CISI DIPLOMA - SUMMER 2010

CHIEF EXAMINER' S REPORT

FINANCIAL DERIVATIVES

The overall pass rate in the examination this time was 40%, down from the winter 2009 examination, but up on the previous two examinations. However, I must repeat my endless message: candidates must make sure they can answer Section A questions. I note the average score of passing candidates on Section A was 14 marks, and the average Section A score of failing candidates was 7 marks. The figures speak for themselves. As I mentioned last time, candidates should remember that if they score 16 marks on Section A, they only need to average ten marks on each of the other questions to pass the examination. Candidates should also bear in mind that the Financial Derivatives examination is a challenging one which requires adequate preparation. As is common, there were a number of candidates whose level of preparation was evidently such that they stood no chance of achieving a pass. Candidates must work carefully through previous papers, and assure themselves that they can adequately answer enough questions to achieve a passing score.

Section A

The questions were a little less straightforward than last time, in order to see if candidates could apply their basic principles to slightly different problems.

In **Question 1**, I was interested to see if candidates were aware at all of the role of correlation in determining volatility inputs for multi-asset derivatives. Thus I did not include a correlation number directly. I awarded full marks to candidates who knew and presented the two equations

$$\sigma^2 = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2 w_1 w_2 \sigma_1 \sigma_2 \rho_{12}$$

$$\sigma^2 = \sigma_1^2 + \sigma_2^2 - 2 \sigma_1 \sigma_2 \rho_{12}$$

or who used the numbers given, and stated an assumed correlation number. It did surprise me how many candidates did not seem to know about the crucial role of correlation at all.

Question 2 was straightforward. It just required candidates to calculate the fortnightly volatility of $8\% / \sqrt{26}$ and remember that a 99% confidence interval is approximately 2.33 standard deviations.

Question 3 required a straightforward calculation of forward bid and offer interest rates, and then the estimation of equivalent futures prices remembering the interest rate bid offer spread is 0.0075%.

Question 4 required the calculation of the 1/2, 2/3 and 3/4 forward rates, estimating the differences between them and 2.5%, and summing the present value of the differences.

Question 5 was again a slightly different question to the usual option question in that a specific forward curve was given. Hence although the binomial up step and down steps would be the conventional $e^{\sigma\sqrt{T}}$ and $e^{-\sigma\sqrt{T}}$, the probabilities of an up step and down step would be different period to period in order to fit the forward curve.

Section B

In, Questions 6, 8, 9 and 10 appeared equally popular, with Question 7 and Question 11 attempted by few candidates. Indeed, Question 7 was only answered by two candidates, and both the answers were very mediocre. I fear that candidates are not spending enough time exploring the weird and wonderful world of credit derivatives. The lack of popularity of Question 11 surprises me, however. Similar option trading questions have appeared in previous papers, and were attempted by almost all the candidates. Moreover the marks achieved on Question 11 were very poor. It would be a shame if candidates neglected the knowledge of standard option concepts such as the Greeks, breakeven prices, volatility smiles and skews, and option trade design.

In any case, Question 6 was an absolutely standard interest rate hedging exercise, and was an example of a question which has appeared on many previous papers. It was pretty well answered with a mean score for the candidates who attempted it of 12 marks. I have already discussed Question 7, but I would suggest that all candidates should be able to work out default probabilities given CDS prices, a recovery rate assumption, and a discount curve. Once the default probabilities are established, estimating the NPV of a CDS at an offmarket spread is very easy. Question 7 was quite well answered by most candidates who attempted it, and absolutely appallingly by a minority. Maybe its use of an unusual currency put some candidates off. However, part (a) was a simple swap calculation, while part (b) simply required the estimation of a spread over LIBOR in Polish Zlotys on a straightforward asset swap. Part (c) required a straightforward pyramid hedge exercise.

I was disappointed with many of the answers in Question 9. Many candidates were aware of the non-normal nature of many market distributions, but were not able to translate their results into concrete examples of the impact on option prices. Few candidates seemed aware of the difference between stochastic volatility and variable volatility (eg Garch models), and even fewer had any idea of the impact of stochastic volatility on option pricing, or the importance of the correlation between the volatility process and the price process. In part (a), few candidates adequately got into the

equivalence of expected value pricing and hedge pricing, and what happens to it if hedge vehicles are not available. Question 10 had some very good answers, all from candidates who passed the examination, but some rather weak answers from other candidates. This was a straightforward question actually, which only required the pricing up of a couple of digital options, and a knowledge of the risks of hedging such options in the market. I have already discussed my surprise at candidates' lack of interest in the relatively easy Question 11.

Section C

Question 12 was by far the most popular. However, most candidates were better at detailing the nature of the products, as compared with analysing the second part of the question about their controversial nature. Moreover, I am not sure many candidates are really aware of the major differences between synthetic CDOs and traditional CDOs, and why these differences can create very different risk profiles. Still it was good that a credit derivatives question engendered such interest, as compared with the quantitative Question 7. Sadly not a single candidate attempted Question 8 on spread products. Far be it from me to question candidates' general interests, but I would suggest that spread products are playing an ever-increasing role in financial markets, and are well worth attention. Again very few candidates attempted Question 14 and none of the answers were particularly inspiring. I thought candidates might have delved more into the relationships between such capital bonds and reverse convertibles, and explored the correlation structures between equity prices for financial institutions and their capital ratios. The valuation and risk assessment of these bonds is a fascinating issue, in my view. Finally Question 15 revisited areas explored in several previous Section C questions. All the answers were decent with a mean of 13 marks for the candidates who attempted the question. Two of the interesting issues addressed by several candidates were the lack of need for exchange trading if global margining is in place, and second the need for simpler swap-related products on exchanges such as futures and options or credit spreads.