VAR

This is a brief example about *VAR* (value at risk). If you would like to explore the topics around VAR, please visit the website Market Risk Analysis, and please download the document Value At Risk (VAR) Models - MIT OpenCourseWare.

Workshop goal

The aim of this study group is to show you some tricks in *R* useful for the calculation of the VAR of a simple portfolio.

What will you learn?

We will shortly discuss the definition of VAR, and we will consider the *ETL* (expected tail loss). Afterwards, we are going to focus on the computation of these market risk metrics.

One essential thing worth mentioning, we will use extracts from the book MARKET RISK ANALYSIS, VOLUME IV, VALUE AT RISK MODELS through all this short presentation.

Market Risk Metrics

A market risk metric is a measure of the uncertainty in the future value of a portfolio, i.e. a measure of uncertainty in the portfolio's return or profit and loss (P&L). Its fundamental purpose is to summarize the potential for deviations from a target or expected value. To determine the dispersion of a portfolio's return or P&L we need to know about the potential for individual asset prices to vary and about the dependency between movements of different asset prices.

VAR

The attractive features of VaR as a risk metric are as follows:

- It corresponds to an amount that could be lost with some chosen probability. It measures the risk of the risk factors as well as the risk factor sensitivities.
- It can be compared across different markets and different exposures. It is a universal metric that applies to all activities and to all types of risk.
- It can be measured at any level, from an individual trade or portfolio, up to a single enterprise-wide VaR measure covering all the risks in the firm as a whole.
- When aggregated (to find the total VaR of larger and larger portfolios) or disaggregated (to isolate component risks corresponding to different types of risk factor) it takes account of dependencies between the constituent assets or portfolios.

ETL

- The conditional VaR risk metric or expected tail loss. This is the average of the losses that exceed the VaR. Whilst VaR represents the loss that we are fairly confident will not be exceeded, ETL tells us how much we would expect to lose given that the VaR has been exceeded.

Thanks a lot!

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