

*Economic capital is the capital sufficient to absorb loss with a certain level of confidence. Thus, it is the common denominator of all risks and often is referred to as the “currency” of enterprise risk management. This three-part series explores current issues associated with economic capital and loss reserving. Part 1 explored how an institution accounts for the economic cycle in its Allowance for Loan and Lease Losses, and Part 3 will look at how institutions can get started in specifying inputs to their economic capital models.*

## Part 2:

# How to Allocate Capital to Business Units

## Tackling the Problems of Diversification Benefits and Excess Capital

*This article addresses the most important issues faced by institutions that have implemented enterprise-wide economic capital and that now wish to develop a sound and equitable method for allocating capital back to business lines.*

by Hans Helbekkmo

**B**anks' initial motivation for implementing a sophisticated approach to economic capital measurement is often the need to understand capital adequacy at an enterprise level. As a logical next step, new adopters then begin to adapt these “top of the house” numbers to help them improve decisions at the business-line level.

It's at this point that many banks trip up over the dividing line set out in Table 1. To calculate consolidated numbers, banks should include diversification benefits and make sure they have a comprehensive coverage of all risks. But when banks begin to build business-level applications of economic capital, they need to think carefully about how to allocate capital to business lines to best achieve the par-

ticular goal they have in mind. The biggest issues here are often how to treat any volatility in enterprise diversification benefits and how to treat the problem of excess capital.

We think that the answers to these practical problems have some interesting implications for whether senior executives view their enterprise as a traditional banking corporation or as a portfolio of businesses with a specialized corporate function.

### The Trouble with Allocation

In the past, many banks that have made an effort to improve the accuracy of their enterprise-wide economic capital have typically adopted one of two approaches to allocating capital to their different activities: a business-line stand-alone approach or a contributory approach.

The simplest approach is to ignore enterprise diversification benefits entirely and calculate each business unit's economic capital on a stand-alone basis. However, this leads to excessive conservatism: Each business unit looks as if it requires far too much capital, and pricing decisions based on these metrics could make the business line look uncompetitive relative to peers. Just giving the stand-alone numbers some kind of broad-brush “haircut” doesn't solve the problem. The economic reality is that business units don't attract diversification benefits

Table 1

### Think Through Your Economic Capital Approach in Terms of Two Levels

#### Consolidated level

- Capital adequacy—including an appropriate level of excess capital.
- Consolidated RAROC.
- Budgeting and planning—including plans for growth, and overall risk tolerance.

#### Business-unit level

- Loan and relationship pricing.
- Risk-adjusted performance measurement.
- Concentration monitoring and limit setting.
- Risk-adjusted incentive compensation.

evenly. Any allocation approach that ignores this will introduce an element of distortion into the calculation.

Other banks accurately calculate enterprise-wide economic capital using sophisticated approaches that incorporate enterprise-level diversification benefits, and then allocate this number directly back to the individual business units in line with the contribution of each unit. This “contributory approach” is fundamentally correct, but it does create a potential headache, as shown in Table 2. The left-hand side of the table shows how one illustrative bank used this approach to directly allocate enterprise economic capital to three business lines. The right-hand side of the table indicates what happens to the bank’s business-line-level economic capital numbers after the institution acquires a wealth management business. Even though the Lending and Treasury operations are unchanged, the economic capital allocation and the risk-adjusted performance numbers for these business units have bounced around.

Large-scale changes in an institution’s risk taking at the enterprise level do not happen every day, but they can have significant economic capital ramifications across all business lines. In addition to acquisitions and divestments, enterprise-level sources of instability include changes in the level of interest rate risk that the bank assumes or risk-transfer transactions, such as securitizations.

There’s nothing “wrong” with this instability—it’s entirely

Table 2

### Strategic Decisions Can Cause Volatility in Directly Allocated Economic Capital

	Before Acquisition Economic Capital			After Acquisition Economic Capital		
	Stand-alone	Diversified	RAROC	Stand-alone	Diversified	RAROC
<b>Lending</b>	300	270	12.0%	300	240	13.5%
<b>Treasury</b>	150	130	15.0%	150	110	17.7%
<b>Wealth Management</b>				100	80	15.0%
<b>Consolidated</b>	450	400	13.0%	550	430	14.9%

*Illustrative only.*

correct that such changes affect the enterprise-level economic capital numbers and how top executives assess the relative performance of business lines. But for some business line applications, the volatility introduces a level of “noise” that makes it difficult for line managers to use economic capital to risk-adjust business decisions—especially for such purposes as risk-adjusted incentive-based compensation, risk-based loan pricing, and adhering to risk-based limits.

### Accountability and Stability

In the case of risk-adjusted compensation, it’s often best to adapt economic capital numbers to ensure that any volatility largely reflects decisions taken by the business—or manager—in question. For example, legitimate sources of volatility in a commercial lending unit might include:

- Borrower credit quality.
- Changes in acceptable collateral and collateral structure.
- Intra-business-line concentration risks.

The need to filter out enterprise-level volatility does not mean that the bank should revert to using stand-alone numbers for business-line economic capital. Instead, banks can calculate each business unit’s stand-alone eco-

nomical capital and then award the unit a “target” or budgeted diversification benefit. This diversification target should be based on a combination of current diversification levels and target levels, so that the total allocated diversification benefit broadly ties back to the economic capital amount that would be allocated under the contributory approach.

The target diversification benefit is likely to vary considerably from business unit to business unit, depending on the diversification benefit that each unit brings to the enterprise’s entire portfolio. Thus the bank will preserve the incentive to grow businesses that have a strong positive impact on overall diversification.

Introducing an element of judgment into the setting of the benefit can be useful for short-term strategic reasons. For example, management occasionally might decide to apply a diversification benefit that is in line with that of a typical competitor to make sure that a business unit is not priced out of a market by the nature of the whole enterprise portfolio by the nature of the whole enterprise portfolio, if the bank believes that this typical level of diversification should be attainable in the longer run. After all, a loan typically stays on the

books long enough for a bank to bring its diversification levels in line with the competition. In this case, the primary incentive should be for the bank to improve diversification, not the loan price.

The target diversification benefit can be used to inform many of the business-level applications of economic capital set out in Table 1, with some additional care to make

sure the numbers are fit for each particular purpose (see sidebar).

### Risk Budgeting—Aligning Business Units and the Corporate Center

The bank can use its economic capital model to develop a “budget” for the economic capital allocated to each of its business units over the next few years. This budget should be consistent with the unit’s expected volume growth and with the risk levels and credit limits the unit has agreed to with the corporate center.

In turn, this budgeting process will help the corporate center in its planning. For example, senior executives need to know how much risk capital they require to grow their enterprise as expected (so that they can raise capital or try to increase enterprise-wide portfolio diversification).

Under this approach, the bank’s business units should pay for any risk capital allocated, including that which they have not put to use—perhaps because the unit has failed to meet its business targets. This leads us to the question of how to account for excess capital.

### The Problem of Excess Capital

Banks hold capital for various reasons that, directly, have little to do with the economic cost of risk. For example, they might be holding such extra or “excess” capital to act as a “war chest” for acquisitions. The cost of excess capital, whether held for rational or irrational reasons, has to be absorbed somewhere in the bank, but it may not be sensible to allocate it directly to the business lines (e.g., in proportion to the business line’s economic capital allocation).

The problem with fully allocated enterprise capital costs is that, like full allocation of other business costs, they can sometimes lead to an economic “death spiral,” in which businesses price themselves out of the market trying to earn an impossibly high rate of return on capital that is being held for “corporate” rather than business-line reasons.

A better option is to set up a corporate account that includes any planned excess equity intended to act as a “war chest” for acquisitions (or their aftermath) and other strategic initiatives, or simply to comply with regulatory capital requirements. In effect,

#### Should Economic Capital for Risk-Based Pricing Be Incremental or Average?

Economic capital numbers must be carefully selected to fit their intended purpose—something that is especially true for risk-based pricing. For example, banks taking a purist approach to risk-based pricing might be tempted to allocate to a transaction the exact *incremental* cost of adding the transaction to the bank’s entire portfolio. The problem with this is that two deals with identical inherent risks would be priced quite differently, depending on whether they were added earlier or later to a portfolio.

Incremental economic capital is usually less than the *average* contributory economic capital of a deal, because each incremental deal has the benefit of the shared capital base of the existing portfolio—at least until concentration risk effects kick in. But pricing every deal as if it were gaining an endlessly repeated incremental benefit would, in fact, lead to a sub-optimal portfolio.

For the most part, it’s best to use average capital factors (i.e., economic capital times the hurdle rate of return)—not incremental-based capital factors—for risk-based pricing.

Incremental economic capital can, however, help set limits on a portfolio, and it can be a useful indicator for pricing large, one-off deals.

Table 3

#### Illustrative Income Statements for a Business Unit and Corporate Account

Sample Business Unit	\$ Millions	Corporate Account	\$ Millions
Net income	15		
Economic capital	100	Actual economic capital	450
RAROC	15%		
Hurdle rate of return	10%		
		Actual equity	600
Budgeted economic capital	150	Budgeted economic capital	500
Excess capital	50	Excess capital	100
Cost of excess equity	50 x 10% = 5	Cost of excess equity	100 x 10% = 10
Return on allocated equity	10%	Net excess/shortfall	-10
<i>Illustrative only</i>			

this corporate account pays for any planned excess equity, while the business units, under the budgeting process described earlier, pay for any unplanned excess equity.

Table 3 shows illustrative income statements for a business unit (profit center) and for a corporate account (cost center). In this example, the business unit is held accountable for \$50 million of excess capital because of an unplanned shortfall relative to the business unit's budget; meanwhile, \$100 million of excess capital is held in the corporate account as a planned excess. The firm as a whole is therefore holding \$150 million of excess capital. The concept of a corporate account is analogous to the concepts of budgeted-versus-incurred operating costs and expected-versus-realized credit losses.

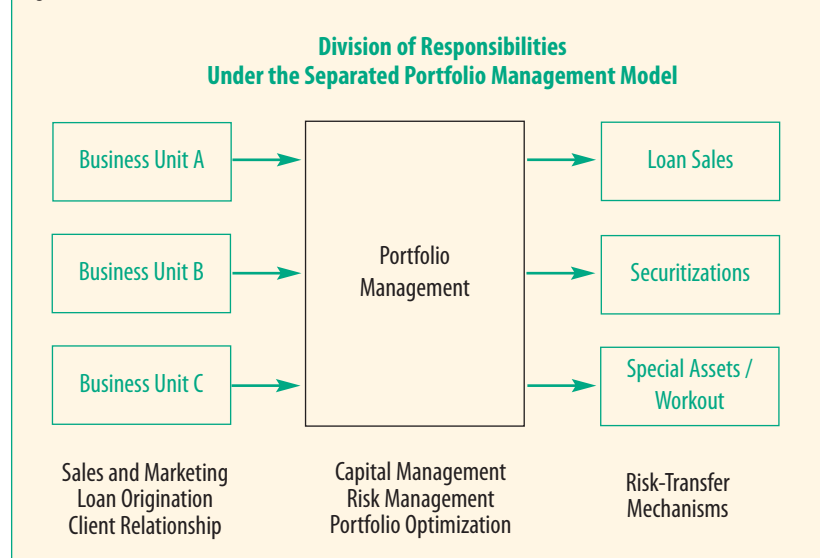
### Advanced Portfolio Management—The Next Frontier?

The approach discussed here will prove valuable today for any firm aiming to apply economic capital numbers appropriately to business-level applications such as incentive-based compensation. But it also has strategic implications for tomorrow.

The discussion so far has focused primarily on the accurate allocation of capital to ensure appropriate incentives at the business-unit level. But it also could be seen as a step towards a more radical and sophisticated approach to portfolio management.

Under the paradigm put forward in this article, the corporate centers of banks could develop a separate portfolio management

Figure 1



group that is responsible for the following actions:

- Capital budgeting and allocation.
- Management of portfolio composition and diversification.
- Portfolio-risk transfer and mitigation.

Figure 1 illustrates the division of responsibilities in this structural model and shows how the approach could facilitate large-scale and complete asset transfers. That is, origination units could “sell” their assets to the bank’s portfolio management group at a par value, taking into account business costs, expected losses and economic capital costs over the expected life of the loan.

Under this model, the business units would be subject only to transaction-level risk and there would be—at the extreme—a perfect separation of duties between the units and the portfolio management group. This is similar to the division of functions seen in the mortgage banking industry, where mortgage agencies such as Fannie Mae have helped to sepa-

rate out the business of loan origination from the business of holding and selling on the risk.

Under this new model, the portfolio management unit would be responsible for managing the bank’s portfolio of assets using the wide range of mechanisms now available, such as:

- Loan sales and purchases.
- Credit derivatives.
- Securitization.
- Credit reinsurance.

This kind of organizational structure could be common in the future, but the industry certainly is not there yet. In the more common model based on enterprise-wide economic capital calculation and allocation, banks will do well to focus on the methods for business-unit capital allocation discussed in this article. □

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