

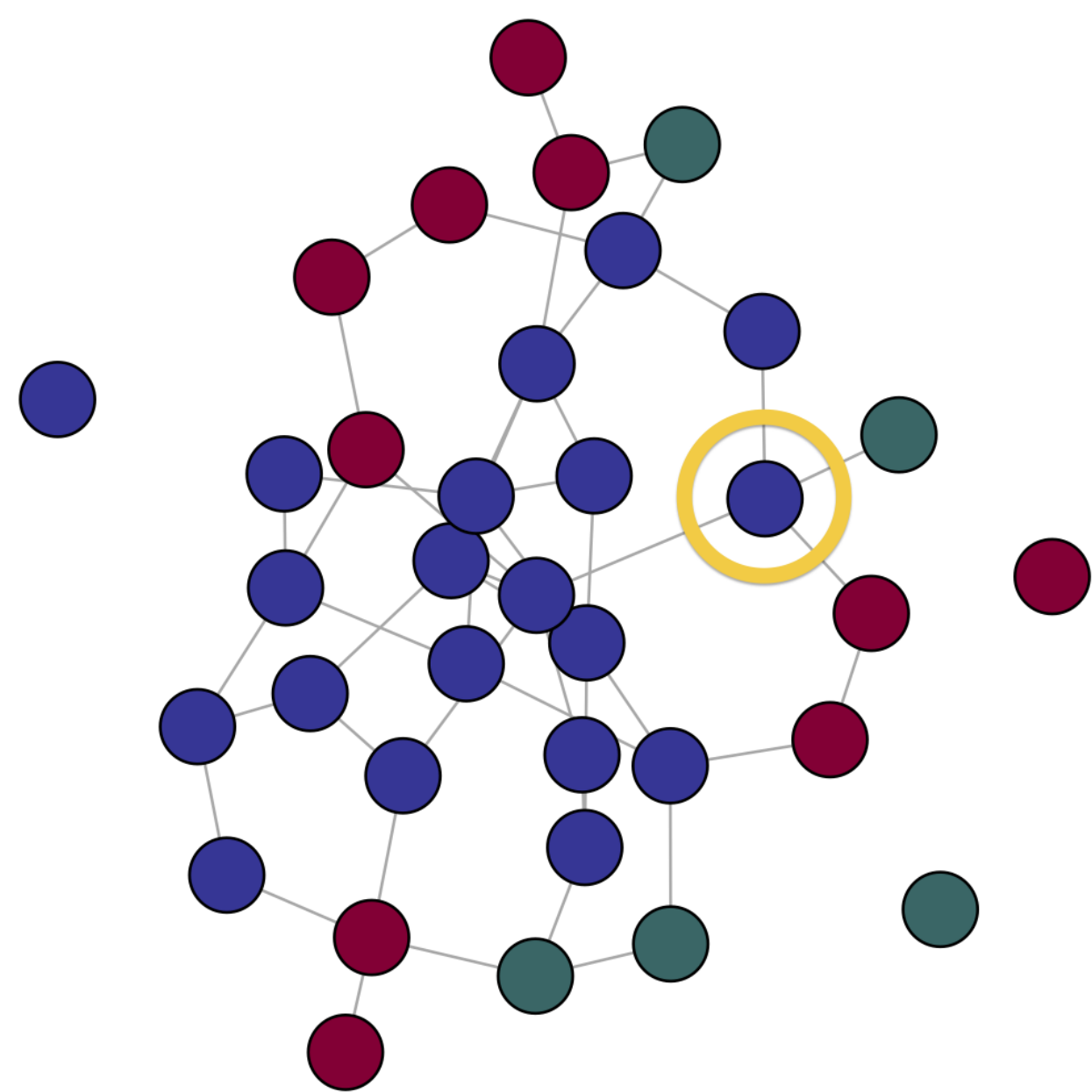
# The Importance of Generative Models for Assessing Network Structure

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## Project Overview

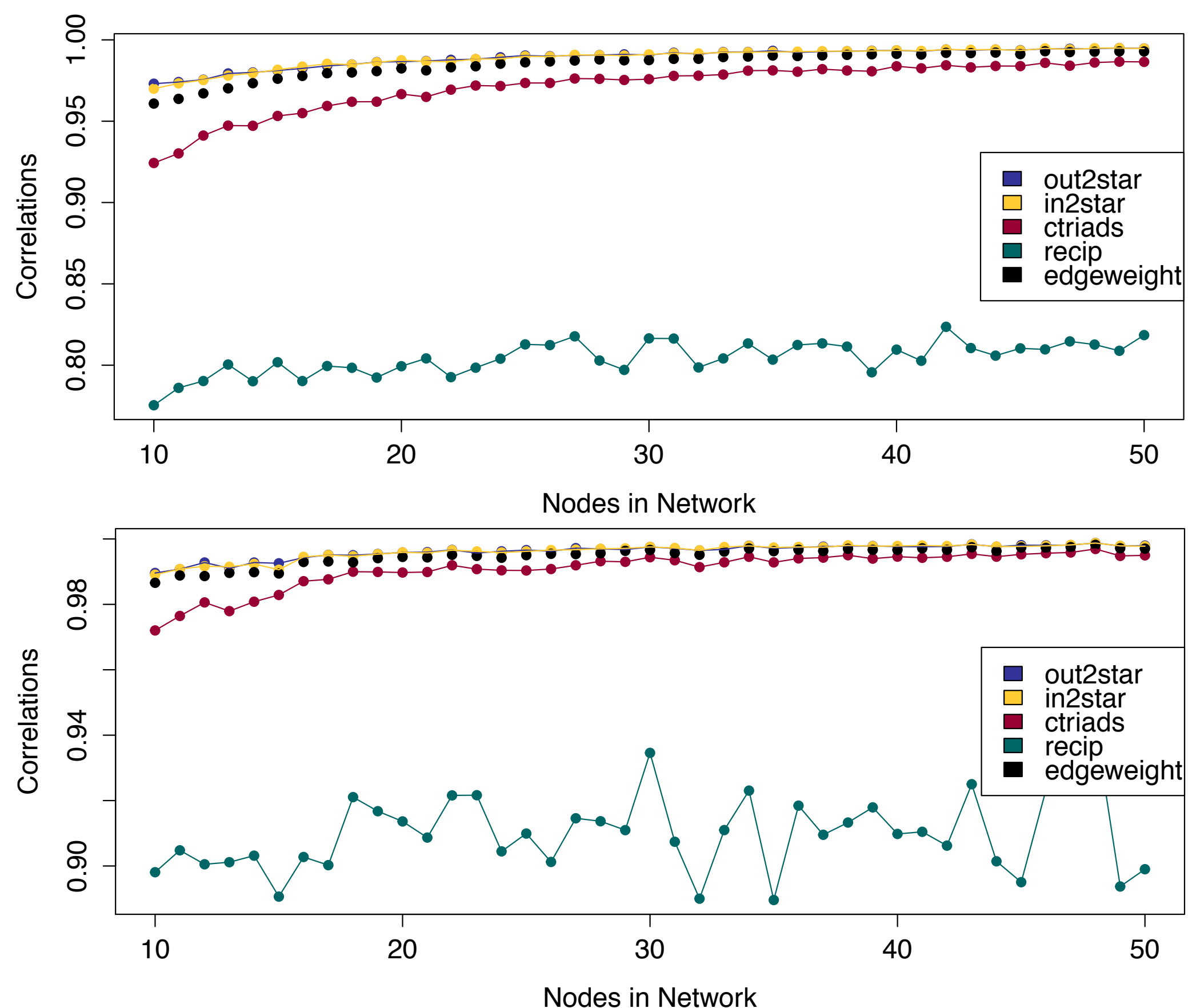
- Network structure can only be assessed using generative models.
- Important to consider explanations for observed structure at three levels: node, group, and system. Explanations confound each other.
- Multicollinearity in (G)ERGM statistics creates specification challenges.
- Bookending problem: multicollinearity and omitted variable bias. Need for strong theory to guide specification.
- Application of framework to extend Oatley et al. (2013). Generative modelling results do not agree with descriptive analysis.

## Specification and Testing of Relational Theories



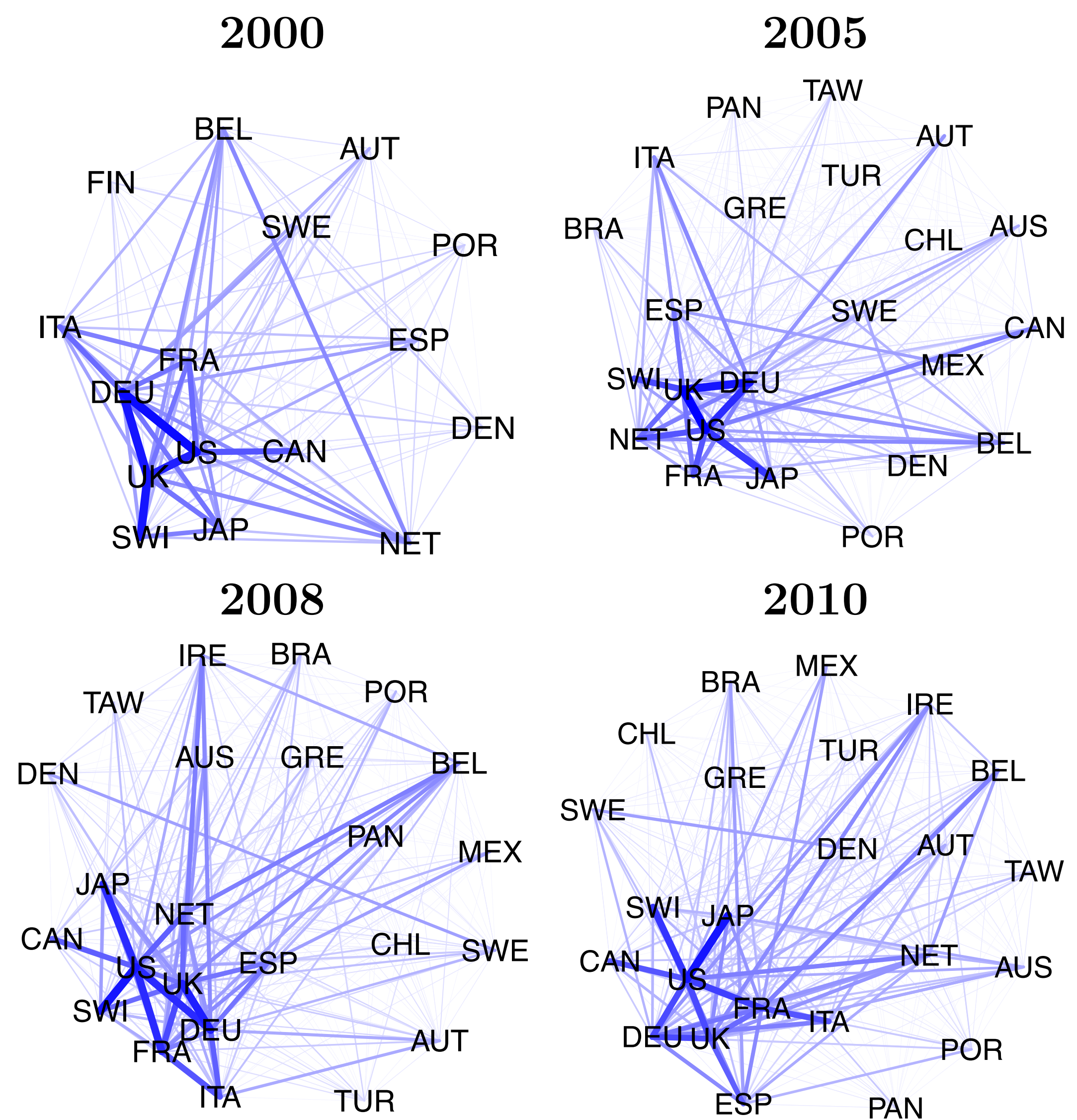
## Multicollinearity in (G)ERGM Statistics

**Figure:** Plots of correlation coefficients between five common network statistics and the transitive triads statistic for samples of 2,000 random  $n$ -node networks with 10 to 50 nodes for dichotomous networks (top) and continuous networks (bottom). Correlations between common network statistics are higher in continuous networks, and the correlations are generally increasing in network size.



## Application: International Lending

Bank for International Settlements (BIS) aggregate (private and public) international lending volumes for 16-24 large economies from Oatley et al. (2013).



## GERGM Estimation Results

