Caselet# 47: Sparky Learns About Key Rate Durations for Callables

Learning Outcome Statement

After completing this caselet, students and trainees should be able to explain how key rate durations detect shaping risk. In addition, they should be able to demonstrate that the key rate durations are an accurate reflection of a bond’s effective duration. They should also be able to distinguish a bullet bond from a barbell.

Caselet# 47

“Sparky, callables are barbells – believe me. You should also review the difference between a bullet and a barbell so that your understanding is fresh.”

“I want you to create a 10NC3 European callable bond with a 6% coupon. Maybe you still have one lying about, somewhere. Then create your own custom yield curve; make each yield 5%. With that set up, you are almost ready to show the barbell.”

“Price the bond with the P/Y function. Be sure to use your custom curve; set the Volatility drop down menu to Single and set the Single Vol Rate that opens up just below Volatility to 20%. As the final steps in the setup, open the Calculation Options and choose Partial Durations (7 Point) and set the pricing level to 100o, for a 100bp OAS.”

“Run the P/Y function to get the price, effective duration, volatility and OAS. Any guesses about the last two fields? Also, display each of the partial duration points, 1-yr, 2-yr, 3-yr, 5-yr, 10-yr, 20-yr and 30-yr. What values do you expect for the last two? What do you expect for the sum of the partial durations. Were you right?”

“Now that you are ‘armed and dangerous’, write up an explanation about how investors can see that the 10NC3 is a barbell. Here’s a hint: compare the partial durations of the callable bond to the partial durations of a Treasury Interest STRIPS (TINT) with the same effective duration. Make sure to keep your results and your notes in your interview notebook. Plenty of fixed income portfolio managers will be surprised at this result and the depth of your understanding.”