

# FORECASTING FINANCIAL MARKETS

Quantitative Finance  
Programs

## COURSE SUMMARY:

|                                |       |
|--------------------------------|-------|
| <i>Time Series Analysis</i>    | Day 1 |
| <i>VAR &amp; Cointegration</i> | Day 2 |
| <i>GARCH Models</i>            | Day 2 |
| <i>Model Testing</i>           | Day 2 |
| <i>Non-linear Models</i>       | Day 3 |
| <i>Chaos Theory</i>            | Day 3 |
| <i>Neural Networks</i>         | Day 3 |

## Course Dates

Dec 1, 2, 3, 2004

New York

One day programs also available

### Who Should Attend

- ✓ Quantitative Analysts
- ✓ Economists
- ✓ Portfolio Managers
- ✓ Investment Strategists
- ✓ Risk Analysts

### Course Leader:



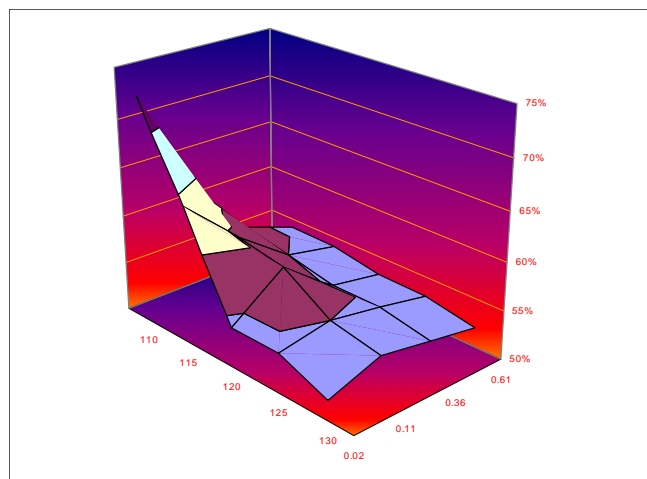
Jonathan Kinlay  
Hedge Fund Manager  
The Proteom Fund  
Adjunct Professor of  
Finance

A 3 DAY COURSE PROVIDING A COMPREHENSIVE AND PRACTICAL REVIEW OF FORECASTING TECHNIQUES AND THEIR APPLICATIONS IN FINANCIAL MARKETS.

### About This Course

Forecasting Financial Markets provides a **comprehensive review** of forecasting techniques and their applications in financial markets. It will provide traders and analysts with the necessary theoretical framework and conceptual toolkit to tackle important forecasting applications in currency, equity, interest rate and derivative markets using state of the art research methodology.

The course addresses both the practical as well as theoretical aspects, and considerable emphasis is placed on **how appropriate forecasting models should be developed and implemented**



Volatility surface modelling

**oped and implemented** in practice, using a variety of computer software tools and financial market data-sets.

Case studies are designed using actual market data to ensure that

delegates leave the course with a clear understanding of how the concepts should be applied to create forecasting models that will function effectively in a live trading environment.

## WHAT YOU WILL LEARN FROM THIS COURSE

This comprehensive course will enable you to:

- ◆ Understand the structure of financial markets and how they process news
- ◆ Model the behaviour of financial market stochastic processes
- ◆ Master the latest forecasting techniques and their applications in financial market modelling
- ◆ Develop profitable quantitative investment strategies
- ◆ Apply appropriate diagnostic & testing criteria to evaluate forecasting & trading performance

### Previous Delegates

- ◆ Salomon Brothers
- ◆ Chase/ JP Morgan
- ◆ Bankers Trust
- ◆ Credit Suisse
- ◆ Merrill Lynch
- ◆ Deutsche Bank
- ◆ ABN-AMRO
- ◆ NatWest Markets

### What delegates say about our courses

“Best course I have taken in the last two years.”

"The content of the class is extremely valuable. Presentation is outstanding. The organization of this session is excellent."

"A wealth of material is presented and the media used to deliver it is effective, affording the participant with valuable hands-on experience with spreadsheet and other software."

“Practicality & theory made fun, together with interesting tools and exercises makes this class excellent!”

“Excellent fusion of theory and practical example”.

“Helped to understand how the theory of finance is really used by traders/analysts.”

“Lecturers clearly demonstrated their mastery of subject matter.”

## DAY 1– TIME SERIES ANALYSIS

### Morning

#### Overview

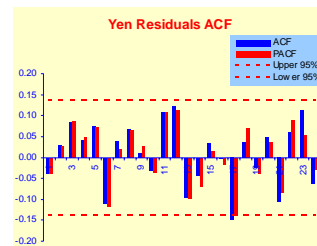
- Characteristics of financial markets
- Market efficiency
- Random walks
- White noise
- Strict white noise
- Forecasting models
- Diagnostic & specification testing

#### Time Series Analysis I

- Moving averages

- Single & adaptive exponential smoothing
- Holt-Winter seasonal decomposition
- Measuring forecast accuracy
- Univariate time series analysis
- Differencing & other stationarity techniques
- Auto-regressive moving average models
- Autocorrelation and

- partial autocorrelation
- Box-Jenkins methodology



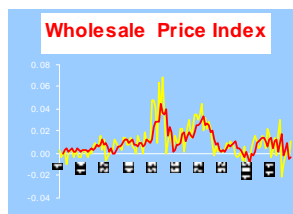
Model estimation & diagnostic testing

### Afternoon

#### Time Series Analysis II

- Anderson, Bartlett & Quenouille test
- Durbin-Watson
- Box-Pierce test
- Ljung-Box test
- Akaike information criterion
- Bayes information criterion
- Forecast function
- Confidence intervals

- ARIMA seasonal models
- Modeling random walks
- Testing for random walks



Modelling WPI

- Unit root tests
- Dickey-Fuller methodology
- Tests for multiple roots
- Phillips-Peron test
- Problems in testing for unit roots
- Unit roots in financial markets
- Purchasing power parity

## LABS & MODELLING EXERCISES

### Univariate Forecasting

Delegates apply univariate modeling techniques and test the accuracy of their model forecasts using standard test procedures.

### Box-Jenkins Analysis

Delegates apply Box-Jenkins methodology to identify, estimate and diagnose a univariate time series

### Forecasting Equity Index Returns

Delegates construct a multiple regression model to forecast excess returns on the S&P500 index.

### Modelling the Wholesale Prices Index

Delegates apply the Box-Jenkins methodology to model the wholesale WPI.

### Testing Purchasing Power Parity in the FX Markets

Delegates apply the Dickey-Fuller procedure to test the validity of the purchasing power parity theory.

# DAY 2—VAR & ARCH MODELS

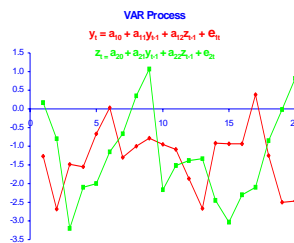
## Morning

### Model Testing

- Statistical tests
- Profitability tests
- Equity curve measures
- Performance measurement vs return measurement
- Portfolio performance measures
- Which tests to use and when

### VAR, Cointegration & Error Correction Models

- Vector Autoregression
- VAR Stationarity
- VAR Identification
- Cholesky decomposition
- Impulse-response functions
- Granger causality
- Tests of causality in financial markets
- Cointegration
- Tests for Cointegration
- Applications in financial markets
- Error Correction models
- Linkage between VAR, CI and EC models



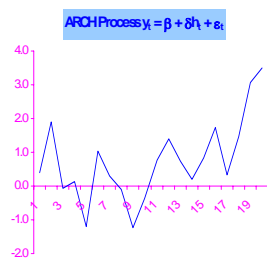
VAR Modelling

## Afternoon

### GARCH Models

- Conditional and unconditional forecasting
- ARCH model structures
- Properties of ARCH
- Examples of ARCH processes
- GARCH models
- Modeling shocks
- Persistency
- GARCH models in financial markets

- Integrated ARCH
- Estimating & testing
- ANOVA
- Lagrange multiplier test
- Likelihood estimation
- Regression & GARCH-M
- Exponential GARCH
- Non-normal error models
- Likelihood function with t-distributed errors
- Stochastic volatility models



GARCH-M Process

## Course Leader:



**Jonathan Kinlay**  
Hedge Fund Manager  
The Proteom Fund  
Adjunct Professor of Finance

**“ The knowledge and experience of the instructor was tremendous. I have worked at top Wall Street firms for ten years and judge him to be at the upper ranks of those I have come into contact with.”**

## Course leader

Jonathan Kinlay is the founder and CEO of the investment research and consulting firm Investment Analytics and of the Proteom hedge fund. Mr Kinlay has advised multinational corporations and financial institutions in Europe, North America and Africa over a period of 16 years in the areas of financial engineering, quantitative analysis and risk management, initially with NatWest Bank and subsequently Chase Manhattan Bank. He subsequently worked as head of quantitative analysis and proprietary trading in a European hedge fund, trading US and European fixed income and OTC & exchange traded derivatives in fixed income, foreign exchange, stocks and commodities.

Mr Kinlay has taught advanced courses in trading and financial engineering as an Adjunct Professor of Finance at leading US and European Universities, including the Universities of Cambridge, Oxford and Reading and at Carnegie Mellon University in New York.

## LABS & MODELLING EXERCISES

### Cointegration Analysis of the Term Structure

Delegates apply cointegration theory to test the expectations theory of interest rates. Specifically, we wish to examine whether differences between spot and forward rates form a stationary or non-stationary process.

### Estimating an ARCH Model for \$/£ Exchange Rate

Delegates construct an ARCH model for the US\$/£ Sterling exchange rate, which is



ARCH Model for Cable

capable of modeling non-linear effects, and conducting a battery of statistical tests of model fitness.

## DAY 3—NON-LINEAR TECHNIQUES

### About Our Courses

Our training courses are thoroughly researched and structured to provide intense, practical training directly applicable to your organization.

Our instructors combine academic excellence and teaching experience at top Ivy-league schools with practical experience in trading, investing and quantitative analysis at leading financial institutions.

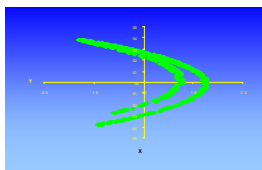
All of our courses make extensive use of analytics software, modelling exercises and case studies using real market data, to ensure that delegates consolidate their understanding of theoretical concepts and learn how to apply them in practice.

Benefits include:

- ◆ Strictly limited numbers
- ◆ Pre-course questionnaire
- ◆ Tailored program to address individual needs
- ◆ Practical workshops and modelling exercises
- ◆ Extensive use of analytics software tools
- ◆ Comprehensive course documentation

### Morning Non-Linear Dynamical & Chaotic Systems

- Rescaled range analysis
- Hurst exponent
- The V-statistic
- Long memory in the DJIA



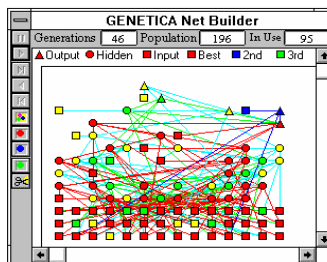
The Henon Attractor

- R/S analysis of stocks, bonds & currencies
- R/S analysis of economic time series
- Pareto-Levy distributions
- ARFIMA models
- Fractional differencing
- Chaotic systems
- Phase space
- The Logistic function
- The Henon attractor
- Embedding dimension
- Wolf's relationship
- Phase space modeling
- Correlation dimension
- Grassberger & Procaccia correlation integral
- Correlation dimension of capital markets
- Brock-Dechert & Scheinkman test
- Lyapunov exponents
- Estimating Lyapunov exponents
- Lyapunov spectra of capital markets

### Afternoon Neural Networks

- Applications of neural networks in finance
- Network architecture
- Design considerations
- Convergence, generalization & stability
- Dynamic topology
- Activation & cost functions
- Momentum parameters
- Learning rates
- Network optimization

- Genetic algorithms
- Combining GA's & NN's
- Trading performance



Network construction using genetic algorithms

### Recent Advances

- Empirical test of Box-Jenkins methodology
- Forecastability of high frequency FX rates
- Bi-linear models
- Granger causality
- Volatility forecasting
- Asymmetric GARCH
- Chaos & fixed income markets
- Neural network trading systems

## LABS & MODELLING EXERCISES

### Rescaled Range Analysis of the S&P500 Index

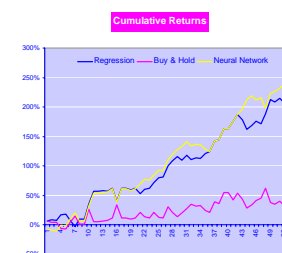
Delegates apply R/S analysis to evaluate long memory processes and a-periodic cycles in the S&P500 Index.

Delegates apply the Grassberger & Procaccia method to estimate the fractal dimension of the S&P500 Index.

### Modelling IBEX Index options using Neural Networks

Delegates use a combination of neural networks and genetic algorithms to create a fore-

casting model for IBEX Index options.



Forecast excess returns over Buy & Hold

### Estimating the Correlation Dimension of the S&P500 Index

# BOOKING FORM & CONTRACT

Please complete this form and fax back to:

**Fax #: 1-(212) 208 2492**

|  |         |           |
|--|---------|-----------|
| Sign up for:   | Date    | Fees      |
| <input type="checkbox"/> Forecasting Financial Markets       | Dec 1-3 | \$4,250 * |
| <input type="checkbox"/> One day of program (indicate which) | 1 2 3   | \$1,500*  |
|  | Total   | _____     |



BOOK 3 PLACES AND 4<sup>TH</sup> DELEGATE IS FREE!

Name \_\_\_\_\_

Position \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

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Phone \_\_\_\_\_

Email \_\_\_\_\_

Cardholder Name \_\_\_\_\_

Billing Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Postcode \_\_\_\_\_

Phone \_\_\_\_\_ Email: \_\_\_\_\_

Credit Card # \_\_\_\_\_ Exp. date \_\_\_\_\_

Signature \_\_\_\_\_ Date: \_\_\_\_\_

**Payment**

- Visa
- MasterCard
- American Express

## UPCOMING COURSES

Please send me details of the following courses

- Advanced Quantitative Methods in Finance
- Bond Trading
- Credit Risk & Credit Derivatives
- Derivative Strategies
- Risk Management
- Structured Products
- Swaps & Interest Rate Derivatives
- Yield Curve & Interest Rate Modelling

## TERMS & CONDITIONS

**Cancellation**

By completing this registration form the signatory hereby agrees that Investment Analytics will not be able to mitigate its losses for any less than 50% of the total contract value. Cancellations must be received by email or fax three weeks before the conference date. Delegate substitutions are welcome at any time. Thereafter the full conference fee is payable. If for any reason Investment Analytics decides to amend this program, we are not responsible for any

airfare, hotel charges or other expenses or costs incurred by the registrants. In the event that Investment Analytics cancels the event, Investment Analytics reserves the right to transfer this booking to another conference to be held in the following twelve months or to provide a credit for an equivalent amount to another conference.

**Indemnity:** The client hereby indemnifies and holds Investment Analytics harmless from and against all costs charges and expenses, including legal fees, which are incurred by

the client. The construction validity and performance of this agreement shall be governed in all respects by the laws of the Bahamas, the exclusive jurisdiction of whose courts the Parties hereby agree to submit.



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Investment Analytics provides independent research focusing on applications of sophisticated mathematical and financial modeling techniques to problems of strategy development and repair, performance analysis and risk management for clients in the investment management industry in Europe and North America.

Our methodology represents a radical departure from traditional methods of research and is based instead on advanced techniques of quantitative finance that have proved highly successful in tackling complex problems in financial engineering and investment analysis. Investment Analytics has applied these powerful and robust techniques to the field of equity analysis, to bring fresh insights and a whole new approach to investment research

