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Preliminary

Restructuring of the Public Enterprise after the Crisis: The Case of Deposit Insurance Fund

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Abstract

This paper studies the issues concerning fund management aspects for the KDIC. More specifically, this paper examines the current financial status of the Korean deposit insurance fund, the optimal size of the deposit insurance fund, a design of the deposit insurance system to minimize any excessive risk taking, and investment strategies to enhance the fund stability.

Briefly, this paper finds that the deposit insurance fund is not viable and the KDIC has no hope of making a full redemption by itself. A loss sharing rule between the government and the KDIC should be resolved as soon as possible to enhance the stability of the deposit insurance system. As a basic strategy for fund management, KDIC should adopt a target zone with feedback. This will reduce the volatility of premiums. To minimize excessive risk taking, KDIC should adopt a risk based premium system, a premium structure that reflects the different risks impose on the KDIC. The premiums may be based on CAMELS ratings as well as some market signals. Finally, the KDIC should reinsure a portion of insurance funds using domestic and foreign financial market instruments in order to hedge against catastrophic losses resulting from mega bank failures and/or financial crises.

I. Introduction

To enhance macroeconomic and financial stability, the Korean government enacted the Depositor Protection Act in December 1995, and established the Korea Deposit Insurance Corporation (KDIC) accordingly in June 1996. The primary aim of the Korea Deposit Insurance Corporation (KDIC) lies in the protection of depositors. Deposit insurance acts as the guarantor of deposits in case financial institutions become insolvent and thus unable to pay back depositors. Through protecting depositors, it reduces the incidence of bank runs, which, in turn, promotes the stability of the financial system.

Even though the deposit insurance system has only been in operation for a relatively short period of time in Korea, with the foreign exchange crisis started in the second half of 1997 through 1998 the KDIC has played a major role in the financial restructuring process in Korea by way of effectively supporting the resolution of failed financial institutions.

This paper studies the issues concerning fund management aspects for the KDIC. More specifically, this paper examines the current financial status of the Korean deposit insurance fund, the optimal size of the deposit insurance fund, a design of the deposit insurance system to minimize any excessive risk taking, and investment strategies to enhance the fund stability.

This paper finds that the Korean deposit insurance fund is not viable with the negative balance of 49 trillion won as of December 31, 2000. Furthermore, its liabilities are anticipated to increase by 19.1 trillion won from 2001 to 2006 due to interest payment. It is quite evident that the KDIC has no hope of making a full redemption by itself. The government is obliged to share the loss with the KDIC. The loss-sharing rule between the government and the KDIC should be resolved as soon as possible to enhance the stability of the deposit insurance system in Korea.

As a basic strategy for deposit insurance fund management, it is recommended that KDIC should adopt a target zone with feedback. If the fund's reserve ratio stays within the target zone, KDIC should charge positive premiums to member financial institutions. If the fund's reserve ratio falls below the lower bound of the target zone, KDIC should charge higher premiums until the reserve ratio is within the target zone. If the fund's reserve ratio rises above the upper boundary, then KDIC should rebate money back to financial institutions. Every three to five years, the overall performance of the deposit insurance fund should be reviewed and the center of the target zone could be adjusted upward or downward.

To minimize excessive risk taking, KDIC should adopt a risk based premium system. That is, a deposit insurance premium structure should reflect the different risks that stronger versus weaker financial institutions impose on the KDIC. To this end, deposit insurance premiums may be based on CAMELS ratings as well as some market signals, for example, subordinated debt spreads for large financial institutions and value of equities traded on the formal exchanges for other listed institutions.

To implement KDIC investment activities coherently, it is recommended to setup general treasury policy, which should provide a framework for governance of treasury activities undertaken on behalf of the KDIC. It should indicate who authorized the President of KDIC to engage in treasury activity and what are the limitations of the President. It should also specify any delegation of authority for treasury activity and the extent of any such delegations. The treasury policy should also specify the duties and responsibilities pertaining to governance of treasury of the KDIC Policy Committee and the KDIC Management.

It is also recommended to establish special arrangements with the Bank of Korea (BOK) and the Ministry of Finance and Economy (MOFE) so that KDIC could buy and sell the BOK's Monetary Stabilization Bonds (MSBs) and MOFE bonds without affecting the market interest rates. To achieve this, it may be helpful to create non-marketable securities of which prices would precisely follow MSBs and MOFE bonds at the market. Once these arrangements are in place, KDIC could sell and buy MSBs and MOFE bonds at the existing market interests without incurring any transactions costs. Thus, when the need for selling a large amount of these securities arises, KDIC could liquidate them without adversely affecting the domestic financial market.

Finally, it is recommended that KDIC should reinsure a portion of deposit insurance funds using domestic and foreign financial market instruments in order to hedge against catastrophic losses resulting from mega bank failures and/or financial crises. Examples of financial instruments for the KDIC to hedge against catastrophic losses are as follows: stock index options, US Treasury Securities, US Treasury Bonds (or Euro Dollar) Futures Contracts, and US Treasury bond (or Euro Dollar) Futures Options.

The organization of this chapter is as follows. Section II discusses the legal foundations of the Korean deposit insurance system. This section examines the aspects of the Depositor Protection Act on the sources and the uses of the deposit insurance fund. Section III discusses the current financial status of the Korean deposit insurance fund. This section briefly reviews the amount of financial assistance provided for restructuring the financial industry. This section also examines the amount of the Deposit Insurance Fund Bonds issued and their redemption schedule.

Section IV discusses the experiences of the deposit insurance systems in advanced countries, U.S. in particular, and their efforts to reform. This section includes recommendations for the KDIC. Section V discusses issues concerning the KDIC's corporate investment strategies. In particular, this section emphasizes the need for using domestic and global financial instruments to hedge against catastrophic losses arising from financial crises. Concluding remarks are in section VI.

II. The Legal Foundations of the Korean Deposit Insurance System.

KDIC insured only bank deposits in January 1997, while the separate funds for each respective non-bank financial institution remained in place. The Depositor Protection Act was revised later in 1997 to consolidate the various deposit insurance funds under the management of the KDIC starting in April 1998. Thus, insured deposits include not only those of banks, but of the deposits held in securities companies, insurance companies, merchant banks, mutual savings & finance companies, and credit unions.

In Korea, the Ministry of Finance and Economy (MOFE), the Financial Supervisory Commission (FSC), the Financial Supervisory Service (FSS), the Bank of Korea (BOK) and the KDIC are responsible for implementing and executing financial policies and supervision of financial institutions. The MOFE is in charge of overall financial policy-making and coordination. It also has the right to amend related Acts and Presidential Decrees through the National Assembly and the President of Korea, respectively, while the BOK manages and enforces monetary policies. The FSC has the right to enforce financial policies and supervise the operation of financial institutions through the FSS. Under the direction of the FSC, the FSS supervises the insured financial institutions and enforce policies on financial stability as well as resolution of the insolvent institutions.

With the recent amendments of the Depositor Protection Act and the enactment of the Public Fund Management Act, the KDIC has the authority to require the member financial institutions and their holding companies (if applicable) to submit their financial information. It also has the authority to request the FSC to conduct examinations of the insured financial institutions. The KDIC may examine an insolvent financial institution in order to determine the most appropriate resolution methods for the institution. Also, if the financial institution is found to be in danger of default, the KDIC may request the FSC to take appropriate actions

According to the Depositor Protection Act, the KDIC insures six different types of financial institutions: banks, securities companies, insurance companies, merchant banks, mutual savings & finance companies, and credit unions. In Korea, the deposit insurance membership for financial institutions conducting business in the above categories is compulsory. In the case of banks, commercial and regional banks approved under the Banking Act, domestic branches of foreign banks, and all specialized banks including the Korea Development Bank are insured. All securities companies excluding the KOSDAQ Stock Market Inc. are insured while the same applies for all insurance companies except reinsurance and guarantee insurance companies. All merchant banks, mutual savings & finance companies, and credit unions approved by the FSC under their respective laws are insured as well.

Insured deposits are the funds that the KDIC guarantees to distribute to the depositors if an insured financial institution fails, in accordance with the guidelines of Article 2 of the Depositor Protection Act. In terms of the protection amount, the principal and interest of insured deposits are protected by the KDIC up to 50 million Korean won. However, the interest will be paid only if the sum of the principal and the interest is less than 50 million won (about 40,000 US dollars). Furthermore, lower of the contractually

provided rate or the rate calculated by the KDIC (set by the Policy Committee based on the market average of one-year maturity domestic timed deposit accounts) will be used to calculate the actual interest to be paid on such claim.

Deposit Insurance Fund

As indicated, the deposit insurance system aims to protect depositors and maintain the stability of the financial system in respect of situations in which a financial institution becomes unable to pay its depositors due to its bankruptcy or insolvency. In order for the deposit insurance system to work, the Depositor Protection Act allows the KDIC to establish the deposit insurance fund (Article 24, section 1 of the Depositor Protection Act).

Sources of Funds

For normal revenue sources, the Depositor Protection Act lists membership fees, insurance premiums, and operating revenues (Article 24, section 2). For contingent funding sources, the Act indicates the following: 1) borrowing from the government, the Bank of Korea and insured financial institutions, 2) issuing bonds, and 3) Korean national properties transferred from the government, subject to approval by the Korean National Assembly (Article 24 section 2 and Article 16 section 2).

As for the types of the premium system, the Depositor Protection Act does not specify it to be whether flat or risk-based. Currently, a flat rate premium system is chosen. According to Article 30 of the Act, a presidential decree can change the types of the premium system. Article 20 of the Act indicates the premium for an individual institution to be the multiple of the average outstanding amount of deposits and a prescribed premium rate which differs across the types of financial institutions. Article 30 of the Act specifies the maximum premium rate to be 5/1000.

**<Table 1> Deposit Insurance Premium Rates
(As of August 5, 2000)**

Insured Financial Institutions	Formula
Banks	Quarterly Premium = quarterly average balance Of Deposits x 10/10000 x 1/4
Securities Companies	Annual Premium = annual average balance of Deposit x 20/10000
Insurance Companies	Annual Premium = amount as stated in Article 16 Section 3 x 30/10000
Merchant Banks	Annual Premium = annual average balance of Deposits x 30/10000
Mutual Savings and Finance Co.	Annual Premium = annual average balance of Deposits x 30/10000
Credit Cooperatives	Annual Premium = annual average balance of Deposits x 30/10000

Insured banks must remit premium payments to the KDIC within one month following the end of each quarter of the business year. Insured non-bank financial institutions must remit premium payments to the KDIC within 3 months following the end of every business year. The annual premium rate for each financial institution is determined taking into consideration the financial state of each insured financial sector, and it should not exceed the legal limit (0.5%) of premium rates. The insurance premium rate is currently flat. That is, premium rates are not risk based, across each sector.

The Depositor Protection Act also states one time membership fee to be collected on ad hoc base. According to the Act, the maximum is 1% of paid in capital for banks, securities companies, insurance companies, and credit cooperatives; for merchant banks and mutual savings and finance companies, the maximum is 10% of paid in capital. Setting power of specific amount of entrance fee is delegated to a presidential decree, a choice of which is detailed in the table below.

<Table 2> Deposit Insurance Membership Fees (One Time)

Banks	1/100
Securities Companies	1/100
Insurance Companies	1/100
Merchant Banks	5/100
Mutual Savings and Finance Companies	5/100
Credit Cooperatives	1/100

Note: A financial institution is required to contribute its one time membership fee to the KDIC an amount calculated by multiplying its paid-in capital by the relevant rates in the table within one month from the date of commencing business.

Article 25 of the Depositor Protection Act limits the opportunity set for portfolio management to sovereign bonds, public bonds and deposits in insured institutions. It allows certain discretion by delegating to the management of KDIC the power of designating acceptable securities for investment.

Besides deposit insurance premium revenues and one-time membership contributions, there are additional sources of funds for the KDIC according to the Depositor Insurance Act. If needed, KDIC may fund through the issuance and sale of Deposit Insurance Fund Bonds (DIF Bonds). The government can guarantee payment of the principal and interest of the DIF Bonds through the approval of the National Assembly.

For additional funding needs, KDIC may borrow from the government, the Bank of Korea and member financial institutions. The government guarantees any borrowings from the Bank of Korea for the principal and interest. KDIC could borrow funds from insured financial institutions, Federation of Mutual Savings and Finance Companies,

Korea Securities Finance Corporation, Korea Export-Import Bank, National Credit Unions Federation, and resolution financial institutions. All borrowings require prior approval of the Minister of the Ministry of Finance and Economy.

The government may also transfer state property such as stocks of state-run enterprises to the KDIC without any redemption requirements. Finally, any funds recovered are also sources of funds. Funds, initially used for resolving failed financial institutions and for deposit payoffs, can be recovered through the sale of assets and securities purchased by the KDIC during the resolution processes. Through dividends received from bankruptcy proceedings, the KDIC may also recover funds used in liquidating financial institutions.

Uses of Funds

The KDIC may use funds to make insurance claim payments (deposit payoffs), to pay back the principal and interest on Deposit Insurance Fund bonds, and to pay back the principal and interest on borrowings from member financial institutions. The KDIC may purchase depositor's rights as the receiver of the failed financial institution and provide financial assistance to failed/failing financial institutions. The KDIC may also use funds to cover its operating expenses. Whenever the KDIC decides to make insurance payments, advance payments, or purchases depositor's rights, it must notify the depositors through public notices regarding the time and procedure of such payments.

III. Financial Status of the Deposit Insurance Fund at the KDIC

Sources of Funds

As of December 31, 2000, the size of the Deposit Insurance Fund is 96.6 trillion won. It consists of insurance premium revenue (1.7 trillion won), contributions from insured financial institutions (0.08 trillion won), funding through the issuance and sale of Deposit Insurance Fund Bonds (52.4 trillion won), borrowings from government (7.6 trillion won), borrowings from financial institutions (19.8 trillion won), and recovery of funds (12.2 trillion won).

Uses of Funds

As of December 31, 2000, the Deposit Insurance Fund has been used largely for two expenses: financial restructuring support and operating expenses of the KDIC. Financial restructuring support amounts to 78.0 trillion won (about 63 billion US dollars). It comprises mostly of equity participation (36.1 trillion won), purchase of assets (2.0 trillion won), open assistance (12.2 trillion won), and assumptions of deposits, insurance claim payoffs and loans to offset losses arising from contract transfers (27.7 trillion won). By financial sectors supported, the financial restructuring support of the 78.0 trillion won is distributed to banks (44.0 trillion won), securities companies (4.9 trillion won), insurance companies (10.8 trillion won), merchant banking corporations (16.8 trillion won), mutual savings & finance companies (4.0 trillion won), and credit cooperatives (1.7 trillion won).

The total operating expenses of the KDIC through the year 2000 amount to 15.2 trillion won. It comprises mostly of interest payments on deposit insurance fund bonds and borrowings from financial institutions (9.7 trillion won) and paying back the borrowings (principal) from financial institutions (5.3 trillion won). Note that insurance premium revenues and membership fees from insured financial institutions are used for operating expenses of the KDIC. The rest of the fund is used for financial restructuring.

**<Table 3> Financial Assistance for Financial Industry Restructuring
(As of December 31, 2000)**

(Hundred million won)

	Equity Participation	Open Assistance	Insurance Payoffs	Purchase of Distressed Assets	Loans	Total
Banks	208,834 (16)	105,067 (6)	-	82,888 (8)	-	396,789 (18)
Securities Co.	49,000 (2)	-	144 (4)	-	-	49,144 (6)
Insurance Co.	88,197 (8)	167,327 (9)	-	3,447 (4)	-	107,971 (16)

Merchant Banks	15,029 (7)	-	140,268 (18)	-	12,917 (14)	168,214 (29)
Mutual Savings & Finance	101 (2)	179 (7)	35,477 (57)	-	4,649 (15)	40,406 (73)
Credit Unions	-	-	16,599 (157)	-	367 (39)	16,966 (181)
Total	361,162 (35)	121,573 (22)	192,488 (236)	86,335 (12)	17,933 (68)	779,490 (323)

Note: The numbers in parentheses indicate the number of financial institutions that have received financial assistance from the KDIC.

Deposit Insurance Fund Bonds: Current Status and Redemption Schedule

Among the liabilities of the Deposit Insurance Fund, the Deposit Insurance Fund Bonds are most relevant. As of December 31, 2000, the total amount of the DIF Bonds outstanding is 52.4 trillion won, and they account for 64.2 percent of total deposit insurance fund liabilities. They are to be redeemed during the years between 2001 and 2006. The principal amount to be matured in 2001 is 1.5 trillion won. The amount to be matured in 2005 is 18.3 trillion won, the largest yearly amount.

As for the interest on the outstanding DIF Bonds, the government has agreed to lend the amount to KDIC with zero interest for three years. The total amount of interest on the DIF Bonds for the years between 2001 and 2006 is expected to be 16.4 trillion won. As of December 31, 2000, 8.2 trillion won of interest payment has been made.

<Table 4> DIF Bond Redemption Schedule

	(Trillion won)									
	1998	1999	2000	2001	2002	2003	2004	2005	2006	Sum
Principal	-	-	-	1.5	4.7	9.7	13.4	18.3	4.9	52.4
Interest	1.1	2.8	4.3	5.1	4.7	4.0	2.7	1.3	0.3	26.3
Sum	1.1	2.8	4.3	6.6	9.4	13.7	16.1	19.6	5.2	78.7

Financial Statements of the Deposit Insurance Fund

According to the Deposit Insurance Fund Balance Sheet as of December 31, 2000, the

total liability (81.57 trillion won) exceeds the total asset (32.33 trillion won) by 49.24 trillion won. The Fund records tremendous negative balance. Out of the 82 trillion won liabilities, long-term liabilities take about 76 percent (62 trillion won). The total liability at the end of 2000 increased from that at the end of 1999 (56.41 trillion won) by 25.16 trillion won. This increase resulted mostly from an increase in borrowing from financial institutions (8.24 trillion won) an increase in issuing deposit insurance fund bonds for financial industry restructuring (8.94 trillion won) and an increase in borrowing from the government to cover interest payments (3.95 trillion won).

According to the Deposit Insurance Fund Profit & Loss Statement for the year 2000, the amount of fund income (5.83 trillion won) is much smaller than that of expenses (23.66 trillion won). Thus, the realized loss for the year 2000 was 17.83 trillion won, a huge loss. The major sources of the losses resulted from the valuation loss from equity participation (4.91 trillion won, 20.8% of the total expense), loss provisions (6.93 trillion won, 29.3% of the total expense), and the DIF Bonds interest payment (4.34 trillion won, 18.3% of the total expense).

**<Table 5> Balance Sheet of the Deposit Insurance Fund
(As of December 31, 2000)**

(Billion won)			
Assets	Amount	Liabilities	Amount
Liquid Assets	5,444	Short Term Liabilities	19,577
Cash and bank deposits	472	Borrowings from financial institutions	14,078
Marketable securities	2,911	DIF Bonds	1,464
Short-term loans (Allowance for bad debts)	11,292 (9,790)	Other	4,035
Other assets	556	Long Term Liabilities	61,989
Fixed Assets	26,878	DIF Bonds	50,977
Equity participation	19,251	Premium on debentures	1,011
Long-term loans (Allowance for bad debts)	8,518 (15,073)	(Discount on debentures)	(56)
Purchase of Distressed Asset	1,991	Long term borrowings	8,023
Off-setting account of Liabilities and guarantees	12,191	Other	2,034
		Total Liabilities	81,566
		Fund Balance	△49,243
Total Assets	32,323	Total Liabilities & Reserves	32,323

**<Table 6> Profit and Loss Statement of Deposit Insurance Fund
(As of December 31, 2000)**

(Billion won)			
Income	Amount	Expenses	Amount

		Operating expenses	30
Revenue from the Fund	1,035	Expenses from resolutions	11,100
(Insurance premiums & membership fees collected)		Interest on borrowings	760
Revenue from Fund Management	799	Interest on DIF Bonds	4,338
Interest revenue	172	Open Assistance	3,928
Revenue from resolution	627	Other	2,074
		Other expenses	12,528
Other revenue	3,992	Losses on valuation of equity Participation	4,914
		Loss Provisions	6,834
Total Income	5,826	Other	780
		Total Expenses	23,658
		Net Loss	△17,832

Assessment

The Deposit Insurance Fund is definitely not viable with the negative balance of 49 trillion won (as of December 31, 2000). Furthermore, its liabilities are anticipated to increase by 19.1 trillion won from 2001 to 2006 due to interest payment. The premium revenue in 2000 was 0.5 trillion won; it is expected to reach .8 trillion won in 2001 as the government increased the premium rate by 100 percent on August 5, 2000. Even with the 100 percent increase in the premium rate, the KDIC has no hope of making a full redemption by itself. The government is obliged to share the loss with the KDIC as deposit insurance enhances macroeconomic and financial stability. A loss-sharing rule between the government and the KDIC should be resolved as soon as possible for the stability of the Deposit insurance Fund.

IV. An Approach to Deposit Insurance Reform

Goals of Insurance Fund Management

According to Blinder and Wescott (2001), a publicly funded deposit insurance system should neither subsidize nor tax the banking system in principle. That is, deposit insurance should be implemented on a breakeven basis for normal operations. Furthermore, deposit insurance system should minimize the risk to the taxpayer in case where a tremendous adverse shock overwhelms the insurance funds and makes the economy and the banking system so weak that it becomes unwise to burden the banks too heavily. The macroeconomic externality can justify some taxpayer exposure in extreme cases. These do not seem controversial to the students of deposit insurance. Thus, keeping the fund solvent and sufficiently liquid to meet the normal expenses and losses should be the primary goal of insurance fund management.

A Target Approach

To render the goal of maintaining solvency practical, we need to specify normal losses to the fund. Computing normal losses requires the knowledge of loss-profile or loss distribution. If explicit loss distribution is available, we can apply one of advanced risk management methodologies such as VaR (Value at Risk). We first choose the confidence level. Then, define value at risk or expected normal losses as the losses corresponding to the confidence level. A fund is solvent when it is large enough to absorb the losses. Given the loss profile, the size of normal loss needs to be sufficiently large to cover most of contingencies. Otherwise, DIS would not be credible. For example, one may consider that 99 percent of loss contingencies should fall into the normal loss range. Once the level of normal loss is chosen, then we may find the corresponding target level for an adequate fund size. In practice countries typically adopt a rule for adequate fund size without specifying the level of normal losses.

Nonetheless, concepts on normal losses and target for the fund are missing in both legal framework and practices in Korea. Without concept on the adequate size of the fund or normal losses, premium rates are determined on ad hoc basis. This implies that KDIC manages its deposit insurance fund with no consideration of long-term viability.

The FDIC, as well as the Canada Deposit Insurance Corporation (CDIC), has adopted the target approach as basic strategies for fund soundness management. That is, a target for the fund size is set first. Then, insurance premiums are set to maintain the target. In the U.S., the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) required the FDIC to maintain each fund at a designated reserve ratio (DRR), the ratio of mandated reserves to insured deposits, of 1.25 percent. When a fund's reserve ratio falls below the DRR, the FDIC must raise premiums by enough to bring the reserve ratio back to the DRR within a year or must charge at least 23 basis points of the insured deposits until the reserve ratio meets the DRR.

However, no analytical rationale for the selection of 1.25 exists. Instead, FDIC indicates that the choice was made because 1.25 represented the approximate historical

average ratio for the insurance fund when the concept was originally introduced in 1980 (see FDIC 2000). But, even whether this is a right interpretation is not free from questions.¹ The CDIC system is more advanced in this regard because at least they have an analytical framework to derive a target. As explained, their formula for the target is basically to calculate expected loss for the fund.

The target approach is currently facing more serious criticisms. First one concerns the target being a ceiling. This feature of FDIC fund management has never been seriously discussed in the past, since the fund size remained below the target due to the severe bank failures in the 1980s. Now that the fund has reached its target in the late 1990s, FDIC is facing the situation that most of its member banks are not paying premiums. The circumstance has raised concerns over the free rider and moral hazard problem. Second one concerns volatile premiums that are likely to rise substantially in an economic downturn. According to FDICIA, if losses from bank failures reduce the fund below 1.25% DRR, the FDIC imposes ex post higher premiums of at least 23 basis points during periods of financial distress. A better system might be less procyclical.

A Target Zone with Feedback

To solve such problems, Blinder and Wescott (2001) have indicated the following. Deposit insurance should be conceived as selling insurance products to the financial institutions and it ought to charge actuarially fair premiums for that service. In that sense, deposit insurance premiums are thought as user fees. There should always be a positive cost of insuring each marginal dollar of insured deposits. On the other hand, if the deposit insurance system is designed to neither tax nor subsidize the financial system in the long run, then the deposit insurance should strive to operate on an approximate breakeven basis. This implies elements of a mutual insurance arrangement. To reconcile these two concepts, the deposit insurance should always charge positive marginal cost for the insurance it provides. To an unnecessary build up of the fund, the deposit insurance should rebate money back to the financial institution in proportion to past premiums paid.

The deposit insurance system needs a feedback mechanism to adjust the average premium up or down in line with loss experience using a rebating system. The funds should be able to adjust to changed loss experiences over time. There should be a target zone so that the first deviations in the fund's balance away from the designated reserve ratio should not require any premium adjustments. If the fund were to build up reserves beyond the upper bound, the system would then begin to rebate funds back to the financial institutions. If the balance were to drop below the lower bound, a temporary surcharge should kick in. Every 3 to 5 years, the overall performance of the deposit insurance fund could be reviewed and the designated reserve ratio could be adjusted upward or downward.

¹ For example, see Kenneth Thomas (2000). He questions on the correctness of the interpretation on the ground that 1.25 cannot be obtained when computing historical average for the period.

Inadequate pricing of Risk

According to Blinder and Wescott (2001), deposit insurance should be designed to minimize microeconomic distortions. In general, insurance can distort incentives, that is, insurance can create moral hazard when it is not properly priced. The deposit insurance system should be designed to minimize excessive risk taking. Deposit insurance system should not favor one type of financial institution over another, nor one type of deposit over another. Financial institutions, depositors, and borrowers should respond to market signals with minimal interference from the deposit insurance system.

Insurers generally price their product to reflect their risk of loss. The further that pricing deviates from expected loss, the greater the incentive for managers to take risks they would have avoided if insurance had been appropriately priced. Without risk based pricing, safe banks unnecessarily subsidize risky banks. As indicated, the current Korean deposit insurance premium system is not risk based.

Premiums financial institutions pay should reflect the expected costs they impose on the insurance fund. Financial institutions with stronger balance sheets (e.g., financial institutions with more capital or safer assets) are more likely to survive even an acute macro shock and hence are less likely to cause a loss to the deposit insurance system. Thus, risk based premiums should be designed to reflect expected loss.

CAMELS plus Market Signals

As is the case in U.S., deposit insurance premiums could be based on the five category CAMELS rating. CAMELS is an acronym for component ratings assigned in a bank examination: Capital, Asset Quality, Management, Earnings, Liquidity, and Sensitivity to market risk. Then a schedule of deposit insurance premiums reflecting the greater risks of insuring deposits of lower rated banks would have to be designed. CAMELS ratings are just one example. One might look at the spreads (over Treasuries, say) of banks' subordinated debentures for those large banks that have subordinated debt outstanding. The best market indicator would be the interest rate on that debt. Bond prices correlate better with banking problems than do equity prices according to Berger, Davies, and Flannery (2000). Yet, deposit insurance should not ignore the information contained in equity prices as long as there is a reasonable amount of trading. For small banks that do not have any securities actively traded in the market, there may be no realistic way to use market data to supplement supervisory information.

Recommendations for the KDIC

We recommend KDIC to adopt a target zone with feedback as a basic strategy for fund management. For example, the center of the target zone may be 2 percent of insured deposits;² the upper bound of the zone may be 2.25 percent and the lower bound of the zone may be 1.75 percent. In this example, when the fund's reserve ratio stays within

² If the size of a loss is typically less than 20 percent of insured deposits and the probability of a financial institution failure is 10 percent, then 2 percent reserve ratio should cover most financial institution failures. See DTT, KDI, and KIF (2001) for a rationale for further details.

the target zone, KDIC should charge positive premiums to financial institutions. When the fund's reserve ratio falls below 1.75 percent, KDIC should charge higher premiums until the size of the deposit insurance fund becomes 2 percent of insured deposits. When the fund's reserve ratio rises above 2.25 percent, then KDIC should rebate money back to financial institutions in proportion to past premiums paid until the reserve ratio becomes 2 percent. Every three to five years, the overall performance of the deposit insurance fund should be reviewed and the center of the target zone could be adjusted upward or downward.

To minimize excessive risk taking, KDIC should adopt a risk based premium system. Deposit insurance premiums should be based on CAMELS ratings as well as subordinated debt spreads for large financial institutions and equities traded on the formal exchanges for other listed institutions.

V. Investment Management

V.1 Basic Strategy

When the currently on going government led financial restructuring is completed and the Deposit Insurance Fund starts to accumulate, the role of KDIC corporate investment becomes more important. To enhance the efficiency of the corporate investment process, the Office of KDIC Fund Management should incorporate the domestic and global economic trend analyses of the Financial Analysis Department and the risk profiles of individual financial institutions of the Risk Management Department before any investment decision is made.

As is the case in FDIC in the U.S., a formal interdepartmental head meeting should be convened at a regular interval to exchange information. In the event market conditions or cash flow projections require a reassessment of investment strategies between regularly scheduled meetings, the head of the Department of Fund Management should determine whether an interim meeting should be held.

Establishing General Treasury Policy

For implementing KDIC investment activities coherently, it is also necessary to setup general treasury policy, which should provide a framework for governance of treasury activities undertaken on behalf of the Korea deposit Insurance Corporations. It should indicate who authorized the President of KDIC to engage in treasury activity and what are the limitations of the President. It should also specify any delegation of authority for treasury activity and the extent of any such delegations. The treasury policy should also specify the duties and responsibilities pertaining to governance of treasury of the KDIC Policy Committee and the KDIC Management.

Fund Liquidity Consideration (short term)

To satisfy short term liquidity needs, KDIC may continue to use the Money Market Deposit Accounts of member financial institutions and the obligations of the Korean Government and the Bank of Korea

Fund Growth Consideration (long term)

To enhance fund growth, KDIC may use Monetary Stabilization Bonds (MSBs) issued by the Bank of Korea (BOK), the Korean government bonds, or the government guaranteed bonds.

Fund Stability Consideration

To hedge against catastrophic losses resulting from mega bank failures and/or financial crises, KDIC may consider reinsure a portion of its funds using domestic and foreign financial market instruments.

Establishing Special Transactions Mechanisms with MOFE and BOK

By establishing special arrangements with the Bank of Korea and the Ministry of Finance and Economy (MOFE), KDIC could buy and sell MSBs and MOFE bonds without affecting the market interest rates. To achieve this, it is helpful to create non-marketable securities of which prices would precisely follow monetary stabilization bonds and MOFE bonds at the market. Once these arrangements are in place, KDIC could sell and buy MSBs and MOFE bonds at the existing market interests without incurring any transactions costs. Thus, when the need for selling a large amount of these securities arises, KDIC could liquidate them without adversely affecting the domestic financial market. Furthermore, since the purchasing and selling of these securities would not entail any transactions costs, the KDIC could economize human resources.

V.2. Investment Objectives

V.2.1. Operational Principles

As a general rule, KDIC should attempt to hold all investments to maturity, including securities designated for long term growth needs, securities designated for short term liquidity needs, and securities designated for hedging needs against catastrophic losses arising from mega bank failures and/or financial crises. Portions of each portfolio may be designated for short-term liquidity needs, long term growth needs, and hedging needs. Investment practices discouraged include security day trading and frequent full scale restructuring of investment portfolios. When purchases and sales are required to meet corporate funding needs, an investment portfolio's securities designated for liquidity needs shall be sold first, then the securities designated for long term growth, and finally the securities designated for hedging needs.

KDIC should seek to achieve its investment objectives at the lowest possible cost, without compromising standards of quality, security, or control. KDIC should also strive continuously to improve investment and cash management techniques and periodically measure and assess its investment performance.

V.2.1. Considerations Prior to Setting Up Investment Objectives

Short Term Investment for Liquidity Needs

Specific investment objectives related to KDIC's holdings of short-term investment for liquidity needs include in order of priority. First, maintain adequate liquidity to meet anticipated and unanticipated cash flow requirements for relatively small losses. Second, control fund balance volatility by managing market price fluctuations of the securities designated for short-term liquidity needs. Third, maximize investment returns, subject to statutory limitations.

Investment to Enhance Long Term Fund Growth

Specific investment objectives related to KDIC's holdings of investment for long-term fund growth include in order of priority. First, eliminate the need for any sales of securities for long-term growth. Second, maximize investment returns, subject to statutory limitations.

Investment for Hedging against Catastrophic Losses

Specific investment objectives related to KDIC's holdings of securities for hedging needs against catastrophic losses arising due to financial crises include in order of priority. First, maintain adequate protection against any anticipated and unanticipated cash flow requirements for catastrophic losses. Second, maximize investment returns, subject to statutory limitations and hedging needs.

V.2.2. Investment Guidelines

Permissible Investment Instruments (Proposed)

The Corporation's funds may be invested in the following:

- MMDA's at the member financial institutions
- Monetary Stabilization Bonds
- Government (MOFE) and Government Guaranteed Securities
- Stock Index Options (*)
- US Treasury Securities (*)
- US Treasury Bonds (or Euro Dollar) Futures Contracts (*)
- US Treasury Bond (or Euro Dollar) Futures Options (*)

Note: (*) refers to investment instruments not currently permitted by the Depositor Protection Act.

Counter Party Risk Considerations

KDIC is exposed to the risk of transaction counter parties defaulting for investment product transaction obligations. To manage this exposure counter parties must meet the credit rating standards throughout the life of the transaction. In the event that a debt issue is downgraded below acceptable credit rating, KDIC should take steps to reduce holdings, while ensuring minimized exposure. Portfolio limits are applied to aggregate counterpart exposure for investment transactions. The credit ratings of count parties assigned by the credit rating agencies as well as KDIC's knowledge of member institutions determine the acceptability of a counterpart's credit. Where there is a difference between two ratings, the lower credit rating shall apply.

As a reference the Canada Deposit Insurance Corporation (CDIC) has the following guidelines for acceptable investment. For investment up to one year, the counter parties must meet the minimum criteria of Standard and Poor's (S&P) rating of A1 and Moody's rating of P1 for short term investment and S&P rating of A and Moody's rating

of A2 for long term investment. For investment of over one year and less than five years, the counter parties must meet the minimum criteria of Standard and Poor's (S&P) rating of AA- and Moody's rating of Aa3 for long term investment. For investment up to one year, the counter parties must meet the minimum criteria of Standard and Poor's (S&P) rating of A1 and Moody's rating of P1 for short term investment and S&P rating of A and Moody's rating of A2 for long term investment. From time to time, the Head of the KDIC Fund Management Department may establish certain limitations on any of the security types by investment portfolio.

Creation of Restricted Investment Portfolios

As deemed appropriate, the Head of the Fund Management Department may establish an individual investment portfolio to segregate the investment activity for investment funds that are subject to specific restrictions. The Head of the KDIC Fund Management Department shall report to the KDIC Policy Committee on the creation of any restricted portfolio and provide the Policy Committee with a copy of the written investment strategy for any such portfolio.

Maturity Considerations

Currently the terms to maturity of KDIC investments are less than a year on average, reflecting KDIC's current high liquidity needs. When the government led financial restructuring is completed and the Deposit Insurance Fund starts to accumulate, it is recommended to increase the average duration of KDIC's long-term investment portfolio. As a reference, as of August 31, 2000, FDIC's maturity structure of its investment portfolio has a peak in 2001 (about 15 % of the total) and steadily declining thereafter until 2010 (about 3 % of the total). FDIC's investment with less than two-year maturity consists of about 27 per cent of total. The weighted average of maturity is about 4.25 years as of August 31, 2000.

Liquidity Considerations

Each investment portfolio for the deposit insurance fund(s) shall have reserves for adequate maintenance of liquidity so that KDIC could meet anticipated and some level of unanticipated cash flow requirements. As indicated, currently KDIC's investment could be characterized as highly liquid. In the future the share of investment to maintain liquidity should be reduced. As a reference, the share of FDIC's reserves for maintaining adequate liquidity is about 25 percent. TO be more specific, the share of FDIC's investment in Securities Designated Available for Sale is about 23.5 percent of the total as of August 31, 2000.

Investment for Enhancing the Fund Stability

KDIC could use the following financial instruments to hedge against catastrophic losses arising due to financial crises: sock index options, U.S. Treasury Securities, US Treasury Bonds (or Euro Dollar) Futures Contracts, US Treasury Bond (or Euro Dollar)

Futures Options

Investing in Domestic Stock Index Options

When a financial crisis breaks out, the nation's bankruptcy rate would increase. As a result, the size of non-performing loans held by financial institutions would increase. This in turn would increase the probability of deposit insurance payouts, and the need for funds to cover deposit insurance. The financial crisis would worsen the financial positions of financial institutions, which would dampen the stock prices of financial institutions. The rise in the nation's bankruptcy rate due to the outbreak of the financial crisis would also reduce the stock prices in general.

To the extent that there is positive correlation between the stock prices of financial institutions and general stock prices, KDIC may purchase put options on KOSPI stock price index to meet the additional demand for deposit insurance funds. When the stock price index decreases below a certain point, which is the strike price of the put option, the payoff of the owner of the put option becomes positive and the size of the payoff is proportional to difference between the actual stock price index and the strike price. Note that this approach will essentially use funds in the domestic capital market to raise funds to meet the increased demand for deposit insurance funds (unless of course KDIC engages in the put option contract with foreign investors). Thus, it could further depress the already depressed domestic financial market due to the financial crisis.

Investing in US (or other advanced country's) Treasury Securities

When a financial crisis breaks out in Korea, the Korean won would depreciate sharply against the US dollar. In this case, if KDIC has already held a sizable amount of US Treasury bills, it may meet the surge in demand for deposit insurance fund due to the financial crisis by selling the US treasury bills. Unlike the previous approach of investing in put stock index options, this approach will use foreign funds to finance the additional demand for deposit insurance. Furthermore, converting US Treasury bonds into Korean won constitutes foreign capital inflow, which will reduce the domestic interest rate and relieve the depressed domestic financial market. However, there is an unwanted side effect to this approach. By holding US or other foreign countries' Treasury securities, KDIC's asset balance is quite susceptible to foreign monetary policy shock.

Investing in US Treasury bond Futures or Eurodollar Futures

Investment in futures contracts will achieve essentially the same objectives as investment in actual securities. Yet, investment in futures contracts allows KDIC to commit fewer funds for hedging against catastrophic losses from financial crises than investment in actual US or other foreign Treasury securities. Furthermore, transacting actual securities in the financial market entail higher transactions cost. Finally, investing in futures contracts makes KDIC not to be susceptible to future unexpected changes in US or other foreign countries' monetary policy.

Investing in Options on Interest Rate Futures

Investment in options on interest rate futures such as US Treasury bond futures options (options to enter US Treasury bond futures contracts) or Eurodollar futures options (options to enter Eurodollar futures contracts) may allow KDIC not to be susceptible to adverse future US or other foreign countries' monetary shock. Yet, it would allow any US or other foreign monetary shocks to positively affect KDIC's asset balances.

VI. Concluding Remarks

The government is in the deposit insurance business mainly to enhance macroeconomic and financial stability. Deposit insurance contributes to stability by preventing bank runs. Such macroeconomic externality justifies some tax payer exposure in extreme cases including the 1997-1998 foreign exchange crisis. As indicated, the Korean deposit insurance fund is not viable. As of December 31, 2000, the fund balance is 49 trillion Korean won (about 39 billion US dollars) on the negative side. The government is obliged to share the loss with the KDIC. A loss-sharing rule between the government and the KDIC should be resolved as soon as possible to enhance the stability of the deposit insurance system in Korea.

Even though it is not a fund management issue, I would like to emphasize that the FSC and the KDIC should take a supervisory action (prompt corrective action) effectively and efficiently when an insured financial institution is classified as not adequately capitalized. Prompt action reduces the likelihood that a failing financial institution will engage in risky and potentially expensive gambles for redemption if it is permitted to continue conducting business. Corrective action may include termination of insurance membership, regulatory sanction on financial institutions and special on-site examination. Such supervisory action would also help resolve the problems of the insured financial institution at the least possible long-term loss to the deposit insurance fund.

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