The flexibility of RAROC

The many values of a risk-adjusted return on capital approach.

by Dr. Robert M. Mark and William V. Bishop

Dr. Robert M. Mark, Black Diamond, shares his insights on determining risk capital using RAROC calculations.

Photograph by Saul Bromberger

Risks are unavoidable in any business. A healthy enterprise without the proper protection can quickly dissolve under the strain of a near-catastrophic disaster. This is why it's essential organizations plan for the unexpected by appropriately allocating risk capital across the enterprise.

Financial institutions conduct risk assessments for business units as well as allocate capital as an increasing function of these risks for their individual product lines or account pools (groupings of "like" and "similar" assets/liabilities), customer accounts and transactions. The risk-adjusted return on capital (RAROC) calculation is based on the trade-off between risk and return. (See "Calculating RAROC" on page 17.)

While making these RAROC assessments, institutions can forecast their economic performances, maintain financial integrity and boost confidence among stakeholders.

Versatility of RAROC

Besides determining what is financially necessary to stay solvent, the amount of allocated risk capital can also serve more sophisticated purposes. For instance, RAROC calculations can transform how an organization measures and manages its investment portfolio. RAROC can be used as a part of scorecards to measure contributions to shareholder value as well as compensate senior management and sales personnel based on the performance of particular business lines and the contribution of supporting infrastructure groups.

Whether to enter or exit a particular business can also be based on the RAROC calculations. RAROC is used to help determine the potential value that would be created if extra resources

were allocated to that new or existing business. In addition, product and account pricing can be set more accurately using RAROC.

A major challenge is that if the information that goes into those models is inaccurate, is untimely or can't be trusted, then those models will produce worthless results.

RAROC relies on data integration

As indicated earlier, there is considerable value in being able to view RAROC for a product line or account pool, as well as to be able to analyze RAROC for all customers that own one of the product lines or are within an account pool. This demands that RAROC be calculated at the lowest level—the account.

However, the account level profitability system is often separate from the RAROC system. Furthermore, product and account information scattered in nonintegrated silos or within disparate data architectures, applications and methodologies can inhibit a complete and accurate measure of RAROC.

This has inspired many banks to begin to integrate and organize their data at the account level rather than at the product level. Organizing data at the lowest level greatly expands the ultimate flexibility for multi-dimensional analysis of results. Also, if all multi-dimensional analysis is derived from the same database, then this ensures ease of reconciliation and promotes user adoption and acceptance. Risk can be measured and tracked at the most appropriate level—the customer.

Finally, an integrated data warehouse infrastructure avoids unproductive work associated with managing replicated data, as well as reduces the inherent costs of managing disparate data repositories and unnecessary data movement.

Key components of an integrated data infrastructure for RAROC

As the level of RAROC sophistication and accuracy is increased, there is a corresponding requirement for more detailed data. At some point, a greater frequency of detailed transaction data will be desired to decrease the latency of measurement. It is imperative, therefore, that the data warehouse technology selected can evolve to accommodate this amount of data.

It is also imperative that the data infrastructure provides flexibility and scalability. The data warehouse will need to support multiple RAROC views, as well as seamlessly provide scalability to support data providers, more sophisticated users (as the complexity of RAROC inevitably increases over time) and RAROC methodology owners. Scaling for increased data, query complexity, the number of end users and data modeling flexibility are critical elements to delivering the ever-increasing sophistication of RAROC methodology and its ultimate adoption within institutions.

Integrate the teams, too

For the RAROC system to function smoothly, the data warehouse, RAROC, risk, finance and business teams must work together to enable accurate RAROC calculations. A risk-literate data warehouse team provides insight into how a sophisticated data warehouse can enable and support deeply risk-based business decisions. Likewise, the RAROC data warehouse team should create strong working relationships with the risk, finance and business teams to remain responsive to evolving RAROC priorities.

A well-designed RAROC methodology and a transparent RAROC reporting process based on a sound integrated data infrastructure and a cooperative enterprise team provide a strong impetus for cultural change and adoption of more precise methods of managing capital. T

Dr. Robert M. Mark is the chief executive officer of Black Diamond, which provides corporate governance, risk management consulting and transaction services. He has also been a chief risk officer as well as a corporate treasurer. Dr. Mark can be reached at bmark.blackdiamond@tmo.blackberry.net.

William V. Bishop is a senior industry consultant with Teradata who has more than 21 years of experience in the financial industry.

Calculating RAROC

A) Projected RAROC = $\frac{\text{Projected risk-adjusted net revenue}}{\text{Projected risk}}$

B) Post-deal RAROC = $\frac{\text{Actual net revenue}}{\text{Projected risk}}$

In either equation, the difference must be equal to or greater than the hurdle rate (the required return on risk capital). To calculate if the deal is worth doing, or was successful, two equations for A and B are available:

A1) Projected RAROC:

$$\frac{\text{Projected risk-adjusted net revenue}}{\text{Projected risk}} = X$$

If X is equal to or greater than the hurdle rate, then the deal is worth doing.

A2) Projected RAROC:
Projected risk-adjusted net revenue *minus* projected risk *times* hurdle rate must be equal to or greater than zero.

B1) Post-deal RAROC:

$$\frac{\text{Actual net revenue}}{\text{Projected risk}} = X$$

If the deal is to be considered successful, X must be equal to or greater than the hurdle rate.

Example: $\frac{\$15}{\$100} = 15\%$

Assume net revenue = $15, risk = $100 and hurdle rate = 20%. Since 15% is less than the hurdle rate of 20%, then the deal was not successful.

B2) Post-deal RAROC:
Actual net revenue *minus* risk *times* hurdle rate must be equal to or greater than zero. Example, using the same figures:
$15 – $100 **X** 20% = -$5. Since -$5 is less than zero, then the deal was not successful.

—R.M.M.