FEDERAL HOUSING FINANCE AGENCY

ADVISORY BULLETIN

AB 2017-03

ACQUIRED MEMBER ASSET PRICE RISK GOVERNANCE

Purpose

This Advisory Bulletin provides Federal Housing Finance Agency (FHFA) guidance for Federal Home Loan Bank (FHLBank) Acquired Member Asset (AMA) price risk governance.[1] It sets forth that a FHLBank should: (1) estimate expected spread to funding; (2) establish minimum expected spreads; (3) adopt total portfolio and acquisition limits; (4) create controls; and (5) conduct board and management committee[2] education and reporting.

Background

Overview of AMA

In July 2000, one of FHFA's predecessor agencies, the Federal Housing Finance Board (Finance Board), adopted a regulation governing the FHLBanks' mortgage acquisitions – the AMA rule. In December 2016, FHFA amended the AMA rule primarily to remove references to Nationally Recognized Statistically Ratings Organizations (NRSROs).[3] FHFA made some other changes, clarified certain provisions, and moved the rule from part 955 to part 1268. At its core, the AMA regulation continues to require that all assets acquired as AMA must meet a three-part test – an asset requirement, a member or housing associate nexus requirement, and a credit risk-sharing requirement.

The Finance Board approved two AMA Programs: the Mortgage Partnership Finance (MPF) program and the Mortgage Purchase Program (MPP). Under each of the approved AMA

[1] Most of the principles discussed within this Advisory Bulletin are also applicable to the price risk stemming from the acquisition of mortgage-backed securities. However, this guidance focuses on the unique exposure stemming from FHLBanks' activities involving AMA mortgage loan acquisitions.
[2] The AB uses the term "management committee" in a non-specific manner. The FHLBank should determine the appropriate management committee that will provide oversight of implementation of this guidance.
[3] FHFA amended the AMA rule to comply with Section 939A of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which requires federal agencies to remove from regulations all references to, or requirements based on, ratings issued by NRSROs.

Programs, FHLBanks offer various AMA Products that allow members to sell mortgage loans to their respective FHLBank.[4]

Description of AMA Price Risk

For purposes of this Advisory Bulletin, price risk associated with AMA (AMA price risk) is the risk that the *price* the FHLBank pays for an AMA mortgage loan is too high, i.e., the price is too high relative to its intrinsic value based on prevailing and forecasted market conditions at the time of acquisition. AMA price risk governance addresses the practices a FHLBank should employ, through management and controls, to mitigate its exposure to this risk.

The higher the price a FHLBank pays for an AMA asset, the lower its expected earnings will be, all else equal. If the expected yield net of risks, i.e., the "expected yield on a risk-adjusted basis," is too low, a FHLBank may not earn enough to cover operating costs. A FHLBank's inability to cover operating costs may diminish its financial condition, and compromise its ability to generate sufficient earnings to pay dividends or augment retained earnings.

Estimating AMA risk-adjusted yields and spreads on mortgage loans is challenging because AMA mortgage loans are long-term assets with embedded prepayment options that make predicting cash flows difficult. A FHLBank purchasing mortgages must project prepayment speeds, which are a function of interest rates, the general economic climate, and idiosyncratic borrower behavior, all of which are hard to predict over the life of the mortgage. A FHLBank must also estimate potential disruptions or shortfalls in cash flows caused by credit risk events, taking into consideration the credit enhancement structures of each AMA Product. The consequences of inadequately estimating AMA spreads to funding can be significant given the long expected lives of mortgage assets. Additionally, as the FHLBank is setting prices, setting prices too high could spur increased volume and create the potential for decreased net earnings over a long period.

Scope

The guidance in this Advisory Bulletin applies to all loans newly acquired to be held in portfolio beginning on January 1, 2018.

Guidance

When managing AMA price risk, a FHLBank should use this Advisory Bulletin as a guide. This Advisory Bulletin provides guidance to evaluate AMA price risk, including establishing minimum expected spread for AMA pricing.

Approaches to Estimate Expected Spread to Funding

[4] FHFA defined the terms "AMA Program" and "AMA Product" in its AMA Rule. *See* 12 CFR 1268.1.

Central to the management and governance of AMA price risk is having a sound estimate of expected[5] net earnings on the mortgage assets, given the prices paid. FHLBanks use various approaches to estimate spreads when setting AMA prices. The approaches include:

- Basket of Liabilities. The simplest process to estimate expected spread to funding is to construct a basket of liabilities that partially offsets the interest rate risk of the AMA, and then to compare the AMA yield to the weighted-average liability yield. Though simple to construct and easy to interpret, the approach does not generate an accurate estimate of expected spread since the resulting spread is not risk-adjusted.

- Single-rate Scenario. The process uses a single rate scenario or a small set of static rate shocks, such as -100 bps, base case, +100 bps, and others to estimate spread. The resulting net spread estimate, however, does not constitute an "expected" spread for the funded asset. It only estimates the spread in the respective scenarios, and the results may vary significantly depending on the scenarios selected.

- Option-Adjusted Spread (OAS).[6] A metric commonly used in the mortgage industry, and that the FHLBanks produce, that largely overcomes the above-mentioned shortcomings. It is an estimate of the risk-adjusted spread, also known as OAS, to funding. To capture the effect of the prepayment option embedded in the mortgage, FHLBanks generate a large number of interest rate paths (256 is the minimum number of paths in models commonly used by the FHLBanks). Generally, the distribution of the paths is a modeling assumption and, for arbitrage free models, is consistent with the market information provided by the current yield curve and option prices.[7]

  FHLBanks might use different methods to generate OAS to funding. The most straightforward method uses the consolidated obligation (CO) curve as the yield curve input to the model. Another method is to use a more liquid curve, such as LIBOR or Treasury, and then adjust the underlying curve for differences between the CO curve and the curve used. A third method is to assemble a risk-matching set of liabilities and to

[5] Throughout the document, the term "expected" is used in its statistical context: as the mean value of a probability distribution. FHFA realizes the generated spread may not be the actual spread earned over the lifetime of the specific acquisition. However, over the course of many acquisitions, the "expected" spread should approximate the average spread earned on acquisitions,

[6] OAS of a mortgage-related financial instrument is highly model dependent and is a function of the underlying interest rate process, probability distribution, interest rate volatility, and mortgage rate propagation assumptions. During the mortgage OAS valuation process, the model generates random interest rates paths (trials) to cover an assumed probability distribution and calculates cash flows (including prepayments) along each path. Along paths with high interest rates, cash flows generally extend as prepayment speeds slow, while along paths with low interest rates, cash flows contract as prepayment speeds increase. The OAS process calculates present values of these projected cash flows along each random path using discount factors obtained by adding or subtracting a constant spread to/from the interest rates across all the random paths such that the average of these present values will equal the AMA's acquisition price.

[7] Specifically, the average of the rates projected in each future period (i.e., months 1, 2…360) will equal the corresponding market-implied forward rate for that period, and the dispersion of these rates in each period will correspond to market implied volatility. When these conditions are met, the rate paths are said to meet "arbitrage-free" conditions.

calculate a net OAS as the difference between mortgage OAS and the weighted-average funding OAS.[8]

FHLBanks should use a metric to assess expected spread to funding that is risk adjusted. The OAS approach appears to be the best available metric to meet this expectation; however, other measurements may be reasonably applied under certain conditions in conjunction with OAS. The FHLBanks should clearly define the gradation for estimating the expected spread (e.g., entire AMA portfolio, mortgage pool or master commitment, or by individual transaction). In determining the level of gradation, FHLBanks should consider volume of activity, risk appetite, and transparency.

Minimum Expected Spreads for Pricing Guidance

A FHLBank should set mortgage acquisition prices to ensure the resulting expected spread to funding covers its costs and provides adequate compensation for the risks assumed, e.g., option, interest rate, credit, and model risks. The FHLBank's management committee should provide oversight, which includes approving and periodically reevaluating the minimum expected spread to funding target that guides AMA pricing. Additionally, the methodology employed for risk-adjusted spread estimation and the specific costs and risks associated with the acquisition of AMA should be documented.

The FHLBank should include a credit risk component in its AMA pricing, either within or in addition to the minimum spread. Cash flow disruption caused by credit risk events, while historically low for FHLBanks, occurs in all mortgage portfolios. Differing credit enhancement structures offered by the FHLBanks affect the timing of those disrupted cash flows. Therefore, the FHLBank should estimate a credit risk component for spread that is sufficient to compensate for credit risk across the array of AMA credit enhancement structures.[9] A FHLBank may factor in the credit enhancement obligation (CEO) that participating financial institutions provide when estimating a credit risk component. In addition, the FHLBank should determine whether different CEO structures result in a different credit risk component. Finally, a credit risk component may mitigate the absence of loan level price adjustments that Fannie Mae and Freddie Mac employ to compensate for increased credit risk.

In addition, the FHLBank should include a model risk component in its AMA pricing, either within or in addition to the minimum spread. Uncertainty in the estimate of the expected risk-adjusted spread of a funded mortgage is unavoidable. The primary source of uncertainty is mortgage prepayments, as the model must project prepayment rates over a 360 months period. Another source of uncertainty involves the assumed funding rates. The illiquidity in the longer-term fixed rate and callable CO markets makes cost estimates of future debt issuance uncertain. As a result, the expected spread estimated for mortgage investments is likely to be far less accurate than estimated advance spreads.

[8] If necessary, FHLBanks should supplement OAS analysis with stress testing to estimate the OAS's stability under various stress scenarios (assumptions could be deterministic or even stochastic in both interest rates and volatility).
[9] A FHLBank may use a single amount for the credit risk component for spread estimates; however, the amount should sufficiently cover the expected disruption of cash flows caused by credit events for each AMA product offered.

Under certain conditions, a FHLBank may purchase AMA below established minimum expected spreads. However, the FHLBank should establish in policy: (1) a framework within which it acquires AMA below the minimum spreads; (2) limits to curtail the negative effect of acquiring AMA below the minimum expected spread on the FHLBank's earnings performance or market value of equity measures; and (3) reporting of the exceptions, and attendant reasons, to the appropriate management committee.

Total Portfolio and Acquisition Limits

In light of the unique risk exposures stemming from mortgages, some of which cannot be fully mitigated (e.g., model risk), a FHLBank's board should consider how large an AMA portfolio the FHLBank can safely manage relative to total assets, total capital, and/or retained earnings. FHFA's AMA regulation does not establish limits on the total amount of AMA a FHLBank may acquire; however, the Supplementary Information to the regulation states, "FHFA expects each Bank's board of directors to establish a prudential limit on its maximum holdings of AMA, which should be governed by the Bank's ability to manage the risks inherent in funding and holding such mortgage loans."[10] The board of directors should have a reasonable basis for setting the prudential limit at a particular level, which should be clearly documented in the board's records. Similarly, to avoid excessive concentration of coupons or vintages, the board of directors may want to limit the amount of AMA the FHLBank may acquire in a given period (e.g., one year).

Controls

A FHLBank should have a well-managed, clearly articulated, and well-controlled process to generate the acquisition spread estimates, i.e., these controls should comport with the model risk management expectations set forth in FHFA's AB 2013-07 *Model Risk Management*. The model used to generate AMA prices is a mission critical model and requires validation on time schedules specified for a critical model. Additionally, management should regularly test the accuracy of the model inputs and the validity of the model assumptions. Furthermore, the appropriate management committee should review and approve key assumptions employed.

Board and Management Committee Education and Reporting

The FHLBank should provide an appropriate overview on the OAS approach, including uncertainties that accompany OAS estimation, to the entire board, appropriate board committee, and to new board members when providing board education on the FHLBank's pricing method for AMA.[11] Further, the board or appropriate board committee, and management committee should receive quarterly reporting of acquisition OAS. When increasing AMA relative to total assets, total capital, or retained earnings, a FHLBank should adjust its reporting and monitoring of AMA price risk accordingly.

Regarding the performance of the AMA portfolio, the board or appropriate board committee and management committee should be provided with information explaining that earnings on AMA

[10] *See* 81 FR 91682, December 19, 2016

[11] A FHLBank does not have to provide OAS process overview if it is not acquiring mortgage loans for on-balance sheet purposes.

may differ over time depending on the interest rate environment. For example, AMA loans purchased in an upward sloping yield curve environment may produce most of their recognized earnings early in their lives, i.e., earnings are “front-loaded.” Under such circumstances, FHFA would expect management to provide an income simulation analysis and to clearly communicate to the board or board committee and management committee the expected annual earnings on the portfolio over time, including a periodic roll-down analysis.

Advisory Bulletins communicate guidance to FHFA supervision staff and the regulated entities on specific supervisory matters. For this Advisory Bulletin, contact your respective Examiner-in-Charge if you have questions or comments.