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RA, RA, RARORAC!

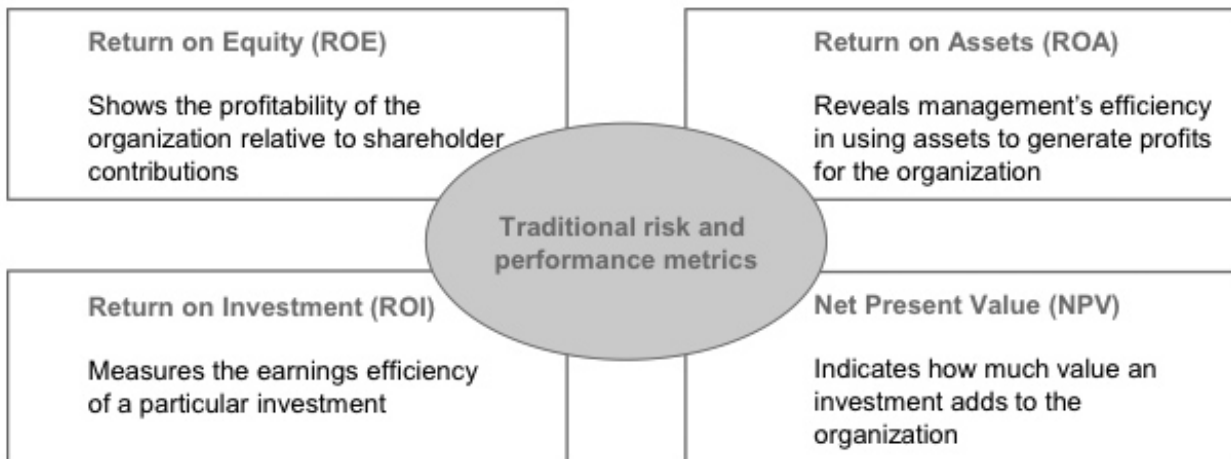
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Introduction

Performance metrics are widely used by companies to create benchmarks, assess performance, and make strategic decisions. Traditional metrics, however, may not properly capture the risks embedded in complex or illiquid insurance liabilities, as recent global market volatility has revealed. As a result, many insurers have turned their focus towards risk-adjusted performance metrics.

Overview of traditional risk and performance metrics

Exhibit 1: Common traditional risk and performance metrics



While the traditional metrics shown in Exhibit 1 are widely used, they are built on a series of simplifying assumptions that may not be adequate in certain economic environments. These metrics assume that future performance can be predicted using past experience, and may not properly account for inherent risks and current economic conditions. Defining risk as volatility from the expected, ROA, for example, ignores the fact that potential volatility can come from both the company's profits as well as the underlying asset base. Further, one-time adjustments to the balance sheet may introduce volatility into traditional metrics.

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Exhibit 2: Shortcomings of traditional metrics



Risk-adjusted performance metrics

The fundamental problem with traditional metrics is that it is possible for an economically unhealthy organization to look healthy, concealing its true economic state. As a result, executives are increasingly turning to risk-adjusted performance metrics (RAPMs) to enhance performance measurement.

By analyzing each risk both independently and in aggregate, RAPMs allow “apples to apples” comparisons of organizations, business units, or products with distinct risk profiles. Broadly, these metrics align corporate strategy and investment. By ensuring proper compensation for accepting risk, insurance company management is able to better assess its own performance, understand how decisions impact other areas of the organization, and ensure an appropriate overall risk portfolio for the organization. Furthermore, the RAPMs promote corporate transparency and allow shareholders to more effectively assess management competency.

Some of the most commonly used RAPMs are Return on Risk-Adjusted Capital (RORAC), Risk-Adjusted Return on Capital (RAROC), and Risk-Adjusted Return on Risk-Adjusted Capital (RARORAC). These metrics are covered in more detail below.

RORAC

RORAC assumes that the organization has a fixed supply of capital which is allocated to each business unit or product line proportional to that unit’s risk exposure. This is an organic capital allocation approach that views the organization as a consolidated business entity. RORAC is calculated as follows:

$$RORAC = \frac{Revenue - Expenses}{Risk\ adjusted\ capital - Diversification\ benefit}$$

Economic capital is often used as the denominator for RORAC; however, statutory capital could also be used if it offers more conservatism or better reflects the realities of the business environment.

RAROC

RAROC, also known as the “Sharpe ratio for business units,” assumes that the organization extends capital to various businesses and charges each unit as it would for a loan. This is a dynamic, bottom-up approach that views the organization as a collection of businesses. RAROC is calculated as follows:

$$RAROC = \frac{Revenue - Expenses - Expected losses}{Capital}$$

RARORAC

RARORAC can be thought as a combination of RAROC and RORAC. RARORAC is derived using the numerator from RAROC and the denominator from RORAC.

$$RARORAC = \frac{Revenue - Expenses - Expected losses}{Risk adjusted capital - Diversification benefit}$$

By adjusting for risks in both the expected return and the capital consumption, RARORAC acts as a powerful comparative tool for risk analysis. In decision-making, RARORAC should exceed the hurdle rate in order to meet the company’s profitability targets.

Key Terms

DIVERSIFICATION BENEFITS are any synergies that arise from the interaction of two or more investments in a portfolio, whereby non-systematic risk is mitigated

ECONOMIC CAPITAL is the amount of retained capital that an organization needs in order to ensure economic solvency. Economic capital reflects the risk appetite of the institution and includes provisions for losses in extreme scenarios. Banks often use the term **EQUITY CAPITAL**

EXPECTED LOSS is the average anticipated loss amount that an organization will suffer across a range of scenarios

HURDLE RATE is the minimum return required to create economic value for the organization. It is often referred to as **COST OF CAPITAL**

RISK ADJUSTED CAPITAL is the amount of retained capital that an organization needs to ensure solvency under a specified set of risk and survival criteria, thus reflecting volatility of future outcomes. Economic capital is an example of risk adjusted capital

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Sample case study

Exhibit 3 provides a simple numerical illustration of how some of the aforementioned metrics compare. Consider the following hypothetical one-year investments:

- **A** is a \$10,000 investment with revenue of \$1,000. It has an expected loss of \$500, economic capital of \$9,500, and diversification benefit of \$500
- **B** is a \$10,000 investment with revenue of \$1,500. It has an expected loss of \$1,000, economic capital of \$10,500, and diversification benefit of \$100
- Both investments have expenses of \$50

Exhibit 3: Numerical illustration of ROI, RORAC, RAROC, and RARORAC for two hypothetical investments

	Investment A	Investment B
ROI¹	$\frac{1,000 - 50}{10,000} = 9.50\%$	$\frac{1,500 - 50}{10,000} = 14.50\%$
RORAC	$\frac{1,000 - 50}{9,500 - 500} = 10.56\%$	$\frac{1,500 - 50}{10,500 - 100} = 13.94\%$
RAROC	$\frac{1,000 - 50 - 500}{10,000} = 4.50\%$	$\frac{1,500 - 50 - 1,000}{10,000} = 4.50\%$
RARORAC	$\frac{1,000 - 50 - 500}{9,500 - 500} = 5.00\%$	$\frac{1,500 - 50 - 1,000}{10,500 - 100} = 4.33\%$

$$^1ROI = \frac{\text{Gain from Investment} - \text{Cost of Investment}}{\text{Cost of Investment}} = \frac{\text{Revenue} - \text{Expenses}}{\text{Cost of Investment}}$$

Using a traditional ROI metric, Investment B appears to be a more attractive opportunity given the higher ROI. After examining the economic capital requirement, Investment B still maintains its appeal given its higher RORAC.

However, when expected losses are taken into consideration, the two investment opportunities become equally attractive given their identical RAROC. Finally, after provisioning for risk in both the returns as well as the capital requirements, Investment A is actually the preferred investment under the RARORAC metric.

RARORAC not only measures the return and the riskiness of an individual investment, but also balances it against the rest of the company by normalizing it to a common “unit” of risk. Thus, Investment A is the better opportunity because it offers a healthier risk-reward balance, optimizing usage of the company’s limited capital resources.

Implementation considerations

There are several considerations facing companies implementing RAPMs and integrating them with existing risk management frameworks and processes.

Risk measurement methodology: The correct risk measurement methodology needs to be in place. In other words, capital calculations should be rigorous and consistent across businesses and product lines. There must be sufficient

confidence that a company whose capital falls within the employed RAPMs will remain solvent.

Interdependencies: Correlations between business units and product lines must be accurately measured. Offsetting and magnifying risks across units need to be closely examined in order to appropriately capture diversification effects across the company.

Required rate of return: The hurdle rate needs to be agreed upon by both the business units and senior management. This threshold may be derived using either qualitative or quantitative approaches. For example, the Capital Asset Pricing Model (CAPM) uses a risk-free rate plus risk premium methodology that incorporates quantitative market information and betas.

Overreliance: As with other metrics, there is a danger of overreliance on RAPMs alone. Although the methodology may appear comprehensive and sound, RAPMs should not be the sole metric used in decision-making. Instead, RAPMs should be used in conjunction with other appropriate management tools and metrics.

Conclusion

Traditional risk and performance metrics have deficiencies which may be overcome in part with risk-adjusted performance metrics, such as RARORAC. Optimizing RAPMs can help an insurer effectively achieve a desired risk-reward balance in its business. When RAPMs are properly integrated with existing business processes and used in conjunction with other risk and performance metrics, companies will be better positioned to thrive in even the most turbulent of times.

The views expressed are the authors' own and may not represent the views of Oliver Wyman.

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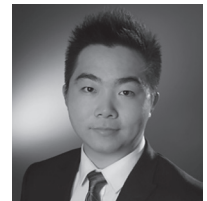
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