The Network of Foreign Direct Investment Flows

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Introduction

The political economy of FDI literature has established several theoretical claims and empirical regularities regarding exogenous political and economic determinants of FDI inflows. However, existing studies—based on monadic and to a lesser degree, dyadic regression models—overlook the complex dependencies that are likely to characterize the network.

In this paper, we integrate hypotheses regarding exogenous determinants and novel hypotheses regarding structural dependencies into a comprehensive exponential random graph model (ERGM) for weighted networks.[1]

Dependence Hypotheses

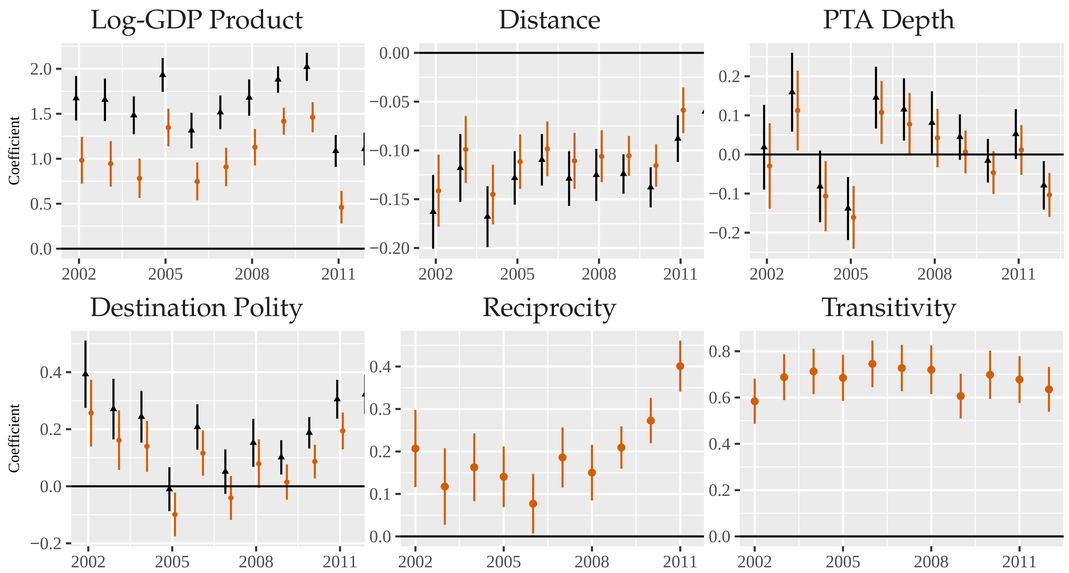
MNC expansion via FDI often face opposition from host countries due to concerns over national security and protection for local firms that do not want to compete with foreign firms. To overcome this political opposition, countries enter into reciprocal agreements. Therefore we expect one structural dependency to be mutuality, which we measure as the increase of FDI given the minimum value in the dyad. For the model reciprocity is defined as:

$$\sum_{(i,j)\in\mathbb{Y}} min(\boldsymbol{y}_{i,j}, \boldsymbol{y}_{j,i})$$

The second structural dependency we model is transitivity, or the likelihood that country A, will send FDI to country C, given that country A sends FDI to country B and country B send FDI to country C. We expect this clustering given the fragmented global supply chains for production and the vertical FDI that follows. For the model transitivity is defined as:

$$\sum_{(i,j)\in\mathbb{Y}} \min\left(\boldsymbol{y}_{i,j}, \max_{k\in N}\left(\min(\boldsymbol{y}_{i,k}, \boldsymbol{y}_{k,j})\right)\right)$$

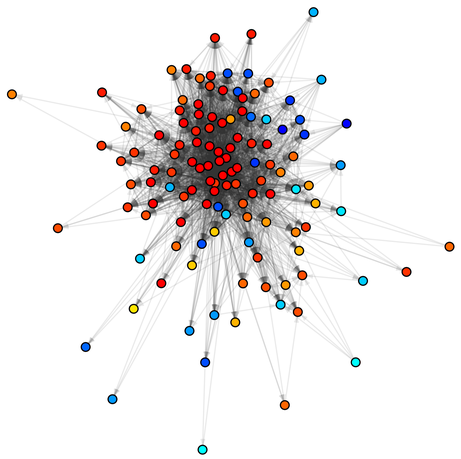
Select Results

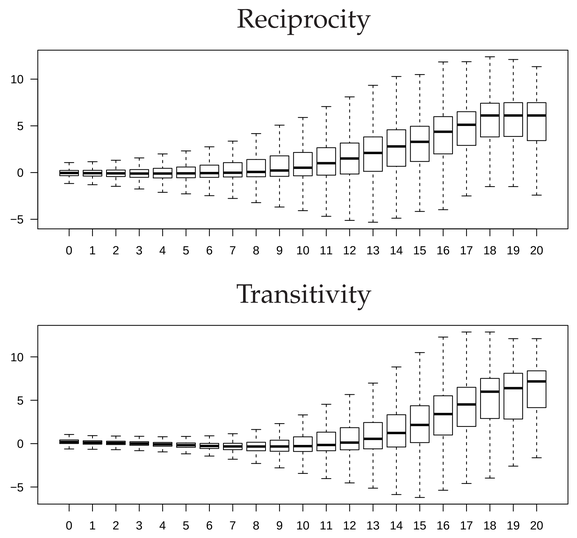


Bars represents 95% Confidence intervals. Black triangles are estimates without controlling for network dependencies, Orange circles are estimates with network controls.

Network Plots

Plot for 2011: Scale from Blue to red represents autocratic regimes to democratic regimes





Model Specification

- Dependent Variable
  - Bilateral FDI statistics, 2001-2012
- Network Statistics
  - Sum; Sum$^{1/2}$; Non-zero; Reciprocity; Transitive Weights
- Dyad-level Covariates (expected)
  - Gravity(+); Contiguity(+); Common Language(+); Four Types of Defense Treaties(+); Colonial Relationships(+); PTA depth(+)
- Node-level Covariates (sender/receiver)
  - GDP per capita(+/-); GDP Growth Rate(+/+); Polity IV(+/+); Political Violence(-/-); Trade Openness(+)

Interpretation

Acknowledgement

This material is based on work supported by the National Science Foundation under IGERT Grant DGE-1144860, Big Data Social Science.

Reference

1. Krivitsky, Pavel N. 2016. ergm.count: Fit, Simulate and Diagnose Exponential-Family Models for Networks with Count Edges. The Statnet Project (http://www.statnet.org). R package version 3.2.2. http://CRAN.R-project.org/package=ergm.count

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