

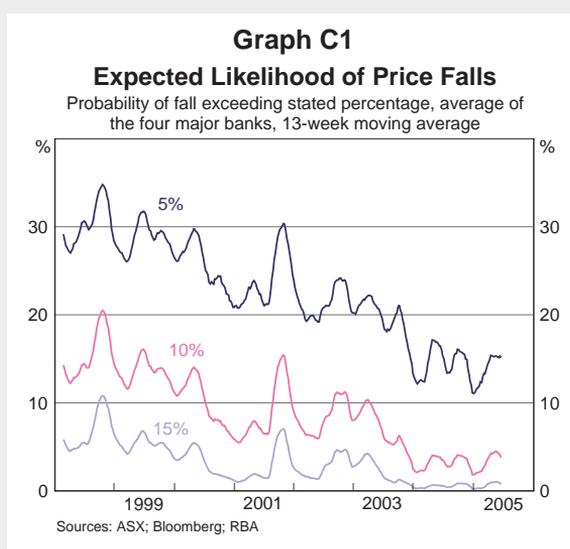
## Box C: Options Markets and the Expected Volatility of Bank Share Prices

As options markets have developed over time, options prices have increasingly been used to derive the market's assessment of the future volatility of a range of asset prices, including share prices. From a financial stability perspective, the expected volatility of bank share prices is of particular interest. Given that fairly liquid markets now exist for options over the share prices of the major Australian banks, the market's assessment of the probability of large movements in these prices can be estimated.<sup>1</sup>

A useful way of presenting the results is to show the probability of large share price movements over some horizon. This is done in Graph C1, which shows the implied probability of falls in excess of 5, 10 and 15 per cent over a 45-day period, averaged over the four major banks. As an illustration, options prices suggest that, in 2004, the probability of a fall in bank share prices in excess of 10 per cent over a 45-day period averaged 3 per cent.

The results suggest that the perceived probabilities of large falls in bank share prices have trended down since at least 1998. Moreover, although some analysts have recently questioned whether banks can sustain their current high rates of return, the probabilities have not risen materially. One interpretation of these results is that, in general, the market has a reasonable degree of confidence that the strong performance of banks over recent years is likely to continue, at least in the short term.

Another feature of the analysis is that the general decline in the probability of large falls has, on a number of occasions, been interrupted by significant increases in expected volatility. The most noticeable example is over the second half of 2001, which was associated with the terrorist attacks in the United States, the failure of Ansett and the revelation of large losses by a US subsidiary of the National Australia Bank. Interestingly, these events tended to be associated



<sup>1</sup> Some techniques for doing this are discussed in Clews, R, N Panigirtzoglou and J Proudman (2000), 'Recent developments in extracting information from options markets', Bank of England Quarterly Bulletin, February, pp 50-60. The techniques used in this Box require a number of important assumptions, including: no transaction costs; no restrictions on short-selling securities; lognormally distributed share returns outside the range of prices covered by option strikes; and risk neutral investors.

with increases in the expected probability of large moves in both directions. This reflects the fact that once a share price has fallen in response to bad news, opinions can become strongly divided as to whether the size of the fall was appropriate, with potential for opinions to change quickly as additional news comes to hand.