

guarantee the obligations of all parties to the contract, as is the case for futures or options on futures. It is, therefore, important to assess the creditworthiness of each swap counterparty due to the possibility of default risk. The cost to the remaining counterparty in the event of a swap default is the replacement cost of the swap. In other words, the cost to the non-defaulting counterparty is the difference between current market rates and the rate specified in the swap contract above or below the difference between the swap rate and the market rates that prevailed at the time the transaction was originally completed.

Interest Rate Futures. The futures market is a highly liquid and publicly available exchange-traded market that provides an excellent hedge for underlying cash-market exposures that correspond to available exchange traded contracts such as CDs. The liquidity aspect of the product reduces the risk of wanting to reverse a position prior to the originally planned expiration date of the hedge and being unable to satisfy this objective.

One disadvantage of using futures as a means to reduce systematic risk is that the basis of cash versus futures relationship changes over time. This means that the hedging A/L manager must frequently recalculate the hedge ratio which determines the appropriate number of futures contracts to go short or long. Furthermore, constructing a long-term hedge may be more difficult using futures than using interest rate swaps. Although it is possible to create a strip of futures, which protects the hedging bank for a period of several years; swaps can usually be arranged for a longer period of time.

Interest Rate Options. Options are popular with hedgers who value flexibility. This is particularly the case with over-the-counter options, which are usually written by large banks whose traders are accustomed to taking positions in derivatives.

Options entitle the owner to exercise the right to sell a specified interest stream without imposing an obligation to take action. Over-the-counter options are more popular with corporations than the exchange-traded options because, like swaps, they can be customized with respect to time to maturity, settlement dates and strike price determinants, such as a defined relationship above or below LIBOR or the Fed funds rate.

The risks faced by options buyers are very different from those faced by options sellers or writers. Specifically, an options buyer has a loss limited to the fee paid for purchasing the option. The much larger loss faced by an options writer is measured as the range between the strike price and an interest rate of zero percent.

A/L managers can now choose from an extensive list of options. The best way to evaluate whether an

option is an appropriate type of risk management tool is to perform a stress test to determine how much rates would have to change before the options premium is recouped.

Product Selection. To summarize, there are several important factors to be considered when assessing which product to select to reduce risk:

- Cash flow attributes of the particular type of hedge;
- Contracting with a counterparty other than a clearinghouse;
- Targeted time horizon of the hedge;
- Transaction customization; and
- Awareness of risk characteristics of the three classes of hedge management products:
 - Futures
 - Options
 - Swaps.

Conclusion. It is critical that the hedging A/L manager understand first and foremost how vulnerable the bank's balance sheet and bottom line are to changes in the value of the hedge and the relationship between the hedge and the asset or liability being protected. A scenario analysis should be performed, using the market conditions associated with the worst case scenario as the inputs to the model being used, to evaluate the effect of the hedge on the underlying asset or liability. The responsibility of using derivatives products effectively and prudently ultimately rests with the A/L managers and the bank A/L management committee (ALCO) executives who monitor their performance.

SUSAN M. MANGIERO

The Economics of Banking: Economic Profit, Economic Capital and Economic Value

One of the current themes in both academic and corporate finance is comprehension of the value creation process. This article briefly reviews some of the basics of economic capital, economic profit and economic value as a foundation for analyzing the value creation process in banking.

In banking, there are two primary methods of understanding the value creation framework, which are based on the two most basic financial statements:

- The income statement, used in profitability analysis; and
- The balance sheet, used in ALM analysis.

The article concludes by suggesting how these two approaches are not exclusive; rather they would be more effective if integrated.

Economic Profit: Basic Concepts. Profitability analysis focuses on effectively measuring the allocation of corporate resources to various business lines. In banking, three of the main resources used by business lines are expenses, balance sheet funding and capital. Cost accounting is concerned with the accurate assignment of expenses, including direct and indirect expenses, to the appropriate business line. In profitability analysis, balance sheet funding is typically accounted for via funds transfer pricing. Traditional profitability analysis concludes with the allocation of expenses and funding. A limitation of this traditional approach is that only the first two resources are accounted for — that is, capital is ignored.

A measurement method that includes a consideration of capital is termed *economic profit* (EP). Broadly stated, economic profits are income statement approaches to performance measurement and value creation. They include a specific charge for the amount of capital used, or allocated to, each business activity. Among the better known EP approaches are:

- Risk-Adjusted Return On Capital (RAROC);
- Economic Value Added (EVA®);
- Shareholder Value Added (SVA®); and
- Excess returns.

Broadly speaking, profitability measurement should include consideration of the three main resources listed above, along with a consideration of risk. Herein we will define risk as loss or the potential for loss. In

general, EP also includes an adjustment for loss, usually expected loss.

A comparison of these alternatives is beyond the scope of this article, but these measurement standards all provide a means for management and the board to rank the profitability of business lines and opportunities for growth. At the risk of oversimplification, most EP approaches measure value creation by measuring profitability versus the cost of capital (or hurdle rate). Value creation is emphasized via linking compensation incentives to economic profit. Research on EVA® has suggested that, in some circumstances, especially in large institutions, EVA® is better correlated with stock price than earnings per share, return on assets, or return on equity metrics.

For readers unfamiliar with EP, a simple example is provided:

- Sample Bank has \$5 billion in assets, \$400 million in capital;
- It has risk-adjusted pre-tax income of \$75 million;
- Its cost of capital and hurdle rate is 15 percent, with annual capital cost allocation of \$60 million ($\400×15 percent); and
- Pre-tax economic profit and value created is \$15 million ($\75 to 60).

Expanding upon the economic approach, a discussion follows on an economic approach to capital, including definitions of economic capital and expected loss.

Economic Capital. Current better practices for the determination for bank capital focus on economic capital approaches. “The role of economic capital, in general is to act as a buffer against those risks that may force a bank into insolvency...” (Rosen, D. and the Professional Risk Manager’s International Association, *The PRM Handbook*, III.B.6.). In *Basel II* (Basel Committee on Banking Supervision, 2004, *International Convergence of Capital Measurement and Capital Standards: A Revised Framework*, p. 137), economic capital is referred to as the capital to protect against unexpected losses. In this context, we need to differentiate between expected loss and unexpected loss.

The amount of expected loss is seen in the allowance for loan and lease losses and other bank reserves. If, theoretically, realized periodical losses always equaled expected periodical losses, no economic capital would be required. Consider the case of a bank that only makes four-year loans and sets aside 1 percent for loan losses, or 0.25 percent per year. If the bank realizes exactly 0.25 percent in losses every year, the bank does not need, in this idealized example, any additional capital for credit losses, for the amount of loss is expected and accounted for a priori’.

Unexpected loss (UL) refers to those losses greater than those estimated by the loan and lease losses and other reserving systems. As noted above, economic capital is

Bank Asset/Liability Management



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EXHIBIT 1. BOOK AND ECONOMIC VALUE, BASE CASE SCENARIO

	Book Value	Economic Value	Premium (Discount)	Premium (Discount) %
<u>\$ million</u>				
Cash	100	100	—	0
FFS & Bank Deposits	250	250	—	0
Securities	1,250	1,225	(25)	-2
Loans & Leases	3,250	3,325	75	2
<u>Other Assets</u>	150	150	—	0
Total Assets	5,000	5,050	50	1
Core Deposits	2,200	1,980	220	10
Time Deposits	1,000	990	10	1
Borrowings	1,250	1,225	25	2
<u>Other Liabilities</u>	150	150	—	0
Total Liabilities	4,600	4,345	255	6
Total Equity	400	705	305	76
Total Liabilities/Equity	5,000	5,050	50	1

required as a buffer against insolvency for unexpected losses. In this context, capital is only to serve as a buffer for unexpected losses, as the expected loss is provided for in pricing and reserves.

It was recently noted that economic capital is not equivalent to Basel II regulatory capital. That is, banks should not equate regulatory economic capital, which is based on risk for the average bank, with bank-specific economic capital, which is based on bank-specific risk. That is, there is a distinction between estimating economic capital as used by a bank for internal purposes versus calculating economic capital requirements for regulatory purposes, under Basel II. Regulatory capital requirements, which are primarily based on credit and operational risks, implicitly include *average* capital requirements amounts for *average* banking book market risk. In some banks, additional economic capital may be required for market risk, primarily due to trading book market risk or for *outlier* banks with excessive market risk, as determined by regulators.

Accordingly, every bank has an individual risk profile. This is expressed in their allocation of assets and funding, their expense structure and their capital position (the three primary resources from above). Accordingly, every bank has a different level of risk, for each risk type, and profitability. This unique risk/return profile results in a unique cost of capital, at least theoretically, for every bank. Thus, every bank needs to estimate its cost of capital to be used for economic profit measurement purposes. As an

alternative to cost of capital calculations, some banks use a target return on capital, also known as a hurdle rate, for economic profitability measurement purposes.

There is some debate as to whether it is better to charge the same rate for all businesses and risk-adjust the amount of assets, or to risk-adjust the cost of capital, or to do both. As EVA® experts have noted, simplicity and transparency are probably more important than measurement precision to the *n*th percentage point. This concept is somewhat analogous to determining the discount rate for economic value measurement purposes.

Economic Value. The basics of economic value analysis are well-known by the readers of *BALM*. An underutilized benefit of economic value analysis is for comprehending the value creation process from a balance sheet perspective. That is, what is the difference between book value and economic value? The difference is the value created (or destroyed). For example, if a bank holds a loan at par (100) on its balance sheet, and the economic value is 101, value of 1 percent of the loan balance has been created over time, as measured at a point in time.

The same is true at the bank level. Our example in Exhibit 1 is from our \$5 billion *Sample Bank*. Using a balance sheet economic value measurement approach, value has been created via the core deposit and loan portfolios. In total, value of \$305 million has been created in excess of book. While this is a stylized example, this is representative of many retail and commercial banks.

Integrating Economic Profit and Economic Value Approaches. Most profitability measurement systems, including economic profit systems, focus on quarterly or annual income statement periods. As such, they suffer from two primary shortcomings. First, by focusing on periodic income, there is a built-in favorable bias for asset sales and securitizations versus holding assets on balance sheet. Via sales and/or securitizations, current period income is maximized, potentially at the cost of long-term profitability.

Second, most profitability measurement systems do not include the impact of value changes, except for those recognized via the income statement. Currently the value changes of only certain financial instruments are included in the income statement per FASB requirements. By excluding the impact of value changes of many financial instruments, profitability measurement systems are excluding a primary source of value creation (or destruction).

A simple suggestion for integrating economic profit and economic value approaches is to include the results of period-to-period changes in economic value in the economic profit measurement system. This requires performing economic value analyses at the business line level. Business line level ALM is a better practice approach enabled by leading ALM models and is already in place at some banks.

This suggestion directly deals with the second shortcoming — that of including the impact of all value changes instead of those only currently required by FASB. It also indirectly deals with the first shortcoming — that of a built-in bias for asset sales and securitizations versus holding assets on balance sheet. When the decision is made to hold assets on balance sheet versus disposition via sales or securitization, current period income is typically decreased, but the spread income in future periods is usually increased. On the other hand, additional value volatility is assumed. In order to measure the impact of the increased value volatility, it is appropriate to include the impact of potential value volatility as part of the performance measurement system.

Conclusion. Large banks, with the dual incentives of more efficient resource allocation and the potential for reduced regulatory capital requirements via Basel II, have launched economic profit and economic capital programs. These economic approaches have significant value for smaller banks as well. It is valuable to integrate periodic economic value changes as estimated by bank ALM systems as this moves the performance

measurement methodology ever closer to a total return approach.

This integrated approach is also congruent with recognition that total return analytics are preferable to less comprehensive approaches when evaluating performance. The Chartered Financial Analysts Institute notes that “Time-weighted rates of return adjusted for cash flows are required” for effective performance measurement under the Global Investment Performance Standards (AIMR Performance Presentation Standards, available on the Web at www.cfainstitute.org/standards/pdf/redraft_AIMR-PPS.pdf). It is only logical to measure business line performance in a total return framework, consistent with the required methodology for fixed income, equity and fund investments.

FRED A. POORMAN
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ALM Compensation Survey

Employee compensation is an important topic, especially in the present economic environment. Many banking professionals, human resource managers and recruiters are especially interested in asset/liability management compensation and employment trends.

BALM continues, therefore, to present an annual ALM Compensation Survey to reflect compensation in key areas of asset/liability management. Levels of responsibility, such as ALCO involvement and risk management, will be included, along with institutional size, A/L model usage and practitioners’ experience levels in the field of ALM.

The information obtained from this survey will include many important aspects in the financial institutions industry. The survey results will be structured to assist management in budgeting, hiring and recruiting decisions, as well as providing decision-making options in the purchase of ALM software. This survey is proprietary in nature and all individual data points will be held in strict confidence.

Please help us compile a complete analysis of the A/L industry by sending in your responses on the attached forms that will be distributed during the months of January, February and March 2006. By completing this survey, you will assist us in preparing a total and all-inclusive breakdown for your A/L community.

You can fax your forms to (704) 541-0661 or e-mail at SECI@aol.com. The survey results will be published in the May 2006 issue of *BALM*.