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## Financial turmoil in the banking sector and the Asian Lamfalussy Process: The case of four economies

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**ADB Working Paper Series**

**Financial Turmoil in the Banking  
Sector and the Asian Lamfalussy  
Process: The Case of Four  
Economies**

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**Chen-Min Hsu and  
Chih-Feng Liao**

No. 221  
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**Asian Development Bank Institute**

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**Abstract**

This paper investigates the prevailing financial regulatory structures and impact of the current financial turmoil on banking performance in four Asian economies: the People's Republic of China (PRC); Hong Kong, China; Singapore; and Taipei, China. Both the PRC and Hong Kong, China operate under a fragmented financial regulatory structure, while Singapore and Taipei, China have integrated structures. We examine the role of an integrated financial regulatory structure in helping financial institutions mitigate the impact of the financial crisis, using financial indicators of banks' capital structure and operating performance in these four economies between 2003 and 2008.

Our analysis of the indicators reveals that banking performance under a fragmented financial regulatory structure is not worse than under integrated regulation. This implies that financial regulatory structure is not the main reason why Asian financial institutions suffered only limited losses from the current global financial crisis. However, given the growing complexity of the global financial system, and the relative weakness of current financial regulatory structures in Asia, this paper suggests that East Asian governments should refer to the Lamfalussy Process in the European Union and set up an Asia Financial Stability Dialogue to facilitate policy coordination for regional financial sector stability and development.

**JEL Classification: F42, G18, G21.**

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## 1. INTRODUCTION

The global financial turmoil originating from the United States (US) subprime mortgage market is deepening and broadening. Banks in the US and the European Union (EU) are threatened with liquidity shortage and huge investment losses. Conversely, commercial banks in Asia have been relatively unscathed.

The impact of the financial turmoil on commercial banks in Asia can be seen in two aspects. First is the direct loss in investments. Subprime mortgage losses in Asia have totaled about US\$19.5 billion, which accounts for approximately 1.95% of total capital in Asian banks; this is far lower than the 10.03% of total capital reported in the US (see Kawai, Lamberte, and Yang 2008).

Second is the change in capital structure and operating performance in Asian banks, which shows the indirect impact of the financial turmoil. The capital adequacy ratio (CAR) in Asian banks has maintained double-digit growth, except in the People's Republic of China (PRC). The nonperforming loans (NPL) ratio has trended downward, while the coverage ratio has trended upward. Additionally, the return on assets (ROA) and return on equity (ROE) in Asian banks continue to perform well (Tables 1–5).

**Table 1: Bank Regulatory Capital to Risk-Weighted Assets (%)**

Economy	2003	2004	2005	2006	2007	2008
PRC	-5.9	-4.7	2.5	4.9	8.4	12.0
Hong Kong, China	15.3	15.4	14.9	15.2	13.4	14.8
India	12.7	12.9	12.8	12.3	12.3	13.0(Mar.)
Indonesia	22.3	19.4	19.3	21.3	19.3	16.8(Nov.)
Korea	11.1	12.1	13.0	12.8	12.3	10.9(Sep.)
Malaysia	13.8	14.4	13.7	13.5	13.2	12.6
Philippines	17.4	18.4	17.6	18.1	15.7	15.5(Jun.)
Singapore	17.9	16.2	15.8	15.4	13.5	14.3(Sep.)
Thailand	13.4	12.4	13.2	13.8	14.8	15.3
Australia	10.0	10.4	10.4	10.4	10.2	10.9(Sep.)
Japan	11.1	11.6	12.2	13.1	12.9	12.3(Sep.)
US	13.0	13.2	12.9	13	12.8	12.5(Sep.)

Source : IMF (2009).

**Table 2: Bank Nonperforming Loans to Total Loans (%)**

<b>Economy</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
PRC	20.4	12.8	9.8	7.5	6.7	2.5
Hong Kong, China	3.9	2.3	1.4	1.3	0.9	1.24
India	8.8	7.2	5.2	3.3	2.5	2.3(Mar.)
Indonesia	6.8	4.5	7.6	6.1	4.1	3.5(Nov.)
Korea	2.6	1.9	1.2	0.8	0.7	1.1
Malaysia	13.9	11.7	9.6	8.5	6.5	5.1(Sep.)
Philippines	16.1	14.4	10.3	7.5	5.8	5.2(Jun.)
Singapore	6.7	5.0	3.8	2.8	1.5	1.4(Sep.)
Thailand	13.5	11.9	9.1	8.4	7.9	6.5
Australia	0.3	0.2	0.2	0.2	0.2	0.5(Sep.)
Japan	5.2	2.9	1.8	1.5	1.5	1.5(Sep.)
US	1.1	0.8	0.7	0.8	1.4	2.3(Sep.)

Source : IMF (2009).

**Table 3: Bank Provisions to Nonperforming Loans (%)**

<b>Economy</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
PRC	19.7	14.2	24.8	34.3	39.2	115.3
Hong Kong, China	NA	NA	NA	NA	NA	NA
India	46.4	56.6	60.3	58.9	56.1	52.6(Mar.)
Indonesia	112.4	110.8	68.6	78.3	87.7	98.5(Aug.)
Korea	84	104.5	131.4	175.2	199.1	155.4(Sep.)
Malaysia	53.1	55	59.1	64.6	77.3	86.9(Sep.)
Philippines	51.5	58	73.8	75	81.5	84.1(Jun.)
Singapore	64.9	73.6	78.7	89.5	115.6	119.9(Sep.)
Thailand	72.8	79.8	83.7	82.7	86.5	...
Australia	131.8	182.9	203	202.5	183.7	87.2(Sep.)
Japan	29.9	31.2	28.1	28.8	26.4	24.9(Sep.)
US	140.4	168.1	155	135	93.1	84.7(Sep.)

Source : IMF (2009).

**Table 4: Bank Return on Assets (%)**

<b>Economy</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
PRC	0.3	0.5	0.6	0.7	1	17.1
Hong Kong, China	1.9	1.7	1.7	1.7	1.9	2
India	1	0.8	0.9	0.7	0.9	1.0(Mar.)
Indonesia	2.6	3.5	2.5	2.6	2.8	2.6(Nov.)
Korea	0.2	0.9	1.3	1.1	1.1	NA
Malaysia	1.3	1.4	1.4	1.3	1.5	1.6(Jul.)
Philippines	1.1	0.9	1.1	1.3	1.3	1.1(Jun.)
Singapore	1	1.2	1.2	1.4	1.4	1.1(Sep.)
Thailand	0.6	1.2	1.4	0.8	0.1	NA
Australia	1.6	1.1	1	1	1	0.9(Jun.)
Japan	-0.1	0.2	0.5	0.4	0.2	0.3(Mar.)
US	1.4	1.3	1.3	1.3	0.8	0.3(Sep.)

Source : IMF (2009).

**Table 5: Bank Return on Equity (%)**

<b>Economy</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
PRC	...	13.7	15.1	14.8	19.9	NA
Hong Kong, China	17.8	20.3	19.1	NA	NA	NA
India	18.8	20.8	13.3	12.7	13.2	12.5(Mar.)
Indonesia	26.6	34.5	26.4	30.2	25.7	26.0(Aug.)
Korea	3.4	15.2	18.4	14.6	14.6	NA
Malaysia	15.6	16.7	16.7	16.2	19.7	NA
Philippines	8.5	7.1	8.8	10.6	10.8	9.6(Jun.)
Singapore	8.7	11.6	11.2	13.7	12.9	11.9(Sep.)
Thailand	10.3	16.8	14.2	8.8	7.3	NA
Australia	24.2	16	14.7	16.8	18.1	17.0(Jun.)
Japan	-2.7	4.1	11.3	8.5	6.1	3.0(Sep.)
US	15.0	13.2	12.7	12.3	7.8	3.3(Sep.)

Source : IMF (2009).

Why are Asian commercial banks less affected by the financial turmoil? This may be attributed to a series of financial supervisory system reforms implemented after the Asian Financial Crisis in 1997. The Asian financial crisis was caused by the sudden influx of global hot money and relatively fragile banking systems. From 1997 to 2003, Asian countries launched reforms in their financial supervisory systems. Among these reforms, the evolution of the financial supervisory structure in the PRC; Hong Kong, China; Singapore; and Taipei, China is most



notable. Since the beginning of the decade, these four Asian economies have become an important global economic zone, owing to phenomenal economic growth. The savings rate of citizens in these economies is relatively higher than in other economies, which contributes to the development of the bank system. Financial markets in Singapore and Hong Kong, China are also highly globalized. Their financial supervisory systems therefore serve as useful reference for financial supervision reforms being implemented in the US and the EU.

This paper focuses on bank supervisory systems in the PRC; Hong Kong, China; Singapore; and Taipei, China, and analyzes how commercial banks have been influenced by the financial turmoil. This study uses financial indicators of banks' capital structure and operating performance during the period 2003–2008, to examine the role of an integrated financial regulatory structure in helping financial institutions mitigate the impact of the financial crisis.

Both Singapore and Taipei, China have integrated financial supervisory systems, while PRC and Hong Kong, China have adopted fragmented regulatory structures. The integrated financial supervisory system features a single universal regulator that conducts oversight and conduct-of-business regulation for all the financial services sectors. In contrast, the fragmented financial supervisory system is a legal-entity-driven approach. The legal status of financial institutions (for example, an entity registered as a bank, a security firm, or an insurance company) essentially determines their regulator, from the perspective of safety, soundness, and business conduct.<sup>1</sup>

Is an integrated financial supervisory institution better than a fragmented regulatory structure? There is no definite answer to this question in the literature.<sup>2</sup> Based on bank supervisory systems in 133 countries from 1996 to 1999, Barth, Nolle, Phumiwasana, and Yago (2002) studied the relationship between different bank supervisory systems and bank structures and demonstrated that there is no relationship between the two. Cihak and Podpiera (2007) argued that integration of the supervisory system is highly relevant in terms of acquiring high quality and consistent financial supervision. Due to the growing complexity of derivatives and financial markets, Masciandaro and Quintyn (2009) argued that a fragmented regulatory approach would not be appropriate, and that an integrated structure should be adopted for the purpose of ensuring sufficient information. However, the United Kingdom's integrated financial regulatory structure did not make it better equipped to deal with the impact of the current

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<sup>1</sup> The Group of Thirty (2008) studied financial supervisory structures in 17 countries. Current structures for financial supervision are classified into four categories: Institutional, Functional, Integrated, and Twin Peaks.

<sup>2</sup> On the issue of choosing an appropriate financial supervision architecture, two main questions are often addressed. One is whether an integrated supervisor is better than a fragmented one. This is the main issue in this paper. The other is the role of central banks in the financial stability framework. This is not covered in this paper. Please refer to Herring and Carmassi (2008), Masciandaro and Quintyn (2009), and Nier (2009).

financial crisis, compared to the US and the EU; this suggests that an integrated financial regulatory structure may not be relevant to hedging financial risk. Our own findings reveal no tangible evidence that an integrated financial regulatory structure is better than a fragmented regulatory structure in mitigating the current financial turmoil. It is likely that this issue will be continuously explored.

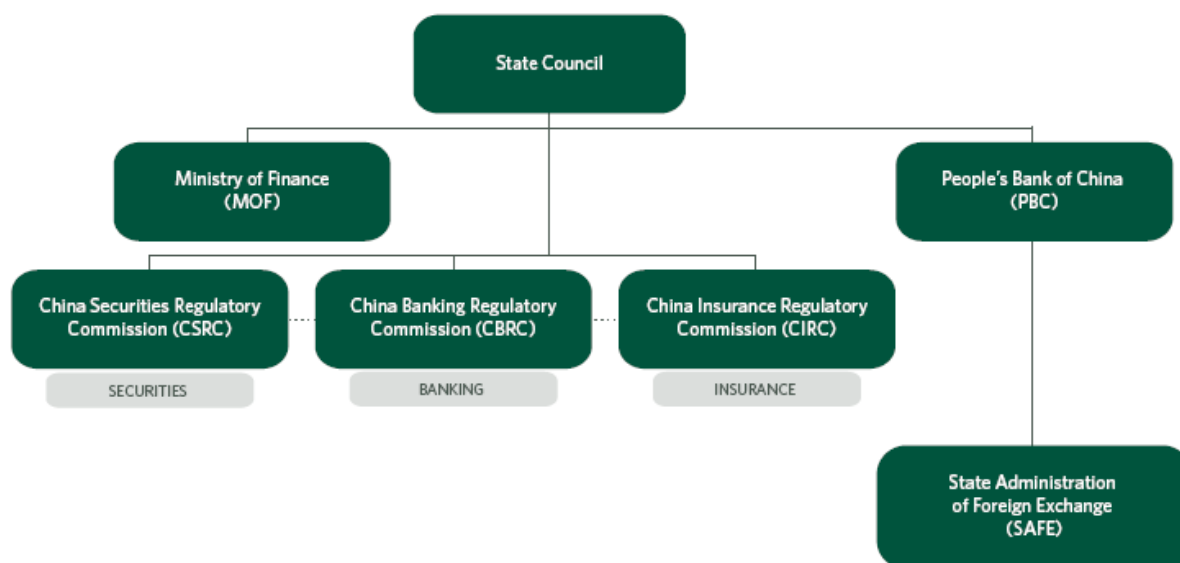
Although the question of which financial regulatory structure would be optimal at the national level remains unanswered, global and regional cooperation in financial supervision should be strengthened to respond to the growing complexity and interdependence of global financial system. Due to differences in financial regulatory structures among Asian countries, this paper suggests that the current framework for Asian regional supervision coordination should refer to the Lamfalussy Process, an approach to the development of the financial service industry regulations used by the EU. Originally developed in March 2001, it is named after the chair of the EU advisory committee who created it, Alexandre Lamfalussy. It is composed of four levels, each focusing on a specific stage of rulemaking.

The remainder of this paper is organized as follows: Section 2 discusses the financial supervisory systems in PRC; Hong Kong, China; Singapore; and Taipei, China, focusing on bank supervision in these countries. Section 3 analyzes the impact of financial turmoil on the commercial banks in these economies, using financial data from 2003 to 2008. Section 4 discusses and analyzes financial regulatory reforms in the US and the EU, and provides suggestions for Asian cooperation on financial supervision. Section 5 concludes.

## **2. FINANCIAL AND BANKING SUPERVISION**

### **2.1 Financial Supervision in the PRC**

Financial supervision in the PRC operates under a fragmented financial regulatory structure (Figure 1). While most countries that have implemented reforms in the past 25 years tended to move towards an integrated or twin teaks approach, PRC did not. Under the previous regulatory structure, all financial supervision was consolidated within the People's Bank of China (PBC), PRC's central bank. Through a series of reforms over the past 25 years, PRC has shifted to an institutional approach, where banking, securities, and insurance are supervised by separate agencies.

**Figure 1: The Financial Regulatory Structure in PRC**

Note: Dotted lines indicate a cooperative relationship.

Source : G30 (2009).

The PBC formulates and implements monetary policy, mitigates financial risks, and safeguards financial stability. Following the reform of the supervisory system and the creation of the China Banking Regulatory Commission (CBRC), the PBC no longer has a direct financial supervisory role. However, the Governor of the PBC is still a member of the State Council of China, which is the government's executive body. As such, it continues to have considerable influence over the general direction of financial supervision. The State Administration of Foreign Exchange (SAFE) is an agency within the PBC that manages PRC's foreign exchange reserves.

In 1992, the Securities Commission of the State Council and the China Securities Regulatory Commission (CSRC) were established to supervise the stock market jointly with the PBC. These two institutions merged in April 1998 and took the name CSRC. The CSRC is responsible for supervising and regulating the securities and futures markets. Other major CSRC functions include supervising securities and futures firms, stock and futures exchange markets, publicly listed companies, fund management companies, securities and futures investment consulting firms, and other intermediaries involved in the securities and futures business; protecting investors' rights and interests; and mitigating market risks.

In 1998, the State Council established the China Insurance Regulatory Commission (CIRC) as an agency to supervise, regulate, and ensure the sound development of the insurance industry. Major responsibilities of the CIRC include formulating insurance industry policies, strategies, and plans; drafting laws and regulations regarding insurance supervision and regulation; examining and approving the establishment of insurance companies; supervising

insurance business operations; and investigating irregularities and imposing penalties as needed. In 2005, the China Insurance Protection Fund was established; this is now under the supervision and management of the Insurance Protection Fund Council.

In April 2003, the China Banking Regulatory Commission (CBRC) was established to supervise and regulate the banking sector. According to the Banking Supervision Law, the CBRC's responsibilities include supervising banks, financial asset management companies, trust and investment companies, and other depository financial institutions; approving new banking institutions; formulating prudential rules and regulations; and conducting a wide range of powers of examination, including off-site and on-site investigation. The CBRC is responsible for detecting risks in the banking sector and establishing an "early-warning system".

The CBRC is led by a board consisting of a Chairman, a Discipline Commissioner, and a General Secretary. As of 2008, the CBRC staff numbered 23,345. Its institutions totaled 2,074, including departments affiliated to Banking Supervision Commission, supervisory board, financial labor union; 36 Banking Regulatory Commissions; 300 branches of the Banking Supervision Commission; and 1,735 supervisory agencies. Their budgets are authorized by the PRC State Council.

The CBRC's supervisory standards are mainly based on CAMELs+, with departments and their responsibilities working independently as follows:

- Supervisory Rules and Regulations Department (Research Bureau). The Supervisory Rules and Regulations Department is responsible for drafting regulations and provisions for the supervision of banking institutions. The department drafts laws and administrative regulations and makes proposals for drafts or amendments. It investigates important issues in the reform, development, and supervision of the banking industry. It is also responsible for proposing policies on the development of the banking industry.
- Banking Supervision Department I. The Banking Supervision Department I handles the day-to-day supervision of state-owned commercial banks.
- Banking Supervision Department II. The Banking Supervision Department II handles the day-to-day supervision of joint stock commercial banks and city commercial banks.
- Banking Supervision Department III (overseeing foreign-fund banks). The Banking Supervision Department III handles the day-to-day supervision of locally incorporated foreign bank subsidiaries.
- Banking Supervision Department IV (overseeing policy banks and postal savings institutions). The Banking Supervision Department III handles the day-to-day supervision of policy banks and postal savings institutions.
- Non-bank Financial Institutions Supervision Department. This department handles

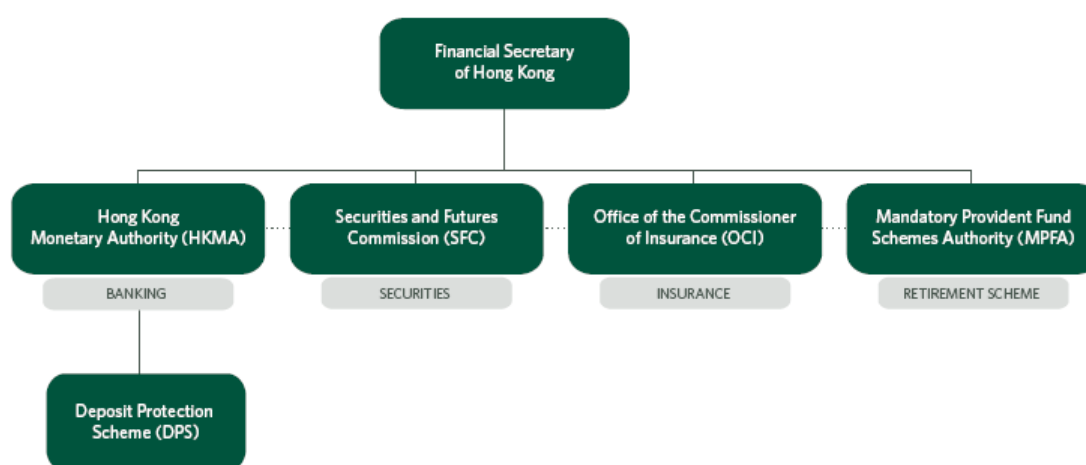
the day-to-day supervision of non-bank financial institutions, including financial asset management companies, trust companies, financial leasing companies, monetary brokers firms, and lending companies, but excluding securities, futures, and insurance institutions.

- Cooperative Finance Supervision Department (overseeing rural credit cooperatives and rural commercial banks). This department handles the day-to-day supervision of credit cooperative institutions, including rural commercial banks and rural credit cooperatives.

## 2.2 Financial Supervision in Hong Kong, China

The financial regulatory structure in Hong Kong, China is best described as having an institutional approach (Figure 2). There are four principal regulators in Hong Kong, China: the Hong Kong Monetary Authority (HKMA); the Securities and Futures Commission (SFC); the Office of the Commissioner of Insurance (OCI); and the Mandatory Provident Fund Schemes Authority (MPFA). These institutions are responsible for regulating their respective industries of banking, securities and futures, insurance, and retirement schemes.

**Figure 2: The Financial Regulatory Structure in Hong Kong, China**



Note: Dotted lines indicate a cooperative relationship.

Source : G30 (2009).

In 1992, as Hong Kong, China prepared for its transition into a Special Administrative Region of the PRC, the government began enacting measures to maintain the stability of the country's monetary and financial systems. It amended the Exchange Fund Ordinance, to enable the Exchange Fund to be used by the Financial Secretary to maintain the stability and integrity of monetary and financial systems. At that time, banking supervision was conducted by the Office of the Commissioner of Banking. To assist the Financial Secretary in achieving the statutory monetary policy objectives, it was decided that the Financial Secretary would be

given the power to appoint a person to serve as the Monetary Authority, and that the Office of the Commissioner of Banking would be merged with the Office of the Exchange Fund to create the HKMA (with the Monetary Authority as its chief executive).

The HKMA is accountable to the people of Hong Kong, China through the Financial Secretary, and through laws passed by the Legislative Council to set out the Monetary Authority's powers and responsibilities. The HKMA's Chief Executive appears before the Panel on Financial Affairs of the Legislative Council three times a year, to brief Members and answer questions on the HKMA's work. Representatives from the HKMA occasionally attend Legislative Council Panel meetings to explain and discuss particular issues; they also attend Committee meetings to assist Members in their scrutiny of draft legislation.

The operating and staff costs of the HKMA are charged to the Exchange Fund. The Exchange Fund derives most of its income from its investment activities, although revenue also accrues from license fees paid by authorized institutions (AIs), rental payments from tenants, and custodian and transaction fees from users of the HKMA's Central Money Markets Unit. The HKMA is accountable to the Financial Secretary. The HKMA's annual budget and strategic plan are approved by the Financial Secretary on the advice of the Exchange Fund Advisory Committee (EFAC), and a number of the HKMA's powers are exercisable only after consultation with the Financial Secretary.

The HKMA may be described as a de facto central bank, in that it has the policy objectives of maintaining currency stability within the framework of the linked exchange rate system; managing the Exchange Fund; promoting the stability and safety of the banking system; and maintaining the development of the financial infrastructure.

Promoting the safety and stability of the banking system through the regulation of banking and deposit-taking businesses and the supervision of AIs is a primary function of the HKMA. This responsibility is shared among three departments:

- the Banking Supervision Department, which handles the day-to-day supervision of AIs;
- the Banking Policy Department, which formulates supervisory policies to promote the safety and soundness of the banking sector; and
- the Banking Development Department, which formulates policies to promote the development of the banking industry.

Using the CAMELs approach, the HKMA evaluates the capital and risk levels of AIs, including various non-credit risks such as interest rate risk in the balance sheet, liquidity risk, and reputation and strategic risks. This approach was further refined in 2008, in light of implementation experience and lessons drawn from the global financial crisis. The assessment of some risk factors was enhanced, such as credit concentration risk, liquidity

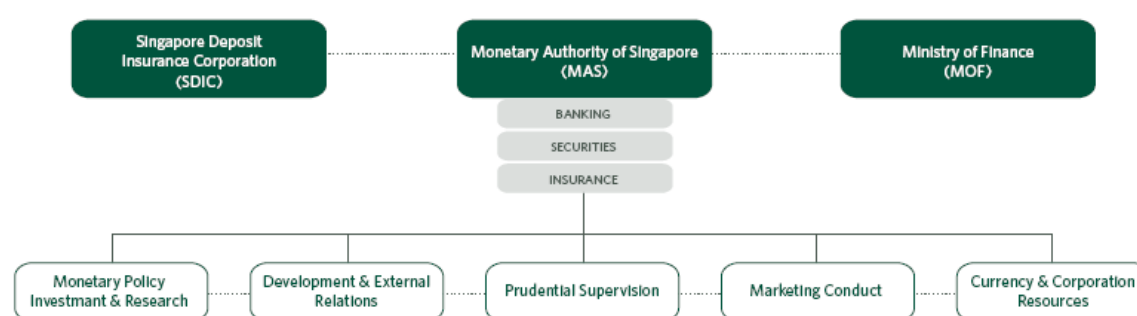
risk, corporate governance, and system controls. The supervisory review of AIs involves on-site examinations, off-site reviews, prudential meetings, meetings with boards of directors, cooperation with external auditors, and sharing of information with other supervisors. The HKMA's aim is to ensure that any problems affecting authorized institutions are detected and addressed at an early stage.

In addition, the HKMA carries out the day-to-day administration of the Deposit Protection Scheme (DPS) on behalf of an independent Deposit Protection Board, whose functions are confined to the assessing and collecting contributions, investing funds, and paying compensation to depositors in the event of a bank failure.

## 2.3 Financial Supervision in Singapore

Singapore has an integrated financial regulatory structure, under which the Monetary Authority of Singapore (MAS) has the authority to regulate the banking, securities, futures, and insurance industries (Figure 3). The MAS is also Singapore's central bank, created by an Act of Parliament in 1970. Before the establishment of the MAS, monetary functions were performed by various government departments and agencies. However, the demands of an increasingly complex banking and monetary environment necessitated the streamlining of functions to facilitate the development of a more dynamic and coherent policy on monetary matters.

**Figure 3: The Financial Regulatory Structure in Singapore**



Note: Dotted lines indicate a cooperative relationship.

Source : G30 (2009).

In 1977, in a continuing effort to streamline various financial sectors, the government decided to bring the regulation of the insurance industry under the control of the MAS. The regulatory functions under the Securities Industry Act enacted in 1973 were also transferred to the MAS in 1984. In 1986, the Futures Trading Act was implemented and administered by the MAS. In

2002, Singapore's Board of Commissioners of Currency merged with the MAS to rationalize central banking. Since then, the MAS has been the authority responsible for monetary and exchange policies promoting the growth and stability of the economy.

The MAS board of directors is composed of a chairperson and four to nine directors. The chairperson is appointed by the president of Singapore, upon the recommendation of the cabinet. The directors are appointed by the president. No one hailing from any financial institution licensed by the MAS may be appointed as a MAS director. A managing director, appointed by the president from one of the current directors, is responsible for the day-to-day administration of the MAS.

The board is responsible for policymaking and general administration of the affairs and business of the MAS. It informs the government of regulatory, supervisory, and monetary policies. The MAS has operational autonomy, although the board remains accountable to the Parliament.

As the integrated supervisor of the financial services sector, the MAS conducts risk-based supervision of financial institutions. This includes authorization or licensing of financial institutions to offer financial services; setting regulatory rules and standards; and taking actions against institutions and individuals for regulatory breaches. The MAS also monitors the financial system to identify emerging trends and potential vulnerabilities, in order to guide and support its regulatory activities.

The Prudential Supervision Department in the MAS is mainly responsible for banking supervision. It is composed of five departments, with the following responsibilities:

- (1) Banking Supervision Department. The Banking Supervision Department (BD) is responsible for the licensing and supervision of banks, merchant banks, and finance companies. The department helps foster the stability and strength of Singapore's financial system by monitoring the safety and soundness of banks and other institutions under their supervision, and actively promotes the adoption of international best practices in corporate governance and risk management.
- (2) Insurance Supervision Department. The Insurance Supervision Department (ID) administers the Insurance Act and has the primary objective of protecting policyholders' interests. The ID adopts a risk-based approach to the prudential and market conduct supervision of insurance companies. The ID carries out its responsibilities by way of both on- and off-site supervision, and works with foreign supervisors as part of a holistic supervisory approach. In its standards development role, the ID works closely with industry associations to promote the adoption of best practices.
- (3) Prudential Policy Department. The Prudential Policy Department (PPD) is responsible for formulating capital and prudential policies for banks, insurance companies, and



securities firms to promote a sound and dynamic financial sector. It works to achieve a more harmonized regulatory framework that will minimize regulatory arbitrage, and facilitate a more integrated, risk-based supervisory approach.

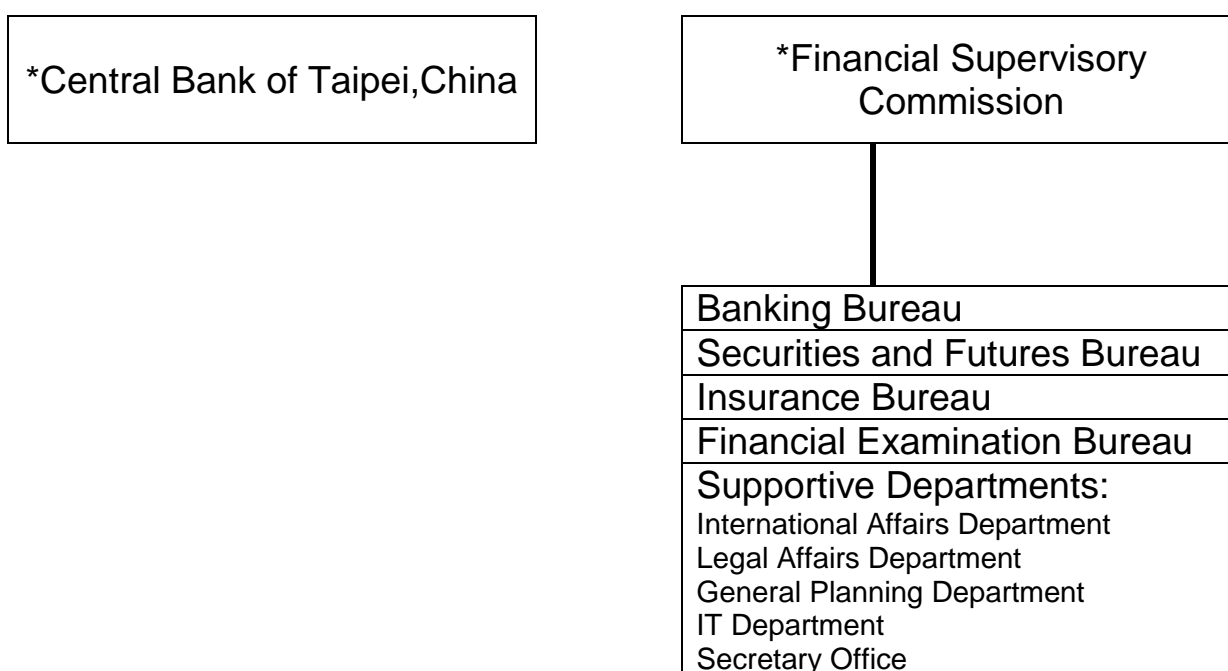
- (4) Complex Institutions Supervision Department. The Complex Institutions Supervision Department (CI) is mainly responsible for the licensing and supervision of large domestic finance groups and branches of foreign banks. The CI supervises local financial groups across banking, insurance, and securities activities.
- (5) Specialist Risk Supervision Department. The Specialist Risk Supervision Department (SRD) provides the financial and technology risk expertise necessary for MAS' supervisory and regulatory functions, and the assessment of individual institutions and system-wide risks. The SRD monitors developments and trends in the financial sector, and seeks effective and efficient approaches to mitigate identified risks. It also oversees payment infrastructures with the objective of fostering their stability and efficiency.

## **2.4 Financial Supervision in Taipei,China**

The Financial Supervisory Commission (FSC) in Taipei,China was established on 1 July 2004 to promote integrated financial supervision. The Commission consolidates the supervision of banking, securities, and insurance sectors, and acts as a single regulator for all of these industries. The establishment of the FSC signifies more than just the transfer or consolidation of financial regulation; it represents the birth of a new service-driven culture of financial supervision in Taipei,China.

The newly established FSC functions as a quasi-independent agency that directly reports to the Executive Yuan. The Commission's responsibilities include supervision, examination, and inspection of the financial market. The FSC is headed by nine commissioners, including the chairperson and two vice chairpersons. All the commissioners are nominated by the Premier to the President for appointment.

The FSC includes four bureaus and five supporting departments (Figure 4). The Banking Bureau, the Securities and Futures Bureau, and the Insurance Bureau are responsible for supervising financial institutions. The Examination Bureau is in charge of examining financial institutions, and consists of examination staff from the Central Bank, the Ministry of Finance and the Central Deposit Insurance Corporation. This has provided better administrative and human resources for conducting financial examination under one agency.

**Figure 4: The Financial Regulatory Structure in Taipei, China**

Source: FSC website<sup>3</sup>.

The Banking Bureau is mainly responsible for banking supervision and ensuring the stability and safety of the banking industry. The organization of the Banking Bureau includes the Legal Regulation Division, Domestic Banks Division, Credit Cooperatives Division, Trust and Bills Finance Companies Division, Foreign Banks Division, and Financial Holding Companies Division.

### **3. IMPACT OF THE CURRENT FINANCIAL TURMOIL ON COMMERCIAL BANKS**

#### **3.1 Impact of the Financial Turmoil on Commercial Banks in the PRC**

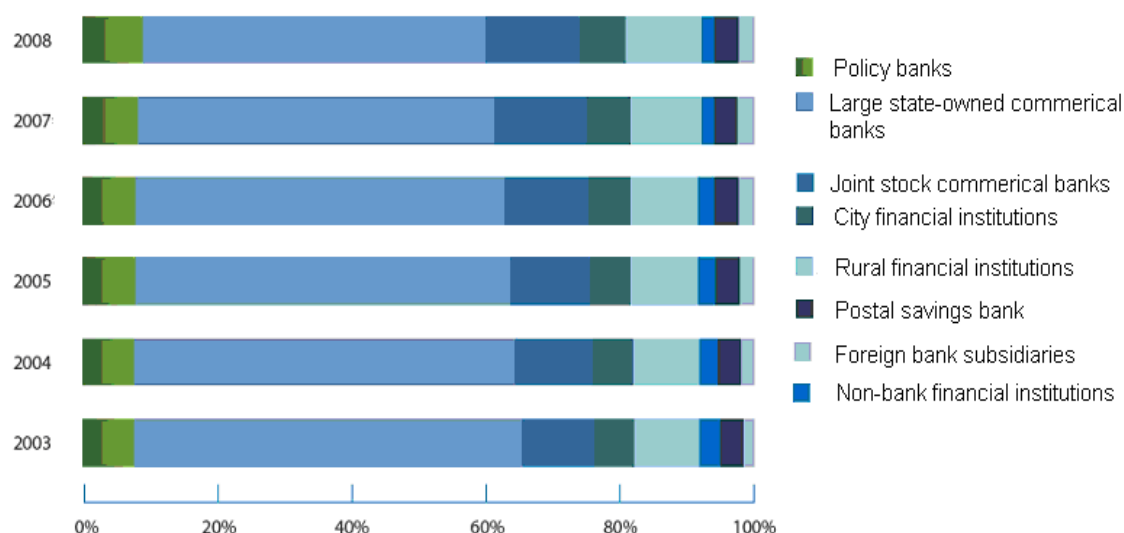
As of the end of 2008, financial institutions in the PRC—including banks and non-banks—consisted of 3 policy banks, 5 large state-owned commercial banks, 12 joint stock commercial banks, 136 city commercial banks, 22 rural commercial banks, 163 rural cooperative banks, 22 city credit cooperatives, 4,965 rural credit cooperatives, 1 postal savings bank, 4 financial asset management companies, 32 locally incorporated foreign bank subsidiaries, 54 trust companies, 84 finance companies of enterprise groups, 12 financial leasing companies, 3

<sup>3</sup> Available at <http://oldwww.fsc.gov.tw/ct.asp?xItem=508411&ctNode=2217&mp=5>

monetary brokers firms, 9 auto financing companies, 91 village and township banks, 6 lending companies, and 10 rural mutual credit cooperatives.

In 2008, there were noticeable changes in the market shares of banking institutions (Figure 5). Measured by asset scale, the three largest banking institutions were large state-owned commercial banks, joint stock commercial banks, and rural cooperative financial institutions. In 2008, the market shares by asset scale of these three types of banking institutions were 51.0%, 14.1%, and 11.5%, respectively. The market shares of large state-owned commercial banks and foreign bank subsidiaries were reduced by 2.22% and 0.23%, while those of the policy banks, rural cooperative financial institutions, joint stock commercial banks and postal savings bank increased by 0.92%, 0.81%, 0.34% and 0.19%, respectively. On the other hand, there was a rise in the market shares by asset scale of other institutions.

**Figure 5: Market Share (by assets) of Banking Institutions in the PRC**



Source : CBRC (2009).

The impact of the current financial turmoil on PRC's investments in security and relevant derivatives in the US and the EU may be observed from three dimensions: government's investment in the US government's bonds; financial institutions' investment in corporate bonds; and strategic overseas investments by the main state-owned banks.

According to estimates by the PRC media, Asian financial institutions incurred total losses amounting to approximately US\$24 billion as a result of the financial crisis, with Japan suffering the biggest loss. Chinese financial institutions, meanwhile suffered a loss of about US\$3.1 billion.

The *Report on Situation of Oversea Holding America Securities* (issued by American Finance Ministry and Federal Reserve System at the end of April 2009), estimated that PRC's total holdings of US stocks, bonds, and asset-backed securities (ABS) was US\$1,174.8 billion at

the end of June 2008. This was second only to Japan's holdings, which amounted to US\$1,184.8 billion. Of the US\$375.7 billion in ABS holdings, around US\$368.7 billion were issued by Fannie Mae and Freddie Mac (Table 6).

**Table 6: Value of Foreign Holdings of US Long-term Securities, by Asian Country and Type of Securities (as of 30 June 2008)**

Economy	Million US\$			
	Long term Securities (include stock, long term government bond, agency bond and corporate bond)	ABS	Agency ABS	Corporate ABS
Japan	1,184,814	162,869	121,018	41,851
PRC	1,174,798	375,676	368,721	6,955
Singapore	155,953	12,834	2,878	9,956
Taipei,China	147,398	36,736	36,169	567
Hong Kong, China	130,554	18,725	8,776	9,949
Korea	120,885	24,357	20,626	3,731
Malaysia	34,098	11,973	10,576	1,397
Thailand	16,446	49	28	21
India	16,604	2	2	Less than 0.5
Indonesia	10,509	20	20	Less than 0.5
Philippines	14,185	63	63	Less than 0.5
Total Asia	3,363,042	676,088	587,452	88,636
UK	840,355	89,872	16,015	73,857
Total Europe	3,795,611	515,494	103,945	411,549

Source : US Treasury Department 2009b.

According to these statistics, PRC financial institutions suffered limited foreign security investment losses as a result of the global financial turmoil. The main reasons for this could be summarized as follows:

- (1) Financial openness was still far lower than the global average level. Overall system risks were therefore kept under control.
- (2) Funds remained in surplus and overall liquidity risk was low.
- (3) Direct and indirect financial systems in PRC are not fully integrated. As such, the high leverage ratio of derivatives does not exist in the financial market.
- (4) Reforms of large commercial banks significantly improved their asset quality. Banks' corporate governance and management ability also continue to improve.

- (5) Foreign exchange reserves rose to US\$2.1 trillion in July 2009, allowing PRC to absorb overseas investment losses.

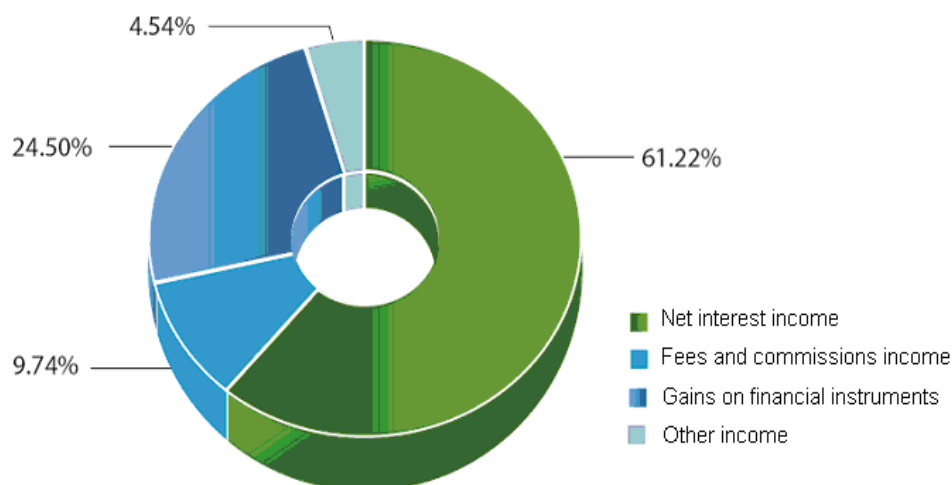
Major commercial banks in PRC also suffered lower investment losses compared to US and EU derivatives or securities. For example, risk exposure in the China Construction Bank peaked at US\$17.814 billion in September 2008, accounting for less than 2% of total assets. Direct risk exposure in other PRC commercial banks listed in Hong Kong, China was also kept under control (Table 7).

**Table 7: US Related Derivatives Holdings of Major Commercial Banks in PRC, Third Quarter of 2008**

Bank	Derivative securities (Billion US\$)					Foreign bond / asset (%)	Reserve provisioned in 2008 (billion US\$)	Provision /net Income (%)
	FNMA FHLMC	Sub-prime	MBS	Lehman Brothers bond	Sub-total			
BOC	6.2	3.3	5.7	0	15.2	1.6	2.1	24
CCB	17.4	0.2	0	0.2	17.8	1.7	0.9	7
ICBC	1.8	1.2	0.6	0.2	3.7	0.3	1.4	10.2
CITIC	1.2	0	0	0	1.2	0.8	0.1	6
CMB	0	0	0	0	0	0	0.1	2.8
Total	26.6	4.7	6.3	0.4	38		4.5	

Source : Wealth Invest Weekly (2009).

The impact of the financial turmoil on the PRC banking industry was assessed in the 2008 Annual Report issued by CBRC. The report noted that the net profit (after-tax) of the banking industry in 2008 was CNY583.4 billion, an increase of 30.6% from 2007. The net return on assets (ROA) was 17.1%; this was the highest figure in the global banking industry. Net interest income, investment returns, and net fee-based income constituted the three major contributors to the income portfolio (Figure 6).

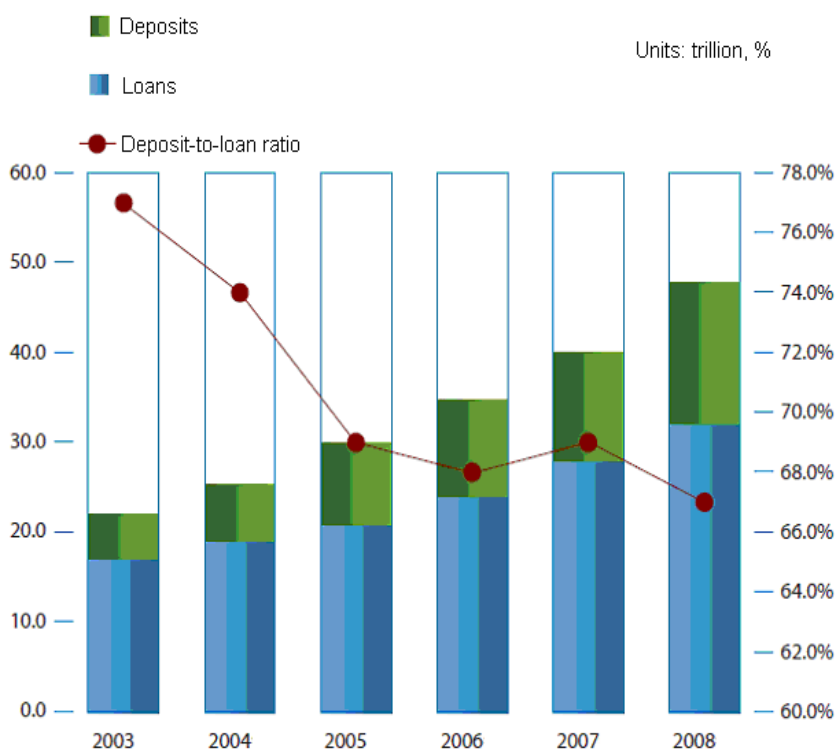
**Figure 6: Profit Distribution of Major Commercial Banks in the PRC**

Source: CBRC (2009).

The overall weighted average capital adequacy ratio (CAR) stood at 12% by the end of 2008. This was higher than the 8.3% registered at the end of 2007. The number of banks which met the CAR requirement of 8% reached 204, higher by 43 compared to 2007. There was only one bank with a CAR below the statutory minimum. The assets of these qualified banks accounted for 99.9% of the total assets of commercial banks, up by 20.9% from the end of 2007.

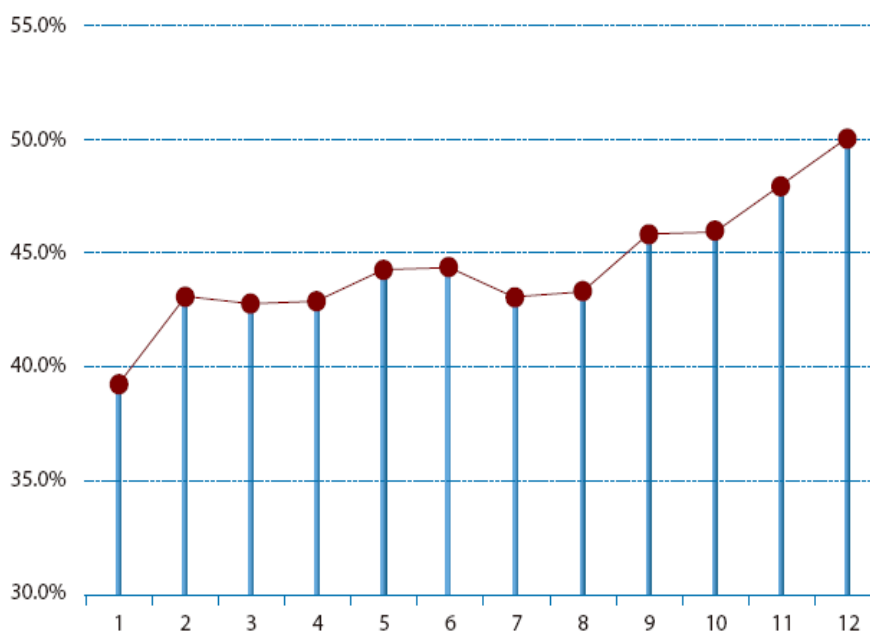
The banking industry's overall liquidity remained stable at the end of 2008. The overall loan-to-deposit ratio of banking institutions was 69.2%, which was 5.8% lower than regulatory ceiling of 75% (Figure 7). The liquidity ratio stood at 50.07%, up by 9.9% from the beginning of the year (Figure 8). The excess reserve ratio was 5.6%, up by 2.6% during the same period.

**Figure 7: Deposits and Loans of Banking Institutions and Loan-Deposit Ratio, 2003–2008**



Source : CBRC (2009).

**Figure 8: Liquidity Condition of Major Commercial Banks in the PRC, January to December 2008**



Source : CBRC (2009).

Due to the financial turmoil, the provision for asset impairment set aside by major commercial banks totaled CNY \$773.5 billion in 2008, an increase of 174.7 billion from the previous year. The provision coverage ratio also increased by 75.2% to 114.4%. The banking industry had thus enhanced their resilience to risks.

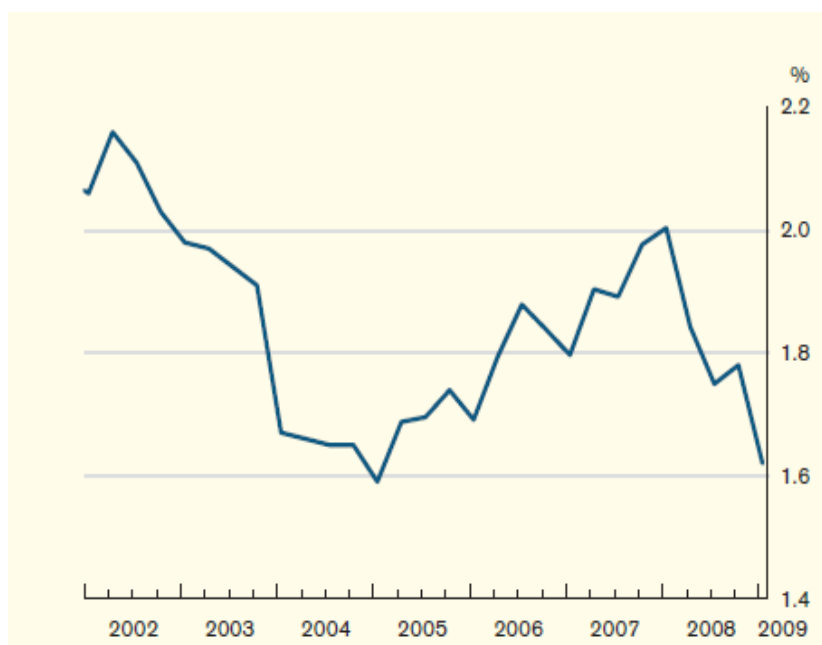
### 3.2 The Impact of the Financial Turmoil on Commercial Banks in Hong Kong, China

As a result of the global financial crisis, the profit of banks in Hong Kong, China was significantly lower in 2008 than in 2007. Many retail banks registered a significant reduction in profits in 2008. The aggregate pre-tax operating profits of retail banks fell by 35.7% in 2008 compared to 2007.

The net interest margin (NIM) of retail banks fell to 1.84% in 2008, compared to 1.90% in 2007. Measured on a quarterly annualized basis, however, the NIM of retail banks rebounded from 1.75% in the third quarter of 2008 to 1.78% in the fourth quarter of 2008 (Figure 9).

The non-interest income of retail banks declined due to trading investment losses and lower income from fees and commissions. The cost-to-income ratio of retail banks climbed up to 45.1% in 2008, from 40.5% in 2007.

**Figure 9: Retail Banks' Net Interest Margin in Hong Kong, China (quarterly annualized)**



Source : HKMA (2009b).

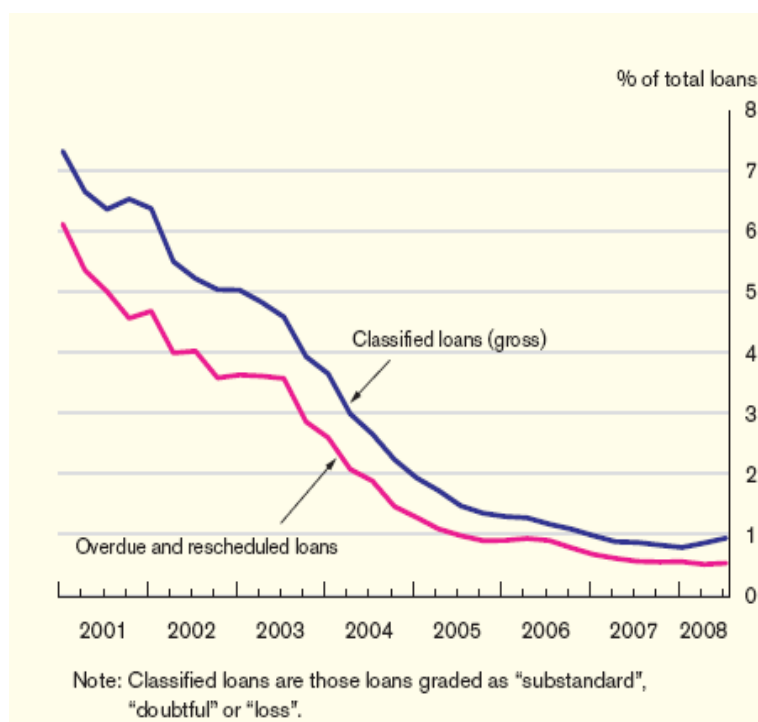
Impairment charges increased significantly in 2008 as the economic and financial environment deteriorated. Net charges for debt provisions surged to HK\$10.7 billion in 2008 from HK\$2.1



billion in 2007. Net charges for other provisions, mostly related to impairment allowances for securities holdings, tripled to HK\$14.6 billion from roughly HK\$4.4 billion in 2007.

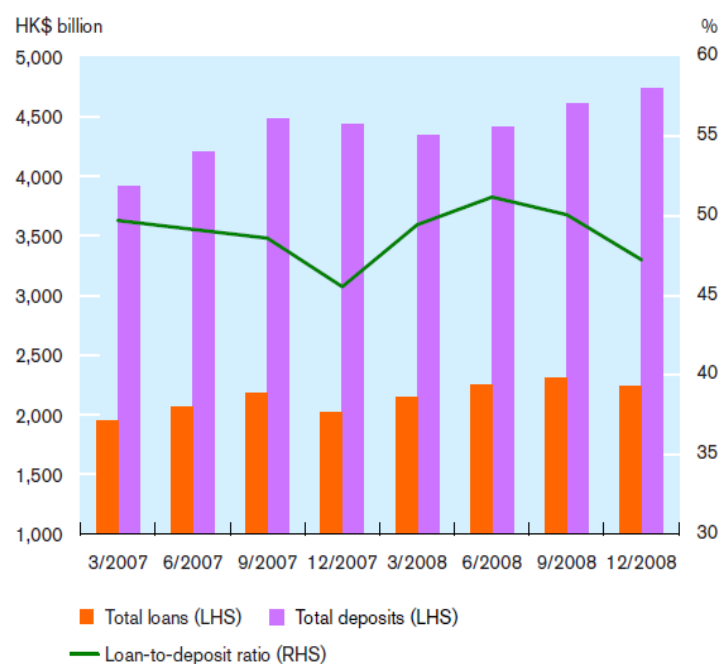
Investments by retail banks in debt securities, which were classified as “substandard”, “doubtful” or “loss”, stood at 0.06% of the banks’ assets by the end of December 2008. Debt securities investments classified as “special mention” increased to 0.39% of banks’ assets in the same period, from 0.31% by the end of September 2008.

The credit quality of retail banks’ loan portfolios deteriorated further in the last quarter of 2008. The ratio of overdue and rescheduled loans also increased to 0.68% from 0.55% by the end of September 2008 (Figure 10).

**Figure 10: Asset Quality of Retail Banks in Hong Kong, China**

Source : HKMA (2009b).

As the financial crisis deepened after September 2008, banks generally became more cautious in lending. Total loans and advances of retail banks fell by 3.1% in the final quarter of 2008. On the other hand, total customer deposits increased by 2.7% during the same period. The overall loan-to-deposit ratio of retail banks fell to 47.2% by the end of December 2008, from 50.1% by the end of September 2008 (Figure 11). The Hong Kong dollar loan-to-deposit ratio also fell to 69.4% from 72.9% during the same period.

**Figure 11: Hong Kong, China's Retail Banks' Total Loans and Customer Deposits**

Source : HKMA (2009b).

In the final quarter of 2008, domestic lending (loans for domestic use plus trade finance) declined by 3.3% despite growing by 2.6% in the previous quarter. Trade finance lending fell significantly by 14.8% in the final quarter, following a decline of 2.5% in the previous quarter. This was apparently due to reduced trade activities. Loans for use outside Hong Kong, China decreased by 0.6% in the final quarter of 2008, after falling by 0.4% in the previous quarter (Figure 12).

**Figure 12: Loans and Advances of Retail Banks in Hong Kong, China**



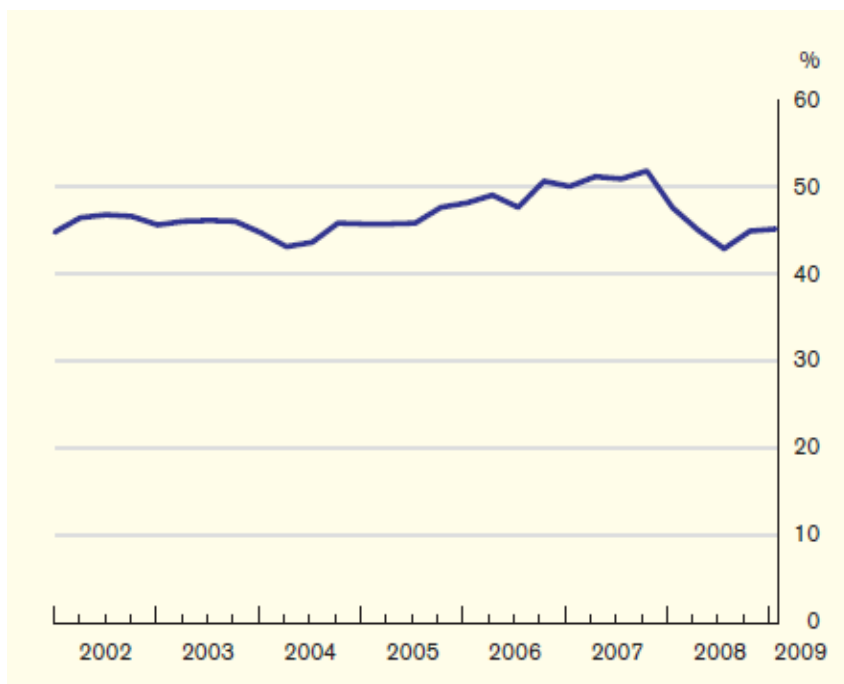
Notes:  
 1 "Domestic lending" is defined as loans for use in Hong Kong plus trade finance.  
 2 "Loans for use outside Hong Kong" include "others" (i.e. unallocated).  
 3 Percentage denotes quarterly growth rate.

Source : HKMA (2009b).

Figure 13 shows that the quarterly average liquidity ratio of retail banks stood at 45% in the final quarter of 2008, well above the statutory minimum of 25%.

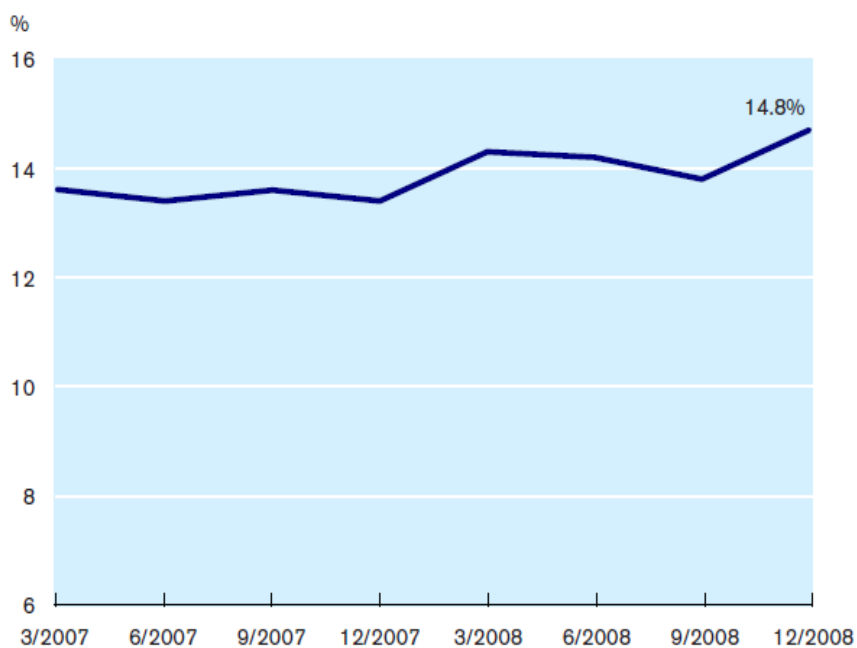
Despite increased provisions for securities investments and bad and doubtful debts, the capital positions of locally incorporated AIs remained sound. Their consolidated CAR stood at 14.8% by the end of December 2008, compared with 13.8% by the end of September 2008 (Figure 14).

**Figure 13: Retail Banks' Liquidity Ratio (Quarterly Average)**



Source : HKMA (2009b).

**Figure 14: Capital Adequacy Ratio of Locally Incorporated AIs**



Source : HKMA (2009b).

Table 8 summarizes some key performance indicators of the banking industry in Hong Kong, China.

**Table 8: Key Performance Indicators of Hong Kong, China's Banking Sector**

	Dec-07	Sep-08	Dec-08
<b>Asset quality</b>			
Pass loans	97.59	97.61	96.57
Special mention loans	1.57	1.43	2.19
Classified loans (gross)	0.85	0.96	1.24
Classified loans (net)	0.65	0.7	0.84
Overdue>3 months and rescheduled loans	0.57	0.55	0.68
<b>Profitability</b>			
Bad debt charge as percentage of average total assets	0.04	0.09	0.18
Net interest margin	1.9	1.86	1.84
Cost-to-income ratio	40.5	43.7	45.1
<b>Liquidity</b>			
Liquidity ratio (quarterly average)	51.9	42.9	45
<b>Capital Adequacy</b>			
Capital adequacy ratio (consolidated)	13.4	13.8	14.8

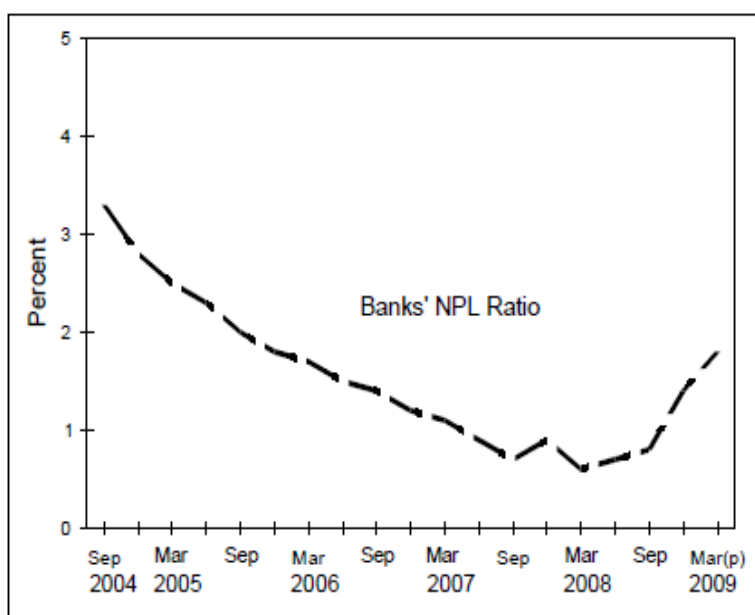
Source : HKMA (2009b).

### 3.3 The Impact of the Financial Turmoil on Commercial Banks in Singapore

As a result of the 2008 global financial crisis and the subsequent decline in commercial activity, the growth of Domestic Banking Units' (DBU) non-bank loans is expected to fall. Spurred by robust economic growth in the first half of 2008, DBU non-bank loans accelerated. While property-related loans—namely loans to the building and construction (B&C) sector and housing—were the main drivers, a number of other sectors such as nonbank financial institutions (NBFI) and general commerce also contributed significantly to the growth in DBU non-bank loans. Despite the strong growth in property-related loans, the exposure of banks to the property sector remained within regulatory limits, and loan books remained well-diversified.

The banking system's NPL ratio is at a historical low after a sustained period of buoyant growth in Singapore. The NPL ratio is expected to rise moderately as the economy slows further and loan delinquencies and defaults rise. Indeed, a slight rise has been seen in the overall NPL ratio, which rose from 0.9% in March of 2008 to 1% in September of 2008 (Figure 15).

**Figure 15: Overall NPL Ratio in Singapore**

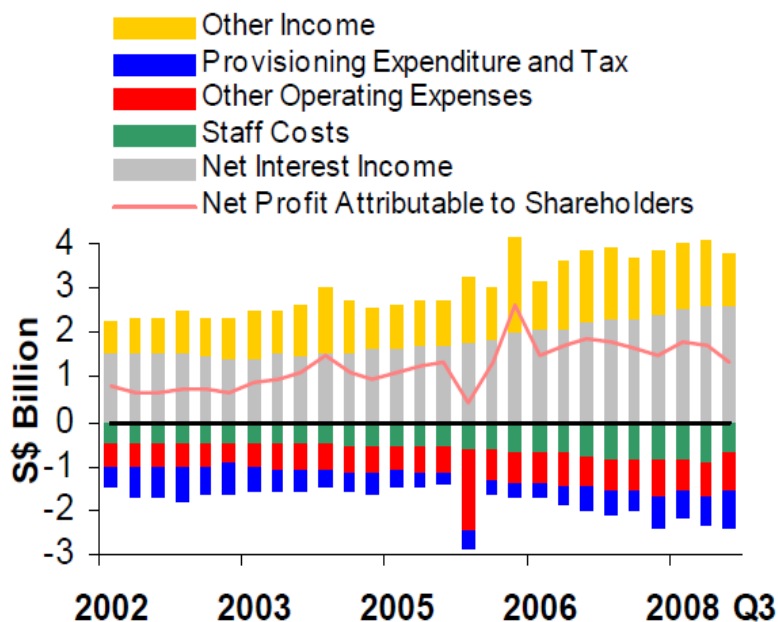


Source : MAS (2009)

Thus far, the impact of the recent financial turmoil on local banks in Singapore has been contained because of their limited direct exposures to securities linked to US home mortgages, or to those distressed or failed financial institutions such as Bear Stearns and Lehman Brothers. Local banks have yet to make large write downs. In November 2008, the allowances for their CDO portfolios totaled S\$937 million, or around 10% of the banks' operating profits in the past four quarters; this brought their outstanding CDO exposures down to less than 0.4% of total assets.

Local banks are still focused primarily on commercial banking, with interest income accounting for four-fifths of gross income, even though they have been expanding their investment banking and fee-based businesses over the years. Non-interest incomes such as trading, investment and fee incomes, which are more sensitive to market conditions, have also been adversely affected (Figure 16).

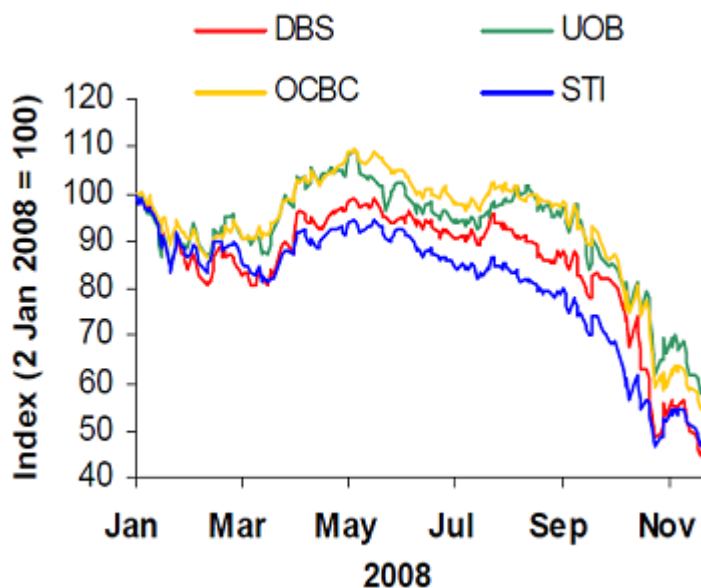
**Figure 16: Local Banks' Profit Components in Singapore**



Source : MAS (2008).

The impact on local banks has mainly been on share prices (Figure 17), reflecting the higher risk premium now required globally and the constrained earnings outlook. Share prices have fallen by about 50% from their highest levels this year, in line with the broader STI Index.

**Figure 17: Local Banks' Share Prices and STI in Singapore**

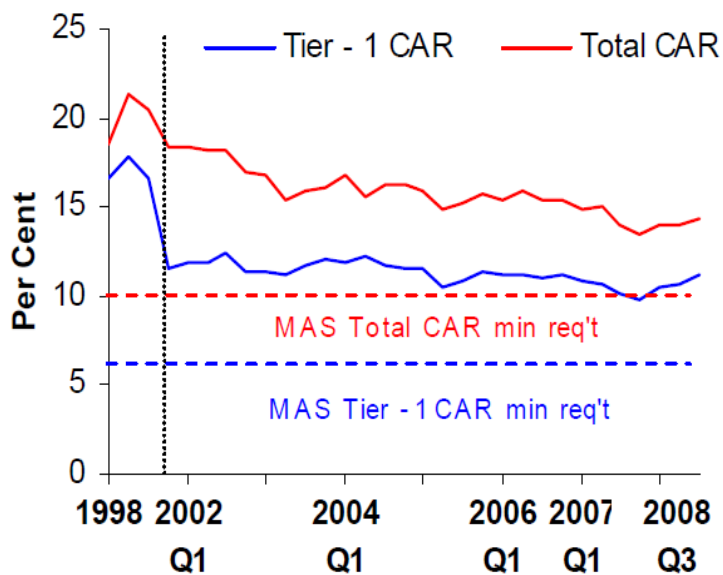


Source : MAS (2008).



However, the local banks facing these risks remained strong, with high capital requirements. The average Tier 1 capital ratio in the third quarter of 2008 was 11.3%, well above the MAS' minimum requirement of 6% and BIS' recommendation of 4% (Figure 18).

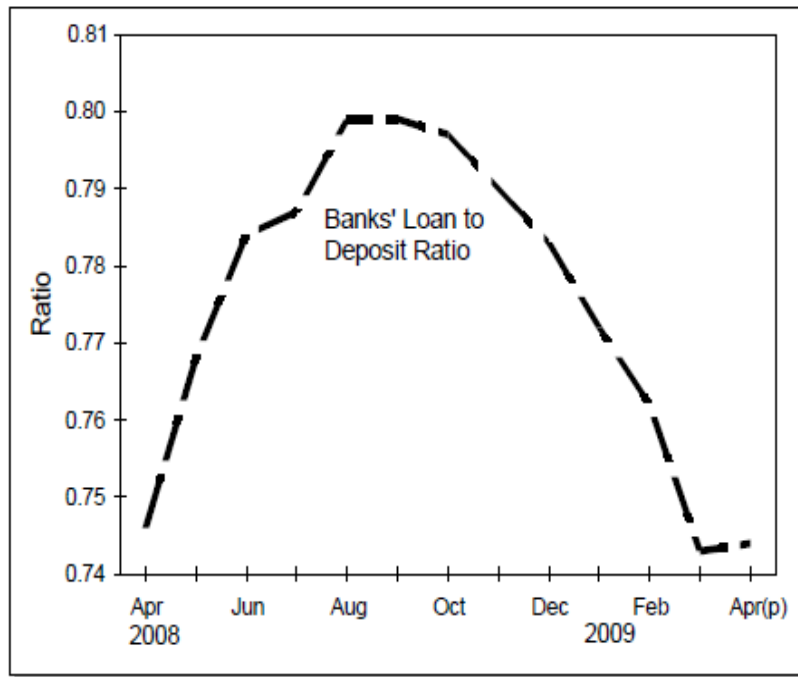
**Figure 18: Local Banks' CAR in Singapore**



Source : MAS (2008).

In addition, local banks have healthy loan-to-deposit ratios, averaging 86% in the third quarter of 2008 (Figure 19). Having a stable retail deposit base as the primary source of funding implies that they rely minimally on wholesale funding.

**Figure 19: Local Banks' Loan-to-Deposit Ratio in Singapore**



Source : MAS (2009).

Table 9 summarizes the key performance indicators of the banking industry in Singapore.

**Table 9: Key Performance Indicators of Singapore's Banking Sector**

	2005	2006	2007	Q1 2007	Q2 2007	Q3 2007	Q4 2007	Q1 2008	Q2 2008	Q3 2008
<b>Capital Adequacy (%)</b>										
Regulatory Capital to Risk-Weighted Assets	15.8	15.4	13.5	14.9	15	14	13.5	14.1	13.9	14.3
Regulatory Tier I Capital to Risk-Weighted Assets	11.4	11.2	9.8	10.9	10.6	10.1	9.8	10.5	10.6	11.3
<b>Asset Quality (%)</b>										
Nonbank NPLs to Nonbank Loans	3.8	2.8	1.5	2.5	2.1	1.8	1.5	1.4	1.4	1.4
Total Provisions to Non-Bank NPLs	78.7	89.5	115.6	94.4	98.6	105.9	115.6	118.9	117.2	119.9
Specific Provisions to Non-Bank NPLs	41.1	41.3	39.9	42.7	39	38.7	39.9	38.8	41.4	43.5
<b>Loan Concentrations (% of Total Loans)</b>										
Bank Loans	24.1	22.8	16.2	21.1	20.7	19.5	16.2	17.7	17.1	16.6
Nonbank loans	75.9	77.2	83.8	78.9	79.3	80.5	83.8	82.3	82.9	83.4
Of which to (% of Total Loans):										
Manufacturing	7.6	8.4	9.2	9	9.1	9.2	9.2	9.1	8.9	9.4
Building & Construction	8.8	9.5	11.4	9.5	10.1	10.2	11.4	12.1	12.3	12.3
Housing	21.7	21	20.6	20.8	20.6	20.6	20.6	19.8	19.7	19.2
Professionals & Private Individuals	9.4	8.7	8.6	8.6	8.5	8.6	8.6	8.2	8.4	8.1

	2005	2006	2007	Q1 2007	Q2 2007	Q3 2007	Q4 2007	Q1 2008	Q2 2008	Q3 2008
Nonbank Financial Institutions	10	10.5	12.3	11.7	11.1	11.3	12.3	11.8	11.4	11.2
<b>Profitability (%)</b>										
ROA (Simple Average)	1.2	1.4	1.3	1.4	1.4	1.4	1.3	1.2	1.2	1.1
ROE (Simple Average)	11.2	13.7	12.9	13.8	14.1	13.4	12.9	12.2	12.5	11.9
Net Interest Margin (Simple Average)	1.9	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2
Non-Interest Income to Total Income	39	42.6	39.1	41.6	40.7	39.5	39.1	36.5	36.4	34.2

Source : MAS (2008).

### 3.4 The Impact of the Financial Turmoil on Commercial Banks in Taipei,China

The subprime mortgage meltdown has had direct and indirect impacts on financial institutions in Taipei,China. Direct impacts mainly involve investments in overseas securities, and financial distress originating from financial institutions and derivatives. Since financial openness in Taipei,China is relatively less advanced, domestic financial institutions had limited exposure to derivatives or subprime investment securities. In addition, the loss in collateralized debt obligation (CDO) of related securities or structured investment vehicles (SIVs) is mostly written down in financial institutions. As such, the impact of the financial turmoil on Taipei,China's financial institutions has been relatively mild. According to a press release issued by the Financial Supervisory Commission Executive Yuan on 29 July 2008, total subprime losses of financial institutions reached approximately NTD \$42.572 billion. The impact on the insurance, bank, and security industries is summarized in Table 10.

**Table 10: Losses in Financial Institutions in Taipei,China from the US Subprime Crisis**

Items	Investment Amount billion NT\$	Unrealized Loss billion NT\$		Realized loss billion NT\$	Total loss
		Reserve provisioned	Un- provisioned		
Bank	Subprime related	43.98	10.65	0.03	17.86
	SIV	16.79	15.58	0.04	16.89
	Sub-total	60.77	-	-	34.17
Insurance	Subprime related	22.9	6.65	0.13	8.08
	SIV	1.29	0.27	0	0.32
	Sub-total	84.95	33.16	0.21	42.57

\* 0.58 billion in total losses from subprime related products in banks is the same as in SIVs; total losses therefore amount to 34.17 billion.

\* Data was recorded through 2008/05.

Source : FSC (2008).

The indirect impact of the financial turmoil is mainly reflected in the operating performance of banks and insurers. In addition to dealing with the double shock of financial turmoil and economic recession, local banks also had to contend with an increase in default in enterprise loans. Moreover, due to a steady decrease in the NIM, incremental insurance reserves increased the operating cost of insurers.

The capital structure and operating performance of Taipei,China banks can be described as follows:

**Weak fundamentals in financial holding companies.** After the 1997 Asian financial crisis, Taipei,China established the financial resolution trust corporation fund (RTC) to deal with problematic financial institutions. In 1999, Taipei,China also adopted policies aimed at decreasing the deposit reserve ratio, increasing the payment of deposit reserve, and decreasing the financial business tax by 3%. These were intended to help banks solve the NPL problem. Due to these policies, the fundamentals of Taipei,China banks have improved.

Compared with the state of banking systems in Europe and US after the financial turmoil, the fundamentals of Taipei,China's banks are relatively sound. However, the fundamentals of financial holding companies have not been as robust as previously thought. This problem has two aspects. First, owing to the Second Financial Reform, several private financial

holding companies combined with private funds from abroad to merge with other financial holding company and state-owned banks. These private funds have been affected by the financial crisis, subsequently affecting the capital structure of financial holding companies. Second, because insurance subsidiaries of financial holding companies suffered from investment losses in domestic and foreign security markets, their capital structure has also been affected. As such, even though Taipei, China's financial system remains relatively sound, capital quality in some large private financial holding companies may have been compromised by the financial crisis.

**Decrease in banking profitability.** The liberalization of the banking sector in Taipei, China has allowed many homogenous competitors to enter the banking industry within a short period of time. Banking business, however, has not expanded at the same speed. Confronted with a limited savings and loan market, competition between old and new banks has become even more intense. Faced with the environment of excessive competition, banks began adopting price competition measures—such as reducing the lending rate—to ensure a stable growth in loan business and increase market share. The NIM between deposits and loans in banks gradually shrank. From 2000 to 2008, the NIM decreased from 2.99% to 1.5%. After tax and deposit reserves, the actual NIM was less than 1.5%. The NIM level in Taipei, China is obviously too low.

In addition, aggressive expansion by and competition among banks created overlaps in inter-banking business. Profits were limited and the market share of more than half of the banks was less than 1%. To expand market share, banks intensified financial marketing, such as increasing service quality and reducing fees. This approach increased costs and reduced actual profit. Although the establishment of new banks reinvigorated Taipei, China's financial market, it also weakened the profitability of banks.

Table 11 shows *both the ROA and ROE* of domestic banks in Taipei, China, which have tended to decrease over time. According to statistics from the Central Bank, domestic banks as a whole posted a net income before tax of NT\$34.4 billion in 2008, a decrease of 55.68% on a year-on-year basis. The net income before tax of domestic banks in the first quarter of 2009 was NTD \$19.2 billion, a decline of 21.79% compared with the first quarter of 2008.

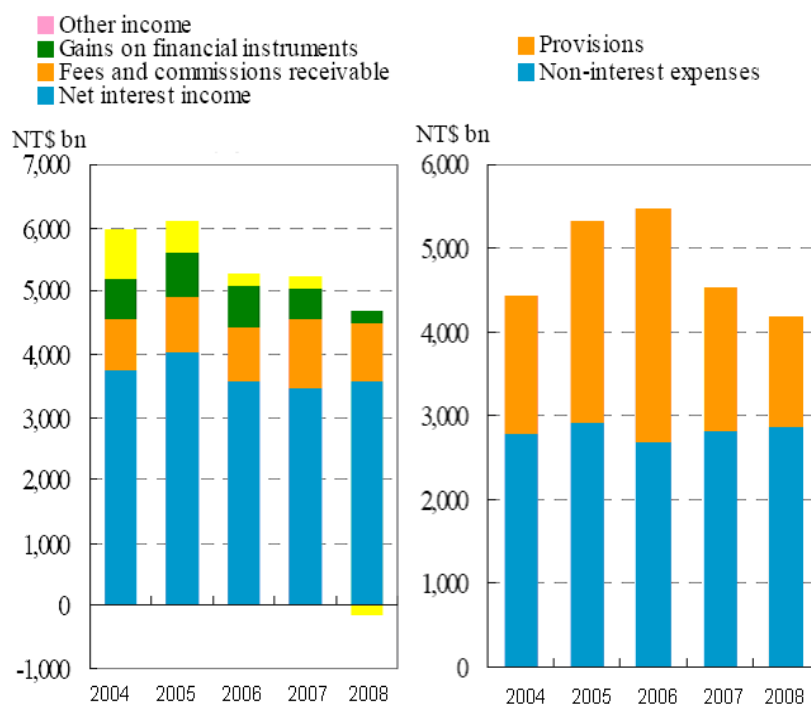
**Table 11: ROA and ROE of domestic banks in Taipei, China**

Year	ROA(%)	ROE(%)
2000	0.48	6.19
2001	0.27	3.6
2002	-0.48	-6.93
2003	0.22	3.52
2004	0.63	10.3
2005	0.3	4.81
2006	-0.03	-0.43
2007	0.14	2.21
2008	0.16	2.47
Jan-09	0.03	0.45
Feb-09	0.04	0.69
Mar-09	0.07	1.05
Apr-09	0.07	1.19
May-09	0.09	1.5

Source : FSC Statistics. Available: "[http://www.fscey.gov.tw/Layout/main\\_ch/BS\\_BSList.aspx?path=2566&Language=1](http://www.fscey.gov.tw/Layout/main_ch/BS_BSList.aspx?path=2566&Language=1)

Figure 20 shows the revenue and cost structure of domestic banks in Taipei, China. Compared with 2007, the overall operating revenues of domestic banks declined by 13.15% in 2008. This was mainly due to an increase in investment losses stemming from sharp falls in the local and foreign stock markets, and continuously increasing provisions in investment positions associated with US subprime securities. On the one hand, the non-interest income of domestic banks fell dramatically, due primarily to the weakened financial market and increasing provisions for impairment losses on assets linked to the US subprime mortgage-related products. However, net interest income, which is the primary source of operating revenues for domestic banks, leveled off due to a continued low interest rate spread between deposits and loans. On the cost side, although non-interest expenses rose in 2008 as employee bonuses were recognized as expenses, total operating costs fell by 7.3% compared with 2007, as a result of a sharp decline in provisions.

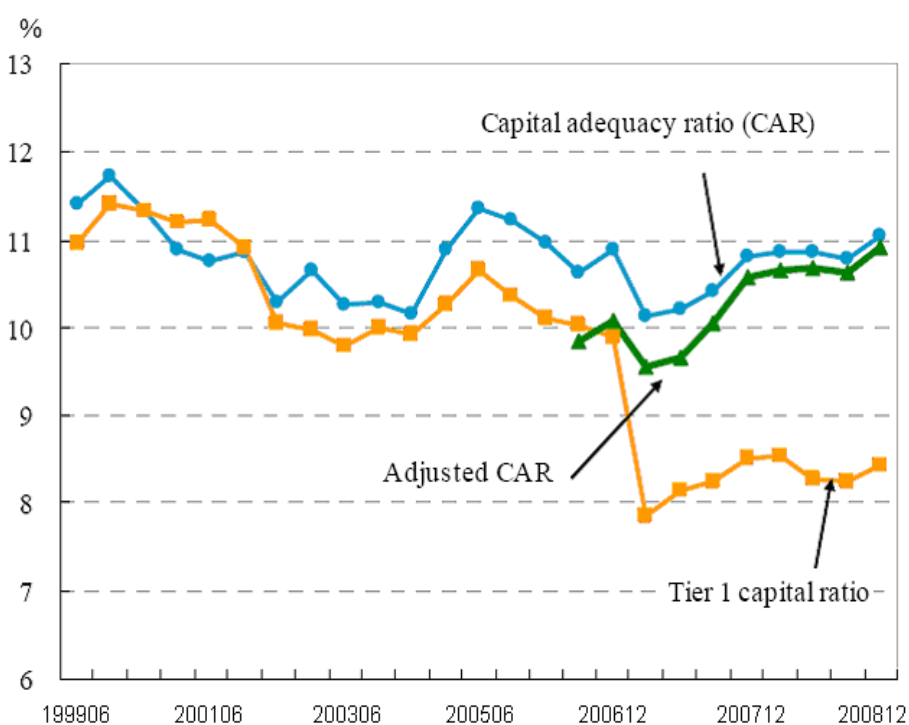
**Figure 20: Composition of Income and Cost of Domestic Banks in Taipei, China**



Source : Central Bank of Taipei, China (2009).

**Small increase in the capital adequacy ratio of domestic banks.** In the second half of 2008, a general reduction in capital was caused by the negative earnings of several domestic banks. Owing to some banks increasing their issuance of common stocks and subordinated bonds, the average capital adequacy ratio stood at 11.04% by the end of 2008, slightly higher than the 10.80% registered by the end of 2007 (Figure 21).

**Figure 21: Capital Adequacy Ratio of Domestic Banks in Taipei,China**



Source : Central Bank of Taipei,China (2009).

Tier I capital, which features the best bearing capacity, accounted for 76.32% of domestic bank's eligible capital in 2008. Tier 2 capital accounted for 23.46%, while Tier 3 capital made up only 0.28%. The percentage of Tier I capital increased slightly by the end of 2008, while the shares of Tier 2 capital and Tier 3 declined slightly.

**Increase in overdue risk in domestic banks.** The capital quality of domestic banks did not significantly worsen as a result of the financial crisis (Tables 12–14 and Figure 22). By the end of 2008, outstanding classified assets of domestic banks as a whole stood at NTD \$612.3 billion, and the average classified asset ratio was 2.07%, increasing by 5.61% and 0.02 %, respectively, compared with the end of June 2008. The outstanding NPL of domestic banks stood at NT \$285.9 billion, and the average NPL ratio was 1.54%, up by 1.67% and 0.02% when compared with the end of June and September 2007, respectively. The average NPL ratio increased steadily to reach 1.63% by the end of April 2009.



**Table 12: NPL Ratio of Overall Banks and Domestic Banks in Taipei,China**

Year	Overall (%)	Domestic banks (%)
1996	4.15	3.7
1997	4.18	3.71
1998	4.93	4.37
1999	5.67	4.88
2000	6.2	5.34
2001	8.16	7.48
2002	6.84	6.12
2003	5	4.33
2004	3.28	2.78
2005	2.19	2.24
2006	2.08	2.13
2007	1.79	1.84
2008	1.52	1.54
Jan-09	1.55	1.57
Feb-09	1.59	1.61
Mar-09	1.6	1.63
Apr-09	1.6	1.63
May-09	1.59	1.61

Source : FSC Statistics.

Available:[http://www.fscey.gov.tw/Layout/main\\_ch/BS\\_BSList.aspx?path=2566&Language=1](http://www.fscey.gov.tw/Layout/main_ch/BS_BSList.aspx?path=2566&Language=1)**Table 13: Amount of Nonperforming Loans and Provision Coverage Ratio in Taipei,China**

Date	NPL (100 millions NT\$)	Provision coverage ratio (%)
Jun-08	2,812	67.35
Jul-08	2,801	67.21
Aug-08	2,802	67.75
Sep-08	2,817	66.93
Oct-08	2,863	66.12
Nov-08	2,982	63.6
Dec-08	2,851	69.48
Jan-09	2,935	69.96
Feb-09	2,896	68.97
Mar-09	2,946	68.69
Apr-09	2,933	68.52
May-09	2,895	68.65

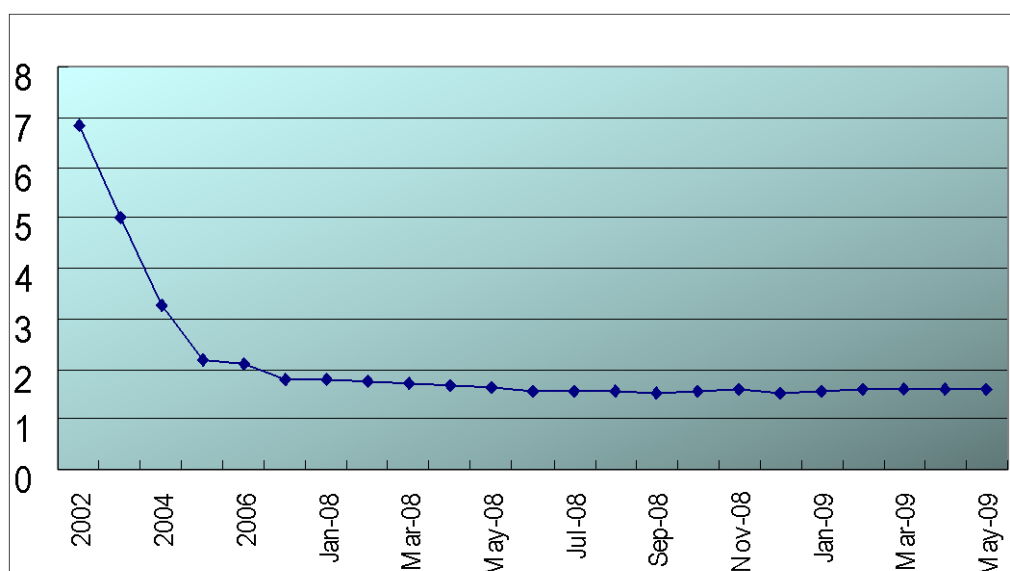
Source : FSC Statistics. Available:

[http://www.fscey.gov.tw/Layout/main\\_ch/BS\\_BSList.aspx?path=2566&Language=1](http://www.fscey.gov.tw/Layout/main_ch/BS_BSList.aspx?path=2566&Language=1)

**Table 14: Key Performance Indicators of Taipei,China's Banking Sector**

	2003	2004	2005	2006	2007	2008
<b>Earnings and Profitability</b>						
Return on assets (ROA)	0.22	0.64	0.3	-0.06	0.28	0.12
Return on equity (ROE)	3.52	10.25	4.74	-0.94	4.32	1.86
Net interest income to gross income	66.86	62.6	66.11	68.34	66.38	78.53
Non interest expenses to gross income	46.35	46.59	47.84	51.21	54.07	62.97
Spread between lending and deposit rates (basis points)	2.63	2.3	2.22	1.91	1.72	1.6
<b>Asset Quality</b>						
Non-performing loans to total loans	6.08	3.82	2.24	2.15	1.83	1.54
Provision coverage ratio	22.68	30.14	50.06	62.26	64.07	69.48
<b>Capital Adequacy</b>						
Regulatory capital to risk-weighted assets	10.29	10.87	11.23	10.87	10.8	11.04
Tier 1 capital to risk-weighted assets	10	10.25	10.37	9.88	8.5	8.43
<b>Liquidity</b>						
Total deposits to total loans	117.69	118.1	118.7	119.41	117.98	122.34
Liquid assets to total assets	NA	NA	NA	NA	10.59	12.69

Source : FSC (2009).

**Figure 22: Average NPL Ratio of Domestic Banks in Taipei,China**

Source: FSC (2009).

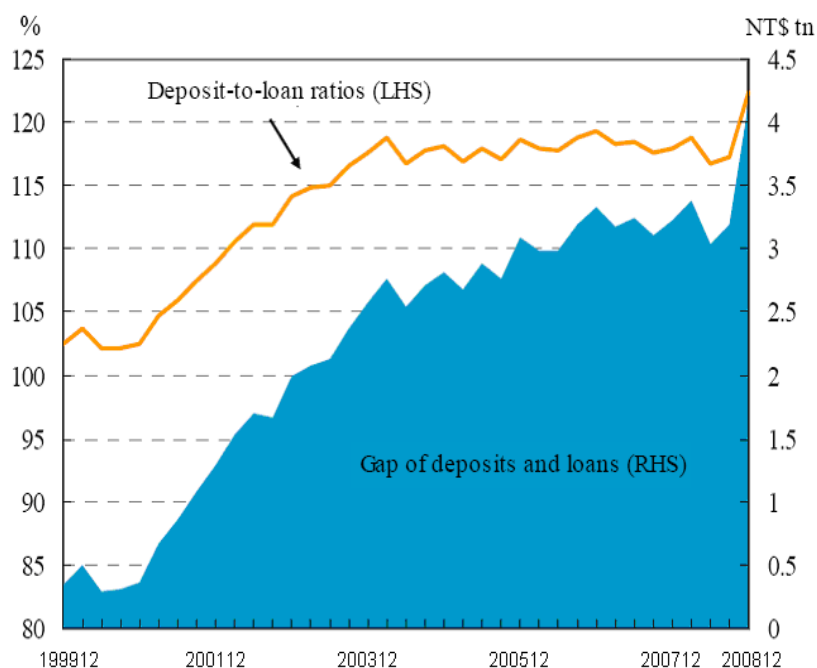
With the rise in NPL in the fourth quarter of 2008, domestic banks raised loan loss provisions, and the NPL coverage ratio increased to 69.48% by the end of 2008. The loan loss reserve ratio increased to 1.07%, indicating that domestic banks allowed for more loan loss provisions to cover possible losses in the future.

As a whole, the capital quality of domestic banks in Taipei,China appear to be sound. However, the expected slowdown in domestic and global economic growth may weaken the financial health of the business sector and compromise the repayment ability of the household sector, hence heightening credit risk.

**Funds have remained in surplus, while liquidity problems have eased in some banks.**

Due to a large amount of capital inflow from overseas, the deposit amounts of domestic banks in Taipei,China increased considerably in the second half of 2008. The annual growth rate in deposits reached 7.66% by the end of 2008. Meanwhile, the annual growth rate in loans slowed down to 3.83%, due mainly to more conservative lending. By the end of 2008, the deposit-to-loan ratio of domestic banks as a whole stood at 122.34%. The funding surplus (i.e. deposits exceeding loan demand) stood at NT \$4.16 trillion, reflecting ample liquidity in domestic banks (Figure 23). This situation continued until the first quarter in 2009, when the deposit-to-loan ratio increased to 127.31%.

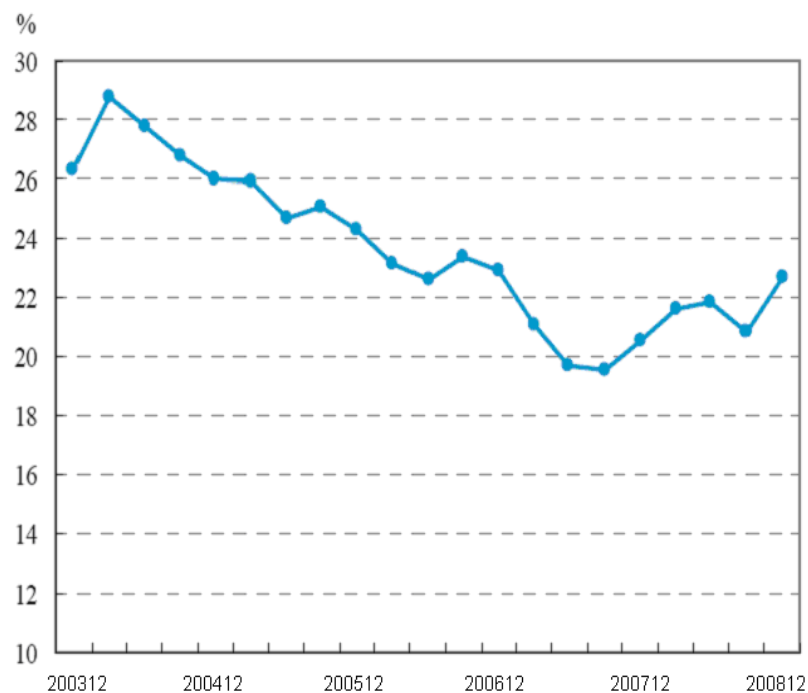
**Figure 23: Deposit-to-Loan Ratio of Domestic Banks in Taipei,China**



Source : Central Bank of Taipei,China (2009).

Figure 24 shows the average NT dollar liquid reserve ratio of domestic banks in Taipei,China. The average NT dollar liquid reserve ratio of domestic banks rose to 22.70% in June 2008, well above the statutory minimum of 7%, and the reserve ratio of each bank was higher than 12%. This ratio steadily rose to 25.43% in March 2009, suggesting that the quality of liquid assets remained satisfactory and that overall liquidity risk was decreasing.

**Figure 24: Liquid Reserve Ratio of Domestic Banks in Taipei,China**



Source: Central Bank of Taipei,China (2009).

## 4. THE IMPLICATIONS OF FINANCIAL REGULATORY STRUCTURE AND THE CURRENT FINANCIAL TURMOIL

The previous two sections showed that an integrated financial regulatory structure did not necessarily help commercial banks in the PRC; Hong Kong, China; Singapore; and Taipei, China mitigate the impact of the current global financial crisis. Although Singapore and Taipei, China operate under an integrated structure, banking performance in these economies were not better than in the PRC or Hong Kong, China, which have fragmented structures.

In June 2009, both the US and EU proposed extensive financial regulatory reforms in response to the global financial crisis. These countries also operate under fragmented regulatory structures. The US proposal recommended the creation of a new federal government agency, the National Bank Supervisor (NBS), to conduct prudential supervision and regulation of all federally chartered depository institutions, and all federal branches and agencies of foreign banks. This agency would take over the prudential responsibilities of the Office of the Comptroller of the Currency (OCC). This office currently charters and supervises nationally chartered banks, federal branches, and agencies of foreign banks, as well as holds responsibility for the institutions currently supervised by the Office of Thrift Supervision (OTS), which supervises federally chartered thrifts and thrift holding companies. The Federal Reserve Bank will have greater power to oversee large financial institutions whose failures could threaten the stability of the entire financial system. Furthermore, the Consumer Financial Protection Agency (CFPA) was established to protect consumers of credit, savings, payment, and other consumer financial products and services, as well as regulate providers of such products and services.

Securities and options are regulated by the SEC, while futures contracts are regulated jointly by the CFTC and SEC. All advisers to hedge funds (and other private pools of capital, including private equity funds and venture capital funds) whose assets under management exceed a modest threshold, should be required to register with the SEC under the Investment Advisers Act. The advisers should then be required to report information on the funds they manage when it is sufficiently assessed that any fund poses a threat to financial stability.

In June 2009, the European Commission put forward its framework proposal on Financial Supervision in Europe. The proposal covered a set of far-reaching reforms in the current architecture of supervisory committees, with the creation of a new European Systemic Risk Council (ESRC) and European System of Financial Supervisors (ESFS), composed of new European Supervisory Authorities. The ESRC would monitor and assess risks to the stability of the financial system as a whole ("macro-prudential supervision"). It would provide early warning of systemic risks that may be building up, and, if necessary, recommend actions to deal with these risks. The creation of the ESRC would address one of the fundamental weaknesses highlighted by the crisis: the exposure of the financial system to interconnected, complex, sectoral, and cross-sectoral systemic risks. The ESFS would supervise individual financial institutions ("micro-prudential supervision"), consisting of a robust network of national financial supervisors working in coordination with new European Supervisory Authorities. These would be created by the transformation of existing Committees for the banking, securities, insurance, and occupational pensions sectors.

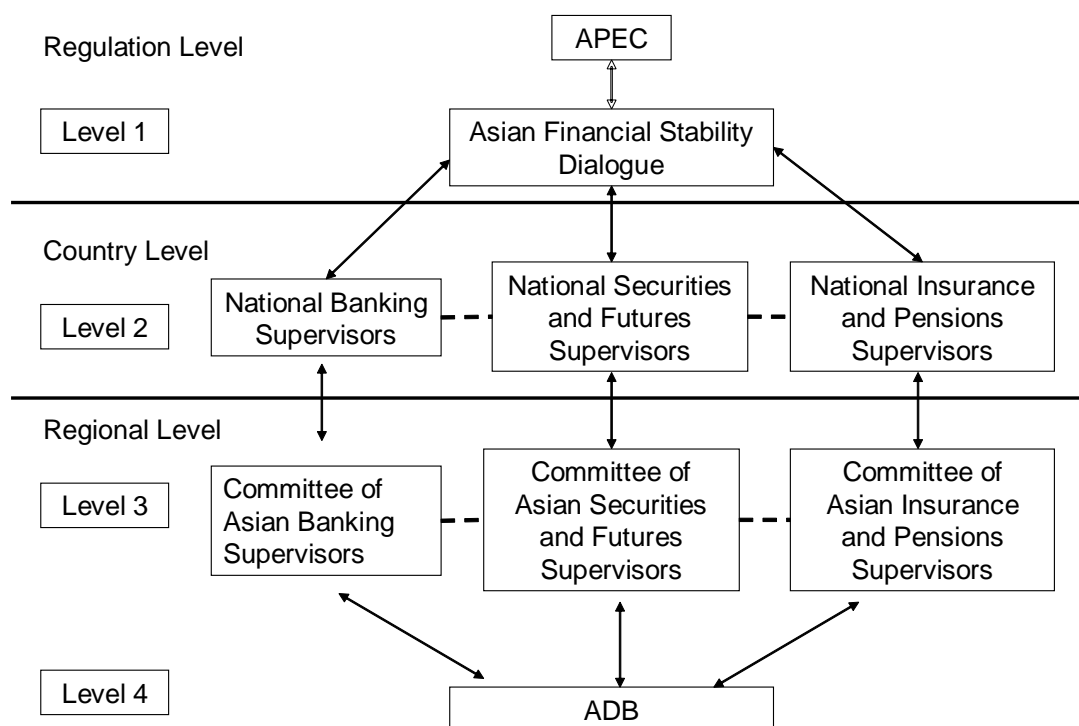
There is no clear evidence to support the argument that an integrated regulatory structure is beneficial to banking performance. But the blurring of boundaries between banking, securities, and insurance challenges traditional financial regulatory structures; Meanwhile, financial globalization and the development of derivatives have made financial markets increasingly complicated. Thus, the traditional financial regulatory structure has become inappropriate. In view of the impact of the financial crisis on the global financial market, greater cooperation in global financial supervision needs to be pursued.

Asian countries have adopted a variety of supervisory structures. As reported in Masciandaro (2009), four of the 13 Asian countries operate under an integrated supervisory structure, while the remaining nine countries have fragmented structures.<sup>4</sup> Similarly in Europe, fourteen of the 27 EU countries have adopted an integrated financial regulatory system, although they have implemented this in different ways. The remaining 13 countries have fragmented structures (Herring and Carmassi 2008).

Developing a regional supervision coordination framework for Asia can refer to the Lamfalussy Process in EU. Although this process has been the subject of recent criticism, it is still the most suitable model for pursuing Asian financial supervisory cooperation in its early stage.<sup>5</sup>

The recommendation for the Asian Lamfalussy Process is organized according to four levels that correspond to the usual policy cycle (Figure 25). The first level constitutes the initial phase of rulemaking, whereby the Asian Financial Stability Dialogue proposes regulations and the Asia-Pacific Economic Cooperation (APEC) decides on these proposals by the usual consensus. The second level committees, composed of representatives from member countries will then be responsible for adopting specific technical rules to implement the framework legislation approved in Level 1. The third level committees, composed of representatives of member countries' financial supervisory agencies, will oversee the consistent day-to-day enforcement of regulations, and will also be charged with drafting implementing powers for decisions reached in Level 2. Finally, monitoring of transposition will be done in the fourth level by the Asian Development Bank.

**Figure 25: The Asian Lamfalussy Process**



Source : Authors' interpretation.

4 According to the Financial Supervision Unification Index in Masciandaro (2009), Australia, Japan, the Republic of Korea, and Singapore have integrated financial supervisory systems, while PRC; Hong Kong, China; India; Malaysia; New Zealand; Pakistan; Philippines; Sri Lanka; and Thailand have fragmented structures.

5 A discussion on the Lamfalussy Process can be found in Kudrna (2009).

In order to implement the Asian Lamfalussy Process, communication and coordination at the regional level need to be strengthened. East Asian countries should set up an Asian Financial Stability Dialogue, made up of finance ministry officials, central bankers, and financial market regulators and supervisors to facilitate policy coordination for financial stability and development. The Asian Financial Stability Dialogue could propose a set of ambitious reforms to the regional architecture of financial services committees, with the creation of a new Committee of Asian Banking Supervisors (CABS), Committee of Asian Securities and Futures Supervisors (CASFS), and Committee of Asian Insurance and Pensions Supervisors (CAIPS).

The recommendations that should be addressed by the Asian Financial Stability Dialogue include:

**Managing short-term international capital flows.** The current global financial turmoil has shifted attention back to problems caused by capital flows. The crisis has revived calls for a fundamental reform of the international financial architecture, revolving around proposals for international institutions designed to regulate and stabilize international capital flows. A starting point would be for the Asian Financial Stability Dialogue to discuss measures to manage short-term capital inflows, particularly when financial markets become euphoric and inflows are excessive. Such measures will be more effective if coordinated at the regional level.

**Establishing a foreign exchange market coordination framework.** The eight member countries in the Chiang Mai Initiative (CMI) are currently sitting on nearly US\$ 4 trillion in foreign exchange reserves. Asian countries can enhance the CMI and its effectiveness to achieve a stable foreign exchange market in Asia. For example, ASEAN, PRC, Japan, and the Republic of Korea agreed in Feb. 2009 to multilateralize the CMI and use the swaps to carry out US\$120 billion in foreign reserves coordination.

**Strengthening the infrastructure of financial markets and financial products.** East Asian governments should ensure that the settlement, legal, and operational infrastructure for financial markets and financial products is sound. The Financial Stability Forum (2008) has suggested that regulators should promote central counterparty clearing (CCP) of over-the-counter derivatives to reduce the loss from a major dealer's failure. CCP clearing also reduces the risk of legal disputes from unconfirmed trades. By standardizing and automating the clearing process, CCP clearing prevents confirmation backlogs.

**Enhancing transparency and risk management.** Regulators should encourage banks to increase transparency through more regular and timely reporting of liquidity, profitability, and capital key indicators, as well as their exposure to developed country counterparties. Given the opaqueness of complex derivative products and a lack of clarity about risk accountability, it is essential to strengthen financial system transparency. Accordingly, authorities should encourage greater disclosure of complex financial products and ensure the "complete and accurate disclosure" of financial conditions by firms. Regulatory standards for liquidity risk management need to be strengthened, particularly for banks that rely heavily on capital market funding. Authorities need to ensure that regulated financial institutions have proper liquidity risk management frameworks, and formulate contingency plans to deal with a disruption in external financing. Close attention is needed to ensure that local banks are properly classifying loans and adequately provisioning against problem loans.

**Strengthening financial institution capitalization.** Regulators should encourage banks to immediately start raising capital to strengthen capital requirement ratios well above prudential norms. This would send a clear signal to the market that banks are entering the downturn from a position of strength rather than weakness. In the current environment of uncertainty, regulators may signal that systemically important financial institutions will not be allowed to fail. Precautionary public recapitalization schemes should also be ready where appropriate. However, public recapitalization should be approached with the primary aim of

strengthening the financial system and promoting needed adjustments, rather than protecting individual institutions or shareholders.

**Alleviating a credit crunch.** In the extreme case of a credit crunch, authorities should undertake measures to prevent a downward spiral from feeding into the real sector. Providing guarantees on new lending might be a first option, if bank balance sheets and liquidity positions remain sound and the pullback is the result of excessive risk aversion. In addition, credit can be supplied directly to the real economy, either through the public sector buying financial instruments issued by firms or through central bank credit extensions. Avoiding a credit crunch for SMEs, which typically have more difficulty accessing finance even in the boom time, is an important task. To address SMEs' funding constraints, it may be desirable to establish a regional loan facility to expedite funding. Providing support for trade credit is also critical to prevent further trade contractions.

**Reforming rating agencies.** The role of global rating agencies in contributing to the current financial crisis needs to be assessed. More specifically, there is a need to review the revenue source of rating agencies and the ways in which ratings are used.

The Financial Stability Forum (2008) has recommended ways to enhance the level of information provided to support structured finance ratings; improve the assessment of underlying data quality; and increase discipline in the rating of new products. The report also highlighted the work of the International Organization of Securities Commissions (IOSCO) in setting standards to enhance the quality and integrity of the rating process. In 2008, IOSCO updated the Code of Conduct Fundamentals for Credit Rating Agencies (the IOSCO Code), to address the additional concerns raised by the rating process for structured finance products. The updated IOSCO Code contains provisions to promote enhanced internal conduct of business controls; address concerns over conflicts of interest in the rating of structured finance products; drive more robust assessment of data quality used to produce ratings; and create greater transparency in the methodologies and limitations of credit ratings.

The US SEC and the Committee of European Securities Regulators recently proposed new rules for credit rating agencies. These proposals strongly reflect the new provisions of the IOSCO Code and the recommendations of the FSF. Asian leaders should also encourage sound development and promote the improvement of regional rating agencies, so that regional and global investors can efficiently choose the best investment opportunities in the region.

## 5. CONCLUSION

This paper describes the current status of financial regulatory structures in the PRC; Hong Kong, China; Singapore; and Taipei, China, particularly in banking supervision. It notes that financial regulatory structures in Singapore and Taipei, China have integrated financial regulatory structures, while the PRC and Hong Kong, China have traditional fragmented structures. Based on financial indicators of capital structure and operating performance in the greater PRC during the period 2003–2008, the results do not show that the banking performance under an integrated structure was better than performance under fragmented regulation.

This finding is not only consistent with evidence from the literature, it is also supported by actual experience with financial regulatory reform in the US and the EU. In June of 2009, although the Federal Reserve was given greater power to oversee large financial institutions in the US, the financial regulatory structure retained its traditional fragmented structure. The newly created National Bank Supervisor (NBS), is mainly responsible for regulating federally chartered depository institutions. The SEC is mainly responsible for overseeing securities and some derivatives. In the EU, there are two new institutions: the European Systemic Risk



Council (ESRC) and European System of Financial Supervisors (ESFS), to be composed of new European Supervisory Authorities.

There is no evidence to support the claim that an integrated regulatory structure is beneficial to banking sector performance. However, the traditional financial regulatory structure is being challenged by the blurring of boundaries between banking, securities, and insurance. Meanwhile, greater financial globalization and the development of derivatives have made financial systems increasingly complicated. Greater cooperation in global financial supervision therefore needs to be pursued. Given the current situation in Asia, Asian financial supervisory cooperation could follow the Lamfalussy Process adopted by the EU.

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## APPENDIX 1. DEFINITIONS OF THE INDICATORS

1. **Loan-to-deposit ratio:**  
This ratio uses the total amount of a bank's loans as the numerator and the amount of its deposits at any given time as the denominator. The higher the ratio, the more the bank relies on borrowed funds, which are generally more costly than other types of deposits.
2. **Liquidity ratio:**  
The liquidity ratio is the cash held by a bank as a proportion of the deposits of the bank. The liquidity ratio measures the extent to which a corporation or other entity can quickly liquidate assets and cover short-term liabilities. It is therefore of interest to short-term creditors.
3. **Capital adequacy ratio (CAR):**  
CAR is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. The formula for calculating CAR is as follows:  

$$\frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Risky Weighted Assets}}$$
4. **Nonperforming Loan (NPL) ratio:**  
The NPL ratio measures the proportion of total loans that are classified as bad or as nonperforming, due to the failure of the borrower to meet interest or principal repayments according to contract terms. It is calculated as:  $\frac{\text{NPL}}{\text{Total Loans}}$ .
5. **Return on Assets (ROA):**  
This is an indicator of how profitable a bank is relative to its total assets. ROA provides an idea of management's efficiency at using assets to generate earnings. It is calculated by dividing a company's annual earnings by its total assets. ROA is displayed as a percentage and is calculated as:  $\frac{\text{Net Income}}{\text{Total Assets}}$ .
6. **Return on Equity (ROE):**  
ROE measures a bank's profitability by revealing how much profit a bank generates with the money that shareholders have invested. ROE is expressed as a percentage and is calculated as:  $\frac{\text{Net Income}}{\text{Shareholder's Equity}}$ .

## **APPENDIX 2. RESPONSE TO THE GLOBAL FINANCIAL CRISIS IN HONG KONG, CHINA; PRC; AND SINGAPORE<sup>6</sup>**

### **1. Hong Kong, China, and the PRC**

In mid-2007, the Hong Kong Monetary Authority (HKMA) began closely monitoring the impact of the US subprime mortgage crisis on the domestic banking system. The HKMA increased the monitoring both of authorized institutions' (AI) direct and indirect exposure to the problem institutions and AIs' liquidity positions, to ensure that they had adequate high-quality assets to exchange for liquidity in emergencies. The HKMA also implemented the following in response to the financial crisis:

- (1) Performed regular stress tests to assess whether retail banks had adequate capital to withstand significant losses, should financial markets deteriorate further.
- (2) Stepped up its internal readiness for triggering "Lender-of-Last-Resort" support if needed, and adopted measures to ease liquidity tightness in the Hong Kong, China interbank market.
- (3) Established a new arrangement with the People's Bank of China (PBC), whereby banks operating in the Mainland could obtain collateralized Renminbi liquidity from the PBC, with the collateral provided by the parent branch or headquarters in Hong Kong, China to the HKMA for safekeeping on behalf of the PBC.
- (4) Through the Financial Secretary, announced the use of the Exchange Fund to guarantee the repayment of customer deposits held with all AIs, beginning 14 October 2008 until the end of 2010, following the principles of the existing Deposit Protection Scheme.
- (5) Established the "Contingent Bank Capital Facility" to provide locally incorporated licensed banks with access to additional capital, should this become necessary.
- (6) Facilitated the provision of collateralized lending to individual banks in need of liquidity through or outside the Discount Window, through a number of temporary measures.
- (7) Issued Exchange Fund paper to meet the market demand of banks for liquidity management.
- (8) Issued a statutory guideline on 24 October 2008, explaining the approach being adopted in the enhancing of the monitoring of AIs' activities, to prevent any potential moral hazard arising from the introduction of the full deposit guarantee and "Contingent Bank Capital Facility."
- (9) Instituted new, semi-yearly surveys of off-balance sheet exposures and debt securities portfolios to strengthen the overseeing of AIs' holdings of debt securities and their exposures to structured credit products or related off-balance sheet entities.
- (10) Announced on 26 March 2009 that it would incorporate foreign-exchange swap arrangements and term repurchase arrangements into its market operations, to offer Hong Kong dollar liquidity assistance to banks.

In summary, the HKMA implemented various liquidity-assistance policies to ensure that the banking system in Hong Kong, China had a high level of capitalization, prudent risk management, and ample liquidity, and that local banks had healthy leverage levels. The exposure of the banking sector to subprime-related assets is not significant. This arrangement will ease any yuan liquidity pressure on PRC branches and subsidiaries of banks in Hong Kong, China. However, the global economic downturn may increase the riskiness of potential borrowers, leading banks to tighten credit standards; this, in turn, will reduce the supply of loans and further weaken the economy. Fortunately, there are signs that the rate of decline in the US and Europe is easing, possibly giving way to positive

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<sup>6</sup> Policy actions in Hong Kong, China and Singapore are summarized in Table A.1.

growth by the end of 2009. Overall, recent indicators in Hong Kong, China suggest that the local banking sector may have emerged from the global crisis relatively unscathed.

## 2. Singapore

Similar to the HKMA, the Monetary Authority of Singapore (MAS) has implemented the following in response to the financial crisis:

- (1) Expanded access to “the Standing Facility.” The MAS introduced “the Standing Facility” in June 2006 to allow banks to improve day-to-day liquidity management by providing a direct channel through which to place excess funds with—or borrow from—the MAS. The Standing Facility helps to moderate intra-day volatility in overnight interbank rates and boost market confidence by assuring banks of liquidity in the banking system. In July 2008, the MAS announced that it would extend the Standing Facility to all participants of the new MAS Electronic Payment System. Moreover, the MAS extended the eligibility criteria of financial institutions for collateral if the need arises.
- (2) Established a US Dollar Swap Facility. In October 2008, the MAS joined a group of central banks (including the European Central Bank, Bank of England, and Bank of Japan), that have established temporary reciprocal currency arrangements (swap lines) with the US Federal Reserve (Fed). The Fed has established a total of 14 swap lines with major central banks worldwide. These swap lines were established to help improve liquidity conditions in global financial markets and to mitigate the spread of difficulty in obtaining US dollar funding.
- (3) Intensified prudential supervision of financial institutions. The MAS intensified the supervision of financial institutions as signs of the subprime crisis emerged in early 2007. Aside from regular discussions with the management, board, and auditors of financial institutions, the MAS continued dialogue with home and host regulators and head-office auditors of foreign bank branches. The MAS also emphasized the importance of stress testing as a tool for assessing potential risks to the soundness of financial institutions and stressed the need for measures to enhance the financial resilience of these institutions. As economic conditions rapidly deteriorated, the MAS increased the magnitudes of the stress parameters used in the industry stress test exercises.
- (4) Announced a government guarantee on deposits. In response to announcements of a blanket government guarantee on deposits by jurisdictions in the region, on 16 October 2008, Singapore announced a guarantee by the Singapore Government on the deposits of individuals and nonbank customers of banks licensed in Singapore. The guarantee, which will be in place until 31 December 2010, is backed by the Singaporean government’s S\$150 billion reserves.

In general, the MAS has taken various policy actions to ensure that the banking system in Singapore has a high level of capitalization, prudent risk management, ample liquidity, and a healthy leverage level of local banks. The banking institutions in Singapore are generally well capitalized, although loan losses are expected to rise. However, Singapore remains vulnerable to a sharper-than-expected slowdown in consumption and investment activity in the global economy, as well as to a potential weakening of domestic demand. Fortunately, the policy actions taken by the authorities in both G20 and Asian countries have helped stabilize financial institutions and the global economy during the first half of 2009. Recent precautionary policies such as the deposit guarantee scheme, the US dollar swap line with the US Federal Reserve Board, and an expected package of supportive fiscal measures should help the banking system tide over this financial turmoil.

**Table A1: Summary of Policy Actions taken in Hong Kong, China and Singapore**

<b>Policy Action</b>	<b>Hong Kong, China</b>	<b>Singapore</b>
Ease monetary policy	Yes	Yes
Introduce fiscal stimulus	Yes	Yes
Liquidity assistance in local currency	Yes	No
Lend foreign exchange	Yes	Yes
Expand deposit insurance	Yes	Yes
Guarantee non-deposit liabilities	No	No
Prepare bank capital injection	Yes	No
Create demand for assets	No	No
Impose short sale restrictions	Yes	Yes
Relax mark to market rules	No	No

Source : Bank for International Settlements (BIS). 2009. The international financial crisis: timeline, impact and policy responses in Asia and the Pacific. August 2009. Basel: BIS.