

FDI Project Notes

IGERT

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Abstract

Our paper examines the determinants of foreign direct investment (FDI) inflows within a network structure. The political economy of FDI literature has shown that a number of political and economic variables such as security alliances, preferential trade agreements, migration networks, and colonial history shape the patterns of FDI flows. However, most existing studies based on monadic or dyadic models overlook the complex dependencies in the network. Global FDI flows operate as a network and therefore the independence assumptions of generalized linear models are not met and network dependencies such as reciprocity and transitivity are not controlled for. In this paper, we utilize bilateral FDI inflow data from UNCTAD and examine the political and economic networks of FDI flows using generalized exponential random graph models (GERGM). These models allow researchers to control for higher order dependencies as well as node and edge variables within the same model. The GERGM uses Markov Chain Monte Carlo algorithms to simulate weighted graphs from which the likelihood of coefficients can be estimated.

1 Data Collection

1. FDI Data

- Downloaded from UNCTAD
- Cleaned and appended into panel format

2. GDP

- Downloaded from WB WDI

3. Distance

- Downloaded from CEPII
- Mayer, T. & Zignago, S. (2011) Notes on CEPII's distances measures: the GeoDist Database
CEPII Working Paper 2011-25
- Includes Common Language, Contiguity, Ethnolinguistic similarity, and Colonial ties

4. Alliances

- Downloaded from COW

- Gibler, Douglas M. 2009. International military alliances, 1648-2008. CQ Press

5. Regime Type

- Downloaded from Center for Systemic Peace
- <http://www.systemicpeace.org/inscrdata.html>

6. GDP growth rate

- Downloaded from WB WDI

7. Trade Openness

- Downloaded from WB WDI

8. Population

- Downloaded from WB WDI

9. Transparency

- Downloaded from Transparency International
- Not included in preliminary results, subsets countries to 75

10. PTA Depth

- Downloaded from DESTA
- <http://www.designoftradeagreements.org>

11. Trade

- Downloaded from OECD.stat
- <http://stats.oecd.org/>
- includes trade in household consumption items, intermediate goods, capital goods, and mixed end-use goods

2 Data Preparation

1. Downloading Data: `FDI_download.R`

- STP and CIV cannot be scraped due to Uni-code issues:Downloaded and formatted manually

- Had to rewrite “Sao Tao and Principe” in its file; Changed “Cote d’Ivoire” to “Ivory Coast”
- Does not run from makefile due to these manual changes

2. Cleaning Data: `FDI_clean.R`

- Gets rid of empty columns and empty rows, then appends all countries to together
- Gets rid of aggregates and adds country codes
- File output `fdi_clean.csv`

3. Adding data: `FDI_merge.R`

- Adds control variables
- File output: replaces `fdi_merge.csv`

4. Subset data: `FDI_subset.R`

- Subsets data to create full edge list for all variables

5. Preliminary Results: `fdi_MRQAP.R`

- Runs OLS models
- Output: FE and MRQAP results

3 Preliminary Results

Table 1: IM/EX FE effects

IV	Dependent Variable: FDI
Contiguity	174.960*** (8.220)
Common Language_off	7.157 (6.776)
Common Ethnoliguistics	-7.846 (6.869)
Past Colony	142.077*** (10.464)
Common Colonizer	41.110***

Table 1: IM/EX FE effects

IV	Dependent Variable: FDI
	(5.583)
Common Currency	121.027*
	(73.033)
Distance	−0.005***
	(0.0004)
Destination GDP	0.000***
	(0.000)
Origin GDP	0.000***
	(0.000)
Defense Alliance	12.256
	(13.213)
Non-agression Treaty	154.289***
	(18.991)
Neutrality Treaty	−247.209***
	(28.128)
Entente	131.783***
	(20.122)
Destination Polity	−3.083***
	(0.784)
Origin Polity	−2.265***
	(0.785)
Destination Trade Opennes	0.633***
	(0.081)
Destination GDP growth (%)	−0.682***
	(0.245)
Origin Trade Opennes	0.790***
	(0.081)
Origin GDP growth (%)	−0.876***
	(0.245)

Table 1: IM/EX FE effects

IV	Dependent Variable: FDI
Origin Population	−0.00000*** (0.00000)
Destination Political Violence	0.401 (2.016)
Origin Political Violence	6.296*** (2.016)
PTA depth	2.615 (1.692)
Trade in Household Consumption Goods	−0.00004*** (0.00000)
Trade in Intermediate Goods	0.0001*** (0.00000)
Trade in Intermediate Goods Sq.	−0.000*** (0.000)
Trade in Capital Goods	0.00001*** (0.00000)
Trade in Mixed End-use Goods	0.0001*** (0.00000)
Constant	−136.288*** (21.681)
Observations	189,000 (126 Countries, 12 years)
R ²	0.317
Adjusted R ²	0.316
Residual Std. Error	494.613 (df = 188710)
F Statistic	303.323*** (df = 289; 188710)

4 To-do List

1. Add Immigration Networks

2. Add Resource Endownments
3. Get GERGM results