

# Spatial Dynamics of Industrial Structure in Korea\*

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## 1. Introduction

Korea has achieved a very high rate of industrial growth and considerable changes in industrial structure since the First Economic Development Plan was launched in 1962. Rapid industrialization and the changes in national industrial structure have not, of course, progressed without locational changes in manufacturing in the Korean space economy.

During the last quarter of a century, a period of rapid industrial growth, the process of regional concentration of manufacturing has been a dominant characteristic of interregional manufacturing change.<sup>1)</sup> That is, bipolar concentration of manufacturing activities in Seoul and Pusan metropolitan areas<sup>2)</sup> can be identified as a distinct

pattern resulting from the locational changes of manufacturing. In 1960, Seoul and Pusan metropolitan areas shared about 33.6% and 23.5% of the national manufacturing employment, respectively. Now the figures has changed to 49.0% and 28.3% respectively, meaning that the two metropolitan areas share more than three quarters of the national manufacturing employment. There has also been a trend of hierarchical diffusion from higher urban centers to lower urban centers in operating units of industrial systems. In this diffusion process the role of Seoul has been predominant and the diffusion from Seoul to all the other cities is more appropriate rather than the hierarchical diffusion within Korean Urban system as a whole.<sup>3)</sup>

On the metropolitan level, several stages of locational changes can be recognized during the

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1) Park, Sam Ock & Wheeler, James O., 1983, "Industrial Location Policies and Manufacturing Employment Change: The Case of the Republic of Korea." *Regional Development Dialogue*, Vol. 4, No. 2, pp.45-64.

2) There is no official definition on metropolitan areas in Korea. In this study, for convenience, Seoul and Kyeonggi Province are regarded as Seoul metropolitan area and Pusan and South Kyeongsang Province, as Pusan metropolitan area.

last quarter of a century. In the Seoul metropolitan area, for example, continuous concentration to the central city until 1968 and decentralization from the central city to the suburbs thereafter can be easily identified<sup>4)</sup>

These locational changes in manufacturing have, to a large extent, been related to the changes of the national industrial structure itself.<sup>5)</sup> The growth of the Southeastern coastal region as the second largest industrial area of the nation is, for example, closely related with the growth of heavy and chemical industries during the 1970s.

The transformation of the national industrial structure did, however, exert different impacts on different areas. Certain areas may have benefited from leading growth industries, while other areas may have not benefited that much. During the rapid industrialization period, therefore, the impact of the changes of the national industrial structure and the locational changes of manufacturing seems to have been manifested in the national space economy and in turn has resulted in dynamic patterns of spatial industrial structures.

The purposes of this study are to examine the extent to which industrial structure of each areal unit has changed since 1970; to investigate major dimensions of spatial industrial structures; and to specify distinct regions exhibiting similar industrial structures. The major hypothesis implied in this study is that recent industrial growth and locational shifts in manufacturing contribute to

the development of new spatial industrial structure and the dynamics of existing spatial dimensions of industrial structures in Korea.

## 2. Data and Methodology

Primary data used in this study are the number of employees by three digit SIC industry groups. The 28 three digit SIC industry groups were reorganized into 26 industry groups, in which SIC 324 (footwear) was included in SIC 323 (leather and leather products) and SIC 314 (tobacco) was included in SIC 313 (beverage) in this study (see. Table 1). Areal boundaries of thirty two cities and one hundred thirty eight counties in 1970 are utilized as basic areal units in the analyses.

A simplified index of diversity developed by Shear<sup>6)</sup> is used to measure the extent to which industrial structure of each areal unit has been diversified since 1970. Shear's diversity index D is as follows.

$$D = (9 \times 10^3) / (5P_1 + 3P_2 + P_3)$$

where D = diversity index

$P_1$ ,  $P_2$ , and  $P_3$  = percent of total employment in the first-ranking, the second-ranking, and the third-ranking three-digit SIC manufacturing category, respectively.

The maximum diversity is  $10N$  ( $N$  = number of industry groups) and the minimum diversity is 18. The major advantages of this index are 1) the simplicity of computation and 2) direct comparability with other regions and with different

3) Park, Sam Ock, 1985a, "Industrial Location Policies in Major Metropolitan Areas of Korea," *The Journal of Korean Planners Association*, Vol. 20, No. 2, pp. 202-220. (in Korean with English summary)

4) Park, Sam Ock, 1981, *Locational Changes in Manufacturing: A Conceptual Model and Case Studies*, Ph. D. Dissertation, University of Georgia, Athens, Georgia.

Choe, Sang Chuel, Song, Byung-Nak, Chun, Dong-Hoon, & Kwon, Won-Yong, 1985, "Intrametropolitan Industrial Location in the Seoul Region: Facts and Issues," *Proceedings of the Korea-U.S. Joint Seminar on Urban/Regional/Transportation Development Planning and Environmental Management*, Korea Section of the Regional Science Association, Seoul, Korea, pp. 45-70.

5) Choe, et. al., op. cit, pp. 45-70.

6) Shear, James A., 1965, "A General Measure of Diversity," *The Professional Geographer*, Vol. 17, No. 1, pp. 14-17.

years as long as consistent categories are maintained.

Spatial variations of industrial structure are illustrated by the use of the Q-mode principal component analysis (PCA). The Q-mode factor analytic technique in this study considers the treatment of areas (cities and counties) as variables and the three digit SIC categories as observations. The analysis therefore provides the identification of groups of areal units having similar levels of internal industrial structure. Cautions are needed in the interpretation of components since the magnitude of industrial employment is not reflected in the outcome, only the similarity in the internal structure of unit areas is reflected. In order to examine dynamics of spatial dimension of industrial structure, Q-mode PCA were conducted separately for the years of 1970, 1976, 1980, and 1984.

### 3. Diversity of Manufacturing

Traditionally, industrial diversification or specialization was analyzed in relation to regional policy for depressed industrial areas.<sup>7)</sup> More recently, several studies focused on the analysis of industrial diversification in relation to city size and regional economic growth.<sup>8)</sup> Even if there has not been a perfect agreement on the results of diversity study, a diversified economy, especially diversified in leading industrial sectors, is generally considered better than undiversified one.<sup>9)</sup> In this study, focus is on the analysis of extents and areal variations in industrial diversity rather than the evaluation of functions of the diversity.

Since the early 1960s the industrial structure

**Table 1. Percent of Each Three-Digit SIC Industrial Group to Total Manufacturing Employment**

Industrial groups			1970	1984
SIC	321	Textile	24.0	16.3
	311	Food	8.8	5.7
	322	Apparel(except footwear)	6.1	9.8
	390	Other manufacturing	5.6	3.7
	384	Transport equipment	5.0	6.3
	313	Beverages & tobacco	4.8	1.0
	383	Electrical machinery, apparatus appliances and supplies	4.6	12.2
	331	Wood & wood products	4.2	1.8
	381	Fabricated metal products (except machinery & equipments)	4.1	7.1
	369	Other non-metallic mineral products	4.0	2.6
	342	Printing & publishing	3.5	2.5
	355	Rubber products	3.2	2.7
	371	Iron & steel basic	3.1	2.3
	382	Machinery except electrical	3.1	5.0
	352	Other chemical products	3.1	3.2
	351	Industrial chemicals	2.7	2.0
	341	Paper & paper products	2.2	2.0
	354	Miscellaneous products of petroleum & coal	1.5	0.5
	356	Plastic products	1.1	2.8
	332	Furniture & fixture	1.1	1.1
	362	Glass products	0.9	0.7
	323	Leather and leather products & footwear	0.9	6.0
	361	Pottery, china and earthenware	0.8	0.8
	385	Professional and scientific; measuring and controlling equipments; photographic and optical goods	0.7	1.2
	372	Non-ferrous metal basic	0.6	0.5
	353	Petroleum refineries	0.4	0.3

Sources: Computed from the mining and manufacturing survey data.

7) Florence, P.S., 1939, "Economic Research and Industrial Policy," *Economic Journal*, Vol. 47, pp.621-641.  
Gallaway, L., 1959, "Some Aspects of the Economic Structure of Depressed Industrial Areas," *Land Economics*, Vol. 35, No. 4, pp.337-346.

8) Hyung, Kie Joo, 1979, "A Study on Agglomeration Theory—with Reference to Manufacturing Diversity in Korea Urban Areas," *Geography*, The Korean Geographical Society, Vol. 20, pp.12-37. (in Korean with English summary)

of Korea has changed considerably and the structural change could be related to the industrial development policy. The industrial bases of Korea were poor in the 1950s with only a small amount of manufacturing activity. Industrial strategies in the 1950s were domestic economy oriented and input substitution of consumer's goods was greatly emphasized. The early 1960s can be identified as a kind of transition period, in which export promotion began to be emphasized in accordance with selective emphasis of input substitution. During this transition period textiles, apparel, and footwear showed considerable growth.

Export-oriented industrialization has been the major industrial strategy for a growth impetus since the late 1960s. Labor intensive industries were becoming internationally competitive and the industries were already self-sustaining in the late 1960s. Capital intensive industries such as shipbuilding industry, iron and steel, motor vehicle assembly, and petrochemicals have showed higher growth with government's emphasis on the heavy and chemical industries, while the self-sustaining labor intensive industries have experienced a decrease in their shares since 1970. Recently, especially in the 1980s, the develop-

**Table 2. Mean of Shear's Diversity Indices of Areal Units by Three Areas**

Regions	Number of areal Units	1970	1984
Seoul metropolitan area	22	43.6	52.8
Pusan metropolitan area	26	35.2	32.9
The rest of the country	122	35.9	31.5

Sources: Computed from the mining and manufacturing survey data.

ment of technology-intensive industries such as semiconductors, fine ceramics, computers, and bioengineering is being emphasized with increasing R&D investments.

The changes of percentage in each three digit SIC group from 1970 to 1984 reveal the structural changes experienced during the rapid industrialization period (Table 1). Overall Shear's index of diversity increased considerably from 59 in 1970 to 70 in 1984. The increase in the degree of diversity of the national industrial structure has, however, exerted different impacts on the regional industrial structure. Considering Seoul metropolitan area as a most industrialized region, Pusan metropolitan area as an industrialized region, and the rest of the country as less industrialized area in the nation, the degree and trend

**Table 3. Trend of Changes in Diversification, 1970~1984**

	Kyeonggi Province	S. Kyeongsang Province	The rest of the country
Number of more diversifying* areal units	13 (62)***	12 (48)***	38 (31)***
Number of more specializing** areal Units	8 (38)	13 (52)	84 (69)
Total	21(100)	25(100)	122(100)

\* increased in the diversity index

\*\*\* parentheses are percentages

\*\* decreased in the diversity index

Sources: Compiled and computed from the mining and manufacturing survey data.

Marshall, J.U., 1975, "City size, Economic Diversity, and Functional Type: The Canadian Case," *Economic Geography*, Vol. 51, No. 1, pp.37-49.

5) Berentsen, W.L., 1978, "Regional Policy and Industrial Overspecialization in Lagging Regions," *Growth and change*, Vol. 9, No. 3, pp.9-13.

Malecki, E.J., 1983, "Technology and Regional Development: A Survey," *International Regional Science Review*, Vol. 8, No. 2, pp.89-126.

10) Kim, Kwang-Suk, 1980, *Pattern and Factors of Korean Industrialization*, Korean Development Institute, Seoul. (in Korean)

of diversity can be related to the degree of industrialization and industrial growth. The Seoul metropolitan area is more diversified than the rest of the country and has increased the degree of diversity since 1970 as represented in the mean of shear's diversity indices in Table 2. In Kyeonggi Province, more areal units increased the degree of diversity, while in the rest of the country except for the Pusan metropolitan area far more areal units decreased the degree of diversity in industrial structure from 1970 to 1984. South Kyeongsang Province represents a midway of the above two regions with showing about the half of the unit areas increased in the degree of diversity (Table 3).

Considering industrial shift in the Korean space economy as shown in Table 4, the changes in industrial structure seem to be consistent with the industrial growth of various regions. Kyeonggi province, which has experienced the highest economic and manufacturing growth in the nation has been comparatively most diversified and diversifying. (Table 2, 3, and 4). On the other hand, the rest of the country has shown more specialized and specializing industrial structure. The Pusan metropolitan area was in the middle of the two regions in its manufacturing growth and the trend of changes in diversity. The mean degree of diversity of unit areas in the Pusan metropolitan area is, however, almost similar to

that of the rest of the country because of industrial cities such as Ulsan, Masan, and Changwon, highly specialized in the sector of heavy and chemical industry. Thus, the locational changes in manufacturing, related to the changes of the national industrial structure, have contributed to the dynamics of the regional industrial structure.

#### 4. Spatial Dimensions of Industrial Structure

##### (1) Industrial Structure Components

The principal component procedures were completed for each year of 1970, 1976, 1980, and 1984. Based on the 5 percent cut off criterion, five components for each year of the analysis were identified. Hence, a component contributing less than 5 percent to the overall explanation was excluded. The basis of the criterion is that any component explaining less than this proportion must contain a large random error variance.<sup>11)</sup>

Percent total variance and three digit SIC groups of high positive scores on each component in each year are illustrated in Table 5. Even though the table representation does not show spatial dimension directly, close examinations of the percent total variance and the component scores reveal two important issues that corroborate the results implicit in the measure of diver-

**Table 4. Regional Distribution of Manufacturing Employment**

Year	Seoul	Kyeonggi Province	Pusan	S. Kyeongsang Province	Taegu & N. Kyeongsang	The rest of the country
1958	25.0	9.5	15.5	8.1	15.0	26.9
1963	29.6	10.2	17.2	5.3	14.5	23.2
1968	34.0	9.5	17.3	6.0	12.2	21.0
1970	33.9	12.1	15.9	7.0	11.5	19.6
1973	33.7	14.1	16.5	8.8	10.8	16.1
1978	25.4	22.4	17.5	10.4	12.1	12.2
1984	24.8	24.2	15.7	12.6	11.8	10.9

Sources: Computed from the mining and manufacturing survey data.

11) King, L.J., 1969, *Statistical Analysis in Geography*, Prentice-Hall, Englewood Cliffs, N.J.

**Table 5. Industrial Structure Components**

Year	Component	Percent total variance	(Cumulative)	SIC groups of high positive scores
1970	I	26.96	(26.96)	textile
	II	24.15	(51.11)	food
	III	14.28	(65.39)	beverages
	IV	7.51	(72.90)	other non-metallic minerals
	V	6.03	(78.93)	other manufacturing
1976	I	38.45	(38.45)	textile
	II	16.88	(55.33)	food
	III	8.80	(64.13)	beverages
	IV	6.62	(70.75)	other non-metallic minerals
	V	6.42	(77.17)	leather; electrical machinery; other manufacturing
1980	I	25.33	(25.33)	textile
	II	23.72	(49.05)	food
	III	9.56	(58.61)	electrical machinery
	IV	7.85	(66.46)	beverages; wood products
	V	7.74	(74.20)	other non-metallic minerals
1984	I	20.89	(20.89)	food
	II	20.49	(41.38)	textile
	III	11.81	(53.19)	electrical machinery
	IV	11.77	(64.96)	other non-metallic minerals
	V	5.89	(70.85)	beverages; wood products

sity. Firstly, cumulative percent total variance of five components for each year has been decreasing consistently since 1970, reflecting a slight diversifying trend in the industrial structure components.

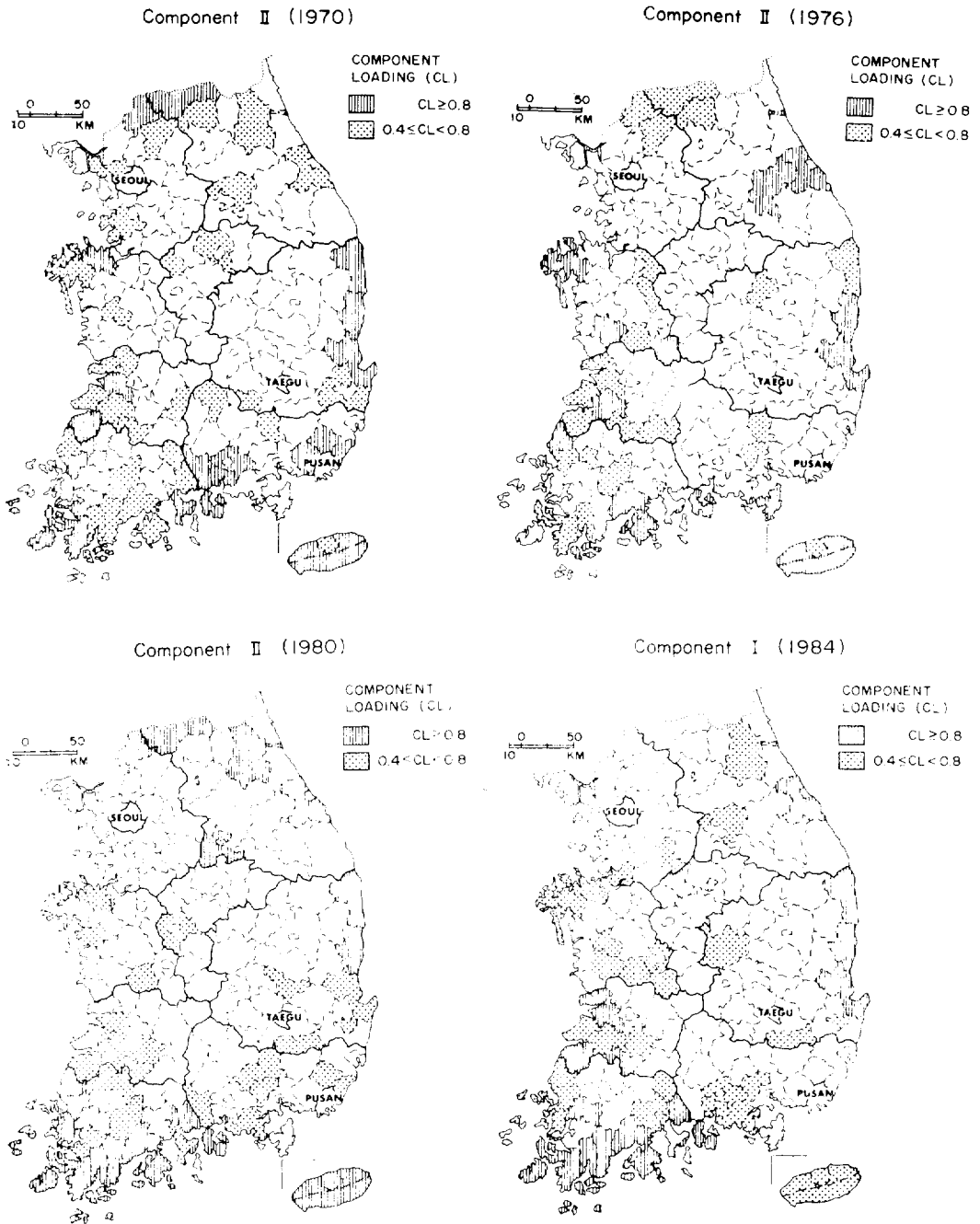
Secondly, dynamic industrial structure with emerging new leading industrial sectors and vanishing or stagnating sectors can be recognized in the comparison of component scores of each year, though there exists considerable similarity in certain extracted components throughout the entire study period. Textile, food, and other non-metallic mineral products scored strongly on Component I, II, and IV respectively in 1970, and these three industrial groups contribute most to three components respectively in 1976, 1980, and 1984, reflecting a similarity in industrial structure components throughout the study period. There exist changes in the other industrial structure components. Beverages was a single most

important sector which scored strongly on component III in 1970 and 1976, but the importance of beverages in the contribution to the similarity in structure by means of high positive component score has been diminishing in the 1980s. Other manufacturing scored highly on component V in 1970, but it did not significantly contribute to any major component after 1976. Instead, electrical machinery has begun to emerge as an important sector in spatial structure since 1976.

These similarity and dynamic aspects in the industrial structure components reveal only sectoral aspects of industry. Spatial aspects of the industrial structure components can be examined by analyses of the components loadings.

## (2) Spatial Patterns and Dynamics of the Industrial Structure Components.

Instead of Table presentation, component loadings are displayed in maps in order to under-

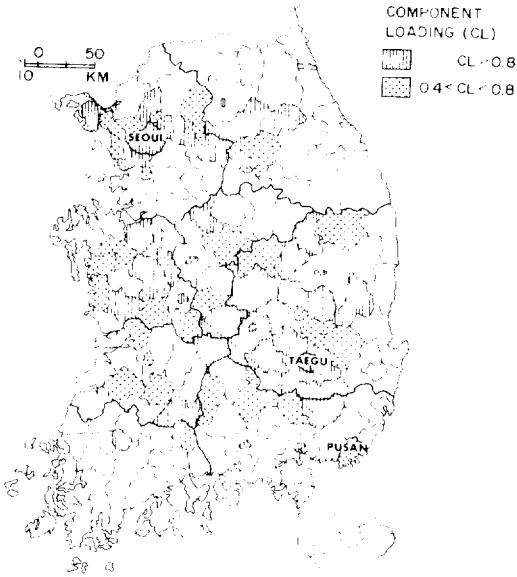


**Fig. 1. Eastern and Southwestern Coastal Regional Structure**

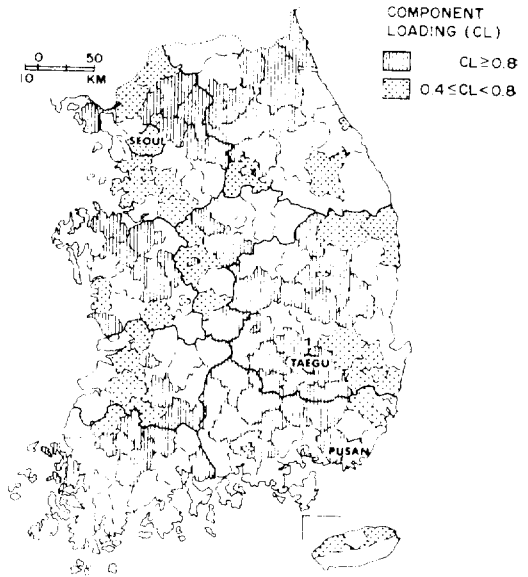
stand spatial dimensions easily. Component I in 1984 is almost identical with component II in 1970, 1976, and 1980 (Figure 1 and Table 5). This component represents similarity in industrial

structure of the eastern and southwestern coastal regions, which has maintained a dominant position in food industry for a long time. The distinct spatial dimension has never been changed

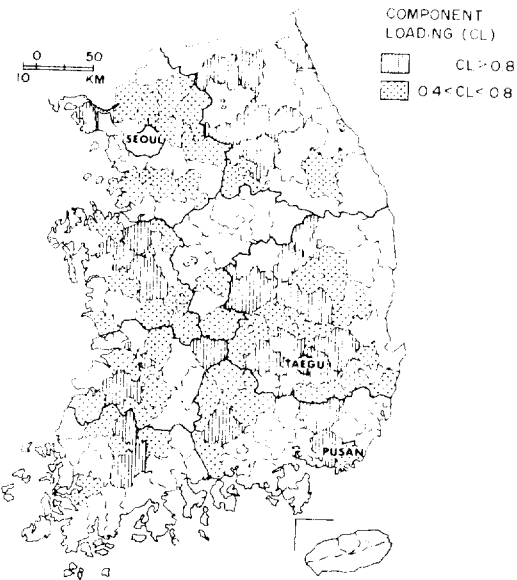
Component I (1970)



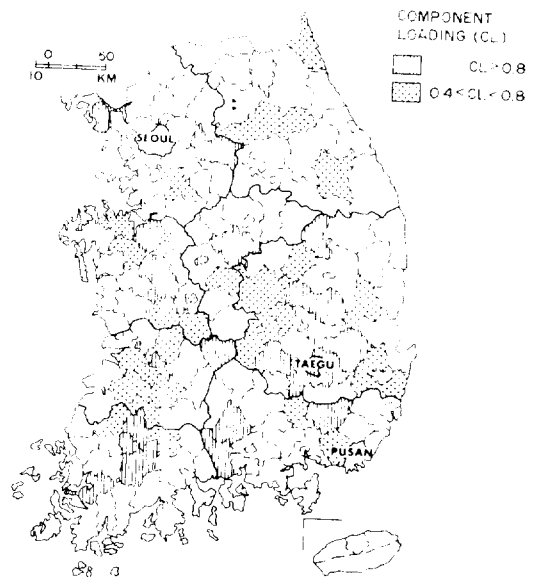
Component I (1976)



Component I (1980)



Component II (1984)

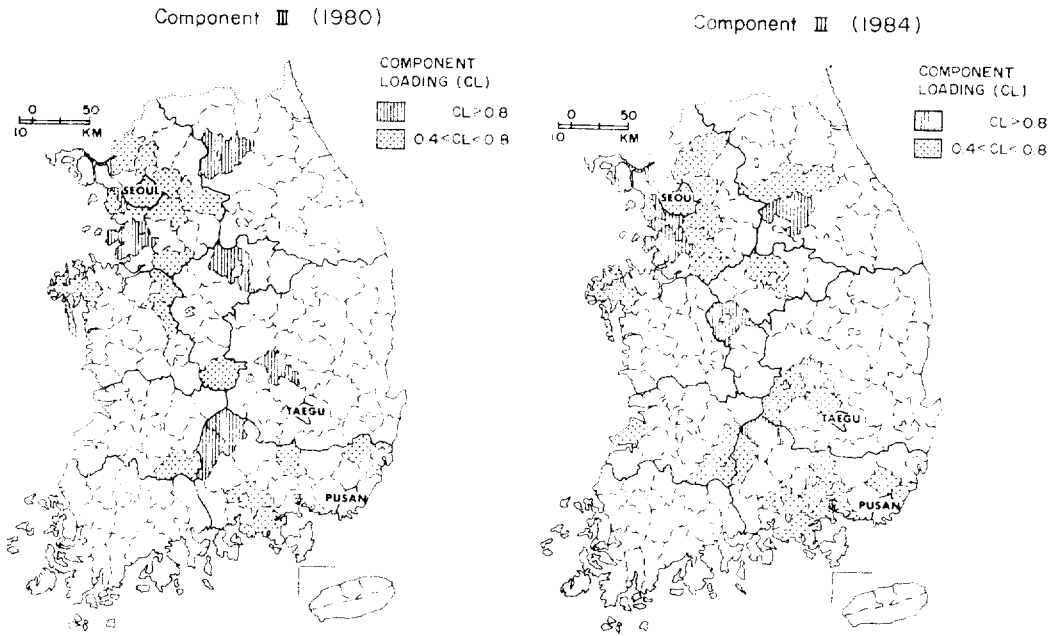


**Fig. 2. Textile Dominant Inland Dispersed Regional Pattern**

since 1970, though there exists a slight change in spatial extension. Most of the regions highly related to the component are poor in industrial development.

Component II in 1984 is comparable to component I in 1970, 1976, and 1980 (Figure 2 and Table 5). This component is considered an inland dispersed pattern which reveals traditional





**Fig. 3. Newly Emerging Seoul-Pusan Axis Structure**

textile dominant structure. Taegu city and its surrounding areas are traditional textile regions and these areas are still closely related to the component. Remarkable spatial extension of high component loadings ( $\geq 0.8$ ) in 1976 reflects considerable dispersion of textile industry during the early 1970s. The textile industry in Korea has undergone decentralization and dispersion since the late 1960s. Higher percent total variance of Component I in 1976 (38.5%) and continuous decrease of the percent thereafter reveal the higher degree of spatial expansion of the textile industry in the mid-seventies and comparative stagnation of the industry thereafter, respectively.

Component III in 1984 is a newly emerged Seoul-Pusan axis structure which is dominated by electrical machinery industry (Figure 3 and Table 5). This spatial structure has begun to show up since mid 1970s and has emerged as a distinct component since 1980. The emergence of this spatial component reflects the areal expansion

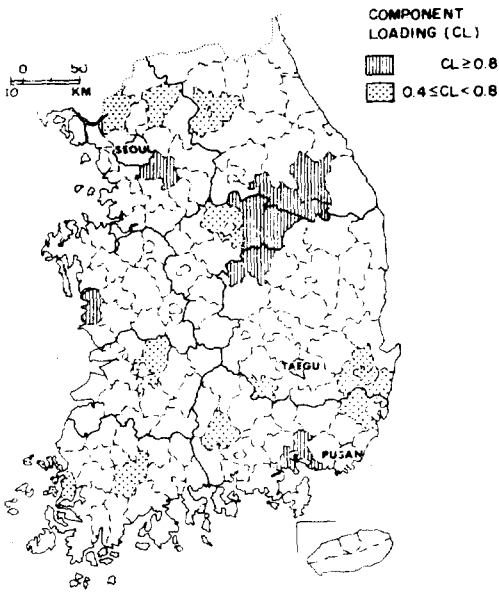
of technology intensive industrial location, especially decentralization within the Seoul metropolitan area. The Seoul metropolitan area comprised 63.9% of total high technology industrial plants in 1983 and rapid decentralization from Seoul to its suburbs has progressed since around the end of 1970s.<sup>12)</sup>

Component IV in 1984 is almost identical with component V in 1980 and component IV in 1970 and 1976 (Figure 4 and Table 5). Areas of high component include the counties of comparatively rich natural resource endowments and are related to the dominance of other nonmetallic mineral products in their industrial structure.

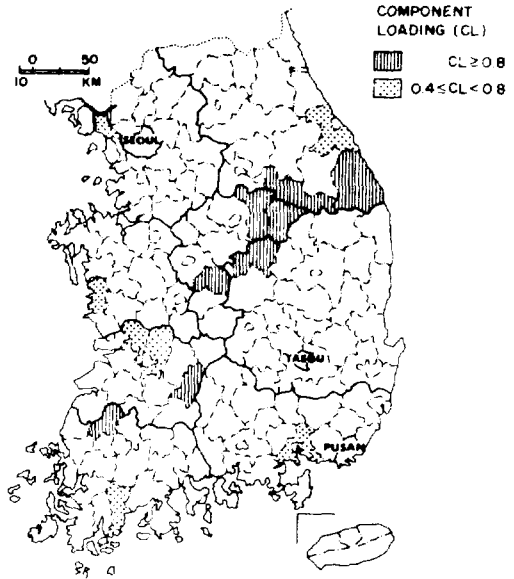
Component V in 1984 is comparable to component IV in 1980 and is somewhat related to component III in 1970 and 1976 (Figure 5 and Table 5). This component in 1980 and 1984 comprises mainly underdeveloped and unindustrialized regions. Wood and wood products and beverage industries contributed most to the sim-

12) Park, Sam Ock, 1985b, "High Technology Industries, R&D Activities, and Regional Development in Korea," *The Korean Journal of Regional Science*, Vol. 1, pp. 37-50.

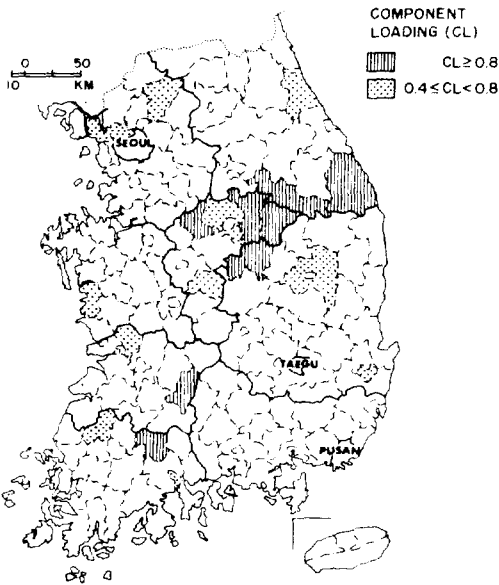
Component IV (1970)



Component IV (1976)



Component V (1980)



Component IV (1984)

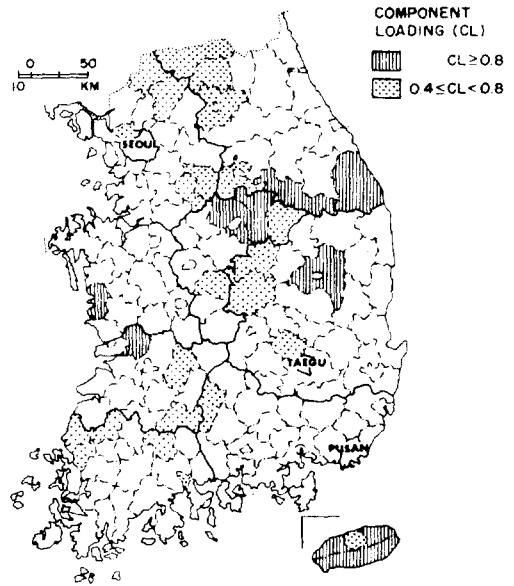
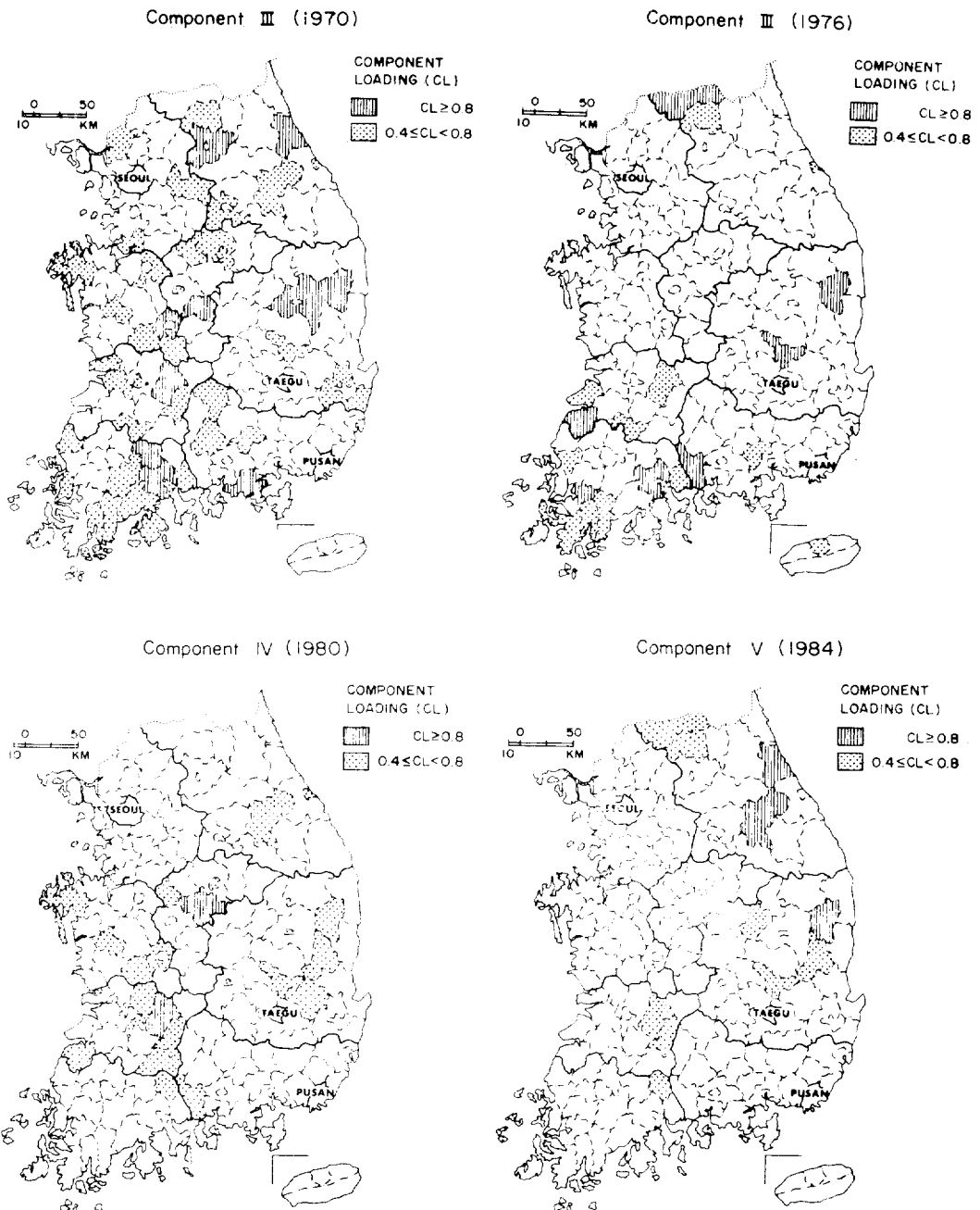


Fig. 4. Natural Resources Oriented Areal Structure

ilarity in structure. The unindustrialized rural counties were relatively specialized in beverage industry in their industrial structure before the early 1970s as brewing industry dispersed even to rural areas. Because of this relative speciali-

zation, component III in 1970 mainly represented dispersed rural counties throughout the country. From the mid 1970s, however, most of rural areas have experienced the changes in industrial structure, especially with the dispersion of textile



**Fig. 5. Underdeveloped Reorganizing Regional Structure**

industry to rural areas, and therefore, relative position of the brewing industry in rural counties has been attenuated since that time. Less extended spatial pattern with lower level of the percent total variance of the component in 1976

and further less important position of the beverage industry in the spatial industrial structure component in the 1980s support the above interpretation. Beverages may not contribute to any major component with further progress of industrializa-

tion of rural areas in the future.

## 5. Summary and Discussions

This study aims to examine the extent to which regional industrial structure has changed since 1970; to investigate major dimensions of spatial industrial structure; and to specify distinct regions showing similar industrial structure.

National industrial structure as a whole has been diversified since 1970. There exists, however, a spatial variation in the diversity of industrial structure. Unit areas in the Seoul metropolitan area are comparatively more diversified and diversifying in their industrial structures, while most of the unit areas in the peripheral regions are relatively less diversified and even more specializing. Unit areas in the Pusan metropolitan area are in the middle of the two regions in the diversifying trend. The results of the diversity analyses reflect that the degree of diversity in industrial structure is somewhat related to regional industrial growth as implied in the study of regional industrial structure of the U.S. South and in the study of U.S. economy.<sup>13)</sup>

Spatial dimensions of industrial structure in 1984 can be represented by five components resulting from the Q-mode PCA. These are 1) eastern and southwestern coastal regional structure which has maintained a dominant position in food industry for a long time; 2) Inland dispersed regional pattern which is related to the textile dominant structure; 3) newly emerging Seoul-Pusan axis structure, related with the recent technology intensive industrial development; 4) natural resources oriented areal structure, related with the dominance of other non-metallic mineral products; and 5) underdeveloped and unindust-

rialized reorganizing regional structure, dominated by wood and wood products and beverage industries.

From the above five components 1), 2), and 4) are long standing spatial structure of industry in Korea though considerable fluctuations in spatial extents exist in the textile dominant structure. There also exists dynamics in other components. One is a newly emerging spatial dimension of industrial structure and the other is losing its importance as a distinct spatial dimension of industrial structure and seems to be reorganized in the near future.

The overall results of the Q-mode PCA support the hypothesis that the rapid industrial growth and the locational changes in manufacturing have contributed to the emergence of the new spatial dimension of industrial structure and the dynamics of existing spatial dimensions of industrial structure in the Korean space economy. Several policy implications can be discussed from the results of this study.

The continuous long-standing spatial dimensions of industrial structure which are related to traditional labor-intensive industrial sector is still important in the Korean space economy, especially in the relatively laggard regions. The evolution of new spatial industrial dimensions is not overriding at present stage, rather it seems to be an ongoing process. Accordingly, sectoral diversifications and improvements in productivity and technology in the traditional sector should be pursued simultaneously for the regional development of the laggard regions which are dominant in the long-standing spatial industrial structure.

In order to disperse structural transformations into the peripheral areas in the Korean space

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13) Fisher, James S., 1981, "Structural Adjustments in The Southern Manufacturing Sector," *Professional Geographer*, Vol. 33, No. 4, pp.466-474.

Keinath, Jr. W.F., 1985, "The Spatial Component of the Post-Industrial Society," *Economic Geography*, Vol. 61, pp.223-240.

economy, the enlightenment of regional innovation potentials in the regional centers of peripheral regions should also seriously be considered in the high technology industrial development policy. Mere physical dispersion of plants to lagging regions from Seoul and in turn changes in industrial structure of the regions may not successfully contribute to the balanced developments of peripheral regions. This is true in the case that the overconcentration of decision powers of larger firms in the core area and limited autonomy at the plant level in the peripheral areas result in the lower level of local linkages in production, services, and informations.<sup>14)</sup> About 88% of the headquarters which have locationally separated plants are concentrated in Seoul.<sup>15)</sup> This overconcentration of decision powers of larger firms in Seoul may not be desirable to the development of the peripheral regions.

Other aspect to be considered in the industrial structure of a region is product cycle stages. If a region is highly specialized only in standardized manufacturing, the region's economy may be

vulnerable even if it is diversified across several industries.<sup>16)</sup> The examination of spatial division of labor and issues of external control in Korea suggests that cities other than Seoul, Pusan, and Taegu are in poor condition in innovation potentials and plants located in the peripheral regions are more highly standardized than those of the core areas.<sup>17)</sup>

Discussions based on views of industrial systems and the stages of product cycle suggest that a region's diversity in operating units of industrial systems and product cycle stages should be concurrently considered with the diversity of regional industrial structure in order to link the sectoral transformations with the development of regions. In this aspect, further in-depth studies on spatial industrial structure with integrating aspects of industrial systems, innovation potentials, and sectoral aspects of industry altogether are necessary to derive agreeable policy implications for regional development of the peripheral regions in the Korean space economy.

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- 14) Watts, H.D., 1981, *The Branch Plant Economy: A Study of External Control*, Longman, London.  
Park, Sam Ock, 1986, "Regional Changes in the Industrial System of a Newly Industrializing Country: The Case of Korea," in Hamilton, F.E.I. ed. *Industrialization in Developing and Peripheral Regions*, Croom Helm, London.
- 15) Park, Sam Ock, 1985a, op. cit.
- 16) Malecki, E.J., op. cit.
- 17) Park, Sam Ock, 1985a, op. cit.

# 韓國 工業構造의 空間的 動態性

朴 杉 沃\*

## 「國文要約」

本研究는 1970年 以後 우리나라의 地域的 工業構造의 變化程度와 工業構造의 空間的 次元 및 그 動態性을 分析하는 것을 目的으로 한다. 1970年의 행정구역단위를 기준으로한 市·郡地域을 研究의 單位地域으로 하였으며 1970年, 1976年, 1980年 및 1984年의 製造業 細分類別 從業員數를 基本資料로 이용하였다. 研究單位地域의 工業構造變化程度를 把握하기 위하여 James A. Shear가 고안한 多樣化指數를 계산하였고, 工業構造의 空間的 次元과 그 變化를 밝히기 위하여 Q型主成分分析法를 利用하였다.

우리나라 全國의 工業構造는 1970年 以後 상당히 多樣化되어가는 경향을 띠었으나 地域別로는 큰變異를 보여주고 있다. 首都圈地域內에서 대부분의 單位地域들은 工業構造가 보다 多樣化되었고 多樣化되어가는 경향을 띠은 반면 首都圈과 釜山圈 以外的 地域에서는 많은 單位地域들의 多樣化程度가 낮은 양상을 띠었다. 多樣化指數의 分析結果를 통해서 工業構造의 多樣化程度가 地域의 工業成長과 관련이 있는 것을 알 수 있으며 이와같은 관계는 최근의 美國의 研究結果에서도 밝혀진 바 있다.

1984年의 우리나라 工業構造의 空間的 次元은 Q型主成分分析에서 나타난 5개의 成分으로 表現될 수 있다. 이들은 ① 오랜기간동안 食料品 工業이 주종을 이루는 東部海岸地域과 南西海岸地域構造; ② 纖維工業이 주종을 이루는 內陸의 分散된 地域패턴; ③ 最近의 技術集約的 產業과 관련된 서울-부산지역의 새로운 構造; ④ 其他非金屬鑛物生産이 우월한 資源指向의 地域構造; ⑤

飲料品工業과 나무 및 나무제품생산의 비중이 우월하나 재조직되어가는 구조 등이다.

이상의 5개의 成分中 ①, ② 및 ④번에 해당하는 구조는 1970年 이래 계속 유지해온 소위 傳統的인 空間構造라고 볼 수 있다. 물론 여기에서 ②번에 해당하는 纖維工業이 주종을 이루는 地域的 構造는 1970年 以後 空間的으로 상당한 변화가 있었지만 이것이 그동안 우리나라에서 주요한 空間的 構造를 차지하였음에는 변함이 없다. 그러나 나머지 두개의 成分에는 큰 變化가 있었다. 그중 하나가 1970年代에는 독특한 構造로서 나타나지 않았으나 1980年代에 들어서 出現한 ③번의 技術集約的 產業과 관련된 空間構造이다. 또다른 變化는 飲料品工業이 주종인 公營구조의 空間的 次元이 그 중요성을 점점 상실하고 再組織되어가는 점이다. 이는 ⑤번에 해당되는 것인데 앞으로 工業化가 進진됨에 따라 새로운 형태의 空間構造로 재조직될 것으로 보인다.

Q型主成分分析의 結果는 급속한 工業成長과 工業立地變化가 工業構造의 새로운 空間的 次元을 出現하게 하였고 기존의 空間的 次元에 動態性을 갖게하는데 영향을 미쳤음을 나타내준다.

本研究 結果를 통해서 몇가지 政策的 問題도 토론될 수 있다. 즉 오랫동안 유지해온 工業構造의 空間的 次元은 대부분이 소위 전통적인 勞動集約的인 工業部門과 관련이 있으며 이는 아직도 우리나라 空間經濟에서 重要한 위치를 차지하고 있다. 반면에 새로운 工業構造의 空間的 次元이 아직은 分明하고 重要하게 나타나지는 않고 이제 形成段階에 있다고 보아야 타당할 것 같다. 그렇다면 새로운 構造의 形成을 가속화하는 政策도 필요하겠지만 傳統的 工業構造를 중심으로 空間的 次元을 이루는 地域의 開發에도

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주의를 기울여야 될 것이다. 이들 지역의 工業 業種別 多樣化는 물론 傳統的 工業部問에의 技術導入을 통한 生産性的 向上과 生産品質의 向上이 우선되어야 할 것이다.

工業의 構造的 變化的 물결을 周邊地域에 分散시키기 위해서는 周邊地域 地域中心都市들의 刷新潛在力을 개발하고 향상시키는 政策的 지원도 필요하다고 본다. 地域中心都市의 工業機能이 단순한 生産機能뿐만 아니라 工業의 中樞管理機能, 研究開發機能 등을 포함하여 어느정도 다양

화되어야 할 필요성이 높기 때문이다. 이와같은 문제는 우리나라 工業化過程에 비추어볼 때 지금부터 충분히 고려되어야 할 과제라고 본다.

本 研究가 단순히 工業의 部門別構造를 중심으로 分析하였기 때문에 工業體系의 運營單位의 多樣性, 製品壽命週期의 各段階의 多樣性, 同一 工業部門內에서의 技術수준의 多樣性 등은 소홀히 하였다. 이와같은 문제들은 금후 깊이있게 연구되어야 할 주요과제들이라 본다.