For information on
21 October 2003

Bills Committee on
Deposit Protection Scheme Bill

Simulation Model for Determining the Target Fund Size

Purpose

The main proposals of the Administration in relation to funding of the deposit protection scheme (DPS) are set out in detail in Section VI of the paper on "Comparison with Overseas Schemes" (CB(1) 2440/02-03(07)). To facilitate Members' discussion of this subject, this paper briefly describes the simulation model used by the Administration to determine the target fund size of the DPS.

Fundamental concepts

2. Funding for deposit protection can take the form of either building a reserve or a fund on an ex ante basis or having the power to raise funds when needed on an ex post basis. The drawback of an ex post funding approach is that the whole cost would have to be met by the member banks after a failure, at a time when banks may be least able to bear the cost. Moreover, the bank that failed would not have paid for the cost of protection. Having an upfront fund would allow contributions to be collected in good times at rates that are within a pre-defined range. It would also enable banks to better estimate future funding requirements. In view of this, the Administration proposes that the DPS in Hong Kong should adopt an ex ante funding approach.

3. Although it is recommended that an ex ante funding approach be adopted, it is not the intention to establish a large DPS fund. The fund is not

there to meet all conceivable funding requirements. Otherwise the fund size and therefore the DPS cost would be prohibitively and unnecessarily high. The back-up funding, which is essentially a liquidity facility to enable the DPS to make prompt payment to depositors, would be met by borrowings from the Exchange Fund[1] or the market. The DPS fund should therefore aim to cover losses which might be suffered by the DPS, not its liquidity requirements. Such losses mainly come from two sources: possible shortfall losses and financing costs associated with the payout to depositors.

4. Shortfall losses refer to the losses suffered by the DPS as a result of payout to protected depositors in excess of funds recovered from the liquidation of a failed bank. Financing costs arise from the need to pay interest on the borrowing the DPS has undertaken to finance the payout to depositors.

5. The loss suffered by the DPS would vary each year depending on the incidence of bank failure. Hopefully in most years there will be no loss at all because there is no bank failure. However, in bad years there might be one or more failures. Conceptually, the DPS fund should not only be able to deal with **expected losses**, i.e. the average losses to the fund, it should also have a **volatility reserve** to absorb **unexpected losses**.

6. Expected loss is intrinsically a long-term (through the cycle) concept, representing the average loss of the fund in a given period (say, one year). It can be calculated by aggregating the expected loss attributable to each individual bank. At the individual bank level, expected loss can be calculated as the product of three factors:-

$$\text{Expected Loss} = \text{Default Probability} \times \text{Protected Deposits} \times \text{Loss Given Default}$$

7. The volatility reserve is to cater for the risk that the loss in any one year might be much greater than the expected level. A larger volatility reserve reduces the likelihood that the fund may become insolvent. This is a factor that contributes to the credibility of the fund. It is akin to the capital required by a bank to absorb losses.

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[1] The intention is that the funding provided by the Exchange Fund would represent a loan which would be repaid by the DPS and would carry an interest rate reflecting the Exchange Fund's cost of fund and an administration fee.

Target fund size

8. The determination of the appropriate fund size basically involves deciding to what extent the DPS fund should be able to absorb unexpected losses in addition to expected losses. The consultant which undertook the consultancy study on enhancing deposit protection in Hong Kong developed a model for determining target fund size based on Monte Carlo simulation. This allows DPS costs to be estimated based on assumptions about the default probability of individual banks[2], shortfall loss and funding costs. Numerous iterations (typically 10,000) of the model are run to produce a statistical distribution of possible losses. From this the annual expected loss of the DPS and the target fund size can be determined.

9. The results of this exercise indicate that a fund size of 0.3% of total protected deposits (equivalent to approximately $1.6 billion at the current level of protected deposits) would be sufficient to cover most of the losses that would be sustained by the DPS[3]. At this level, the DPS fund would meet the International Monetary Fund's benchmark of being able to absorb the losses arising from the simultaneous failures of two medium-sized banks. It is also largely consistent with the minimum capital adequacy ratio of 8% required of a bank under the Basel Capital Accord[4]. The Administration believes that setting the target fund size at 0.3% of total protected deposits is appropriate. To raise the target fund size further would unnecessarily increase the financial burden on the banks. On the other hand, any significant reduction of the target fund size, as previously suggested by the Hong Kong Association of Banks, could undermine the credibility of the scheme.

10. The Administration further proposes that the target fund size be built up within 5 years. This would mean that the central rate of contribution

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[2] Default probabilities are assigned to individual banks by reference to their respective credit ratings. For banks without a credit rating, a probability is assigned by reference to the credit ratings of their peer groups.

[3] In statistical terms, this would be equivalent to a confidence interval of about 99.5%.

[4] The Basel Capital Accord is an internationally accepted framework for measuring the capital adequacy of banks. Under the existing accord, a bank is required to maintain its ratio of capital to risk-weighted assets at a minimum of 8%.

payable by banks would be set at 0.08% per annum during the fund build-up period. After that, the DPS should continue to set aside a sufficient "provision" each year to meet its expected losses (i.e. the average loss expected in any given year). The provision required to cover expected losses would be much lower than that required to build up the capital of the fund. Expressed in terms of a percentage of total protected deposits, this would be equivalent to a charge of 0.01% per annum (or approximately $54 million in absolute terms).

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