PAK Exam Aid

Financial Economic Theory and Engineering (FETE) Exam

Spring 2012 Edition

Mock Question Sample

9. *(12 points)* You are planning to set up a portfolio insurance for your company's existing portfolio for one year. You scheduled a meeting with the Board of Directors and will explain to them what portfolio insurance is.

(a) *(2 points)* Describe portfolio insurance and describe the reasons to create a put option synthetically rather than to buy it in the market.

(b) *(1 point)* Describe steps to create a put option synthetically by trading the portfolio.

You are provided with the following information:

- The current value of the portfolio is $1,000
- To protect the portfolio against market downturn, you need a 1-year European put option with strike price of $990
- The volatility of the portfolio is 20% per annum
- The risk-free rate is 5% per annum
- There is no dividend yield
- The S&P's index is at 1000
- The portfolio is considered to mimic the S&P very closely

Normal Distribution Table

d1	0.20	0.25	0.30	0.35	0.40	0.45	0.50
N(d1)	0.5793	0.5987	0.6179	0.6368	0.6554	0.6736	0.6915

(c) *(2 points)* Calculate the initial portfolio insurance.

…to be continued

9. *Materials from Options, Futures and Other Derivatives Ch.17*

HP	Answer
(a)	**<u>Portfolio Insurance</u>**
1	• Protect the portfolio against market declines while preserving the potential gain
	• Two approaches
1	o Buy put options on a market index
1	o Or create the put options synthetically
	<u>Reasons to Create the Required Put Option Synthetically Rather Than to Buy it in the Market</u>
1	1. Options markets do not always have the liquidity to absorb the large-volume trades
1	2. The strike prices and exercise dates required are different from those available in the markets

…to be continued