

**Department of Banking and Financial Management
University of Piraeus**



Research Seminar Series

**Thursday, October 9 2008
Time: 16:00 – 18:00, Room 013**

Seminar Title

“Forecasting Implied Volatility Surfaces: A parametric and Non-Parametric Approach”

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Summary

Volatility implied from observed option contracts systematically varies with the contracts’ strike price and time to expiration, giving rise to an instantaneously non-flat implied volatility surface (IVS) that exhibits substantial time variation. We propose a new approach that jointly models the cross-sectional characteristics and the time-series dynamics of the IVS. First, instead of imposing a parametric specification of moneyness and time-to-maturity to explain the IVS cross-sectionally, we derive directly from the data a number of orthogonal statistical factors that are shown to accurately reproduce the IVS observed on any given day. These statistical factors are shown to have a natural interpretation in the law of motion of the IVS. At a second stage, we attempt to exploit the factors identified for forecasting purposes, by modeling their evolution with simple, parsimonious econometric specifications. We demonstrate that our approach achieves a high-quality fit of the surface and of its evolution over time, using OTC currency options. The out-of-sample forecasting accuracy of the approach up to three days in the future is found to be significantly higher than that of hard-to-beat widely-used benchmarks.

Andrianos E. Tsekrekos received his MSc and PhD from Management School, Lancaster University, UK. In the past he taught in the Lancaster University, UK and the University of Durham, UK. At the moment he is a Lecturer at the Department of Accounting and Finance, AUEB. His research is focused in derivatives pricing, real options valuation, stochastic and implied volatility models, numerical methods and incomplete markets.