＊ Paper presented at “The International Conference on Early Warning System for Financial Crisis” held in Taipei on January 20~21,2000 by Academia Sinica & Chung-Hua Institution for Economic Research, Taiwan, R.O.C.
＊＊Chairman, Central Deposit Insurance Corporation, the Republic of China.

The Role of the Financial Early-warning System in Strengthening Financial Supervision and the Deposit Insurance Mechanism＊

Dr. Wei-Yi Lin＊＊

I. Foreword

Ever since financial liberalization became a popular world trend in the 1980s, many of the advanced industrialized nations have either removed or significantly lifted the ban of business restrictions and financial controls. These widespread relaxations have resulted in the global financial markets becoming increasingly integrated and efficient, and financial technology being constantly upgraded and new financial products continually introduced. On the other hand, competition in financial markets has become increasingly fierce and has had a huge impact on the various kinds of operating risk encountered by financial institutions as well as on financial supervision. Not only have financial institutions needed to enhance their operating conditions, but they have also needed to consolidate their risk management, in response to fierce competition resulting from increased liberalization. Furthermore, each country’s financial supervisory authorities have needed to place added emphasis on financial discipline and financial supervision while at the same time promoting financial liberalization. Only then have they been able to stabilize financial order, safeguard the rights and interests of depositors and assist economic development.

Because the financial system and the approach to financial supervision in the Republic of China is in many ways similar to that adopted in the United States and other advanced countries, it has also been difficult for those of us engaged in the work of financial supervision to avoid the occurrence of crises involving problem financial institutions. This has been a particular concern as it has had a huge impact on the rights and interests of depositors. Financial institutions that absorb deposits and then create credit by extending loans need to assume a high level of risk, while the general public also places a high degree of confidence in such institutions. For this reason there is no country that does not by direct or indirect means seek to safeguard its depositors. This means that each country will more closely supervise its financial institutions, impose controls over business operations and limit the

number of new branches that can be established. In recent times, the impact of financial liberalization and globalization has greatly increased the operational risk borne by financial institutions. As a result, credit risk, interest rate risk, foreign exchange rate risk, operations risk, liquidity risk, regulatory risk and reputation risk nowadays exert a far greater impact on financial institutions than they did in the past. Such drastic changes have caused various governments to once again recognize the importance of strengthening the work of financial supervision, and they have successively implemented deposit insurance systems whose objective is to directly protect the interests of small depositors.

Deposit insurance is a kind of policy-based insurance, in which the government and the business community work together in a spirit of mutual assistance to stabilize financial conditions and safeguard the rights and interests of depositors. The function of a deposit insurance system and its contribution towards stabilizing financial conditions may be summed up in one sentence as follows: “The operations of financial institutions depend on the confidence placed in them by depositors, while the confidence of depositors in turn depends on deposit insurance.” Deposit insurance does not only negatively wait for financial institutions to fail so that the depositors may be compensated, but rather seeks to positively encourage insured institutions to increase the soundness of their operations. This is in order to effectively control all kinds of operating risk, and thereby appropriately avoid beforehand the occurrence of financial turmoil and financial crises. Since the deposit insurance system is concerned with the common interests of all financial institutions as well as the rights and interests of depositors, those countries that implement deposit insurance have by and large adopted systems in which participation in deposit insurance has been made mandatory. This has in turn given deposit insurance institutions huge responsibilities and wide-ranging powers in relation to handling problem financial institutions, thereby causing the deposit insurance mechanism and the system of financial supervision to become very closely interconnected. It has also become a key feature of financial supervision, as well as an umbrella of protection for the many depositors in these financial institutions.

Ever since the U.S. in 1991 enacted the *Federal Deposit Insurance Corporation Improvement Act (FDICIA)*, the Federal Deposit Insurance Corporation (FDIC) has been able to deal with problem financial institutions using the least cost method. Under this Act, the FDIC can take prompt corrective actions and adopt related supervisory policies in relation to financial institutions that are unable to meet the capital adequacy requirements. It is also able to implement a **risk-related premium system** that is based on the deposit insurance funding risk being encountered by these financial institutions. In this way, the moral hazard associated with

financial institutions can be avoided and the safety and stability of their operations enhanced. For these reasons, the role of the FDIC has changed from that of handling crises to that of crisis prevention, and from that of dealing with failed financial institutions after the event, as was the case in the past, to that of making every effort to prevent such institutions from failing by seeking to control risk in the first place. From the deposit insurance mechanism established by the U.S. in response to financial liberalization we know that, with the trend towards financial liberalization and globalization, the deposit insurance system has in practice become the most important aspect of financial supervision in terms of the handling of financial crises. It has also become indispensable when it comes to protecting the rights and interests of depositors, maintaining credit order and promoting stable economic development.

In order to effectively control the operating risk of the whole body of financial institutions and prevent financial crises from occurring, in addition to conducting on-site examinations, it is all the more necessary to rely on the establishment of a comprehensive financial early-warning system. Because each country is limited in terms of the examination resources, the work of financial supervision needs to be conducted in the most efficient and scientific way possible, while also being geared towards the supervision of problem financial institutions. For this reason, establishing a financial early-warning system has become one of the most important aspects of a country's deposit insurance system in terms of preventing the occurrence of financial crises. The purpose behind having a financial early-warning system is to collect data relating to the financial conditions and operations of financial institutions in a timely manner. By means of statistical analysis, those financial institutions that require special attention and supervision and attention are selected, and their operational shortcomings and other problems are recognized at an early stage, so that appropriate corrective measures can be proposed and implemented as quickly as possible while keeping costs down to a minimum, and thereby avoiding the occurrence of financial crises.

Since its formal establishment in September **1985**, the **Central Deposit Insurance Corporation (CDIC)** of the R.O.C. has been actively involved in establishing an early-warning system for insured institutions, during which time it has also detected and measured the operational risk of insured institutions. In 1991, the Ministry of Finance vested the CDIC with the responsibility for establishing a **National Financial Institutions' Early-warning System (NFIEWS)** that subsequently replaced the earlier insured institutions' early-warning system. Over the period since the NFIEWS became operational in 1993, the results achieved clearly indicate the system's ability to provide the information

needed in financial supervision and to select those financial institutions with operational shortcomings or serious deficiencies.

In January **1999**, the deposit insurance system in the R.O.C. was changed from one in which participation was voluntary into one in which participation was made **compulsory**. Because of this, it became all the more necessary to strengthen the function of financial supervision in relation not just to handling but also guarding against problem financial institutions. At this time, it was only by strengthening the financial early-warning system and averting crises, thereby reinforcing the financial supervision and the deposit insurance mechanism, that financial order and stability could be ensured in the days ahead and the rights and interests of depositors safeguarded.

I would now like to discuss with you all the following five topics:

1. The Importance of Establishing a Financial Early-warning System.
2. The History and Current Operating Conditions of the Financial Early-warning System in the R.O.C.
3. The Contribution of the R.O.C.'s Financial Early-warning System to the Strengthening of Financial Supervision and the Deposit Insurance Mechanism.
4. The Feasibility of Establishing a Regional Financial Early-warning System through International Cooperation to Prevent the Occurrence of Financial Crises.
5. A Discussion on How Strengthening the Financial Early-warning System may Affect Financial Supervision and the Deposit Insurance Mechanism in the Future and the Relevant Problems.

II. The Importance of Establishing a Financial Early-warning System

1. The Relationship Among Early-warning System, Banking Supervision and Deposit Insurance Mechanism

In the past decade, rapid innovations in financial markets and globalization of funds flows have changed the face of banking system. Competition in financial markets has become increasingly fierce, and has had a huge impact on the various kinds of financial risks and operational risks of financial institutions. The increase of financial risks and operational risks causes the occurrence of problem financial institutions and induces financial crises. The supervisory authorities need to strengthen financial supervision in the following aspects:

(1) Placing added emphasis on financial discipline.

(2) Maintaining financial stability.

(3) Safeguarding the rights and interests of depositors.

(4) Handling the problem financial institutions promptly.

The bank supervision cycle (please refer to Table 1**)** starts from creating a legal and regulatory environment and drafting risk-based regulations, then licensing the establishment of banks and continuously implementing off-site monitoring and on-site examination. Based on the on-site examination report, supervision authority and management take necessary corrective actions and the legal and regulatory environment is improved accordingly. Looking at the bank supervision cycle, it is clear that the bank supervision process being seen as the output of one process becomes the input for the next, and vice versa. Therefore, bank supervisions can not prevent bank failures. Their primary role is to act as facilitators in the process of risk management and to evaluate and enhance the statutory framework in which risk management is undertaken.(Please refer to Table 2**,**Table 3**,**Table 4 the framework for financial sector development, financial risk management model and the consolidated supervision).

In order to achieve the above-mentioned purposes, many countries implement the deposit insurance system (please refer to Table 5: Best Practices for the Deposit Insurance System). Deposit insurance has close interconnection with banking supervision. It seeks to stabilize financial order, to safeguard the rights and interests of depositors, and to handle the problem financial institutions promptly by the use of financial early-warning system. It also implements risk-adjusted premium system by the use of financial early-warning system to prevent moral hazard and promote safe and sound operations of financial institutions. Financial early-warning system has played an extremely effective role in terms of promoting the functions of financial supervision and deposit insurance. It has also become an indispensable tool in assisting in the work of financial supervision and deposit insurance.

2. The Meaning of a Financial Early-warning System

A financial early-warning system is a system that performs the two important functions of financial supervision and diagnosing operating conditions of financial institutions. It is based on various operational management principles in the financial sector, on the selection of key variables, and on the establishment of a set of statistical functions, indicators or critical values. If, after applying the model, it is discovered that a financial institution’s regulatory compliance goes beyond what is permissible, a warning will be indicated. This information will be submitted to the supervisory authorities so that they may quickly adopt prompt corrective actions or management-by-exception measures , and the financial institution will be required to rectify violations of laws or

regulations and improve its operations within the prescribed time limit.

3. Practices of Early-warning System in Developed Countries

(1) The U.S. System

Due to the very large number of financial institutions in the U.S., the financial supervisory authorities are unable to bolster financial supervisory efficiency solely on the basis of performing on-site examinations. Instead, it has found it necessary to establish a financial early-warning system as well as enhance other functions in off-site monitoring system. The U.S. financial early-warning system may be described as follows:

a. In 1979, the U.S. Federal Financial Institutions Examination Council (FFIEC) set up bank appraisal system known as **CAMEL system**. According to this system, financial institutions were evaluated on **C**apital adequacy, **A**sset quality, **M**anagement, **E**arnings and **L**iquidity. Later, in view of the increasingly complex nature of the financial environment in the last five years, the supervisory policies and the procedures adopted by the various federal financial supervisory authorities were accordingly adjusted. Thus, this uniform financial institutions' appraisal system was modified, and an additional sixth criterion was added in 1997, namely, **S**ensitivity to market risks, thereby giving rise to a new acronym, **CAMELS**.

b. The U.S. Federal Reserve Bank in its bank surveillance procedures makes use of the early-warning system to test and select the names of problem financial institutions. Those banks that either already have financial problems or else are on the brink of experiencing such problems are then very carefully analyzed. Finally, appropriate response policies are formulated in relation to those financial institutions that are deemed to be problem financial institutions.

c. In 1985, the U.S. Office of the Comptroller of the Currency (OCC) adopted a risk evaluation approach in relation to the supervision of community banks. This involved the use of a Community Bank Scoring System (CBSS) that was based on the early-warning system in relation to the many community banks in the U.S. From the results obtained, it was able to determine whether or not the operating conditions of a community financial institution were stable. In addition, there was also the National Bank Surveillance Video Display System (NBSVDS), which kept data on the financial, economic and regional aspects of financial institutions. Such data was helpful to financial analysts in evaluating the risk that might

arise as a result of a financial institution being affected by factors other than those related to the manufacturing industry or the economy as a whole. In addition, the examination personnel would, in relation to those relatively high-risk banks selected by CBSS, obtain more detailed information based on the NBSVDS that could be supplied to the analysts to conduct more in-depth analyses.

d. The U.S. Federal Deposit Insurance Corporation (FDIC) has adopted Extended Monitoring Systems in order to strengthen the function of off-site monitoring. The main reason for this is so that, during the time period that elapses between the two on-site examinations that are conducted, off-site monitoring can continue. The data that is reported on a quarterly basis can be used to watch for changes in financial conditions and unusual growth situations. Within this overall system, there are two sub-systems. The first is the CAEL sub-system, in which off-site monitoring is conducted in relation to five aspects of financial institutions, namely, Capital, Asset quality, Earning, Liquidity and market risk sensitivity. The second sub-system is the GMS sub-system, that is, the Growth Monitoring System, which is mainly concerned with monitoring financial institutions that are exhibiting abnormal growth. It involves selecting those financial institutions whose deposits and loans are experiencing unusual growth on a quarterly basis. Within a period of forty-five days, additional analysis will be performed to determine whether to conduct an on-site examination.

In 1998, the FDIC established a Statistical Camels Offsite Rating (SCOR) system, whose purpose is to more effectively and efficiently monitor the risk faced by the banking and thrift system. It by and large makes use of statistical probability regression models to forecast an overall rating for a financial institution, and uses the results of the most recent rating evaluation to compare actual results with its forecasts to examine the link between the two. In addition, it makes use of data for the most recent year reported to compare any changes that have taken place during that period. In this way, it is able to estimate the rating result that the institution is likely to receive the next time an on-site examination takes place.Another system that is adopted to examine large banks and savings organizations in the U.S. is the Large Insured Depository Institution (LIDI) system. This system provides additional information regarding assets on a quarterly basis as well as trends in relation to insured institutions with total assets in excess of US$1 billion. It also conducts further analysis in respect of those financial institutions

with total assets exceeding US$3 billion. This system has achieved a certain measure of success in terms of triggering the early warning system and preventing operations from deteriorating, and some 75 percent of the total assets of financial institutions have been covered by it.

By the use of financial early-warning system, the Federal Deposit Insurance Corporation has formally implemented a risk-related premium system to avoid the moral hazard associated with insured financial institutions since 1994. The risk-related premium system is briefly introduced as follows:

e.FDIC's Risk-Related Premium System (RRPS):

Under RRPS, a bank or thrift will pay within a range of 23 cents to 31 cents per $100 of domestic deposits, depending on the institution's risk classification. This risk classification is based on an institution's capital group and supervisory subgroup assignments. The **attachment 1** explains the procedures to be used in determining these assignments.

Each institution will be assigned to one of three groups (well capitalized, adequately capitalized or undercapitalized) based on its capital ratios. The FDIC also assign each institution to one of three supervisory subgroups based on an evaluation of risk. These three subgroups are: Group A (for financially sound institutions with only a few minor weaknesses) , Group B (those with weaknesses which, if uncorrected, could cause substantial deterioration of the institution and increased risk to the insurance fund) and Group C (those with a substantial probability of loss to the fund absent effective corrective action).

	Supervisory Subgroup		
Capital Group	A	B	C
1. Well Capitalized	23	26	29
2. Adequately Capitalized	26	29	30
3. Undercapitalized	29	30	31

(2) The Canadian System

The federal financial supervisory authorities in Canada comprise the Ministry of Finance, the Bank of Canada, the Office of the

Superintendent of Financial Institutions (OSFI) and the Canada Deposit Insurance Corporation. Moreover, it is the OSFI that is responsible for the work of financial examination. In order to reduce the operating risk of financial institutions and prevent bankruptcies from occurring, a major reform of financial supervision took place in Canada in 1994. Greater responsibility for the success or failure of the business was placed on each financial institution's board of directors, and an additional degree of responsibility was assigned to the institution's external auditors. According to the newly enacted *Office of the Superintendent of Financial Institutions' Act*, the OSFI's duties were to examine the safety and soundness of financial institutions and supervise and control risk policies. The methods adopted to do this included off-site monitoring and on-site examinations in order to determine whether or not the operations of the financial institutions being supervised were stable and healthy and whether or not they met the requirements of the financial supervisory authorities. Moreover, it was the off-site monitoring that was deemed to be the most important activity. The off-site monitoring conducted by the OSFI is in many ways very similar to the financial early-warning system adopted in the U.S., and is also termed the CAMEL rating system. It by and large makes use of the financial data of each financial institution reported in the media to perform financial analyses and thereby furnish the supervisory authorities with needed statistical information. (This data, for example, would include statistics on past-due loans, a comparison of the performance of different banks, as well as ratio analysis.) Examination personnel may, by means of corporate intranets, inquire into the operating conditions of each financial institution being examined, to serve as a reference for the work of supervision. In addition, the system is also able to generate a watch-list in respect of problem financial institutions, so that the necessary supervisory measures can be rapidly adopted.

4. The Importance of Establishing a Financial Early-warning System

The financial early-warning system, generally speaking, has the following functions:

(1)It is able to provide the financial supervisory authorities with information as to the priority order, scope and frequency of on-site examination, in order to effectively match the available personnel.

(2)Through its functioning, the early-warning system is to more objectively and quickly discover problem financial institutions, and urge the financial supervisory authorities to strengthen their

supervision and management of such institutions as a precautionary measure.

(3)It is able early on to predict the likely deteriorating trend of problem financial institutions.

(4)It is able to gather on a regular basis the financial information that is reported by the financial institutions, and to tidy up, compile and analyze such data to obtain an accurate picture of these financial institutions' operating conditions.

(5)The rating results derived from this early-warning system can serve as important reference material for handling problem financial institutions and as a basis for improving the operating conditions of financial institutions.

(6)If the deposit insurance system incorporates different risk premiums based on different levels of risk, the financial early-warning system can provide different risk evaluation rankings, which will serve as a basis for determining the risk-based deposit insurance premiums.

Ⅲ. The History and Current Operating Conditions of theFinancial Early-warning System in the R.O.C.

1. Historical Development

The development process relating to the financial early-warning system established in the R.O.C. may be categorized by means of four stages, as follows:

(1)Stage One (1985-1990)

In June 1988, two kinds of computer application systems for insured institutions, namely, the ***Examination Data Rating System*** and the ***Call Report Percentile Ranking System*** were completed and made operational.

(2)Stage Two (1990-1991)

In March 1990, the Ministry of Finance invited representatives of the Central Bank of China, the CDIC and the Taiwan Cooperative Bank to discuss the establishment of a national financial early-warning system. In August 1991, the Ministry of Finance and the CDIC together invited representatives of the Central Bank of China and the R.O.C. Bankers' Association and other related agencies to organize a Conference on National Financial Early-warning System.

(3)Stage Three (1992-1994)

In July 1993, the National Financial Early-warning Examination

Data Rating System formally commenced operations. In October of the same year, the National Financial Early-warning Call Report Percentile Ranking System also formally began to operate.

(4)Stage Four (1994-present)

In June 1997, the CDIC began to compile the quarterly reported data for each financial institution for the period from 1990 to 1998 in order to revise the early-warning system's base period. Furthermore, in June 1999, its *Newly-revised National Financial Early-warning System* and the *Overall Evaluation Report of the Examination Data Rating System Based on Qualitative Indicators in Management Capability* began to operate.

2. The Current Status of the R.O.C.'s Financial Early-warning System

The financial early-warning system in the R.O.C. owes its origins to the research conducted by the CDIC shortly after its establishment in 1985. In the early stages of its development, in order to determine the type of model to be used, the CDIC collected a large quantity of data based on a wide range of literature related to the financial early-warning systems operating in other countries. It also dispatched personnel to the five federal financial supervisory agencies in the U.S. to conduct further research into how these systems operate. Later developments were by and large based on the Ministry of Finance's overall administrative plan drawn up in 1987 as well as on resolutions passed by the Financial Examination Committee. The financial early-warning system that was implemented by the CDIC in 1988 encompassed the operational data of the insured institutions. It was only in 1993 that the CDIC was commissioned by the Ministry of Finance to begin operating a **National Financial Institution's Early-warning System(NFIEWS)**. At this point all financial institutions in Taiwan came within the scope of the early-warning system's operations. This system consisted of two sub-systems. The first was the **Examination Data Rating System**, and the second was the **Call Report Percentile Ranking System**. The former makes use of data reported in on-site examinations, evaluates the financial conditions and the operational effectiveness of the financial institutions examined at that time, and objectively ranks them according to the grades assigned to them. The latter makes use of the financial data reported by financial institutions on a quarterly basis, and compares them with the quarterly data of other financial institutions, taking special note of any changes in operational effectiveness. These findings serve as reference material regarding operational trends. For those financial institutions which are found to have operational shortcomings, an

early-warning report is drawn up. In other words, if the early-warning system were to be used in relation to health checks for human beings, the Examination Data Rating System would be just like a once-per-year overall examination report for a financial institution. The Call Report Percentile Ranking System, on the other hand, would be just like a regular follow-up report regarding the body's vital organs. The two systems complement each other, and neither one can be truly effective without the other.

Looking at the actual operations of the financial early-warning system over many years, the system's success in terms of selecting those financial institutions whose performance is sub-standard or whose operations have been deteriorating have been plain for all to see. The system has been particularly effective in terms of the reports and information of a financial supervisory nature that it has provided. However, the financial environment has been rapidly changing and, in view of the financial markets becoming increasingly liberalized and complicated, the operating risk faced by financial institutions has increased. The early-warning system's evaluation indicators and allocation criteria have thus, in view of the changing financial environment, been in need of revision. Therefore, in order for the results of the evaluation to be truly able to reflect the operating conditions of financial institutions and effectively enhance the early-warning function, the CDIC in 1998 modified each relevant item within the National Financial Institutions' Early-warning System. The result was that these risk indicators were used in the determination of the risk-based assessment rate. The following sections look at several different issues concerning these rating indicators within the revised system. These issues include the source of these rating indicators, the design of the weightings used for them, the way in which the indicators are allocated, the determination of the evaluation rankings, the early-warning method used, and the way in which the early-warning data is handled. The Examination Data Rating System and the Call Report Percentile Ranking System which make up the R.O.C.'s National Financial Institutions' Early-warning System are now explained in some detail.

(1) Examination Data Rating System

The Examination Data Rating System is mainly referred to the Unified Financial Institutions' Rating System proposed by the Federal Financial Institutions Examinations Council of the U.S., that is, the so-called **CAMELS** rating system. It makes use of seven financial categories used in the work of financial supervision, namely **C**apital adequacy, **A**sset quality, **M**anagement, **E**arnings, **L**iquidity, **S**ensitivity of market risk and others. In addition,

according to the special characteristics of each group of financial institutions, the system makes use of their examination reports over a period of several years in order to select each kind of evaluation indicator. Each evaluation indicator is given a different weighting and allocation, and on the basis of these different criteria, each financial institution is given an overall score. Furthermore, according to the resulting score, each financial institution is classified on the basis of one of five different levels, **A**, **B**, **C**, **D** and **E**, in order to determine the quality of the financial institution's operations. In addition, any exceptional items are noted, and those financial institutions to which special attention must be paid, as well as those institutions given a relatively low rating, or those whose rating is deteriorating are also taken into account. Other individual indicators and abnormal supervisory items are also considered in order to strengthen the work of supervision.

A. Sources of Rating Indicators

The sources of the financial and operational indicators used within the CDIC's National Financial Institutions' Early-warning System include the following:

a. The financial ratios adopted by the U.S. financial supervisory agencies.
b. Indicators that scholars, based on their research, have discovered are able to distinguish problem financial institutions.
c. The financial and business indicators used by the R.O.C.'s financial supervisory agencies in their work of examining financial institutions.
d. The indicators that highly experienced local and foreign bank examination personnel recommend should be used in relation to the R.O.C.'s financial early-warning system.

The process of selecting these indicators involves first of all choosing manually those indicators that are appropriate for the R.O.C.'s financial environment and which can be obtained from the data included in the examination reports. Then, by performing t-tests and other related tests, those indicators that are highly significant and which have low degrees of correlation can then be distinguished. That is, the indicators selected are those that can distinguish "problem financial institutions" from "normal financial institutions," as well as those evaluation indicators that have low degrees of correlation with each other. Then, these highly-experienced examination personnel will use their judgment to make a final selection of indicators. According

to the above-mentioned results, a total of 17 indicators have been selected in relation to domestic banks, 12 in relation to the local branches of foreign banks, 19 in relation to credit cooperative associations and 20 in relation to the credit departments of farmers' and fishermen's associations, giving an overall total of 26 different indicators.

B. The Weights Assigned to the Indicators and the Way in which they are Employed

After selecting the evaluation indicators, and then selecting the sample data and using multivariate statistical methods and factor analysis, each evaluation indicator is tested to determine its importance, and then a weight is assigned to each indicator. As to the assigning of weights to financial indicators, this is in principle based on the concept of normal distribution. The small number of observed values where there is abnormal data will then be eliminated, and then each indicator will be categorized into one of five levels based on sample means and standard deviations.Then, the non-financial indicators, such as management ability, will be quantitatively estimated using Likert scales and also categorized according to five grades, from which are derived the grades "excellent," "good," "fair," "poor," and "very poor."

C. Definition of the Rating Results

Individual institution's rating result is given by adding up the score for each evaluation indicator.What each institution's rating and its overall score represents is as follows:

Grade A: An overall score of 75 or more: The institution has sound operations.

Grade B: 65 - 74.9: The institution's operations are still sound.

Grade C: 55 – 64.9: The institution's operations are a little weak, and there are operational shortcomings.

Grade D: 45 – 54.9: There are operational deficiencies and improvements that need to be made.

Grade E: 44.9 or less: There are serious deficiencies, and prompt corrections need to be made.

D. How the Early-warning is Given and the Early-warning Data Handled

Apart from determining how the financial institutions' overall scores are ranked so as to evaluate the quality of their operations, the rating system will, based on any of the following events occurring, result in a warning, in relation to which further supervision is required. These

12 events include the following among others: the rating system gives an overall D or E grade; the rating results for the current period are two grades lower than the corresponding results in the previous period; fraud at the managerial level has taken place; a serious power struggle has taken place giving rise to an operational crisis, and so on. As to the major warnings given by the financial early-warning system, the ways in which they are dealt with are as follows:

a. The Ministry of Finance will dispatch specialist personnel to conduct specific scope examinations, or else examination personnel from the Bank Examination Department of the Central Bank of China and the CDIC will together with the Ministry of Finance share the work of examination in the following ways:
   (a) By increasing the scope of the annual examinations.
   (b) By performing the annual examination at an earlier date.
   (c) By performing specific-scope examinations when deemed necessary.
b. The Ministry of Finance will resort to the following measures based on actual conditions:
   (a)Making improvements within a prescribed period.
   (b)Dispatching personnel to offer guidance.
   (c)Enforcing a punishment (such as a fine, punishing managers, or replacing responsible officials).
   (d)Dispatching officials for supervision or conservatorship purposes.

(2)The Call Report Percentile Ranking System

The Call Report Percentile Ranking System makes use of an analytical model that is based on the percentile ranking concept. The financial institutions' quarterly data that has already been reported is entered into this model. The value in percentile ranking terms of each evaluation indicator is calculated within the context of a peer group in order to obtain an overall percentile ranking, and then a list of those financial institutions to which special attention needs to be paid is drawn up. The selection of the indicators used in the model and the Examination Data Rating System are one and the same thing. The calculation of the scores assigned to each indicator is based on tests to standardize the values of the indicators. The weights assigned to the indicators are obtained using factor analysis and are based on the relative importance of the indicators used in the evaluation. The overall score is then based on the standardized indicator being multiplied by a weight. The percentile ranking is calculated by deducting the standard left tail value of the score from one, and then multiplied by 100. On the basis of this design principle, all of the indicators or percentile rankings will fall in between the 1~99 percentile. The early-warning method used by the system will

thus not merely observe changes in the percentile rankings of each financial institution from consecutive quarters, in order to clearly understand changes in operating trends. It will also, in the case where the overall score's percentile ranking falls outside of a certain range, or where within a period of one year the ranking worsens or falls behind a certain level, or the percentile ranking of individual category falls behind the limit, give rise to a warning, and hence further supervision and control will be needed.By the use of financial early-warning system, the Central Deposit Insurance Corporation also implemented a risk-based premium system to avoid the moral hazard associated with insured financial institutions and promote the safe and sound operations of insured financial institutions. The risk-based premium system is briefly introduced as follows:

⑶ CDIC's Risk-Based Premium System (RBPS):

In 1999, the RBPS in the Republic of China was implemented based on the *Risk-Based Premium Scheme* drafted by the CDIC. This scheme regards the "Capital Adequacy Ratio" of each insured financial institution as well as "Examination Data Rating Composite Score" based on the Examination Data Rating System under the National Financial Institution's Early-warning System(NFIEWS) as indicators of risk. Each of the indicator is subdivided into three levels, with the result that each insured institution may be assigned to any one of nine different risk groups. These nine groups are then assessed on the basis of three different premium rates, namely 5.0, 5.5, 6.0 cents per $100 of insured deposits. The **attachment 2** explains the procedures to be used in determining these assignments.

	Examination Data Rating Score		
Capital Adequacy	A	B	C
1.Well Capitalized	5.0	5.0	5.5
2. Adequately Capitalized	5.0	5.5	6.0
3. Undercapitalized	5.5	6.0	6.0

＊ Rates are in cents per $100 of insured deposits.

Ⅳ. The Contribution of the R.O.C.'s Financial Early-warning System to the Strengthening of Financial Supervision and the Deposit Insurance Mechanism

Since it was established and put into operation in June 1988, the R.O.C.'s financial early-warning system has played an extremely effective role in terms of promoting the function of financial supervision and deposit insurance mechanism in this country. It has also become an indispensable tool in assisting in the work of financial supervision and deposit insurance. The main contributions of the early-warning system are as follows:

1. Detecting Problems with Financial Institutions Early On and Maintaining a Firm Control over Risk, to Prevent such Problems from Becoming More Serious .

The Call Report Percentile Ranking System, which forms part of the current financial early-warning system, makes use of data pertaining to financial institutions that is reported on a regular basis and inputted into the system. After the calculations and evaluation are performed, a list of those institutions requiring the so-called follow-up is generated. This list includes those financial institutions whose operations are deemed at the present time to exhibit deficiencies. In addition, certain of these financial institutions may, based on evaluation criteria including capital adequacy, asset quality, earnings, liquidity and other relevant factors, exhibit abnormal behavior, and important information with regard to their assets or operations will be generated. Such information is forwarded to relevant supervisory personnel who conduct further analysis, in order to discover where the hidden problems lie. In this way, appropriate supervisory measures may be taken to remedy these problems before they become much more serious. During the past decade, the R.O.C.'s financial early-warning system has already been able to successfully detect problem financial institutions early on, and, as a result of the CDIC's providing guidance to a number of these insured institutions, it has been able to effectively resolve potential financial crises.

After the financial crisis, in order to enlarge the function of financial early-warning system , in July 1999, the CDIC established an "on-line Internet Data Transmission System" to facilitate the transference of data between financial institutions and itself. Many important kinds of financial and business information regarding the operations of these financial institutions are transmitted to the CDIC every day. Then, for those business items where there are abnormal changes, once the system has performed the necessary calculations, warnings are immediately given, in order that necessary response policies can be implemented in a timely manner as a precautionary measure, thereby more fully reflecting the system's ability to detect problem financial institutions early on.

2. Effectively Utilizing Financial Supervisory Resources and Strengthening the Handling of Problem Financial Institutions to Enhance the Effectiveness of Financial Supervision and Deposit Insurance

Ever since the early 1990s as the R.O.C. continued to further promote financial liberalization, the number of deposit-taking financial institutions increased from 451 in December 1990 (or 3,429 units if all branches are included) to 463 (or 5,351 units including branches) in June 1999. Owing to the increase in the number of branches, there has been a corresponding decline in financial supervisory resources (as the number of bank examination personnel has not increased proportionately). It is only by enabling the work of financial supervision to be conducted in the most effective way, with the presently limited resources being used in the most efficient way and by concentrating these resources on those financial institutions with higher potential risk, that financial supervision can achieve the best results. In view of the objective of the financial early-warning system being to detect those financial institutions with relatively high risk, and to sound a warning to those financial institutions with operational shortcomings, when the R.O.C.'s financial supervisory authorities engage in the work of supervision, they refer to the warnings and other information generated by the financial early-warning system. They then concentrate their supervisory resources on those financial institutions where the degree of risk is relatively high, without there being any need to waste too many resources on those financial institutions that are operating normally or that have relatively low risk. In this way, the financial supervisory authorities can effectively deal with problem financial institutions and cause financial supervision to have its full effect.

Currently, the R.O.C. conducts examinations on those financial institutions' head offices with normal operations that are given an A or B evaluation about once every two years. For those institutions that are awarded a C grade, the examination is conducted about once every 18 months. For those institutions given a D grade, the examination takes place about once every year to 15 months, while for those awarded an E grade, the examination takes place every year. From this we can see that the frequency of examination is mainly based on the grade assigned to each financial institution by the financial early-warning system.

3. Implementing Various Different Supervisory Measures Based on Each Financial Institution's Level of Risk so that Twice as Much can be Accomplished with Half the Effort

Currently, when the R.O.C.'s financial supervisory authorities implement financial supervisory measures, they do so on the basis of the different degrees of risk among financial institutions, with the result that they can accomplish twice as much with only half the effort. Since the examination rating results generated by the financial early-warning system are based on the differences in the overall operational performance of the financial institutions, thus giving rise to different evaluation rankings, the evaluation results and other related information obtained are sufficient to match the above-mentioned needs and to serve as a reference for the supervisory authorities. They may also be used to determine which financial supervisory policies are to be adopted. For example, depending on the seriousness of the problems being encountered by the financial institutions, the financial supervisory authority may request that the defects be remedied within a set time period. To this end, it may conduct an intensive specific-scope examination or a general-scope examination, provide guidance, impose a fine, or else replace top management personnel. In these ways, the supervisory measures can have their full effect.

4. Maintaining a Firm Grasp of the Operating Trends of Insured Institutions at All Times to Understand where the Operational Risk is Located so as to Immediately Implement Effective Response Policies

In January 1999, the system of deposit insurance in the R.O.C. was changed into one in which participation in deposit insurance was made compulsory. Apart from one foreign bank branch located in Taipei which did not need to be insured because its deposits were already safeguarded by the deposit insurance system in the parent country, all other deposit-taking institutions were safeguarded by the deposit insurance system in the R.O.C. In order to practicably and effectively control and reduce deposit insurance risk, it was necessary for the CDIC to effectively maintain a firm grasp of the operational developments of each insured institution. Furthermore, when faced with problem financial institutions with relatively high risk, it was recommended that the competent authority adopt supervisory policies that would rapidly take effect in order to resolve the problems. In order to accomplish the above-mentioned objectives, the CDIC usually relies on the different pieces of information provided by the financial early-warning system. It then analyzes this data to understand each insured institution's risk and operational shortcomings, and then prepares effective response measures which it forwards to the competent authority for implementation. It is thus able to reduce deposit insurance risk and thereby achieve the

objectives of safeguarding the rights and interests of depositors in financial institutions, maintaining financial order and promoting the sound development of financial business.

5. Determining the Risk-based Assessment Rate Criteria for Each Financial Institution, as an Appropriate and Fair Reflection of Each Institution's Operational Performance

Since January 1999, the system of deposit insurance in which participation was made compulsory, in order to reflect the different degrees of operational risk among insured institutions, the R.O.C. for the first time from July 1, 1999 onwards implemented a deposit insurance Risk-Based Premium System(RBPS, as above-mentioned) by making use of different deposit insurance risk assessment rates to reflect different levels of operational risk among insured institutions. This system was adopted in order to reflect each individual insured institution's operational risk, as well as the loss that might be borne by the financial system as a whole. Such a system operates in the following way. Those insured institutions with relatively good operations and relatively low risk are assessed on the basis of a rather low assessment rate. However, those insured institutions whose operations are relatively poor and whose risk is high are charged a rather high premium by comparison. For this reason, the risk-based premium system can encourage insured institutions to improve their operations in order to obtain a relatively more favorable rating. However, if one is to fairly and effectively determine each insured institution's level of risk, and enable it to accept the assessment rate adopted, a key issue concerns whether this differential risk-based premium system can be successfully implemented.

In order to be able to effectively evaluate the operating performance of insured institutions, it is necessary to adopt fair and objective evaluation criteria. Since the financial early-warning system was first implemented, the examination data rating system used to evaluate the operational performance of financial institutions has mostly been based on objective and quantitative data. This has been supplemented by on-site examinations to understand each financial institution's management capability. By holding fast to the independence principle, cautious estimates have in addition been made, and for this reason the rating results are very much able to reflect the operational performance and degree of risk of each financial institution. The CDIC has therefore, when implementing the risk-based premium system, made use of an overall examination rating score as an important evaluation criterion when seeking to establish the risk-based premium criteria. Having such an important criterion for determining the risk-based

premium to be applied to each insured institution can accurately reflect the differences in operational performance among financial institutions, thus making the differential risk-based premium system even fairer and more objective. It is for this reason that, up to the present day, all insured institutions have been able to accept such a system.

Ⅴ. The Feasibility of Establishing a Regional Financial Early-warning System based on International Cooperation to Prevent Financial Crises

The world is currently very much like a global village. If in any corner of the globe an unforeseen event of significant size occurs, regardless of whether it is a political, military, economic, cultural or communications issue, the other countries or regions will be affected to differing degrees. There are very few countries or regions that will not be affected. It is for this reason that, in 1997 when Thailand experienced a financial crisis, the effects of this crisis spread to other Asian countries, resulting in the Asian financial crisis. Furthermore, the crisis spread even further to influence financial conditions in countries outside the Asian region, so that the stability of the global financial system was affected. From this we can see that, if one is able to set up a regional financial early-warning system by means of international cooperation before a financial crisis takes place, then the dangers associated with an impending financial crisis in a certain country can be detected before the crisis erupts. Then, if measures to resolve such an impending crisis can be swiftly taken to prevent it from occurring, one can avoid the situation where there is an overall deterioration in the global financial system.

Since enhancing cooperation among countries is a very complicated process, the effective establishment of a regional financial early-warning system depends on the wisdom and farsightedness and degree of cooperation among each country's leaders. Any purely selfish attitudes need to be forsaken and a spirit of mutual cooperation nurtured if an effective system can be established for use over the longer term. The concept of how such mutual cooperation can be harnessed to establish a regional financial early-warning system is explained in some detail in the following sub-sections to serve as a valuable means of reference.

1. Major Difficulties Faced in Establishing a Regional Financial Early-warning System

The following problems need to be gradually resolved in order to establish a regional financial early-warning system at present:

(1) Every country uses different criteria and terms in its financial statistics

or for its accounting standards. These need to be integrated if a uniform system is to be arrived at to enable valid comparisons to be made.

(2) Each country is at different stages of financial liberalization and globalization, and has been affected by its own self-preservationism and protectionist policies. It may be feared that the provision or disclosure of its financial information may have a negative impact on that country's financial or economic sectors or on individual financial institution and result in a more serious warning. Such considerations may impede the efficient functioning of the regional financial early-warning system.

(3) Should the process of regional cooperation involve taking into consideration political and diplomatic considerations, it may become unnecessarily complicated and inhibit its smooth functioning.

(4) Problems related to the matching of technologies, especially where each country has a different level of computerization, to the compatibility systems integration and to controls over the safety of data transmission will need to be resolved.

2. The Feasibility of a Step-by Step and Gradual Approach to Promoting the Establishment of a Regional Financial Early-warning System

In order to eliminate the above-mentioned obstacles, the following approaches may be adopted:

(1)Each of the countries should establish its own financial early-warning system and best practice deposit insurance system: According to the statistics of the International Monetary Fund (IMF), all over the world there are 68 countries that have set up the deposit insurance system, including 32 in Europe, 14 in western hemisphere, but only 9 in Asia .(Please refer to Table 6 : Countries with Explicit Deposit Insurance Systems**)**

(2) Establishing an international data transmission system in order to establish regional cooperation: Different countries should discard their self-preservationist attitudes, and share relevant data together, beginning with information of a general nature and then extending this to the exchange of information of an individual nature that is sensitive. In this way, information may be exchanged in an orderly manner, so that the cooperative relationship may then proceed to a deeper level.

(3) Establishing standard definitions of financial statistics and accounting terminology among participating countries: This can be done by referring to related principles or practices adopted by the international community. Then a set of common criteria can be made

available to participating countries for comparison and reference purposes, which in turn can be more fully integrated by specialist agencies.

(4) Establishing uniform criteria for setting up a financial early warning system: This should first serve as a reference yardstick for participating countries that are setting up a financial early-warning system or else are modifying such a system. Then, by means of the regional network, a financial early-warning system based on regional cooperation should be established.

3. The Assistance that the CDIC is Currently Able to Provide for the Establishment of a Regional Financial Early-warning System

The CDIC has since its establishment set out to research the concept of a financial early-warning system. It therefore in 1989 set up an insured institutions' financial early-warning system, the so-called "system for evaluating the operational performance of insured institutions." Owing to the success of its implementation, the Ministry of Finance subsequently commissioned the CDIC to establish a "National Financial Early-warning System." Such a system was up and running in 1993, and has been in operation ever since. After observing the results generated by the system over a period of several years, the system's ability to pick out those financial institutions with operational shortcomings or whose operations were deteriorating became plain for all to see. In addition, the other information of a supervisory nature that the system provided was particularly effective in terms of assisting in the work of financial supervision. Based on the actual experience gained through the establishment and operation of the financial early-warning system just referred to, the R.O.C. has in turn been able to share its experience with other participating countries that as yet have not established a financial early-warning system to serve as a valuable reference. Through this exchange of technical experience, the R.O.C. can help other countries set up financial early-warning systems, which in turn can provide the basis for mutual cooperation in the setting up of a regional financial early-warning system.

4. The Way in which a Regional Financial Early-warning System Involving Regional Cooperation should be Established

(1) The regional financial early-warning system should first be established by a small group of countries to effectively strengthen financial and economic cooperation and international financial supervision.

Participating in the establishment of a cross-border financial

early-warning system is helpful in strengthening any cooperative relationship that a country may have with the other participating countries. For this reason, when establishing such a system, particular emphasis must be placed on the financial and economic cooperative relationship, and to strengthening the effectiveness of international financial supervision. Political factors, particularly those related to diplomacy, need to be avoided. In this way, it is relatively easier for other countries to be willing to participate in such a cooperative relationship. Furthermore, when seeking to invite participation from countries in the development stage, one should begin by fostering cooperation within a small region or among a small group of countries. By waiting until such a system is smoothly established and functioning effectively, the other countries will naturally become interested in participating, and hence the region covered by the participants will be enlarged. In this way, the financial early-warning system will be even more effective.

(2)In the early stages, a transmission mechanism for sharing information of a general nature should first be established, and a start made to integrating differences in statistical and accounting terminology. Only then, and based on a favorable cooperative relationship, should negotiations take place to establish a regional financial early-warning system.

Because a financial early-warning system involves a great deal of data that is sensitive, countries participating in a regional financial early-warning system will out of consideration for their own interests be concerned about supplying data to the system. This may well have a negative impact on the system's effectiveness. For this reason, before a basis of mutual trust is established, participating countries may tend to maintain a rather conservative and negative attitude.Therefore, before plans are made to establish a regional financial early-warning system, countries may first of all provide each other with financial and economic information of a general nature, before going on to exchange information related to financial supervision. During this stage, in order to effectively use the information and prepare for the establishment of the regional financial early-warning system in the future, measures must be taken to coordinate the integration of financial statistical terminology and accounting definitions, where these differ among the various countries involved. Therefore, by seeking to enhance cooperation in a gradual and orderly manner, a basis for mutual trust can be laid, and then negotiations can take place to work out other technical details relating to the establishment of a regional financial early-warning system. It is when the conditions are ripe that success will come.

(3) When establishing a regional financial early-warning system, those external factors that influence financial conditions should be taken into consideration.

Generally speaking, an individual country's financial early-warning system lays particular emphasis on the evaluation of internal factors, that is, it mainly evaluates those factors that affect each financial institution's operational performance and also forecasts future changes in trends. However, a regional financial early-warning system that arises as a result of cooperation among countries, besides possessing the above-mentioned functions, also needs to take into account external factors of an international nature in order to obtain an overall estimate. For example, international economic conditions, financial trends, country risk, natural disasters, military conflicts and other relevant incidents all affect the stability of each country's financial early-warning system within a region, and also significantly impact the operations of each financial institution within the region. For this reason, when evaluating such kinds of factors in the setting up of a regional financial early-warning system, it is necessary to first of all to study data relating to such factors. After analyzing their feasibility, such factors can be listed among the evaluation indicators. From this we can see that the establishment of a financial early-warning system involves a more difficult and complicated process, and thus needs to be supported by a larger quantity of specialized personnel and financial resources.

(4) The R.O.C.'s relevant and actual experience in establishing and operating a financial early-warning system should be made available to assist other countries in setting up their own financial early-warning mechanisms.

At present, the number of countries that are operating financial early-warning systems can be counted on one's fingers. Apart from that of the U.S. which was established a long time ago and which is particularly outstanding, the achievements of the other countries in terms of their financial early-warning systems are far inferior by comparison. As for the Asian region, it is the financial early-warning system established by the CDIC that is the largest in size and the most distinguished in terms of its achievements. For this reason, when establishing a regional financial early-warning system, the CDIC is able to provide other countries with actual experience for reference purposes, as well as assist in establishing related systems. It can even go so far as to modify and enlarge its own financial early-warning system to serve as a central hub for a regional financial early-warning system, to which the

financial early-warning systems of other countries can be linked. In this way, a complete regional financial early-warning system can be established.

Ⅵ. The Financial Early-warning System and Strengthening Financial Supervision and the Deposit Insurance Mechanism in the Future: A Discussion of Relevant Problems

As I proposed at Sydney Workshop on Economic Monitoring and Financial Sector Surveillance sponsored by Financial Markets Development Committee (FMD) under the Pacific Economic Cooperation Council (PECC) held in Australia in April 1999, the preconditions for set up East Asian Building Blocks for a new global financial architecture are as follows:

1. Developing a system of business laws, including corporate law, bankruptcy law, contract law, consumer protection law and private property law as a mechanism for fair resolution of disputes.
2. Establishing an internationally-accepted and generally-recognized accounting standards.
3. Setting up an audit system for enterprises up to certain level of capacity so that users of the enterprises' financial statements, including banks, could obtain the information of enterprises' audited financial conditions.
4. Setting up a set of well-defined rules and regulations for appropriately governing and effectively supervising financial markets and their participants.
5. Establishing information sharing mechanism and standard definitions of financial statistics and accounting terminology among participating countries.
6. Establishing uniform criteria for setting up a financial early-warning system, especially the external factors influencing the financial conditions.

The financial early-warning system has an important bearing on the functioning and efficiency of both financial supervision and the deposit insurance mechanism. This will be all the more so in the future as the financial supervisory system becomes more fully integrated. If such integration within the financial system in relation to banking, insurance, securities business and futures trading does not take place, not only will this impact the efficiency of financial supervision in terms of its unification, but the financial system and society as a whole will be seriously affected. For this reason, the government in regard to the financial early-warning system and both financial supervision and the deposit insurance mechanism will in the future need to give careful

consideration to the following:

1. **In the future, the financial early-warning system will need to expand and to integrate the available information relating to banking, insurance, securities business and futures trading. It will also need to focus its attention on the financial services groups, in order to enable it to effectively unify the work of financial supervision.**

The unification of financial supervision in the future will encompass banking, insurance, securities business and futures trading. Therefore, in order to strengthen the function and efficiency of the financial early-warning system, it will become necessary for the early-warning system currently administered by the CDIC in relation to banks to incorporate the information related to insurance companies, securities houses and futures brokerages. Besides broadening the scope of the early-warning function in so far as banks are concerned, the early-warning system will integrate related financial information. The system may thus be referred to as the "financial supervision and deposit insurance early-warning system." Its important function will be extended to serving as an early warning to financial services groups. At present, most of these financial conglomerates are involved in the fields of banking, insurance, securities business and futures trading. Thus the financial supervisory early-warning system of the future should have the financial services groups and the merger activity taking place among them as its major focus. In this way, both the financial early-warning system and the work of financial supervision will be strengthened, thereby preventing a financial services group from experiencing a marked deterioration in terms of its assets structure. This would of course at the same time endanger the banking, insurance, securities and futures markets due to the huge fluctuations in these markets. This emphasis on financial services groups in relation to the financial early-warning system and the work of financial supervision constitutes an important policy direction for financial supervision in the advanced industrialized countries of the world.

2. **The supervisory authorities and the deposit insurance corporation should establish a relevant financial early-warning system in order to be able to detect abnormal capital ratios and quickly take corrective measures.**

In the late 1980s, the U.S Federal Savings and Loan Insurance Corporation(FSLIC) companies experienced a crisis with their savings and loan associations. Owing to their not taking measures to deal with the

problems early on, these associations suffered huge losses, and in 1988 many of them went bankrupt and were acquired by the Federal Deposit Insurance Corporation. The U.S. government thereupon in 1991 drew up the *Federal Deposit Insurance Corporation Improvement Act (FDICIA)*, through which it significantly reformed the deposit insurance system. The FDICIA stipulated that the FDIC should handle problem financial institutions on the basis of the minimum cost principle. In cases where financial institutions failed to meet the capital adequacy requirements, immediate corrective action needed to be taken. Once the financial institution's capital ratio fell to 2%, the FDIC could immediately step in and exercise control. The *FDICIA* stipulated that a capital ratio of 2% for insured institutions was their risk capital threshold. This meant that, while problem financial institutions still had a positive net worth, the financial supervisory authorities could intervene before their problems worsened. This significantly cut down on the costs of dealing with problem financial institutions, and was a means of directly safeguarding the rights and interests of depositors and maintaining the safety of deposit insurance funds. For the system to be designed in such a way that the FDIC could intervene early on, it was necessary for there to be a sound financial early-warning system in place. Without such a financial early-warning system, it would not have been possible to know whether these financial institutions' capital ratios conformed to the regulations. Moreover, the financial early-warning system should not only be able to detect and measure the statutory risk-based capital ratio (i.e. the BIS ratio), but it should also be able to perform the early-warning function of estimating beforehand any deterioration in the capital ratio. This is in order to take measures to intervene as early as possible, thereby enabling the early-warning system to exercise its function of safeguarding the rights and interests of depositors and deposit insurance fund. It also enables one to avoid the situation where one only finds out about the problem after it is too late.` Such a turn of events causes the deposit insurance system to have a crisis on its hands and it then has to bear the financial risk itself. For this reason, even if the work of financial supervision will in the future be unified, the deposit insurance corporation will still need to operate the current financial early-warning system. However, the deposit insurance corporation can also forward the results generated by this system to the financial supervisory authorities for integration with the other available information, so that they can together further strengthen and promote the effectiveness of financial supervision.

3. It is necessary for the financial early-warning system to serve as a basis for implementing the deposit insurance risk-based premium

system and for strengthening financial supervision, in order to reflect the operational risk of financial institutions and avoid moral hazard.

As financial liberalization and globalization have continued to be promoted, differences in the levels of operational risk among financial institutions have become more pronounced. Therefore, by implementing a single assessment rate, one is unable to fairly take into consideration the overall risk of financial institutions, or to reflect differences in business risk and management among individual financial institutions. This is unfair to those financial institutions with sound operations. Furthermore, since those financial institutions engaging in highly-risky business activities do not need to pay a relatively higher premium, this tends to cause them to increase their high-risk investments and hence their overall risk. It is for these reasons that implementing a differential risk-based premium system has recently become necessary. From July1,1999, the CDIC start implementing the risk-based premium system.

The financial early-warning system has a key role to play in the success of the implementation of a differential risk-based premium system. One could go so far to say that the financial early-warning system is the backbone of financial supervision and the lifeblood of the deposit insurance system. Without the operation of the financial early-warning system, it would not be possible for financial supervision to be twice as successful with only half the effort. Moreover, the deposit insurance system would not be able to prevent risk from occurring in the first place, and it would have to bear that risk itself, and, for this reason, a widespread financial and supervisory crisis would result.

4. **It is necessary to adopt a strategy that can be applied at all times where financial supervision is the primary objective, and the financial early-warning system the secondary objective. This is to avoid the occurrence of delays in handling problem financial institutions.**

The principal functions of the financial early-warning system are as follows: (1) It maintains a firm grasp of the financial conditions of financial institutions at all times, and effectively evaluates their risk. (2) It discovers problem financial institutions very early on, and implements appropriate supervisory measures based on its findings. (3) It provides information that can serve as a reference for on-site examinations as well as in regard to the frequency of examination, and this can help reduce the costs of financial supervision and increase its efficiency. However, the financial early-warning system is no panacea for all evils. Merely relying on such a system to resolve all problems and neglecting to take swift

supervisory action to deal with the problems will result in the financial early-warning system failing to have its full desired effect. In addition, due to administrative lenience or procrastination, opportunities to deal with problem financial institutions will also be missed. Relying on the financial early-warning system to discover problem financial institutions early on is of course important. However, what is even more important is that the financial early-warning system should complement the measures implemented through the system of financial supervision. As for the discovery of any unusual problems by the financial early-warning system, it is necessary to immediately adopt effective financial measures to restore financial order and discipline. Only then is the financial early-warning system able to achieve its objective.

5. The R.O.C. should share its successful experiences of setting up a financial early-warning system, in order to establish through cross-border cooperation a regional financial early-warning system. It should also strengthen regional economic and financial cooperation, thereby boosting the effectiveness of international financial supervision.

This paper therefore recommends that a regional financial early-warning system be set up through cross-border cooperation, in accordance with the following:

(1)First of all a transmission mechanism for the sharing of information should be established, and statistical definitions and accounting terminology harmonized.

(2)The regional financial early-warning system should first be established beginning with a small group of countries. In this way, economic and financial cooperation and international financial supervision can be strengthened.

(3)All external factors that influence financial conditions should be taken into consideration, including, for example, international economic conditions, financial trends, country risk, natural disasters and military conflicts. These are all factors that need to be evaluated when setting up a regional financial early-warning system.

(4)The R.O.C. can share its successful experiences in establishing a regional financial early-warning system, and assist other countries in setting up similar mechanisms, so that they can together enjoy the benefits of international economic and technical cooperation and strengthen international financial supervision.

Attachment 1

FDIC'S Risk-Related Premium System (RRPS)
Determination of Risk Classifications

Outlined herein are the procedures used to place institutions into Risk-Related Premium System capital groups and supervisory subgroups. Assignment to one of three capital groups, coupled with assignment to one of three supervisory subgroups, will determine which of the nine risk classifications is appropriate for an institution. Risk classifications of institutions determine their premium rates.

I. Procedures for assigning institutions to capital groups

Each institution is evaluated through a series of tests. The tests are as follows:

IF (1) Total risk-based capital ratio is greater than or equal to 10% and
(2) Tier 1 risk-based capital ratio is greater than or equal to 6% and
(3) Tier 1 leverage capital ratio is greater than or equal to 5%

Then Well Capitalized. Assignment: Capital Group 1.

IF (1) not well capitalized and
(2) Total risk-based capital ratio is greater than or equal to 8% and
(3) Tier 1 risk-based capital ratio is greater than or equal to 4% and
(4) Tier 1 leverage capital ratio is greater than or equal to 4%

Then Adequately Capitalized. Assignment: Capital Group 2.

IF (1) not well capitalized or adequately capitalized

Then Undercapitalized. Assignment: Capital Group 3.

II. Procedures for assigning institutions to supervisory subgroups

In accordance with section 327.3 of the FDIC's revised assessment regulation, each institution will be assigned to one of three subgroups on the basis of supervisory evaluations by the institution's primary federal supervisor and, if applicable, state supervisor, and other information as the FDIC determines to be relevant to the institution's financial condition

and the risk posed to the BIF or SAIF.

There are three supervisory subgroups:

- "Subgroup A" which generally corresponds to the primary federal regulator's examination composite rating of 1 or 2, consists of financially sound institutions with few minor weaknesses.
- "Subgroup B" which generally corresponds to the primary federal regulator's examination composite rating of 3, consists of those institutions which demonstrate weaknesses which, if not corrected, could result in significant deterioration of the institution and increased risk to BIF or SAIF.
- "Subgroup C" which generally corresponds to the primary federal regulator's examination composite rating of 4 or 5, consists of institutions for which there is a substantial possibility of loss to BIF or SAIF unless effective corrective action is taken.

The supervisory subgroup assignment will be based on a variety of factors, including:

1. results of the last examination accepted by the primary federal regulator
2. time elapsed since the last examination
3. results of off-site statistical analysis of reported financial statements
4. analysis of other pertinent information

Attachment 2

CDIC'S Risk-Based Premium System (RBPS)
Determination of Risk Classifications

Outlined herein are the procedures used to place insured financial institutions into RBPS capital adequacy levels and Examination Data Rating Composite Score levels. Assignment to one of three capital adequacy levels, coupled with assignment to one of three Examination Data Rating Composite Score levels, will determine which of the nine risk groups is appropriate for an institution. Risk groups of institutions determine their premium rates.

I. Procedures for assigning institutions to capital adequacy levels

There are three capital adequacy levels:

- For banks if total risk-based capital ratio is greater than or equal to 12%; and
- For community financial institutions if total equity to loan ratio is greater than or equal to 10%

Then Well Capitalized. Assignment: Capital Adequacy Levels 1.

- For banks if total risk-based capital ratio is greater than or equal to 8%; and
- For community financial institutions if total equity to loan ratio is greater than or equal to 6%

Then Adequately Capitalized. Assignment: Capital Adequacy Levels 2.

- For banks if total risk-based capital ratio is less than 8%; and
- For community financial institutions if total equity to loan ratio is less than 6%

Then Undercapitalized. Assignment: Capital Adequacy Levels 3.

II. Procedures for assigning institutions to Examination Data Rating Composite Score levels

There are three Examination Data Rating Composite Score levels:

- For each insured financial institution if the Examination Data Rating Composite Score it has received is greater than or equal to 65, which is generally corresponds to the primary regulator's examination composite rating of 1 or 2, consists of financially sound institutions

with few minor weaknesses.

※Assignment: Level A.

- For each insured financial institution if the Examination Data Rating Composite Score it has received is greater than or equal to 50, which is generally corresponds to the primary regulator's examination composite rating of 3 or the better part of 4, consists of those institutions which demonstrate weaknesses which, if not corrected, could result in significant deterioration of the institution and increased risk to CDIC.

※Assignment: Level B.

- For each insured financial institution if the Examination Data Rating Composite Score it has received is less than 50, which is generally corresponds to the primary regulator's examination composite rating of the worse part of 4 or 5, consists of institutions for which there is substantial possibility of loss to CDIC unless effective corrective action is taken.

※Assignment: Level C.

The Examination Data Rating Composite Score Level assignment is based on the following areas:

- capital adequacy
- asset quality
- management capacity
- earnings
- liquidity
- market risk sensitivity

References

1. Information provided by country authorities, IMF desk officers & MAE staff.
2. The FDIC's risk-related premium system reference material; FIL-71-92 Oct. 7, 1992 ; FIL-77-92 Nov. 5, 1992 ; FIL-58-95 Sept. 7, 1995.
3. The FDIC selected papers from the "International Conference on Deposit Insurance" Sept. 9-11, 1998 Washington, D. C. U. S. A.
4. A user's guide for the uniform bank performance. FFIEC, 1998.
5. The FDIC quarterly banking profile. FDIC, fourth quarter, 1998.
6. Statistical CAMELS Offsite Rating--Training Manual, FDIC, 1998.
7. EMS/CAEL User Manual, FDIC
8. Basic examination concepts and guideline, DOS (Department of Supervision) manual of examination policies, FDIC, 1998.
9. Market risk, DOS manual of examination policies, FDIC, 1998.
10. Financial institution rating system, FDIC, 1998.
11. Uniform financial institutions rating system, Federal Register, FFIEC.
12. The structure and functions of the deposit insurance system--the performance of the CDIC, Dr. Wei-Yi Lin, Central Deposit Insurance Corporation, Deposit insurance information quarterly, Sept. 1998.
13. Proposals for April, 1999 Sydney Workshop on Economic Monitoring and Financial Sector Surveillance sponsored by Financial Markets Development Committee (FMD) under the Pacific Economic Cooperation Council (PECC), Dr. Wei-Yi Lin, Central Deposit Insurance Corporation. R. O. C.