Caselet #42 — Sparky Learns About American & European Callable Duration

*Learning Outcome Statement*

After completing this caselet, students and trainees should be able to explain the relationship between American and European bond’s effective durations at different yield levels.

*Caselet #42*

Renowned Darla Moore School of Business graduate and bond analyst, Ms. Jane Gotzrox, can hardly control the excitement.

“*Sparky,*” she says, “I just overheard a portfolio manager say, ‘since American callables have the same call option as a European callable plus more options for calling later, the effective duration of American callables is shorter than the effective duration for European callables.’ Sounds pretty plausible, eh, *Sparky*?”

“He’s wrong, of course, and it is important that you not fall into the same trap. This assignment is one of the most valuable in help you get that industry job. Here’s what you’re going to do:”

“If you still have the 6% coupon American and European callables that you’ve already built, use them. Otherwise, jump onto Yield Book Add-in and, with the user bond techniques, make new ones. Be sure to get the issue date, accrual date and all that kind of thing straight. We can ignore the Bermudians, because we know that they act much like American callables and the extra effort to analyze them isn’t worth the cost.

“First, I want you to change the coupon on the American callable so that its option-adjusted spread is the same (within 1bp of) as the European callable when both are priced at par, the curve is flat at 5% and you use 20% vol. Can you guess which way the coupon has to change, *Sparky*?”

“Once the bonds are comparable, I want you to record and plot their effective durations for prices of 90, 92, ..., 100, 102, ..., 110. In each case, I want you to shift the yield curve parallel to itself to bring the OAS back to within 2bp or 3bp of the original OAS. Do you know why I want that done, *Sparky? Yeah? We’ll see.*”

“What you’ll find, of course, is that for some prices American callables are longer than European and for some prices they are shorter. *Sparky,* take my word for it; there’s a pattern in there. I want you to see the pattern, which should be pretty easy, and I want you to explain it, which may be a little tougher, but it’s good for you.”