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Weekly Post: Managing Interest Rate Risk using the EVE Report

Dear Clients-

Economic Value of Equity (EVE) or Net Economic Value (NEV) report is an interest rate risk regulatory report and gauges the impact of interest rate changes on the fair market value of assets, liabilities and equity. As part of the ALM process of risk management the Board is responsible to develop the Interest Rate Risk Management policy limits which state what level of risk is acceptable based on the percent changes of EVE value or capital at risk.

Despite EVE is widely reported in the ALM process and its importance to enhance bank performance, EVE remains mostly as a regulatory number and not often used for management. That is unfortunate. And this Post explains why.

Challenges

- What do EVE duration and convexity numbers tell me?
- How should I set EVE value targets under rate shocks?
- How does offering options to customers affect my interest rate risk?

Solution

A balance sheet can be structured in a way that can generate high earnings in 24 months while deferring cost to a later date. And therefore, EaR report cannot detect these longer term interest rate risks on a balance sheet, but EVE report can.

The longer term risk is particularly important for community banks because you offer customers many kinds of options to meet their needs while collecting the fees (higher interests from borrowers or lower interest costs to lenders). Therefore, banks must manage the option risk on the balance sheet to increase the income.

You offer residential mortgagors options to prepay and caps to limit their interest cost in ARMs. Commercial real estate loans also have options to prepay. Depositors have options to withdraw and FHLB funding has option to call the loans. The measure of the significance of options on any balance sheet item is "convexity."

Market Wisdom - Art Hilliard*

Selling vs "Extend and Pretend"

Everyone is familiar with the term "extend and Pretend" where corrective action on a loan is postponed due to relationship issues or in the hope that the loan will cure itself.

- Significant non-accruals or REO can mean serious trouble if assets haven't been written down or charged off
- A backlog of non-accruals with low REO is an indicator of extend and pretend
- Rarely do loans that have missed 6 months of payments ever pay in full

Sell Non-Performing Loans/Other Real Estate Owned

- At times, market prices can exceed intrinsic value
- Avoid lengthy and costly foreclosure process, especially in certain states
- Reduce carrying cost and capital tied up in non-earning assets
- Reduce uncertainty risk (i.e., property values, timelines, etc.)

Many smaller banks have retained and worked out their distressed assets

- Risk includes prolonged justification of portfolio of loans at "Fair Value".

Art Hilliard has been in the mortgage industry for 29 years. He has originated, managed secondary marketing, securitizations and settlements, provided mortgage financial advisory and performed multiple mortgage portfolio sales and acquisitions. He was past president of the Illinois Mortgage Bankers Association.

Pool details attached *THC* site *Conf Room*
<https://www.thcdecisions.com/tro>



Convexity lets you determine the trade off between income and option risks, analogous to use of duration, enabling you to determine the trade off between risk of rising rates and interest income, as I discussed in previous Posts.

The table below shows the weighted average life, duration and convexity of a sample balance sheet instruments.

Description	Interest Rate Risk		
	WAL	eff.dur	eff.con
1-4 FAMILY FIRST 30 FRM	8.13	6.26	-0.85
1-4 FAMILY FIRST 20 FRM	6.58	5.40	-0.56
1-4 FAMILY FIRST Balloon FRM	6.29	5.38	-0.42
1-4 FAMILY FIRST 1/1 ARM	6.31	0.76	-0.02
1-4 FAMILY FIRST 3/1 ARM	5.14	2.33	0.00
Consumer New Auto Fixed	1.99	1.86	0.06
Consumer Credit Card Floating	0.95	0.22	0.00
Line of Credit Home Equity Floating	7.74	0.31	0.01

An instrument that has more option risk would have a more negative convexity. An instrument has no option risk when convexity is positive. As expected, the table shows that long term FRM has higher option risk because of the prepayment or extension risks.

Numerical Example

Regulatory policy limits are defined as the % change of EVE under parallel shocks of interests. Consider an EVE report of a hypothetical bank to illustrate.

	Value (\$mm)	duration	convexity
Assets	531	3.25	-0.57
Liabilities	429	2.9	0.25
Equity (EVE)	102	4.72	-4.02

The equity is the economic asset value net of the economic liability value. Therefore, EVE is the auction value of the balance sheet without taking any future growth or balance sheet strategy into account. Duration is the value sensitivity to rate shock. The table shows that the EVE value would drop 4.72% (or \$4.02mm) of the EVE value. EVE duration is simply the weighted average of the durations of asset and liability. Note that liability is borrowing which enables you to leverage the balance sheet. When the funding duration is lower than that of the assets, the leverage position would be more liability sensitive, thus higher duration.

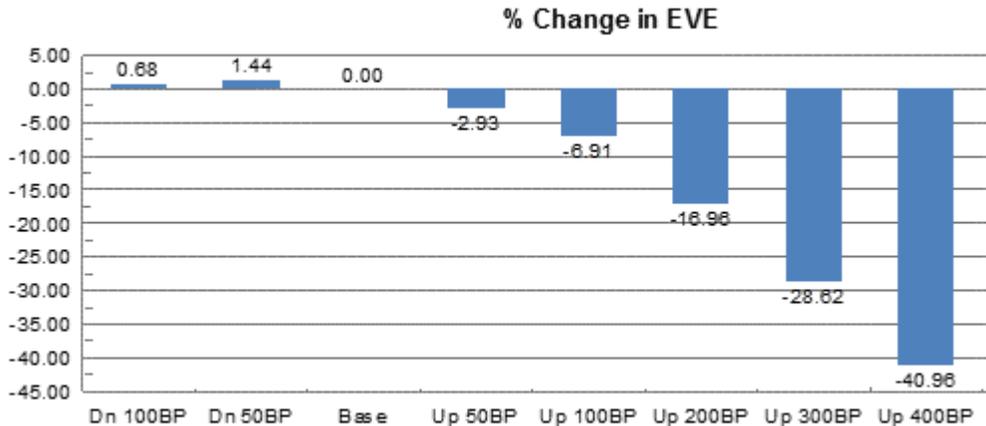
Likewise, EVE convexity is also the weighted average of those of the asset and liability. Because of the embedded options in the asset, the balance sheet net position has option risk of -4.02. The combined effect of duration and convexity on the EVE value can be approximately summarized below. Under 100 bpt interest rate parallel shock upwards.

$$\% \text{ change in EVE} = - \text{Duration} + 0.5 \text{ Convexity.}$$



Therefore, the EVE value is more adversely affected by rising rate when duration is significantly positive and convexity significantly negative. The numerical example also shows that the convexity contributes significantly to the drop in % EVE value.

The impact of the convexity on the balance sheet is depicted below.



The EVE report bar chart depicts the % change of EVE under a set of shocks. Because of the embedded option risk on this balance sheet, the chart shows that the drop in EVE value accelerates as interest rates shocks are higher. Regulators call this “falling off the cliff.” The accelerated drop in EVE value per se is not the concern, as long as the drop does not exceed the policy limits.

Loans incur duration and convexity (option) risks. Using the duration concept (“asset sensitive” and “liability sensitive”) to manage your balance sheet is widely practised and accepted. Despite the importance of offering options to customers in banking, “convexity” measure used to manage the option risk is often ignored. This is unfortunate because a significant part of banking is offering options to customers at a price.

Conclusions

Offering options to customers enhances earnings and deepens customer relationships. These options can be designed specific to the customer’s needs. EVE reports, duration and convexity in specific, enable you to manage your interest rate risk as you increase your option risk exposure.

If you have any questions on the use of EVE report to enhance your performance, please do not hesitate to contact THC.

Regards,
Tom Ho
Tom.ho@thomasho.com
1-212-732-2878

*Art Hilliard is the Principal at AHilliard Company assisting banks, credit unions, and mortgage companies with mortgage advisory and asset sales and acquisitions.



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