Caselet #45 – Sparky Learns about Callables & Forwards

Learning Outcome Statement

After completing this caselet, students and trainees should be able to explain how forward yield curves influence present prices of callable bonds.

Caselet #45

Renowned Darla Moore School of Business graduate and bond analyst, Ms. Jane Gotzrox, has called her intern into her office.

“Sparky,” she asks, “do you remember the Gotzrox 6% 10NC3 that you created yesterday?? I want you to change it to a 10NC5 today to help our portfolio managers understand callables better.

“They think that because callables are a barbell between the call date and the maturity date that shorter maturities ought to have nearly no impact on their value. While they acknowledge that 5s through 10s move the price or the OAS quite a bit, they think that 6-months through 5s should have little impact because they only change the present value of coupon payments.”

“They’re wrong, of course. Let’s show them how. Load the Gotzrox 6% 10NC5 into Yield Book Add-in. Begin as you did yesterday with a flat yield curve at 5% and a 20% volatility. Then, change only the short end of the curve, 6-months through 5s.”

First, make the curve 6-mo =7.5, 1-yr and 1.5yr = 7, both 2s 6.5, both 3s 6, both 4s 5.5. Is that a steepener or flattener, Sparky? Because 5s through 10s are unchanged, the portfolio managers think that the price should stay near par, so let that happen. Now, at a constant vol of 20% with 5s through 10s yields constant at 5%, what happens to the option value and the OAS?

Next, change 6-mo through 4.5-years to 2.5, 3.0, 3.0, 3.5, 3.5, 4.0, 4.0, 4.5, and 4.5 and find that option value and OAS. Make a table with price, option value and OAS and label the rows with steepener, flat and flattener. That’s the mechanical part, Sparky. The part that makes us valuable is explaining why that happens. Can you figure it out? Let me give you a hint – think forwards. With your growing sophistication in understanding bonds, I have to like your prospects when this internship ends.