

# **Knowledge Artificial Neural Networks to Enhance Parametric Option Pricing**

**Andreou C. Panayiotis<sup>1</sup>, Charalambous Chris<sup>2</sup>, Martzoukos H.  
Spiros<sup>3\*</sup>**

**University of Cyprus  
Department of Public and Business Administration**

**This Version: January 2006**

*JEL classification:* G13, G14

*Keywords:* Option pricing, implied volatilities, implied parameters, artificial neural networks, optimization

*Acknowledgements:* This work has been partly funded by the Hermes European Center of Excellence in Computational Finance and Economics, and a University of Cyprus grant for research in ANN and Derivatives.

---

**1,2,3 PhD Candidate, Professor of Management Science and Assistant Professor of  
Finance respectively**

\* Corresponding author:

Spiros H. Martzoukos, Assistant Professor of Finance  
University of Cyprus, Dept. of Public and Business Administration  
P.O. Box 20537, CY 1678 Nicosia – Cyprus  
Fax: +357-22-89 24 60, Tel.: +357-22-89 24 74  
email: baspiros@ucy.ac.cy

### **Abstract**

In this paper we explore ways that alleviate problems of nonparametric (artificial neural networks) and parametric option pricing models by combining the two. The resulting knowledge enhanced network model is compared to standard artificial neural networks and to parametric models with several historical and implied parameters. Empirical results using S&P 500 index call options strongly support our approach.