



CISI DIPLOMA

EXAMINER'S REPORT

FINANCIAL DERIVATIVES WINTER 2010

The overall pass rate in the examination was 64%, though rather fewer candidates took the paper than previously. There was a considerable improvement in Question A answers, though once again I point out that passing candidates scored an average of 16.9 marks, while failing candidates scored an average of 5.3 marks. The implications of this are I hope evident. Answers in Section B were heavily concentrated in Questions 6, 7 and 9 with questions 8 and 11 being almost totally neglected. I must say I find this hard to understand, since Question 8 called for brief discussions of some common issues in financial derivatives, and provided a platform for the less quantitatively inclined, while Question 11 was an extremely straightforward question on basic option price arbitrage, which all candidates should be familiar with. In Section C, I noticed that the question on Madoff was totally rejected by all candidates. In any case, the message is that papers are improving, but some candidates are still taking the paper with no chance of passing, based on the knowledge they have of derivatives.

The section A questions were very straightforward on the examination. Question 1 was a simple VAR question which required candidates to estimate a two-week standard deviation from annual data, and know that a one-sided confidence level of 95% was around 1.645 standard deviations. The expected movement in the stock price would then be translated into an option premium change, using the delta and gamma information provided and remembering.

$$\Delta O = \delta \Delta S + \frac{1}{2}(\gamma)(\Delta S)^2$$

Every candidate should know how to calculate the gross and net basis for a bond futures contract as in Question 2, and indeed most candidates got full marks on this question. Question 3 was a straightforward example of assessing convexity arbitrage, while Question 4 required candidates to know that the price of a digital is given by

$$\text{DISCOUNT FACTOR} \times \text{PAYOFF} \times \text{PROBABILITY OF PAYOFF}$$

or in the Black-Scholes framework

$$e^{-rT} (100) N(d_2)$$

In question 5, candidates needed to know that the BDT model assumes lognormally distributed interest rates, while the HW model assumes normally distributed rates. Since the models are both single factor models, they assume all interest rate changes along the curve are perfectly correlated. This means that implied changes in yield will be larger than in practice, and hence the models will tend to overprice OTM bond options.

Turning to Section B, Question 6 was answered by about half the candidates, and with one exception the answers were of a high quality. The ideas of cash bucketing and pyramid hedging now appear to be well understood. Question 7, a straightforward equity hedging question, was answered by the vast majority of candidates, though interestingly, some did not actually understand that the VAR of a portfolio hedged with index futures would depend upon the specific risk of the stock portfolio. The average mark achieved though was very satisfactory at around 13 marks. Basic hedging questions are common in the Financial Derivatives Examination, and candidates appear to be finally realising that in their preparation. As I mentioned Question 8 was unpopular, but the vast majority of candidates did Question 9. Candidates tended to produce better answers for the value of a put option in part (a), than they did for the proof that delta hedging actually works in part (b). The interplay of dividends, interest payments, stock profits and losses, and final option exercise seemed to confuse quite a few candidates. It is worth candidates working though hedging exercises of this kind. Question 10 was only addressed by five candidates, which is odd since the product simply consisted of a forward position and a sold put position, which should be familiar to any candidate. Moreover all candidates should be familiar with the simple arbitrage calculations especially put-call parity called for in Question 11.

In Section C, Questions 13 and 14 proved the most popular, but once again candidates tended to list all the things they knew about VAR and credit derivatives, as opposed to assessing them critically as asked for in the questions. A few candidates attempted question 12, which I would have thought would have been interesting given the history of precipice bonds and the credit issues for structuring products raised by the bankruptcy of Lehman Brothers and others. The question was a good way for candidates to reveal their knowledge of the interplay of market risks, liquidity risks and credit risks.