Caselet #4 – Sparky Works with TVM

Learning Outcome Statement

After completing this caselet, students and trainees should be able to demonstrate that Zero Coupon bond pricing is equivalent to simple time value of money calculations for a single cash flow.

Caselet #4

“Renowned Darla Moore School of Business graduate and bond analyst Ms. Jane Gotzrox is meeting with her new intern.”

“You will be stunned, Sparky, when you find out how much bond analysts are paid. Do you know what makes it so stunning? All they are doing is time value of money. Now, to be sure, there are plenty of fillips on basic TVM that come to the fore, and getting the right discount rate is of huge value, but it’s all TVM, nevertheless.”

“I want you to show that it’s true, or at least could be true. Here’s the drill:

Let’s use a different form of bond identifier for this analysis. Put “TINT0, MM/DD/YYYY” in cell A1. Make the month 2, 5, 8 or 11 and the day 15. Use this year plus 10 for the year. For example, you would have used TINT0 08/15/2023 on the first day of summer 2013. I know that Treasury interest STRIPS (TINTs) automatically have zero coupons, but Yield Book Add-in’s convention is TickerCoupon, MaturityDate. In cell A2, put the date this year that is 10 years before the TINT’s maturity date.”

“Now, use the price/yield function to find the price of the TINT at 6% interest 10 years before maturity. Using a financial calculator, calculate $100/(1+i/2)^2*T$, it should match your Yield Book Add-in price. Using the financial calculator, set periods per year to 2, N = 20, i = 6%, FV =100, PMT = 0 and calculate PV. It should match. Calculate $100/(1+i/2)^2*T$ in Excel. It should match. Use Excel’s Price function with appropriate inputs. It should match.”

“See, Sparky? You have calculated the present value of a single cash flow for 10 years hence five different ways and they ALL match. Keep this in mind as the bonds appear to get harder. In fact, as we move away from integer exponents on coupon payment dates, we’ll get into the weeds very fast.”

“This task probably is not your strongest case for the interview notebook. Still, you should keep a copy as a reminder of what you are really doing when pricing bonds.”