

## CORE DEPOSIT VALUATION: A BASIC APPROACH

### Introduction.

Many institutions see benefit in performing a “mark-to-market” of their entire balance sheet. This economic approach to Interest Rate Risk Management provides a theoretical Economic Value of Equity (EVE). A Stress Test EVE Analysis compares EVE in various interest rate environments. This information can help identify risks and help ascertain the appropriate time to sell balance sheet items and realize gains. It can also help mitigate losses by helping you to decide to sell certain items if interest rates are moving in an unfavorable direction.

Some balance sheet items like investments and conforming mortgage loans are fairly easy to mark-to-market. There is an active trading market for these types of instruments. Comparing your balance sheet items to actively traded items with similar characteristics can provide some assurance that your valuations are reasonable. Other items such as non-conforming loans and core (non-maturity) deposits don't have such a large trading market, and it may be more difficult to ascertain a fair market value.

Core deposit premiums are of particular importance in EVE analysis. This intangible asset usually hedges a decline in asset value in rising interest rate scenarios. It also can be one of the most scrutinized valuations by the federal banking regulators.

There is some information written on the subject of core deposit valuation, methodologies and approaches. When utilizing any of these methodologies, it is beneficial to compare your calculated core deposit premium to actual premiums paid in branch transactions (see *Exhibit 1*).

### Key components.

Sometimes, using the most generic data available is a good, basic approach when setting up assumptions for core deposit valuation. Consider these three important elements that usually factor into an economic value calculation:

#### 1. Decay rate/average life.

Now over a decade old, the FDICIA 305 Proposal suggests a core deposit life somewhere between 1.0 and 2.6 years. The even older OTS decay model assumes a core deposit average life somewhere between 1.8 and 4.5 years (unless an OTS regulated institution provides empirical information to override this assumption). Both methods apply their longest average lives to Savings and their shortest to Money Market accounts.

It is difficult to say how current economic conditions affect the average life of core deposits. Several institutions

recently experienced an inflow of core deposits as investors fled the stock market. The industry assumes many of these deposits will eventually return to the stock market, once the economy shows stronger signs of recovery. In addition, the internet provides more competition. Now depositors have access to many more institutions and are able to shop around for features important to them. More volatility in the market and more choices for consumers suggest the average lives of core deposits may now be shorter than previously thought.

#### 2. Sensitivity to changes in market rates.

Core deposit rates generally are administered rates and not tied directly to market rates. But, to an extent, they are and when market rates go up, core deposits rates will eventually move up, too. Administered rates eventually will move directionally with market rates.

A regression analysis, performed using several periods of core deposit rates, can identify a correlation between changes in core rates and changes in market rates. It is important that your core deposit rate history include at least one rate cycle. The relationship calculation can become a complex mathematical equation that includes:

1. Beta - A percentage movement to a movement in market rates. The formula may include an intercept. It may also use a dual-beta: a different formula for rising and declining rates.
2. Lag - Amount of time market rate has changes before core rate changes. It may also have a dual-lag. Many banks move cores rate up more slowly than they move core rates down.
3. Ceiling/Floor – Depending on the market rate used and where we are in a rate cycle, rate floors and ceilings may be appropriate.

Many institutions use sensitivity between 5% and 50%, with a 1 to 3 month lag depending on rate movement direction and volatility. A 5% sensitivity means a 5 basis point shift in the core rate for every 100 basis point shift in market rates. Accounts with a higher sensitivity to changes in market rates tend to have a shorter average life.

#### 3. Rate forecast assumption.

It is best practice to use an implied forward interest rate forecast. The implied forward methodology uses points on the current yield curve to determine future rates. It is the standard rate “forecast” used when pricing many fixed income instruments and derivatives. A positively sloped yield curve will generate a rising rate forecast, while an inverted yield curve will do just the opposite.

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**EXHIBIT 1. Total Premium Paid for Deposits in Branch Acquisitions, by Region**

Region	1999 YTD	2000 YTD	2001 YTD	2002 YTD*	03/02 Qtr.	06/02 Qtr.	09/02 Qtr.	12/02 Qtr.*
Mid-Atlantic	8.68	10.64	6.00	5.00	6.39	4.59	4.05	NA
Midwest	6.39	7.55	5.50	5.96	6.11	4.71	5.82	5.61
New England	12.00	6.02	8.56	5.36	NA	NA	8.99	1.72
Southeast	6.32	7.80	6.00	6.83	6.49	7.00	7.35	9.78
Southwest	5.50	9.80	4.92	4.10	3.09	6.19	6.25	NA
West	4.25	5.73	6.82	2.56	1.25	1.99	8.40	4.00
<b>Weighted Avg</b>	<b>7.00</b>	<b>8.00</b>	<b>5.56</b>	<b>5.69</b>	<b>6.04</b>	<b>4.42</b>	<b>6.14</b>	<b>4.66</b>

Information per SNL Datasource

\* 2002 information through 12/17/2002

**EXHIBIT 2. Distribution of Domestic Deposits and Ratio of Domestic Deposits to Total Assets, by Deposit Category, by Region**

Region	Demand Deposits	Now/Other Accts	MMDA/Savings	Time < \$100K	Time => \$100K	Deposits/Assets
<b>1999 YTD</b>						
Mid-Atlantic	14.6%	11.9%	36.8%	19.8%	16.9%	39.6%
Midwest	15.6%	14.1%	32.7%	26.1%	11.6%	63.8%
New England	13.3%	8.3%	40.7%	22.5%	15.2%	57.7%
Southeast	15.6%	7.9%	40.0%	23.7%	12.8%	61.1%
Southwest	15.7%	17.7%	30.0%	21.4%	15.2%	72.6%
West	12.5%	37.5%	28.2%	11.8%	10.0%	60.9%
<b>Weighted Avg</b>	<b>14.8%</b>	<b>14.8%</b>	<b>35.3%</b>	<b>21.8%</b>	<b>13.3%</b>	<b>56.0%</b>
<b>2000 YTD</b>						
Mid-Atlantic	13.1%	11.9%	37.6%	18.7%	18.7%	40.8%
Midwest	14.3%	13.5%	32.8%	26.2%	13.3%	62.7%
New England	12.8%	8.3%	42.1%	22.2%	14.6%	58.1%
Southeast	14.8%	7.9%	39.7%	23.6%	14.0%	61.9%
Southwest	13.2%	14.8%	39.1%	18.5%	14.4%	74.6%
West	12.8%	36.0%	28.7%	11.5%	11.1%	58.2%
<b>Weighted Avg</b>	<b>13.8%</b>	<b>14.3%</b>	<b>36.2%</b>	<b>21.2%</b>	<b>14.5%</b>	<b>56.2%</b>
<b>2001 YTD</b>						
Mid-Atlantic	13.1%	11.5%	41.5%	15.6%	18.2%	43.2%
Midwest	15.0%	14.2%	36.6%	23.0%	11.2%	62.4%
New England	12.5%	8.7%	45.7%	20.0%	13.2%	59.7%
Southeast	15.1%	8.5%	43.9%	20.4%	12.2%	64.9%
Southwest	11.8%	15.0%	44.7%	15.7%	12.7%	75.5%
West	12.0%	38.2%	31.4%	9.2%	9.2%	59.6%
<b>Weighted Avg</b>	<b>13.8%</b>	<b>15.1%</b>	<b>40.1%</b>	<b>18.2%</b>	<b>12.9%</b>	<b>57.9%</b>
<b>06/2002 YTD</b>						
Mid-Atlantic	11.8%	11.9%	43.9%	14.9%	17.5%	42.3%
Midwest	12.8%	13.7%	39.7%	22.5%	11.3%	60.9%
New England	11.9%	8.8%	47.0%	18.2%	14.1%	61.9%
Southeast	12.4%	8.9%	47.0%	19.7%	12.0%	63.9%
Southwest	11.2%	13.7%	46.9%	15.3%	12.9%	74.6%
West	10.0%	39.6%	33.2%	8.3%	8.9%	61.0%
<b>Weighted Avg</b>	<b>11.9%</b>	<b>15.4%</b>	<b>42.6%</b>	<b>17.3%</b>	<b>12.8%</b>	<b>57.3%</b>

Information per SNL Datasource

Information is comprised of 8,931 Commercial Banks, Savings Banks and Savings Institutions carrying an asset balance from 1999 through June of 2002.

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### **Tying it all together.**

There is no cookie cutter approach when applying these three components and other related factors to arrive at your institution's core deposit premium. No one knows your institution as well as you. It will take some careful consideration and possibly some justification of assumptions, as well.

*Exhibit 1* shows, by region, weighted average premiums paid for deposits in branch acquisitions. It is assumed the premium paid is for the branch's core and time deposits. Once you have calibrated your EVE model, *Exhibit 1* should help you by providing a comparison for your calculated core plus time deposit value.

In addition to using results in *Exhibit 1*, the Office of Thrift Supervision produces a quarterly report called "Selected Asset and Liability Price Tables". Along with several other balance sheet categories, core and time deposit intangible values can be found in within. The report can be found at the OTS web site on the internet.

*Exhibit 2* shows the total mix of core and time deposits by region. *Exhibit 2* is provided as a guide to measure how your deposit mix compares with the total institutional mix. It is not a representation of the mix of sold deposits.

Reviewing the trends in *Exhibit 2* shows a shift of funding from CDs and Demand Deposits into NOW/Other Accts and MMDA/Savings Accounts. It also shows an increase in the ratio of Domestic Deposits to Total Assets. This suggests institutions are taking advantage of the inflow of funds from outside sources and relying less on borrowings.

Overall, for the 8,931 institutions analyzed in *Exhibit 2*, Asset and Domestic Deposit balances grew around 9.5% and 10.0%, respectively, in 2000. In 2001, Assets grew again about 6.4% and Domestic Deposits grew 9.5%. And, annualizing the 6 months of information for 2002, suggests a 5.3% Asset growth and a 3.2% Domestic Deposit growth.

### **Conclusion.**

The core deposit premium will generally help offset some loss of overall asset value in rising rate scenarios. The core deposit premium is also one of the most theoretical components in the EVE calculation. While premiums are usually paid for branch deposits, they tend to vary greatly from deal to deal. The data in *Exhibit 1* is a weighted average of hundreds of negotiated deals across the country. A variety of other conditions, such as a branch location and an institution's reputation, can have a strong impact on the premium.

Like many A/L model components, the Core Deposit premium is formulated from a variety of assumptions. These assumptions may be different than actual results in real live interest rate scenarios.

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