

國立政治大學社會科學院經濟學系  
博士論文

指導教授 陳樹衡博士

社會網路互動下的新凱因斯動態隨機一般均衡模型

**Toward a Social Network-Based  
New Keynesian DSGE Model**

研究生 張嘉玲

中華民國一百年七月

## 謝辭

謹以此論文獻給辛苦養育我的父母、陪我一路走來分享酸甜苦辣的家人與朋友，  
以及在做學人與學術道路上用心教導我的師長們。當然，還有親愛的老公和我的親  
親小寶貝—Baby 娃娃。



張嘉玲 辛卯年夏

## 摘要

本研究建構一社會網路互動下的新凱因斯動態隨機一般均衡模型，探討效用基礎下波茲曼分配背後的網路結構，以及，社會網路對新凱因斯動態隨機一般均衡模型參數的影響。根據本論文模擬結果，效用基礎下波茲曼分配背後所隱含的社會網路結構呈現局部區域性連結拓撲，此結論與熱力學對波茲曼分配中粒子互動方式的假設相同，然而，區域性連結之網路結構（如環狀網）並非目前實證研究所觀察到的網路型態（如冪分布網路或高群集係數之小世界網路），故吾人是否得以直接利用效用基礎下波茲曼分配來描述社會上人與人之間的互動現象必需更忱慎考量之。另外，社會網路互動也將使新凱因斯動態隨機一般均衡模型之參數估計產生偏誤，依本研究估計結果觀之，只要加入社會互動，總合需求曲線中實質利率之參數估計將為正號，即實質利率對產出缺口的影響為負向影響，也就是文獻上的投資儲蓄迷思 (IS puzzle)，若進一步觀察社會網路結構對該實證迷思的影響則可發現當社會網路群聚程度越高時，該估計偏誤將越嚴重。

**關鍵詞：**社會網路互動下的新凱因斯動態隨機一般均衡模型 (Social Network-Based New Keynesian DSGE Model)、效用基礎下波茲曼分配 (Performance-Based Boltzmann-Gibbs Distribution)、投資儲蓄迷思 (IS Puzzle)、加總問題 (Aggregation Problem)

## Abstract

We construct a social network-based New Keynesian DSGE (Dynamic Stochastic General Equilibrium) Model to investigate the underlying social network structure derived from the performance-based Boltzmann-Gibbs model, and thus interpret the process that social network structures affect the estimation bias in the New Keynesian DSGE framework. According to our simulation results, the underlying social network structure derived from the performance-based Boltzmann-Gibbs model should be local. This finding is consistent with the study of thermodynamics, which the Boltzmann-Gibbs distribution is based upon, i.e. the local interaction. However, it contradicts not only the purpose of combining the performance-based Boltzmann-Gibbs machine and New Keynesian DSGE model, but also empirical studies of social network structures in the real world. Accordingly, maybe we have to consider further whether the performance-based Boltzmann-Gibbs machine is a suitable tool for calibrating social interaction under the stylized New Keynesian DSGE framework. Furthermore, if we embedded interaction behavior in the stylized New Keynesian model, the so-called “IS Puzzle” can be consequently observed. We also realized that “IS Puzzle” is connected with network structures. The more clustering the network structure is, the more significant “IS Puzzle” would be.

**Keywords:** Social Network-Based New Keynesian DSGE Model, Performance-Based Boltzmann-Gibbs Distribution, IS Puzzle, Aggregation Problem