MARTIN TUCHMAN
SCHOOL OF MANAGEMENT
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Detecting arbitrage in the spot foreign exchange market

Steve Taylor from MTSM at NJIT
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Abstract: A theoretical and computational framework is proposed for the detection and identification of arbitrage opportunities among spot currency exchange rates. We obtain sufficient conditions for excluding the triangular arbitrage opportunities in a market with or without market frictions, i.e. transaction costs. Then, we propose an efficient computational approach not only to detect triangular arbitrage opportunities in real time but also to identify the combinations of currencies associated with the arbitrage. Finally, we discuss a graph theoretic formulation of the maximum arbitrage detection problem and present associated techniques used to identify the arbitrage magnitude. In numerical studies, we utilize empirical data of foreign currency exchange rates to substantiate our theoretical findings and demonstrate the efficiency of the proposed computational approach. We also provide examples of the implementation of these ideas.

Speaker Bio: Stephen Taylor joined the Martin Tuchman School of Management at NJIT after working in industry for seven years as a quantitative research analyst. He has worked at Tudor Investment Corporation, Hutchin Hill Capital, Morgan Stanley, and Bloomberg on a variety of quantitative projects including developing hedging algorithms and implementing risk and performance metric monitoring software. In addition, he was a Technical Staff member at MIT Lincoln Laboratory where he worked on developing radar compression algorithms. His research focuses on the application of non-traditional mathematical and statistical methods to quantitative finance problems with a focus on risk and valuation. He is excited to join NJIT, is looking forward to interdisciplinary collaboration with the mathematics, engineering, and computer science departments, and helping the MTSMs efforts to promote data science and quantitative finance education for business school students.

This talk is part of the MTSM Business Data Science PhD Program Seminar Series