

**Cyprus University of Technology**

***Department of Commerce, Finance and Shipping***

***Seminar Talk***

Wednesday 7th of October 2015, 17:30-18:20

(Conference Room, 2nd floor, Continental Building)

**“Robust Optimization and its Guarantees”**

**by**

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Abstract

Robust optimization provides solutions to decision making under uncertainty. We introduce the problem by considering the formulation of robust policy in the presence of rival models purporting to represent the underlying economic system. We then discuss a collection of models for robust decision making in finance, starting with the robust portfolio optimization problem with uncertain return mean and second moments. We review the robust equal risk contribution and the robust omega ratio problems. Further performance guarantees can be injected by integrating options within a robust framework. This can also be applied to currency portfolios, employing additional constraints to safeguard against arbitrage. We also discuss extensions to multi-stage decision models. The basic paradigm that ensures robustness is minimax: the determination of the optimal decision in view of the worst-case scenario. Most models can be solved as straightforward mathematical programming problems and by dualising the inner optimization problem. Finally, we consider robust option portfolios, for minimizing the maximum hedge error, that require specialized minimax algorithms.

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