

Financial

Understanding Volatility

Course Outline

FORT GREY CONSULTING

Tutor: Dr Quintin Rayer

	Jul 30		Jul 27		Week ago	Yield	P/E
	Yield	P/E	Yield	P/E			
Argentina	7.2	6.9	7.1	6.9	7.0	7.0	
Australia	4.8	13.6	4.8	13.5	4.9	13.5	
Austria	2.0	11.3	2.2	17.5	3.1	19.4	

MARKETS

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Understanding Volatility

Overview

Volatility is one of the most widely-used risk measures in finance. However it is not without weaknesses if its limitations and assumptions in how it is used are not fully appreciated.

This course focuses on volatility, from its selection as a risk measure, its flaws, relationship to probabilities, to many of the ways it is used in financial applications. These include scaling with time, combining volatilities for multi-asset portfolios, exploring how it may evolve with time, estimating future volatility, and implied volatility.

Examples are provided throughout to help practitioners appreciate key concepts.

The estimated time required to complete this course is 6-9 hours.

Target Audience

- Professionals in the financial services sector who wish to improve, or refresh, their knowledge of risk measurement methods for portfolios or funds. This includes staff new to risk functions who wish to gain an overview of the various quantitative methods used to analyse portfolio risk.
- Although risk measurement has the potential to be a mathematically-intensive topic, this course keeps mathematics to an intermediate level so that only an appreciation of mathematical summation and matrices is required. This supports those financial professionals without a quantitative background, but who require a strong appreciation of the core concepts.

Understanding Volatility

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1. Introduction

What is risk? – Dispersion – why volatility?

2. Volatility

Volatility and what it looks like – criticisms – population & sample.

3. The Normal Distribution

SD and Normal Distribution – why it matters – *animation* illustrating the Quincunx - probabilities of extreme events.

4. Scaling Volatility with Time

How to scale volatility – one dimensional random walk including illustration with an *animation* – building intuition.

5. Correlation

What correlation looks like – risk & return – combining volatilities with two or more assets.

6. Time-Evolution of Volatility

Volatility clustering – estimating volatility – pros & cons of estimation approaches.

7. Estimating Volatility

Exponentially weighted moving average, ARCH and GARCH – selecting a GARCH model.

8. Implied Volatility

Black-Scholes – calculating implied volatility – volatility smile – implied distribution.

9. Summary

Overview – contact details.

Tutor



Dr Quintin Rayer

BSc, ARCS, DPhil, CPhys, Chartered FCISI, Chartered Wealth Manager, SIPC

Consultant

- Dr Quintin Rayer is a Chartered Fellow of the Chartered Institute for Securities and Investments, a Chartered Wealth Manager, holds a Physics degree from Imperial College London and a Physics doctorate from Oxford University.
- Quintin has applied knowledge from nuclear and aerospace engineering to areas in finance, working for actuarial and investment consultancy firms as well as a multi-national European bank for nearly ten years.
- Projects have included substantial and innovative development of quantitative fund selection and analysis techniques, risk monitoring and portfolio optimisation, including in-house training for analysts and relationship managers.
- Quintin has completed the Sustainable Investment Professional Certification (SIPC) with the John Molson Business School, becoming this programme's first graduate in the Channel Islands and the second in the UK.

Understanding Volatility

Course Benefits

- Improved understanding of how volatility is used in a wide range of financial applications.
- Appreciations of the limitations of volatility as a risk measure.
- How volatility scales with time.
- Calculation of volatilities for multi-asset portfolios.
- Appreciation of the time-dependent nature of volatility.
- Examples throughout to aid understanding.
- Course completion certificate as evidence for meeting Continuing Professional Development (CPD) requirements.

Course Content Includes

- Slides to work through at your own pace.
- Video: narrated slides with explanations of the material covered.
- Video animations to illustrate key concepts.
- Video: television presenter style.
- Worked examples.
- Test questions to check understanding.
- Course certificate that can be downloaded as proof of completion.