand can examine. Such policies and procedures shall cover all aspects prescribed on **Attachment 3**.

5.4.2 Financial institutions shall review the interest rate risk policies on a regular basis, including improving such policies to commensurate with the scope, volume and complexity of its activities and market circumstance that may be changed.

5.5 Guidelines for Risk Assessment, Controlling and Monitoring

5.5.1 Guideline for risk assessment

(1) Financial institutions shall establish systems, which are able to measure significant interest rate risk and capable of assessing the effects from the changes on interest rate to their earnings¹ and/or economic value of financial institutions that are suitable and consistent with the scope, volume and complexity of the activities of the financial institutions. The Bank of Thailand intends to encourage financial institutions to allocate staff and database systems so that financial institutions may enhance or develop risk assessment systems which are able to assess impact to the financial institutions' earnings and to economic value, including communicating the main underlying assumptions of the risk assessment such that they are clearly understood by the management of the financial institutions.

(2) Financial institutions shall select systems or tools for assessing impact from interest rate change in accordance with the scope, volume and complexity of financial institutions' activities. Details of the systems and tools for interest rate risk assessment are prescribed on **Attachment 4**.

(3) Financial institutions, whose repricing risk is a major interest rate risk, and embedded options² and complex activities are immaterial, may choose repricing gap method to assess impact on income. Such method is the minimum requirement set out by the Bank of Thailand. Details on interest rate risk assessment by repricing gap are prescribed on **Attachment 5**.

(4) Financial institutions should consider the structure of the balance sheet and exposure of option risk as elementary factors in the consideration of the preparation of interest rate risk measurement systems which are capable to assess the effects of interest rate risk on the economic value. For examples financial institutions which obtain significant portion of embedded options or obtain high proportion of long-term assets with fixed interest rates while having a low proportion of the long-term liabilities.

(5) Financial institutions which maintain material exposures in interest rate risk in foreign currency, as deemed by the financial institution itself, and are able to explain to examiners of the Bank of Thailand, must be able to measure the interest rate risk level of each currency as well due to the difference in the yield curve of the interest rate of each currency.

¹ Net interest income both present and expected in the future including the effects on net income in the case where the financial institution has materially significant proportion of non-interest income sensitive to interest rate changes.

² Embedded options shall mean rights embedded in the financial instruments such as loans, instruments that allow one party to change the term or cash flow relevant to those contract or instrument. Examples are prepayment for loans without any penalty fee or any other fees, caps, floors and callable bonds, etc. The embedded options make it difficult to estimate the returns and interest rate risk of such financial tools since the probability of exercising such options changes as the interest rate changes.

(6) Financial institutions should develop various database systems in order to assess the interest rate risk for assets and liabilities with uncertain repricing period or remaining maturity in order to appropriately correspond with the actual behavior of the customers, especially, financial institutions with material exposures such as saving account deposits and current account deposits (non-maturity deposits) that the depositors may choose to withdraw at anytime or loans granted with the prepayment right without cost. Such factors create complexity in assessing the interest rate risk level since the value of both the positions and cash flow time band of these positions may change as the market interest rates change. In the case where financial institutions want to adjust data to be in line with behavior of the customers, financial institutions shall perform such adjustment in accordance with stipulated guideline as prescribed on **Attachment 6**

(7) Financial institutions shall be able to conduct a stress testing on the interest rate risk, including the case where key assumptions breakdown. Financial institutions should also consider those results when establishing and reviewing their policies and limits for interest rate risk. The guideline on conducting stress testing is prescribed on **Attachment 7**.

5.5.2 Guideline for risk controlling

Financial institutions must establish risk limits and other related practices as well as ensure enforcement and regularly conduct the reviews to maintain exposures within levels consistent with their established policies. The guideline details are prescribed on **Attachment 8**.

5.5.3 Guideline for risk monitoring

(1) Financial institutions shall obtain an information system which provides adequate and accurate information for measuring, controlling, monitoring and reporting interest rate risk. Such reports shall be prepared regularly in a timely manner for the board of directors, other committees, senior management and various individual business line managers as appropriate.

(2) Financial institutions should conduct testing on reliability of the tools and assumptions employed in their interest rate risk measurement systems regularly to ensure that they are able to identify any possible shortcoming of the systems in order to improve the efficiency and reliability of the systems.

Details on reporting of risk and testing on reliability of the tools and assumptions are as prescribed on **Attachment 9**.

5.6 Internal Controls Related to Interest Rate Risk Management

Financial institutions shall arrange to obtain an internal controls system which is suitable for the interest rate risk management process and shall independently and regularly review the risk management systems in order to evaluate and enhance the efficiency of interest rate risk management system. Details of guideline on internal control and review are prescribed on **Attachment 10**.

5.7 Guideline on Maintaining Capital

5.7.1 Financial institutions should consider and monitor their capitals level to ensure adequacy and their abilities to endure possible losses from interest rate changes in their banking book.

5.7.2 The examiner of the Bank of Thailand may provide opinions, on a case by case basis, to require financial institutions with high interest rate risk and/or inadequate capital relative to the interest rate risk to increase the capital and/or reduce the positions which cause interest rate risk or to undertake any actions to reduce the interest rate risk exposure.

5.8 Submission of Data and Relevant Reports

5.8.1 Financial institutions shall prepare and submit data for assessing interest rate risk in the banking book in accordance with the format and guideline set out by the Bank of Thailand in the Data Management System (DMS). The report shall be submitted within 21 days from the last day of the quarter. Guidelines and explanations of data preparation are prescribed on **Attachment 11**.

5.8.2 Financial institutions, exposing to interest rate risk in any foreign currency at a significant level, shall prepare and submit reports on such currency individually in addition to report in Thai Baht. For foreign currency positions which are immaterial, financial institutions shall prepare and submit an aggregate report with other currencies.

5.8.3 Financial institutions, having adjusted data behavior and already complied with the regulations regarding adjustment of data behavior, shall submit reports by referring to the adjusted data behavior together with assumptions underlying the adjustment.

5.8.4 Financial institutions shall retain documented evidence and various details supporting the preparation of reports prescribed by the Bank of Thailand as well as details for the report preparation internally used by the financial institutions in order to regularly manage the interest rate risk and submit such information as requested by the Bank of Thailand.

6. Effective Date

This Notification shall enter into force on and from the day following the date of its publication in the Royal Gazette.

Announced on the 3rd day of August, 2008

(Mrs. Tarisa Watanagase)
Governor
Bank of Thailand

Types and Impacts of Interest Rate Risk

Sources of Interest Rate Risk

1. Repricing risk: arises from timing differences in the residual term (for the case of fixed rate) and the next repricing (for the case of floating rate) of assets, liabilities and off-balance-sheet items. Although such differences of timing may be related to the fundamental business of the financial institutions in general, it may cause damages to the financial institutions. For example, a financial institution that uses short-term deposits to fund long-term loans at fixed rates may encounter a decline in its net interest income if the interest rates increase since the cost of funds of the deposit rates will increase while the earnings from loans remain fixed.

2. Yield curve risk: arises from the changes of the shape and slope of the yield curve which negatively impact the earnings and economic value of the financial institutions. For example, a financial institution holding a long-term government bond of 10 years and shorting in the 5-year government bond, if the yield curve becomes steeper (the increase of long-term interest rate is greater than the increase of the short-term interest rate), the financial institution's economic value shall decline because the value of the asset which is the 10-year bond declines more than the value of the liability which is the 5-year bond.

3. Basis risk: arises from the changes of market interest rates which cause the interest rates of assets, liabilities and off-balance-sheet items to change disproportionately though the residual term of assets, liabilities and off-balance-sheet items is equal to the next repricing term. For example, when the short-term interest rate in the market has changed, the deposit interest rate, which is referred from the 1-month LIBOR rate, and the loan interest rate, which is referred from the 1-month US government bond, may change differently.

4. Option risk: arises from changes of interest rates which cause the volume or period of cash flow from a financial instrument with embedded option to change and adversely impact earning or economic value of the financial institutions. For example, a financial institution purchases a 30 – year debenture which the issuer is able to redeem before maturity. The market interest rate at issuance is 10%. The interest rate at face value is 10%. If the market rate drops to 8%, the issuer may redeem the debenture before maturity resulting in the change in cash flow that the financial institution expects to receive. This will negatively affect the financial institution since it needs to reinvest at a lower interest rate. Alternatively, the financial institution may provide a loan that allows the debtor to prepay the loan without any penalty to the financial institution or the financial institution may accept a deposit without clearly stipulating the term in the agreement which the customer may withdraw at any time. In such cases, interest rate changes may cause the cash flow of the financial institution to change and may adversely affect the financial institution.

Effects of Interest Rate Risk

Changes of interest rates can have adverse effects on the financial institutions both on their earnings or their economic value. Hence, the effects of the interest rate risk may be analysed by 2 perspectives as follows

1. Earnings Perspective means analysis of the effects of changes in interest rates on accrual or reported earnings of the financial institutions. This is an analysis of the effects in the short-term which is an approach used by many financial institutions since the decline of earnings from the changes in interest rate may affect the stability of the financial institutions.

From the earning perspective, most financial institutions will mainly focus the analysis on the impact of the net interest income (the difference between interest income and interest expense) since it is directly affected by the changes of interest rates. Nonetheless, financial institutions having non-interest income or fee income in a high proportion should consider the effects on net income as well (including effects on net interest income, non-interest income and operating expenses) since some types of fee income correlate with the volume of the business of the financial institutions which may change with the changes of interest rates such as loan servicing fees, etc.

2. Economic Value Perspective means analysis of the effects of changes in interest rates on the economic value of assets, liabilities and off-balance-sheet items of the financial institutions.

The economic value of all these items means the present value discounted by the market interest rate of the expected cash inflow of the assets minus the expected cash outflow of the liabilities plus the net expected cash flow of the off-balance-sheet items. Therefore, the economic value perspective of financial institutions reflect the sensitivity of the net worth of the financial institutions to the fluctuations of the interest rates which is a more comprehensive view than the earnings perspective since it analyzes the long-term effects on the financial institutions while the earnings perspective considers short-term effects within 1-2 years.

Roles and Responsibilities of the Board of Directors and Senior Management of Financial Institutions

The board of directors of financial institutions¹ has the roles and responsibilities in managing interest rate risk as follows:

1. Possessing the knowledge and understanding of the sources of interest rate risk, risk exposure and the interest rate risk management of financial institutions;
2. Approving the lines of authority of those related to interest rate risk management to ensure balance of power and independence of the business units related to risk and the risk management unit which performs the duty of identifying, measuring, monitoring and controlling risks;
3. Approving the business strategies related to interest rate risk, interest rate risk management policies and internal controls including approving the policies regarding new activities or products;
4. Delegating to and overseeing that the senior management conducting the identifying, measuring, monitoring and controlling interest rate risk of the financial institutions in commensuration with the scope, volume and complexity of the activities and products as well as allocating resources that are adequate and appropriate for its interest rate risk management;
5. Approving the interest rate risk limit or to risk level that is acceptable to the financial institutions;
6. Receiving sufficient, appropriate and timely information in order to evaluate the interest rate risk management ability of the senior management in compliance with the approved policies;
7. Periodically re-evaluating the interest rate risk management policies of the financial institutions as well as the business strategies that affect the interest rate risk exposure of the financial institutions to ensure that they remain appropriate with the changing circumstances.

Senior management has the roles and responsibilities in managing interest rate risk as follows:

¹ Or any designated committee in the case of foreign bank branch.

1. Ensuring the preparation of business strategies and interest rate risk management policies for the approval of the financial institutions' board of directors and to apply the approved policies strictly and fully within the financial institutions as well as re-evaluate the said policies to ensure that they remain appropriate with the changing circumstances;

2. Establishing appropriate lines of authority that are related to interest rate risk management including defining the responsibilities of each subordinating unit;

3. Ensuring that there is an appropriate interest rate risk management including setting procedures and methods in identifying, measuring, monitoring, controlling and reporting of the interest rate risk;

4. Overseeing the compliance with the interest rate risk management policies and internal controls as well as effectively re-evaluate the interest rate risk management processes;

5. Establishing risk limit for the approval of the board of directors of financial institutions;

6. Receiving information that is sufficient, appropriate and up-to-date in order to assess any possible damage to the financial institutions caused by the changes of market risk factors and other significant factors both under the normal situation and crisis;

7. Approving any new activity or product of the financial institutions as well as setting the objectives and procedures for the activity to comply with the policies approved by the board of directors of financial institutions;

8. Regularly meeting or consulting with the financial institutions' board of directors and risk management staff regarding the procedures and processes of risk management;

9. Ensuring that the staff possesses adequate knowledge and understanding on the techniques, finance and related businesses in managing interest rate risk and internal controls.

Appropriate Interest Risk Management Policies and Operating Procedures

Appropriate interest rate risk management policies should have the characteristics and details entailing various topics as follows:

1. Clarity and are consistent with the scope, volume and complexity of the activities of the financial institutions;

2. Specifying risk limits, operating procedures and approval process of various activities as well as guidelines and approval for a transaction that exceeds the risk limit;

3. Delineating the line of authority in each unit to be clearly separated from each other by defining duties and responsibilities of the business units related to risk and the risk management unit as well as setting guidelines and operating procedures that prevent conflicts of interest;

4. Stipulating clear processes for conducting business as well as strategies for generating profits and to prevent related risks, types of financial instruments that the financial institutions are permitted to hold as well as clear objectives for holding such financial instruments;

5. Establishing internal control processes for interest rate risk management including authority, duty, and responsibility of the units conducting the re-evaluation of the interest rate risk management;

6. Identifying a new activity or product related to interest rate risk to consist of various features as follows:

6.1 Description of the product and strategy for undertaking the activity;

6.2 Allocation of resources for managing interest rate risk management of the new product and activity;

6.3 Analysis of the new product or activity;

6.4 Procedures to be used to measure, monitor and control the risk of the new product or activity;

6.5 Consultation between units related to the new product such as legal unit, accounting unit, risk management unit and other units prior to commencing the new product or activity;

6.6 Monitoring and evaluating subsequent to the introduction of the new activities in order to develop new products and risk management in the future;

7. Financial institutions should conduct regular reviews and re-evaluation of the interest rate risk management policies as well as appropriately revise the policies so that they remain consistent with the scope, volume and complexity of the changing businesses and market situations.

Systems and Tools for Measuring Interest Rate Risk

1. Risk measurement systems of financial institutions should have the following characteristics:

1.1 Capable of capturing all materially significant types of interest rate risk of assets, liabilities and other off-balance-sheet items.

1.2 Consistent with the generally accepted financial concepts and/or techniques for measuring risks.

1.3 Having clear detailed assumptions, variables as well as methodologies or operating procedures of the systems in writing.

2. Financial institutions may use different systems for measuring or managing risks for different activities. For example, a financial institution may use value at risk method for the trading book and repricing gap method or simulation for the banking book, etc. Nonetheless, the management of the financial institution must understand the integrated view of the interest rate risk arisen from its various products and businesses.

3. Tools used in assessing effects of the interest rate changes are numerous. The financial institutions should select ones consistent to the scope, volume and complexity of their activities. They range from the static repricing gap which is a simple calculation and static simulations that assess the effects of the interest rate changes from various simulations by using the information of the present position of the financial institutions to highly complicated techniques such as the dynamic modeling that is able to reflect the effects of new activities and products, the possible changing behaviors of consumer in the future, the change in business strategies, and various decision making of the financial institutions as well as to better reflect the effects from embedded and explicit options.

In this regard, various tools for measuring interest rate risk are prescribed on **Attachment 4.1**

Interest Rate Risk Measurement Techniques

Static Repricing Gap Approach

1. The simplest technique for assessing interest rate risk of financial institution is **static repricing gap** which may be used to measure the effects of interest rate changes on the changing of earnings and economic value of the financial institutions. When it is used for assessing the interest rate risk on earnings, it shall be called **repricing gap analysis**. This is perhaps the first technique developed to assess interest rate risk of financial institutions and is preferred by many financial institutions. Nonetheless, some financial institutions may develop the said technique to become more accurate by applying the Duration principle with the repricing gap Table to assess the effects of interest rate changes on economic value. Such technique is called **duration-based gap**.

2. **Static repricing gap** technique is prepared by recording assets, liabilities and off-balance-sheet items which are sensitive to interest rate on a table consisted of time band according to the time remaining until maturities (for fixed rate cases) or to the time remaining until the next repricing (for floating rate cases). In general, it may be called **gap analysis**. The size of the gap in each time band is calculated from assets, subtracted by liabilities, added to off-balance-sheet items within such time band. Then the gap in each time band may be multiplied by the assumed change of interest rate to estimate the change in earnings resulting from such interest rate change, which is an indicator of repricing risk exposure. The size of interest rate change used in the analysis may be based on various factors e.g. past data, trend of the interest rate change in the future and the decision making of the management of the financial institutions, etc.

3. In designing the interest rate risk assessment system, the financial institutions should ensure that details of rate-sensitive positions commensurate with the sophistication of the technique utilized since the accuracy of the each type of interest rate risk assessment tool e.g. repricing gap, partly depends on the time bands, the accumulation of positions or cash flows within a too-wide a time band will reduce assessment accuracy. In practice, the financial institutions must also evaluate the materiality of the reduced accuracy resulting from setting the width of the time band comparing to the effort in making the assessment.

4. For assets or liabilities with uncertain repricing e.g. current account deposits and saving deposits as well as items whose actual residual term varies from the term under agreement e.g. housing loans which allow prepayment without any penalty fee, interest or other additional fees to the financial institutions, etc., the recording in the time bands must correspond as closely to the actual behavior as possible. Such recording should depend on the judgment, historical experience and statistical data of each financial institution.

5. Negative repricing gap or liability-sensitive gap in each time band will occur when the difference of the interest rate-sensitive assets and liabilities plus the net position of off-balance sheet items during such time band has a negative value which implies that the increase of market interest rate tend to cause a reduction in the net interest income. Conversely, positive repricing gap or asset-sensitive gap implies that the increase of market interest rate would instigate increased net interest income of financial institutions.

6. Although repricing gap analysis is a commonly used approach to assessing interest rate risk exposure since it is simple, this general technique still has the following limitations.

6.1 It does not take account of the difference of remaining time before next repricing of each position in a particular time band. This means that every position in such time band is assumed to mature or repriced interest simultaneously. Hence, if the financial institutions uses too wide time band, the exposure from the calculation is likely to deviate. The remedy is to more finely divide the time band with high concentration of exposures.

6.2 It does not consider the differences in spreads between each type of interest rate change which may arise as the level of market interest rate changes (basis risk).

6.3 It does not take into account the effects on earnings arisen from option risk e.g. the repayment period may vary from the agreed term in the contract upon interest rate changes, etc.

6.4 It does not reflect the effects from the interest rate changes on earnings and non-interest expenses which may be significant components of net income of the financial institutions.

6.5 The technique using repricing gap analysis is a crude approach in assessing effects on net interest income of financial institutions that may arise from assumed interest rate changes.

Duration-based Gap Approach

1. Static repricing gap schedule may also be used to evaluate the basic effects on economic value by defining sensitivity weights (duration-based weight) to each time band and multiplying with the gap and interest rate change in such time band to obtain duration weighted gap which upon summing up all time bands, the result will be a rough estimate of the change in economic value of the financial institutions that may arise from the assumed change of interest rate.

2. In general, the sensitivity weights in each time band can be estimated from the product of average duration¹ (which reflects the percentage change of economic value of the position to the interest rate change of small degrees) of various positions within the same time band to the interest rate change in such time band. In some cases, the weights may differ for positions on the asset side and liability side within the single time band to reflect the differences in coupon rates and remaining terms to maturities of those positions. Moreover, the assumptions on interest rate changes may differ in different time bands to reflect differences in the volatility of interest rates along the yield curve.

3. Financial institutions may derive a more refined and accurate sensitivity weight by calculating the precise duration of each asset, liability and off-balance-sheet position. Such approach would correct the potential errors occurring when aggregating positions or cash flows in calculating average duration in the time band. Furthermore, financial institutions may consider using effective duration instead of modified duration which better reflects non-linear relationship between the changes of economic value and of interest rate.

Simulation Approaches

1. Financial institutions holding positions of complex financial instruments or risk sources beyond Repricing Risk of material proportion should use more sophisticated risk measurement approaches than the static repricing gap such as simulations, etc. Such techniques assess potential effects of interest rate change on earnings and economic value in details by simulating future path and degree of change of interest rates and impact on cash flows.

2. **Static simulations**² are techniques to assess interest rate risk solely on the effects arisen from cash flows of the financial institutions' present positions. For assessing effects on earnings, these techniques will estimate cash flows and earnings over a specific period under simulation of more than one case of interest rate change. Generally, they include changes of the slope and shape of the yield curve and changes of spread between various interest rates. For assessing effects on economic value under these techniques, it can be accomplished by estimating expected cash flows over the

¹ Duration approach has been applied into 2 forms of application which are: 1) **Modified Duration** means an elasticity which is equal to normal duration divided by $1+r$, where r means level of market interest rate. Therefore such value will represent the percentage change on economic value of a position to percentage change on interest rate under the assumptions that a) change in such value has a linear relationship with change in interest rate and b) timing of payments is fixed; and, 2) **Effective Duration** means a relaxation on such assumptions which is an estimated sensitivity of a position to change on interest rate in case there is an embedded options.

² Duration gap described previously can be viewed as a very simple form of static EVE simulation.

entire lives of all positions held by the financial institutions and discounted back to their present values.

-4/5-

3. Some types of static simulation may further refine from the simple analysis based on static repricing gap by further detailing of different positions, both on and off balance sheet so that specific assumptions about interest and principal payments as well as effects on non-interest income and expense can be incorporated in the assessment.

4. **Dynamic simulation** is a more complex technique than the static simulation which analysis of effects on earnings and economic value is similar to the static simulation approach but builds in more detailed assumptions about the future course of interest rates and the expected changes in business activities of the financial institutions from the present positions. Therefore, it is able to reflect dynamic interaction of payments streams and interest rates. The simulation could involve following assumptions.

4.1 Financial institutions' strategies for changing future administered interest rates such as savings interest rates, etc.;

4.2 Behavior of customers from positions with embedded options and/or various explicit options such as behavior on withdrawal from savings and current account with unclear remaining time to maturity, loan prepayment, changes of cash flows from embedded options, etc.; and

4.3 New activities or products such as new loans or new types of transactions, etc.

5. For financial institutions having material positions based in many foreign currencies and readiness in terms of personnel with expertise as well as having sufficiently sophisticated interest rate risk measurement techniques, may select to consolidate positions of several currencies together for the risk assessment by making assumptions on correlations between different currencies. Financial institutions selected assumptions of correlations in aggregating the risk positions must regularly review the validity of such assumptions as well as assessing possible risk exposures under circumstances where the correlations differ from the assumptions.

Guidelines for Measuring Interest Rate Risk by Repricing Gap Approach

Financial institutions assessing interest rate risk by repricing gap approach shall comply with following minimum guidelines stipulated by the Bank of Thailand. There is no any behavior adjustment of items whose remaining terms or terms to the next repricing vary from the contractual terms such as loan prepayments, deposits without definite maturities and non-performing loans, etc.

Procedures of Measuring Interest Rate Risk

Measuring interest rate risk exposure of **earnings** by repricing gap technique can be organized into 6 steps as follows:

1. Recording assets, liabilities and off-balance-sheet positions on the banking book, only of which the items without definite contractual maturities and loan prepayments have not yet adjusted, onto the repricing gap schedule where time bands must at least be divided on a quarterly basis for the first 1-2 year according to the Bank of Thailand's prescribed guidelines below.

2. Calculating gap in each time band by netting the positions of assets, liabilities and net off-balance-sheet position in the time band.

3. Calculating cumulative gap in each time band by adding the net position of each time band to the net position of the previous time bands.

4. Evaluating impact on earnings from interest rate change under assumed interest rate change such as increasing by 100 basis points constantly throughout the yield curve (parallel shift in the yield curve) in 1 year time by calculating from the product between 1) gap within each time band and 2) assumed interest rate change e.g. 0.01 and 3) proportion to year of remaining time from the midpoint of each duration to 1 year that continues to be impacted by the interest rate risk (proportion of 1 year time remaining in effect), such as for 0-1 month period, the midpoint is 0.5 month; then the proportion to year that the gap in the 0-1 month band will be impacted by interest rate change is equal to $(12-0.5)/12$ or 0.958.

5. The exposure of interest rate risk in banking book is equal to the sum of impacts on earnings from interest rate change during 1 year which is derived from Step 4 for all currencies.

6. Comparing the interest rate risk exposure in the banking book derived from Step 5 with the projected future net interest income of the financial institutions in 1 year time.

Financial institutions may consider evaluating interest rate risk from the **impact on economic value** by duration-based gap technique using risk weights from the BIS¹ guidelines during the initial period by performing the following procedures.

1. Slotting assets, liabilities and off-balance-sheet items into the time bands on the repricing gap schedule according to the Bank of Thailand's prescribed guidelines below.

2. Calculating gap in each time band by netting the positions of assets, liabilities and net off-balance-sheet position in the time band.

3. Multiplying the gap in each time band with risk weight (duration-based weight) of each time band (Table 1) which reflects sensitivity of the position in each time band to the interest rate change such as increase of 100 basis points constantly throughout the yield curve (parallel shift in the yield curve).

4. Summing the results derived from netting the impacts on economic value in each time band to yield the total impact on economic value in all time bands for each currency.

5. Summing the impacts on economic value from the table for each currency to yield aggregate impact on economic value of all currencies.

6. Comparing the value of gap of risk in the banking book with capital of the FI to evaluate interest rate risk exposure in the banking book.

¹ Reference from the Principles of the Management and Supervision of Interest Rate, July 2004 of Bank for International Settlements (BIS)

Table 1					
Weighted Gap					
Weighted Gap in Each Time Band	Time Band	Midpoint of the Time Band	Proxy of Modified Duration ^{1/}	Interest Rate Change	Risk Weight
	0-1 month	0.5 month	0.04 year	100 bps	0.04%
	more than 1-3 months	2 months	0.16 year	100 bps	0.16%
	more than 3-6 months	4.5 months	0.36 year	100 bps	0.36%
	more than 6-12 months	9 months	0.71 year	100 bps	0.71%
	more than 1-2 years	1.5 years	1.38 years	100 bps	1.38%
	more than 2-3 years	2.5 years	2.25 years	100 bps	2.25 %
	more than 3-4 years	3.5 years	3.07 years	100 bps	3.07 %
	more than 4-5 years	4.5 years	3.85 years	100 bps	3.85 %
	more than 5-7 years	6 years	5.08 years	100 bps	5.08 %
	more than 7-10 years	8.5 years	6.63 years	100 bps	6.63 %
	more than 10-15 years	12.5 years	8.92 years	100 bps	8.92 %
	more than 15-20 years	17.5 years	11.21 years	100 bps	11.21 %
	more than 20 years	22.5 years	13.01 years	100 bps	13.01 %

^{1/} Modified duration of the gap in each time band is approximated from the midpoint of each time band under the assumption that the rate of return is 5% under the BIS guideline.

General Guidelines for Making Entries

1. Items to be entered in various time bands on the Repricing Gap Schedule are assets, liabilities and off-balance-sheet items which are rate-sensitive items. Such includes interest rate bearing items as well as non-interest bearing items that are rate sensitive e.g. financial instruments sold at a discount such as zero coupon bond, etc. Non-rate sensitive assets, liabilities and off-balance-sheet items are to be input in “Non-rate sensitive” column.

2. On-balance-sheet items are to be input in the Repricing Gap Schedule using their book values in THB as at month end.

3. Off-balance-sheet derivatives are to be entered in two legs in both long and short positions (the two legs approach) which splits the underlying of the derivatives by translating the derivatives to positions of such the underlying instruments first. Entries are then to be made by using 1) principal value of the underlying in the case that there is underlying (except option, see Clause 21) or 2) principal amount of the notional underlying in the case without underlying such as interest rate swap, FX forward/swap, cross currency swap, etc. The foreign exchange contracts and interest rate swap contracts between two currencies are to be separately entered, one in each respective currency. The interest rate swaps in one currency are to be entered twice, as the long and short positions in the same currency.

4. Financial institutions, having positions related to foreign interest rates in such proportion that the Financial institutions deemed material and are able to justify with supporting documents to the examiners of the Bank of Thailand, are to prepare repricing gap Schedule separated by currency and record the equivalent amounts in THB using the contractual FX rates or if not specified, using the FX rates on the reporting date.

5. Interest bearing assets and liabilities shall be entered on the repricing gap Schedule differently by categorized according to the type of interest rates into two following groups.

5.1 Fixed rate items shall mean assets and liabilities with fixed interest rates. Items with constant fixed rate until maturities such as fixed rate bonds, fixed deposits, etc. shall be entered in the time band according to the remaining time until maturities. For cases where rates are fixed for a period and float in the next period, the entry shall be in the time bands according to the duration before changing to float rates such as housing loans with constant interest rate for the first 3 years and after that the floating rate is equal to MLR. Such shall be entered in the 2-3 year time band.

5.2 Floating rate items shall mean assets, liabilities whose interest rates may fluctuate. Such can be categorized into 2 types, which are:

(1) Variable rate items shall mean assets, liabilities whose interest rates change at the discretion of the counterparty or with reference rates such as LIBOR. Examples are floating rate notes whose rates change with LIBOR, borrowings at rates based on LIBOR, etc. These shall be recorded in the time bands according to the time remaining until next repricing. The assumption is that the reference interest rate will be adjusted immediately after the reporting date. If remaining periods of the assets or liabilities are less than periods till the last repricing, they are to be entered according to the remaining periods.

(2) Managed rate items shall mean assets and liabilities with floating interest rates and no definite repricing dates but rates are adjusted at the discretion and strategy of each FI. These are loans with interest rates of MLR + spread, etc. Such shall be entered in the time band according to the remaining time until the next projected repricing date after market rates or reference rates having changed. The assumption is that the market rates or reference rates will be adjusted immediately after the reporting date. **The FI is able to justify its assumptions related to the repricing period so that the Bank of Thailand can examine.** For instance, if the FI historically adjusts its interest rates every 3 months, then the entry shall be made in the 1-3 month time band. Alternatively, if the FI adjusts its rates 1 month following the market interest rate movement, then it shall make the entry in the 0-1 month time band. This is assumed that the market interest rate changes immediately after the reporting date.

6. Non-interest bearing assets and liabilities such as zero coupon bonds shall be entered in the time bands according to the time remaining until maturities.

7. Assets and liabilities with install payments (installment items) as opposed to single payments at maturities should be entered separately for each amount in the appropriate time bands according to the period before next repricing of each amount. For example, a loan with book value of THB 2 million shall be next repriced in the next 2 months while there will be a repayment of THB 100,000 in the next 10 days; the entries will be THB 100,000 in the 0-1 month time band and THB 1,900,000 in the 1-2 month time band.

8. Internal deals are not reported in the Repricing Gap Schedule.

Details for Inputting Assets, Liabilities and Off-Balance-Sheet Items

Assets

1. Cash is to be entered in the “Non-rate sensitive” column.

2. Interbank items e.g. interbank loans are to be entered in the time bands according to the time remaining until the next repricing for floating rate items and time remaining until maturities for fixed rate items.

3. Purchased under resale agreements **shall be entered under the heading prescribed in the Notification of Bank of Thailand Re: Preparation and Announcement of Financial Statement of Financial Institution** in the time bands according to the time remaining until contractual maturities since they have fixed interest rates.

4. Investments

4.1 Debt securities with floating rates are to be entered in the time bands according to the time remaining until the next repricing and debt securities with fixed interest rates are to be entered in the time bands according to time remaining until contractual maturities.

4.2 Common shares and other equity instruments similar to equity securities shall be entered in the “Non-rate sensitive” column and preferred shares whose attributes are similar to debt instruments with variable for fixed interest rates shall be entered in the time bands according to the time remaining until the contractual maturities or the next repricing dates, respectively.

Other securities such as:

- Callable bond with definite information regarding redemption period shall be entered in the time bands which the issuer is expected to redeem such instrument. It is to be determined from the reference to maturity, call price and current price which the issuer will call when the price of the instrument is higher than the call price. For instance, a bond of 10 years term which the issuer may call after 5th year, its interest rate reflected market price for the next 6 years is equivalent to THB 102 and call price is THB 101. It is then highly probable that it will be called in the 6th year; hence, it is to be entered in the 5-7 year time band. Where it is uncertainty of call period, it shall be entered in the time band according to the time remaining until contractual maturity.

- Convertible instruments shall be entered as debt instruments. They are to be entered in the time bands according to the next repricing. When such instruments start to behave similar to equity instrument, then they are to be entered in the “Non-rate sensitive” column.

5. Loans

5.1 Gross amount excluded accrued interest receivables, is to be entered.

5.2 Generally they are to be entered in the time bands according to the time remaining until contractual maturities for fixed rate loans and in the time bands according to the time remaining until the next repricing for floating rate loans. Loans with uncertain repricing dates but rates changes depend on the strategy of each FI (managed rates) such as rates based on MLR, MOR and MRR, such loans shall be entered in the time bands according to the remaining time which the FI expects to adjust the next interest rates or after the changes of market rates or reference rates by assuming that the market interest rates or reference rates will adjust immediately after the reporting date.

5.3 Loans with repayment in the interim between the reporting date and the next repricing date shall be entered in the appropriated columns splitting the repayment amounts and the residual amounts. The residual amounts (the total loan amounts minus the repayment amounts) are to be entered in the time bands according to the next repricing. The repayment amounts shall be entered in the time bands according to the contractual due dates.

5.4 Credit card loans, where the proportion is material to the total credit advances of the FI, are to be divided into 2 time bands which are “Non-rate sensitive” for outstanding balance which the customers shall pay in full and the time bands expected to be the next repricing for the outstanding balance. The proportion of the outstanding balance in each part depends on the historical behavior of the portfolio.

6. Non-performing loans are to be entered in the “Non-rate sensitive” column.

7. Accrued interest receivables shall be entered in the “Non-rate sensitive” column.

-5/7-

8. Allowance for doubtful accounts shall be entered in the “Non-rate sensitive” column.

9. Foreclosed assets shall be entered in the “Non-rate sensitive” column.

10. Land, premises and equipment shall be entered in the “Non-rate sensitive” column.

11. Other assets which are deposits at the Bank of Thailand, advances payment such as prepaid insurance premiums or other non-rate sensitive items shall be entered in the “Non-rate sensitive” column.

Liabilities and Shareholders' Equity

12. Deposits

12.1 Current account shall be entered in the “Non-rate sensitive” column since financial institutions in Thailand are not yet permitted to offer interest for current account deposits, hence they are not sensitive to interest rate changes.

12.2 Saving account shall be entered in the time bands according to the time remaining until the anticipated repricing subsequent to the changes in the market rates or reference rates assuming that the market or reference interest rates shall adjust immediately after the reporting date. For instance, the FI may enter in the 0-1 month or 1-3 month time band.

12.3 Fixed deposits shall be entered in the time bands according to the time remaining until maturities.

13. Interbank items such as interbank borrowings shall be entered in the time bands according to periods until the next repricing for floating rate items and until maturities for fixed rate items.

14. Sold under repurchase agreements **shall be entered under the heading prescribed in the Notification of the Bank of Thailand Re: Preparation and Announcement of Financial Statement of Financial Institution** in the time bands according to the contractual maturities since they are fixed interest rates.

15. Other liabilities shall be entered in the time bands according to the periods until the next repricing or time remaining until maturities or if they are not sensitive to

interest rate changes, they are to be entered in the “Non-rate sensitive” column. Such examples are accrued expenses which do not incur any interest. They are to be entered in the “Non-rate sensitive” column.

-5/8-

16. Shareholders’ equity

16.1 Common shares shall be entered in the “Non-rate sensitive” column.

16.2 Preferred shares with attributes similar to equity instruments shall be entered in the “Non-rate sensitive” column and those with attributes similar to debt instruments shall be entered in the time bands according to the periods until the next repricing.

16.3 Others such as paid-in capital and retained earnings, etc. shall be entered in the “Non-rate sensitive” column.

Off-Balance-Sheet Items

17. Forward foreign exchange contracts shall be input with the notional amounts as 2 entries as follows: 1) Long position in the currency to be received in the future in the Repricing Gap Schedule of such currency; and, 2) Short position in the currency to be paid in the future in the Repricing Gap Schedule of such currency in the time bands according to the time remaining until maturities of such forward contracts. For instance, a forward foreign exchange contract which sells THB and buys USD of the contracted amount equivalent to USD 1 million in 5 months, shall be entered as a short position in THB schedule in the more than 3-6 month time band and long position in USD schedule in the more than 3-6 month time band with the amount of its equivalent in THB.

18. Futures and forward rate agreements (FRAs) shall be entered with the notional amounts as 2 entries as follows:

18.1 the first entry related to the underlying instrument, is to be entered in the time band corresponded to the time remaining until delivery or period which rights can be exercised plus time remaining of such underlying instrument, if any; and

18.2 the second entry related to the said derivative, is to be entered in the time band corresponded to the time remaining until delivery or period which rights can be exercised.

Example: If a financial institution has a long forward bond, the entries will be: 1) long position for the notional amount of the instrument to be received in the time band corresponded to the time remaining until the delivery of the forward contract plus the time remaining of the bond; and, 2) short position for the notional amount of the contract in the time band corresponded to the time remaining until delivery of the forward contract.

Example: A 2 x 5 months FRA is sold, the entries will be: 1) long position for the notional amount in the 5 months time band; and, 2) short position for the notional amount in the 2 months time band.

-5/9-

19. Interest rate swaps shall be recorded as 2 entries according to the interest received or paid and the relevant remaining period. Receiving item shall be entered as long position and paying as short, in the time band according to the time remaining until maturity for the portion with fixed interest rate and for the time band according to the period until the next repricing for the floating rate portion. For example, an interest rate swaps which the FI will receive floating rate and pay fixed interest rate, the entries shall be 1) long position for receiving item in the time band according to the next repricing, and 2) short position for paying item in the time band according to the time remaining until maturity of the swap contract.

20. Cross currency swaps shall be entered similarly to the interest rate swaps, however, the long and short positions shall be entered on the repricing gap schedules of the relevant currencies.

21. Options with underlying interest rate or foreign currency instruments shall be reported in the delta equivalent value as follows: 1) for the case without underlying such as interest rate or currency options, etc., the delta equivalent value equals to the product of the principal value of the notional underlying and delta value; and, 2) for the case with underlying such as bond, options, etc. the delta equivalent value equals to the product of fair value of the underlying and delta value where the delta value can be derived from options pricing model of each FI. Two legs approach shall be employed in distributing options in the time bands which is 1) at the time the underlying contract takes effect and 2) at the time the underlying contract mature.

Example: In April the call options on a June Three-month Interest Rate Future has been brought, the entries will be long position for the time the underlying contract mature in the 5 months, and short position for the 2 months time band. For the currency options, the entries will be long position according to the Repricing Gap Table in the currency to be received and short position according to the Repricing Gap Table in the currency to be delivered.

22. Other obligations such as unused credit facilities, guarantee obligations, etc. shall be entered using the notional amount in the “Non-rate sensitive” column.

The examples of measuring interest rate risk by Repricing Gap Approach are prescribed on Attachment 5.1.

Examples of Interest Rate Risk Measurement by Repricing Gap Approach

Financial institutions which measure interest rate risk by repricing gap approach according to the Bank of Thailand guidelines may refer to the example herewith without making any behavioral adjustment for items without definite residual terms under contracts, prepayments and NPLs assuming the position of the FI as at 30 December 2004 as follows: 1) total assets is equal to THB 8,500 million, 2) total capital is equal to THB 1,200 million and 3) the exchange rate is THB 40 per one USD.

Step 1 Entering assets, liabilities and off-balance-sheet items in the Repricing Gap in various time bands.

Assets

1. Cash of THB 500 million shall be entered in the “Non-rate sensitive” column.

2. Interbank item is lending in the interbank market for the amount of THB 90 million for 5 days, shall be entered according to the remaining time in the 0-1 month time band.

3. Investments

3.1 There are 3 held to maturity debt instruments as follows:

(1) special D series bond 42/6.00%/6/2, 6 years term, with book value of THB 500 million, matured on 5 Mar. 05, the entry is to be made for the residual term in the more than 1-3 months;

(2) D series bond 45/4.625%/5, with book value of THB 1,000 million, matured on 21 Jun. 09, residual term is 4.5 years, the entry shall be made in more than 4-5 years.

(3) USD bond with residual term of 15 years, book value of USD 5 million equivalent to THB 200 million, fixed interest rate, it is to be recorded in the USD schedule for the amount of THB 200 million in more than 10-15 year time band.

3.2 Debt instrument available for sales in the banking book is AIS093B debenture with book value of THB 500 million, matured on 21 Mar. 2009, interest rate of 2.10% plus average fixed deposit rate of Bangkok Bank, Kasikorn Bank, Siam Commercial Bank and Krung Thai Bank, interest paid on 21 Mar. and 21 Sep every year, the entry is to be made in time band of the next repricing on 21 Mar. 05 which is more than 1-3 months time band.

3.3 Equity instrument available for sales is 2,000,000 shares of Land & House with book value of THB 9.5 per share is to be entered in the “Non-rate sensitive” column in the amount of THB 19 million.

3.4 Equity instrument held for investment is 2,000,000 shares of Banpu with book value of THB 120 per share is to be entered in the “Nonrate sensitive” column in the amount of THB 240 million.

4. Loans

4.1 Commercial loans

(1) THB loans consist of outstanding balance of THB 1,000 million at 6-month BIBOR with next repricing in 6 months. The amount of THB 1,000 million is to be entered in the more than 3-6 months time band.

(2) USD loans consist of outstanding balance of USD 7.5 million equivalent of THB 300 million at fixed interest rate, time remaining of 5 months. The amount of THB 300 million is to be entered in the more than 3-6 months time band on the USD schedule.

4.2 Housing loans

(1) Outstanding balance of THB 600 million, fixed interest rate of 4% for 2 years, after which changed to floating rate of MLR-0.5% with monthly repayment of principal only of THB 5 million. The amount of THB 5 million is to be entered in the 0-1 month time band, THB 10 million in the more than 1-3 month time band, THB 15 million in the more than 3-6 months, THB 30 million in the more than 6-12 months, THB 60 million in the more than 1-2 years and THB 480 in the more than 2-3 years time bands.

(2) The remaining THB 500 million at floating rate to be repriced no longer than 1 month after the change of market interest rate, assumed that the market rate will change on the day following the report date, shall be entered in the 0-1 month time band.

4.3 Personal loans of THB 100 million, 2 years term, fixed interest rate of 15% shall be entered in the more than 1-2 years time band.

4.4 Credit card loans are at THB 400 million, of which THB 150 million the customers pay in full and THB 250 is outstanding. The THB 250 million shall be recorded in the more than 1-3 months time band for the reason that the FI charging late fees must advise the customers 30 days in advance. Moreover, the THB 150 million is to be entered in the “Non-rate sensitive” column since it is without any interest.

4.5 Hire-purchase loans- THB 100 million is due in 8 months time, THB 150 million in 1.5 years and THB 300 million in 3.5 years, entries will be made according to the remaining time since they have fixed interest rate throughout contractual terms. The amounts THB 100 million, THB 150 million and THB 300 million are to be entered in the more than 6-12 months, more than 1-2 years and more than 3-4 years, respectively.

5. Non-performing loans in the amount of THB 400 million are entered in the “Non-rate sensitive” column.

6. Accrued interest receivables in the amount of THB 150 million are entered in the “Non-rate sensitive” column.

7. Allowance for doubtful accounts of THB 200 million are entered in the “Non-rate sensitive” column.

8. Properties foreclosed in the amount of THB 300 million are entered in the “Non-rate sensitive” column.

9. Land, premises and equipment of THB 1,000 million are entered in the “Non-rate sensitive” column.

10. Other assets in the amount of THB 200 million are entered in the “Non-rate sensitive” column.

Liabilities and Shareholders' Equity

11. Deposits

11.1 Current accounts of THB 500 million are entered in the “Non-rate sensitive” column.

11.2 Savings with interest rate of 1% per annum in the amount of THB 2,000 million are to be entered in the 0-1 month time band since the FI will adjust the deposit rate 1 month after the change of market rate assuming that the market rate changes on the day following the reporting day.

11.3 Fixed with fixed interest rate

(1) THB 500 million amount due within 3 months, THB 1,500 million due within 1 year are to be entered according to the remaining time respectively.

(2) 12 month fixed in the amount of USD 5 million equivalent of THB 200 million with 2 month remaining time, the THB 200 million is to be entered in the more than 1-3 months time band on the USD schedule.

(3) 3 year fixed in the amount of USD 7.5 million equivalent of THB 300 million with 2.5 years remaining, the THB 300 million is to be entered in the more than 2-3 years time band on the USD schedule.

12. Interbank item which interbank borrowing in the amount of THB 900 million for 5 days is entered in the 0-1 month time band.

13. Borrowings from issuing of THB 1,000 million debentures with fixed interest rate of 5% for 8 years, residual term of 2.8 years is to be entered in the more than 2-3 years time band.

14. Other liabilities which are not sensitive to changes in the amount of THB 49 million is entered in the “Non-rate sensitive” column.

15. Shareholders’ equity total of THB 1,551 million is entered in the “Non-rate sensitive” column.

Off-Balance-Sheet Items

16. Forward foreign exchange contracts of USD 7.5 million equivalent of THB 300 million to purchase THB and sell USD in the next 5 months, are entered as a long position of THB 300 million in the more than 3-6 months time band on the THB schedule and a short position of THB 300 million in the more than 3-6 months time band on the USD schedule.

17. Interest rate swaps of THB 500 million, matured in 2 years, paying fixed interest rate and receiving floating rate which is repriced every 3 months, are entered as a long position of THB 500 in the 1-3 month time band and a short position of THB 500 million in the more than 1-2 years time band on the THB schedule.

18. Cross currency interest rate swap 1-year THB/USD swap of USD 5 million equivalent to THB 200 million, due in the next 11 months which the FI pays fixed interest rate THB and receives floating rate USD, interest adjusted every 3 months, next repricing in 2 months. Upon maturity, the FI pays principal in THB and receives principal in USD. The entries are a short position of THB 200 million on the THB schedule in the more than 6-12 months time band (11 month), and a long position of THB 200 million on the USD schedule in the more than 1-3 months (2 months) time band.

19. Interest rate futures which the FI holds a long position in 6-month interest rate future contract which will be effective in the next 4 months for the amount of THB 100 million, the entries are a short position of THB 100 million in the more than 3-6 months time band (4 months) and a long position of THB 100 million in the more than 6-12 months (4+6=10 months) time band on the THB schedule.

20. Forward rate agreements which financial institutions sell (2,18) forward rate agreement on THB interest rates for THB 400 million, entries are a long position of THB 400 million in the more than 1-2 years (18 months) time band and a short position of THB 400 million in the more than 1-3 months (2 months) time band on the THB schedule.

21. Put options which financial institutions long put which mean financial institutions buy rights to sell USD bond held by the FI having delta equivalent values of USD 5 million or THB 200 million. Presently the bond has 15 remaining years and must exercise the rights in the next 2 months. Entries are a long position of THB 200 million in the more than 1- 3 months (2 months) time band on the USD schedule and a long THB 200 million in the more than 10-15 years (15 years) time band on the USD schedule.

22. Call option which the financial institutions long call the rights to buy 3-month US Treasury Bill having delta equivalent value of USD 6.25 million or THB 250 million and must exercise the rights in the next 3 months, entries are a long position of THB 250 million in the more than 3-6 months (3+3=6) time band and a short position of THB 250 million in the more than 1-3 months (3 months) time band on the USD schedule.

23. Other obligations such as overdraft facilities of THB 100 million which is unused will be entered in the “Non-rate sensitive” column.

Step 2 Calculating gap in each time band by netting the positions in the assets, liabilities and net position for off-balance-sheet items in each time band. For instance, in the 0-1 month time band, RSA is THB 595 million, RSL THB 2,900 million creating a gap before off-balance-sheet items equals to THB -2,305 million and net position of notional amounts for off-balance-sheet items is THB 0. Hence, the gap is equal to $595-2,900+0=-2,305$. As such, in the 0-1 month time band, the FI has a position which is liability sensitive of THB 2,305 million, etc.

Step 3 Calculating cumulative gap in each time band by adding the gap in each time band to gap in the previous time bands. For instance, the more than 3-6 months time band of the THB schedule has cumulative gap equal to the sum of the gap of more than 3-6 months time band and the gap of more than 1-3 months and 0-1 month time bands which is $1,215+860-2,305=$ THB -230 million. As such in the 0-6 months time band the FI has a

liability sensitive position of THB 230 million and a ratio of cumulative gap to total assets equal to 2.71 % ($-230/8,500=0.0271$).

-5/15-

Step 4 Measuring the effects on earnings from the interest rate change under the assumption that the interest rate increases by 100 basis points constantly through the yield curve (parallel shift in the yield curve) within the period of 1 year shall be derived by multiplying the gap in each time band with 100 bps and proportion of the affected time band to the year. For example, on the THB schedule, the effects on net interest earnings of the 0-1 month time band is equal to the product of the gap in such time band which is THB -2,305 million and the annual proportion of each affected time band in 1 year is $11.5/12 = 0.958$ and the interest increase of 100 bps; hence the interest earning in the 0-1 month time band reduces by THB 22.08 million ($-2,305*0.958*1\%$).

Step 5 Assessing the interest rate risk exposure which is equal to the sum of the effects on net interest income from the interest rate increase in 1 year period derived from Step 4 of all currencies. For example, if the interest rate increases by 100 bps causing the net interest income in 1 year to reduce by THB 11 million on the THB schedule and increase by THB 1.15 million in the USD schedule. Hence, the total effects on net interest income of the FI are reduction of THB 9.85 million.

Step 6 Comparing all interest rate risk level in the banking book derived in Step 5 with the projected income of financial institutions. For example, assuming financial institutions project income for the year 2005 at THB 200 million, the financial institutions shall earn less interest income by 4.93% of the project income if the interest rate should increase by 100 bps.

Interest rate risk measurement of effects on economic value by using duration weight under the BIS guidelines may be performed as follows:

Step 7 Multiplying the gap in each time band with the duration-based weight which reflects the sensitivity of the gap in each time band to the constant interest rate increase of 100 bps throughout the term structure interest in order to derive the effects on the economic value (EVE) of the gap in each time band. For example, on the THB schedule, the economic value of the position in the 0-1 month time band will change by the equivalent of the product of the gap THB -2,305 million and the duration-based weight of -0.04% which is THB 0.92 million.

Step 8 Summing the net results derived from netting the effects on the economic value of the position in each time band in order to obtain effects on economic value on the position in every time bands for each currency. For example, if the interest rate increases at a constant 100 bps through the term structure interest, it will cause the economic value of the total THB position of the financial institutions to reduce by THB 33.30 million.

Step 9 Summing the effects on the economic value from each currency schedule together to obtain the effects on all currencies. For example, the effects on the economic value for THB schedule reduces by THB 33.30 and for USD schedule increases by THB 5.93 million. Therefore, the total effects on the economic value of financial institutions will reduce by THB 27.37 million if the interest rate increases by 100 bps constantly throughout the term structure interest line.

Step 10 Comparing the total effects on the economic value of the financial institutions with their capital. For example, a financial institution has a capital of THB 1,200 million; the increase in interest rate by 100 bps will cause the economic value of the financial institution to reduce by 2.28% of its total capital.

Bank
Repricing Gap Schedule in THB for Period Ended 30 December 2004

Assets	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non-rate sensitive	Total
Cash														500.00	500.00
Interbank items	90.00														50.00
Investments		1,000.00						1,000.00						259.00	2,259.00
Debt instruments		1,000.00						1,000.00							2,000.00
Held to maturity		500.00						1,000.00							1,500.00
Available for sales		500.00													500.00
Equity instruments														259.00	259.00
Available for sales														19.00	19.00
General investments														240.00	240.00
Other investments															0.00
Loans	505.00	260.00	1,015.00	130.00	310.00	480.00	300.00							500.00	3,500.00
Commercial loans			1,000.00												1,000.00
Consumer loans															0.00
Housing loans	505.00	10.00	15.00	30.00	60.00	480.00									1,100.00
Personal loans					100.00										100.00
Credit card loans		250.00												150.00	400.00
Hire-purchase loans				100.00	150.00		300.00								550.00
Other credit advances															0.00
Non-performing loans														400.00	400.00
Accrued interest receivables														150.00	150.00
Allowance for doubtful accounts														(200.00)	(200.00)
Net properties foreclosed														300.00	300.00
Net land premises and equipment														1,000.00	1,000.00
Other assets														200.00	200.00
Total Rate Sensitive Assets	595.00	1,260.00	1,015.00	130.00	310.00	480.00	300.00	1,000.00	0.00	0.00	0.00	00.00	0.00		5,090.00

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non-rate sensitive	Total
Liabilities & Shareholders' Equity															
Deposits	2,000.00	500.00		1,500.00										500.00	4,500.00
Current														500.00	500.00
Savings	2,000.00	50.00													2,000.00
Fixed				1,500.00											2,000.00
Others															0.00
Interbank items	900.00														500.00
Borrowings						1,000.00									1,000.00
Other liabilities														49.00	49.00
Shareholders' equity														1,551.00	1,551.00
Total Rate Sensitive Liabilities	2,900.00	500.00	0.00	1,500.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5,900.00
Off-balance-sheet items															
FRA		(400.00)			400.00										0.00
CCRS				(200.00)											(200.00)
Forward			300.00												300.00
Future			(100.00)	100.00											0.00
IRS		500.00			(500.00)										0.00
Put option															
Call option															0.00
Other obligations															100.00
Total rate sensitive off-balance-sheet items	0.00	100.00	200.00	(100.00)	(100.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		100.00

Bank
Repricing Gap Schedule in USD for Period Ended 30 December 2004

Assets	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non- rate sensitive	Total
Cash															0.00
Interbank items															0.00
Investments											200.00				200.00
Debt instruments											200.00				200.00
Held to maturity											200.00				200.00
Available for sales															0.00
Equity instruments															0.00
Available for sales															0.00
General investments															0.00
Other investments															0.00
Loans			300.00												300.00
Commercial loans			300.00												300.00
Consumer loans															0.00
Housing loans															0.00
Personal loans															0.00
Credit card loans															0.00
Hire-purchase loans															0.00
Other credit advances															0.00
Non-performing loans															0.00
Accrued interest receivables															0.00
Allowance for doubtful accounts															0.00
Net properties foreclosed															0.00
Net land premises and equipment															0.00
Other assets															0.00
Total Rate Sensitive Assets (RSA)	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	00.00	0.00		500.00

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non- rate sensitive	Total
Liabilities & Shareholders' Equity															
Deposits		200.00				300.00									500.00
Current															0.00
Savings															0.00
Fixed		200.00				300.00									500.00
Others															0.00
Interbank items															0.00
Borrowings															0.00
Other liabilities															0.00
Shareholders' equity															
Total Rate Sensitive Liabilities (RSL)	0.00	200.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		500.00
Off-balance-sheet items															
FRA															
CCRS		200.00													200.00
Forward			(300.00)												(300.00)
Future															
IRS															0.00
Put option		200.00									(200.00)				0.00
Call option		(250.00)	250.00												0.00
Other obligations															0.00
Total rate sensitive off-balance-sheet items	0.00	150.00	(50.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(200.00)	0.00	0.00		(100.00)

Bank
Report of Interest Rate Risk Measurement in THB
For Period Ended 30 December 2004

Unit: million baht

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non-rate sensitive	Total
1. Total assets															8,500.00
2. Total rate sensitive assets (Total RSA)	595.00	1,260.00	1,015.00	130.00	310.00	480.00	300.00	1,000.00	0.00	0.00	0.00	0.00	0.00		5,090.00
3. Tot. rate sensitive liabilities (Tot. RSL)	2,900.00	500.00	0.00	1,500.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5,900.00
4. Gap (RSA-RSL)	(2,305.00)	760.00	1,015.00	(1,370.00)	310.00	(520.00)	300.00	1,000.00	0.00	0.00	0.00	0.00	0.00		810.00
5. Gap of nominal amount of rate-sensitive off-balance-sheet items	0.00	100.00	200.00	(100.00)	(100.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		200.00
6. Periodic Gap	(2,305.00)	860.00	1,215.00	(1,470.00)	210.00	(520.00)	300.00	1,000.00	0.00	0.00	0.00	0.00	0.00		
7. Cumulative Gap	(2,305.00)	(1,445.00)	(230.00)	(1,700.00)	(1,490.00)	(2,010.00)	(1,710.00)	(710.00)	(710.00)	(710.00)	(710.00)	(710.00)	(710.00)		
8. Ratio of gap to total assets (%)	(27.12%)	(17.00%)	(2.71%)	(20.00%)	(17.53%)	(23.65%)	(20.12%)	(8.35%)	(8.35%)	(8.35%)	(8.35%)	(8.35%)	(8.35%)		
9. Effects on net interest income case															
10. Ratio of each affected time band to 1 year	0.985	0.833	0.625	0.250											
11. Effects on net interest income in each time band if interest rate increases 100 bps	(22.08)	7.16	7.59	(3.68)											
12. Effects on net interest income in 1 year	(22.08)	(14.92)	(7.32)	(11.00)											
13. Effects on economic value case															
14. Duration-base weight	-0.04%	-0.16%	-0.36%	-0.71%	-1.38%	-2.25%	-3.07%	-3.85%	-5.08%	-6.63%	-8.92%	-11.21%	-13.01%		
14.1 Proxy of modified duration	-0.04	-0.16	-0.36	-0.71	-1.38	-2.25	-3.07	-3.85	-5.08	-6.63	-8.92	-11.21	-13.01		
14.2 Int. rate change assumption (basis points)	100	100	100	100	100	100	100	100	100	100	100	100	100		
15. Effects on economic value in each time band	0.92	(1.38)	(4.37)	10.44	(2.90)	11.70	(9.21)	(38.50)	0.00	0.00	0.00	0.00	0.00		
16. Cumulative effects on economic value	0.92	(0.45)	(4.38)	5.61	2.71	14.41	5.20	(33.30)	(33.30)	(33.30)	(33.30)	(33.30)	(33.30)		

Bank
Report of Interest Rate Risk Measurement in USD
For Period Ended 30 December 2004

Unit: USD

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non- rate sensi tive	Total
1. Total assets															8,500.00
2. Total rate sensitive assets (Total RSA)	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00	0.00	0.00		500.00
3. Tot. rate sensitive liabilities (Tot. RSL)	0.00	200.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00		0.00	0.00		500.00
4. Gap (RSA-RSL)	0.00	(200.00)	300.00	0.00	0.00	(300.00)	0.00	0.00	0.00	0.00	200.00	0.00	0.00		0.00
5. Gap of nominal amount of rate-sensitive off-balance-sheet items	0.00	150.00	(50.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	(200.00)	0.00	0.00		(100.00)
6. Periodic Gap	0.00	(50.00)	250.00	0.00	0.00	(300.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7. Cumulative Gap	0.00	(50.00)	200.00	200.00	200.00	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)		
8. Ratio of gap to total assets (%)	0.00	(0.59%)	2.35%	2.35%	2.35%	(1.18%)	(1.18%)	(1.18%)	(1.18%)	(1.18%)	(1.18%)	(1.18%)	(1.18%)		
9. Effects on net interest income case															
10. Ratio of each affected time band to 1 year	0.958	0.833	0.625	0.250											
11. Effects on net interest income in each time band if interest rate increases 100 bps	0.00	(0.42)	1.56	0.00											
12. Effects on net interest income in 1 year	0.00	(0.42)	1.15	1.15											
13. Effects on economic value case															
14. Duration-base weight	-0.04%	-0.16%	-0.36%	-0.71%	-1.38%	-2.25%	-3.07%	-3.85%	-5.08%	-6.63%	-8.92%	-11.21%	-13.01%		
14.1 Proxy of modified duration	-0.04	-0.16	-0.36	-0.71	-1.38	-2.25	-3.07	-3.85	-5.08	-6.63	-8.92	-11.21	-13.01		
14.2 Int. rate change assumption (basis points)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
15. Effects on economic value in each time band	0.00	0.08	(0.90)	0.00	0.00	6.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
16. Cumulative effects on economic value	0.00	0.08	(0.82)	(0.82)	(0.82)	5.93	5.93	5.93	5.93	5.93	5.93	5.93	5.93		

Bank Limited
Report of Measurement of Interest Rate Risk in All Currencies
For Period Ended on

Unit: million baht

Currency	Interest Rate Changes by 100 Basis Points	
	Effects on Net Interest Income	Effects on Economic Value
THB	(11.00)	(33.30)
US DOLLAR	1.15	5.93
JAPANESE YEN		
POUND STERLING		
EURO		
HONG KONG DOLLAR		
RINGGIT		
SINGAPORE DOLLAR		
OTHERS		
Total Effects from Interest Rate Changes	(9.85)	(27.37)
Net Interest Income during the Upcoming One Year	(4.93)	
Percentage of Current Capital Funds		(2.28)

Guideline on Information Adjustment to Commensurate with Actual Behavior

Financial institutions that intend to adjust information to be in accordance with the customers' behavior shall comply with the following guidelines:

1. Assumptions underlining the behavioral adjustment on financial institutions transaction shall be consistent, reasonable and in coherence with the interest rate circumstance

2. Financial institutions shall avoid using of assumptions which are not referable from the past experience or not feasible. Large financial institutions shall be more rely on analysis of the assumptions based on statistical principles. Information used in developing the assumptions are as follows:

2.1 Statistical analysis of portfolio and customer's behavior in responding to the interest rate change may vary by market situation or specific factors of the financial institutions such as characteristic of customer, type of financial institutions, etc.

2.2 Model which financial institutions have developed themselves or developed by the vendor such as model for premature repayment.

2.3 Information from business unit and service provider regarding business and pricing strategy, as the change on business or pricing strategy may affect the behavior of the cash flow which does not have maturity.

3. Financial institutions shall have spent sufficient time to monitor the behavior of each activity before making adjustment.

4. Financial institutions' board or other appointed committee and senior management shall review and evaluate major assumptions at least once a year to ensure that such assumptions are still reasonable as the change in market circumstance, competition and strategy may reduce the reasonableness of the assumptions.

5. Financial institutions shall maintain the written supporting documents and review results of such assumptions and shall acknowledge the development process of the assumptions to more than one person.

6. Financial institutions shall ensure that all significant positions and both on and off balance sheet cash flow have been aggregated into the evaluation system constantly and properly. Such data shall included coupon rate, cash flow of financial instruments, time band of interest rate adjustment and other important conditions specified on the contract. In case where the data has not been adjusted according to the contract, financial institutions shall set out an appropriate method, procedure and reason in writing for such adjustment so that it can be evaluated, especially, the adjustment to the expected cash flow for expected prepayment of customers or early redemption of security issuers.

7. Financial institutions' management and the user of data on interest rate risk assessment shall obtain good understanding on the underlined assumptions and use such data with caution, particularly, in case where the technique is complicate, even though the result is theoretically accurate, such data may not be benefit to the risk management if the assumptions or variables used in calculation are not reasonable and not in line with the situation that may incur. Therefore, financial institutions shall prepare document containing assumptions and any relevant variables which is clear and understandable. Such document shall be review regularly and financial institutions shall evaluate on appropriateness of the assumptions at least once a year.

An example of the data adjustment to correspond to the actual behavior is prescribed on **Attachment 6.1**

An Example of the Data Adjustment to Correspond to the Actual Behavior

Interest rate risk measurement is an assessment based on items which are on and off-balance-sheet and take into account the time remaining until contractual maturities or until the next repricing. Hence, to enhance the accuracy of the measurement, the outstanding balance of the position of each item to be entered in the time bands on the repricing gap or duration-based gap schedules should be as close to the actual as possible. Financial institutions then should adjust the information to correspond with the actual behavior of the crucial items which tend to deviate from the contractual maturity dates in particular non-maturity deposits or NMDs which are savings, current accounts and mortgage loans or other types of loans which the borrowers have the right to prepay the principal as well as non-performing loans.

In considering making behavioral adjustment to these items, financial institutions should evaluate the significance of the effects from these items which may depend on the specific attributes of each financial institutions or market circumstance at each period, such as market which the interest rate is rising, or the financial institutions stipulate that the customers to pay all penalty fees or some of the differences between contractual interest rate and market interest rate of such prepayment that they may not entice the customers to repay the loans. Hence, the said effects may not be significant.

An Example of Behavioral Adjustment of Non-Maturity Deposits (NMDs)

Factors that determine the Volume of NMDs

NMDs are the crucial sources of funds of financial institutions. The outstanding balance of NMDs may vary in different scenarios, such as:

- Funding needs and ability of financial institutions to find other sources of funds. In such time as high liquidity situation, financial institutions may adopt a pricing strategy which discourages deposits.
- Pricing strategies and customer base of financial institutions. For instance, financial institutions may waive fees for customers who maintain minimum deposit balance or tiered pricing strategies for each customer group.
- Market strategies and strategies regarding deposit products. Financial institutions may set targeted customer base by designing products specific to the group such as products for a non-rate sensitive group and products for a rate sensitive group.

- Number and types of competitors in the market. Strategies of the competitors including commercial banks, mutual funds and insurance companies offer customers with more alternatives which may affect the deposit volume of financial institutions.
- Levels and trends of market interest rates have tremendous effects on the movement of deposits. The higher the difference between market rate and deposit rate, the greater the movement.
- Product development and changes in supervisory regulations affects the deposit structure and customers' behavior, for instance, the repeal of the interest rate ceiling of the Bank of Thailand on 25 February 2004. Thus, in analyzing NMDs, financial institutions should account for new financial products in the market as well as supervisory regulations due to be effective which may affect the customers' behavior.

The aforementioned factors demonstrate that volume of NMDs may change at all time. Hence, in adjusting NMD information to correspond to the actual behavior of the customers, it should commence from analysis of characteristics of the targeted customers of the FI and of the various aforementioned factors to determine their effects on its customers' behavior and pricing. An example of techniques which financial institutions may employ for such analysis is as follows:

Method 1 Analysis of Non-core Deposits and Core Deposits

Step 1 Categorizing deposits into non-core and core deposits

In analyzing and setting assumptions related to NMDs, it is necessary to differentiate between 1) core balances which are long-term and stable and 2) non-core balances which are short-term and temporary deposits. This can be accomplished by analyzing the behavior of the deposits according to the types of occupations and other population structure of the customers based on historical statistical information. Examples of non-core deposits are (1) seasonal deposits such as deposits of customers in agriculture that increase or decrease seasonally or deposits of customers with fixed income or retirees whose balances are usually highest at month-ends, (2) deposits which behave similar to working capital of businesses, etc.

Core deposits which are deposited for longer term than the non-core deposits should be further separated into 2 groups, a rate sensitive group and a non-rate sensitive group by observation of the historical behavior, deposit account information or statistical analytical tools. Such may facilitate the development of assumptions related to NMDs. For examples, 1) analysis of the effects of market interest rate on deposits interest rate, which in general, financial institutions will adjust deposit interest rate subsequent to market rate change and at a less degree than the market rate change and 2) analysis of the effects of market interest rate on returns from other sources where financial institutions should offer lower interest rate than the alternatives (spread), the customers may move their deposits elsewhere. Hence, if financial institutions monitor the spread and administer the cost of opportunity loss of the customers, it shall be able to determine the effects on the volume of the NMDs.

Step 2 Setting assumptions and compiling assumptions for measuring interest rate risk

Non-core deposits are short-term and constantly fluctuate. Financial institutions may assume that such deposits will remain less than 6 months. Therefore, they should be put in the less than 6 months time bands on the repricing gap schedule or distributed in shorter time bands depending on the behavior of the customers of financial institutions since they may differ for each financial institution.

Core deposits which are sensitive to changes of market interest rates or of competitors when financial institutions do not adjust their NMD interest rates to commensurate with the market interest rates or of the competitors should be assigned to the shorter time bands on the repricing Gap schedule when anticipating outflow of deposits since they are ready to leave the Financial institutions should other returns are higher.

Core deposits which are not rate sensitive will remain with financial institutions even if it will not adjust the NMD interest rates according to the market rates or those of the competitors. Such is crucial to the interest rate risk measurement which financial institutions may employ several methods as follows:

- Assigning the entire amount as long-term deposits which is non-rate sensitive and will remain at financial institutions without due dates, assuming that financial institutions are on-going and that the deposit volume reduces due to demographics of the customers, for instance, deaths or relocations which will be uniformly replaced by deposits of new customers. Nonetheless, financial institutions employing this method must prepare sensitivity analysis to assess effects on earnings and liquidity if these deposits move from the financial institutions.
- Distributing the deposits in different time bands based on the demographic assumptions of the customers.
- Assigning the entire amount as long-term deposit which is not quite rate sensitive but setting maximum maturities such as not longer than 10 years in assigning time bands by reason of difficulty in predicting customers' behavior, competition, industry and supervisory regulations.

Financial institutions should consider assigning longer time bands on the repricing gap or duration-based gap schedules to these deposits during periods of increasing rates in relation to periods of decreasing interest rates. Moreover, those who set assumptions related to NMDs should consult the marketing managers who look after customers for the benefit of setting assumptions on residual terms of these deposits.

Method 2 Analysis Effects of Pricing Spread on Components of NMDs by Net Income Simulation

Normally net income simulation will already add the effects from cap and floor as well as effects from market rate change on deposit interest rate and outstanding balance of NMDs. For instance, the simulation is able to calculate correlation that when market rate increases by 200 bps, the deposit interest rate of financial institutions will increase by 75 bps; however, when the market rate drops by 200 bps, the deposit rate will reduce by 125 bps. This demonstrates the different speeds and sizes of changes in relation to the level and direction of the market rate changes. When the market interest rate increases, deposit rate may be adjusted at a slower rate and at lesser amount in comparison to when the market rate decreases. In measuring the effects of pricing spread on volume of deposits, simulation may indicate lesser changes in the deposit volume than when the rate is moving up.

Method 3 Replicating Portfolio Analysis

This analysis is based on viewing NMDs as a portfolio consisted of many types of financial instruments with different interest rates and maturities resulting from pricing and various strategies according to customer groups. In estimating the maturities of NMDs under this method, financial institutions must use statistical approaches to find which replicating portfolio consisted of various financial instruments with definite maturities has interest rate adjustment in the period and amount close to their NMDs. For instance, financial institutions may discover that the changes in rates of return of replicating portfolio consisted of 3-month treasury bills and 2- year treasury notes are close to the changes in the interest rates of NMDs. As such, financial institutions are able to use the duration of such replicating portfolio in estimating the maturities of the NMDs.

An Example of Adjustments of Non-performing Loans

Non-performing loans (NPL) is another important item of the financial institutions. Adjusting such data may be performed by units responsible for monitoring NPLs such as debt restructuring units or collection units to estimate the groups of loans under their responsibilities as regards to the feasibilities, ratios and recovery period which such NPLs will turn into performing loans in the future. Alternatively it may be based on experience or historical statistics in order to input the proportions of outstanding NPLs expected to recover in the future in according to general guidelines for inputting entries. For example, NPL of Company A has a probability that 50% of its outstanding balance will be paid at the interest rate of MLR-2% within the next 18 months. The entries will be 50% of the amount in the more than 1-2 years time band and another 50% in the non-rate sensitive column.

Guideline for Stress Testing

1. In designing of scenarios for stress testing, financial institutions should take into account of their strategies and positions as well as tailoring to types of risk relevant to each financial institution. Possible scenarios of stressful conditions are:

- 1.1 Abrupt changes in the various interest rates;
- 1.2 Changes in the relationships among key market rate (Basis Risk);
- 1.3 Changes in the slope and the shape of the yield curve (Yield Curve Risk);
- 1.4 Changes in the liquidity of key financial markets;
- 1.5 Changes in the volatility of interest rates;
- 1.6 Key assumptions or parameters break down such as assumptions for illiquid financial tools, financial tools of uncertain maturities and changes in business strategies, etc.

2. In conducting stress testing, financial institutions should specially consider financial tools or markets where concentrations exist since such positions may be more difficult to liquidate or hedge in stressful situations including “worst case scenario” which rarely occurs, in addition to more probable events. Management and the Board of Directors and/or other committees must periodically review both the procedure and the results of such stress tests and must ensure that appropriate contingency plans are in place.

3. Beyond conducting stress testing under the scenarios designed by the financial institutions which reflect the positions of each financial institution, the Bank of Thailand may require financial institutions to conduct stress testing under the scenario designed by the Bank of Thailand (supervisory scenario) in order to assess the impact of the interest rate risk on financial institution system under a single scenario which the Bank of Thailand shall duly advise financial institutions.

Risk Limits and Control

1. Risk limits of financial institutions should have initial elements as follows:

1.1 Having been approved by the boards of directors on aggregated interest rate risk limit or by other designated committees for detailed limits;

1.2 Commensurate with the scope, volume and complexity of the positions held by the financial institutions as well as commensurate with their capitals;

1.3 Consistent with the techniques used in measuring interest rate risk and should reflect the possible effects from the interest rate changes on earnings and/or economic value;

1.4 Ensuring that positions that may exceed the risk limit receive immediate management attention;

1.5 Able to control all interest rate risk exposures that are material to themselves;

1.6 Able to compare the potential gains against possible risk of undertaking the various activities or products;

1.7 Able to monitor the actual risk level from the various activities against predetermined risk tolerances;

1.8 Stipulating clear and thorough guidance for various exceptions that should specify which limits are never to be exceeded, which can tolerate temporary breach, for how long, for what reason; every step of the process must be documented such as stating the reason to exceed the risk limit, authorized person, etc.;

1.9 To be regularly reviewed such that they correspond with the sophistication of their risk measurement systems.

2. Financial institutions may consider establishing interest rate risk limits by setting an aggregate interest rate risk limit and by types of interest rate risk that are material or by individual portfolio or by types of activities, etc.

3. Risk limits for measuring effects of interest rate changes on earnings should be set by linking the volatility of both net income and net interest income in order to fully assess the interest rate risk of the financial institutions covering the contribution of the non-interest income as well. Such risk limits in general shall specify acceptable levels of earnings volatility under specified interest rate scenarios.

4. Risk limits for effects of interest rate changes on economic value should be appropriately established to commensurate with the scope, volume and complexity of the positions of the financial institutions. Financial institutions holding long-term positions or engaging in activities related to options or financial tools with embedded options in high proportions should consider setting risk limits addressed to economic value of the financial institutions with increased details.

5. Interest rate risk limits may be established from scenarios of exceptional movements in market interest rates which simulate stress situations that rarely occur but causing severe impact by taking into account of historical rate volatility and time required for management to address such exposures. Risk limit should be based on measures derived from the underlying statistical method such as techniques that yield earnings at risk or economic value at risk, etc. Moreover, specified scenarios should take account of the full range of possible sources of interest rate risk that may occur to the financial institutions. Hence, simple scenarios using parallel shifts in interest rates may be insufficient to comprehensively identify such risks.

Reporting of Risk and Confidence Testing of the Tools and Assumptions Adopted

Reporting of Risk

The reporting form submitted to financial institutions' board, other committee and multi-level of management may vary. However, at a minimum, the report shall consist of:

1. The executive summary and overall and individual significant interest rate risk
2. Reports presenting that Financial institutions have comply with the policy and relevant risk limits
3. Assumptions and principles such as manageable interest rate policy, NMD's behavior and information on prepaid debt, etc.
4. Results from stress testing, including testing of situation which major assumptions and variables are not as expected.
5. Summary of matters found from reviewing of policies, procedures regarding interest rate risk, sufficiency of interest rate risk assessment, as well as, any matters found by internal and external auditor and other consultants.

Confidence Testing of the Tools and Assumptions Adopted

The confidence testing of tools and assumptions may be performed as follows:

1. Reviewing the validity of the techniques and computation formulas used can be done by making comparison with the techniques accepted by the academics or generally used in the financial market; and/or
2. Comparing the results from the systems/techniques used with the actual events; and/or
3. Comparing the results of the systems/techniques with results from other systems/techniques.

Internal Controls and Reviews Related to Interest Rate Risk Management

Internal Controls Related to Interest Rate Risk Management

1. Financial institutions must have an adequate internal controls system for their interest rate risk management process. It must commensurate with the scope, volume and complexity of the activities with the objective of ensuring the efficiency of the interest rate risk management systems of the financial institutions.

2. Internal controls of interest rate risk management should be an integral part of the overall internal controls of the financial institutions and must be strictly enforced internally throughout the entire financial institutions.

3. Internal controls of interest rate risk management must be concise systems and suitable to the operations.

4. Internal controls of interest rate risk management must have clear control activities such as policies and operating procedures for interest rate risk management such as transaction approval procedures, monitoring of risk limits, reconciliations and reporting of information as well as other procedures established by the financial institutions to achieve interest rate risk management objectives.

5. Internal controls of interest rate risk management systems should include continual reviews by independent units.

6. FI's Board of Directors or other designated committees must receive information on reviews and internal controls that is clear, adequate, appropriate and timely.

Review of Internal Controls of Interest Rate Risk Management

1. Financial institutions shall establish reviews on interest rate risk management as an integral part of internal control with the objective of assessing the effectiveness of the risk management systems, personnel's compliance with the established policies and operating procedures.

2. Financial institutions shall arrange reviews and evaluations of the interest rate risk management at least once a year conducting by unit which is independent from the business units related to risk. For the large financial institutions or ones with complex activities, such unit should be independent from the risk management units as well. Moreover, resources and tools appropriate for reviews must be available, whereby in the initial stage, if the reviews of the interest rate risk management are not conducted by independent unit from the risk management unit, financial institutions shall assign individuals or groups with expertise to be responsible for the reviews and evaluations of the said system. There should be documents demonstrating the clear reviews to be made available to the Bank of Thailand examiners as well as that the management has closely monitored the reviews and evaluations.

3. Financial institutions must arrange for the results of the reviews as well as any recommendations to be reported to the senior management and Board of Directors, adequately, appropriately and timely. Moreover, reports, documents and evidences from the reviews from both internal and/or external units must be retained and to be available for the Bank of Thailand examiners.

4. The reviews and evaluations of the interest rate risk management systems should be able to identify factors that may affect the effectiveness of the interest rate risk management and the internal controls such as the changes in personnel or technology, risk limit structure and monitoring procedures for cases that breach risk limits.

5. In reviewing the interest rate risk management systems, financial institutions should consider the following issues depending on their scope, volume and complexity of the activities.

Qualitative

5.1 Supervision of the Board of Directors and senior management of the FI on the interest rate risk management process

5.2 Compliance with the policies of interest rate risk management

5.3 Responsibilities of the interest rate risk management units towards the development and administration of risk measuring, controlling and monitoring

5.4 Appropriateness of the interest rate risk measurement system relative to the scope, volume and complexity of the activities

5.5 Appropriateness and reliability of the underlying assumptions in measuring interest rate risk, having clear documentation, integrity of information used in the calculation and analysis

5.6 Adequate personnel with expertise in the interest rate risk management

Quantitative

5.7 Volume of various financial products and their sensitivity to interest rate changes

5.8 Effects on earnings and/or capital from changes of various levels and/or shape of yield curve

5.9 Significant effects on earnings and/or capital from various interest rate risk such as basis risk, option risk, etc.

Preparation of Information and Related Reports

For the Bank of Thailand's purpose on supervising and measuring financial institutions' interest rate risk in banking book, financial institutions shall prepare and submit information required by in the data management system (DMS). Such information, when the Bank of Thailand receives, will, then, be compiled into a report of interest rate risk assessment of all currencies as prescribed on Attachment 11.1 and a report of interest rate risk assessment of a single currency as prescribed on Attachment 11.2.

In this regard, financial institutions shall refer to the explanation for report preparation in preparing information and submit it to the Bank of Thailand.

**Report of Measurement of Interest Rate Risk in All Currencies
For Period Ended on**

Unit: THB

Currency*	Interest Rate Changes by Basis Points	
	Effects on Net Interest Income	Effects on Economic Value
THB US DOLLAR JAPANESE YEN POUND STERLING EURO HONG KONG DOLLAR RINGGIT SINGAPORE DOLLAR OTHERS		
Total Effects from Interest Rate Changes		
Percentage of Projected Net Interest Income during the Upcoming One Year		
Percentage of Current Capital		

*For foreign currencies, financial institutions shall prepare and report on separate report only for significant currency.

Explanation for Report Preparation
Report of Measurement of Interest Rate Risk in All Currencies

A. General

1. This is a summary report of assessment of interest rate risk from positions in the banking book of financial institutions for all currencies. It is to assess the effects on net interest income and economic value from the interest rate changes in all currencies, by which the change shall be an increase of 100 basis points or any change that the Bank of Thailand will further advise.

2. Financial institutions shall analyze interest rate risk using repricing gap method as prescribed by the Bank of Thailand on the **Attachment 5** and an example of the assessment of interest rate risk using repricing gap on the **Attachment 5.1** of Supervision Policy on Interest Rate Risk in Banking Book of financial institutions.

3. Any inquiry regarding this report should be directed to the Prudential Policy Department, Financial Institutions Policy Group, the Bank of Thailand at Tel.: 0-2283-6821, 0-2356-7688, 0-2283-5805 and 0-2283-5804.

B. Definitions

This is a summary report of effects from the changes of interest rates on positions in banking book for all currencies of the financial institutions. The financial institutions shall report the effects on net interest income and economic value from the interest rate increase of 100 basis points of every currency that financial institutions prepare the separate report of measurement of interest rate risk by currency.

Interest Rate Changes by 100 Basis Points means that it shall be assumed that the interest rate increases by 100 basis points across the return rates within 1 year time.

The Effects on Net Interest Income means the amount of net interest income of the positions in banking book that changes when the interest rate increases by 100 basis points.

The Effects on Economic Value means the economic value of the positions in banking book that changes when the interest rate increases by 100 basis points.

THB means the position in the banking book in Thai currency affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Thai Currency.

US DOLLAR means the position in the banking book in US dollar affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in US Dollar. The amount shall be reported in its equivalent in THB.

JAPANESE YEN means the position in the banking book in Japanese Yen affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Japanese Yen. The amount shall be reported in its equivalent in THB.

POUND STERLING means the position in the banking book in Pound Sterling affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Pound Sterling. The amount shall be reported in its equivalent in THB.

EURO means the position in the banking book in Euro affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Euro. The amount shall be reported in its equivalent in THB.

HONG KONG DOLLAR means the position in the banking book in Hong Kong Dollar affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Hong Kong Dollar. The amount shall be reported in its equivalent in THB.

RINGGIT means the position in the banking book in Ringgit affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Ringgit. The amount shall be reported in its equivalent in THB.

SINGAPORE DOLLAR means the position in the banking book in Singapore affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of the effects from the Report of Measurement of Interest Rate Risk in Singapore Dollar. The amount shall be reported in its equivalent in THB.

OTHERS means the aggregate position in the banking book in every other currencies that are not materially affected by the change of interest rate which the financial institution must report the effects on the net interest income and economic value using the calculated result of effects from the Report of Measurement of Interest Rate Risk in Other Currencies. The amount shall be reported in its equivalent in THB.

Total Effects from Interest Rate Changes means the sum of the effects on net interest income and economic value of the positions of all currencies from the increase of interest rate by 100 basis points.

Percentage of Projected Net Interest Income during the Upcoming One Year means proportion of the total net interest income affected by the increase of interest rate by 100 basis points on the projected net interest income during the upcoming 1 year of the financial institutions.

Percentage of Current Capital funds means proportion of the total economic value affected by the increase of interest rate by 100 basis points to the current capital funds of the financial institutions.

Bank
Report of Measurement of Interest Rate Risk in Currency
For Period Ended

Unit: Baht

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non-rate sensitive	Total
1. Total assets															
2. Total capital funds															
3. Cash															
4. Interbank items															
5. Net investments															
6. Loans															
7. Accrued interest															
8. Allowance for doubtful accounts															
9. Net properties foreclosed															
10. Net premises and equipment															
11. Other assets															
12. Total Rate Sensitive Assets (Total RSA)															
13. Deposits															
14. Interbank items															
15. Borrowings															
16. Other Liabilities															
17. Shareholders' Equity															
18. Total Rate Sensitive Liabilities (Total RSL)															

	0-1 Month	More than 1-3 Month	More than 3-6 Months	More than 6-12 Months	More than 1-2 Year	More than 2-3 Year	More than 3-4 Year	More than 4-5 Year	More than 5-7 Year	More than 7-10 Year	More than 10-15 Year	More than 15-20 Year	More than 20 Year	Non-rate sensitive	Total
19. Net position before off-balance-sheet items (RSA-RSL)															
20. Net position of nominal amounts of rate -sensitive off-balance sheet items															
20.1 Net position of rate sensitive non-option off balance- sheet items															
20.2 Net position of rate sensitive off-balance-sheet options															
21. Periodic gap															
22. Cumulative gap															
23. Ratio of periodic gap to total assets (%)															
24. Effects on net interest income															
25. Proportion of 1 year of each time band that will affect periodic gap	0.958	0.833	0.625	0.250											
26. Assumption of interest rate change (basis points)	100	100	100	100											
27. Effects on net interest income in each time band															
28. Accumulated effects on net interest income in 1 year period															
29. Effects on economic value															
30. Duration-based weight	-0.04%	-0.16%	-0.36%	-0.71%	-1.38%	-2.25%	-3.07%	-3.85%	-5.08%	-6.63%	-8.92%	-11.21%	-13.01%		
30.1 Proxy of modified duration	-0.04	-0.16	-0.36	-0.71	-1.38	-2.25	-3.07	-3.85	-5.08	-6.63	-8.92	-11.21	-13.01		
30.2 Assumption of interest rate change (basis points)	100	100	100	100	100	100	100	100	100	100	100	100	100		
31. Effects on economic value in each time band															
32. Cumulated effects on economic value															

Explanation for Report Preparation Report of Interest Rate Measurement in Each Currency

A. General

1. This is a report of measurement of interest rate risk from positions in the banking book in THB and any currency significance to financial institutions. It is to measure the effects on net interest income per each currency from the interest rate changes, by which the change shall be an increase of 100 basis points or any change that the Bank of Thailand will further advise.

2. Financial institutions shall analyze interest rate risk using repricing gap method as prescribed by the Bank of Thailand on the Attachment 5 and an example of the measurement of interest rate risk using repricing gap in Attachment 5.1 of the Supervision Policy of Interest Rate Risk in Banking Book of Financial Institutions.

3. Financial institutions must prepare reports separately per each currency for positions in THB and positions for material currencies and express the amount in its equivalent in THB.

4. For currencies that are not significant, financial institutions shall prepare a report of aggregate effects in the report for other currencies and express the amounts in their equivalent in THB.

5. For foreign currency position conversion, financial institutions shall convert into THB **using exchange rate stipulate in the Notification of Bank of Thailand Re: Accounting for financial Institution as reported at the month end.**

6. Any inquiry regarding this report should be directed to the Prudential Policy Department, Financial Institutions Policy Group, the Bank of Thailand at Tel.: 0-2283-6821, 0-2283-5805 and 0-2283-5804.

B. Definitions

This is a report of the measurement of interest rate risk on positions in banking book per each currency. Financial institutions shall prepare and report the effects on net interest income and economic value from the interest rate increase of 100 basis points. Moreover, financial institutions must enter items on and off-balance-sheet in various time bands as well as demonstrating the interest rate risk calculation.

Duration means residual term until maturity for items with fixed interest rates and residual term until next repricing date for floating rate items.

Non-rate Sensitive means items that are not sensitive to the interest rate changes.

Items to be reported are categorized as follows. Definitions are to be referred to those in the Balance Sheet (BLS) Data Element: Balance Sheet Item of the Data Management System (DMS).

1. Total assets shall mean total assets of financial institutions.
2. Total capital funds shall mean total capital funds of financial institutions.
3. Cash shall mean banknotes, coins and petty cash held by financial institutions and cash in collection to be recorded in the prescribed time band.
4. Interbank items shall mean deposits, certificates of deposit, loans, margin loans and net balance of debit/credit margin under repurchase agreements from the same counter party and same transaction including transferred loans not qualified under accounting standards to other domestic financial institutions in accordance with the Interest Act of the financial institutions and other financial institutions abroad; however it shall not include loans to suspended financial institutions or those whose licenses are revoked but shall include accrued interest receivables less income pending amortization, allowance for doubtful accounts and allowance for value adjustment from debt restructuring which shall be recorded in the prescribed time band.
5. Investments (net) means all types of investments that are debt or equity instruments in the possession of financial institutions or whose rights are transferred but with repurchasing agreements including investments in transferred loans that are qualified as purchased under accounting standards by expressing the net value after adding or subtracting any revaluation or allowance for diminution of securities in accordance with accounting standards which shall be recorded in the prescribed time band.
6. Loans shall mean all types of lending to domestic non- financial institutions borrowers under the Interest Act of the financial institutions and other financial institutions abroad including being a creditor due to having paid or ordered to pay for the benefits of former trading parties, payment under all types of obligations, hire-purchase or leasing, margin lending, net balance debit/credit margin under repurchase agreements from the same counter-party and transaction as well as loans to suspended Financial institutions or those whose licenses are revoked and less income pending amortization which shall be recorded in the prescribed time band.

Income pending amortization shall mean income from debtor of hire-purchase contract, lease contract or discounted bills not yet recognized as income.

7. Accrued interest shall mean accrued interests from loans that the financial institutions record as income but not yet received excluding accrued interest from interbank and money market transactions which shall be recorded in the prescribed time band.

8. Allowance for doubtful accounts shall mean the amount reserved for loans expected to be uncollectible under the regulations on asset classification and provision of the Bank of Thailand, and to include allowance for value adjustment from debt restructuring which shall be recorded in the prescribed time band.

Allowance for value adjustment from debt restructuring shall mean investment in the borrowers that exceeds the fair value of the debt in accordance with the accounting standards.

9. Properties foreclosed shall mean assets (excluding securities) which possessed by financial institutions due to repayment of debt or to the purchase of assets mortgaged with the FI and are disposed under orders of the courts or the receivers including foreclosed assets from financial lease or hire-purchase, assets intended for business or for employees which are not utilized in the said purpose plus assets in the property financing business. As such the stated value shall be net of provisions for diminution of such assets which shall be recorded in the prescribed time band.

10. Net land, building and equipment shall mean land, buildings and equipment that the FI maintains for operating business or as benefits for the staff or employees of the financial institutions. The stated value shall be net value after deduction of accumulated depreciation and allowance for diminution of such assets which shall be recorded in the prescribed time band.

11. Other assets shall means other assets not yet listed above. The stated value shall be the net value after deduction of accumulated depreciation and allowance for diminutive of the aforementioned items which shall be recorded in the prescribed time band.

12. Total rate-sensitive assets or RSA shall mean the aggregate amount of the rate sensitive assets in each time band.

13. Deposits shall mean money which the financial institution accepts as deposits or money received from the public that must be repaid upon demand or at the end of specified period which shall be recorded in the prescribed time band.

14. Interbank items shall mean deposits, borrowings, margin loans, net balance debit/credit margin under repurchase agreements from the same counter party and transaction to other domestic financial institutions under the Interest Act of the financial

institution and other financial institutions abroad which shall be recorded in the prescribed time band.

-11/11-

15. Borrowings shall mean all types of borrowings including debenture, debt instruments, margin loans, net balance debit/credit margin under repurchase agreements from the same counter party and transaction and sales of debt unqualified as sales under accounting standards, which shall be recorded in the prescribed time band.

16. Other liabilities shall mean other liabilities not specified in the aforementioned items, which shall be recorded in the prescribed time band.

17. Shareholders' equity for Thai financial institutions shall mean the difference between assets and liabilities of the financial institutions. In case of foreign bank branches, it shall mean head office's portion or of other branches that are the same entity, which shall be recorded in the prescribed time band.

18. Total rate-sensitive liabilities (RSL) shall mean total amount in the monetary term of liabilities which are sensitive to interest rate changes in each time band.

19. Net position before off-balance-sheet items shall mean the difference between assets and rate-sensitive liabilities (RSA – RSL) in each time band.

20. Net position of nominal amounts of rate-sensitive off-balance-sheet items shall mean the sum of net position of the nominal amounts of off-balance-sheet items that are sensitive to interest rate changes in each time band, which shall be recorded in the prescribed time band (sum of items 20.1 and 20.2).

20.1 Net position of rate-sensitive non-option off-balance-sheet items shall mean net position of the nominal amounts of non-option off-balance-sheet items that are sensitive to interest rate changes in each time band, which shall be recorded in the prescribed time band.

20.2 Net position of rate-sensitive off-balance-sheet options shall mean net position of the nominal amounts of off-balance-sheet items which are options and are sensitive to interest rate changes in each time band, which shall be recorded in the prescribed time band.

21. Periodic gap shall mean the sum of net position before adding the off-balance sheet items in each time band and the net position of nominal amounts of off-balance sheet items in each time band (sum of items 19 through 20).

22. Cumulative gap shall mean the sum of net positions in each time band and net positions of the previous time band.

23. Ratio of cumulative gap to total assets (%) shall mean the ratio of cumulative gap in each time band to total assets.

-11/12-

24. Effects on net interest income shall mean effects on net interest income of the FI if the interest rate changes.

25. Proportion of 1 year time remaining in effect shall mean the proportion per year of the residual term from midpoint of each time band to 1 year that the net position in each time band is still affected from the interest rate risk (Proportion of 1 year time remaining in effect). For example, for 0-1 month, the midpoint is 0.5 month; hence, the proportion per year of the time band which the net position in the time band of 0-1 month shall be affected when the interest rate changes, equals to $(12-0.5)/12$ which is equal to 0.958.

26. Assumption of interest rate change (basis points or bps) shall mean the changes of interest rate in each time band within 1 year e.g. setting interest rate to increase by 100 bps evenly throughout the yield curve (parallel shift in the yield curve) within 1 year period.

27. Effects on net interest income in each time band shall mean the amount of net interest income which may be affected by the changes of interest rates e.g. under the assumption that interest rate increases by 100 bps evenly throughout the yield curve (parallel shift in the yield curve) within 1 year period; to be calculated by multiplying 1) net position in each time band, 2) proportion of 1 year in each time band which the net position is affected, and 3) assumption of the interest rate changes (multiplication of items 21, 25 and 26).

28. Accumulated effects on net interest income in 1 year period shall mean the sum of effects on net interest income in each time band and the previous time bands within 1 year time.

29. Effects on economic value (economic value of equity or EVE) shall mean the economic value of the FI which may change if the interest rate changes.

30. Duration-based weight shall mean the risk weight of each time band which reflects the sensitivity of the position within each time band to the interest rate changes within each time band which the risk weight is equal to the multiplication of proxy of modified duration and the interest rate change e.g. increases by 100 basis points evenly throughout the yield curve (parallel shift in the yield curve). Proxy of modified duration is estimated from the midpoint of each time band under the 5% rate of return assumption according to the BIS guidelines.

31. Effects on economic value in each time band (EVE) shall mean economic value of the FI calculated from multiplying the net position in each time band with the

risk weight (duration-based weight) of each time band (multiplication of items 21 and 30).

-11/13-

32. Cumulated effects on economic value shall mean the sum of the effects on economic value in each time band and the effects in all previous time bands.

Disclaimer: The Association of International Banks, its directors, members and employees take no responsibility, accept no liability from any use or misuse of the information in these pages and do not attest to the correctness of the translation, if any. This translation contains privileged information. It is intended for the named recipients only. No portion of this translation may be transmitted by any means without prior written permission from the Association of International Banks. All rights reserved.