

Relationship between Living Environments and Location Choice of Firms

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1. Background and purpose

Like many Asian countries, Japan has suffered from problems caused by population concentration in large cities. It is necessary for the solution to promote firms to move to rural areas.

Traditionally, attracting large-scale manufacturing industry by infrastructure development has been attempted, but there are many problems.

Firstly, it is a problem of the rural side. The harmony with the location area has not been considered, causing deterioration of the living environment in the surrounding area and the breakdown of the primary industry. Also, as the economy matures, its effectiveness has also declined, and automated manufacturing industry does not exert sufficient effect to control migration of population.

Secondly, it is a matter of metropolitan area, where industry flows out. In the areas where traditional industries were located, the number of people working at those areas has decreased and the redevelopment is done on patchwork. As a result, the division of the community is proceeding. Distortion is occurring inside the metropolitan area.

In order to deal with such problems industrial sites in harmony with the local environment are required.

Fortunately, in recent years in Japan, examples of firms that are attracted by a good environment to relocate have been reported, and many municipalities aim for promoting industrial locations appealing environments as their strengths. However, it is not detailed what points are attractive to the company side.

Some previous studies focused on the relationship between neighboring environments and firms' opening up (Andersson et al. 2016) or leaving (Weterings, 2014). Others focused on the positional relationship with the infrastructure such as airports (Strauss-Kahn et al. 2009).

On the other hand, the following points are characteristic of this paper. The first point is, in accordance with the idea of Fukuda et al. (2016), focusing on the characteristics at the block level. The second point is focusing on the relocation of companies. We try to reveal the relationships between living environments and location choice of firms.

2. Method

Using data from Teikoku Databank, which is a Japanese firm holding data of Japanese firms comprehensively, we extracted companies that moved between 2010 and 2015, and tried to explain their location choice. In order to describe living environments, we classify neighborhoods from the viewpoint of physical and social living environment using cluster analysis. The variables we used as below. The data are based on national census of Japan.

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Physical environment

- 1) percentage of low-silhouette (1 or 2 storied) condominium
- 2) percentage of rental housing
- 3) growth rate of rental housing (2010-2015)

Social environment

- 4) percentage of children (0-14) population
- 5) percentage of young (20-34) population
- 6) growth rate of young (20-34) population (2010-2015)
- 7) worker engaged in a specialized and technical job

We chose 231 cities which are center of Urban Employment Area (UEA) as analysis targets. Because of incompleteness of data, some neighborhood are excluded from the analysis.

We calculated the square root of the difference between value of each neighborhood and the average of whole the city assuming that firms choose their locations based on relative characteristics because most of location changes confirm within the city boundary. Based on seven values derived as stated above, by non-hierarchical clustering, we categorized neighborhoods into 5 groups. Fig. 1 shows an example of the categorization. It can be said that the same categories of neighborhood tend to be positioned closely to each other and there are differences based on distance from the center of the city, but it is not only unique reason directing categorization.

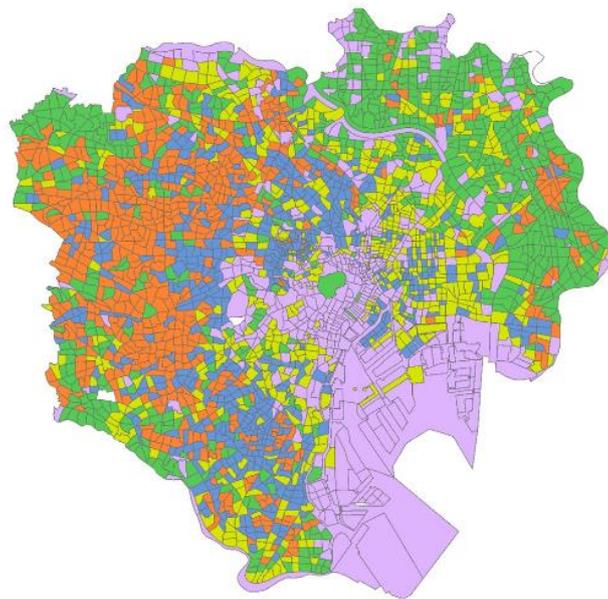


Fig. 1 An example of categorization of blocks (Tokyo)

3.Result

Table.1 shows averages of seven values for each category. This values base on the square root of the difference, so sometimes they are below zero. As Japan is matured country, the growth rates of various indicators at large are almost balanced. There are not critical differences of the value of percentage of children (0-14) population, while the other values considerably change among categories.

Table.1: averages of seven values for each category

	1)	2)	3)	4)	5)	6)	7)
I	-0.21	-0.84	-0.35	-0.02	-0.14	-0.37	-0.31
II	-0.08	-0.45	-0.04	-0.04	-0.06	-0.23	0.63
III	0.15	-0.29	0.30	0.02	0.09	-0.09	-0.31
IV	-0.04	0.74	0.00	0.00	0.17	0.17	-0.17
V	0.10	5.28	0.05	0.01	0.85	0.85	-0.06

Source: National census of Japan (2010, 2015)

3-1. static location

Firstly, we look at general location categorization based on characteristics of neighborhood. It is expected to reflect historical accumulation of firms' location. Table.2 shows the number of static location and the net inflow of firms. Many firms are located in the category III, which is characterized by the high ratio of low-silhouette (1 or 2 storied) condominium. The category I with small ratio of young people follows the category III.

Table.2: the number of static location and the net inflow of firms

	static number (2010)		net inflow (2010-2015)	
		composition ratio		ratio
I	32587	26.28%	26	0.08%
II	13427	10.83%	51	0.38%
III	47153	38.03%	-148	-0.31%
IV	30170	24.33%	78	0.26%
V	647	0.52%	-7	-1.08%

Source: data from Teikoku Databank, National census of Japan (2010, 2015)

3-2. location changes

Then, we focus on location changing of firms. The second column of Table 2. shows the number of all firms which have changed their locations. In addition, we analyzed SMEs or firms with high centralities. The category II and the category IV have higher net inflow rates compared with the other categories. Firms are flowing out of the category III, which is the most popular category for firms from the viewpoint of static location, and the category I is nearly balanced between inflow and outflow.

You can point out following insights.

First, the categories which statically a number of firms belong to are not necessarily attracting many firms from the other categories. Except for the category V, which have little firms' location, smaller categories achieve relatively higher net inflow ratios.

Second, the trends above are related to changes in social environment. Categories with high net inflow rates have tendency to have high growth rate of young population. Attractive environment for young generation might also be attractive for firms. Th category III and I can be regarded as old areas having lost their attractiveness.

Third, if you focus on newly opened firms or SMEs, the tendencies above are stronger, while firms with high centralities are more located in old concentration. The categories which many firms are relocating to are expected to function as incubators for new business. On the other hand,

firms with high centrality often are old and large firms and they are inclined to be located in old areas and cannot be moved easily.

4. Conclusion

We analyzed relationship between living environment and firms' location choice. Although the results are primitive, they suggest that firms are attracted to some specific types of neighborhoods. In addition, you can expect correspondence of neighborhoods which are attractive for young people and those who for growing firms. These areas might work as incubation for new business.

This point provides an important hint for aiming at growth of cities located in rural areas with the economic environment led by service industries.

5. Future tasks

Regarding variables in metropolitan units, it cannot be said that they fully correspond to the living environment that I would like to explain. Therefore, there is a possibility of undervaluation or erroneous evaluation. Also, there is a problem that the cause and effect relationship has not been revealed. In addition to considering these improvements searching better data, it seems necessary to carefully study a few cases.

Keywords: location choice, social environment, physical environment, social environment

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Note

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