

Earnings at Risk

What It Measures

Earnings at risk (EAR) measures the quantity by which net income might change in the event of an adverse change in interest rates. It is a risk measurement which is closely linked with value at risk (VAR) calculations. The difference is that while VAR looks at the change in the entire value over the forecast horizon, EAR looks at potential changes in cash flows or earnings.

Why It Is Important

Companies engaged in international business face many risks from changing currency levels to fluctuating interest rates. The challenge for investors and financial professionals is understanding and quantifying how these risks affect the profitability of the business.

Calculating EAR helps you to understand the impact of interest rate changes on your company's financial position, but it can be a challenge to calculate as transaction volumes grow or portfolio complexity increases. For this reason, banks and large corporations will rely on specialist computer applications using the Monte Carlo method to calculate EAR.

How It Works in Practice

There are various models available to calculate EAR, but at heart most will calculate EAR by using a variation of:

Principal amount × Interest × Time period = Interest income and interest expense

However, EAR is not this simple in reality! Most EAR models will allow you to add in numerous factors that affect interest income and expense, such as time periods for various rates received, outstanding balances, or interest rates received and paid.

In addition, the model will simulate various possible interest rate scenarios over a period of several quarters or years, to determine their potential effect on earnings. There might be dozens of projections covering short-term rates, long-term rates, risk spreads, etc, over the specified time period. For each quarter, the model will calculate income and expense based on assumed interest rates, and can be adapted to reflect hypothetical rate changes, illustrating different strategies and customer behaviors.

If most of the likely scenarios do not seriously reduce earnings, then the organization's interest rate exposure is low. If the scenarios result in unacceptable changes, the organization might consider looking at changes to its strategy.

Tricks of the Trade

- Because of the number of variables that can be applied to EAR modeling, no two models will look the same, even if applied to the same organization. It is therefore essential to ask for specific details when analyzing any EAR summary.
- A typical EAR model will show analysis for up to a 300 basis point increase or fall in interest rates. These may be shown as a single rise/fall, or gradual change in rates. The EAR will also show a "confidence interval" showing impact according to, for example, a 90% confidence interval.
- Very few organizations devise EAR models from scratch, but will rely on summary results generated by computer. However, managers may well need to analyze EAR reports generated by specialized modeling tools and applications.

More Info

Book:

- Lam, James. *Enterprise Risk Management: From Incentives to Controls*. Hoboken, NJ: Wiley, 2003.

Websites:

- Approximity.com on EAR: www.approximity.com/risk/Products/cfar.html
- Financial Risk Manager on EAR: www.financial-risk-manager.com/risks/market/relativevar.html

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