

Evidence-Based Trade Policymaking Capacity Building Programme

ARTNeT Interactive Gravity Modeling Tool

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Outline

- Background on gravity model of trade and their applications
- Theoretical gravity and fixed effect issues
- ARTNeT Interactive gravity model database
- Demonstration and exercises
- Conclusions



Part I

Background on gravity model of trade and their applications



What is Gravity Model

- Gravity model is a very popular econometric model in international trade
- The name came from its utilizing the gravitational force concept as an analogy to explain the volume of bilateral trade flows
 - Proposed by Tinbergen (1962)
- Initially, it was not based on theoretical model, but just intuition only
- Later on, a range of rigorous theoretical foundation has been given.
 - The most well-known benchmark so far is Anderson and van Wincoop (2003).



Gravity Analogy

Gravity force equation

$$F_{ij} = G \frac{M_i M_j}{D_{ij}^2}$$

Gravity force between two objects depends on their masses and inversely proportional to the square of distance between them.



Trade Gravity: Basic

$$X_{ij} = C \frac{Y_i Y_j}{t_{ij}}$$

X_{ij} = exports (or trade) from i to j,

C = constant,

Y = economic mass ($\approx$ GDP),

t = trade costs between two countries

$\approx$ distance, adjacency, ..., "policy factors".

Export (or trade) between two countries depends on their economic masses and negatively related to trade costs between them.



Basic gravity model of trade:

$$X_{ij} = C \frac{Y_i Y_j}{t_{ij}}$$

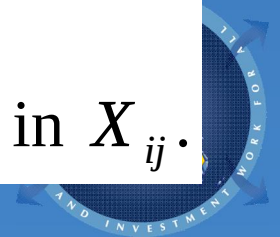
- Larger countries trade more than smaller ones
- Trade costs between two trade partners reduce trade between them.

Empirical equation for basic gravity model:

$$\ln X_{ij} = b_0 + b_1 \ln(Y_i) + b_2 \ln(Y_j) + b_3 \ln(t_{ij}) + e_{ij}$$

$$b_1, b_2 > 0; \quad b_3 < 0$$

A 1% change in Y_i is associated with a b_1 % change in X_{ij} .



Proxies for trade costs

- Distance
- Adjacency
- Common language
- Colonial links
- Common currency
- Island, landlocked
- Institutions, infrastructures, migration flows,...



• Bilateral tariff barriers



Why is it so popular?

- Intuitively appealing
- Fits with some important stylized facts
- Easily to use real data to explain trade flows with respect to policy factors we are interested in.
- Estimation using OLS

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_7926

