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Location choice network patterns of Japanese multinational companies in Europe

Presentation of
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Introduction I, focus and aim of the research

Focus of this research

- The research investigates network patterns of location choice of multinational companies by using *multinomial logit method*.
- Empirical analysis of regional economic factors, which were significant for attracting investments of Japanese companies during recent decade by using most detailed data possible (regional data).
- The paper particularly addresses factors, which follower multinational (Japanese) companies considered important in their investment decisions.

Aims of this research

1. Analyzes significant regional economic factors, which follower Japanese companies consider important in choosing regions with already established Japanese firms
2. Analyzes those regional economic factors, which are significant for those companies, which choose to locate near to hubs of Japanese companies.
3. By using distances between regional centers, this paper tries to establish significance of physical distance in establishing hub of Japanese companies.

Introduction II, MNC location choice

Factors according to which multinationals choose location:

- Market factor – companies want to serve market where demand is high
- Cost factor – companies want to locate where operational costs are small (labor, property costs, taxes etc.)
- Agglomeration effect – companies tend to locate in the region with companies with similar attributes or with similar country of origin
- Resource factor – companies don't want to face shortages of labor, government services, natural resources etc.

Agglomeration effect - for multinational company to locate near to other already established company from the same country there could be such reasons as:

- companies tend to follow their business customers (to serve customers better they locate close to them)
- following existing intra-firm linkages already established in Japan, which they consider in their investment decisions abroad.

Introduction III, existing literature on location choice

Logit method in location choice analysis

- Head (2004) - conditional logit method analysis of Japanese investments in the US, includes wage, corporate and social tax. Market potential significant and strong agglomeration effects of location choice
- Alegria (2006) - conditional logit analysis of European firms in European regions, includes agglomeration effects by using number of foreign investment projects in the region in a year before investment decision is made, strong dominance of agglomeration effects at regional level
- Raschuite (2007) - mixed logit method to analyze foreign investment patterns in Central and Eastern Europe, market effect stronger for larger firms
- Disdier (2004) - nested logit for French companies in Eastern and Western Europe, firms will more likely choose regions with established French firms.

Networking linkages in location choice of FDI

- Chen (1998) – case of Taiwanese FDI in US and Southeast Asia, network linkages can help investors overcome entry barriers, enable smaller firms to engage in FDI. Taiwanese firms stronger on external network linkages, particularly on strategic linkages (firm level)

Introduction IV, existing literature on multinomial logit method in decision making

Multinomial logit in location choice analysis

- Wei (2005) analyzes entry modes of FDI in China by using categorical variables of entry mode.
- Louri (2000) uses multinomial logit to determine outward FDI activity of Greek firms, where the categories are firms' decisions to export, engage in FDI or not in engage in export or FDI activities.
- Lin (2010) strategies of multinationals in accordance to relationship between parent company and subsidiary, extension of multinational strategy types.

Japanese investors are more likely to select region where is already established companies, because of

- positive spillover of information and
- possible cost savings in procurement.

Branches from same parent company are established in same region or close to same region for the purpose of

- cost saving,
- facilitation of information exchange between daughter companies.

Objectives and contribution

Understand how follower companies choose region and whether there is some kind of network structure in their decision making and in their location choice

- Factors follower companies consider important in contrast to pioneering companies
- Network structure of Japanese overseas companies in Europe
- Importance of distance for networked companies

Empirically analyze companies decision making by using lowest and most standardized data across regions as possible

Contribution

- Previously not researched location choice factors of follower companies and companies, which locate close to hubs
- Distance to other companies observed (to region with largest concentration of Japanese companies)

Motivation and hypothesis

Motivation

- Analyze significant regional economic factors, which follower Japanese companies consider important in choosing regions
- Analyze regional factors, which are significant for those Japanese companies located to near hubs of Japanese companies
- Establish significance of physical distance between regional centers for those companies located near to hubs

Hypothesis

Japanese companies disregard geographical distance in their investment decisions as they create network of Japanese companies

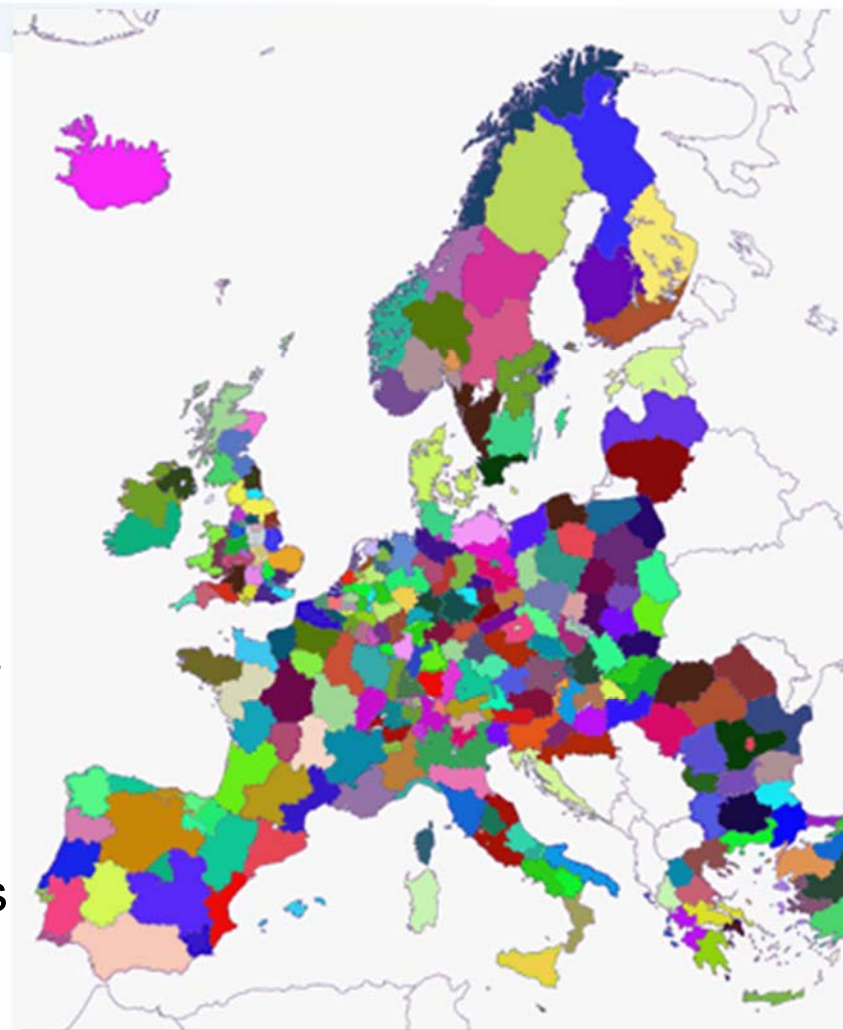
Data highlights

Description of regional data

- Source Eurostat
- Region specific data observed from 1995 to 2005, inclusive
- Regions, which did not attract any Japanese company were removed
- Regions, which are not bordering with regions with other regions with Japanese company presence were removed (Cyprus, Estonia, Latvia, Lithuania, Malta) and overseas regions (French, Spanish and Portuguese overseas regions)

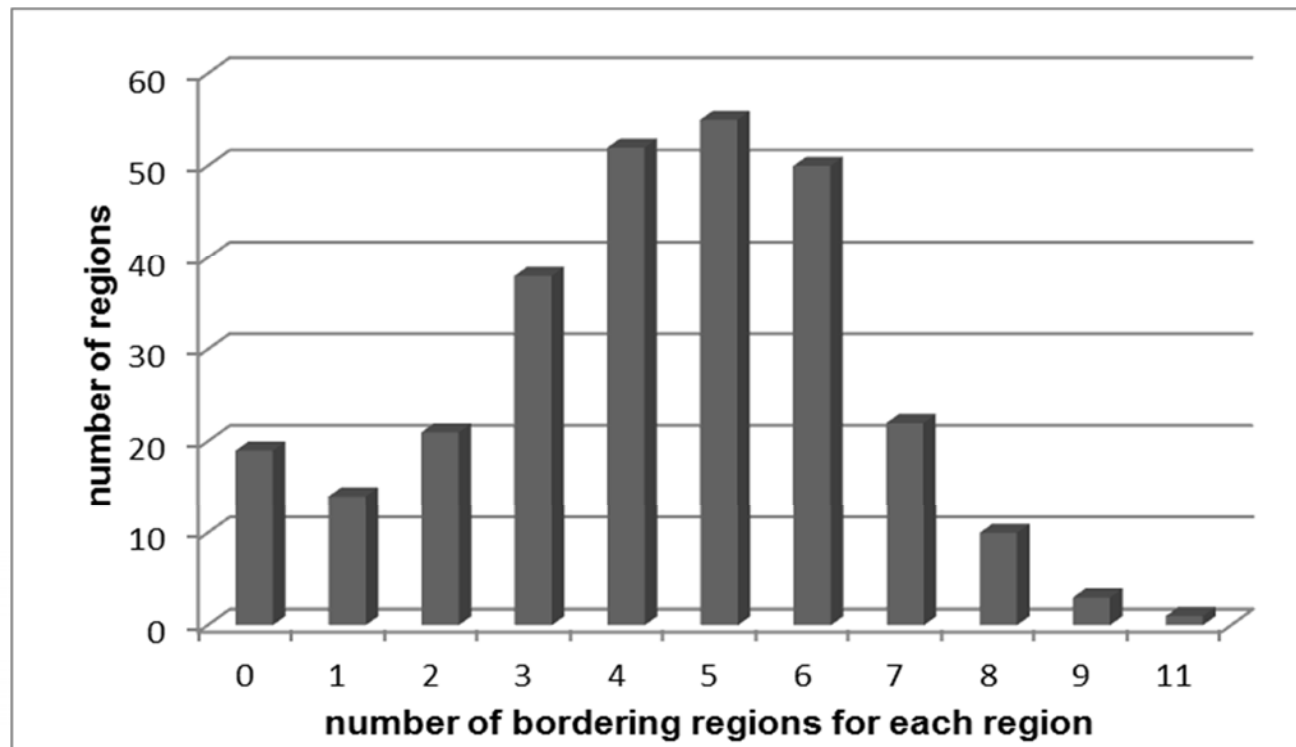
Description of company data

- Totally 3 349 Japanese companies has been observed investing in European countries



Description of regions in the dataset

Number of bordering regions for each region



Number of regions for each category

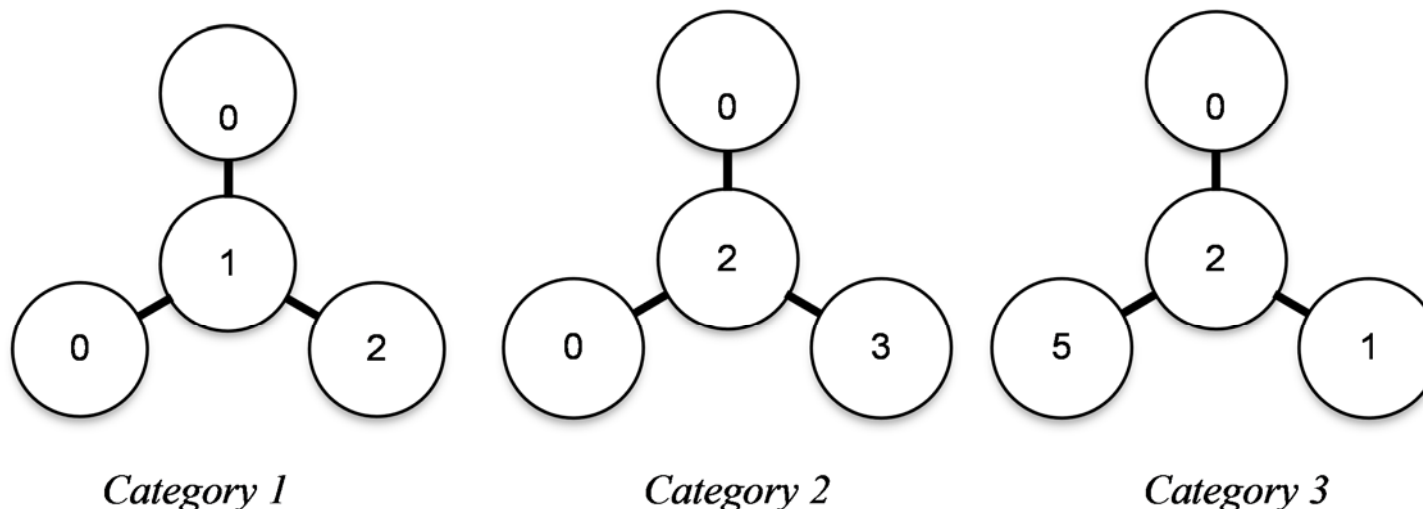
Category 1 - 212 (8.2%)

Category 2 - 353 (13.6%)

Category 3 - 601 (23.2%)

Categories of regions

Three categories to describe location patterns of Japanese comp.



Category 1 - region attracted newcomer company, there are no Japanese companies present in surrounding region or up to one region

Category 2 - region attracted follower company

Category 3 – region has attracted company one or more Japanese company, but also other surrounding regions (more than 2 bordering regions) have attracted Japanese company → region is part of hub of Japanese companies

Methodology

Discrete choice model

- Based on results developed by McFadden (1984), contribution Train (2003)
- In multinomial logit – probability of choosing three locations is independent from other locations (IIA Independence of Irrelevant Alternatives)
- Multinomial expressed and parameters β_j estimated by maximum likelihood method

$$P_{jt} = \frac{e^{\beta_j X_{jt}}}{\sum_{k=1}^n e^{\beta_k X_{jt}}}$$

Categorical choice variable P_{jt}

Left side:

- Categorical variable describing region attractiveness. – P at region j , in year t

Right side:

- Population, average wage rate, unemployment rate, road density, airport presence, distance to other Japanese companies
- Distance measured between centers of regions - longest 417 km, with average 107 km.

Results I

Specifications:

- Reported in two specifications
- Second specification without infrastructure development

Results of regression

- Research concentrates on categories 2 and 3, for category 1 results are mostly insignificant,
- Size of region (market factor) negative for first 2 categories, positive for 3rd category
- Average wage (cost factor) positive across all specifications, can also indicate labor quality – more skillful staff “cost” more
- Unemployment rate (resource factor) negative for category 1, but turns positive for categories 2 and 3 although insignificant (other studies report various results, possibly labor market structural problems)
- Infrastructure development (resource factor) - road density positive and significant across all categories, presence of airport significant and positive for hubs (category 3) – hubs forming around large airports
- Distance
 - for category 1 negative and significant – companies established in the region prefer to locate not far away
 - for category 2 positive and significant
 - for category 3 insignificant suggesting distance not important for companies locating close to hubs

Results II

Specification	(1)			(2)		
Category	(1)	(2)	(3)	(1)	(2)	(3)
Ln Population	-0.1340 (0.1311)	-0.1035 (0.1197)	0.1970 ^b (0.0862)	-0.0689 (0.1249)	-0.0690 (0.1141)	0.2592 ^a (0.0827)
Ln Average Wage rate	12.8576 (13.8160)	19.3452 ^c (12.4715)	3.1586 (8.5476)	21.0409 ^b (13.0606)	24.2782 ^b (11.9242)	10.1168 (8.1434)
Ln Unempl. rate	-0.0115 (0.2917)	0.4921 ^b (0.2794)	0.1153 (0.1853)	-0.1303 (0.2791)	0.3431 (0.2669)	0.0612 (0.1777)
Ln Road density	0.1307 ^b (0.0701)	0.1406 ^b (0.0665)	0.0798 ^b (0.0494)			
Airport	0.7416 (0.5840)	0.2785 (0.6010)	0.8251 ^b (0.4003)			
Distance	-0.0031 ^a (0.0012)	0.0016 ^b (0.0009)	0.0004 (0.0007)	-0.0032 ^a (0.0012)	0.0015 ^b (0.0009)	0.0004 (0.0007)
Constant	0.5144 (1.9150)	-1.3301 (1.7638)	-2.8910 (1.2385)	-0.0879 (1.8142)	-1.3826 (1.6704)	-3.6415 (1.1824)
Log Likelihood	-1503.00			-1508.68		
Frequency (%)	212 (8.2%)	353 (13.6%)	601 (23.2%)	212 (8.2%)	353 (13.6%)	601 (23.2%)
Observations	2596			2596		

Results III, significance of distance

For distance:

- Distance not significant for companies locating close to hubs of Japanese companies
- First comer and follower companies consider distance significant.

Blue - category 3 (part of hub, distance to region with largest presence)

Red - category 2 (more than one in region)

Green - category 1 (single comp)

