Industrial Competitiveness and Economic Strategy in City-Region: A Case study of Fukuoka City

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■ **Summary**: This paper focuses on urban competitiveness of industry and urban economic strategy in Fukuoka city. Urban economies were globalized, city-regions necessarily exposed to international competition in 21st century. In the development of urban competition, city-regions have to produce industrial competitiveness. By planning the original strategy of city-region, it is necessary for city-region to go on independent urban growth based on basic industry. Fukuoka-city is not exceptional, which is the core city of Kyushu and placed the Gateway to Asia in Japan. Findings obtained in this study are that Fukuoka-city must develop the regional industrial policy which is based on growing Wholesale and Retail Businesses and Service Industry.

■ **Keywords**: Urban Competitiveness, Regional Distinctiveness, Basic Industry, Wholesale and Retail Businesses, Service Industry

1. Introduction

With advance in the globalized economy, the city, which a domestic competition has been done up to now, will be exposed to a global interurban competition. It is necessary to brew the economic force that can correspond to competition for other cities in a global interurban competition. The urban competitiveness is able not to be formed at once. It is not only requested to promote the economic base with growth potential but also to promote a peculiar economic base of each city, which ranks with another city.

In this paper, I want to try to consider about the urban competitiveness of Fukuoka-city. Fukuoka-city is a gateway in East Asia, which is the center city in the Kyushu area. Therefore, materializing in the future, it is thought that it will play an important role in a local plan of the national land plan (large area block). Maintaining the base in Kyushu, the urban competitiveness of Fukuoka-city has the important significance. In addition, it is important to have the urban competitiveness in the city, not only for the viewpoint of the economy but also for the life side. The urban competitiveness decides whether to improve the quality of life in the city through re-distributing to profit raised in the urban economy to household. Consequently, the urban competitiveness becomes an important key concept from the viewpoint of improving the living standard of Fukuoka- city.

The following is contents of this paper: I try to define the urban competitiveness, to analyze empirically. Finally, I show the directionality of the economic strategy in Fukuoka-city.

2. Definition of urban competitiveness

Recently, the definition about the urban competitiveness has been shown the notable achievement in the world.

For instance, M. Parkinson[10] is deriving the urban competitiveness from six standards. Concretely, (1) economic diversity for manufacture and service industry, (2) competitive superiority of city by supply of skilled workers engaged in the information-intensive industry, (3) the relation between supply-side and reception-side of skilled

workers which belong to university, research organization, government and private sector, is good, and the network is dense. (4) (social, cultural and physical) environments are very high. And attracting and being able to stay the worker who has a mobility necessary for industrial management, (5) the substantial condition of communication and transportation, (6) to carry out long-term strategy, it is possible to use strategically public and private sector, social, cultural and political resources in the region.

Moreover, R. Florida[1], who has been paid attention in recent years, requested the source of the economic growth in the city from "Creativity". It is necessary for the growth by this creative economy to have three T (Technology, Talent and Tolerance). Thus, he thought that, through the city accumulates creative human capital, it realizes innovation and improvement for the productivity. He says that the city acquires economic competitiveness by this system. He goes into this thought, and makes his original index. He ranks cities in the United States, based on it.

Mochizuki[13] is similar to Florida's method, which ranks from the viewpoint of urban competitiveness. Mochizuki analyzes the competitiveness of Kawasaki-city which had been specified an ordinance-designated city, based on urban competitiveness index announced by the Beacon Hill institute of the Suffolk university. The meaning of using this urban competitiveness index is that indicate what a high competitiveness means a high economic performance. Thus, to strengthen the urban competitiveness, the environment becomes important factors, which are, for example, developments of business, entrepreneur, securing the workforce, technical skill. He measured the competitiveness of Kawasaki-city in cities in the United States, comparing between 50 cities (metropolitan area) in the United States and Kawasaki-city, based on these conditions.

The urban competitiveness has the characteristic which is connected closely with economic development. Seeing Figure1, there is the tendency that adds to an element, for instance, the culture and the environment without economy etc, when he thinks the urban competitiveness. However, when you discuss the urban competitiveness, it is an important output that the city survives economically. Based on it, the definition of the urban competitiveness is almost same as the economic competitiveness. Thus, we can understand to substitute the urban competitiveness with the urban industrial competitiveness.

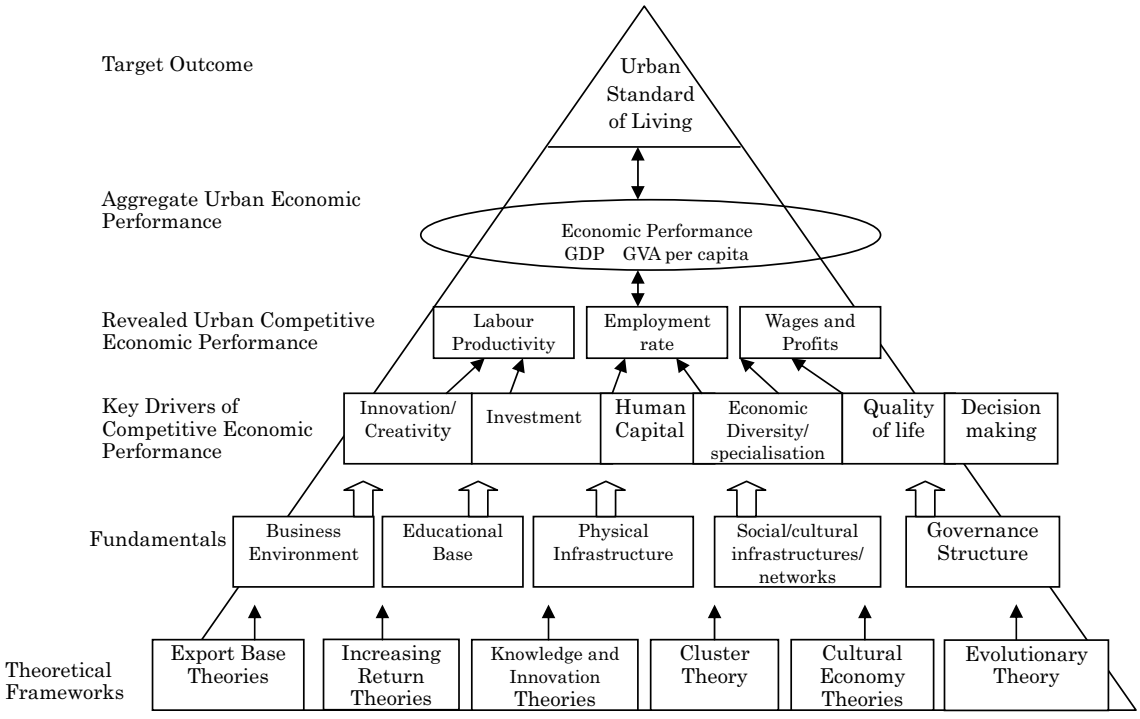

Figure 1 Conceptual of Urban Competitive Performance
Source : J.Glasson and T.Marshall (2007) p.70. Fig4.2

3. The analysis of the industrial competitiveness in Fukuoka-city

From here, I try to investigate the measurement of industrial competitiveness in Fukuoka-city, and, based on this implication, I consider the economic strategy in Fukuoka-city. As basic assumption, the urban competition has been done in Japan. I clarify that position Fukuoka-city has acquired in that. Primarily, I have to analyze that it is necessary to compare international city. However, in this paper, I analyze only the industrial competitiveness of a domestic city, because of the restriction of data etc. The objects for analyzed cities are 12 ordinance-designated cities and special wards of Tokyo.

When we think the urban competitiveness, at the first, industrial distinctiveness is important. If the city had an original industry compared with other cities, there are agglomeration economies in that city. At a result, urban agglomeration strengthens itself further. Therefore, to improve agglomeration economies, it is necessary to have an industrial diversity and industrial distinctiveness. When the industry has an industrial diversity and distinctiveness, it is not enough that an individual industry is various. It is necessary that the basic industry that stimulates economic growth for the city is various and original. Because of two or more basic industries are located in a single city, agglomeration economies are strengthened so as urbanization economies.

I would like to proceed in analysis according to this logic. The industrial diversity and the distinctiveness are clarified from two analyzed perspectives. In the first, we indicate whether the city concerned has distinctiveness different from the industrial structure in the nation. Japan's economic growth is based on manufacture and service industry. However, in the level of city, further subdivided industrial diversity and distinctiveness form the urban competitiveness. Then I try to verify how the city has original industrial diversity and distinctiveness. In the second, based on them of urban industry, I try to explain that the city grows by what basic industry and it has the competitiveness. Then, in the first, I analyze industrial diversity and distinctiveness in the city. I adopt Regional Distinctiveness Index: RDI[(1)] presented by A.Markusen[3)] as a basic model. This model takes the numerical value from 0 to 100. If it was near 0, it means that the industrial structure is similar to national, and oppositely, if it was near 100, it means that the difference from the industrial structure in the nation. RDI is obtained from the next numerical formula.

$$RDI_r = \sum_0 \frac{\left| \frac{E_{or}}{E_r} - \frac{E_{oR}}{E_R} \right| * 100}{2} \qquad (1)$$

$E\ (r)$: total number of an employee in region r
$E\ (R)$: total number of an employee in nation R
$E\ (OR)$: the number of an employee for an occupation o in region r
$E\ (or)$: the number of an employee for an occupation o in nation R

Table 1 Regional Distinctiveness for Individual City
Source: Census 2005

When I analyze below, I calculate Regional Distinctiveness Index in 12 ordinance-designated cities and special wards of Tokyo, substituted above numerical formula for census data. The result is Table 1. From table 1, Kitakyushu-city is the nearest the industrial structure in the nation, it is intermediate cities where Yokohama-city, Nagoya-city, Kyoto-city, Kobe-city, and Hiroshima-city are located. And, special wards of Tokyo and Fukuoka-city show that the industrial structure and the character are different from national, and have an original industrial characteristic.

From this analysis, as Yokohama-city and Osaka-city advocate a creative city, however Yokohama-city does not have low industrial distinctiveness in the side of industry. Osaka-city, where has been developed traditionally industrial city, has higher industrial distinctiveness. Fukuoka-city has Regional Distinctiveness Index higher than it of Sapporo-city, Sendai-city and Hiroshima-city which are local center cities. Its industrial diversity is higher. The level of Regional Distinctiveness Index in Fukuoka-city is same to the level of it in special wards of Tokyo.

In above analysis, I indicate that Fukuoka-city is a high distinctiveness compared with industrial structure in nation. Next assignment is that Fukuoka-city depends on what basic industries. In other words, I try to investigate what industries are industrial sources in Fukuoka-city.

The economic base in Fukuoka-city can be gotten by an economic basic analysis. A standard technique of an economic basic analysis in the regional economics is location Quotient method (LQ). It is defined, if LQ is over 1, the industry means a basic industry which grows the urban economy. And if it is lower than 1, the industry means a non-basic industry which consumes industrial outputs within the city. LQ is obtained from the next numerical formula[2].

$$LQ_{ir} = \frac{E_{ir}}{E_r} \Big/ \frac{E_{in}}{E_n} \qquad (2)$$

$E\ (ir)$: the number of an employee for the industrial sector i in region r
$E\ (r)$: total number of an employee in region r
$E\ (in)$: the number of an employee for the industrial sector i in national level
$E\ (n)$: total number of an employee in national level

Table2 Basic Industries in Fukuoka-city
Source: Census 2010

Industry(large classification)	The number of employee in indivisual industry		National constitution ratio of the number of employee in indivisual industry(%)	Fukuoka's constitution ratio of the number of employee in indivisual industry(%)	Total number of the employee in basic industries of Fukuoka-city
	National(person)	Fukuoka-city(person)			
Total	61,505,973	798,752			
Agricaulture	2,703,360	4,173	4.40%	0.52%	
Forest	46,618	59	0.08%	0.01%	
Fishery	215,813	829	0.35%	0.10%	
Mining	26,921	37	0.04%	0.00%	
Construction	5,391,905	70,599	8.77%	8.84%	577
Manufucture	10,646,362	44,218	17.31%	5.54%	
Electric・Gas・Heat supply・Water supply	279,799	5,449	0.45%	0.68%	
Telecommunication	1,624,480	40,175	2.64%	5.03%	19079
Transport	3,132,712	47,334	2.64%	5.03%	
Whole sale and Retail	11,018,413	185,495	5.09%	5.93%	42404
Finance and Insurance	1,537,830	31,975	17.91%	23.22%	12004
Real estate	859,635	19,381	2.50%	4.00%	
Eating and drinking, Lodging industry	3,223,451	51,849	1.40%	2.43%	9987
Medical and Social welfare	5,353,261	64,981	5.24%	6.49%	
Education and Learning support industry	2,702,160	37,715	8.70%	8.14%	2623
Complex service industry	679,350	5,808	4.39%	4.72%	
Service industry	8,819,754	142,578	1.40%	2.43%	28040
Public Service	2,098,148	24,979	5.24%	6.49%	
Industry of cassification impossibility	1,146,001	21,118	8.70%	8.14%	
Total number of the employee in basic industries					114713
The ratio of the employee in basic industries(%)					14.36%
BN ratio(regional multiplier)					6.96

Based on above numerical formula, I find some basic industries in Fukuoka-city. The results are Table 2. When I calculate basic industries, I use Doi's method for the industries which LQ are over 1[3]. At a result, Fukuoka-city has some basic industries which are construction, telecommunication industry, wholesale and retail, finance and

insurance, eating and drinking, lodging industry, education and learning support industry, service industry. This means that Fukuoka-city has an industrial diversity.

As a result of the analysis, Fukuoka-city has seven basic industries. This means the formation of urban economies in Fukuoka-city from urban economics perspective[4]. Fukuoka's basic industries have some characters that it is not manufacture like national industrial structure but wholesale and retail industry. In this discussion, what Fukuoka's retail industry is strong corresponds to the top of shopping city which elected by "MONOCLE"[5] in UK[6] .

However, manufacture has overwhelming international competitiveness in Japan. Then can we think that Fukuoka's wholesale and retail industry become resources of the urban competitiveness? Yoh[9] points out what alternative industry of manufacture is wholesale and retail industry, and service industry. According to this view, we think Fukuoka's industrial structure forms the urban competitiveness through not the weak manufacture but the force of wholesale, retail, and service industry.

In this paper, I try to measure the agglomeration degree of a wholesale which complements a retail industry. The indicator of the agglomeration degree in a wholesale is W/R ratio[7]. W/R ratio means indicator which understands the agglomeration condition of wholesale in inter-region. W/R ratio is obtained from the next numerical formula.

$$\mathrm{W/R}\ ratio = \frac{wholesale\ (\mathrm{W})}{retail\ (\mathrm{R})} \tag{3}$$

Table 3 W/R Ratio
Source: Commercial Statistics 2008

As I substitute former numerical formula for the data of a commercial statistics, I calculate W/R ratios of 12 ordinance-designated cities and special wards of Tokyo. The result is a table 3. As the result of the analysis, the W/R ratio is, in general, higher in the large cities. And the W/R ratios in the other cities are lower. W/R ratios of Sendai-city, Hiroshima-city, and Fukuoka-city are exceptionally higher. The W/R ratio of Fukuoka-city was especially the highest in the local center cities. This result supports that whole sale is strength. Thus, in above study, Fukuoka' competitiveness which supported by developments of wholesale, retail, and service industry receives urbanization economies.

4. An economic strategy based on industrial competitiveness

When the local government decides on the development strategy based on urban competitiveness, it is necessary for it to design the strategy based on basic industry. In the case of Fukuoka-city, strong basic industries are wholesale, retail, and service industry. Therefore, it should consist of economic strategy based on these industries. I try

to lead the impact of basic industries which use basic industry model. Here, as I base on Otomo[5], I consider the economic strategy through an employment of alternative indicator in urban development.

In this paper, as alternative indicator of urban economy is an employment, the element of urban development becomes urban employment structure. The urban employment structure is defined by the next numerical formula.

$$T = B+N \tag{4}$$

T : the number of an employee in the whole city
B : the number of an employee in the basic industry
N : the number of an employee in the non-basic industry

If I put on $\mathrm{N/B} = \alpha$, above numerical formula is transformed below.

$$T = B+(N/B)B \tag{5}$$

$$T = (1+\alpha)B \tag{6}$$

$(1+\alpha)$ in the above numerical formula is a regional multiplier. As a result, this formula means that the number of an employee in the city is decided by the number of an employee in the basic industry. Kadomoto[7] points out, if number of an employee in the basic industry increased a person, the number of an employee in the non-basic industry increases about 10 person.

Thus, when the local government drafts the urban economic strategy, if it put the policy target on an improvement in quality of life through increase of employment, it is important that it carries out urban policy to increase the number of employee in the basic industry. This urban policy has a characteristic of an industrial policy.

In this discussion, as I consider to the competitiveness of Fukuoka-city, I confirm that it has some competitive industries which are wholesale, retail and service industry. After this, if these competitive basic industries grew, the urban agglomeration expands, and develops urban economy. In other words, the urban economic strategy has a subject which brings up competitive industries. When I think the economic strategy in Fukuoka-city, wholesale and retail industry is the most important sector.

As a traditional industrial policy in a region has attached greater importance to an inner-regional balance, local government cannot carry out choice and concentration for the public investment. In this background, there is a proposition which regional development has to aim at an inner-regional balance. Nowadays it has been important that realize the development for aiming at an inner-regional balance. However, if Fukuoka-city could not have a strong economic force, it is difficult that it realizes the development for aiming at an inner-regional balance. Especially, when many cities compete extremely under “structural reform”, Fukuoka-city has to defeat the other cities in Kyushu. Then if it acquired an economic result, it must pursue the development for aiming at an inner-regional balance based on an economic result.

To form the competitiveness for defeating the other cities in urban competition, Fukuoka-city will make the regional industrial policy, which grows it strategically. Then it is necessary that Fukuoka-city thinks a choice and concentration of the public investment.

Now, Fukuoka-city has a lot of industrial agglomeration. However, this is not a purity agglomeration but a casual agglomeration or social agglomeration historically. Thus, if local government implemented a strong industrial policy in the region, and if it got ready for the economic condition in the city, the agglomeration economies becomes stronger. Therefore it is necessary that Fukuoka-city implements the regional industrial policy which contributes to strengthen the competitiveness. The regional industrial policy needs to become competitive to bring to a regional innovation.

5. Industrial policy in Fukuoka-city

I think that the industry of Fukuoka-city develops while enjoying the profit from agglomeration of urbanization economies. However, as it has been formed the urban industry by a casual agglomeration, the industrial policy for

the implementing method of economic strategy has not been enough for the design of an urban agglomeration.

As usual, unless Fukuoka-city has not been done a management effort, urban agglomeration in Fukuoka-city has been become a lot of depth, because Kyushu economy has concentrated to Fukuoka-city. In this period, 2011 is a turning point which the industrial policy in Fukuoka-city begins a new stage.

6. Conclusion

In this paper, I think urban industrial competitiveness and economic strategy through case study of Fukuoka-city. As a result, Fukuoka-city has higher industrial distinctiveness in local center cities, and has industrial diversity, which is grown by urbanization economies. Especially, wholesale, retail and service industries in Fukuoka-city have the competitiveness. Though Fukuoka-city has a subject which strengthens strategically wholesale, retail and service industries, it will acquire the urban competitiveness.

As M. Parkinson pointed out, if the source of urban competitiveness was the diversity of manufacture, it is weakness for Fukuoka-city not to have a manufacture. However, in this consideration, I indicated that wholesale and retail industry had an alternative function for a manufacture. Therefore urban economic strategy in Fukuoka-city has to invest intensively wholesale and retail industry.

Fukuoka-city has been chosen as the best shopping city in the world in "MONOCLE" which published in UK. This means that Fukuoka-city has the potential of retail industry. I expect that Fukuoka-city will implement an economic strategy through this force, which develops in world economy.

Notes

(1) A. Markusen is a professor of Minnesota University, who is an authority in the urban policy and the city planning research. In this paper, I selected RDI which has led by Markusen and Schrock[3].

(2) In this paper, the formula of the location coefficient method is derived according to study of P. McCann[4].

(3) Doi's method is a technique that can improve it to divide agriculture and the region by J.C Weaver in the United States. Otomo[5] consider to the detail (pp.115-117).

(4) Urbanization economies mean the economy of the agglomeration caused in the enterprise of different industrial sectors (P. McCann[4], p.58).

(5) "Monocle" issue15, volume2, 2008, p.26.

(6) "Monocle" Issue15, volume2, 2008, pp.205-213.

(7) This method depends on K. Hashimoto[11] (pp.8-9). This analysis tool is not the techniques of economics and geography but the techniques of business administration and the distribution industry.

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