



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

---

SHINPEI NAKAMURA SAKAI

Department of Statistics  
The University of Chicago

Multiplex Network Modelling via GERGM

WEDNESDAY, November 13, 2019, at 10:30 AM  
Jones 304, 5747 S. Ellis Avenue

#### ABSTRACT

The specification flexibility of the Generalized Exponential Random Graph Model (GERGM) allows us to model weighted, directed, and multiplex networks. To some extent, GERGMs also enable us to incorporate the dynamic features of these networks. In this paper, the Mexican financial contagion network containing the exposure between all institutions transacting securities, derivatives, deposits, and foreign exchange is modeled using GERGM. We assess the goodness-of-fit of the model, ensuring that it is capturing the basic structure of the graph and taking into account the significance of explanatory variables. Our results show the importance of considering multiplex networks since the regulations of each market are different. Importantly, we prove focusing on a single layer can overlook instability in the system.