

Economic IRR and Its Application

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Abstract

Integrated management of capital, risk and return is essential for the contemporary Enterprise Risk Management (ERM). The relationships between three elements are measured by three metrics: Economic Solvency Ratio (ESR), Return on Equity (ROE) and Return on Risk Capital (RORC). The risk-adjusted return metrics represented by RORC have an important role in decision making because they are inextricably linked to strategic planning and its analysis. RORC is popularly used in practice, but has limitations in that RORC itself gives little information about ESR.

In this paper, we introduce a risk-adjusted return metric called “Economic Internal Rate of Return” (Economic IRR) as a complement to RORC. Economic IRR is a form of internal rate of return that includes initial required capital as part of initial investment. After explaining the development of the models for Economic IRR, we show how we apply them to life insurance and annuity. The derived equations are acceptable not only theoretically but also intuitively. Then we explore the pros and cons of Economic IRR from the perspective of effectiveness of practice. We find that Economic IRR excels in effectiveness and efficiency and is very useful in decision making. After showing an example of practical use in Fukoku Mutual Life, we conclude that Economic IRR, when it is effectively incorporated into the decision making process, will enhance the integrated management of capital, risk and return, and consequently will strengthen the ability of risk-taking.

Keywords

ESR, ROE, RORC, IRR, Economic IRR, Risk premium for required capital, Risk-return efficiency, Partial economic solvency ratio, Risk-release rate, Discrete model, Continuous model, Closed model, Semi closed model, Open model, Stationary model, Approximation for term insurance, Decision making, Pricing strategy, Sales strategy, ALM strategy, Capital strategy, Dividend strategy, Management cycle, Efficient frontier, Optimal portfolio.

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