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To: Federal Home Loan Bank Interest Rate Risk Modelers

From: Fred Graham, Associate Director, Risk Modeling
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Subject: Revised Technical Guidance for Calculation of Market Value of Equity (MVE) and Duration of Equity (DOE) in Low Interest Rate Environments and Related Reporting Requirements

Background

In a memorandum dated on September 3, 2008, the Federal Housing Finance Agency (Finance Agency) issued technical guidance to the Federal Home Loan Banks (FHLBank) related to advisory bulletin AB 03-09. In that guidance, the Agency offered two alternative methods for calculating the effects on MVE of negative rate shocks when market rates were too low to allow a 200 basis point down shock without generating negative post-shock interest rates. One of those alternatives was to implement a “constrained parallel down shock” under which a FHLBank would submit results from a parallel down shock that produces post-shock swap and CO rates no lower than 50 basis points. Unfortunately, the interest rate environment that has existed in the markets since the fourth quarter of 2008 has made this alternative unacceptable. Specifically, with swap and CO rates near zero at the short-end of the maturity spectrum, that guidance permits FHLBanks, if they choose to follow the Constrained Parallel Down Shock alternative, to report the estimated effects on MVE for only positive parallel rate shocks.

While most FHLBanks have provided information about the effects of negative rate shocks on MVE by implementing the Constrained Non-Parallel Down Shock alternative described in the September 3, 2008 guidance, not all have done so. To avoid getting such limited information on the effects of negative rate shocks from some FHLBanks, the Finance Agency is amending its earlier technical guidance. Specifically, FHLBanks should, beginning with year-end 2009 reporting, use the constrained non-parallel down shock method described below to report the effects of negative rate shocks on their MVE.

Guidance

When to Calculate a Constrained 200 Basis Point Down Shock

When interest rates are such that the -200 basis point parallel shock would produce some swap or CO rates below zero or near enough to zero to cause modeling difficulties, FHLBanks should employ a smaller down shock (i.e., a constrained down shock) using a method that approaches the following:¹

A Constrained Non-Parallel Down Shock²

For swap and CO curves, FHLBanks should submit results for all (50, 100, and 200 basis points) down shocks by imposing a boundary rate (zero or somewhat higher if more practicable) on post-shock rates. Such a boundary would allow base case rates that are higher than the size of the designated shock to be shocked down by the full size of the shock, while it would allow lower rates to be shocked down only to the boundary rate. Effectively, this would be a constrained non-parallel shock that, under most circumstances, would produce a down shock of the size of the designated shock at longer maturities in conjunction with a smaller down shock at shorter maturities.

For the Treasury curve, FHLBanks should shock down the curve by the same amount that it shocked the swap and CO curves and allow the model to constrain the lowest post-shock Treasury rates to fall no lower than zero, or, if the effects of doing so are immaterial, leave the Treasury curve unshocked.

Calculating the Duration of Equity Under the Non-Parallel Constrained Down Shock

To determine the post-shock DOE, FHLBanks should calculate, using the same procedures they normally use, an effective duration based on the post-shock MVE understanding that constrained non-parallel shocks may be needed for this calculation as well.

Reporting Requirements

Effective December 31, 2009, when any down shock (50, 100, and 200 basis points) produces some post-shock swap or CO interest rates that are below zero or near enough to zero to cause modeling difficulties, all FHLBanks should calculate, as of each quarter-end date, MVE and DOE corresponding to a constrained shock using the method described above. The FHLBanks should report the results for the constrained non-parallel 200 basis point down shock on the CRS.NET lines normally associated with the full 200 basis point down shock. They should also report the results for all three down shocks (constrained non-parallel if necessary) along with

¹ For the purpose of applying this guidance, a FHLBank should use the swap and CO rates that it would normally use to discount the cash flows for its instruments to assess whether a swap or CO rate falls below the threshold for instituting the procedures outlined here. If, for example, a FHLBank uses the TAP curve to discount its CO cash flows, then the TAP curve is the applicable curve for CO rates.

² Note that this constrained non-parallel down shock differs from the one described in AB 03-09.

those for the interest rate up shocks to the Office of Supervision, Risk Modeling Division (graham.fred@fhfa.gov), as part of their quarterly submission of Off-Site Market Risk Monitoring Data in the column normally used for the down shocks of the designated size.

Questions

Questions and comments regarding this guidance should be directed to Fred Graham, Associate Director, Risk Modeling, Office of Monitoring and Analysis, Division of Federal Home Loan Bank Regulation, at (202) 408-2960, or graham.fred@fhfa.gov.