

MT-255 Introduction to Mathematical Finance

Measuring risk and return: calculating return, calculating the arithmetic mean across different presentation of data, the geometric mean and its application to time series data calculating risk, the standard deviation and variance, dispersion measures for sample data, discounted cash flow (DCF): the concept of the time value of money, the mathematical relationships of real rates, nominal rates and inflation, deriving present values and terminal values, discount factors, discount factors for single cash flows, annuity discount factors for multiple cash flows, perpetuity discount factors for infinite cash flow series, application of DCF technique: net present value (NPV), deriving the NPV to make investment decisions, calculation of the NPV manually and using financial calculators, cash flow identification for project appraisal introduction to dividend valuation model (DVM), using the DVM to value bonds and shares dealing with non-annual cash flows, dealing with changing discount rates, the internal rate of return (IRR), introduction to the IRR, calculating the IRR using financial calculators, problems of the IRR.

Recommended Books

1. "An Elementary Introduction to Mathematical Finance", Sheldon M. Ross, Cambridge University Press, 3rd Edition, 2011
2. "Introduction to Mathematical Finance: Discrete Time Models", Stanley Pliska, Blackwell 1997.