國 立 中 央 大 學

統 計 研 究 所

學 術 演 講

主 講 人：**Rahma Julia**（茱麗）（國立中央大學統計研究所博士生）

講 題：**Systemic Risk and Interbank System under the Stochastic Environment**

時 間：**111年12月13日（星期二）**<u>**上午11：00 ～ 12：00**</u>

地 點：中央大學鴻經館**M429**室

茶 會：<u>上午 10：30 ～ 11：00</u> 地 點：鴻經館 510 室

ABSTRACT

Systemic risk has become a prominent focus of numerous studies as a result of the current economic downturn and financial crisis. Throughout this study, we offer an efficient factor model for inter-bank borrowing and lending in which the volatility of individual banks is affected by economic factors, modeled as diffusion processes. Moreover, we use a coupled diffusion through drift system to represent how the log capitalization of N banks has changed over time, in which the system's stability then depends on how interbank borrowing and lending have evolved. A significant amount of banks simultaneously achieving insolvency thresholds at a particular planning horizon poses a systemic risk. According to the optimal strategy in terms of the objective function, each bank wishes to borrow cash from a monetary authority when its balances fall below a certain level. However, when banks reach a significant threshold, central banks loan money to them. We then show the existence of a Nash equilibrium in a closed loop with finitely many players is verified by the solvability of the Riccati partial differential equations. We also demonstrate that a key role of the central bank is that of a clearinghouse, whose purpose is to provide the security and efficiency that is integral to the stability of a financial market..

Key words: Factor model, systemic risk, Nash equilibrium, interbank lending and borrowing, and Hamilton-Jacobi Bellman(HJB) equation

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