Jardine Fleming

Asian Banks

Sensitivity of spreads to cash reserve and liquidity ratios

Jardine Fleming Securities Limited

Quantitative Research
December 1995

Pradeep Chokhani

Asia Pacific

Regulations and bank spreads

Net interest spreads are the most important factor affecting the profits of a bank. These are in turn determined by the level of interest rates on loans, securities and deposits; the allocation of assets among cash, securities and loans; the allocation of deposits among current, savings and term; and the level of non-performing loans.

In mathematical terms (and ignoring some extraneous complications), the spread is given by:

$$\textbf{Spread} = \frac{\text{interest income} - \text{interest expense}}{\text{average earning assets}}$$

$$\textbf{Interest income} = \text{CRR} * \text{deposits} * \text{interest rate}_{cash}$$

$$+ \text{SLR} * \text{deposits} * \text{interest rate}_{securities}$$

$$+ \text{loans} * \text{interest rate}_{loans} * (1 - \text{NPL})$$

where CRR = cash reserve ratio
SLR = statutory liquidity ratio
NPL = % of loans that are non-performing

$$\textbf{Interest expense} = \text{current deposits} * \text{interest rate}_{current}$$

$$+ \text{savings deposits} * \text{interest rate}_{savings}$$

$$+ \text{term deposits} * \text{interest rate}_{term}$$

$$\textbf{Average earning assets} = \text{cash} + \text{securities} + \text{loans}$$

where cash = CRR * deposits
securities = SLR * deposits
loans = (deposits + equity - cash - securities)

The amount of shareholders' equity is determined by the capital adequacy ratio, which is the minimum ratio of shareholders' equity to risk-weighted assets. Assuming loans carry a 100% risk weighting, and cash and securities carry a 0% risk weighting, then

$$\textbf{Equity} = \text{CAR} * \text{loans}$$

$$= \frac{\text{Deposits} * (1 - \text{CRR} - \text{SLR}) * \text{CAR}}{1 - \text{CAR}}$$

where CAR = capital adequacy ratio

Banks have little leeway to determine spreads

What is clear from the mathematical formulation of a bank's spread is this: a bank has only limited control over what it is.

Interest rates, for example, are based on overall economic conditions. A single bank cannot really influence this number, other than by seeking out riskier borrowers willing to pay more.

The cash reserve ratio and the statutory liquidity ratio determine the allocation of assets at a bank, and are usually set by the Central Bank. The breakdown of deposits, meanwhile, also tends to be a function of the market place rather than a conscientious decision on the part of a bank's management.

Shareholders' equity, meanwhile, is determined by the capital adequacy ratio applied to loans, which in turn is determined by the SLR and CRR.

Indeed, the only factor that a bank can truly control is the ratio of non-performing loans, and this too is a function of the state of the local economy (especially the property market).

Usually, the main way that banks can really influence their spreads is by establishing a cartel with other banks and setting the prime rate at some high profitable level. While banks in Thailand are known to engage in this practice, those in Malaysia must adhere to a base lending rate that is largely determined by the 3-month KLIBOR.

Fig. 4: Malaysia

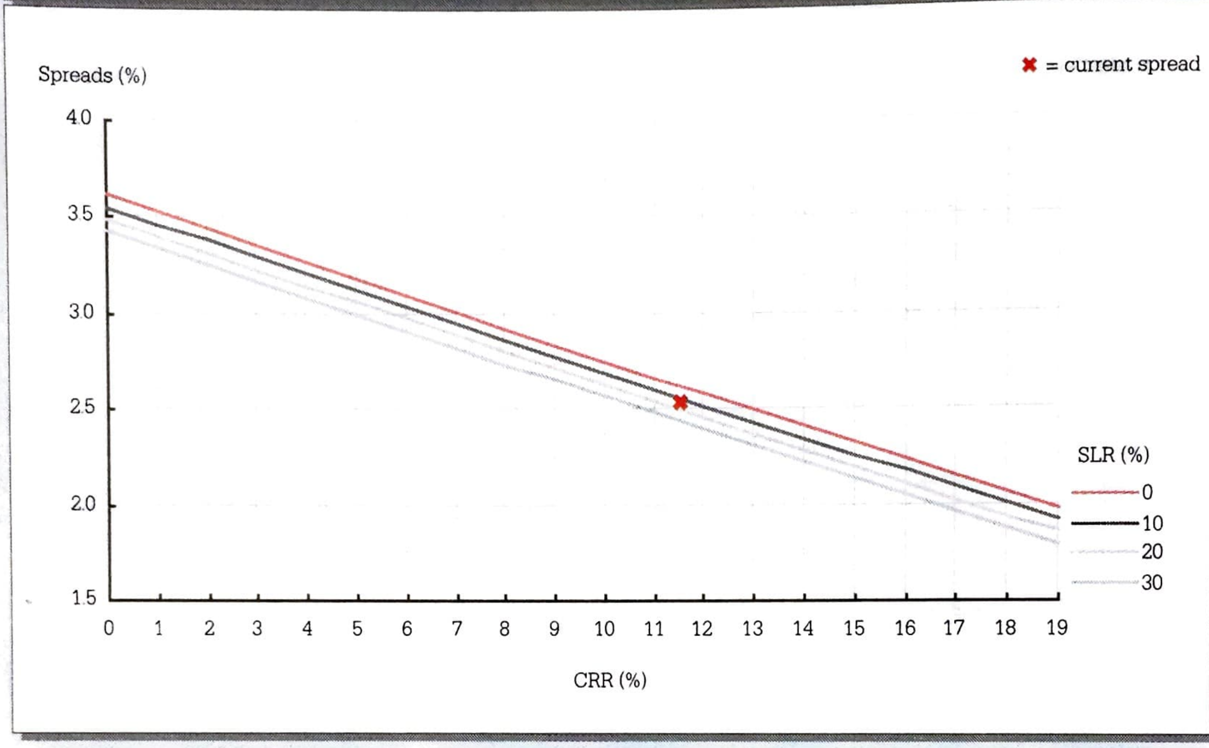

Fig. 5: Pakistan

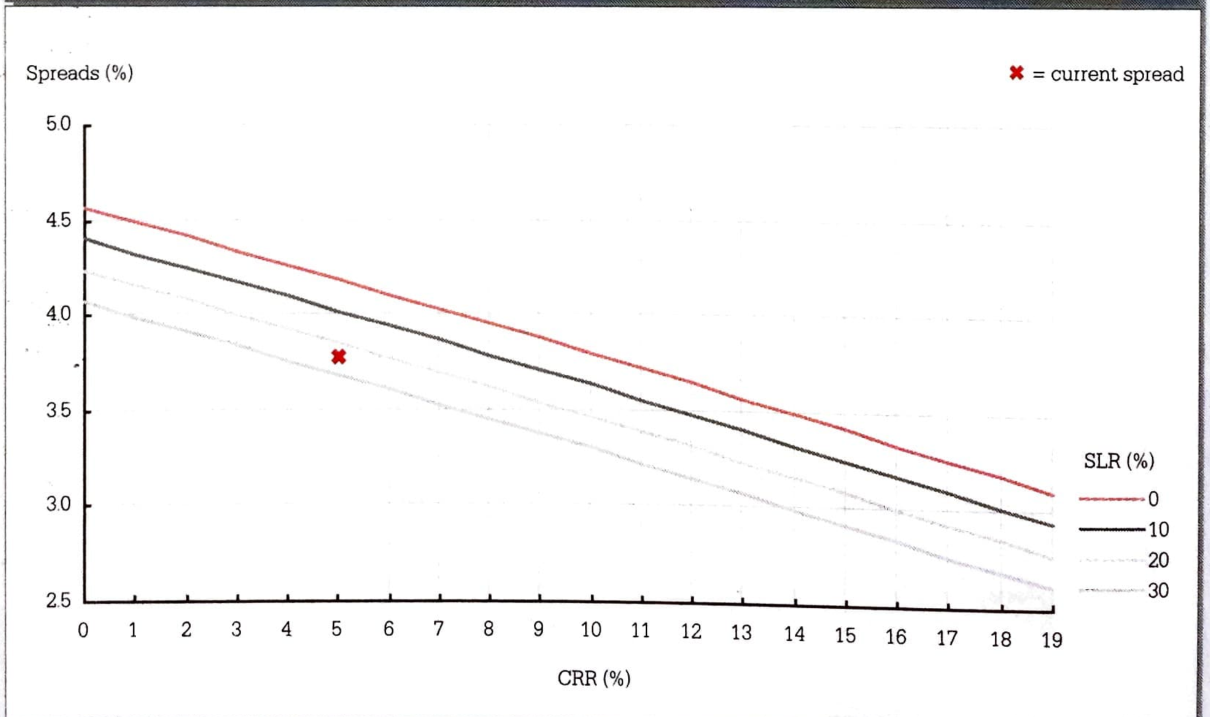

Fig. 6: Sri Lanka

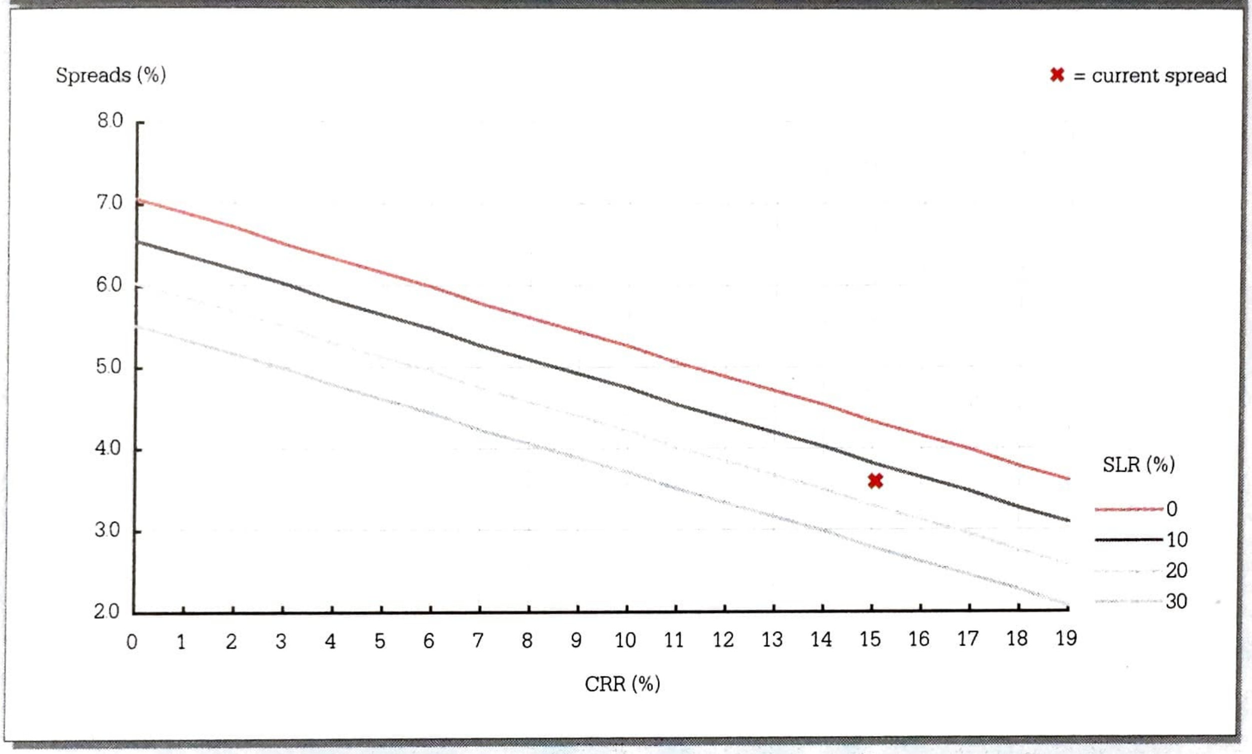

Fig. 7: Hong Kong

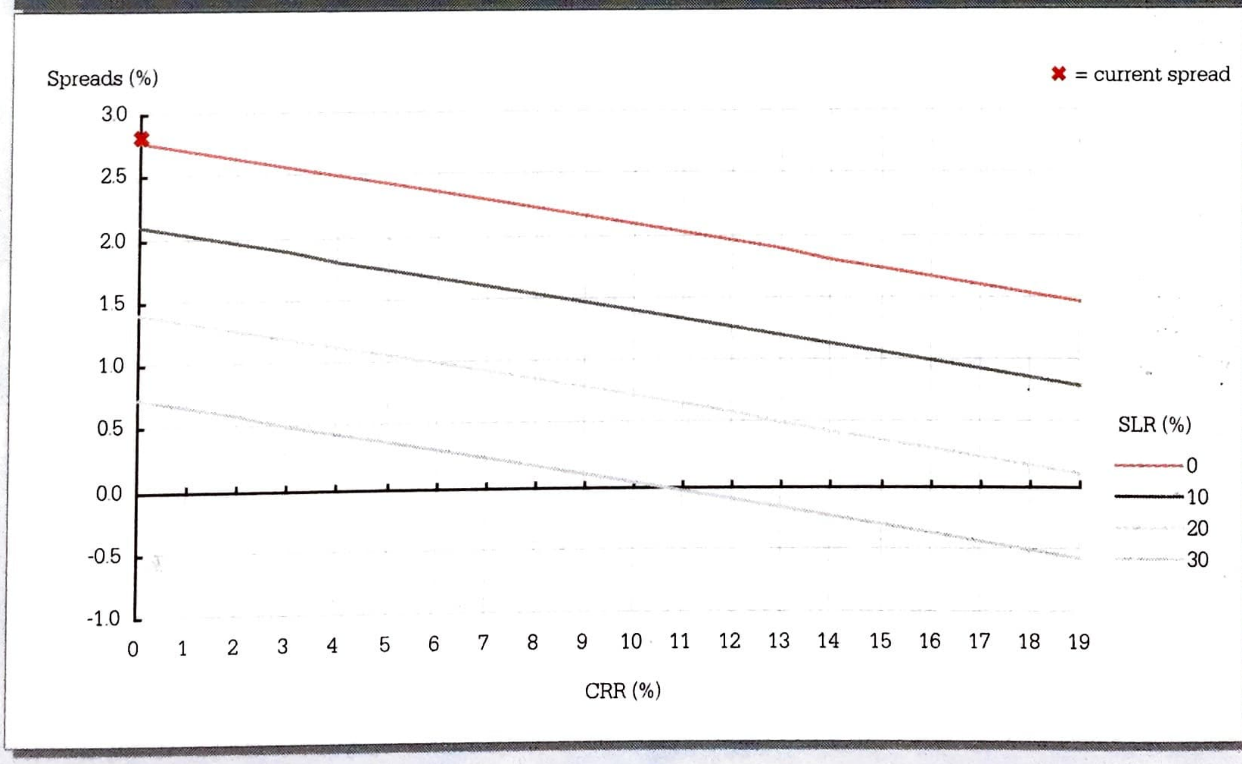

Fig. 8: Indonesia

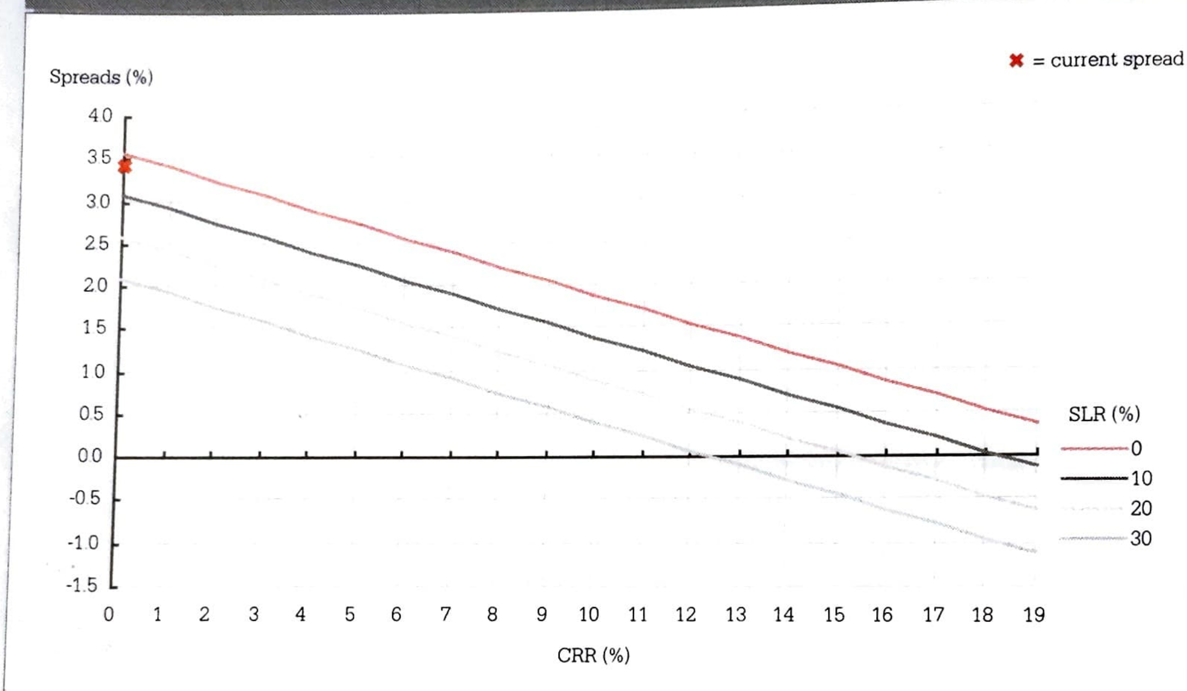

Fig. 9: Korea

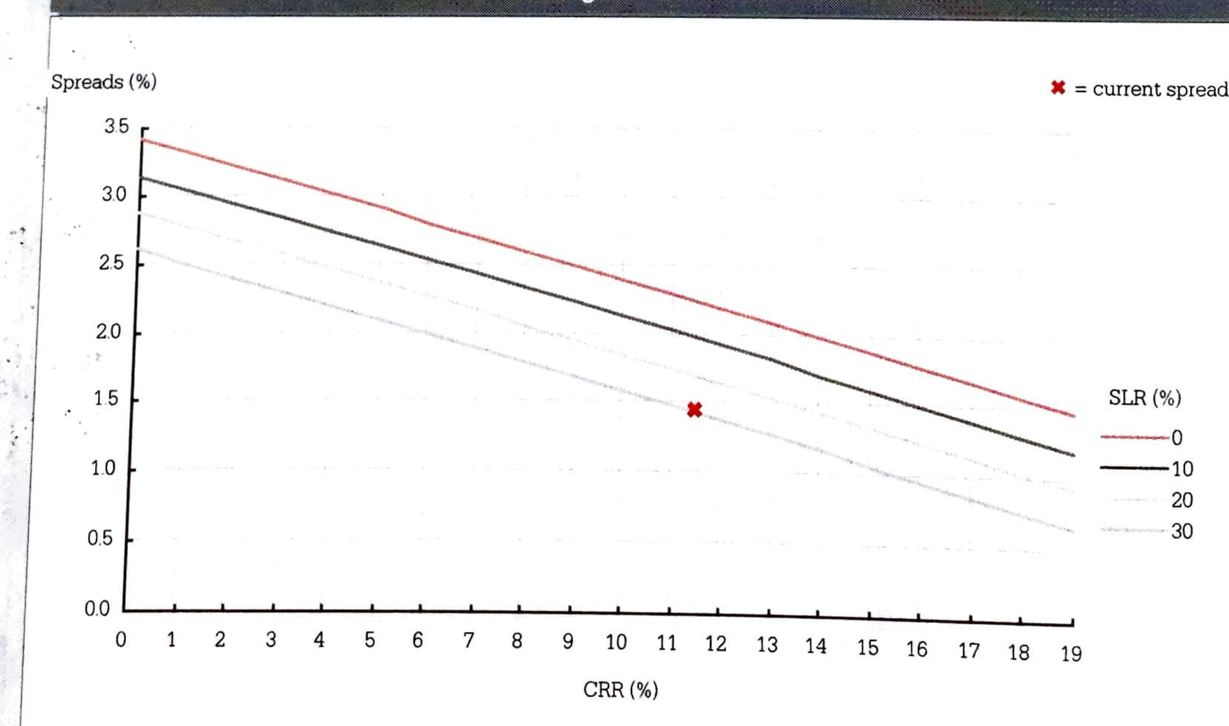

Fig. 10: Singapore

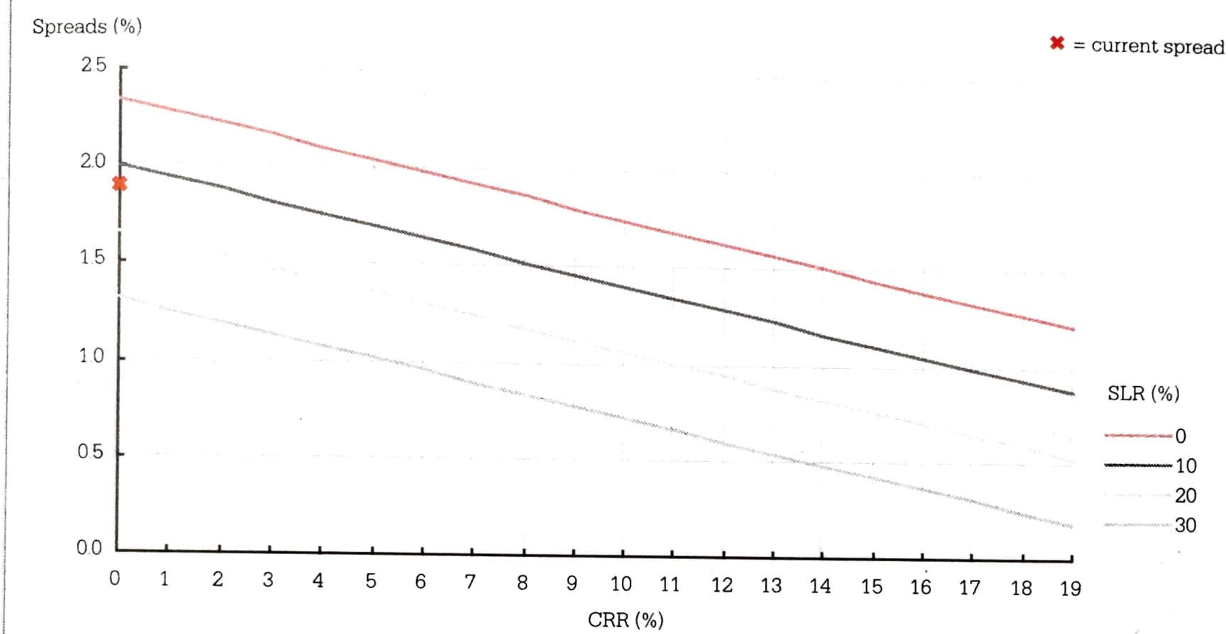

Fig. 11: Philippines