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Content (I)

a. Measuring trade costs

b. Descriptives

c. Deriving trade costs - Novy Method
a. Measuring trade costs

- Trade costs include all costs from producer until final consumer.
- Transportation costs are for example:
  - tariffs and non-tariff measures
  - information costs
  - customs fees and charges
  - the cost of time

- Some are easier to measure, think fees vs the cost of time.

- Direct measures: Data on fees or transport charges.

- Indirect measures: Inferred data from price differences.
b. Descriptives

- *Arvis et al. (2013)* find that trade costs are equivalent to 297 per cent ad-valorem tariff on international trade
Descriptives – Components

- Font size indicates importance of trade cost components, the bigger the more important (based on Arvis et al. (2013))

![Diagram showing trade cost components]

- **Trade costs**: 297% of production value
- **Distance and borders**: 
  - Tariffs
  - Culture
  - Currency
- **Trade facilitation (logistics) and connectivity**
- **Other policy costs**
Descriptives – Sectoral differences

• Trade costs are not the same across different sectors, think perishable, agricultural goods vs natural resources such as crude oil

• In 2012, trade costs were 68% higher for agricultural goods compared to manufacturing

• Also variance differs, 11 times higher in manufacturing than in agricultural goods, with respect to trade facilitation
Descriptives – Global value chains

- **4th global review of Aid for Trade** (WTO 2013) finds that biggest obstacles for developing countries to enter global value chains are:
  - Customs procedures
  - Transportation costs
  - Transportation delays

*Source: Nordås et al. (2006)*
Descriptives – Sectoral differences (Zaki (2015))
Descriptives – Geographical patterns
Descriptives – Geographical patterns

* Excluding Pacific island countries

LAC: South and Central America and the Caribbean
b. Deriving trade costs - Novy method

- Trade has increased considerably in the last decade

- One reason is the reduction in transport costs, but which trade costs decreased the most? We know very little about them.

- Trade costs are generally difficult to measure, hence:

  - Derive trade costs from comparing the levels of trade flows

  - Comprehensive measure of trade costs, well grounded in theory

  - Measure captures transport costs, tariffs, language barriers, red tape,...
Novy method ct’d

- The gravity equation can be used in reverse to measure bilateral trade costs and to decompose trade costs into a tariff and non-tariff component (see for instance Jacks et al., 2011 and ESCAP/WB database)

a. Theoretical approach
- Take expression (10) from the gravity slides and write it down for \(X_{ij}, X_{ji}, X_{ii}\) and \(X_{jj}\), where \(X_{ii}\) and \(X_{jj}\) are the expressions for intra-national trade
- Rearrange trade costs

\[
\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}} = \left(\frac{X_{ii}X_{jj}}{X_{ij}X_{ji}}\right)^{\frac{1}{\sigma-1}}
\]

(1)

- Tariff equivalent of bilateral trade costs relative to domestic trade costs can then be expressed as geometric average of trade barriers in both directions

\[
\tau = \sqrt[2\sigma-1]{\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}}} - 1 = \left(\frac{X_{ii}X_{jj}}{X_{ij}X_{ji}}\right)^{\frac{1}{2(\sigma-1)}} - 1
\]

(2)
a. Theoretical approach (ct’d)

• Expression (1) is a derivation of overall trade costs from the gravity equation without imposing a cost function.

• It is neither assumed that domestic trade costs are zero, nor that they are the same across countries ($t_{ii}$ may differ from $t_{jj}$) nor that bilateral trade costs are symmetric ($t_{ji}$ may differ from $t_{ij}$).

• Under the specific assumption that domestic trade costs are zero and bilateral trade costs symmetric (as implied by taking the geometric average as a measure of bilateral trade costs), it is also possible to decompose overall trade costs in their various cost components by assuming an arbitrary trade cost function.
a. Theoretical approach (ct’d)

• For example, it is possible to decompose overall trade costs in their tariff and non-tariff component by simply estimating

\[
\ln(\tau_{ij}) = \delta_1 \ln(dist_{ij}) + \delta_2 \ln(tariff_{ij}) + \delta_3 \ln(NTB_{ij}) + \epsilon_{ij}
\]

where NTB is a dummy

• To compute the tariff equivalent of a quota, we only need to calculate what is the percentage change in tariff that has the same impact on trade costs as a quota

\[
\text{Tariff equivalent} = \exp(\delta_3/\delta_2) - 1
\]
b. Empirical implementation

• The difficulty in calculating (1) is to get figures for intra-national trade
• One approach is to estimate these figures as the difference between production and exports (see for instance Novy 2012)
  • The use of GDP instead of production data tends to overstate intra-national trade, and therefore trade costs, because a growing share of trade is services (largely non-tradable)
• One can use the TPP datasets (CEPII)
• See Exercise 2 of Chapter 3 of the Practical Guide to Trade Policy Analysis