# ΒΙΟΓΡΑΦΙΚΟ ΣΗΜΕΙΩΜΑ

## Απόστολος Ν. ΡΕΦΕΝΕΣ

### ΠΡΟΣΩΠΙΚΑ ΣΤΟΙΧΕΙΑ

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| ΟΝΟΜΑ | Απόστολος Νικολάου Ρεφενές |
| ΤΗΛΕΦΩΝΟ | (++30 210) 82 03 670 |
| ΗΜΕΡ. ΓΕΝ. | 13 Δεκεμβρίου 1958 |

### ΠΑΡΟΥΣΑ ΘΕΣΗ

Καθηγητής, Οκονομικό Πανεπιστήμιο Αθηνών

### ΣΠΟΥΔΕΣ

PhD in Computer Science, University of Reading, (1987).
BSc (Hons) in Mathematics and Computing, University of North London, (1984).

### ΑΚΑΔΗΜΑΙΚΗ ΠΕΙΡΑ

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| | **RESEARCH** |
| (1995 - 2000) | Associate Professor in Decision Science, London Business School |
| (1996 - 2000) | Director, Computational Finance Programme, London Business School |
| (1994 - 1996) | Director, NeuroForecasting Club, London Business School |
| (1989 - 1993) | Senior Research Fellow, University College London |
| (1987 - 1989) | Research Associate, University College London |
| (1994 - 1996) | Visiting Professor, University of Athens |
| (1994 - 1995) | Visiting Senior Research Fellow, London Business School |
| (1990 - 1992) | Visiting Science Advisor, Department of Trade & Industry |
| | **ADMINISTRATIVE** |
| (2003 - 2005) | Chair, Student Club, AUEB |
| (2001 - 2003) | Deputy Chair, Departmet of Management Science, AUEB |
| (1990 - 1991) | Chair, CEC Advanced Informatics in Medicine Working Group |
| (1990 - 1991) | Chair, DTI Mission to Assess Japanese FGCS Programme |
| (1989 - 1990) | Member, ESPRIT experts group for the Parallel Computing Action |

### ΕΠΑΓΓΕΛΜΑΤΙΚΗ ΠΕΙΡΑ

| | |
|---|---|
| (2004 -2005) | Chief Executive, OPAP International Ltd. |
| (2005 - ) | Μέλος, Επιτροπή Ανταγωνισμού |
| (2004 - 2004) | Board Member, OPAP S.A., Non-Executive Director, |
| (1994 - 2000) | Panel Member, UK Cabinet Office, OST; Financial Services ForeSight |
| (1993 - 1999) | Chairman, Hughes Financial Analtytics Ltd |

### EDITORIAL

| | |
|---|---|
| Assoc. Editor | Intelligent Systems in Accounting & Finance, Wileys, (1998 - ) |
| Assoc. Editor | Int. Journal of Computational Intelligence & Organisations, IJCIO (1995-) |

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| Guest Editor | Journal of Forecasting, Special Issue, co-edited H.White, Vol. 17(1998) |
| Editorial Board | Neural Computing & Applications Journal, Springer Verlag, (1991 - ) |
| Editor | Neural Networks in the Capital Markets, Wiley & Sons, Book (1995) |
| Editor | Proc. First Int. Wrksp. "Neural Networks in the Capital Markets", (1993) |
| Series Editor | Computational Finance, Kluwer Academic, Book Series (1998 -) |
| Co-editor | Decision Technologies for Financial Engineering, WSP, Book (1997) |
| Co-editor | Neural Networks in Financial Markets, Proc. NnCM96 WSP, Book (1996) |
| Co-editor | Decision Technologies in Computational Finance, Kluwer, Academic Proc. Computational Finance 1997, Book (1998). |

**ΟΡΓΑΝΩΣΗ ΣΥΝΕΔΡΙΩΝ**

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|---|---|
| General Chair | COMPUTATIONAL FINANCE 2000, London (May 2000). |
| General Chair | COMPUTATIONAL FINANCE 1997, London (October 1997). |
| General Chair | 3rd International Conference on "Neural Networks in the Capital Markets", NnCM, London (Oct. 1995). |
| General Chair | International Workshop on "Neural Networks in the Capital Markets" London Nov. 18-19 (1993). |
| International Chair | Joint IEEE/IAFE Int. Conf. on "Computational Intelligence in Financial Engineering", New York, Spring 1995. |
| Session Chair | "Dynamical Systems in Financial Engineering", WCNN (1995):- World Congress on Neural Networks Washington DC (1995). |
| Session Chair | Sixth European Congress on Intelligent Techniques & Soft Computing, Non-Parametric Methods in Financial Econometrics, Aachen, Sept. 98. |
| Programme Committee | Computational Finance 1998, New York, NYU, Stern (1994 - ) |
| Programme Committee | International ICSC Symposium on Soft Computing in the Financial Markets), June 1999, Rochester, NY, USA, (1999). |
| Programme Committee | Engineering Applications of Neural Networks (EANN'99), 13-15 September 1999, Warsaw, Poland. |
| Programme Committee | World Congress on Neural Networks, WCNN (1995 -) |
| Programme Committee | International Conference on Artificial Neural Networks, ICANN (1995-) |
| Programme Committee | International Conference on Neural Information Processing Systems, ICONIPS (1995 -) |
| Programme Committee | IEE International Conference on ANNS, IEE (1992 - 1996) |

**INVITED/PLENARY TALKS -** Conferences (1993 - )

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| Keynote address | ICANN' 93, International Conference on Neural Networks, "Neural Networks in the Capital Markets", Amsterdam, (Sept. 1993). |
| Keynote address | NIPS' 93, "Non-linear methods in Financial Engineering", Denver, Colorado, (Dec. 1993). |
| Keynote address | IEEE, Int. Conf. Computational Intelligence, Perth, Australia (Nov. 95) |
| Invited Speaker | IIR Quantitative Portfolio Investment Techniques, London, (Oct. 1999). |
| Invited speaker | EQMC, Non-parametric Methods in Quantitative Marketing, Madrid, (July 1998). |
| Invited speaker | NnCM 96, (Neural Networks in the Capital Markets). Pasadena, CA, (Nov. 1996). |
| Invited speaker | ICONIPS96, (Int. Conf. on Neural Information Processing). Hong-Kong, (Sept. 1996). |
| Invited speaker | CIFEr'95 (Computational Intelligence in Financial Engineering). The first joint IEEE/IAFE int. conference on the topic. NY, NY, (April 1995). |
| Invited speaker | RISK, Risk Conference on Model Risk, "Evaluating and Managing Model Risk in the Non linear Context", NY, NY (Oct. 1995). |
| Invited speaker | WCNN'94, World Congress on Neural Networks, "Neural Networks in Investment Management", San Diego June 1994. |

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| Invited speaker | IBC, Fifth Annual Forum, Advanced Technologies for Trading & Asset Management, "Nonlinear Data Analysis and Forecasting in Investment Management:, New York July 20, 21 (1994). |
| Invited speaker | IBC, 5th Annual Symp., Intelligent Systems in Business & Finance, "Neural Networks in Financial Engineering", London Feb. (1994). |
| Invited speaker | IIR' 93, Institute for International Research, conference on "Software tools fur portfoliomanagement und trading", Frankfurt, (April. 1993). |
| Invited speaker | IIR' 93, Institute for International Research, conference on "Modernes Portfolio Management", Frankfurt, (Sept. 1993). |
| Invited discussant | Economic Notes (Risks Involving Derivatives), Sienna, (Dec. 1996). |

Προσκεκλημένος ομιλητής σε πολλά άλλα συνέδρια και workshops στη Βρεττανία και άλλες χώρες μεταξύ των οποίων Global Derivatives 95 (Paris), RISK (NY), BNCNN-95 (Curitiba, Brasil), NIPT-91 (Tokyo), IWIC (USSR), BCS, International Neural Networks Society, NCAF, IBC, Cambridge University "Advances in Options Research", κλπ).

## ΔΡΑΣΤΗΡΙΟΤΗΤΑ ΚΡΙΤΗ (REFEREEING ACTIVITIES)

- UK Research Councils ESRC/EPSRC
- Commission of the European Communities ESPRIT
- Hong Kong University Grants Committee
- Cyprus University Grants Committee

- IEEE Trans. on Neural Networks
- IEEE Trans. on Knowledge and Data Engineering
- Neural Networks
- Neural Computation
- Neural Computing and Applications
- Neurocomputing
- Neural Information Processing Systems
- Pattern Analysis and Applications
- Computational Statistics & Data Analysis
- Management Science
- International Journal of Forecasting
- European Journal of Operational Research
- Computers and Operations Research
- Journal of Business Finance and Accounting
- Journal of Defence Economics
- Journal of Mathematics Applied to Business and Industry

## RECENT MEDIA

Επίκαιρες πτυχές του έργου του έχουν απασχολήσει τον περιοδικό επιστημονικό τύπο όπως

- Scientific American
- The New Scientist
- Nature
- Risk
- IEEE spectrum
- Canadian Business Magazine
- Journal of Global Investment
- Managed Derivatives
- The Financial Times
- The Independent
- The Guardian
- The Daily Telegraph
- Machine Intelligence News
- Expert System Applications and others.
- Listed in who-is-who in the World

**ΣΥΜΒΟΥΛΕΥΤΙΚΕΣ ΥΠΗΡΕΣΙΕΣ (CONSULTING)**

- CITIBANK
- Morgan Stanley
- Barclays BZW
- Credit Lyonaisse
- Societe Generale
- Dresdner Bank
- Deutsche Morgan Grenfell
- Reuters Plc
- County NatWest Investment Management
- Smith New Court
- Golden Cross
- Bradford & Bigley Building Soc.
- Abbey National
- Barclays UKBS
- ECONOSTAT
- Shell
- IBM
- UK Department of Trade & Industry
- EU ESPRIT advisory board

**ΔΙΔΑΚΤΙΚΗ ΠΕΙΡΑ**

<u>Executive Courses</u>

- Mastering Advanced Quantitative Methods, Athens University of Economics and Business
- Financial Engineering and Risk Management, GC, Brazil
- Pricing Options, Futures and other Derivative Securities with Nonparametric Methods, Golden Cross
- Factor Models for Tactical Asset Allocation, Citibank, Singapore
- Advanced Quantitative Investment Methods, Forum, Frankfurt.
- Advanced Forecasting Methods for Financial Engineering, London Business School
- Neural Networks in Financial Economics, Int. Center for Monetary & Banking Studies, Geneva
- Tactical Asset Allocation, International Faculty of Finance, London

<u>Graduate Courses</u>

- Financial Mathematics (Stochastic Processes, stochastic flows and differential equations)
- Financial Econometrics (Time Series, ARCH/GARCH, State-Space Models, Neural Networks)
- Stochastic Optimisation and Genetic Algorithms
- Computational Finance (Numerical methods, Re-sampling, Monte-Carlo, Bootstrap Statistics)
- Uncertainty Analysis and Hypothesis Testing

<u>Undergraduate Courses</u>

- Foundations of Investment Management, HK
- International Investment Decisions in Emerging Markets, Singapore
- Systems Analysis, UCL
- Networks and Architectures, UCL
- Neural Networks, UCL

## ΕΠΙΒΛΕΨΗ ΔΙΔΑΚΤΟΡΙΚΩΝ ΔΙΑΤΡΙΒΩΝ

- **Skitzi V.,** “Dynamic Correlation Models”, Athens University of Economics & Business, PhD, (2004).
- **Towers N**. “Evolutionary Methods for Decision and Risk Analysis in Active Investment management”, London Business School, PhD (2000).
- **Bolland P.,** “Robust Neural Estimation and Diagnostics”, PhD, London Business School, (June 1998).
- **Bentz Y.,** “Identifying and Modelling Conditional Factor Sensitivities: Applications in Equity Investment”, PhD, London Business School, (Nov. 1999).
- **Burgess A. N.,** A Computational Intelligence Methodology for forecasting noisy, non-stationary time-series, London Business School, PhD, (Nov. 1999).
- **Holt W.,** “Statistical Diagnostics and Test Procedures for Neural Models”, London Business School, PhD (Feb. 1999).
- **Pandelidaki S.,** “Neural and Econometric Models for Sales Forecasting”, London Business School, PhD (Nov. 1998).
- **Zapranis A.,** “A Methodology for Neural Model Identification, Variable Selection, and Adequacy Testing”, PhD, London Business School, (June 1997).
- **Azema-Barac M.,** “Parallel Neural Network Architectures”, PhD University College London, (1994).
- **Balou A.,** “A Basic Object Oriented Platform for the execution of high-level OO languages”, PhD University College London, (1995).
- **Oliveira C.,** “A Distributed Object-Oriented Machine for Parallel Processing”, PhD University College London (1994).

## ΕΡΕΥΝΗΤΙΚΗ ΔΡΑΣΤΗΡΙΟΤΗΤΑ

Η ερευνητική δραστηριότητα του Α. Ρεφενέ αποτελείται από τρεις θεματικές ενότητες. Αρχίζει το 1984 με θέματα Τεχνολογίας Υπολογιστών και εξελίσσεται σταδιακά σε θέματα Τεχνολογίας των Αποφάσεων και την εφαρμογή της Διοικητικής Επιστήμης στον τομέα της Χρηματοοικονομικής. Η πρώτη θεματική ενότητα (την περίοδο 1987-1990) ξεκινά με τη Διδακτορική Διατριβή του και εστιάζει σε θέματα πληροφορικής και πιο συγκεκριμένα σε αρχιτεκτονικές υπολογιστών για Συστήματα Υποστήριξης Αποφάσεων (Decision Support Systems), όπως Knowledge based systems, Neural Networks, Object Oriented Environments. Η δεύτερη θεματική ενότητα (την περίοδο 1989-1992) εστιάζει σε Συστήματα Υποστήριξης Αποφάσεων και εφαρμογές σε τομείς όπως image understanding, voice recognition, medical diagnosis και database marketing. Η τρίτη θεματική ενότητα εστιάζει στην ανάπτυξη και εφαρμογή αυτών των συστημάτων και γενικότερα της Διοικητικής Επιστήμης στον τομέα της Χρηματοοικονομικής.

Η τρέχουσα ερευνητική δραστηριότητα στο Decision Technology Centre, London Business School αφορά θέματα μεθοδολογίας και εφαρμογής. Στο επίπεδο της μεθοδολογίας η έρευνα εστιάζει στην ανάπτυξη μη-γραμμικών μεθόδων για ανάλυση δεδομένων, προβλεψιμότητα και πρόβλεψη. Τα κύρια ερευνητικά θέματα καλύπτουν τα εξής:

- **Nonparametric models & machine learning**: εκτίμηση μη-παραμετρικών υποδειγμάτων και αλγόριθμοι εκμάθησης βασιζόμενοι στη μεθοδολογία των νευρωνικών δικτύων.
- **Model selection / specification**: μεθοδολογίες ταυτοποίησης νευρωνικών υποδειγμάτων και διάγνωση-ανάλυση υπολειμμάτων και οικονομετρικοί έλεγχοι για την πιστοποίηση πληρότητας μη-

γραμμικών υποδειγμάτων [identification procedures for mispecified neural network models; and diagnostics/residual analysis for non-linear model mis-specification).

- **Hypothesis testing & confidence intervals**: ανάπτυξη θεωρητικών και εμπειρικών κατανομών για τον οικονομετρικό έλεγχο υποθέσεων και διαστημάτων εμπιστοσύνης για νευρωνικά υποδείγματα. (development of distribution theory for hypothesis testing and confidence intervals on parameter/variable significance estimation).

- **Robust model estimation**: διαδικασίες και αλγόριθμοι εκτίμησης και διάγνωσης - outlier- and leverage-resistent estimation procedures for neural models and diagnostics for outlier/leverage identification in the context of nonlinear models.

- **Parameter sensitivity & prediction uncertainty**: ευαισθησία μη-γραμμικών υποδειγμάτων και αξιοπιστία προβλέψεων - model sensitivity to sampling variance and parameter perturbations. Bounds for prediction uncertainty.

- **Nonlinear cointegration**: ανάπτυξη και ταυτοποίηση υποδειγμάτων μη-γραμμικής συνολοκλήρωσης - development and identification of nonlinear models with error correcting terms on cross-sectional as well as time series data.

- **Generalised Nonlinear Least Squares Models:** ανάπτυξη και εφαρμογή ειδικών μεθόδων GLS για μη γραμμικά υποδείγματα - development and application of GLS methods for nonlinear models to deal with problems of stationarity, level changes, etc.

Την τελευταία πενταετία ο Ρεφενές είναι αποδέκτης χρηματοτοδότησης για βασική έρευνα από δημόσιους και ιδιωτικούς οργανισμούς της τάξεως των $10 εκ για την μελέτη και εφαρμογή της παραπάνω μεθοδολογίας αλλά και ευρύτερα της Διοικητικής Επιστήμης σε θέματα Χρηματοοικονομικής, όπως:

- **Factor Models for Tactical Asset Allocation:** τα υποδείγματα αυτά (Factor models) έχουν ευρεία χρήση στην στατική διαχείριση χαρτοφυλακίων. Το παρόν project επεκτείνει την χρήση των υποδειγμάτων στο χώρο της τακτικής διαχείρισης χαρτοφυλακίων (tactical asset allocation) όπου η διαφορά αποδόσεων μεταξύ ομόλογων, μετοχών και ρευστών μπορεί να εξηγηθεί μέσω των μεταβολών διαφόρων μακροοικονομικών μεγεθών. Η προσέγγιση διευρύνει την υπόθεση γραμμικότητας στην εξάρτηση και χρησιμοποιεί νευρωνικά υποδείγματα αντί γραμμικής παλινδρόμησης για να εξετάσει την εξάρτηση των σχετικών αποδόσεων (equity premium) από μεταβολές σε 17 μακροοικονομικούς παράγοντες. **With:** Postel (Hermes) Investment Management.

- **Arbitrage Models for Tactical Asset Allocation:** τα υποδείγματα αυτά (Statistical arbitrage models) αρχίζουν να αποκτούν ευρεία χρήση στην τακτική διαχείριση χαρτοφυλακίων σαν εναλλακτική προσέγγιση των factor models. Το παρόν project επεκτείνει την χρήση τους επιχειρώντας να αξιοποιήσει προσωρινές ανωμαλίες στις τιμές των ομολόγων και μετοχών. **With:** Societe Generale.

- **Factor Models for Equity Investment**: στη γραμμική τους μορφή, τα υποδείγματα αυτά (Factor models) έχουν ευρεία χρήση στην διαχείριση μετοχικών χαρτοφυλακίων. Το παρόν project διευρύνει την υπόθεση γραμμικότητας στην εξάρτηση. Χρησιμοποιούνται υποδείγματα νευρωνικών δικτύων για να μοντελοποιήσουν τη σχέση μεταξύ μετοχικών αποδόσεων και μακροοικονομικών μεγεθών όπως financial ratios και cyclicity indicators. Τα υποδείγματα εφαρμόζονται σε μετοχές του δείκτη CAC-40 και χρησιμοποιούνται για την δημιουργία χαρτοφυλακίων τα οποία είναι ουδέτερα (η κατ'επιλογήν ιδιαιτέρως ευαίσθητα) σε μεταβολές επιλεγμένων παραγόντων. **With**: Societe Generale and Banque Nationale de Paris.

- **Nonlinear Cointegration in European Equity Futures**: αναπτύσσει μοντέλα μη-γραμμικής συνολοκληρωσης στις ευρωπαϊκές αγορές μετοχικών αξιών. Συγκεκριμένα μεταξύ του δείκτη FTSE και άλλων δεικτών που συμπεριλαμβάνουν τους DAX, EoE, CAC, και SMI. Τα υπολείμματα της συνολοκληρωσης μοντελοποιούνται σαν μη-γραμμική συνάρτηση διαφόρων εξωγενών μεταβλητών όπως (e.g. interest rate volatility, oil price changes, etc) οι οποίες επιλέγονται με την μέθοδο ANOVA και νευρωνική ανάλυση. **With:** CitiBank.

- **Forecasting Intra-day Volatility for Option Pricing**: μελετά μη-γραμμικά μοντέλα πρόβλεψης της τεκμαρτής μεταβλητότητας (implied volatility). Είναι από τις πρώτες εργασίες που εξετάζουν τη δυναμική της συνεπαγόμενης μεταβλητότητας σε υψηλή συχνότητα (i.e. intraday) και που εντοπίζουν τη μη-γραμμική εξάρτησή της από παράγοντες όπως: maturity effect, μεταβολές στις αποδόσεις του υποκείμενου τίτλου κλπ.. Τα συμπεράσματα της εργασίας αυτής έχουν σημαντικές συνέπειες για τους market makers. **With:** CitiBank.

- **Modelling Quarterly Returns on the FTSE-ALSH and S&P 500:** εξετάζει τη χρήση των νευρωνικών δικτύων σαν εναλλακτική προσέγγιση στην πρόβλεψη χρηματιστηριακών αξιών. Αποδεικνύεται ότι τα νευρωνικά δίκτυα προφέρουν καλύτερες προβλέψεις σε σχέση με την γραμμική παλινδρόμηση στην περίπτωση των τριμηνιαίων αποδόσεων του δείκτη FTSE All share. Το αποτέλεσμα αυτό σε συνδυασμό με την ανάλυση ευαισθησίας που επακολουθεί, υποστηρίζουν την υπόθεση ύπαρξης μη γραμμικής σχέσης μεταξύ των αποδόσεων του δείκτη και μακροοικονομικών μεταβλητών σε αντίθεση με την γραμμική παλινδρόμηση η οποία αποτυγχάνει να αναγνωρίσει εμφανείς σχέσεις μη-γραμμικότητας. **With:** Henderson Administration.

Στην προηγούμενη θέση του σαν Senior Research Fellow στο University College London είχε την επίβλεψη πολλών άλλων ερευνητικών προγραμμάτων.

## PUBLICATIONS

### books and special issues

[1] Refenes A-P. N., and White H. (ed), "Neural Networks and Financial Economics", J<u>ournal of Forecasting</u>, special issue, Vol. 17, 5-6., (1998).

[2] Refenes A-P. N., Burgess A. N. and Moody J., (1998) “Decision Technologies for Computational Finance”, Proc. Computational Finance 1997, Kluwer Academic, ISBN Hardback: 0 7923 8308 7; ISBN Paperback 0 7923 8309 5

[3] Refenes A-P. N., Abu-Mostafa Y., Moody J., and Weigend A. (ed), "Neural Networks in Financial Engineering", World Scientific, Singapore, (1996), ISBN 981-02-2480x.

[4] Refenes A.-P N. (ed), "Neural Networks in the Capital Markets", Wiley & Sons, Chichester, (1995), ISBN 0-471-94364-9.

[5] Weigend A, Abu-Mostafa Y. and Refenes A-P. N., (ed), "Decision Technologies for Financial Engineering", World Scientific, Singapore, (1997), ISBN 981-02-3123-7.

[6] Zapranis A. D. and Refenes A-P. N., “Principles of Model Identification, Selection and Adequacy: with Applications in Financial Econometrics”, (1999), Springer-Verlag, ISBN1-85233-139-9.

[7] Refenes A.-P. N. (ed) “Quantitative Methods in Finance”, Typothito-George Dardanos, ISBN 960-402-173-7, Athens (2004)

### journals

[8] Skintzi V. D. and Refenes A-P. N. “Implied Correlation Index: A new measure of Diversification”, <u>Journal of Futures Markets</u>, Submitted August 2003, Accepted March (2004).

[9] Skintzi V. D., Skiadopoulos G, and Refenes A-P. N. “The effect of misestimating correlation on Valua-At-Risk”, <u>The Journal of Risk Finance</u>, 73(1),Submitted July 2003, Accepted February (2004).

[10] Skintzi V. D. and Refenes A-P. N., "Volality spillovers and dynamic correlation in European Bond Markets",Journal of International Financial Markets, Institutions & Money, (submitted, accepted, 2004).

[11] Carapeto M., Holt W., and Refenes A-P. N. “On model complexity and selection”, Journal of Statistical Computation and Simulation, 73(1), pp. 45-47, (2003).

[12] Refenes A-P. N. and Holt W. “Forecasting Volatility with Neural Regression: a contribution to model adequacy”, IEEE Trans. On Neural Networks, Vol 12, No.4, 850-865, (July 2001).

[13] Refenes A-P. N., and Zapranis A. D. "Neural Model Identification, Variable Selection and Model Adequacy", Journal of Forecasting, Vol. 18, 299-332, (1999).

[14] Refenes A-P. N., Burgess A. N., and Bentz Y., "Neural Networks in Financial Engineering: a study in Methodology", IEEE Trans on Neural Networks, Vol. 8, No. 6, pp. 1222-1267, November 1997.

[15] Refenes A-P. N., Bentz Y. Bunn W. D., Burgess A. N. and Zapranis A. D, "Backpropagation with Discounted Least Squares and its Application to Financial Time Series Modelling", Neurocomputing, Vol. 14, no. 2, pp. 123-138 (Feb. 1997).

[16] Refenes A-P. N., Gonzales Miranda F. and Burgess A. N., "Intraday Volatility Forecasting Using Neural Networks. A Comparative Study with Regression Models", IJCIO (accepted 1996, to appear 1996) Vol. 1:2, pp. 1-56.

[17] Kolias C. and Refenes A-P. N. “Modelling the Effects of Defence Spending Reductions Using Neural Networks: Evidence from Greece”, Journal of Peace Economics and Public Policy, vol. 3. no. 2, pp. 1-12, (1996).

[18] Refenes A-P. N., 'Neural Networks in Investement Management: Testing Strategies & Performance Metrics', Neural Computing & Applications (revised Sept. 1994, accepted May 1995).

[19] Burgess A. N., and Refenes A-P. N. “Modelling Nonlinear Moving Average Processes using Neural Networks with Error Feedback: An application to implied volatility Forecasting”, European Journal of Signal Processing, Vol. 74 , Issue (1998).

[20] Refenes A-P. N., Kollias C., and Zapranis A. N., "External Security Determinants of Greek Military Expenditure: An Empirical Investigation Using Neural Networks", Journal of Defence Economics, vol. 6. pp. 27-41 (1995).

[21] Refenes A-P. N., Francis G., and Zapranis A. D., "Stock Performance Modeling Using Neural Networks: A Comparative Study with Regression Models", Neural Networks Vol. 7, No. 2, pp 375-388 (1994).

[22] Refenes A-P. N., "Neural Networks: forecasting Breakthrough or just a passing fad", International Journal of Forecasting", 10(1994) 43-46.

[23] Refenes A-P. N., and Azema-Barac M., "Neural Network Applications in Financial Asset Management", Neural Computing & Applications, Vol. 2., no. 1, pp. 13-39. (1994).

[24] Refenes A-P. N., *et al* "Currency Exchange rate prediction and Neural Network Design Strategies", Neural computing & Applications, Vol 1, no. 1., (1993).

[25] Tuv E., & Refenes A-P. N., "Removal of Catastrophic Noise in Hetero-associative Training Samples", Microprocessing and Microprogramming vol 38., pp. 697-704. (1993).

[26] Refenes A-P. N., "N-Expression Implementations for Integrated Symbolic and Numeric Processing", North-Holland Future Generation Computer Systems vol. 3, no. 3, pp.161 - 187, (Sept. 1987).

[27] Refenes A-P. N, "Message-passing via Singly Buffered-channels: an Efficient and Flexible Communications Control mechanism", The Euromicro Journal, North-Holland, vol. 30, no. 1-5, (Aug. 1990), pp. 645-653.

[28] Refenes A-P. N., "Parallelism in Knowledge Based Machines", The Knowledge Engineering Review, Vol. 4 no.1, pp. 53-71 (1989).

[29] Refenes A-P. N., & Alippi C., "Histological Image Understanding by Error Backpropagation", Microprocessing and Microprogramming, North-Holland, vol. 32, (1991) pp .437-446.

[30] Treleaven P.C. and Refenes A-P. N., "Fifth Generation and VLSI Architectures", North-Holland FGCS, vol. 1, no. 6, pp. 387-396, (Dec 1985).

[31] Eberbach E., McCabe S. C., and Refenes A-P. N., "PARLE: a language for expressing parallelism and integrating symbolic and numeric processing", The Euromicro Journal, North-Holland, vol. 27, no. 1-5, (Sept. 1989), pp. 207-214.

[32] Refenes A-P. N., Eberbach E., and Cotronis J., "Language Support for Concurrent Symbolic and Numeric Systems", The Euromicro Journal, (June 1989).

[33] Balou A., and Refenes A-P. N, "Designing a parallel Object Oriented Compiler Target language", The Euromicro Journal, North-Holland, vol. 30, no. 1-5, (Aug. 1990), pp. 457-465.

[34] Refenes A-P. N., and Balou A., "The Design and Implementation of VOOM: a parallel Virtual Object-Oriented machine", Microprocessing and Microprogramming, North-Holland, vol. 32, (1991) pp. 289-296.

[35] Refenes A-P. N., Bentz Y., and Burgess A. N., "Neural Networks in Investement Management", Journal of Finance and Communications, no. 8, April (1994), 95-101.

[36] Refenes A-P. N. “Neural Model Identification, Variable Selection & Model Adequacy”, Comment on Serrano-Cinca C., “Feedforward Neural Networks in the Classification of Financial Information”, European Journal of Finance, Vol. 3, No. 3, (1997), pp. 183-231. ISSN 1351-847X.

[37] Refenes A-P. N. and Burgess A. N. “Comment”, in Arthur W. B. et al, “Asset Pricing Under heterogeneous Expectations”, Economic Notes by Banca dei Paschi di Siena, Vol. 26, np. 2, pp. 331-336, (1997).

[38] Bentz Y., Refenes A-P. N. and Connor J. “Vos donnees ont-elles un sens? Les systemes intelligents et adapatifs en gestion des actifs financiers”, la Revue du Financier, No. 109 (1997).pp. 17-32, ISBN 0223-0143.

**Conferences I**

(full paper submission, three referees, rejection rates 70-75%)

[39] Burgess A-P.N. & Refenes A. N. "A Principled Approach to Neural Network Modelling of Financial Time Series", Proc. IEEE ICNN'95 Perth Australia, (Nov. 1995), ISBN 0-7803-1182-5.

[40] Refenes A-P. N., and Mitrelias C., "Network Pruning by Weight Variance", Proc. NIPS'93 Denver Colorado, in Cowan J., Tesauro G., and Alspector J., (ed), "Advances in Neural Information Processing", vol. 6, Morgan Kaufmann, San Francisco (1994).

[41] Refenes A-P. N., Zapranis A., and Azema-Barac M., "Stock Ranking: Neural networks Versus Multiple linear Regression", Proc. IEEE ICNN'93 San Francisco (March 28 - April s 1993).

[42] Refenes A-P. N. "Optimizing Connectionist Datasets with ConSTrainer:", Proc. 2nd IEEE Symposium on Parallel & Distributed Processing, IEEE Computer Society Press 2087, ISBN 0-8186-2087-TH0328-5/90/0000/0806, Dallas - Texas, (Dec. 9-13 1990).

[43] Refenes A-P. N., "CLS: An Adaptive Learning Procedure and Its Application to Time Series Forecasting", Proc. IJCNN-91, Singapore, (Nov. 1991).

[44] Refenes A-P. N., & Vithlani S. "Constructive Learning by Specialisation", Proc. ICANN-1991, Elsevier Science Publishers, (Noth Holand), ed Kohonen T.,(June 1991) pp. 923-929.

[45] Tuv E., & Refenes A-P. N., "Handling Malicous Vectors in Hetero-associative Data Samples", Proc. IJCNN '93, Nagoya Japan (1993).

[46] Balou A., & Refenes A-P. N., "VOOM: a parallel Virtual Object-Oriented machine", 2nd IEEE Symposium on Parallel & Distributed Processing, Dallas - Texas, IEEE Computer Society Press 2087, (Dec. 9 - 13 1990).

[47] Refenes A-P. N., et al "PARLE: A Parallel Target Language for Integrating Symbolic and Numeric Processing", Lecture Notes in Computer Science, Springer-Verlag, Vol 365, pp. 181-198, Proc. PARLE-89, Eidhoven, The Netherlands, June 12-16, 1989.

[48] Burgess A. N., Bunn D. W. and Refenes A-P. N. “Neural Networks with Error Feedback Terms for Financial Time Series Modelling”, Proc. SNN’97, May 21, 1997, Amsterdam.

[49] Refenes A-P. N. and Connor J. T., "Biasing Towards Integer Solutions ", in Amari S. *et al* (eds), Proc.ICONIPS-96, Springer, Singapore, (1996), pp. 681-689. ISBN 981-3083-03-4.

[50] Diamond C., Shadbolt J, Azema-Barac M., and Refenes A-P. N. "Neural Networks for Tactical Asset Allocation in the Global Bonds Markets", Proc. IEE Third International Conference on ANNS, (1993) pp. 118-122, ISBN 0 85296 573 7.

[51] Refenes A-P. N., *et al* "Currency Exchange Rate Forecasting by Error Backpropagation", Proc. Int. Conf. on System Sciences, HICCS-25, Kauai, HawaII, Jan. 7-10, (1992), ISBN 0-8186-2435-3.

[52] Refenes A-P. N., *et al* "An Integrated Neural Network System for Image Understanding", in "Machine vision systems Integration in Industry", SPIE-90, vol 1386, Boston, (Nov. 1990).

[53] Eberbach E., Cotronis J., and Refenes A-P. N., "Language Transformations for concurrency control in symbolic and numeric systems", in Proc. Parallel Computing 89, PARCOM-89, Leiden, The Netherlands, 29 Aug. - 1 Sept (1989), in Evans D*. J. et al* (ed), ISBN: 0-44-88386X.

[54] Refenes A-P. N., & Chan E. B., "Sound Recognition and Optimal Neural Network Design", Proc. EUROMICRO-92, Paris (Sept. 1992).

[55] Azema-Barac M. M., & Refenes A-P. N., "Neural Network Implementations and Speed-up on Massivelly Parallel Machines", Proc. EUROMICRO-92, Paris (Sept. 1992).

**Book chapters**

[56] Skintzi V., Skiadopoulos G., Refenes A-P. N. “The Effect of Misstimating Correlation on Value-At-Risk”, in Refenes A-P. N. (ed), Quantitative Methods in Finance, Typothito, Athens (2004), pp. 233-269, ISBN 960-402-173-7.

[57] Holt W., & Refenes A-P. N., “The D. W. for Neural Models”, in Bol G. *et al* (eds), “Risk Measurement, Econometrics, and Neural Networks”, Physica-Verlag, Heidelberg, (1998), pp.57-69, ISBN 88/2202-5 43210.

[58] Refenes A-P. N. Gonzalez F. and Burgess A. N., “A Principled Approach to Time Series Analysis with Neural networks: An Application to Volatility Forecasting”,. In Fiesler E., and Beale R. (eds) Handbook of Neural Computation, Oxford University Press, (2002), pp F3.3-42.

[59] Bolland P., Connor J. T. and Refenes A-P. N., “Application of Neural Network to Forecast High Frequency Data”, in Dunis C. and Zhou B. (ed) “Non Linera Modelling of High Frequency Financial Time Series”, Wiley & Sons, (1998), pp. 225-246, ISBN 0-471-97464-1.

[60] Refenes A-P. N., and Bolland P. "Modelling quarterly returns on the FTSE: A comparative study with regression and neural networks", in Chen C. H. (ed) " Fuzzy logic and Neural Network Handbook", Computer Engineering Series, chapter 19, McGraw-Hill, N.Y. (1996), ISBN 0-07011189-8.

[61] Burgess A. N., and Refenes A-P. N., "The Use of Error Feedback Terms in Neural Network Modelling of Financial Time Series", in Dunis C. "Forecasting Financial Markets", Wiley & Sons, Chichester (1996), pp. 261-275, ISBN 0-471-96653-3.

[62] Refenes A-P. N. and Zapranis A. D., "Neural Networks in Tactical Asset Allocation: a comparative study with Regression Models", in Arbib M. A. (ed), "The Handbook of Brain Theory and Neural Networks", Bradford Books/The MIT Press, 1995, ISBN 0-262-01148-4. Pp.491-495.

[63] Refenes A-P. N., Zapranis A. D. Connor J. and Bunn D. W., "Neural Modelling in Investement Management", in Treleaven P. C. and Goonatilake S. (ed), "Intelligent Systems For Finance and Business", pp. 177-208, Wiley & Sons (1995), ISBN 0-471 94404 1.

[64] Refenes A-P. N "Neural Networks in Investement Management: Testing Strategies and Performance Metrics," in Zenios S., (ed), "Quantitative Methods, Super computers and AI in Finance", pp. 287-308, Stanley Thornes (1995), ISBN 0 7487 2336 6.

[65] Refenes A-P. N. "Methods for Optimal Network Design", in Refenes A. N. "Neural Networks in the Capital Markets", Wiley & Sons (1995).

[66] Refenes A-P. N. "Data Modelling Considerations", in Refenes A. N. "Neural Networks in the Capital Markets", Wiley & Sons (1995).

[67] Refenes A-P. N., "Constructive Learning and its Application to Currency Exchange Rate Prediction", in "Neural Network Applications in Investment and Finance Services", Turban E., and Trippi R. (eds), Chapter 27, Probus Publishing, Chicago, (1994).

[68] Refenes A-P. N., Zapranis A. D., & Bentz Y., "Modeling Stock returns With Neural Networks", in Lisboa P. G., and Taylor M, "Neural Networks - II: techniques & Applications", Ellis Horwood (1994).

[69] Refenes A-P. N., & Zaidi A., "Managing Exchange Rate Prediction Strategies with Neural Networks", in Lisboa P. G., and Taylor M, "Techniques and Applications of Neural Networks", Ellis Horwood (1993), ISBN 0 13 0 62183 8.

[70] Refenes A-P. N., "ConSTrainer: A Generic Toolkit For Connectionist Dataset Selection", in Dorffner G. (ed), "Konnektionismus in Artificial Intelligence und Kognitionsforschung", Springer-Verlag, vol 252, (1990), pp. 163-177.

[71] Refenes A-P. N., "Parallel Abstract Machines: Towards a Unifying Intermediate Representation?" in Warwick K. (ed) "Applied Artificial Intelligence", P.Peregrinus, London, (1991) pp. 94-125. ISBN-0863412459.

[72] Treleaven P.C., Refenes A-P.N., Lees K.J., McCabe S.C., "Computer Architectures for Artificial Intelligence", in "Future Parallel Computers", Trelevean P. C. and Vaneschi M., (eds), Springer-Verlag, Lecture Notes in Computer Science, pp. 416-194, (Aug. 1987).

[73] Refenes A-P. N. and Odjik E. A. M., "European Parallel Computing", in "Parallel Computers; Object Oriented, Functional, Logic", Treleaven P. C., (ed), Wiley & sons, London, (1989) pp.1-15.

[74] Refenes A-P. N. and Bunn D. W., "Neural Networks and Investement Management", in Skeete H., (ed), "The Handbook of World Stock and Commodity Exchanges", IFR London (1995), ISBN 1 873446 65 9.

## Conferences II

(programme committee review, rejection rates 55-60%)

[75] Skintzi V. D. and Refenes A-P. N., "Volality spillovers and dynamic correlation in European Bond Karkets", in Proc., International Bond & Debt Markets Integration Conference, Dublin, 31/05/2004.

[76] Refenes A-P. N., and Holt W. T. "Non-Linear Models of Financial Market Volatility", in Proc., KES-2001, Knowledge Based Intelligent Information Engineering Systems & Allied Technologies, Osaka, Japan (2001), Baba N., Jain L. C. and Howlett R. J., (eds), IOS Press, ISBN 1-58603-192-9.

[77] Refenes A-P. N., Zapranis A. D. and Utans J. "Model Identification, Variable Selection and Model Adequacy ", Proc. NnCM' 96, Pasadena Nov. 19-21, (1996), also in Weigend A. *et al* (ed) Neural Networks in Financial Engineering, World Scientific, Singapore, (1997), pp. 243-262. ISBN 981-02-3123-7.

[78] Zapranis A. D. Utans J. and Refenes A-P. N., "Specification Tests for Neural Networks: a case study in Tactical Asset Allocation", Proc. NnCM' 96, Pasadena Nov. 19-21, (1996), also in Weigend A. *et al* (ed) Neural Networks in Financial Engineering, World Scientific, Singapore, (1997),pp 262-276. ISBN 981-02-3123-7.

[79] Utans J. Holt W. and Refenes A-P. N. "Principle Component Analysis for Modeling Multi-Currency Portfolios", Proc. NnCM' 95, London Oct. 11-13, (1995), also in Weigend A. *et al* (ed) Neural Networks in Financial Engineering, World Scientific, Singapore, (1997), ISBN 981-02-3123-7.

[80] Bentz Y., Refenes A-P. N., and De Laulanie J-F. "Neural Network Meta-Models of Investment Strategy Performance", Proc. NnCM' 95, London Oct. 11-13, (1995), also in Refenes A-P. N. et all (ed) Neural Networks in Financial Engineering, World Scientific, Singapore, (1996), pp. 241-259, ISBN 981-02-2480x.

[81] Burgess A. N. and Refenes A-P. N., "Modelling non-linear Co-integration in International Equity Index Futures", Proc. NnCM' 95, London Oct. 11-13, (1995), also in Refenes A-P. N. et all (ed) Neural Networks in Financial Engineering, World Scientific, Singapore, (1996), pp. 50-64, ISBN 981-02-2480x.

[82] Kollias C. and Refenes A-P. N. "Modelling the Effects of Defense Spending Reductions using Neural Networks: Evidence from Greece", Proc. ASSA'96, San Francisco (January 5-7, (1996).

[83] Refenes A-P. N., "Measuring the Performance of Neural Networks in Modern Portfolio Management", Proc. Unicom-95, in Taylor J. G. (ed) Neural Networks, Alfred Waller, (1995), ISBN 1 872474276.

[84] Refenes A-P. N., *et al* "Financial Modelling Using Neural Networks", Proc. Unicom 92, also in Liddell H. (ed) "Commercial Parallel Processing", Unicom, (Feb. 1992).

[85] Oliveira C. E. T., & Refenes A-P. N., "BROOM: Designing a Parallel VLSI Architecture for Object-Oriented Systems", (IV SBMICRO), Int. Conf. Microelectronics, Brazil, pp. 79-89, 12-14 July 1989.

[86] Oliveira C. E. T., & Refenes A-P. N., "VLSI design issues for a Basic Regular Object Oriented machine", IFIP workshop on "Parallel Architectures on Silicon", Grenoble, (Nov. 1989).

[87] Refenes A-P. N., and McKay S. C. "Parallel Multi-Microcomputer Architecture to support the Integration of Symbolic and Numeric Processing", Proc. Int. Conf. on Parallel Processing for Computer Vision and Display, University of Leeds, (12-15 Jan. 1988).

[88] Refenes A-P. N., *et al*, "SPAN: Parallel Computer Systems for Integrated Symbolic and Numeric Processing", in "ESPRIT-88: Putting the Technology to use", North-Holland, pp.877-890, (Nov. 14-17, 1988).

**others**

(invited journal/conference and/or refereed but non-ISBN publications)

[89] Refenes A-P. N. and Bunn D. W., "Finance and Investment Technology", Global Investment Management", Vol. 4:2, pp. 20-31, (1995).

[90] Kollias C. and Refenes A-P. N. "Modelling the Effects of Defence Spending Reductions on Investment Using Neural Networks in the Case of Greece", Centre of Planning and Economic Research, Athens, TR-57/96, (June 1996).

[91] Refenes A-P. N., Bentz Y. Bunn W. D., Burgess A. N. and Zapranis A. D, "Backpropagation with Discounted Least Squares and its Application to Financial Time Series Modelling", Proc. NnCM' 94, Caltech Pasadena, Nov. 17-18 (1994).

[92] Refenes A-P. N., "Measuring the performance of Neural Networks in modern Portfolio Management: Testing Strategies and Metrics", Proc. NnCM' 94 Caltech Pasadena, Nov. 17-18 (1994)

[93] Bentz Y., and Refenes A-P. N., "Backpropagation with Weighted Signs and its Application to Financial Time Series", Proc. NnCM' 94 Caltech Pasadena, Nov. 17-18 (1994).

[94] Zapranis A. D. and Refenes A-P. N., "Neural Networks in Tactical Asset Allocation: Towards a Methodlogy for Hypothesis Testing and Confidence Intervals:, Proc. NnCM' 94 Caltech Pasadena, Nov. 17-18 (1994).

[95] Bolland P. J., and Refenes A-P. N., "Analysis o the Relationship Between Volume, Open Interest and Futures Prices:, Proc. NnCM' 94 Caltech Pasadena, Nov. 17-18 (1994).

[96] Refenes A-P. N., Bentz Y. Burgess A. N. and Zapranis A. D, "Backpropagation with Differential Least Squares and its Application to Financial Time Series Modelling", Proc. Snowbird 1994.

[97] Refenes A-P. N. (ed), "Neural Networks in the Capital Markets", Proc. NnCM-93 London Business School, Nov. 17-18 (1993).

[98] Refenes A-P. N., Francis G., and Zapranis A., "Asset Management within the APT Framework using Neural Networks", Proc. IFIP, ORAIS'93: AI in Business and Finance, London (July 27 - 30 1993).

[99] Refenes A-P. N. and Bilge U., "Sensitivity analysis for Tactical Asset Allocation in the Global Bond Markets", in Refenes A. N, (ed) "Neural Networks in the Capital Markets", Proc. NnCM'93 London Business School, Nov. (1993).

[100] Refenes A-P. N., Zapranis A. D., & Bentz Y., "Modeling Stock returns With Neural Networks", Proc. NnCM '93, London Business School, Nov. 17-18 (1993).

[101] Refenes A-P. N. and Bilge U., "Self-Organising Feature maps in preprocessing datasets for decision support in Histopathology", NSC/BME-90E, Proc. Int. North Sea Conf. in Biomedical Engineering, Antwerp, (19-22 Nov. 1990).

[102] Refenes A-P. N., Kollias, C., and Zapranis A., "Arms Race Modeling using Neural Networks: a case study", Proc. Yapay Zeka Sempozyum, Instabul, (June 1993).

[103] Uchida S., and Refenes A-P. N. (eds) "Benchmarking for Parallel Systems", Proc. 2nd Joint Workshop ICOT/DTI-SERC, Tokyo, (Oct. 15-17, 1990).

[104] Refenes A-P. N., "Neurocomputing: Key Requirements on Basic Theory & Enabling Technology", Proc NIPT' 91, Tokyo, (March 13-14, 1991).

[105] Refenes A-P. N., "NeuroComputing: Themes and variations", Proc. Int. Workshop, Samarkand, Uzbekistan, USSR, (Sept. 10-17, 1990).

[106] Refenes A-P. N., "Parallel Computing in Europe and the UK", Proc. 2nd Joint Workshop ICOT/DTI-SERC, Tokyo, (Oct. 15-17, 1990).

[107] Refenes A-P. N., "Parallel Knowledge Processing Computers", Proc. BCS Symp. on"Parallel Architectures for Artificial Intelligence", Birkbeck College London, (Feb-23 1988), pp. 1-20.

[108] Refenes A-P. N., "Neural Computing Technology Transfer Programme", Workplan & Strategy Report, Department of Trade and Industry, Information Technology Division (Aug. 1991).

[109] Refenes A-P. N., "Neural Network Design Strategies for Histological Image Understanding", Proc. Applications of Neural Computing in Medicine, Institute of Physical Sciences in Medicine, Royal Marsden Hospital, (April 1992), London.

**under review/pending**

[110] Zapranis A. D., Utans J. and Refenes A-P. N. “Sampling Variability Estimation Schemes For Neural Models”, Neural Networks (submitted).

[111] Holt W. and Refenes A-P. N. “Two residual diagnostic test statistics for neural regression models”, ISAS ’98, 4$^{th}$ Int. Conf. On Information Systems Analysis and Synthesis, Orlando-Florida July 12-16 1998 (submitted March 1998, Accepted June 1998).

[112] Holt W. and Refenes A-P. N. “A principled approach to neural regression analysis: a case study on the airline data”, Applied Statistics, Journal of the Royal Statistical Society (submitted, under review).