

Strengthening and Harmonization of Macroprudential Indicators for Monitoring Financial and Asset Markets in Asia and Pacific

Biswanath Bhattacharyay

**Strategy and Policy Department
Asian Development Bank
May 2001**

I. Introduction

As asset and financial markets are highly vulnerable to instability and systemic risk, monitoring these markets assumes great importance in light of the recent financial crisis. One of the crucial prerequisites is the availability of appropriate and adequate information, particularly a set of key macroprudential indicators (MPIs) that can be used to monitor the health or soundness (strength or vulnerability) of the financial system. The availability of a key set of MPIs could play a significant role in addressing the vulnerability of the asset and financial markets and thus minimize the risk of crisis recurrence. In this regard, countries need to produce and disseminate adequate and quality data and MPIs to markets, with the required periodicity and timeliness.

In the recent past, monetary and financial statistics and MPIs in most Developing Member Countries (DMCs) have not been adequate to comprehensively address financial and monetary problems and issues. Therefore, ADB conceived the Regional Technical Assistance (TA) on "Strengthening and Collection of Financial and Monetary Statistics in Selected DMCs". DMCs continue to strengthen their monetary and financial information systems in order to avoid or minimize the impact of future crisis.

II. ADB Initiatives and Activities

In the wake of the Asian financial crisis, the ADB, in close collaboration with its DMCs, made enormous efforts to strengthen and modernize financial sectors in developing Asia. ADB provided Indonesia, Korea, and Thailand with substantial assistance to help restructure their financial and corporate sectors as well as restore the public's confidence in their financial markets. These assistance programs helped the countries to adopt good financial governance practices, increase the disclosure and transparency of financial information, and reform the legal and regulatory framework governing the corporate and financial sectors. These programs and other assistance activities have significantly contributed to the stabilization of financial and foreign exchange markets, the restructuring of capital markets and banking sectors, and the ongoing economic recovery.

To prevent future crisis or to minimize its impact in the region, ADB also strengthened regional economic monitoring activities. The fact that the contagion of the crisis was extremely virulent among neighboring countries highlighted the need for an international surveillance mechanism. Given the impact of the crisis, ASEAN financial ministers endorsed the ASEAN Surveillance Process as an innovative measure for promoting regional cooperation in the new global environment. ADB fully committed to contributing to the regional economic monitoring efforts. To provide technical support for the

ASEAN Surveillance Process and assist its DMCs in harnessing the benefits of globalization, ADB established a Regional Economic Monitoring Unit (REMU) within its Headquarters. More recently, the Government of Australia has joined ADB's surveillance effort by financing the establishment of the Asian Recovery Information Center (ARIC) under REMU, which is also housed at ADB Headquarters. The ARIC is an internet-based facility for collaborative exchange and analysis of information on social and economic impacts of the crisis and Asia's recovery prospects. It helps governments and the donor community to respond more effectively to the social impacts of the crisis.

In order to enhance the ability of its member DMCs to assess the strength and vulnerability of their financial sectors, ADB and the ADB Institute have conducted several research studies, technical assistance projects, conferences and seminars.

III. RETA 5869: Strengthening and Collection of Financial and Monetary Statistics in Selected DMCs

A. Objectives

The main objective of the RETA is to strengthen the institutional capacities of central banks of the selected DMCs in compiling relevant financial and monetary statistics and monitoring MPIs. Specifically, the RETA aims to: (a) identify new and changed demands for monetary and financial statistics as a result of the recent Asian crisis; (b) specify a set of key financial and monetary MPIs that can be used to monitor the asset and financial markets; (c) produce these additional statistics and indicators on a regular basis; and (d) disseminate these through print and electronic media. To allow wide and easy access to users, these statistics will be integrated into ADB's statistical database system (SDBS) and will be available in ADB's website.

B. Scope and Participation of DMCs

The TA covered five DMCs, namely: Fiji, Indonesia, Philippines, Thailand and Vietnam. Fiji was selected to represent the Pacific region and serve as focal point for strengthening the institutional capabilities for the rest of the Pacific DMCs. The other four DMCs were selected because they were among the most affected by the Asian financial crisis and they agreed to participate in the TA. Other countries that participated in the initial activity of the TA included Australia, Germany, Japan, Korea and Taipei, China with the latter participating in the entire project on its own initiative.

C. Accomplishments/Activities Undertaken

The TA is being implemented over a period of 14 months, beginning April 2000. The Central Banks (CBs) of the five selected DMCs have been assigned the role of Implementing Agencies (IAs). The major accomplishments of the project are as follows:

1. Inception Workshop

The inception workshop was held from 4-6 April 2000 in ADB Headquarters, Manila. It was attended by 25 participants from 10 countries. Resource persons from IMF, ADB,

Bank of International Settlements (BIS), UN ESCAP and Australian Bureau of Statistics (ABS) presented technical papers.

The major accomplishments of the inception workshop were:

- Appreciation of participants on the current status of Monetary and Financial Statistics in selected ADB DMCs;
- Identification of new data demand as well as a core set of MPIs needed to support an effective financial surveillance system;
- Familiarization with the various concepts, approaches and methodologies for monitoring vulnerability of asset and financial markets;
- Sharing of experiences, problems, issues and expertise in the compilation of monetary and financial statistics and monitoring asset and financial markets;
- Formulation of strategies and recommendations to facilitate regular compilation and release of MPIs; and
- Preparation of individual country workplans and budgets for implementing the TA objectives.

2. Country Workplan and Implementation

The participants revised their country workplans upon consultation with concerned senior officials. These were further revised based on comments of the Project Officer-in-Charge (OIC). Countries prepared the metadata (the working definition of the MPI) for the 67 commonly agreed MPIs and some additional MPIs (depending on the availability of data and need). The participants continuously consulted with the Project OIC as they proceeded with their task of compiling the MPIs and the metadata.

3. Review Missions

Review missions were conducted in Indonesia, Thailand, Viet Nam and Fiji by the Project OIC. The objectives of the review mission were: 1) to review and monitor the progress of the compilation of commonly agreed MPIs; 2) to discuss and clarify issues and problems with senior officials of Central Bank, stock exchange, national statistics office and other concerned ministries regarding the production, definition, methodology used for compilation, analysis and dissemination of the indicators; and 3) to prepare and sign a memorandum of understanding between ADB and Central Bank (particularly for Fiji and Viet Nam) to allow the compilation, analysis and submission of the MPIs to ADB on a regular basis.

4. Compendium of ADB MPIs

Each participating country submitted the draft compendium of ADB MPIs which was revised several times based on the comments of Project OIC and availability of new data from various agencies.

Traditionally, all the MPIs for monitoring, as suggested in literature, are usually quantitative variables. However, the importance of qualitative variables can not be undermined. Quantitative indicators have to be complemented with qualitative indicators to arrive at a comprehensive assessment of the health of a financial market. The qualitative indicators or information should include the adequacy of institutional and regulatory framework of countries.

The system of ADB MPIs can be classified into three categories, namely: (1) aggregated microprudential indicators of health of individual financial institutions; (2) macroeconomic indicators concerning the health of financial sectors; and (3) qualitative Business Tendency Survey (BTS) Indicators. This is unique as it includes very important qualitative and leading BTS Indicators.

An inventory of the number and type of ADB MPIs compiled by TA- participating DMCs is presented in Table 1 (Appendix 1).

A comparison of frequency and time lag of production of ADB MPIs by RETA participating DMCs is presented in Table 2 (Appendix 2).

5. Concluding Workshop

For the concluding workshop, representatives of participating DMCs will present their compendium of MPIs together with their analysis. They will also present reports on pertinent and outstanding methodological problems and issues, together with the recommendations and suggestions for future courses of action.

The objectives of the concluding workshop are as follows:

- (i) present and discuss the country compendium on commonly agreed MPIs as per the conclusion of the Inception Workshop as well as provide an analysis of the indicators;
- (ii) discuss the various approaches and methodologies used in producing the MPIs and the problems and issues encountered in generating them;
- (iii) apprise participants on the appropriate analysis and interpretation of the indicators and the usefulness of composite indicators for monitoring the asset and financial markets; and
- (iv) provide recommendations and share the countries' future plans on compiling, analyzing, interpreting, and disseminating MPIs and other activities related to the monitoring of the vulnerability of the asset and financial markets.

IV. Metadata/Data Specifications of Identified MPIs

Ideally, a metadata should contain textual description of the MPIs. It should include: (i) working definition; (ii) coverage; (iii) public access; (iv) integrity and quality of the data; (v) compilation methods and (vi) departures from relevant international standards. In cases where there is a significant heterogeneity among the practices in compiling MPIs, the implications will have a bearing on the analysis and interpretations of individual country MPIs. A comparison of the working definitions of ADB MPIs as provided by DMCs is highlighted in Table 3 (Appendix 3).

V. Problems and Issues in the Compilation and Analysis of MPIs

Owing to the volume and complexity of monetary and financial transactions, compilation and analysis of MPIs is no easy task. The job is beset with several problems and issues which can be summarized as the following:

A. General Problems and Issues:

1. Spread of data in various databases within and outside Central Bank

Data required for the compilation of MPIs are being produced and processed by different departments within the Central Bank and various agencies/institutions outside of the Central Bank (CB). The major difficulties faced in the compilation include the extensive coverage of ADB MPIs and spread of data in various databases belonging to several departments of the central bank, national statistics office, ministry of finance, stock exchange, and others. There is also a lack of a statistics or data management department in CB that collects and compiles entire monetary, financial and banking data from various departments and stores the data in a central electronic database.

The mandate and role of each department and agency dictate the statistics that it is going to generate. With the wide spectrum of areas covered by the MPIs, it is essential that inputs be given by several divisions/agencies. Within the CB, in general, monetary data is provided by the Economic/Statistics Department, data on commercial banks is sourced from the Banking Supervision/Supervision Department and data on foreign exchange is available from the Foreign Exchange Department. For data sourced outside of CB, the Stock Exchange and Stock Exchange Commission/Capital Market Supervision Agency supply stock market data and the Statistics Office produces data on trade, prices and GDP. The successful implementation of the project and periodic analysis of ADB MPIs would require effective and close collaboration among various concerned departments within and outside CB.

The present system of having to gather data from different departments/ agencies creates a host of problems which ultimately has an adverse effect on the timely production, dissemination and analysis of data.

To respond to the need for a central database, the Bank of Thailand has recently created a new department called the "Data Management Group". This group has created a central database for monetary, financial and related statistics. Bank of Thailand has now been sending monthly updates of the MPIs to ADB. It is therefore recommended that other CBs follow the example set by Thailand.

2. Non-availability or non-applicability of some indicators

The list of MPIs was drawn to ideally cover the major areas of concern in determining the vulnerability of the asset and financial markets. During the course of compiling the identified indicators, some countries found that some of the indicators are not applicable to them. Indonesia, for instance, has neither bond market nor Treasury bill instrument. On the other hand, Fiji has no short-term debt as these are all long-term. The indicator "use of IMF credit" is likewise not applicable, as Fiji does not borrow from IMF.

There are also cases wherein data are totally unavailable or are available only for the more recent years thereby preventing an analysis of the movement of the indicator through time. In Thailand, data on loans to commercial real estate and residential real estate as percent of total loans are available on a quarterly basis starting in the fourth quarter of 1999. A tabulation of indicators provided by countries is shown in Appendix 4.

3. Incomparability of indicator over time

Due to the change in the definition or coverage of statistics over time, data on some indicators may be incomparable. This may render the results, based on long time series analysis, not useful for proper policy action.

From the point of view of compilers of statistics, change in the coverage, definition and methodology in generating the indicators may prove inevitable, as they would like to constantly attune data to the current times/practices. In Thailand, specifically, prime lending rate during the period 1995-1999, referred to short and medium-term financing needs of the private sector as reported by the 4 largest commercial banks. Starting 2000, however, prime rate refers to short and financing needs of the private sector as reported by the 5 largest commercial banks. Data from the 4 largest banks could have been inaccurate especially if the 5th commercial bank has numerous transactions on financing.

4. Lack of transparency and problems in the disclosure of data

One of the criticisms cited in the aftermath of the financial turmoil in 1997 was the unavailability of data on some of the more important indicators like the amount and quality of debt exposure of countries and the type of loans extended to the public and private sector, among others. There were even reports that some countries were unable to release some of the data that they have regularly been reporting.

During some of the discussions, countries admitted that some indicators are sensitive in nature and are used for internal purposes only. In some cases, countries consider information as temporarily confidential if data are still incomplete or provisional. They argued that they refrain from disclosing the data to prevent the public from having a biased perception of the financial sector. They overlook the fact that non-disclosure of data contributes to the wariness and the negative outlook investors have on the economic prospects of the country.

5. Extensive coverage of ADB MPIs

Due to the extensive coverage of ADB MPIs, compilation could be an additional burden. At this stage, the 70 MPIs that are to be compiled by countries cannot be reduced as countries are still in the initial stages of compiling and setting-up the indicator system. However, later, attempts should be made to identify a core set of leading indicators. These attempts have to be guided by the fact that a good financial monitoring system should contain a broad variety of indicators because currency and banking crises are usually preceded by multiple economic problems.

EXCEL programming could be used for automated compilation of the MPIs from the database containing the raw statistics. CB should collect the data in appropriate electronic format in order to minimize time consuming data entry. At the same time, the MPIs must be assessed on a continuous basis in terms of relevancy, adequacy and effectiveness.

6. Late/ incomplete/ inaccurate replies from other institutions or agencies

Late submission of data of some commercial banks are at times a result of computer system problems. Inaccurate replies, on the other hand, stem from lack of understanding of proper definition of terms as well as lack of coordination among agencies.

B. Recommendations on the Enhancement of the Usefulness of MPIs

1. Need for professional/institutional judgement for interpretation of MPIs

MPIs are useful in formulating policy action. MPIs should supplement institutional/professional judgment. Informed judgment based on an understanding of the different institutions, frameworks, and regulations coupled with the interpretation of MPIs and BTS results will help arrive at an accurate assessment.

2. Limitations of MPI in inter-country comparison

It is not advisable to compare the performance of countries solely based on MPIs. Definitions of some MPIs may vary from one country to another. At the same time, each country has its own set of frameworks, standards and regulations. Interpretation and analysis of MPIs should depend on the typical characteristics of the financial market of the concerned country. An understanding of the intrinsic financial nature/structure of each country will enable one to correctly assess the situation of a country.

3. Harmonization of MPIs

MPIs need to be harmonized in terms of definitions, coverage, periodicity, timeliness, analysis, interpretation and dissemination.

4. Early warning capability of MPIs

Effectiveness of MPIs in predicting events and taking corrective measures rely heavily on the quality and timeliness of data. Hence, countries need to ensure that data satisfy set standards.

Countries should also undertake extensive analysis of available qualitative and quantitative data to enable them to assess the capability and strength of the indicators in providing early signs of weakness. The indicators could be classified into leading, coincident and lagging indicators based on the results of time series analysis.

During the workshop, an attempt will be made to identify a set of leading indicators (around 25 leading MPIs) and formulate composite indicators based on the identified MPIs.

5. Capacity Building

Technical training should be provided to CB personnel to enable them to perform meaningful interpretation and analysis of MPIs. Effective monitoring calls for a high degree of experience in analyzing the quantitative MPIs coupled with informed judgement on the adequacy of the institutional and regulatory framework of the concerned country.

6. Benchmark/threshold levels

For each MPI, a benchmark/threshold value and norm for the indicators need to be established in order to obtain a meaningful signal on the vulnerability of the financial sector.

7. Composite indicator

Countries need to explore the compilation of a composite indicators based on a set of core leading indicators. However, it should be ensured that use of a single composite indicator would not produce misleading results. It is advisable that countries produce several composite indicators for each of the seven group of indicators, namely (i) External Debt and Financial Flows; (ii) Money and Credit; (iii) Banking; (iv) Interest rates; (v) Stock and bond markets; (vi) Trade, Exchange and International Reserve; and (vii) Business Survey Data. These composite indicators could be used to monitor specific areas of the financial system.

VI. Topics on Harmonization and Strengthening of Analysis, Interpretation and Dissemination of MPIs

A group discussion session will be conducted in the concluding workshop with a view to gathering consensus recommendations on harmonizing and strengthening the compilation, analysis and interpretation of MPIs in Asia and Pacific. There is a need for increased harmonization of MPIs among DMCs in terms of coverage, working definition, periodicity, timeliness, methods of analysis and interpretation, and modes of dissemination to the public. The objective of harmonization is to make the country MPIs and their analysis and interpretation more regionally comparable.

Some Topics for Group Discussion:

Compilation and Dissemination

1. Should countries plan on compiling and disseminating MPIs on a monthly basis?
2. What data categories are to be included in the regular submission?
3. What is the periodicity of each data category (i.e., quarterly or monthly)?
4. What timeframe of submission to ADB's site will be appropriate?
5. Should countries post their MPIs in their own website?
6. Should countries adopt a harmonized method of calculation (ratio or growth rates)?
7. For the statistics (such as GDP) for which monthly or quarterly estimates are not available, should we use an estimate or annual figure for the compilation of the MPI?

Analysis and Interpretation

8. Should countries plan to analyze and interpret the MPI on a monthly/quarterly basis?

9. Should DMCs adopt a harmonized method or approach for analysis and interpretation?
10. How do countries analyze and interpret MPIs of other countries in the region or countries with similar characteristics to allow comparison and measurement of contagion effect of the vulnerability?
11. What are the important qualitative information need to be collected for meaning full analysis of the health of financial sectors?

Dissemination of MPIs

12. What should be the best practice for disseminating MPIs and its analysis for public access?

At present, DMCs have different approaches on dissemination of data on financial sector. It is normally believed that regular disclosure of information promotes market discipline and enhance international investors' confidence. However, there is always concern about confidentiality of some sensitive information.

Monitoring Vulnerability

13. What are the core leading MPIs that could be used for monitoring vulnerability? What are the criteria for selecting core leading MPIs: frequency, availability, capability of sending lead signals, etc.
14. Should countries plan on adopting a common composite indicator based on a core set of leading indicators for obtaining an initial signal of vulnerability?
15. What additional resources including the enhancement of the technical capabilities of Central Bank staff will be required for effective analysis and interpretation of MPIs?
16. Should we adopt uniform threshold values for signal of vulnerability?
17. What is the most appropriate approach or process of monitoring financial markets of a country or of a region?

Regional and Inter-regional Cooperation

18. Can we form a regional forum or association on financial markets monitoring on for exchange of ideas and cooperation among countries?
19. What nature of inter-regional cooperation (such as Asian and South America) will be useful for strengthening the monitoring process and capability?
20. In what areas could countries cooperate for effective monitoring of asset and financial markets (on the job training, consultancy, exchange visits, conferences, etc.) ?

VII. Conclusion and Recommendations

This small scale RETA project was highly successful in achieving its objectives as all the participating countries produced not only the commonly agreed 67 MPIs, but some additional MPIs, on time. Thailand's example of setting up a Data Management Department that collects and compiles entire monetary, financial and banking data and stores the data in a central electronic data base is a good practice which other developing member countries could follow. This has enabled Thailand to produce monthly updates of the MPI and send these to ADB on a regular basis.

An area which needs attention is building the capacity of concerned staff of CB in effectively analyzing and interpreting MPIs in order to translate the results into policy action. The project will achieve the additional goal of analyzing and interpreting these MPIs as there will be lectures on this end.

Countries must strive to consistently produce timely and reliable data based on the identified list of core MPIs. CBs and other ministries/institutions such as Stock and Insurance Market supervisory agencies and Ministry of Finance should collaborate in producing data on the financial and real sector. They should ensure that data are made available and accessible to the public within a specific time frame. They should maintain a calendar of the release of statistics wherein users will be guided as to when data will become available.

In spite of many attempts by researchers and practitioners in the financial field, it is still not possible to identify a set of MPIs which could give accurate signals of vulnerability. Each country needs to analyze and identify country-specific MPIs which could prove to be more effective than a generic set of indicators. This set of MPIs has to be revised continuously to adapt to the demands of changing times. In this concluding workshop, we will attempt to identify a core set of leading/coincident indicators based on limited data and analysis. It is recommended that DMCs continue to identify and update the core set of country-specific leading indicators. Aside from this task, they also need to establish a country-specific or regional threshold value for each of the core MPIs that should be updated continuously over time.

It would be very useful if DMCs could formulate and adopt appropriate practices for the dissemination of MPIs and their analyses to the public. Appropriate disclosure practices will not only strengthen the confidence of international investors but also promote market discipline.

In addition to these MPIs, there are a number of measures which could help avert crisis recurrence. These measures include: (i) extension of monitoring the non-bank deposit taking institutions and non-depository financial intermediaries; (ii) strengthening of institutional framework; (iii) adoption of good financial governance practices; (iv) promotion of transparency and disclosure of financial information; (v) on-site inspection of financial institutions; and (vi) reforming and strengthening of the legal and regulatory frameworks that govern the corporate and financial sectors.

This workshop is not the end of the activities. ADB has created a website for this project which will contain the MPI compendium of all participating countries. All participating member countries are welcome to provide their country monthly updates. These new MPI compendia and updates will find their way in the DMCs and ADB's statistical database, websites and hardcopy publications for universal access. It is expected that DMCs will continue sharing their experiences in improving their MPI compendium and exchange new ideas for strengthening the quality and coverage of MPI as well as their analysis, interpretation, and dissemination. This will lead to increased harmonization of ADB MPIs among DMCs in terms of coverage, working definition, method of compilation, periodicity, timeliness, method of analysis and interpretation, and dissemination to the public.

References

1. International Monetary Fund, "Macroprudential Indicators of Financial System Soundness" by a Staff Team led by Evans Owens and et. Al., Washington DC, IMF, April 2000.
2. Asian Development Bank, "Regional Technical Assistance on Strengthening and Collection of Monetary and Financial Statistics in Selected Developing Member Countries", RETA paper, November 1999.