

Risks and Supervisory Challenges of  
Financial Conglomerates in Korea

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금융그룹화와 금융위험: 실증분석 및 정책과제

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## ABSTRACT

This paper studies implications of financial conglomeration for both financial risk of individual conglomerates and systemic risk potential in post-crisis Korea. Our analyses suggest that we cannot conclude that financial conglomerates are taking on higher risks relative to non-conglomerate independent institutions. We also find that larger financial institutions show a significantly higher profitability and lower variability in profitability operating on a superior efficient frontier. However, it turns out that the consolidation has raised systemic risk potential as direct and indirect interdependencies among large banking institutions have substantially increased. Furthermore, financial conglomerates have become more vulnerable to contagion risks from non-bank sectors and capital markets. In the face of the shifting risk structure, financial supervisory and regulatory systems must be upgraded toward a more risk-based, consolidated supervision. Prompt corrective action provision for financial conglomerates must be based upon fully consolidated group risks, and effective supervisory devices need to be introduced to avoid inadvertent extension of public safety net to cross-sectoral activities of financial conglomerates. It is also critical to strengthen internal control and risk management capacities at financial conglomerates, and to establish strong market discipline by improving information transparency and monitoring incentives in the financial market.

본 논문은 외환위기 이후 빠르게 진전되어 온 금융 대형화, 그룹화 현상이 개별 금융기관과 시장 전반의 시스템 리스크에 미치는 영향에 대하여 분석하였다. 실증분석 결과에 따르면, 위기 이후 독립 금융기관과 비교하여 금융그룹 소속 금융기관의 도산위험이 대체로 낮은 것으로 나타나며, 겸업화 효과보다는 대형화에 의한 수익성 및 수익 변동성 개선효과가 유의하게 나타나는 것으로 분석되었다. 따라서 아직까지 우리나라에서 고위험 추구를 통한 대형 금융그룹의 위험상승 현상은 관측되지 않고 있다. 그러나 대형 은행그룹 간 직간접적 상호의존도가 높아짐에 따라 시스템 위험의 발생 가능

성이 증대되고, 겸업화로 비은행부문 및 자본시장으로부터의 위험전이 가능성도 높아지고 있어 이에 대한 정책대응이 요구된다. 특히 금융그룹을 하나의 동일체로 인식하고 그룹단위로 건전성 규제 등을 실시하는 위험 중심의 연결감독체제가 확립될 필요가 있으며, 겸업화로 인한 공적 안전망의 확대를 효과적으로 차단하기 위한 감독장치도 마련될 필요가 있다. 아울러 금융그룹의 내부통제 및 위험 관리체제를 강화하고, 경영투명성의 제고를 통해 금융그룹에 대한 시장의 모니터링 기능도 확충할 필요가 있다.

## I. Introduction

The structure of the Korean financial services industry has been rapidly transformed since the 1997 financial crisis. Initially driven by the government restructuring program, the combined trends of financial consolidation, conglomeration and internationalization not only caused a dramatic change in the competition structure but also significantly eroded the effectiveness of existing regulatory regime in maintaining financial stability. Integration among traditionally separated financial services and the emergence of a few large financial conglomerates have brought about a fundamental shift in the nature of financial risks embedded in the financial system.

While it is required to understand the evolving nature and structure of risks implied in the new financial regime, a clear-cut relationship between financial consolidation and financial stability does not exist. Indeed, financial consolidation may increase or decrease risks of individual financial conglomerates. With scale and scope economies, and benefited from increased market power, financial conglomerates may be able to enhance profitability thereby containing financial risks. However, complexity in operation and incentives to take on more risks based upon 'too-big-to-fail' may actually increase financial risks of large conglomerates.

Financial consolidation and conglomeration may also increase systemic risk potential. Incentives of financial markets as well as regulatory authorities in monitoring and supervising large conglomerates can be significantly undermined. Even if individual conglomerates are able to benefit from diversification, interdependency and mutual exposure among large financial conglomerates may substantially increase as they share homogeneous business portfolios and asset structure.

In the face of the increasingly limited ability of supervisory and monetary authorities to cope with financial risks, it has become an urgent task to devise a new regulatory regime capable of preventing excessive risk-taking of financial conglomerates and regulatory forbearance of financial supervisors. It is also required to create an environment where market participants have a strong incentive to monitor risks and penalize financial institutions if they take on too much risk.

Given the imperatives of the supervisory and regulatory reform in the face of ongoing consolidation and conglomeration, we address following inquiries in the present paper: How can we characterize the financial consolidation process that has accelerated during the post-crisis period in Korea? What is the evolving nature of risks associated with financial consolidation and conglomeration? Do large financial conglomerates composed of various financial businesses differ significantly from the institutions running a single business in terms of risk characteristics? If so, in what manner should the risks of financial conglomerates be contained and managed? How should the system-wide risk that may be amplified to ignite systemic crises be classified, observed, and responded to? What is the nature of the financial safety net in which the perverse incentives of market participants as well as financial regulators can be curbed to reinforce both financial stability and efficiency?

The present paper is organized as follows: Section 2 summarizes the post-crisis

financial restructuring program and characterizes the development in financial consolidation and conglomeration in Korean financial industries. This section also analyses the shift in financial industry structure by examining the degree of concentration. Section 3 presents a conceptual framework as well as empirical analyses in order to understand risk implications of financial conglomeration in Korea. This section explores potential risk impacts by focusing on the channels through which financial consolidation may influence financial risks of individual conglomerates and systemic risk potential. We conduct regression analyses to explore possible linkages between financial conglomeration and profitability as well as firm risk of financial institutions. Section 4 outlines current regulatory framework of financial supervision for financial conglomerates in Korea. Finally, section 5 discusses policy implications and suggestions.

## II. The Rise of Financial Conglomerates in Korea

Since the onset of the 1997 financial crisis, the Korean financial industry has seen the rise of financial conglomerates as well as massive consolidation and concentration. Prior to the crisis in Korea, there had existed two types of financial groups. One is the “financial conglomerate”<sup>1</sup> whose business lines were exclusively in financial activities, in which their organizational structure took the form of a parent’s participation in financial subsidiaries (parent-subsidiary model) which was partly allowed in the mid 1980s.<sup>2</sup> However, financial institutions in Korea were prohibited from establishing financial holding companies(FHCs)<sup>3</sup>; in that financial activity among financial institutions were strictly separated for fears that financial concentration through holding companies would lead to side effects including the potential for anti-competitive behavior. Later on, as will be mentioned in the proceeding section, financial holding companies were introduced in Korea following the crisis as a part of the government’s restructuring efforts.

Another form of financial group prevalent in Korea has been the “mixed conglomerate,” which is predominantly commercially oriented, but contains at least one regulated non-bank financial institution (NBF1). In Korea, many NBF1s are owned by the chaebols (large family-owned conglomerates). According to the Fair Trade Commission, the amount of assets for 10 largest mixed conglomerates totaled about 172 trillion won as of April 2005, of which Samsung’s share of assets totaled about 110 trillion won, or 64%. Figure 1 shows the ownership structure of Samsung Group. As can be seen, the group ownership structure is characterized by two

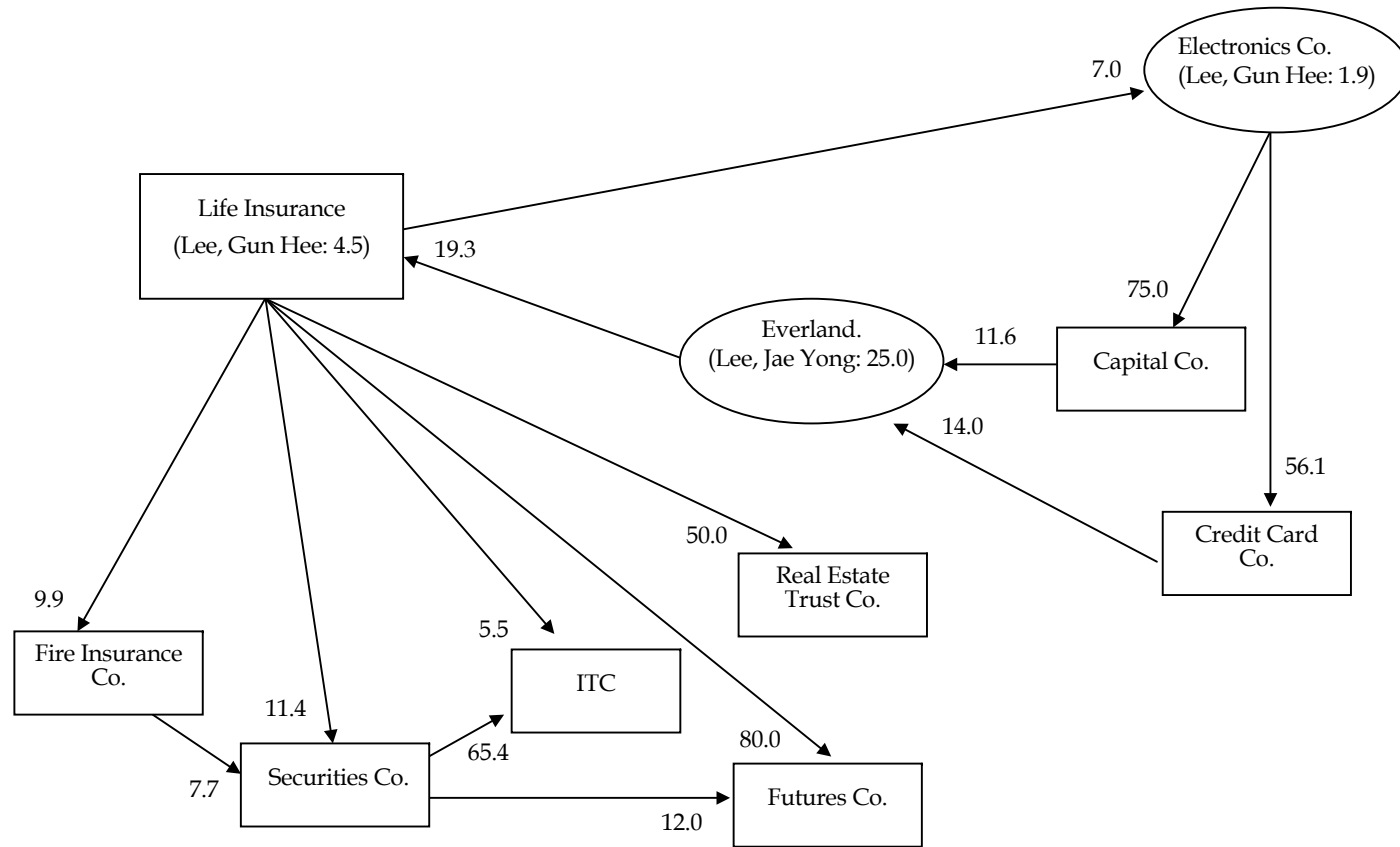
<sup>1</sup> According to the Tripartite Group of bank, securities and insurance regulators (the Basel Committee on Banking Supervision (BCBS), the International Organization of Securities Commissions (IOSCO) and the International Association of Insurance Supervision (IAIS)), the term “financial conglomerate” would be used to refer to “any group of companies under common control whose exclusive or predominant activities consist of providing significant services in at least two different financial sectors (banking, securities, insurance).” (Joint Forum on Financial Conglomerates, ‘Supervision of Financial Conglomerates,’ 1999)

<sup>2</sup> Korean banks have been permitted to own securities companies as subsidiaries since 1984.

<sup>3</sup> Financial holding companies are defined as entities that control regulated financial intermediaries: typically depository institutions, insurance companies, or securities firms. (Howell Jackson, 1997)

**[Figure 1]**

[Figure 1] Ownership Structure of Samsung Group





**<Table 1> Financial Institutions Closed or Merged**

(As of June 2003, unit: number of institution)

|                                      | Total No. of Institutions (end-1997) (A) | Type of Resolution |        |                      |              |                | New Entry | Total No. of Institutions (end of June 2003) |
|--------------------------------------|--|--------------------|--------|----------------------|--------------|----------------|-----------|--|
|                                      |  | License Revoked    | Merger | Others <sup>1)</sup> | Subtotal (B) | Ratio(%) (B/A) |           |  |
| Banks                                | 33                                       | 5                  | 10     | -                    | 15           | 45.5           | 1         | 19   |
| Merchant Bank Corporations           | 30                                       | 22                 | 6      | -                    | 28           | 93.3           | 1         | 3  |
| Securities Companies                 | 36                                       | 5                  | 3      | 2                    | 10           | 27.8           | 18        | 44   |
| Insurance Companies                  | 50                                       | 8                  | 6      | 2                    | 16           | 32.0           | 13        | 47   |
| Investment Trust Companies           | 31                                       | 6                  | 1      | -                    | 7            | 23.3           | 9         | 32   |
| Mutual Savings and Finance Companies | 231                                      | 100                | 27     | 1                    | 128          | 55.4           | 12        | 115  |
| Credit Unions                        | 1,666                                    | 2                  | 106    | 463                  | 571          | 34.3           | 9         | 1,104  |
| Leasing Companies                    | 25                                       | 9                  | 1      | 1                    | 12           | 48.0           | 4         | 17   |
| Total                                | 2,101                                    | 157                | 161    | 469                  | 787          | 37.5           | 67        | 1,381  |

Note: 1) Includes dissolution and asset transfers to bridge institutions.

Source: Public Fund Management Committee, Ministry of Finance and Economy, *White Paper on Public Fund*.

major holding companies and circular equity subscription. Everland is functioning as a virtual holding company, which governs Electronics through Life Insurance. Samsung Life Insurance in turn functions as a financial holding company that governs other non-bank financial institutions.

During the restructuring process following the crisis, a number of insolvent financial institutions were closed or merged with other institutions. Indeed, as can be seen in Table 1, the number of financial institutions in Korea fell from 2,101 in 1997 to 1,381 by the end of June 2003, a drop of 34.3%. Among the 787 financial institutions that underwent restructuring, 161 institutions were merged during the same period. In particular, the number of banks sharply decreased to 19 by the end of June 2003 from 33 in 1997 through closures and mergers — Korea had never once experienced such a dramatic turn of events, which led to the resolution of major financial institutions. In the case of NBFIs, 28 merchant banking corporations (MBCs), 10 securities companies, 7 investment trust companies (ITCs), and 16 insurance companies had been closed down through exits or mergers by the end of June 2003.

## 1. Resolution of Distressed Institutions and Financial Consolidation

At the time of the crisis, many Korean financial institutions were significantly undercapitalized. Because of large non-performing loans (NPLs) and weak capital



base, troubled Korean banks struggled to improve their BIS capital adequacy ratios by curtailing lending as raising new capital was virtually impossible. Such financial implosion further intensified already severe credit crunch and resulted in massive corporate bankruptcies. Under these circumstances, the top priority in financial restructuring was the disposal of NPLs and the recapitalization of banks.

The first policy response by the Korean government was to identify insolvent financial institutions and resolve them. In January 1998, the government nationalized two major banks — the Korea First Bank and Seoul Bank — that had become insolvent. Moreover, the Financial Supervisory Commission (FSC) ordered twelve other banks that had capital adequacy ratios of less than 8 percent at the end of 1997 to prepare rehabilitation plans by April 1998. In June 1998, five banks were identified as being insolvent and their rehabilitation plans were rejected by the FSC following a comprehensive review of their financial conditions. Each of these banks was acquired through P&A (Purchase and Assumptions) agreement by relatively healthy banks (See Figure 2).<sup>4</sup>

The plans of the other seven banks with capital adequacy ratios below 8 percent at the end of 1997 were given tentative approval to continue operations under the condition that those banks would pursue cost reductions through branch closures and staff downsizing. In addition, the government offered support by recapitalizing the seven banks and purchasing their impaired assets. As little progress was being made in the restructuring, the government stepped in by encouraging the mergers of the troubled banks. As such, in January 1999, two major banks, Korea Commercial Bank and Hanil Bank merged to form Hanvit Bank, and again in July 1999, another major bank, Chohung Bank acquired two regional banks: Kangwon Bank and Chungbuk Bank.<sup>5</sup>

At the same time, bank mergers not directly led by the supervisory authority were also undertaken. With support from the government, in January 1999, Kookmin Bank merged ailing Korea Long-Term Credit Bank, which enabled them to achieve synergy between Kookmin's wide retail network and Korea Long-Term Credit's corporate finance. In addition, Hana Bank also merged Boram Bank amid the wave of consolidation. Note that both Korea Long-Term Credit Bank and Boram Bank had been showing a possibility of significant undercapitalization and, without the mergers, corrective supervisory actions would have been inevitable.

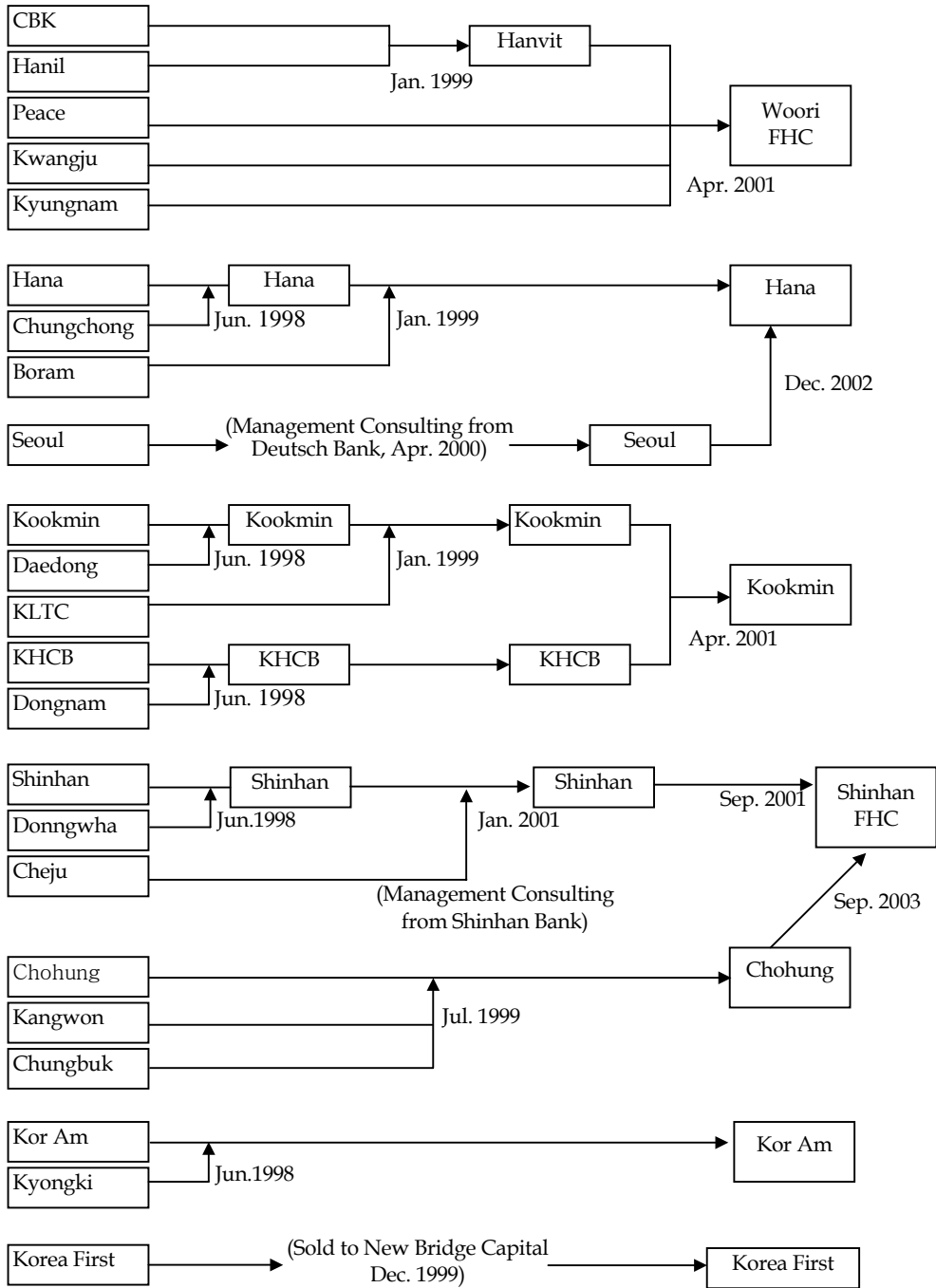
The bank consolidation trend was marked in April 2001 with the merger of Korea's two large banks — the Kookmin Bank, the largest by asset size, and the Korea Housing & Commercial Bank, the third largest. The merger, which created the largest bank in Korea, was the first bank merger between healthy banks in genuine sense. In fact, as of the end of 2003, the Kookmin Bank's assets totaled 214.8 trillion won, accounting for nearly 27% of total assets in the banking sector. Furthermore, in December 2002, Seoul Bank, which had been nationalized following the crisis and unable to find any strategic investors, ultimately merged with Hana Bank.

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<sup>4</sup> The suspended banks and their respective acquirers are as follows: Daedong Bank by Kookmin Bank, Dongnam Bank by Korea Housing & Commercial Bank, Dongwha Bank by Shinhan Bank, Chungchung Bank by Hana Bank, and Kyungki Bank by KorAm Bank.

<sup>5</sup> Among the seven troubled banks, only Korea Exchange Bank was not merged but received a capital injection from Commerzbank.

[Figure 2] Consolidation of Korean Banking Industry Following the Crisis



**<Table 2> Affiliates of Financial Group in Korea**

(As of September 2003, unit: number of institution)

|                           |                                 | Bank       | Insurance | Securities | ITC | Card | Others | Total |    |
|---------------------------|---------------------------------|------------|-----------|------------|-----|------|--------|-------|----|
| Financial<br>Conglomerate | Financial<br>Holding<br>Company | Woori      | 3         | 0          | 1   | 1    | 0      | 5     |    |
|                           |                                 | Shinhan    | 3         | 1          | 1   | 2    | 1      | 9     |    |
|                           |                                 | Dongwon    | 0         | 0          | 1   | 1    | 0      | 2     | 4  |
|                           |                                 | Subtotal   | 6         | 1          | 3   | 4    | 1      | 3     | 18 |
|                           | Parent-<br>Subsidiary<br>Model  | Banking    | 8         | 2          | 2   | 4    | 1      | 8     | 25 |
|                           |                                 | Insurance  | 0         | 3          | 1   | 2    | 0      | 1     | 7  |
|                           |                                 | Securities | 0         | 1          | 9   | 7    | 0      | 3     | 20 |
|                           |                                 | Subtotal   | 8         | 6          | 12  | 13   | 1      | 12    | 52 |
| Mixed Conglomerate        | Samsung                         | 0          | 2         | 1          | 1   | 1    | 2      | 7     |    |
|                           | LG                              | 0          | 0         | 1          | 1   | 1    | 2      | 5     |    |
|                           | SK                              | 0          | 1         | 1          | 1   | 0    | 1      | 4     |    |
|                           | Others                          | 0          | 7         | 7          | 6   | 2    | 13     | 35    |    |
|                           | Subtotal                        | 0          | 10        | 10         | 9   | 4    | 18     | 51    |    |
| Total                     |                                 | 14         | 17        | 25         | 26  | 6    | 33     | 121   |    |

Source: Choi (2004), Establishment of the Korean Supervisory System for Financial Conglomerates.

In the meantime, to deal with the other weak banks, the government enacted *Financial Holding Company Act* in October 2000, and created a financial holding company in April 2001. Under a holding company structure, numerous synergy effects can be achieved such as enabling the cross selling of financial products, lowering funding costs, and streamlining IT investment. At the same time, the government hoped that affiliated companies would be able to retain their client base while being able to avoid employee downsizing, further helping to lessen employee resistance, in contrast to the P&A approach used in 1998.

At first, two nation-wide banks (Hanvit and Peace) and two regional banks (Kwangju and Kyungnam) were placed under a government-run holding company, Woori Financial Holdings. Before doing so, the NPLs of candidate banks were disposed, and in addition, public funds were injected to raise their capital adequacy ratios above 10 percent. Aside from the banks, a securities company, an ITC, and a credit card company<sup>6</sup> were placed under the Woori financial holding company.

<sup>6</sup> In 2003, Woori Credit Card Company experiencing financial distress under a pile of NPLs was acquired by Woori Bank. According to the OECD report (1993), under a financial holding company, a bank's relation to non-bank affiliates is indirect as there exists a cushion — a holding company — between them. Because the legal separation is more extensive than in the case of the parent-subsidiary model, the cost of producing a given mix of products tends to be more expensive. However, it is often

**<Table 3> Fiscal Support for Financial Restructuring (11/1997 ~ 6/2003)**

(Unit: trillion won)

|                               | KDIC and Others  |                      |                   |                    | KAMCO            | Total |
|-------------------------------|------------------|----------------------|-------------------|--------------------|------------------|-------|
|                               | Recapitalization | Capital Contribution | Deposit Repayment | Purchase of Assets | Purchase of NPLs |       |
| Banks                         | 34.0             | 13.7                 | 0                 | 14.0               | 24.6             | 86.2  |
| NBFIs                         | 26.3             | 3.3                  | 29.8              | 0.3                | 14.5             | 74.2  |
| Merchant Banking Corporations | 2.7              | 0.2                  | 17.2              | 0.0                | 1.6              | 21.7  |
| Insurance Companies           | 15.9             | 2.9                  | 0.0               | 0.3                | 1.8              | 21.0  |
| Securities and ITCs           | 7.7              | 0.0                  | 0.01              | 0.0                | 8.5              | 16.2  |
| Mutual Savings Banks          | 0.0              | 0.2                  | 7.9               | 0.0                | 0.2              | 8.2   |
| Credit Cooperatives           | 0.0              | 0.0                  | 4.7               | 0.0                | 0.0              | 4.7   |
| Others                        | 0.0              | 0.0                  | 0.0               | 0.0                | 2.4              | 2.4   |
| Total                         | 60.3             | 17.0                 | 29.8              | 14.3               | 39.1             | 160.4 |

Source: Public Fund Management Committee, Ministry of Finance and Economy, *White Paper on Public Fund*.

Then, in September 2001, a second financial holding company was established, Shinhan Financial Holdings, under which Shinhan and Cheju Banks along with a life insurance company, a securities company, an ITC, and a credit card company were placed under the same umbrella. In September 2003, Chohung Bank, the fourth largest bank at the end of 2002, was also placed under the Shinhan Financial Holdings, making it the second largest financial group in Korea.<sup>78</sup>

In tandem with these measures for the resolution of weak or insolvent institutions, the government injected a total of 160.4 trillion won (26 percent of GDP) in fiscal resources to rehabilitate the financial system from the late 1997 until the end of June 2003 (see Table 3). The operating arms of the government in this regard were the

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argued that, because of the indirect relationship, the safety and soundness of the bank can be more isolated from the non-bank affiliates and the bank may have less incentive to bail out a faltering non-bank affiliate. In practice, the opposite can be said to be true, as non-bank affiliates in distress tends to be rescued, mainly for the purpose of protecting group's reputation. This is the case for the Woori Credit Card Company, and as a result, the Woori Bank's access to official safety net has been indirectly extended to the non-bank subsidiary.

<sup>7</sup> In 2003, another financial holding company, Dongwon Financial Holdings, was established. However, unlike Woori and Shinhan Financial Holdings, only NBFIs were placed under this holding company.

<sup>8</sup> Recent developments in the Korean banking industry since June 2003 are the following: Koram bank was acquired by Citibank in November 2004, and the Korea First Bank was acquired by Standard Chartered Bank in January 2005. Recently in December 2005, Hana Financial Holdings, the fourth financial holding company group in Korea, was launched controlling four major subsidiaries - Hana Bank, Daehan Investment Securities, Hana Institute of Finance, and Hana INS.

Korea Asset Management Corporation (KAMCO) and the Korea Deposit Insurance Corporation (KDIC). Out of the total amount of fiscal support, 60.3 trillion won was used for recapitalization, 39.1 trillion won for the purchase of NPLs, and 29.8 trillion won for the deposit repayments for closed institutions. The recapitalization of financial institutions using public money left a substantial share of the banking sector in the hands of the government.<sup>9</sup>

## 2. Concentration of the Financial Industry in Korea

As a result of the government-led financial restructuring after the financial crisis, which brought about massive consolidation, market concentration increased significantly in Korea's banking industry. To determine the degree of market concentration in Korea's banking industry, we use two kinds of measures. The first is the so-called  $k$ -th bank concentration ratio ( $CR_k$ ) which takes the market shares of the first to the  $k$ -th largest banks in the market. The second index we use is the Herfindhal-Hirshman Index (HHI)<sup>10</sup>, which is calculated by summing the squares of the individual percent market shares of all the participants in a market. Total assets are taken as the measure of bank size.

As a result of the consolidation trend in the banking industry, market concentration increased significantly, in a large part due to the merger of Korea's two large banks, Kookmin Bank and Korea Housing & Commercial Bank. In terms of  $CR_3$ , the ratio rose substantially to 53.2% in 2003 from 28.4% in 1997, as can be seen in Figure 3-1. Similarly, the HHI index showed a sharp increase from 664 in 1997 to 1,497 by the end of 2003, which is considered as being "moderately concentrated."

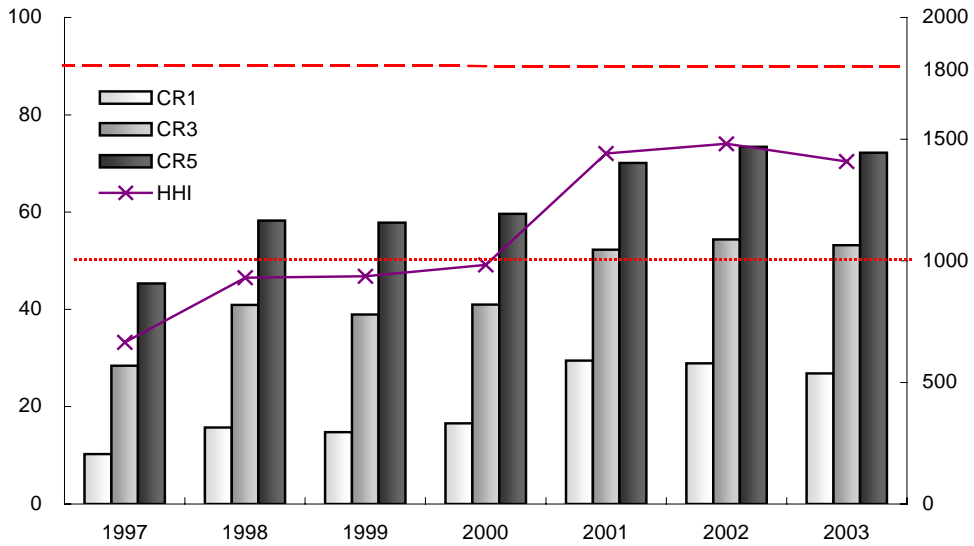
Figures 3-2 and 3-3 show the changes in the concentration ratios of the life-insurance industry and securities industry, respectively. According to the HHI index, Korea's life-insurance industry is considered as being "highly concentrated" with HHI exceeding 2,500, even with Daehan life-insurance company losing market share after the crisis, Samsung and Kyobo life-insurance companies were able to maintain an oligopolistic market structure, as the industry saw a reduction in the number of smaller sized companies. As for the securities industry, though a number of firms were closed, there were also a sizable number of new entries, which allowed the industry to maintain a competitive market environment.

Lastly, in considering the entire financial industry, Figure 3-4 shows the changes in the concentration ratio of the financial groups instead of individual financial entities. According to the HHI index, although there was a steady increase in the index from 405 in 1997 to 800 in 2003 reflecting the emergence of financial conglomerates following the financial crisis, the level of market concentration is still considered as being competitive.

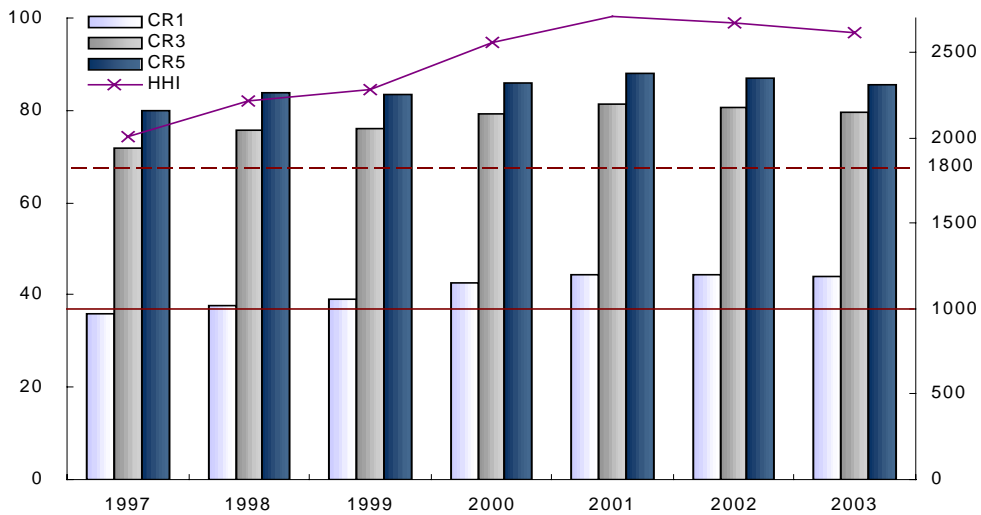
<sup>9</sup> Indeed, KDIC currently owns Woori Financial Holdings Company with 86.8% ownership, which includes Woori, Kwangju, and Kyongnam Banks, all of three are 100% owned by the Woori Financial Holding Company.

<sup>10</sup> Regulators assessing the effect of mergers on concentration in local financial markets typically rely on HHI. U.S. Department of Justice divides the spectrum of market concentration into three categories: "not concentrated" (HHI below 1,000), "moderately concentrated" (HHI between 1,000 and 1,800), and highly concentrated (HHI above 1,800).

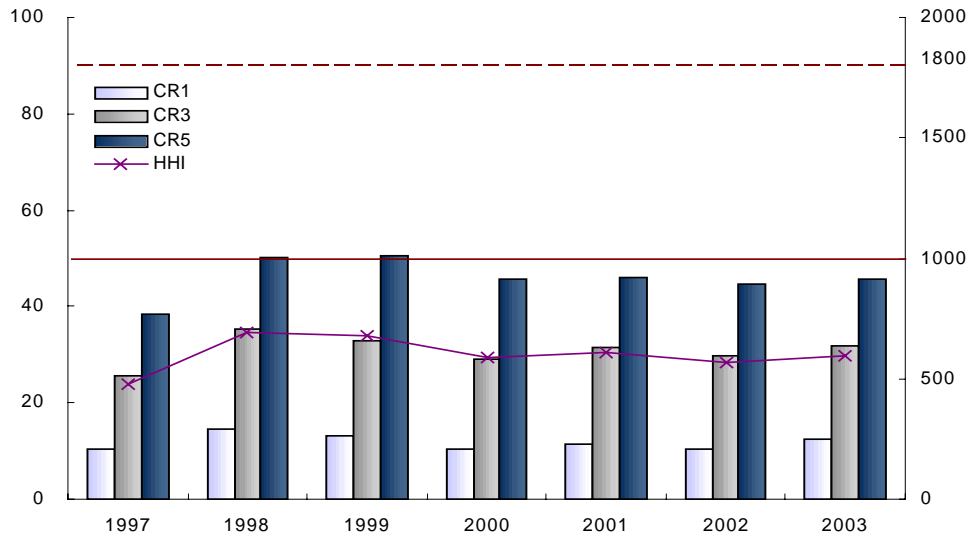
[Figure 3-1] Concentration Ratio of the Korean Banking Industry (based on assets)



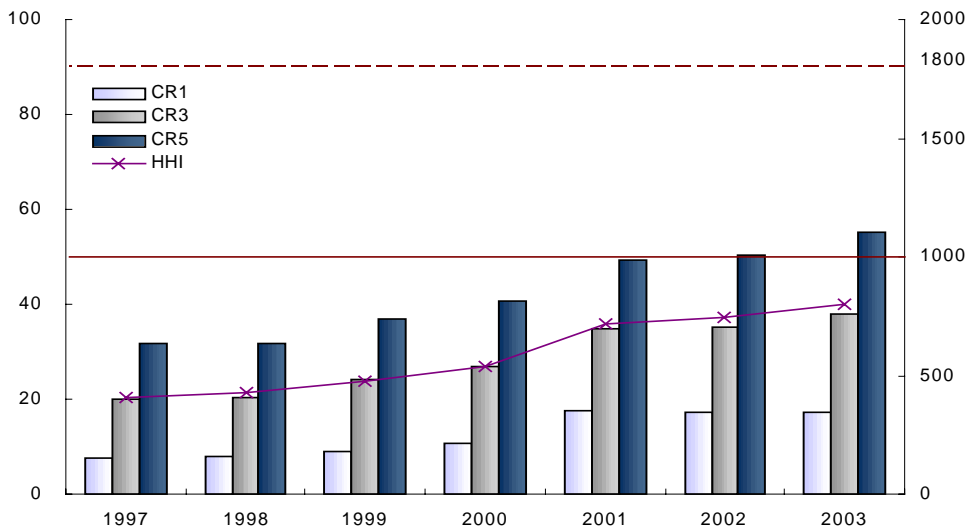
[Figure 3-2] Concentration Ratio of the Korean Life-Insurance Industry (based on assets)



[Figure 3-3] Concentration Ratio of the Korean Securities Industry (based on assets)



[Figure 3-4] Concentration Ratio of the Korean Financial Group (based on assets)



Source: Bank of Korea (2004).

### III. Financial Consolidation and Changing Risks

#### 1. Conceptual Framework

As described above, the financial consolidation in Korea encompasses both consolidation of large financial institutions through mergers and acquisitions (M&As) within the same financial industry, and cross-industry conglomeration among bank and non-bank financial institutions - either in the form of parent-subsidiary model or of financial holding company structure. Note that these two types of consolidations often occur simultaneously and banks are in general at the center of the consolidation process. As a result, a few large bank-centered financial groups have emerged, within which various non-bank financial institutions are clustered around a large bank. Henceforth, in this section, we explore risk implications of the typical bank-centered financial conglomeration without explicitly distinguishing bank consolidation from cross-industry conglomeration.

Before we examine the implications of financial consolidation on financial risks, it would be informative to explore the relationship between financial efficiency and stability. Traditional literature often suggests that there exists a potential tradeoff between financial efficiency and stability. Specifically, while large banks with increased market power may potentially undermine competition and efficiency of resource allocation, large banks can be more profitable and financially robust, which promotes financial stability. For instance, Keeley (1990) found that the erosion of market power due to increased competition led to higher default risk premium and lower capital ratios for U.S. banks in the 1980s. He argued that, with asymmetric information and provision of bank deposit insurance, lower charter values led to higher risk and failure rate of banks due to moral hazard and agency problem.<sup>11</sup> In retrospect, the bank restructuring policy in Korea during the post-crisis period seemed to be based upon this charter value hypothesis, that is, the implied trade-off between competition and stability. In an effort to promote bank profitability and financial stability, mergers between insolvent banks and creation of large leading banks were often an explicit policy objective of the government authorities.

Recent research, however, indicates that one cannot ascertain a clear-cut relationship between consolidation and financial stability challenging the traditional view. First, according to a group of research, financial concentration may not always create market power for large institutions.<sup>12</sup> Indeed, even with few participants, financial markets can be sufficiently contestable.<sup>13</sup>

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<sup>11</sup> For instance, the view that the erosion of bank market power is associated with financial instability can also be found in Marcus (1984).

<sup>12</sup> G10 report (2001) suggested that consolidation of US banking organizations had only minor effects on market power because most M&As did not increase local concentration in a significant way, and because antitrust authorities, potential market entrants, deregulation and advances in technology increased the degree of competition.

<sup>13</sup> Allen and Gale (2000) showed that, under search cost, a branch banking system with only two nation-wide banks can lead to a perfectly competitive pricing, while the system with multiple unitary banks may lead to monopoly pricing. Also, contrary to the result of Bikker and Haaf (2000), which reported a negative relationship between concentration and degree of competition, Claessens and Laeven (2003) found that bank concentration is only weakly correlated with the degree of competition as



**<Table 4> Financial Consolidation and Financial Risks**

| Types of Risk                             | Channels   | Factors  |
|---|--|--|
| Financial Risk of Individual Conglomerate | Profitability and Cost Efficiency  | - Scale and scope efficiencies<br>- Market power rents   |
|   | Earnings Variability   | - Geographic diversification<br>- Product diversification  |
|   | Operational Risk   | - Complexity in business<br>- Organizational diseconomies<br>- Difficulties in monitoring / control<br>- Heterogeneity in culture<br>- Difficulties of harmonizing risk management |
|   | Risk Preference  | - Moral hazard based upon TBTF   |
| Systemic Risk Potential                   | Effectiveness of Supervision, Monitoring and Market Discipline                               | - Regulatory forbearance<br>- Concentration and difficulty of orderly workouts<br>- Opacity and information asymmetry  |
|   | Direct Interdependencies   | - Short-term inter-bank lending<br>- Medium and long-term loans<br>- OTC derivatives transactions  |
|   | Indirect Interdependencies   | - Homogeneous balance sheet structure<br>- Homogeneous business / profit structure<br>- Common exposure to market risks  |
|   | Contagion from Integration, Alliance and Reputation, De facto Extension of Public Safety Net | - Risks from non-bank subsidiaries<br>- Risks from strategic alliance with non-financial companies<br>- Exposure to foreign and capital market shocks                              |

Second, even though we admit that large financial conglomerates can reduce financial risks benefiting from increased market power and diversification of their geographic and business portfolios, various features of conglomeration may actually increase the scope for instability, in particular when they lead to a small number of large 'national champions,' which are too big and few to fail, to discipline, and to liquidate.

It may be a challenging task to systematically characterize and classify potential channels through which financial consolidation and conglomeration has impact on the risk and stability of a financial system. Following the spirit of G10 report (2001) and De Nicolo *et al.* (2003), we distinguish financial risks of individual financial conglomerates on a standalone basis from systemic risk potential for the financial system as a whole. In this regard, the conceptual framework we employ in investigating risk implications of financial consolidation and conglomeration is summarized in Table 4.<sup>14</sup>

measured by H-statistics. Rather, they argued that it is foreign bank participation and low entry barrier that fosters competitive pricing.

<sup>14</sup> Hahn and Hong (2003) provided a diagnostic analysis on the risk implications of bank

### A. Risk of Individual Financial Conglomerates

Financial risks of individual conglomerates can be impacted through four conceptually distinctive channels - expected earnings, variability of earnings, operational risk and risk preference of individual conglomerates. First, profitability and earnings potential would be enhanced for large financial conglomerates if they can exploit and realize the scale and scope economies. For instance, financial conglomerates can achieve cost saving by spreading out large fixed cost required in IT investment over larger asset base. Subsidiaries in a financial group can also share marketing and distribution channels as well as database and IT systems. Financial consolidation and conglomeration can lead to revenue enhancement if increased size raises market power and if product diversity and cross-selling increases profit opportunities. With enhanced profitability and cost efficiency, insolvency risk of individual conglomerates would be reduced, *ceteris paribus*. Note also that increased profitability and higher charter value would lessen moral hazard incentive of large conglomerates.<sup>15</sup>

Second, financial consolidation and conglomeration may lower risk of individual financial conglomerates with greater opportunities for risk diversification. Geographic consolidation would yield a potential for risk diversification if merged financial firms operate in heterogeneous markets and are expected to show relatively low or negative return correlations. In a similar vein, cross-industry financial consolidation may also contribute to reductions in earnings variability by facilitating product diversification if expected returns are sufficiently heterogeneous across different financial services. On the other hand, as noted by Cumming and Hirtle (2001), the risk faced by a financial conglomerate could be larger than the sum of risks of each subsidiaries if the volatility of a subsidiary is affected by the actions of other subsidiaries.<sup>16</sup>

Third, while large conglomerates may be able to benefit from the scale and scope economies and risk diversification, operational risk may substantially increase with

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consolidation for Korean banking industry. This section is mainly based upon the analytical framework of Hahm and Hong (2003).

<sup>15</sup> Empirical evidence is mixed for the argument that large banks are more efficient and more profitable. For instance, Berger *et al.* (1999), Hughes and Mester (1998) reported the existence of a significant scale economy in the U.S. banking industry. Numerous authors such as Hannan (1991) and Calomiris and Carlino (1991) also supported the positive association between bank size and market power measured, for instance, by higher lending rate, lower deposit rate, and higher profitability. Craig and Santos (1997) found that profitability increased and risk decreased after the mergers of U.S. bank holding companies. However, there also exists counter evidence. Boyd and Runkle (1993) reported that there was no significant positive relationship between Tobin's *q* and the size of US bank holding companies. Also, Akhavan *et al.* (1997) and Chamberlain (1998) reported that profitability had not significantly improved for banks that had undergone M&As.

<sup>16</sup> In general, empirical evidence seems to be relatively favorable for the existence of geographic diversification effect. For instance, Benston *et al.* (1995) found that the motivation for mergers in the U.S. in the 80s was mainly risk diversification effect rather than the exploitation of the deposit insurance put option value. Hughes *et al.* (1996) found that well diversified interstate banks could reduce insolvency risks. Craig and Santos (1997) found lower default risks as measured by the z-score and lower stock return volatilities for merged bank holding companies. Demsetz and Strahan (1997) also argued that large banks had lower stock return volatility if their portfolios were held constant. As for the product diversification, empirical evidence is more limited. For instance, the studies of Kwast (1989), Boyd *et al.* (1993), and Kwan (1997), among others, imply that there exists a relatively limited potential for product diversification benefits.

growing organizational complexity, inefficiencies in management and internal control, heterogeneous culture among subsidiaries, and difficulties of harmonizing risk management, etc. Indeed, large and complex financial conglomerates may no longer be able to understand exact nature of their risks.

Finally, financial consolidation and resulting dominance of a few large financial conglomerates can bring about moral hazard for financial conglomerates especially if they believe they are too big to fail (TBTF). The emergence of a small number of large financial conglomerates creates an incentive for regulatory forbearance because the failure of a large conglomerate will threaten the stability of the entire financial system. In turn, this creates a perverse incentive for financial market participants in monitoring financial conglomerates and penalizing them for taking on excessive risks. Possibilities of regulatory forbearance and weakening market discipline cause moral hazard of large conglomerates, which makes them take risks more aggressively. Note also that, based upon TBTF, risks will be under-priced for large conglomerates and this implicit subsidy provides further incentives toward additional consolidation and conglomeration. All in all, financial conglomerates may have incentives to pursue riskier investments, and more aggressive risk taking may offset the risk reduction effects potentially achievable through revenue enhancement and diversification.<sup>17</sup>

## B. Systemic Risk Potential

As summarized in Table 4, financial consolidation and conglomeration has potentially significant implications not only for the risk of individual conglomerates but also for systemic risk potential. As discussed above, the dominance of a small number of large financial conglomerates that are too big and few to fail and increased concentration of the financial industry around these large conglomerates could significantly increase systemic risk potential. Note also that the emergence of TBTF institutions would undermine the effectiveness of financial supervision and market monitoring. As a result, excessive risk taking and moral hazard of large financial institutions may lead to higher systemic risk potential.

Even in the absence of the incentive problems, increasing complexity of financial conglomerates would make it more difficult for regulators and market participants to comprehend risks and take early corrective actions. Belated recognition of the problems due to information opacity in turn increases incentives for regulatory forbearance, and sudden disclosure of the problems and possible disorders in the

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<sup>17</sup> A group of research investigated potential effects of financial consolidation on the risk profile of large financial institutions. While Boyd and Runkle (1993) and Craig and Santos (1997) reported risk reduction effect of bank mergers, Chong (1991) found that interstate consolidation actually increased stock return volatility based upon an event study of U.S. bank mergers. Boyd and Gertler (1993) also reported a similar incentive effect for more risk taking of large banks using U.S. data. In a similar vein, Demsets and Strahan (1997) argued that financial risks of large banks were not necessarily low as they expanded risky loan portfolios exploiting the diversification effect. De Nicolo (2000) found that default risks of large banks measured by z-score index actually increased with bank size not only for U.S. banks but also for European and Japanese banks, which implies more aggressive risk taking of large institutions. De Nicolo et al. (2003) also reported evidence that z-score index was systematically lower and thus default risk was higher for both financial conglomerates and large financial firms based upon the data for world largest 500 financial firms.

resolution of large ailing conglomerates may cause a serious system-wide disruption.

Increasing degree of interdependence among the large and complex financial conglomerates also implies higher potential for systemic risk. The Group of 10 Ferguson report (2001) indicates that areas of direct interdependency that are most associated with consolidation include mutual credit risk exposures through inter-bank loans, on and off-balance sheet activities such as financial derivatives, and from the payment and settlement relationships. The systemic risk potential may also increase if large conglomerates are simultaneously and similarly exposed to adverse shocks. While financial conglomerates are able to diversify within each group, they are getting more homogeneous as business areas as well as asset and profit structures become increasingly similar. Resulting indirect interdependencies among large conglomerates raise systemic risk potential as well.<sup>18</sup> Finally, financial conglomeration may aggravate the problem of systemic risk as banks expand their involvement in high risk activities that are closely tied to non-bank financial firms and capital markets. As a result, banking institutions would be more vulnerable to contagion risks from non-bank and non-financial sectors as well as capital markets. The use of identical brand name for affiliated non-bank subsidiaries may also erode firewall within a conglomerate and increases pressure for both managers and financial regulators to protect affiliated non-bank subsidiaries. The shift of financial savings from bank deposits to affiliated non-bank financial subsidiaries also implies de facto extension of public safety net.

## 2. Diagnostic Analysis of Risk Implications

### A. Risk of Individual Financial Conglomerates

As discussed above, financial consolidation and conglomeration may increase or decrease financial risks of individual financial conglomerates. With the scale and scope economies financial conglomerates may be able to enhance profitability thereby reducing financial risks. However, increasing complexity in operation and incentives to take on more risks based upon moral hazard may actually increase financial risk of large conglomerates on a net basis. As there exists no comprehensive measure of financial risks readily observable, rather than directly quantifying the risks of financial conglomerates, this section focuses on the respective channels outlined in Table 4 to explore the potential implications of financial consolidation and conglomeration.

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<sup>18</sup> G10 report (2001) suggests that interdependencies among large and complex banking organizations have increased over the last decade in the U.S. and Japan and began to increase in Europe. De Nicolo and Kwast (2002) investigated the systemic risk potential presented in the U.S. banking industry over the period of 1988-99 based upon correlation measures of stock returns of large and complex banking organizations, and found a positive consolidation elasticity of stock return correlations. They interpreted the evidence as suggesting that the systemic risk potential increased with consolidation in the banking industry. As for the cross-country studies, empirical evidence is mixed. Beck *et al.* (2003), using a logit model, found that banking crises were less likely in countries with a more concentrated banking system. On the other hand, De Nicolo *et al.* (2003) reported that the aggregate z-score index obtained from the top 5 banks in each country was significantly negatively associated with the degree of bank concentration. That is, bank consolidation is positively associated with the systemic risk potential.

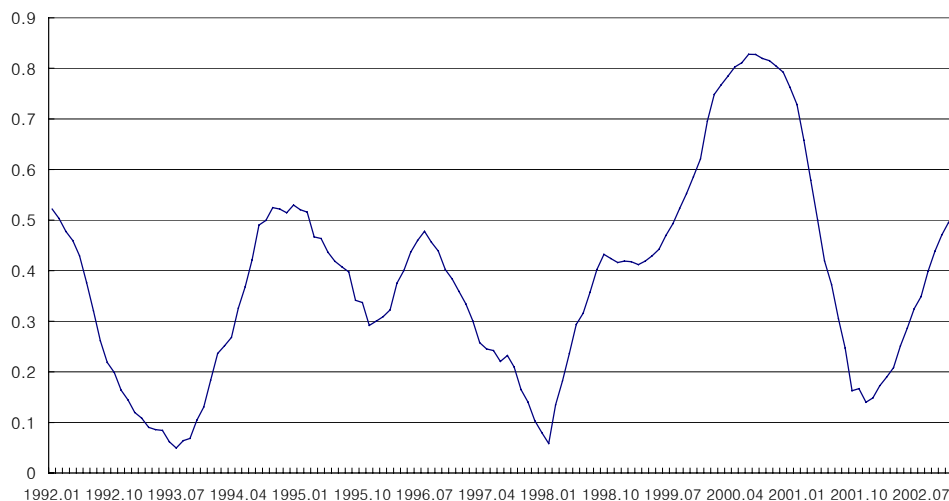
#### *a. Scope of Geographic Diversification*

To promote financial stability through geographic diversification, sufficient heterogeneity is required across regional markets so that idiosyncratic risks may be diversified away. To diagnose the scope of geographic diversification over business cycle, we investigated degree of correlations among regional industrial productions.

Figure 4 shows the trend in the average cross-correlation among major cities and provinces in Korea from January 1992 to September 2002.<sup>19</sup> The average correlation coefficient turned out to be positive and less than 0.5 except in the period of 1999.6 - 2001.6, indicating that the potential scope of geographic diversification would be in general limited. However, it is noteworthy that the correlation shows a cyclical pattern with relatively low correlations in business cycle recessions. This implies that geographically well-diversified financial conglomerates would suffer less from the adverse impact of recessions on the asset quality and profitability.

For more direct evidence on the scope of geographic diversification, we investigated historical profitability of Korean regional banks. As shown in Table 5, earnings of regional banks measured in return on equities (ROEs) for Jeonbuk-Kwangju, Jeonbuk-Kyongnam, Kwangju-Pusan, and Kwangju-Daegu pairs showed relatively low degree of correlations. This again implies that, while the diversification effect may not be substantial, there could be a potential benefit from the cross-regional consolidation among those regional bank pairs.

**[Figure 4] Average Cross-Correlation in Regional Industrial Productions**



Source: Hahm and Hong (2003).

<sup>19</sup> At each point in time the cross-correlation matrix of industrial production indices for 14 major cities and provinces was computed using the prior 24 months industrial production time-series, and then, the average cross-correlation was obtained based on the matrix. Seasonally adjusted industrial production series were used.

**<Table 5> Cross-Correlations in the Profitability of Regional Banks (ROAs / ROEs, 1991-2002)**

|          | Cheju       | Jeonbuk     | Kwangju     | Kyongnam    | Pusan       |
|----------|-------------|-------------|-------------|-------------|-------------|
| Jeonbuk  | 0.93 / 0.82 |             |             |             |             |
| Kwangju  | 0.89 / 0.67 | 0.78 / 0.23 |             |             |             |
| Kyongnam | 0.82 / 0.86 | 0.69 / 0.48 | 0.90 / 0.93 |             |             |
| Pusan    | 0.90 / 0.91 | 0.87 / 0.86 | 0.86 / 0.44 | 0.80 / 0.70 |             |
| Daegu    | 0.93 / 0.93 | 0.90 / 0.90 | 0.87 / 0.46 | 0.81 / 0.71 | 0.99 / 0.99 |

Source: Hahm and Hong (2003).

#### *b. Scope of Product Diversification*

Next we focus on the scope of diversification across different financial services industries to explore potential benefits from conglomeration. Table 6 shows the cross-correlation in historical earnings measured from the yearly return on assets (ROAs) among three major financial industries in Korea. Note that earnings correlation was relatively high between commercial bank and life insurance industries, while other industry pairs – commercial bank and securities, and securities and life insurance, showed relatively low correlations. This implies that the alliance between bank and life insurance may be able to produce a positive synergy in profitability. However, it may potentially amplify earnings variability as well.

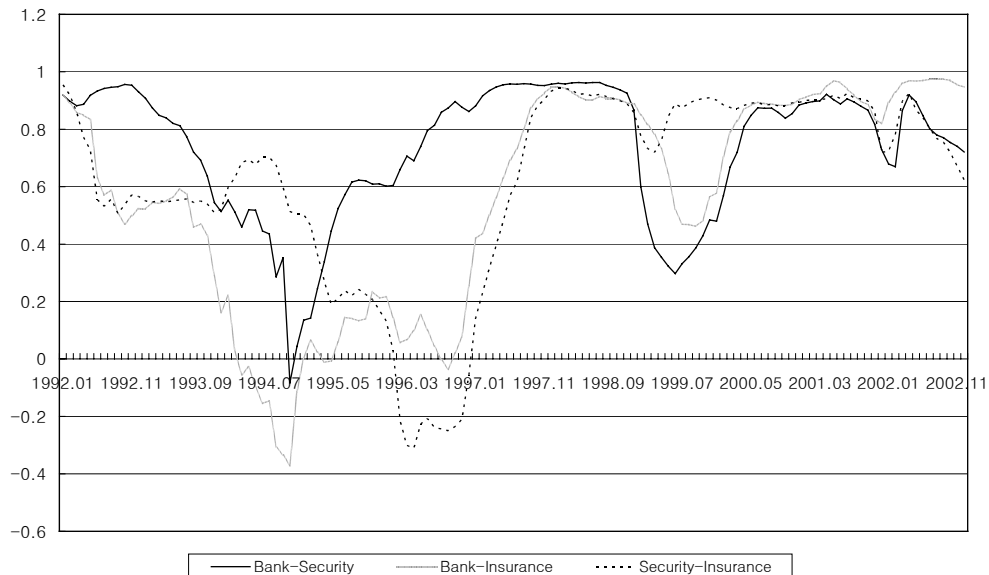
Figure 5 shows the cross-correlation coefficients among monthly stock price indices of bank, securities and life insurance industries.<sup>20</sup> It is noteworthy that the cross-correlation increased substantially after the financial crisis in 1997-98 implying a much limited potential for diversification across different financial industries in the post-crisis period.

**<Table 6> Cross-Correlations in ROAs of Financial Industries (1991-2001)**

|                          | Commercial Banks | Securities Companies |
|--------------------------|------------------|----------------------|
| Securities Companies     | 0.1014           |                      |
| Life Insurance Companies | 0.8755           | 0.0882               |

Source: Hahm and Hong (2003).

<sup>20</sup> The cross-correlation coefficient at each point in time was computed using the previous 24 month time-series for monthly changes in log stock price indices of three financial services industries.

**[Figure 5] Cross-Correlations in Stock Price Indices of Financial Industries**

Source: Hahm and Hong (2003).

### *c. Market Power and Increased Profitability*

As discussed above, there has been a view that consolidation increases franchise value and profitability of large banks and thus lowers financial risks of consolidated banks. This view in large part hinges upon the assumption that consolidation undermines competition. However, as discussed above, recent studies report evidence that consolidation has only minor effects on competition and market power.

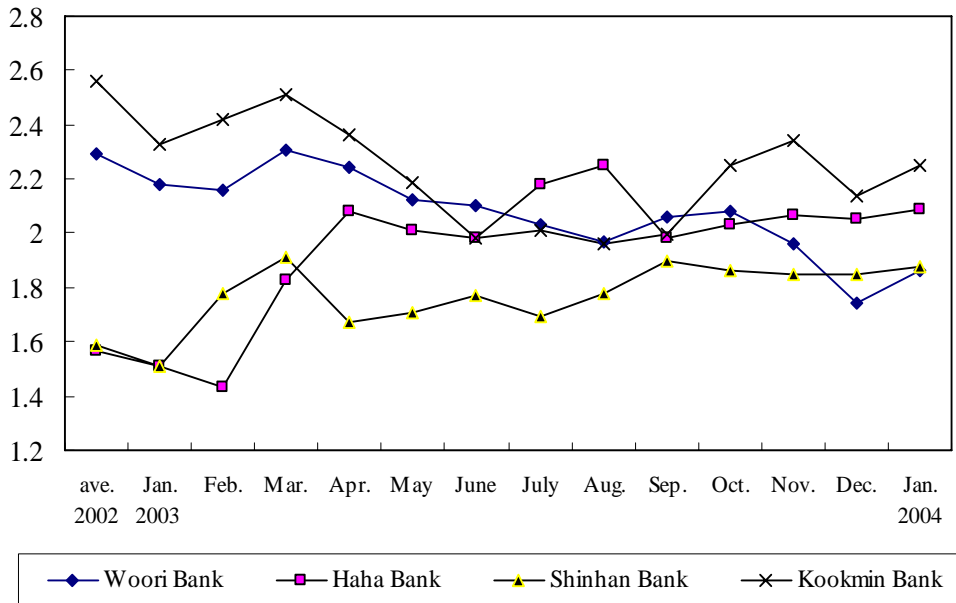
Figure 6 shows the trends in the deposit and lending interest rate spread of major commercial banks in Korea for new deposits and new loans extended in a month. Note that the significantly higher spread for relatively large leading banks such as Kookmin and Woori banks has actually disappeared recently as competition among banks became more intense. This implies that the market power effect of consolidation may not be significant in Korea, and hence, consolidation would not undermine competition due to increased contestability.

### *d. Risk-taking and Moral Hazard*

Finally, individual financial conglomerates may have incentives to take on risks more aggressively based upon the expectation that they are too big and few to fail. Deteriorations in the monitoring capacity of supervisory authorities and financial markets being faced with ever-increasing complexity and information opacity of financial conglomerates also encourage risk-taking incentives of TBTF institutions.

It is too early to evaluate the change in the risk-taking behavior of Korean

[Figure 6] Deposit-Lending Interest Rate Spreads of Major Banks



financial conglomerates in this regard. As noted above, bank consolidation at early stage in post-crisis Korea has been driven by the government’s restructuring initiative, and the banks intervened by the government had no freedom of taking risks at their own will as they were tightly monitored by the Korean Deposit Insurance Corporation (KDIC) and Financial Supervisory Service (FSS).

A recent study on the risk of Korean commercial banks by Kim (2003) found that bank asset risk indicators such as non-current loan ratio and loan loss provision ratio were not significantly associated with bank size variables. However, Kim reported a weakly positive association between bank size and unsystematic component of stock return volatility, which is a more forward-looking measure of risk relative to the accounting measure. Kim interpreted the evidence as possibly indicating a more aggressive risk taking behavior of large banks.

### B. Systemic Risk Potential

As emphasized above, financial consolidation and conglomeration may increase systemic risk potential as incentives of both large financial conglomerates and financial markets and regulatory authorities in monitoring and supervising them may also change. Even without distortions in incentives toward risk taking, the degree of systemic risk potential may increase with financial consolidation because, although the extent of diversification can increase at individual institutions, financial conglomerates tend to share increasingly similar



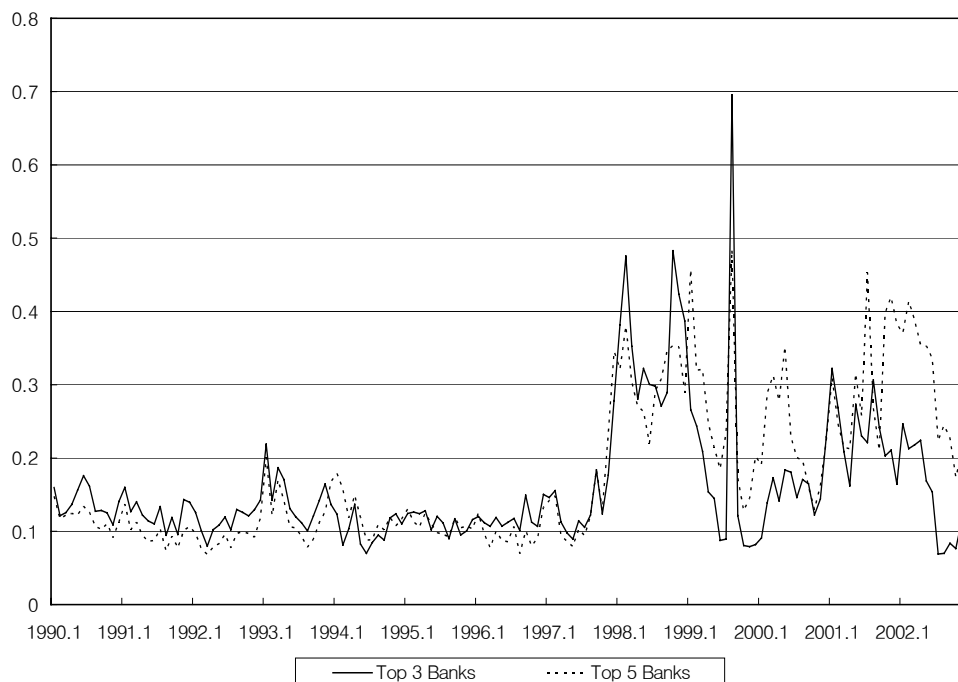
characteristics in their business portfolios and asset structures. Following the conceptual framework outlined above and in the spirit of G10 Ferguson report (2001), this section focuses on these risk channels and explores potential impacts on the systemic risk in Korea.

#### *a. Direct Interdependencies among Conglomerates*

One such channel of direct interdependencies is mutual exposure of large banks through short-term lending. Figure 7 shows the size of call loans relative to bank equity capital for top three and top five banking institutions in Korea since 1990. As can be seen, the ratio increased systematically during the post-crisis period. The rising credit risk exposure to short-term inter-bank lending indicates a higher potential for contagion of liquidity risk and hence systemic risk potential. Note also that not only the level but also the variability of the call loan to bank equity capital ratio increased substantially after the crisis.

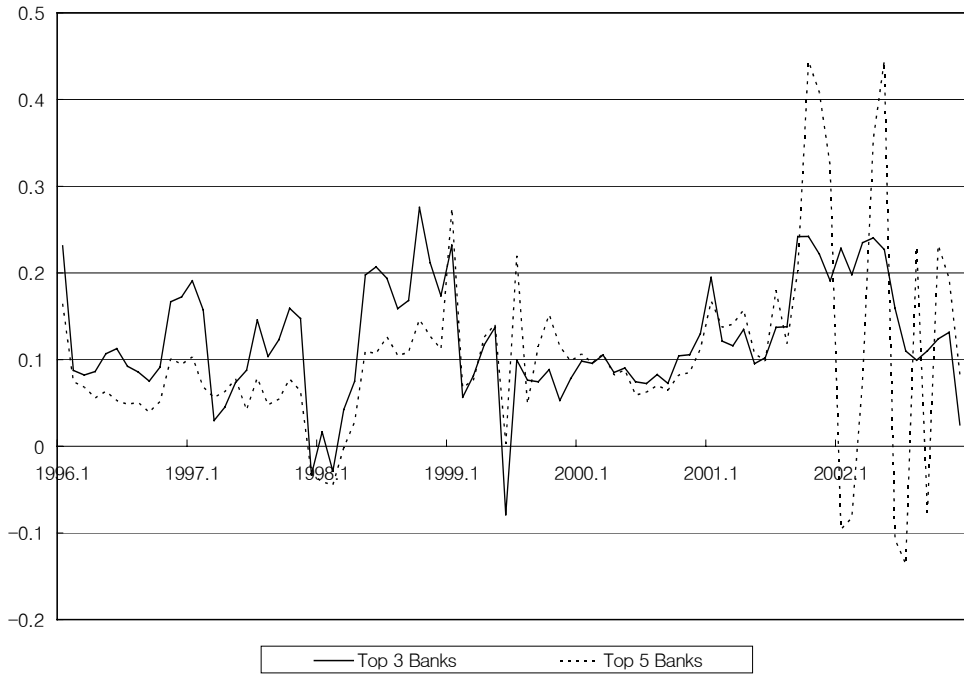
While the risk exposure of large banking institutions in short-term lending market has increased substantially, the counter-party risk exposure through financial derivative transactions shows a mixed picture. Figure 8 shows the trend in the net position of derivative transactions for top 3 and top 5 commercial banks relative to bank equity capital, which does not reveal a structural increase after the financial crisis.

**[Figure 7] Call Loan to Bank Equity Capital Ratios**



Source: Hahm and Hong (2003).

[Figure 8] Net Positions in Financial Derivative Transactions



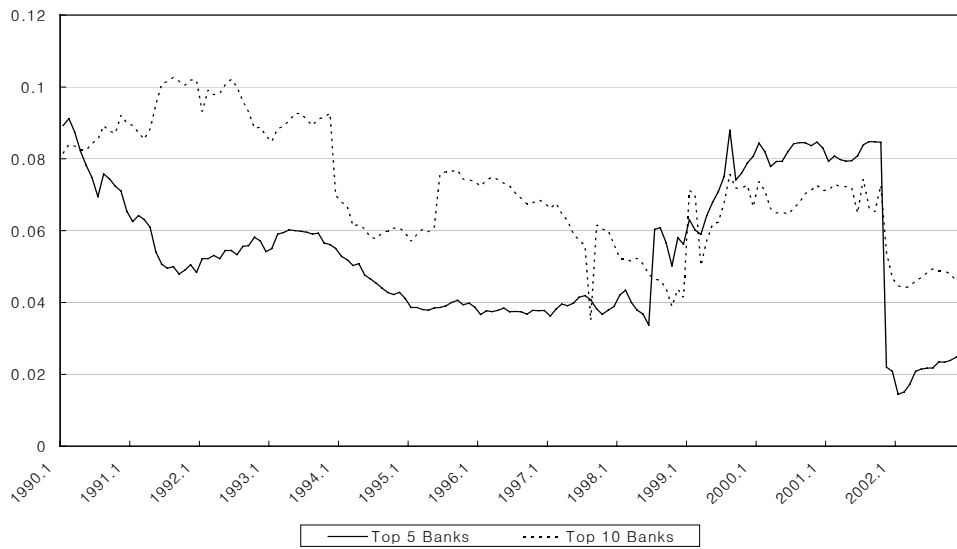
Source: Hahm and Hong (2003).

**b. Indirect Interdependencies among Conglomerates**

While diversified within respective financial conglomerates, the structure of balance sheet and profit strategy may become increasingly similar across financial conglomerates. Figure 9 shows the time-series of standard deviation in the corporate loan to bank asset ratios for top 5 and top 10 commercial banks in Korea since 1990. Note that the standard deviation fell gradually for top 10 banks. For top 5 banks, the standard deviation had increased during the 1998-2001 period, but then it fell sharply from 2002. This reflects that the competition among large banking institutions has become more intense in consumer and retail banking as banks that traditionally focused on large corporate lending gradually shifted their portfolios toward more household and small and medium-sized enterprise loans.

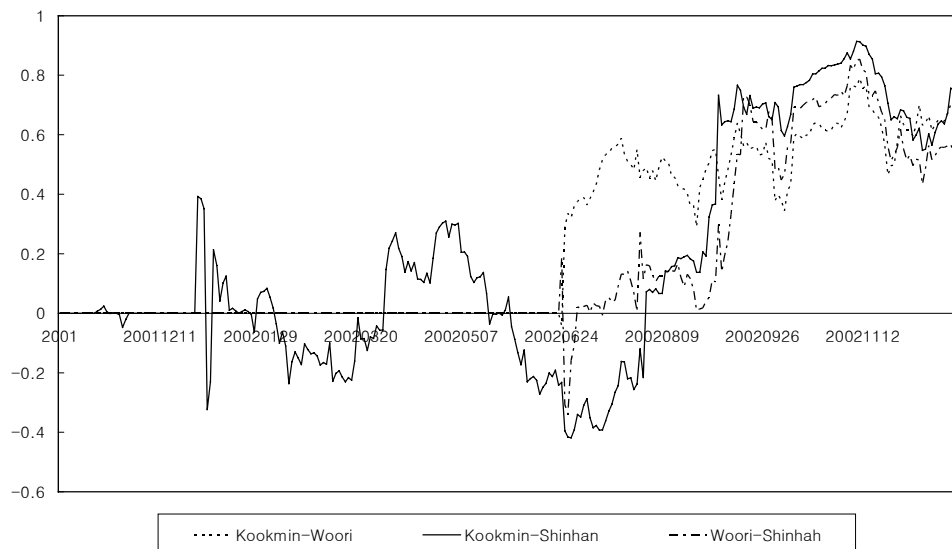
Stock market also seems to perceive these increasing interdependencies among large banking institutions. Aside from direct and indirect interdependencies reflected in the bank balance sheet, more forward-looking stock market may better capture the degree of mutual exposure and linkage among conglomerates. Indeed, the herd behavior of depositors and financial market investors could provide additional source for systemic risk. Figure 10 shows the trend in the cross-correlation in daily stock prices of top 3 banks - Kookmin bank, Woori Financial Holdings and

**[Figure 9] Standard Deviations in Corporate Loan to Bank Asset Ratios**



Source: Hahm and Hong (2003).

**[Figure 10] Cross-Correlations in Daily Stock Price Returns of Top 3 Banks**



Source: Hahm and Hong (2003).

Shinhan bank.<sup>21</sup> Note that the cross correlations became structurally higher from the second half of 2002, which implies that large banks are increasingly simultaneously exposed to market risk and contagion, indicating heightened systemic risk potential.

### 3. Regression Analyses on the Linkage between Financial Conglomeration and Profitability and Risk of Financial Institutions

Above diagnostic analyses focused on banking institutions as they are at the center of the current financial conglomeration trend in Korea. In this section, we broaden our data set to include other types of financial institutions such as securities and insurance corporations, and explore impacts of financial conglomeration on the profitability and risk taking behavior based upon the recent performance of financial institutions in Korea. Indeed, new business opportunities are arising for financial conglomerates from consolidation and diversification, which in turn influence profitability, capital adequacy, and risk profile of their business portfolios. As a result, insolvency risks of respective financial conglomerates would also change.

To obtain measures for financial risks, we use both standard deviation on return on asset (ROA) and z-score index following De Nicolo et al. (2003). The z-score was constructed by dividing the sum of average ROA and average equity capital to asset ratio by standard deviation of ROA for a certain period. The z-score can be understood as a measure for insolvency risk since it represents the number of standard deviation that just wipes out mean earning plus capital. It is a measure to evaluate whether a firm has a sufficient amount of capital and profit-generating capacity against its risk-taking level. A lower value for the z-score would indicate that the firm is exposed to higher insolvency risk.

In order to identify whether financial conglomeration had any structural impact on the behavior of financial institutions since the financial crisis, we considered both pre-crisis (1992-96) and post-crisis (2001-03) samples. We excluded the 1997-2000 data from the analysis since this marked a period of massive financial restructuring including the resolution of NPLs and consolidation of major troubled banks. For 1992-96, our sample totaled 101 financial institutions including 24 commercial banks, 33 securities companies, 41 insurance companies, and 3 investment trust companies. For 2001-03, the sample totaled 118 institutions including 14 commercial banks, 34 securities companies, 31 insurance companies, and 39 investment trust companies. For both sample periods, we computed average ROA ( $\mu$ ), average equity capital to asset ratio ( $\kappa$ ), standard deviation of ROA ( $\sigma$ ), and z-score ( $z$ ) for each financial institution.

Financial institutions within each industry were classified into financial conglomerate group and non-conglomerate group. Then financial institutions in conglomerate group were in turn classified according to the type of financial conglomerate – financial holding company sub-group, parent-subsidiary sub-group,

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<sup>21</sup> At each point in time, we computed cross-correlation coefficient from daily stock returns during the last one month period. The sample period began from November 2001 when Kookmin and Korea Housing Bank merged into Kookmin bank. Note also that stock prices of Woori Financial Holdings were available only from June 2002 due to the restructuring and merger process.

and mixed conglomerate sub-group.

Tables 7-1 and 7-2 report the weighted average values of the profitability, capital ratio, standard deviation in profitability, and insolvency risk for the entire sample as well as respective sub-group samples for both pre-crisis and post-crisis periods. First, when looking at the entire financial institutions during the post-crisis period, we find that financial institutions belonging to conglomerates exhibit, on average, lower profitability compared to independent financial institutions that do not belong to conglomerates. Also, we see that conglomerate financial institutions performed better compared to independent non-conglomerate financial institutions, in terms of their capital ratio and volatility in profitability, and consequently, exhibited a higher z-score or lower insolvency risk.

When examining the sample further by industry, we generally confirm the pattern of conglomerate institutions outperforming non-conglomerate institutions particularly in profit volatility and z-score. For instance, the financial institutions in the banking industry exhibited similar performance patterns, except in terms of volatility in profitability. This larger volatility in profitability can be mostly attributed to the fact that the parent-subsidiary subgroup was exposed to the credit card boom-bust cycle since the credit card company affiliates belonged to the parent bank. It is interesting to note that banks of financial holding company subgroup showed both higher profitability and a higher z-score compared to banks of parent-subsidiary subgroup. This indicates that banks in the parent-subsidiary group took on higher risks, and hence, were subject to higher insolvency risks relative to the banks in the financial holding company subgroup.

Second, when we compare the performance of the entire sample across pre-crisis and post-crisis periods, we see that profitability improved in the post-crisis period while the capital ratio and volatility in profitability deteriorated in the post-crisis period, thereby lowering the z-score in the post-crisis period. This performance pattern was generally observed for both conglomerates and non-conglomerates. As for the relative performance of conglomerates and non-conglomerates during the pre-crisis period, we find that financial conglomerates somewhat outperformed independent financial institutions in terms of profitability, capital ratio, and volatility in profitability. Consequently, financial institutions of conglomerates exhibited a lower insolvency risk.

Overall evidence indicates that we cannot conclude that financial conglomerates are taking on higher risks relative to non-conglomerate independent financial institutions in post-crisis Korea, the only exception being the investment trust industry, in which conglomerates showed a lower z-score on average.

We now proceed to the regression analysis and investigate whether the firm size and conglomerate affiliation matter for profitability and risks. More specifically, we run the following cross-sectional regressions for four distinct dependent variables – ROA ( $\mu$ ), standard deviation of ROA ( $\sigma$ ), equity to asset ratio ( $\kappa$ ), and z-score ( $z$ ).

$$Y_i = \beta_0 + \beta_1 D1_i + \beta_2 D2_i + \beta_3 D3_i + \beta_4 \text{Log Asset}_i + \beta_5 \text{CONG}_i + u_i \quad (1)$$

$$Y_i = \beta_0 + \beta_1 D1_i + \beta_2 D2_i + \beta_3 D3_i + \beta_4 \text{Log Asset}_i + \beta_5 \text{FH}_i + \beta_6 \text{PS}_i + \beta_7 \text{MX}_i + u_i \quad (2)$$

**<Table 7-1> Profitability and Risks of Financial Institutions  
(weighted average values for 1992-96)**

|                                |                   |                   | Number | ROA   | Equity /<br>Asset | ROA std.dev. | Z-Score |
|--------------------------------|-------------------|-------------------|--------|-------|-------------------|--------------|---------|
| Banks                          | conglomerates     | holding company   | 0      | -     | -                 | -            | -       |
|                                |                   | parent-subsidiary | 6      | 0.38  | 5.30              | 0.16         | 56.70   |
|                                |                   | Mixed             | 0      | -     | -                 | -            | -       |
|                                |                   | Subtotal          | 6      | 0.38  | 5.30              | 0.16         | 56.70   |
|                                | Non-conglomerates |                   | 18     | 0.25  | 6.13              | 0.20         | 40.23   |
|                                | Total             |                   | 24     | 0.32  | 5.68              | 0.18         | 49.21   |
| Securities                     | conglomerates     | holding company   | 0      | -     | -                 | -            | -       |
|                                |                   | parent-subsidiary | 10     | 0.52  | 41.87             | 2.58         | 20.35   |
|                                |                   | mixed             | 18     | 0.76  | 40.93             | 2.35         | 20.27   |
|                                |                   | subtotal          | 28     | 0.69  | 41.21             | 2.41         | 20.29   |
|                                | Non-conglomerates |                   | 5      | 2.43  | 48.06             | 1.25         | 45.14   |
|                                | total             |                   | 33     | 0.81  | 41.67             | 2.34         | 21.95   |
| Insurance                      | conglomerates     | holding company   | 0      | -     | -                 | -            | -       |
|                                |                   | parent-subsidiary | 4      | -0.09 | 2.80              | 0.57         | 32.68   |
|                                |                   | mixed             | 22     | -0.25 | 1.57              | 0.89         | 14.35   |
|                                |                   | subtotal          | 26     | -0.21 | 1.85              | 0.82         | 18.56   |
|                                | Non-conglomerates |                   | 15     | -1.99 | 4.48              | 3.54         | 2.07    |
|                                | total             |                   | 41     | -0.36 | 2.06              | 1.04         | 17.22   |
| Investment<br>Trust<br>Company | conglomerates     | holding company   | 0      | -     | -                 | -            | -       |
|                                |                   | parent-subsidiary | 0      | -     | -                 | -            | -       |
|                                |                   | mixed             | 0      | -     | -                 | -            | -       |
|                                |                   | subtotal          | 0      | -     | -                 | -            | -       |
|                                | Non-conglomerates |                   | 3      | -0.36 | -6.47             | 7.50         | -1.09   |
|                                | total             |                   | 3      | -0.36 | -6.47             | 7.50         | -1.09   |
| Total                          | conglomerates     | holding company   | 0      | -     | -                 | -            | -       |
|                                |                   | parent-subsidiary | 20     | 0.35  | 6.39              | 0.27         | 53.82   |
|                                |                   | mixed             | 40     | 0.02  | 12.02             | 1.28         | 15.92   |
|                                |                   | subtotal          | 60     | 0.27  | 7.72              | 0.51         | 44.86   |
|                                | Non-conglomerates |                   | 41     | 0.18  | 6.00              | 0.61         | 37.41   |
|                                | total             |                   | 101    | 0.24  | 7.06              | 0.55         | 42.00   |

**<Table 7-2> Profitability and Risks of Financial Institutions  
(weighted average values for 2001-2003)**

|                                |                   | Number            | ROA  | Equity /<br>Asset | ROA std.dev. | Z-Score |       |
|--------------------------------|-------------------|-------------------|------|-------------------|--------------|---------|-------|
| Banks                          | conglomerates     | holding company   | 5    | 0.92              | 4.81         | 0.20    | 37.09 |
|                                |                   | parent-subsidiary | 4    | 0.18              | 4.55         | 0.60    | 13.98 |
|                                |                   | mixed             | 0    | -                 | -            | -       | -     |
|                                |                   | subtotal          | 9    | 0.41              | 4.64         | 0.47    | 21.34 |
|                                | Non-conglomerates | 5                 | 0.48 | 4.57              | 0.39         | 13.83   |       |
|                                | total             | 14                | 0.42 | 4.62              | 0.46         | 20.12   |       |
| Securities                     | conglomerates     | holding company   | 2    | 2.55              | 39.29        | 2.14    | 19.72 |
|                                |                   | parent-subsidiary | 4    | 1.24              | 34.59        | 2.29    | 18.29 |
|                                |                   | mixed             | 12   | -0.80             | 22.87        | 2.27    | 32.15 |
|                                |                   | subtotal          | 18   | -0.08             | 26.79        | 2.26    | 28.01 |
|                                | Non-conglomerates | 16                | 1.54 | 18.86             | 5.31         | 11.44   |       |
|                                | total             | 34                | 0.27 | 25.05             | 2.93         | 24.38   |       |
| Insurance                      | conglomerates     | holding company   | 1    | 2.31              | -0.21        | 1.51    | 1.39  |
|                                |                   | parent-subsidiary | 3    | 0.78              | 2.93         | 0.53    | 8.41  |
|                                |                   | mixed             | 13   | 1.12              | 9.03         | 0.62    | 20.17 |
|                                |                   | subtotal          | 17   | 1.07              | 7.54         | 0.61    | 17.29 |
|                                | Non-conglomerates | 14                | 2.29 | 6.14              | 1.25         | 8.18    |       |
|                                | total             | 31                | 1.34 | 7.23              | 0.75         | 15.29   |       |
| Investment<br>Trust<br>Company | conglomerates     | holding company   | 2    | 6.68              | 90.71        | 2.70    | 43.18 |
|                                |                   | parent-subsidiary | 5    | 12.45             | 89.26        | 5.12    | 22.15 |
|                                |                   | mixed             | 10   | 6.94              | 90.07        | 3.97    | 52.38 |
|                                |                   | subtotal          | 17   | 8.68              | 89.88        | 4.20    | 41.66 |
|                                | Non-conglomerates | 22                | 6.74 | 93.39             | 3.95         | 57.67   |       |
|                                | Total             | 39                | 7.81 | 91.45             | 4.09         | 48.41   |       |
| Total                          | conglomerates     | holding company   | 10   | 0.97              | 5.32         | 0.25    | 36.28 |
|                                |                   | parent-subsidiary | 16   | 0.26              | 5.14         | 0.63    | 13.62 |
|                                |                   | mixed             | 35   | 0.78              | 11.86        | 0.94    | 22.51 |
|                                |                   | subtotal          | 61   | 0.53              | 6.52         | 0.60    | 20.87 |
|                                | Non-conglomerates | 57                | 1.07 | 6.34              | 0.98         | 12.31   |       |
|                                | Total             | 118               | 0.63 | 6.49              | 0.67         | 19.34   |       |

In equation (1), D1, D2, D3 are dummy variables for securities, insurance and investment trust industries. Log Asset is the natural logarithm of total asset size and CONG is conglomeration dummy that equals one if the institution is affiliated with a financial group. In equation (2), we further refine the type of conglomerates using financial holdings company group dummy (FH), parent-subsidiary group dummy (PS), and mixed conglomerate group dummy (MX).

Table 8 reports results on the regression analyses. It is interesting to note that, for the post-crisis period of 2001-03, the size variable has a significant explanatory power for both profitability and risk measured by the standard deviation of ROA. Larger financial institutions have a significantly higher profitability and lower variability in ROA operating on a superior efficient frontier. Compared with the results from the pre-crisis period, absolute values of the coefficient of firm size in both ROA and standard deviation regressions were larger for the post-crisis period than those for the pre-crisis period. Such size effect of higher profitability and lower risk seems to reflect the economies of scale and diversified portfolios of financial institutions achieved through financial consolidation. However, note also that the size variable does not explain z-score for both pre- and post-crisis periods, which indicates that larger financial institutions tend to be undercapitalized relative to their asset, resulting in a lower equity-asset ratio. This was particularly so during the pre-crisis period.

After controlling for the size effect, it is noteworthy that financial conglomerates in general did not exhibit any significant differences in risk performance and capitalization relative to non-conglomerate independent financial institutions. Although the conglomerate dummy did reveal minor negative impact on the profitability front, these effects were only minimal. In the pre-crisis period, parent-subsidiary group tended to show a lower profitability, while in the post-crisis period, mixed conglomerates showed a lower profitability.

The weak effect of financial conglomeration on the performance of financial institutions suggests that Korea's business scope regulation still takes a "compartmentalism" approach rather than a "universal banking" approach.<sup>22</sup> Furthermore, Korea's compartmental regulatory approach takes a positive system rather than a negative system. Therefore, the regulatory structure strictly limits the business scope of financial institutions. For instance, under Korea's positive system, financial institutions can only offer financial products listed by regulatory provision. So if a financial product does not appear on the positive list, then financial institutions are prohibited from offering those unlisted products.

Restricting our sample to bank, securities, and insurance industries by excluding investment trust companies yielded qualitatively similar results as reported in Table 9.

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<sup>22</sup> There exist various regulations that restrict actual business cooperation among the subsidiaries within a financial group. For instance, fair trade and securities exchange related regulations strictly restrict joint business activities among subsidiaries such as joint marketing and the sharing of a common back office system.



<Table 8>

<Table 9>

**<Table 8> Financial Conglomeration, Profitability and Risk: Regression Analyses  
(Bank, Securities, Insurance, and Investment Trust Industries)**

|                                    | Z-Score                 |                   |                          |                   | ROA                     |                    |                          |                      | Equity/Asset            |                     |                          |                    | ROA std.dev.            |                    |                          |                     |
|------------------------------------|-------------------------|-------------------|--------------------------|-------------------|-------------------------|--------------------|--------------------------|----------------------|-------------------------|---------------------|--------------------------|--------------------|-------------------------|--------------------|--------------------------|---------------------|
|                                    | Pre-Crisis<br>(1992~96) |                   | Post-Crisis<br>(2001~03) |                   | Pre-Crisis<br>(1992~96) |                    | Post-Crisis<br>(2001~03) |                      | Pre-Crisis<br>(1992~96) |                     | Post-Crisis<br>(2001~03) |                    | Pre-Crisis<br>(1992~96) |                    | Post-Crisis<br>(2001~03) |                     |
| Log Assets                         | 1.10<br>(0.58)          | 1.03<br>(0.54)    | 3.18<br>(1.11)           | 4.13<br>(1.44)    | 0.24*<br>(1.75)         | 0.24*<br>(1.79)    | 1.41***<br>(3.18)        | 1.42***<br>(3.19)    | -5.23***<br>(-4.32)     | -5.27***<br>(-4.35) | -0.41<br>(-0.27)         | -0.30<br>(-0.20)   | -0.35**<br>(-2.07)      | -0.36**<br>(-2.10) | -0.93***<br>(-2.95)      | -0.97***<br>(-3.03) |
| Financial<br>Conglomerate<br>Dummy | -0.95<br>(-0.19)        |                   | 2.83<br>(0.40)           |                   | -0.63*<br>(-1.73)       |                    | -1.01<br>(-0.91)         |                      | -1.45<br>(-0.44)        |                     | -2.68<br>(-0.70)         |                    | -0.09<br>(-0.19)        |                    | -0.38<br>(-0.48)         |                     |
| Holding<br>Company<br>Dummy        |                         |                   |                          | 16.75<br>(1.33)   |                         |                    |                          | 0.98<br>(0.50)       |                         |                     |                          | 1.35<br>(0.20)     |                         |                    |                          | -1.33<br>(-0.95)    |
| Parent-<br>Subsidiary<br>Dummy     |                         | 1.86<br>(0.30)    |                          | -10.03<br>(-0.95) |                         | -0.85*<br>(-1.94)  |                          | 0.64<br>(0.39)       |                         | 0.36<br>(0.09)      |                          | -1.68<br>(-0.29)   |                         | 0.18<br>(0.33)     |                          | -0.12<br>(-0.10)    |
| Mixed<br>Conglomerate<br>Dummy     |                         | -2.62<br>(-0.48)  |                          | 3.12<br>(0.39)    |                         | -0.50<br>(-1.27)   |                          | -2.39*<br>(-1.90)    |                         | -2.52<br>(-0.72)    |                          | -4.32<br>(-0.98)   |                         | -0.24<br>(-0.50)   |                          | -0.17<br>(-0.19)    |
| Constant                           | -24.89<br>(0.60)        | -23.40<br>(-0.56) | -18.78<br>(-0.39)        | -34.23<br>(-0.71) | -5.73*<br>(-1.93)       | -5.85**<br>(-1.96) | -18.29**<br>(-2.46)      | -18.51***<br>(-2.48) | 104.15***<br>(3.89)     | 105.11***<br>(3.91) | 99.84***<br>(3.90)       | 98.07***<br>(3.75) | 14.80***<br>(3.95)      | 14.94***<br>(3.98) | 21.77***<br>(4.12)       | 22.47***<br>(4.17)  |
| Adj.R <sup>2</sup>                 | 0.36                    | 0.36              | 0.09                     | 0.10              | 0.42                    | 0.42               | 0.19                     | 0.21                 | 0.64                    | 0.64                | 0.80                     | 0.80               | 0.42                    | 0.42               | 0.23                     | 0.22                |
| Sample Size                        | 101                     | 101               | 118                      | 118               | 101                     | 101                | 118                      | 118                  | 101                     | 101                 | 118                      | 118                | 101                     | 101                | 118                      | 118                 |

Note: t-values are in parenthesis. \*\*\*, \*\* and \* indicate that the coefficient is significantly different from zero at 1, 5 and 10 percent levels respectively.

**<Table 9> Financial Conglomeration, Profitability and Risk: Regression Analyses  
(Bank, Securities, and Insurance Industries)**

|                                    | Z-Score                 |                  |                          |                  | ROA                     |                   |                          |                   | Equity / Asset          |                     |                          |                  | ROA std.dev.            |                    |                          |                     |
|------------------------------------|-------------------------|------------------|--------------------------|------------------|-------------------------|-------------------|--------------------------|-------------------|-------------------------|---------------------|--------------------------|------------------|-------------------------|--------------------|--------------------------|---------------------|
|                                    | Pre-Crisis<br>(1992~96) |                  | Post-Crisis<br>(2001~03) |                  | Pre-Crisis<br>(1992~96) |                   | Post-Crisis<br>(2001~03) |                   | Pre-Crisis<br>(1992~96) |                     | Post-Crisis<br>(2001~03) |                  | Pre-Crisis<br>(1992~96) |                    | Post-Crisis<br>(2001~03) |                     |
| Log Assets                         | 1.09<br>(0.57)          | 1.02<br>(0.53)   | 0.68<br>(0.29)           | 1.83<br>(0.79)   | 0.22*<br>(1.71)         | 0.23*<br>(1.74)   | 0.74**<br>(2.62)         | 0.82***<br>(2.89) | -5.27***<br>(-4.34)     | -5.32***<br>(-4.37) | -0.33<br>(-0.17)         | -0.12<br>(-0.06) | -0.36**<br>(-2.10)      | -0.36**<br>(-2.14) | -0.57***<br>(-2.90)      | -0.60***<br>(-2.95) |
| Financial<br>Conglomerate<br>Dummy | -0.94<br>(-0.18)        |                  | 2.77<br>(0.43)           |                  | -0.61*<br>(-1.73)       |                   | -1.35*<br>(-1.70)        |                   | -1.39<br>(-0.42)        |                     | -3.59<br>(-0.64)         |                  | -0.08<br>(-0.17)        |                    | -0.20<br>(-0.36)         |                     |
| Holding<br>Company<br>Dummy        |                         |                  |                          | 21.25*<br>(2.01) |                         |                   | 0.72<br>(0.56)           |                   |                         |                     |                          | 2.16<br>(0.23)   |                         |                    |                          | -0.84<br>(-0.90)    |
| Parent-<br>Subsidiary<br>Dummy     |                         | 1.87<br>(0.30)   |                          | -4.78<br>(-0.50) |                         | -0.83*<br>(-1.94) |                          | -0.86<br>(-0.73)  |                         | 0.42<br>(0.11)      |                          | -1.60<br>(-0.19) |                         | 0.19<br>(0.34)     |                          | -0.24<br>(-0.29)    |
| Mixed<br>Conglomerate.<br>Dummy    |                         | -2.61<br>(-0.47) |                          | -1.76<br>(-0.24) |                         | -0.48<br>(-1.26)  |                          | -2.29*<br>(-2.56) |                         | -2.46<br>(-0.70)    |                          | -6.40<br>(-0.98) |                         | -0.24<br>(-0.48)   |                          | 0.06<br>(0.10)      |
| Adj.R <sup>2</sup>                 | 0.35                    | 0.35             | 0.06                     | 0.10             | 0.44                    | 0.44              | 0.04                     | 0.08              | 0.63                    | 0.63                | 0.32                     | 0.31             | 0.32                    | 0.31               | 0.31                     | 0.30                |
| Sample Size                        | 98                      | 98               | 79                       | 79               | 98                      | 98                | 79                       | 79                | 98                      | 98                  | 79                       | 79               | 98                      | 98                 | 79                       | 79                  |

Note: t-values are in parenthesis. \*\*\*, \*\* and \* indicate that the coefficient is significantly different from zero at 1, 5 and 10 percent levels respectively.

#### IV. Supervision of Financial Conglomerates in Korea

As emphasized above, financial groups present the risk of contagion - the spread of financial problems among different entities within the group. As such, one entity suffering from financial unsoundness such as an impairment of capital or liquidity or an excessive build-up of risk exposures may place the soundness of the rest of the group at risk, which would otherwise be sound. Considering this, the supervision of financial conglomerates needs to take a group-wide perspective as well as a solo perspective. Hence, although solo supervision of individual entities continues to be of primary importance, the complementary role of consolidated financial supervision, which assesses the impact on the safety and soundness of operations of all the entities within a group, needs to be emphasized. Indeed, the Basel Committee on Banking Supervision addressed this issue in the 1997 report on Core Principles for Effective Banking Supervision, which stated that, *“An essential element of banking supervision is the ability of supervisors to supervise the banking group on a consolidated basis.”*

In Korea, among the three types of financial groups - financial holding company, parent-subsidiary model, and mixed conglomerate, a primitive form of consolidated supervision has been applied only to financial holding companies. Although entities of parent-subsidiary model and the mixed conglomerate are subject to supervision on a solo basis, there are no group-wide regulations on capital adequacy and restrictions on intra-group transactions such as limits on credit exposure. Moreover, regulators in Korea do not have access to relevant data on non-financial subsidiaries, which may be necessary for adequate supervision of the entire group.

As part of the Korean government's initiative to meet international regulatory standards, the Financial Holding Company Act was introduced in October 2000, which is largely based upon the U.S. Bank Holding Company Act. While sharing most of key features, two acts show some minor differences.<sup>23</sup> Key features of the Korean financial holding company act can be summarized as follows.

First, approval of the Financial Supervisory Commission (FSC) is required for establishing a financial holding company based on the following criteria: 1) sound business plan, 2) qualification for major shareholders, 3) sound financial and management performance, 4) adequate equity swap ratio.

Second, the financial holding company must own 50% or more of the affiliates' voting securities, whereas for a listed company, controlling ownership requirement is 30%. In case an affiliate of a financial holding company seeks ownership control of another affiliate, the same requirements are applied. Financial holding companies are prohibited from owning a non-financial firm.

Third, a financial holding company can engage in all financial activities including banking, insurance and securities.

Fourth, the Financial Supervisory Commission has adopted a risk-based

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<sup>23</sup> In the U.S., the financial holding company - a bank holding company that, having met certain capital, managerial, and community reinvestment criteria, can engage in any financial activity pursuant to the Gramm-Leach-Bliley Act of 1999.

**<Table 10> Key features of Financial Holding Companies in Korea and the U.S.**

|  | Korea  | United States   |
|--|--|---|
| Prior approval and standards of authorization      | <ul style="list-style-type: none"> <li><input type="checkbox"/> Approved by FSC</li> <li><input type="checkbox"/> Criteria: 1) sound business plans, 2) requirements for being major shareholders, 3) sound financial and management performance, 4) adequate equity swap ratio</li> </ul>   | <ul style="list-style-type: none"> <li><input type="checkbox"/> Approved by FRB</li> <li><input type="checkbox"/> Financial holding company is a bank holding company that, having met certain 1) capital, 2) managerial, and 3) community reinvestment criteria</li> </ul>   |
| Criteria for Controlling Ownership in Subsidiaries | <ul style="list-style-type: none"> <li><input type="checkbox"/> FHC must own 50% or more of the affiliates' voting shares (30% or more for a list company)</li> <li><input type="checkbox"/> In case an affiliate of a FHC seeking ownership control of another affiliate, the requirements are same</li> <li><input type="checkbox"/> Financial holding companies are prohibited from owning a non-financial firm.</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> More broad interpretation of criteria for being subsidiaries               <ul style="list-style-type: none"> <li>1) Any company 25% or more of the affiliates' voting securities, 2) any company the election of a majority of directors is controlled in any manner by holding company, 3) any company with respect to the management of which holding company has the power, directly or indirectly, to exercise a controlling influence, as determined by the FRB.</li> </ul> </li> </ul> |
| Permissible Activities                             | <ul style="list-style-type: none"> <li><input type="checkbox"/> All financial activities including banking, insurance, and securities, etc.</li> </ul>   | <ul style="list-style-type: none"> <li><input type="checkbox"/> Activities, FRB has determined to be 1) "financial in nature," 2) "incidental to such financial activity," or 3) "complementary to a financial activity" and posing no "substantial risk to the safety and soundness of depository institutions or the financial system generally"</li> </ul>   |
| Capital Adequacy                                   | <ul style="list-style-type: none"> <li><input type="checkbox"/> The sum of the individual net equity capital for individual group members should exceed the sum of the solo capital requirements for individual group members.</li> </ul>  | <ul style="list-style-type: none"> <li><input type="checkbox"/> BIS capital adequacy ratio for the entire group is formulated on a consolidated basis</li> </ul>  |
| Prompt Corrective Action (PCA)                     | <ul style="list-style-type: none"> <li><input type="checkbox"/> The FHCs are ordered to engage in PCAs when the FSC deems it necessary on the basis of the ratio of equity capital to the requisite capital below stipulated level and the composite grade of LOPECM.</li> </ul>   | <ul style="list-style-type: none"> <li><input type="checkbox"/> The PCA applies only to FDIC-insured depository institutions and not to bank holding companies.</li> </ul>  |

&lt;Table 10&gt; Continued

|  | Korea   | United States   |
|--|---|---|
| Restrictions on intra-group transactions | <ul style="list-style-type: none"> <li><input type="checkbox"/> Affiliates are prohibited from investment between affiliates in the same group and extending credit to the FHC.</li> <li><input type="checkbox"/> An affiliate's total credit extension with any one affiliate cannot exceed 10% of the affiliate's capital. The affiliate's total credit extensions with all affiliates combined cannot exceed 20% of the affiliate's capital.</li> <li><input type="checkbox"/> Extension of credit among affiliates must be fully secured with qualifying collateral, which must be worth 100 to 130% of the amount of the extension of credit, with the percentage depending on the type of collateral (100% for Korea government securities; 110% for municipal securities, 130% for others)</li> <li><input type="checkbox"/> A FHC or any affiliates cannot purchase a low-quality asset from an affiliate.</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> A Bank's total covered transactions<sup>1)</sup> with any one affiliate cannot exceed 10% of the bank's capital. The bank's total covered transactions with all affiliates combined cannot exceed 20% of the bank's capital.</li> <li><input type="checkbox"/> Most covered transactions must be fully secured with qualifying capital. The collateral must be worth 100 to 130% of the covered transaction, with the percentage depending on the type of collateral: 100% for US government securities; 110% for state and municipal securities; 120% for other qualifying debt, and 130% for stock, leases, or other real or personal property.</li> <li><input type="checkbox"/> A bank cannot purchase a low-quality asset from an affiliate</li> </ul> |
| Information sharing                      | <ul style="list-style-type: none"> <li><input type="checkbox"/> Affiliates within the same group are allowed to share personal information on customers without consent.</li> </ul>   | <ul style="list-style-type: none"> <li><input type="checkbox"/> Affiliates within the same group are allowed to share personal information on customers without consent.</li> <li><input type="checkbox"/> Consumers have the right to opt out of having their information shared with certain third parties</li> </ul>   |

Note: 1) A bank engages in a covered transaction when it 1) extends credit to, or for the benefit of, an affiliate; 2) issues a guarantee for the benefit of an affiliate; 3) purchases assets from an affiliate; 4) accepts securities issued by an affiliate as collateral for an extension of credit, including an extension of credit to a third party; 5) invests in securities issued by an affiliate.

deduction approach proposed by the Joint Forum for Financial Conglomerate<sup>24</sup> to

<sup>24</sup> Joint Forum, which was established in 1996 under the auspices of the BCBS, IOSCO, and IAIS, has proposed techniques that facilitate the assessment of capital adequacy on a group-wide basis for financial conglomerates and identification of double or multiple gearing, in which the same capital is used simultaneously as a buffer against risk in two or more legal entities (Joint Forum, *Capital Adequacy Principles Paper*, 1999). The Joint Forum prescribes three methods for the measurement of the group capital of financial conglomerates: building-block prudential approach, risk-based aggregation approach

assess the capital adequacy of financial holding companies. Accordingly, the sum of the individual net equity capitals for individual group members must exceed the sum of the solo capital requirements for individual group members.

Fifth, the financial holding companies are ordered to engage in prompt corrective actions (PCAs) when the Financial Supervisory Commission deems it necessary on the basis of the ratio of net equity capital to the regulatory required capital below stipulated levels and the composite grade of *LOPECM* (Lead subsidiary, Other subsidiary, Parent company, consolidated Earnings, Capital adequacy, and Management). PCA consists of three sets of progressively more stringent corrective procedures (see Table 11).

Sixth, the Financial Holding Company Act imposes quantitative and qualitative limits on certain kinds of intra-group transactions. An affiliate of a financial holding company cannot make an investment in other affiliate within the same group. Furthermore, an extension of credit to holding company by affiliates is prohibited. The Financial Holding Company Act imposes limits on credit extension among affiliates. An affiliate's total credit extensions to any one affiliate cannot exceed 10% of the affiliate's capital. The affiliate's total credit extensions to all affiliates combined cannot exceed 20% of the affiliate's capital. Extensions of credits among affiliates must be fully secured with qualifying collateral. The collateral must be worth 100 to 130% of the amount of the extended credit, with the percentage depending upon the type of collateral (100% for Korean government securities; 110% for municipal securities; and 130% for others). A financial holding company or any affiliate cannot purchase a low-quality asset from other affiliates.

Seventh, in order to enhance synergy effects such as cross selling of products and services among affiliates in a financial holding company, affiliates within the same group are allowed to share information on customers without customers' consent.

## V. Policy Implications and Suggestions

Above diagnostic analysis indicates that one cannot ascertain a clear-cut relationship between financial consolidation and the risk of individual conglomerates or systemic risk potential. However, recent experiences and developments in both advanced countries and emerging market countries seem to indicate that a more consolidated financial system dominated with a few large financial conglomerates may bring about potentially significant financial instability, especially if the concentration and conglomeration create 'too-big-to-fail' problems.

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and risk-based deduction approach. The risk-based deduction method emphasizes the amount and transferability of capital available to the parent or other members of the group. Essentially, this approach takes the balance sheet of each company within the group and looks through to the net assets of each related company, making use of unconsolidated regulatory data. Under this method, the book value of each participation in a dependant company is replaced in the participating company's balance sheet by the difference between the relevant share of the dependant's capital surplus or deficit. Any holdings of the dependant company in other group companies are also treated in a similar manner. However, any reciprocal interest, whether direct or indirect, of a dependant company in a participating company is assumed to have zero value and is, therefore, to be eliminated from the calculation.



**<Table 11> Prompt Corrective Actions for Financial Holding Company in Korea**

| Measures<br>(Decision maker)   | Conditions when measures are taken                                    |   | Detailed Measures  |
|--|---|---|--|
|  | Ratio of<br>Equity<br>Capital to<br>Regulatory<br>Required<br>capital | Management<br>Performance   |  |
| Management<br>Improvement<br>Recommendations<br>(Governor of<br>FSS) | Below<br>100%   | <input type="checkbox"/> Above the third grade in LOPECM, but below the fourth grade in the evaluation item of "parent company" or capital adequacy<br><input type="checkbox"/> It seems evident that the above cut-off conditions are not satisfied because of the large financial debacle | <input type="checkbox"/> Improvement in personnel management and organizational operation<br><input type="checkbox"/> Cost reduction<br><input type="checkbox"/> Restrictions in fixed asset investment, entry to new business, and new financial investment<br><input type="checkbox"/> Disposal of insolvent assets<br><input type="checkbox"/> Recapitalization<br><input type="checkbox"/> Restriction of dividend payout<br><input type="checkbox"/> Arrangements of special loan loss provisioning |
| Management<br>Improvement<br>Requirements<br>(FSC)                   | Below<br>75%  | <input type="checkbox"/> Below the fourth grade in LOPECM<br><input type="checkbox"/> It seems evident that the above cut-off conditions are not satisfied because of the large financial debacle   | <input type="checkbox"/> Retrenchment of organization<br><input type="checkbox"/> Restriction of holding risky assets and disposal of assets<br><input type="checkbox"/> Requirement of management turnover<br><input type="checkbox"/> Partial suspension of business operation<br><input type="checkbox"/> Restructuring of subsidiaries<br><input type="checkbox"/> Planning of M&A, or transfer of business entirely or partially  |
| Management<br>Improvement<br>Orders<br>(FSC)                         | Below<br>25%  | <input type="checkbox"/> Unsound financial Institutions specified in The Act Concerning Structural Improvement of Financial Industry  | <input type="checkbox"/> Write-off of shares<br><input type="checkbox"/> Prohibition of execution by management and nomination of manager<br><input type="checkbox"/> Merger<br><input type="checkbox"/> Full or partial transfer of business operation<br><input type="checkbox"/> Third-party takeover of the FHC<br><input type="checkbox"/> Suspension of business operation for less than 6 months<br><input type="checkbox"/> Full or partial transfer of contracts                                |

As we have emphasized above, the effectiveness of existing financial regulatory system has been significantly undermined in the face of on-going financial consolidation and conglomeration. With increasingly limited ability of supervisory and monetary authorities to control financial risks and cope with financial disruption, it has become an urgent task to devise a new regulatory regime capable of preventing excessive risk-taking of financial conglomerates and regulatory forbearance of financial supervisors. Given that the regulatory system could become effective only if it is accompanied with strong market discipline, it has also become critical to create an environment where market participants have a strong incentive to monitor risks and penalize financial institutions if they take on too much risk.

In the era of financial consolidation and conglomeration, the regulatory system must be reformed toward a more market and risk-based system, and existing capital-based static financial supervision must also be shifted toward a more dynamic supervision focused on the soundness and effectiveness of management and internal control processes. Furthermore, in safeguarding the financial system, regulations on the governance and disclosure requirements for financial conglomerates need to be further strengthened in order to effectively complement official supervision with internal and market monitoring. With a view to establishing the new regulatory regime, this section addresses policy issues and puts forward a set of policy recommendations for Korea.

## **1. Strengthening Governance System and Risk Management Capacity of Financial Conglomerates**

The first step to cope with risk-taking incentives of large financial conglomerates is to establish a transparent and accountable governance system at financial conglomerates. In the absence of a proper governance mechanism, managers of financial conglomerates may maximize their own benefit at the expense of outside stakeholders such as shareholders and depositors. The costs to investors of monitoring managers are known as agency costs, and the establishment of an effective governance system greatly reduces this agency cost.

Indeed, since 1997 financial crisis, Korean banks have revamped their internal governance systems. Non-executive outside directors, audit committee, and compliance officer systems were introduced in January 2000 to strengthen the governance and internal control procedures within banks. Furthermore, various reform measures have also been implemented to upgrade bank accounting and disclosure systems in order to facilitate bank monitoring by depositors and investors.

While the governance system and internal control mechanisms were relatively well established for individual commercial banks, as for financial conglomerates, the group governance and internal control systems have not yet been fully established. Financial holding companies have not fully come to grips with the complex organizational control and risk structures within group. For instance, as we have seen from the case of credit card industry in Korea, the failure of risk management at non-bank financial subsidiaries is easily transmitted as a financial loss to affiliated bank subsidiaries regardless of the risk management effort on the part of bank

subsidiaries. Non-compliance of regulations and illegal activities at non-bank subsidiaries also cause a significant damage to the reputation of bank subsidiary as well as entire financial group that shares identical brand name.

While the governance systems at respective subsidiaries must be strengthened, parent holding companies need to establish a strong internal mechanism to identify, monitor, aggregate and effectively control overall group risk as individual risks of subsidiaries easily propagate in a non-linear way. In particular, the governance system at bank subsidiaries needs to be further strengthened in order to prevent possible transfer of risks circumventing internal firewalls among subsidiaries within a financial group. Even if bank subsidiaries are wholly owned by the parent holding company, there must be independent outside directors at the board of bank subsidiaries in order to monitor bank managers on behalf of depositors and outside investors. This is especially so when the deposit insurance backed by tax-payers money is extended to bank liabilities.<sup>25</sup>

Strengthening risk management capacity at financial conglomerates has become a key task in maintaining financial stability in the face of increased uncertainty and innovative financial flows. With the contagion and non-linear propagation of risks within a financial group, it is especially important for financial conglomerates to implement a consolidated risk management at a group level. Financial holding companies must be able to identify risk exposures of the entire group and implement a system to avoid excessive concentration of risks by allocating risk limits over subsidiaries. At the same time, a transparent group risk management policy framework must be established and consistently applied in which various risk measures and targets are coordinated across holding company and its subsidiaries within a financial group.

With financial consolidation, the management of operational risks has become a particularly challenging task for large financial conglomerates. However, regardless of their increasingly complex scope of businesses, the management of operational risks at Korean financial conglomerates still remains at a rudimentary level. As recently suggested by the Basel Committee (2003), an effective operational risk management framework requires, as crucial elements, clear strategies and oversight by the board of directors and senior management, a strong operational risk and internal control culture including clear lines of responsibility and segregation of duties, effective internal reporting, and contingency planning. Financial conglomerates must establish clear policies and processes to identify, measure and

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<sup>25</sup> It is controversial whether independent directors are required for the board of directors at the 100% owned bank subsidiary. The arguments against the independent director requirement are fourfold: First, the monitoring and controlling function of the parent holding company could be in conflict with the functioning of the board of directors at the subsidiary bank. Second, Foreign countries such as the U.S. (article 36 of the FDIC Act) and Japan (commercial code) do not require independent directors and audit committee composition for subsidiaries of financial holding companies. Third, the protection of the interests of other stake-holders such as employees and creditors is the duty of all directors rather than the duty of independent directors, and hence, it must be protected by other measures such as multiple derivative suits. Fourth, since the financial holding company assumes all legal liabilities and risks that result from the failure of monitoring and controlling the bank subsidiary, a full management authority commensurate with the liability must be allowed to the holding company. However, these views are ignorant of the fact that the provision of a public safety net to banks may complicate the agency problem not only among the stakeholders of a bank but also among the protected bank and the parent holding company especially when other non-bank subsidiaries are not protected by the public safety net.

control operational risks, and the framework must be consistently implemented at both group and subsidiary levels.

## 2. Risk-based Consolidated Supervision of Financial Conglomerates

Given the increased potential for systemic risk in the presence of large and complex financial conglomerates, more intense and sophisticated supervision is necessary for those potentially 'too-big and few-to-fail' institutions. Effective devices must be introduced to avoid inadvertent extension of public safety net to cross-sectoral activities such as investment banking and other non-bank financial services. Large financial conglomerates are often important players in capital markets, and hence, failures of financial conglomerates present potentially systemic vulnerabilities in direct financing as well as in indirect financing. As such, ensuring financial conglomerates to maintain a sound asset quality and robust capital base is crucial to the stability of entire financial system.

For timely and effective monitoring of risks at large financial conglomerates, the supervisory framework must be improved to risk-based consolidated supervision. With traditional static capital-based approaches, it is almost impossible to evaluate accurately the development and propagation of risks implied in the cross-border provision of financial services and market activities of complex financial conglomerates. Risk-based consolidated supervision is an essential element of effective prudential regulation in the era of financial consolidation. Consolidated supervision is based upon consolidated information about the entire financial conglomerate and enables systematic monitoring of risks implied in banking and non-banking activities of subsidiaries from a joint perspective. Consolidated accounting and prudential regulatory measures are integral parts of consolidated supervision.

As described above, currently in Korea, consolidated financial supervision has not yet been fully introduced. Only a rudimentary framework is currently applied to financial holding companies and no consolidated framework has been introduced for other type of financial groups. For instance, a key prudential supervisory measure is capital adequacy regulation. The capital adequacy regulation for financial holding company groups in Korea is currently based upon the required capital. Specifically, the net sum of equity capitals of the holding company and its subsidiaries must be greater than the simple sum of regulatory capital requirements for respective group member subsidiaries.

Following the spirit of pillar 1 of the new BIS Basel accord, capital adequacy standard for financial conglomerates must be more tightly linked with risk capital aggregated for the entire financial conglomerate. The amount of risk for a financial group could be substantially different from the simple sum of risks at its subsidiaries as we have shown in the above diagnostic analysis. The capital adequacy standard for financial conglomerates must be able to reflect potential contagion and propagation of risks within group, and the first step required in this regard is to adopt a framework based upon the group BIS capital ratio computed from fully

consolidated financial statements of financial conglomerates.

For an effective consolidated supervision of financial conglomerates, financial supervisors must be equipped with relevant capabilities and organizational structure as emphasized by pillar 2 of the new Basel accord. Special supervisory units for ongoing off-site surveillance of financial conglomerates need to be established, and monitoring and early warning systems must be strengthened. In addition, the supervisors must be able to assess the effectiveness of internal risk management and capital allocation approaches of financial conglomerates.

### 3. Minimizing 'Too-big-to-fail' and Regulatory Forbearance

As discussed above, large financial conglomerates may engage in moral hazard and aggressive risk-taking given the possibility of regulatory forbearance and expectations of 'too-big-to-fail'. An important way to ensure that financial supervisors do not engage in regulatory forbearance is through strict implementation of prompt corrective action provisions, which require supervisors to intervene as early as possible. Prompt corrective action is crucial to preventing failures of financial conglomerates because it creates incentives for financial conglomerates not to take on too much risk in the first place, recognizing that if they do so, they are more likely to be subject to regulatory actions.

In Korea, prompt corrective action provisions were first introduced in April 1998.<sup>26</sup> With the enactment of the *Financial Holding Company Act*, a similar prompt corrective action provision was formally introduced for financial holding companies in October 2000. The prompt corrective action for financial holding company groups is currently based upon the group net equity capital to required capital ratio and the LOPECM-based evaluation results.<sup>27</sup> According to the provision, the Governor of the Financial Supervisory Service must recommend, require, and order financial holding companies to take necessary management improvement measures if the ratio of net equity capital to the required capital falls below 100%, 75%, and 25% respectively. As noted above, the criteria may not fully reflect risks of financial conglomerates, and hence, the criteria for prompt corrective action for conglomerates must be changed into the one based upon the group BIS capital ratio.

Moreover, note that a key element in making prompt corrective action work is the mandatory nature of the scheme, which makes it a credible threat for financial institutions. Hence, discretionary applications of the provision must be minimized. In the case of large financial conglomerates, systemic risk could be a concern when

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<sup>26</sup> Prompt corrective action provisions were first introduced in April 1998 for commercial banks and merchant banking corporations, and then subsequently extended to securities and insurance companies in June 1998 and to investment trust management companies and credit specialized financial companies in 2001. According to the provision, for instance, banks are classified into five groups by the BIS capital ratio and the CAMELS-based evaluation results of bank management CAMELS is the evaluation criteria for bank performance and denotes capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risk, respectively. The supervisory authority could impose various corrective measures whenever banks' BIS capital adequacy ratios and management evaluation grades fall below predetermined criteria.

<sup>27</sup> LOPECM denotes lead subsidiaries, other subsidiaries, parent, earnings consolidated, capital adequacy consolidated, and managerial composite.

strictly applying the prompt corrective action. However, this systemic risk concern itself brings about moral hazard for large financial conglomerates. Moreover, the expectation of future bailouts causes additional distortions in fund flows and increases market power of large financial groups, which in turn results in de-facto government subsidies to large conglomerates with taxpayers' money as collateral. As argued by Hahm and Mishkin (2000), it is important to recognize that, although large financial conglomerates may be too big to liquidate, they can be closed with losses imposed on uninsured creditors. Except under very unusual circumstances, the least-cost resolution procedure must be strictly applied by imposing loss to uninsured depositors and creditors.<sup>28</sup>

In a related context, there must be strict limitations on within financial group transactions to prevent financial conglomerates from transferring deposit insurance subsidy extended to bank subsidiaries to other affiliated non-bank subsidiaries. As argued by Mishkin (1999), financial consolidation opens up opportunities to reduce the scope of deposit insurance and limit it to narrow bank accounts, substantially reducing the moral hazard. The deposit insurance fund backed by tax payers' money must be used only to protect insured depositors of bank subsidiaries and must be effectively insulated from bailing out other subsidiaries.

#### 4. Strengthening Disclosure Requirements and Market Discipline

Note that the increasing complexity of the asset portfolio and business structures of large financial conglomerates substantially attenuates both financial authority's supervisory capacity and monitoring ability of outside stakeholders. An answer to these problems is to have the financial market discipline financial conglomerates by providing more transparent information on the management of large financial group and by establishing a more market-based supervisory framework. In other words, it is necessary to establish a strong market discipline as a complement to official supervision.

Disclosure requirements are essential for market participants to have relevant information, which allows them to monitor financial institutions and keep them from taking on too much risk. A recent study by the U.S. Federal Reserve Board indicates that disclosure requirements for large complex banking organizations need to be strengthened in the areas such as securitizations and loan sales, internal asset risk rating and loan loss reserve calculations, credit concentrations by counterparty, industry, or geography, market risks, and risks by legal entity and business lines (Board of Governors of the Federal Reserve System 2000). In a similar vein, public disclosure requirements need to be further strengthened for large financial conglomerates in Korea.

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<sup>28</sup> In December 2000, the Korean government enacted the *Special Act on Public Fund Management*, according to which, the Public Fund Oversight Committee was established under the Ministry of Finance and Economy. While the principle of the least-cost resolution was formally introduced in the act, it is still possible that the principle can be applied in a discretionary way by the judgment of the committee over systemic risk concerns. To prevent regulatory forbearance for large financial conglomerates, the conditionality for systemic risk exception must be explicitly set out and strengthened further.

With the effort to promote information transparency, supervisory authorities need to introduce more market-based regulatory measures, such as requiring financial conglomerates to issue subordinated debt. Subordinated debt with a ceiling on the spread between its interest rate and the interest rate on government bonds could become an effective disciplinary tool. If a financial group is taking on too much risk, it is unlikely to be able to issue subordinated debt within the designated spread cap. Hence, compliance with the subordinated debt requirement would be a direct way for the market to force financial conglomerates to limit their risk taking. Alternatively, differential deposit insurance premium could be charged according to the interest rate on the subordinated debt. Information about whether financial conglomerates can issue subordinated debts and the interest rate on the subordinated debt itself can help the public evaluate supervisors' action, which in turn reduces the scope of regulatory forbearance.

## **5. Early Recognition and Effective Management of Systemic Risk: Coordination among the MOFE, FSC and BOK**

As emphasized above, in the era of financial consolidation and conglomeration, early detection and prevention of systemic crisis is crucially important. To establish an effective preventive mechanism, it is critical to have an institutional channel for communication, cooperation, and check and balance among related regulatory authorities – especially among the financial supervisory authority, central bank, and the ministry of finance and economy.<sup>29</sup>

While it is financial supervisor's responsibility to maintain the soundness of financial institutions, it is rather a controversial issue who must bear the responsibility for the development and realization of systemic risk. It is especially true when imprudent macroeconomic policies cause unusual fund flows in the financial system and bring about deterioration of asset qualities for financial institutions. For instance, monetary policy of the central bank and foreign exchange policy of the finance ministry are more or less directly linked with credit boom-bust cycles in emerging market countries. In addition, the prudential regulation policy of the supervisory authority is often influenced by the stabilization policy of the finance ministry, which seems to be more politically concerned. Another area that calls for a tight coordination among the related regulators is the payment and settlement system. Disruptions in the payment and settlement system could be a potentially significant source of systemic risk. The central bank, which is the overseer of the payment and settlement system, must be closely coordinate with the supervisory authority as the failure of large conglomerates may cause a significant disruption for the system.

In Korea, the Ministry of Finance and Economy (MOFE) is ultimately responsible for the stability of the entire financial system. However, there must be operational

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<sup>29</sup> Kim (2004) provided a comprehensive and detailed case study of the recent failure of credit card industries in Korea and emphasized the importance of a cooperative and mutually accountable system among public regulatory bodies such as the Ministry of Finance and Economy, Bank of Korea, Financial Supervisory Service and the Korea Deposit Insurance Corporation.

institutional mechanisms in which financial policies of the MOFE can be coordinated with the prudential regulation and supervisory policies of the Financial Supervisory Commission (FSC) and the monetary policies of the Bank of Korea (BOK). The institutional scheme must be able to systematically identify and monitor potential sources and propagation channels of systemic risk developments, and provide early warning signals for policy makers and financial institutions.

In order for this mechanism to work effectively, an official committee on macro financial supervision needs to be established, where the minister of MOFE, chairman of the FSC, and the governor of the BOK meet on a regular basis and share timely information among the regulatory authorities. For instance, the supervisory authority' institutional micro supervision information must be shared with the central bank's macroeconomic financial market information.



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