

Geographical Economics

Course 2: Topics in international trade (II)

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Targets

- ▶ Understanding the importance of the new economic geography
- ▶ Discuss evidence
- ▶ Discuss potential extensions

Nobel prize

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- ▶ Be ready to address a few questions

Questions

- ▶ Which is the novelty of this stream of literature ?
- ▶ Which are the differences with respect to the previous trade theories ?
- ▶ Does it fit the empirical evidence ?
- ▶ You have 15min to address the questions and then we open a discussion.

Building blocks

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- ▶ Discrete vs continuous version
- ▶ Two-step procedure
- ▶ Setting: there is a fixed number of workers/consumers (L). Workers supply their unit of time to work in one of accessible activities.

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- ▶ Consumers' problem is to split their income between agriculture and manufactures in aggregate to max their utility; namely

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- ▶ We usually take $p^a = 1$. Numeraire good.

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Looking at the composite good:

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- ▶ number of goods (n); monopolistic competition
- ▶ ρ elasticity of substitution

Building blocks

Results of the maximization process: optimal consumption of the numeral good

$$A = (1 - \mu) \frac{Y}{p^a}$$

- ▶ and concerning the composite good:

$$\min \int_0^n p(i) m(i)^\rho di$$
$$st : M = \left[\int_0^n m(i)^\rho di \right]^{\frac{1}{\rho}}$$

Building blocks

$$\frac{m(i)^{\rho-1}}{m(j)^{\rho-1}} = \frac{p(i)}{p(j)}$$

$$m(i) = \frac{p(j)^{\frac{1}{\rho-1}}}{\int_0^n p(i)^{\frac{\rho}{\rho-1}} di} M$$

Supply side

Production function:

$$l(i) = f + cq(i)$$

Profit function:

$$\pi(i) = p(i)q(i) - w(i)l(i)$$

Plugging in and solving:

$$p(i)\rho = cw(i) \implies p(i) = \frac{cw(i)}{\rho}$$

Prices are a mark-up over marginal costs and this mark-up is constant; it relates on the degree of substitutability of manufacturing goods.

Supply side

It is common to introduce the following change:

$$\rho = \frac{\sigma - 1}{\sigma}$$

and the previous condition turns out to be:

$$p(i) = \left(\frac{\sigma}{\sigma - 1} \right) cw(i)$$

and, finally, plugging in the price equation into the profit one, and imposing the zero profit condition, we get:

$$q(i) = \frac{f\rho}{(1-\rho)c} \text{ or } q^* = \frac{f(\sigma-1)}{c}$$

The quantity produced by each firm (at equilibrium) is constant !!

Other results

- ▶ At the equilibrium, the constant-quantity per variety implies that wages in manufacturing are identical across varieties in each country.
- ▶ The number of workers hired in each firm turns to be constant:

$$l^* = f + cq^* = f\sigma$$

- ▶ Assuming that $L = L_A + L_M$, the optimal number of varieties (firms) is

$$L_M = l^* N \implies N^* = \frac{L_M}{f\sigma}$$

Opening to trade

- ▶ Opening to trade implies thinking of mobility of workers and firms; consumers can buy varieties also from abroad.

$$P_h = \left[n_h p_h^{1-\sigma} + n_f \left(\frac{p_f}{\tau} \right)^{1-\sigma} \right]^{\frac{1}{1-\sigma}};$$

$$P_f = \left[n_h \left(\frac{p_h}{\tau} \right)^{1-\sigma} + n_f p_f^{1-\sigma} \right]^{\frac{1}{1-\sigma}}.$$

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- ▶ Index of prices

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Opening to trade

- ▶ Real wages:

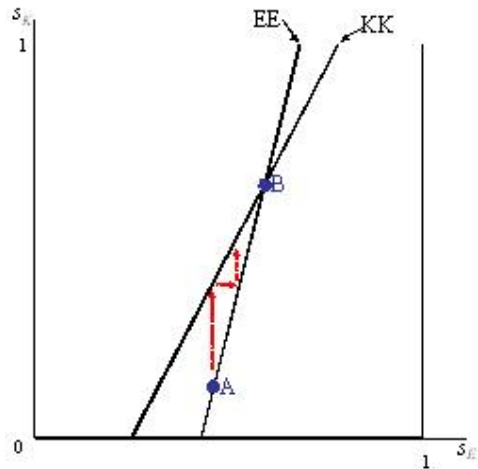
$$\omega = w_h P_h^{-\mu}; \omega^* = w_f P_f^{-\mu}$$

Definition

Differences in real wages are the source of workers' mobility and determine the creation of a CORE-PERIPHERY patterns.

Core-Periphery structure

Let us consider the EE-KK framework as described in Martin et al. (2004)

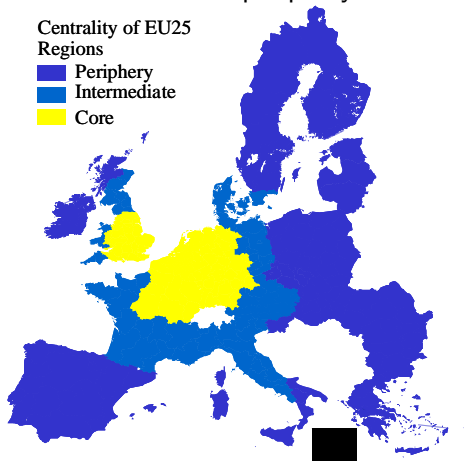


Core-Periphery structure: an example

The European Union is a classical example to figure out the existence of a core-periphery structure

Centrality of EU25
Regions

- Periphery
- Intermediate
- Core



Core-Periphery structure: other results

- ▶ The rise and fall of local agglomerations (Puga, 1999).
Worker mobility; farmer immobility and firms immobility allows for creating agglomerations in pre-selected areas.
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- ▶ The importance of agglomerations: under competitive conditions, agglomerations imply higher wages and higher productivity. Puga, Mayer, Combes, Duranton and co-autors (in several contributions from 2007 onward) study the creation, intensity and consequences of this economic phenomenon,

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- ▶ Agglomerations still very attractive because consumers are there....there is the market !!

Core-Periphery structure: other results

- ▶ But, to stay at the core is costly (rents etc...): what else can a firm do ?

$$MP_i = \sum_{j=1}^n \frac{M_j}{D_{ij}}$$

where M_j is the demand from location j to the firm in i ; D_{ij} is the distance between locations i and j .

Core-Periphery structure: other results

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- ▶ To settle as close as possible....new concept **MARKET POTENTIAL** for any location i

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- ▶ The **HOME MARKET EFFECT**
- ▶ The large region ends up with large market for manufacturing goods (as a combination of transport costs and economies of scale) that can be sold (in the "large" market of the region) without incurring in transport costs. Then, *this region becomes exporter of the goods for which it has a large local market.*

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- ▶ J.F Thisse, M. Fujita and co-authors proposed a new version of this framework by replacing the CES function with a semi-quadratic utility functions. Similar results; closed form solutions and more complicated algebra.
- ▶ Extending the setting to more than 2 places: it implies to introduce more than one type of transport costs (regional and international, for instance). However, the effect of the size of the international transport costs matter more than the regional one in creating agglomerations (Monfort & Nicolini, 2000; Paluzie 2001).