Caselet #20—Sparky Learns About TIPS Duration

Learning Outcome Statement

After completing this caselet, students and trainees should be able to explain why TIPS effective duration is shorter than conventional Treasuries of the same maturity and how to estimate real yield betas.

Caselet #20

Renowned Darla Moore School of Business graduate and bond analyst, Ms. Jane Gotzrox, greets her intern. "Sparky," she says, "you have been making fair progress, so far, but you have to turn up the heat if you want the full set of skills to compete with your predecessors."

"Today you will learn about TIPS. They are strange and wondrous instruments, unlike anything else. That is, actually, quite a good thing. TIPS are bond-like; they are also stock-like. But, most importantly, they cannot be hedged."

"TIPS’ unhedge-ability means that they have statistical components that are not in any other financial instrument. TIPS make the overall efficient frontier more efficient. You can use TIPS to reduce the risk in your target return portfolio or you can use TIPS to increase the return in your target risk portfolio. Either way, you can reach new points in risk/return space that were not attainable before TIPS were introduced."

"TIPS’ yield to maturity is ‘real yield,’ whereas ordinary bonds’ yield to maturity is ‘nominal yield.’ I am sure you remember the Fisher equations from your economics course (or you can find a reading to refresh your memory), so we won’t go into it here. The upshot is that yields on TIPS do not move 1-for-1 with yields on ordinary bonds. That means that the bonds’ effective durations can be quite different, even when their nominal durations are similar."

"Here is what you need to do. First, find all of the US TIPS (ticker TIPS and security type INDXLNK). Choose the one with remaining maturity closest to 9 years. Then find the Treasury issue with the closest weighted-average-life as of the most recent business day. If you use P/Y to find WAL, it does not matter whether you use 100 for the level or 90. What does that tell you about WAL? Its usefulness? If you get a tie for closest WAL, choose the most recently issued Treasury. That will almost certainly make it a 1-year old 10-yr, instead of a 21-year old 30-yr."

"Now, for nominal and effective duration. Get the closing price for both bonds for the last business day and calculate duration and effective duration for each. You will almost certainly find that nominal duration is longer for the TIPS than for the conventional Treasury. Why, Sparky, why?"
“The harder question is why is the TIPS’ effective duration shorter (probably much shorter) than the conventional Treasury bond’s? Here, you must allow for the possibility that real and nominal yields move by different amounts; part of the movement in nominal yields is due to changing inflation expectations that do not move real yields. The TIPS’ effective duration is its nominal duration times its real yield beta. If you use ctl-shift-C on the TIPS effective duration, all of the P/Y calculations pop up in a window. In it you will find the real yield beta and it will be less than one.”

“Your final step is to confirm that the real yield beta is the right size (or really close to the right size) by running a regression of real yields as the y-variable and nominal yields as the x-variable. Put down six months of dates and bring in historical data on both bonds’ yields. Then run the regression and compare your regression coefficient to Yield Book Add-in’s real yield beta. It should be close. As a final, final step, explain the import of the R-squared for this regression.”

“This will take a bit of time, Sparky, but the pages in your interview notebook could be pure gold when it is time for you to go to market.”