One of the great benefits of having customers that are very involved in running their own portfolios is that they produce a bevy of technical questions. Some of these questions I tend to know off the top of my head. Others I used to know and have forgotten. And still some others are unanswerable (or at least lack empirical evidence).

An example of the first is, “How’s the weather today?” I have several windows in my office, so I have a good shot of getting that right. An example of the second is, “What does FAS 115 say about reclassifying Held-to-Maturity bonds into Available-for-Sale?” Happily, ICBA Securities has an outstanding Investment Strategies staff and a research database on our Web site that can get that answered quickly and correctly. An example of the third is, “Where are Fed Funds going to be in 18 months?” Obviously my opinion is no better than any one else’s, but I am glad to hazard a guess if asked.

This column is in no way intended to discourage such inquiries, but will serve as a handy reference source to typical, technical, important questions that relate to mortgage-related securities. And I will still be near 100 percent correct in answering questions about the weather outside my window.

Life and Duration Matter

To start things off let’s examine the difference between Average Life and Duration and why you should care.

In a nutshell, Average Life is the weighted average period of time over which principal cash flows are received. Duration is the weighted average period of time over which all cash flows are received (P and I). This tends to cause Average Life to be longer than Duration because Average Life is used to measure mortgage securities, and MBS have a larger element of interest in their early cash flows. As for why you should care, Average Life gives an investor a benchmark to compare
the term of an amortizing security to a non-amortizing one. And Duration is a fairly reliable measurement of price volatility for a fixed-rate security.

This brings up another issue—the difference in Duration and Effective Duration.

Duration, as stated above, is essentially a measurement of how long it is going to take, on average, to receive all of your P and I. Not coincidentally, it can also be used to estimate the amount of price volatility a security has, with two major limitations: 1) the estimate is only reliable for fairly modest rate shocks (plus or minus 100 basis points or so); and 2) it assumes that cash flows and coupons remain constant during those rate shocks. If these conditions are met, then a bond with a Duration of 3 should lose about 3 percent of its value if rates rise 100 basis points.

Now comes the excitement: If a bond has a floating rate coupon, then its price volatility should be much less than the weighted average period of time to receive all P and I, and traditional Duration is of very little use. The good news is that, with the advent of more sophisticated computer modeling, we are now able to estimate future prices of floating rates securities, given certain rate shocks. Once we are able to forecast future prices, then we can back into a bond’s Effective Duration.

The Dreaded PSA Ramp
So how can I remember the connection between Constant Prepayment Rate (CPR) and Public Securities Association (PSA) speeds?

In a word, formulae. The traditional method of measuring how mortgage securities prepay,

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CPR was, and is, fairly straightforward. A 6 percent CPR means that 6 percent of the unscheduled principal will be received in the next year. This is not complicated.

The PSA decided that homeowners typically exhibit different (meaning slower) refinance patterns in the early years of a loan’s life, and attempted to create a model that tweaked CPR to account for this. It made an assumption that the first 30 months of a loan’s life would see slower prepayments than the remainder, and produced a derivative of CPR that, it believed, would be a better mousetrap.

There are two complicating factors to this belief: One, as mortgage companies have become more efficient in lending money, borrowers’ costs of refi have fallen, and the 30-month rule has long since been proven flawed. Two, even though MBS buyers understand the shortcomings of the PSA model, it remains the standard to measure the average life swings that are built into Collateralized Mortgage Obligation (CMO) offerings. Therefore, examiners will still want to see yield tables based on PSAs and expect investment policies to be based on data using PSA tables. It’s up to the bank to document PSA and CPR speeds and why a given bond meets its risk/reward criteria.

Here are the formulae:

- PSA = CPR/6/(\square\square)\times100
- CPR = PSAx6x(\square\square)/100

Notice that these work only for the first 30 months of a pool’s life. After that, 6 percent CPR = 100 PSA.

In future columns, I will discuss other frequently asked questions relating to MBS and other securities.

Please keep the questions coming.

Jim Reber is the president and CEO of ICBA Securities, a broker-dealer in Memphis and a member of NASD and SIPC. Reach him via e-mail at jreber@icbasecurities.com.