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## THE ASSET AND LIABILITY PRICE TABLES

OTS publishes the document, *Selected Asset and Liability Price Tables*, quarterly. The tables report the estimated economic values of various financial instruments as calculated by the NPV Model. This chapter describes the contents of the publication, and discusses ways institutions may use the tables to analyze their interest rate exposure.

### Contents of the Asset and Liability Price Tables

The Price Tables publication contains tables reporting the estimated economic values of assets, liabilities, and financial derivative and off-balance sheet contracts that comprise significant portions of the typical savings association's portfolio. In most cases, these published tables are excerpts from much larger price look-up tables used internally by the NPV Model.<sup>1</sup> Most tables list prices as a percent of outstanding balance, so that to calculate the economic value of a given asset, liability, or financial derivative and off-balance sheet item, the outstanding dollar balance of the item is multiplied by the price from the table, divided by 100. Exceptions are noted below:

### Assets

For assets, tables are provided for single-family mortgage securities, servicing rights, and mortgage derivatives. For single-family fixed-rate mortgage securities, there are separate tables for 30-year FNMA/FHLMC securities, 30-year GNMA securities, generic 15-year securities, and balloon securities.<sup>2</sup> For single-family adjustable-rate securities, there are three tables for current-market index ARMs (6-month, 1-year, and 3-year Treasury indices) and two for lagging-market index ARMs (1-month and 12-month 11th District COFI).

There are eight tables for mortgage servicing rights: separate tables listing the present value of the stream of servicing fees and servicing costs for conventional FRM servicing, FHA/VA FRM servicing, Treasury ARM servicing, and COFI ARM servicing.<sup>3</sup>

The servicing fee tables report the present value per \$100 of mortgages serviced, of the flow of servicing fees over the remaining life of \$100 of the mortgages, assuming a 50 basis point servicing fee (these present values are referred to as unit present values). To calculate the economic value of the fees institutions report on Schedule CMR, the reported fee is divided by 50, then that ratio is multiplied by the appropriate unit present value from the table, times the mortgage balance divided by \$100.

The servicing cost tables list the present value of the assumed cost of servicing one mortgage over its remaining life, less the assumed ancillary income derived from that mortgage. Thus, to calculate the economic value of the cost associated with servicing a pool of mortgages, the appropriate unit present value from the table is multiplied by the number of mortgages in the pool.

The price table for mortgage derivatives reports the prices of the benchmark securities chosen to represent the 15 categories of mortgage derivatives in Schedule CMR. These prices are used to value the mortgage derivatives of institutions that do not report their own economic value estimates. See Section 5.N for more information on how mortgage derivatives are valued by the NPV Model.

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<sup>1</sup> For example, the table for single-family 1-year Treasury ARM securities in the published "Price Tables" consist of 16 lines that are excerpted from the Model's internal price look-up table that contains a much larger number of lines. See Section 5.G for a discussion of how the larger price look-up table is produced.

<sup>2</sup> The published "Price Tables" do not include tables for mortgage loans. Their interest rate sensitivity is similar to that of a mortgage security with a WAC on the underlying collateral equal to the coupon on the loan while their economic value is slightly higher.

<sup>3</sup> The servicing tables do not include the value of float on escrows on mortgages serviced for others.

## *Liabilities*

The Price Tables include price look-up tables for five types of deposit accounts: transaction accounts, MMDAs, passbook savings accounts, non-interest bearing accounts, and retail CDs. Instead of reporting the estimated economic value of the liabilities, the tables report the estimated price of the intangible associated with each type of deposit. (An exception is retail CDs, discussed below, for which there are two tables: one reporting economic values and the other the price of the intangible.)

As discussed in Chapter 6, the face value of each type of demand deposit appears in the liabilities section of the Exposure Report while the value of the intangible associated with the deposit appears in the assets section. As for the other asset price tables, the intangible prices are expressed as a percent of the outstanding deposit balance. Thus, to calculate the value of the intangible associated with \$100 of, say, MMDAs, the outstanding balance is multiplied by the price from the table, divided by 100.

The retail CDs price table reports the estimated price of the deposit, net of the retail CD intangible (i.e., the value accruing to the institution as a result of the likelihood that depositors will allow their CDs to roll over at maturity). This table is used to calculate the economic value of retail CDs appearing on the liability side of the Exposure Report. A separate table for the retail CD intangible table is used to calculate the value of the intangible appearing on the asset side.

## *Financial Derivative and Off-Balance Sheet Contracts*

The Price Tables include a table for interest rate caps. Interest rate cap prices are reported in basis points. Thus, to calculate the economic value of a given interest rate cap, the notional amount is multiplied by the price from the table, divided by 1000.

## *Yield Curves, Interest Rates, and Prepayment Tables*

Besides the price tables, the publication also provides the following data:

- The quarter-end zero-coupon curve used by the NPV Model to create discount factors for assets, and yield curves for swaps and wholesale CDs.
- Quarter-end interest rates used by the Model to calculate discount factors for a variety of assets.
- Four tables listing prepayment rates for the following types of single-family mortgages: 30-year conventional FRMs, 30-year FHA/VA FRMs, 15-year FRMs, and balloon mortgages. The prepayment rates are those for moderately seasoned whole loans.

## *How to Use the Price Tables*

Institutions can use the tables to do the following types of analyses:

### *Compare the Results of the NPV Model and Institutions Internal Models*

Institutions may find that the NPV exposure estimates they generate for their TB 13a analyses differ from those produced by the OTS NPV Model. Because institutions often have separate systems for gathering data for Schedule CMR and for input into their own models, some of these differences may arise from differences in the level of aggregation of the input data. Other differences may result from differences in methodologies for valuing financial instruments.

To determine the extent to which methodological differences account for the difference between the two sets of results, institutions can use the Price Tables to compare their own estimates of the economic value and interest rate sensitivity of individual assets and liabilities with those of the OTS Model. To do so, they

would choose assets and liabilities for which economic value estimates are reported in the Price Tables, and calculate their own economic values for those same instruments.

**Example: Comparison of OTS Estimates with Institution's Own Estimates**

Suppose an institution wished to compare its own estimates of the economic value of its FHLMC 30-year fixed-rate mortgage securities and of its retail CDs, to the estimates produced by the NPV Model. The securities have a pass-through rate of 8.0 percent, a weighted average coupon on the underlying collateral of 8.5 percent, and a weighted average maturity of 330 months. The CDs have a weighted average coupon of 4.5 percent, and a weighted average maturity of 12 months.

To make the comparison for the mortgage securities, the institution would reference the line for a security with a remaining maturity of 330 months and a WAC of 8.5 on the price table for FHLMC 30-year fixed-rate securities.

In the NPV Model, the total price of a retail CD is equal to the value listed in the table *Retail CD Prices*, less the value listed in the table *Retail CD Intangible Prices*. The institution would, therefore, reference the line for a CD with the appropriate maturity and coupon from each of those tables, and subtract the value of the intangible from the CD price in order to compare the total price to its own estimated price.

To determine the economic values in the NPV Model for instruments with characteristics different from those listed in the price tables, interpolate between relevant lines on the tables. For example, to determine the estimated economic value of an FRM security with a maturity of 300 and a WAC of 9.0 percent, interpolate between the 300 month, 8.5 percent line, and the 300 month, 9.5 percent line.

*Perform What-If Exercises to Analyze the Effect of Portfolio Restructuring on Exposure*

Institutions can use the price tables to get an indication of the effect that restructuring their portfolio would have on their OTS exposure estimates by, for example, substituting one asset for another.

**Example: Effect on NPV of Substituting ARMs for FRMs**

Consider the simple case of an institution with an asset portfolio comprised solely of 30-year fixed-rate mortgage securities with a coupon of 8.0 percent, a weighted average coupon on the underlying loans of 8.5 percent, and a remaining maturity of 330 months. Suppose the institution wishes to estimate the effect on its NPV sensitivity of substituting 1-year Treasury-indexed ARM securities for its FRM securities. Assume the economic value of the institution's liabilities is as listed in the table below.

Using the Price Tables, the economic value of the institution's FRM securities before restructuring would be as follows, with the FRM values based on an outstanding balance of \$100.

Institution Before Restructuring							
	-300	-200	-100	0	+100	+200	+300
FRMs	108.2	106.5	104.6	100.8	95.8	90.8	86.0
Liabilities	98.5	99.0	99.5	100.0	100.5	101.0	101.5
NPV	9.7	7.5	5.1	0.8	-4.7	-10.2	-15.5

The institution could estimate the effect on NPV of selling its FRM portfolio for its current value of \$100.8, and reinvesting that amount in 1-year Treasury ARM securities that have a base case estimated economic value of \$100.22 in the following excerpt from the 1-year Treasury ARM price table.

	-300	-200	-100	0	+100	+200	+300
ARMs	101.0	100.6	100.5	100.2	99.6	97.6	94.5

Since proceeds from the sale of the FRMs would be 100.8, the institution would multiply the line above by 1.006 ( $1.006 = 100.8/100.2$ ) to determine the economic value of the ARMs in each rate scenario. Replacing the FRMs with that result produces the following values for NPV in each rate scenario.

Institution After Restructuring							
	-300	-200	-100	0	+100	+200	+300
ARMs	101.6	101.2	101.1	100.8	100.2	98.2	95.1
Liabilities	98.5	99.0	99.5	100.0	100.5	101.0	101.5
NPV	3.1	2.2	1.6	0.8	-0.3	-2.8	-6.4

The example above shows that, by restructuring its portfolio, the institution could decrease its exposure to rising interest rates according to the NPV Model, but at the cost of a decline in the gains it experiences in falling rate environments.

The institution's portfolio data and the price tables used in this example were for a particular month. Thus, this exercise would simulate the effect of a restructuring on the institution's NPV Model results only if it had been performed on approximately that date. The effect of the restructuring on the results would differ if interest rates had changed, or the structure of the institution's portfolio had changed.