Caselet #28 – Sparky Learns Forward Yields and Cost of Carry

Learning Outcome Statement

After completing this caselet, students and trainees should be able to explain how forward yields are calculated to make them breakeven rates.

Caselet #28

Sparky, I want you to demonstrate that forward yields are break-evens, just as you know they are. Here is how I want you to do it:

Open Excel and login to the Yield Book Add-in.

Put numbers 1 through 30 in column A. Then, load the Treasury Model Curve from 10/17/2013 in column B. You’ll do that by using the Yield Book dropdown menu; choose Curves and then Curve Data. In the dialog box that opens, choose USD for currency, the TSY Model Curve button, and 10/17/2103 for the curve date. For cell B1, you will choose curve years A1 and Par Rate. Leave Interpolate Curve checked. Click apply, and then drag down to A30. Click Calculate and the Treasury Model Curve data will appear. Pretty easy, huh?

Now, to calculate the forward yield curve, choose the Yield Book drop down menu, Curves and Curve Analysis. In the dialog box, choose Currency = USD, Curve Type = TsyModel, Data Type = Par Rate, Curve Date = 10/17/2013. For cell C1, choose Curve Year = A1 and Implied Forward Delay 24 (months). Click Apply; click Done; Drag the formula to C30 and Calculate. Now, you have the par curve two years forward.

Let’s take a look. Highlight the years, par rates and forward par rates. Now, insert scatterplot, but use lines instead of points. See that when the yield curve is upward sloping with flattening at the long end, it gives forwards that are higher and flatter than the original curve. That’s a fact worth remembering.

Now, let’s look at some Scenario returns. Start with the Bond/Portfolio = 2yr, Level = the 2yr yield. Because the 2s are going to mature, the pricing method at horizon does not matter, but choose Method = Yield with Level = 0. To finish setting up the scenario, use the 2yr yield for both reinvestment rates, an unchanged yield curve (zero bp shift) and both TotalReturn and AnnualizedReturn. Once you Calculate, are you surprised by the scenario rate of return, Sparky? Why or why not?

Next, let’s try the 5-year note. In Scenario Rate of Return, choose the 5yr for the bond, its par yield today for level, 10/17/2013 for settlement, Yield for horizon pricing method
and the forward yield on the 3yr for level. [Why the 3yr, Sparky, why?] Use the 2yr rate for both reinvestment rates and 0bp shift in the par curve over a 24 month horizon. What rate of return do you expect, Sparky? What annualized return did you find? Again, this analysis has so many moving parts that a couple of bp miss is not significant.

Finally, do all the same things for the 10yr. When I did it, my Annualized return was off by 6bp, which gave me some concern. I reran the analysis with 8/15/2013 as the settlement date. That brought the result back to within a couple of basis points. Why do you think that happened, Sparky?

Keep careful notes for your notebook, Sparky. This is a must have for job interviews.