

An Evaluation of Decentralization Policies in Light of Changing Location Patterns of Employment in the Seoul Region

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I. Introduction

In the next two decades the urban population in developing countries will continue to grow about four times as fast as in the industrialized countries. Between 1975 and 2000 the urban areas of developing countries are expected to absorb close to one billion people. In the mid-1970's the net annual addition to the population of Mexico City and São Paulo, for example, was over half a million each; the number was over a quarter of million in Jakarta and Seoul. By the year 2000 the developing world will have 40 cities with 5 million or more people; 18 of them are expected to have more than 10 million people. Until 1950 Buenos Aires was the only city in the developing world with a population over 5 million (World Bank, 1979, p. 72).

The rapid urbanization in these countries has produced a heavy concentration of population and economic activity in a very few large urban centers. This pattern of urban concentration has generated two major policy concerns. First, it is widely believed that the largest cities in these countries are getting "too big." This belief is not usually based on evidence that negative externalities such as pollution and congestion are greater than the benefits of agglomeration economies. It is more likely that the concerns about the size of these large cities stem from the decline in the quality of life of their high income groups, from the frustrations of planners who have experienced enormous pressure in recent years to accommodate the rapid urban growth, and from a fear that large cities may experience catastrophic failure of management. The second, and perhaps more easily understood, policy concern focuses on regional equity, since in

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most countries it is politically and socially important to maintain balance between regions in terms of income, education and employment opportunities, and urban amenities. Concerns about regional equity also often underlie programs and policies that attempt to redirect population growth from large cities.

In the middle income countries of Latin America and East Asia, including Mexico, Brazil, Venezuela, the Philippines, and Korea, policy makers have paid a good deal of attention to various ways to reduce spatial biases toward the large cities. More recently, the governments of these countries have initiated specific policies to decentralize economic activity away from the largest urban center to peripheral areas or secondary cities. Policy packages with diverse instruments have been initiated and implemented with varying degrees of success (Renaud, 1981). Among the decentralization policies initiated in these countries, industrial location policies tend to be the most important ones. This is not surprising since "the true determinants of urbanization and spatial concentration in developing countries are found in the forces that determine the location of employment opportunities: the nature and pattern of industrialization, the pace of agricultural development, and the growth of transportation and communication networks" (World Bank, 1979, p. 76). More specifically, the decentralization policies include explicit policy instruments intended to relocate existing industries from the large urban centers, or to induce new industries to new industrial zones, the secondary cities, or lagging regions.

The rationale for the policies to decentralize economic activity is difficult to justify on economic grounds alone, because these policies are an outcome of diverse social, political and economic objectives: interregional equity, political cohesion, national defense, and preventing further growth of large cities because of the fear of a catastrophic failure of urban management. Nevertheless, with the complex set of policy objectives, decentralization policies are very likely to be pursued in these middle income countries. Hence, it will be extremely important to help governments select policies that are least damaging to the overall welfare of the economy.

For analytical reasons, it is convenient to address employment location policies from two levels of spatial aggregation: (1) "deconcentration policies" aimed at modifying employment location patterns within the capital region; (2) "decentralization policies" intended to influence spatial patterns at the national level. The former involves a study of intrametropolitan phenomena while the latter deals with interregional issues, including the development of secondary cities and lagging regions.

This paper is confined to intrametropolitan issues within the capital region.

In order to formulate sound spatial policies and to implement plans and programs efficiently, it is essential for policy makers to understand the trend of employment location patterns and how firms' location behavior tends to produce such a trend. In the Bogota "City Study" conducted at the World Bank, analytical and empirical results were established regarding firms' location decisions (Lee, 1982b), but a study of policy effects was not undertaken due to the absence of explicit policy instruments implemented there. Measuring such policy effects is the focus of our current research on employment location policies in Korea, which is a country with a long history of policy experiments.

As part of continuing research efforts, this paper documents the changing patterns of employment location in the Seoul region and draws some policy implications.

II. Changing Location Patterns of Population and Employment

Changes in the Distribution of Population in Korea

Table 1: During 1975-1980, Seoul and Busan (two "special cities"), and Gyeonggi province where Seoul is located, were the only three areas that

[Table 1] Distribution of Population by Province, 1975-1980 (in thousands)

	1975		1980		Annual Average
	Persons	%	Persons	%	Growth Rate (%)
Seoul	6,890	19.8	8,367	22.3	3.96
Busan	2,453	7.1	3,160	8.4	5.20
Gyeonggi	4,039	11.5	4,935	13.2	4.09
Gangweon	1,862	5.4	1,792	4.8	- 1.76
Chungbug	1,522	4.4	1,424	3.8	- 1.32
Chungnam	2,949	8.5	2,956	7.9	0.05
Jeonbug	2,456	7.1	2,288	6.1	- 1.41
Jeonnam	3,984	11.5	3,779	10.1	- 1.05
Gyeongbug	4,859	14.0	4,962	13.3	0.42
Gyeongnam	3,280	9.5	3,323	8.9	0.26
Jeju	412	1.2	463	1.2	2.36
All	34,707	100.0	37,449	100.0	1.53

Source: NBS, *Preliminary Count of 1980 Population and Housing Census*, November 1, 1980.

gained the share of population. The annual growth rate of population was much higher there than the national average. Seoul had a net gain of 295,000 persons each year while Gyeonggi and Busan gained 179,000 and 141,000 persons per year respectively. On the other hand, four provinces, including the southwest Jeolla region, experienced a net loss of population while other provinces had virtually no net changes with the exception of Jeju island. In the late 70's, the population continued to shift to the Seoul and the Busan regions.

Changes in the Distribution of Manufacturing Employment in Korea

Table 2: During 1973-1978, Busan, Gyeonggi, and two southeastern provinces (Gyeongbuk and Gyeongnam) gained the share of manufacturing employment; all other regions including Seoul lost their shares. Gyeonggi had the highest annual growth rate of manufacturing employment, almost twice the national average, while Seoul's growth rate one of the lowest in the country. It should be noted that the growth rate of manufacturing employment in the two southeastern provinces was about four times higher than that of establishments, indicating the births of large establishments in that region.

[Table 2] Distribution of Manufacturing Establishments and Employment by Province, 1973-1978

Establishment a/					
	1973		1978		Annual Average
	Number	%	Number	%	Growth Rate (%)
Seoul	5,832	25.0	7,752	26.0	5.9
Busan	2,020	8.7	3,282	11.0	10.2
Gyeonggi	2,437	10.5	5,229	17.5	16.5
Gangweon	849	3.6	913	3.1	1.5
Chungbug	709	3.0	692	2.3	-0.5
Chungnam	1,785	7.7	1,837	6.2	0.6
Jeonbug	1,240	5.3	1,191	4.0	-0.8
Jeonnam	2,717	11.7	2,146	7.2	-4.6
Gyeongbug	3,886	16.7	4,621	15.5	3.5
Gyeongnam	1,588	6.8	1,944	6.5	4.1
Jeju	229	1.0	255	0.9	2.2
Other	1	-	2	-	-
All	23,293	100.0	29,864	100.0	5.1

Employment a/					
	1973		1978		Annual Average
	Persons	%	Persons	%	Growth Rate (%)
Seoul	409,916	33.7	539,192	25.1	5.6
Busan	204,152	16.8	374,873	17.4	12.9
Gyeonggi	170,928	14.1	492,136	22.9	23.6
Gangweon	18,654	1.5	23,254	1.1	4.5
Chungbug	25,675	2.1	34,925	1.6	6.3
Chungnam	57,975	4.8	83,595	3.9	7.6
Jeonbug	39,010	3.2	55,286	2.6	7.2
Jeonnam	44,614	3.7	53,136	2.5	3.6
Gyeongbug	131,949	10.9	264,072	12.3	14.9
Gyeongnam	109,588	9.0	225,817	10.5	15.6
Jeju	3,920	0.3	4,635	0.2	3.4
Other	8	-	50	-	-
All	1,216,389	100.0	2,150,971	100.0	12.1

a/ With 5 or more employees.

Data Source: NBS Manufacturing Census Files.

Changing Location Patterns of Population and Manufacturing Employment in the Seoul Region

Table 3: During 1975-1980, the share of population between Seoul and Gyeonggi stayed constant with the same annual growth rate of about 4 per-

[Table 3] Changes in Population by City in the Seoul Region, 1975-1980

	1975		1980		Annual Average
	Persons	%	Persons	%	Growth Rate (%)
Seoul	6,890	63.0	8,367	62.9	3.96
Gyeonggi	4,039	37.0	4,935	37.1	4.09
Total	10,929	100.0	13,302	100.0	4.01
Incheon	800	7.3	1,085	8.2	6.28
Suwon	224	2.0	311	2.3	6.78
Seongnam	273	2.5	376	2.8	6.61
Euijeongbu	108	1.0	133	1.0	4.25
Anyang	135	1.2	254	1.9	13.47
Bucheon	109	1.0	221	1.7	15.18
Subtotal	1,649	15.1	2,380	17.9	7.61
Rest of Gyeonggi	2,390	21.9	2,555	19.2	1.34

Source: NBS, *Preliminary Count of 1980 Population and Housing Census*, November 1, 1981.

cent. Within Gyeonggi province however, the six satellite cities (see the attached map) grew much faster than the provincial average; the area outside the six cities lost its population share. Population grew fastest in two cities, Anyang and Bucheon, located at the major highway exits of Seoul.

Table 4: In contrast to the distribution of population, Seoul's share of manufacturing employment has declined sharply from 70.6 percent in 1973 to 48.3 percent in 1980 (Table 5). Manufacturing employment in

[Table 4] Changes in Employment and Establishments by City in the Seoul Region, 1973-1978

	1973		1978		Annual Average
	Number	%	Number	%	Growth Rate (%)
Employment a/					
Seoul	409,916	70.6	539,192	52.3	5.6
Gyeonggi	170,928	29.4	492,136	47.7	23.6
Total	580,844	100.0	1,031,328	100.0	12.2
Incheon	67,825	11.7	166,576	16.2	19.7
Suwon	15,746	2.7	33,838	3.3	16.5
Seongnam	12,118	2.1	43,217	4.2	29.0
Euijeongbu	5,862	1.0	11,788	1.1	15.0
Anyang	20,616	3.6	40,184	3.9	14.3
Bucheon	7,147	1.2	45,012	4.4	44.5
Subtotal	129,314	22.2	340,615	33.0	21.4
Rest of Gyeonggi	41,614	7.2	151,521	14.7	29.5
Establishments a/					
Seoul	5,832	70.5	7,752	59.7	5.9
Gyeonggi	2,437	29.5	5,229	40.3	16.5
Total	8,269	100.0	12,981	100.0	9.4
Incheon	610	7.4	1,458	11.2	19.0
Suwon	245	3.0	247	1.9	0.2
Seongnam	73	0.9	350	2.7	36.8
Euijeongbu	122	1.5	175	1.4	7.5
Anyang	139	1.7	299	2.3	16.6
Bucheon	145	1.8	604	4.7	33.0
Subtotal	1,334	16.3	3,133	24.2	18.6
Rest of Gyeonggi	1,103	13.3	2,096	16.1	13.7

a/ Establishment with 5 or more employees.

Data Source: NBS Manufacturing Survey Files.

[Table 5] Distribution of Manufacturing Employment and Establishments between Seoul and Gyeonggi, 1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
Employment a/								
Seoul	70.6	67.1	63.2	60.8	57.3	52.3	50.3	48.3
Gyeonggi	29.4	32.9	36.8	39.2	42.7	47.7	49.7	51.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(Number)	580,844	612,051	718,864	851,601	945,762	1,031,328	957,368	897,924
Establishment a/								
Seoul	70.5	71.0	66.7	64.8	64.8	59.7	59.2	56.6
Gyeonggi	29.5	29.0	33.3	35.2	35.2	40.3	40.8	43.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(Persons)	8,269	8,234	8,305	9,466	11,241	12,981	13,926	13,215

a/ Establishments with 5 or more employees.

Data Source: NBS Manufacturing Survey Files.

[Table 6] Distribution of Manufacturing Employment and Establishments by City in the Seoul, Region, 1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
Employment a/								
Seoul	70.6	67.1	63.2	60.8	57.3	52.3	50.3	48.3
Incheon	11.7	12.4	14.1	15.6	15.3	16.2	16.5	16.8
Suweon	2.7	2.8	3.0	3.0	3.2	3.3	3.6	3.4
Seongnam	2.1	2.5	3.0	3.6	3.7	4.2	4.2	4.2
Euijeongbu	1.0	0.9	1.1	1.1	1.2	1.1	0.7	0.6
Anyang	3.6	3.8	3.4	2.9	3.5	3.9	3.9	3.4
Bucheon	1.2	1.2	3.0	3.3	3.7	4.4	4.6	4.6
Rest of Gyeonggi	7.2	9.3	9.2	9.8	12.0	14.7	16.2	18.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Establishment a/								
Seoul	70.5	71.0	66.7	64.8	64.8	59.7	59.2	56.6
Incheon	7.4	8.0	9.8	11.2	10.6	11.2	9.9	9.6
Suweon	3.0	2.8	2.7	2.4	2.0	1.9	1.7	1.6
Seongnam	0.9	1.0	1.3	1.6	2.0	2.7	2.9	3.1
Euijeongbu	1.5	1.5	1.1	1.0	1.2	1.4	1.0	0.9
Anyang	1.7	1.8	1.9	2.0	2.0	2.3	2.3	2.4
Bucheon	1.8	1.6	3.3	3.8	4.1	4.7	5.1	5.7
Rest of Gyeonggi	13.3	12.3	13.3	13.2	13.4	16.1	17.9	20.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a/ Establishment with 5 or more employees

Data Source: NBS Manufacturing Survey Files.

Gyeonggi grew more than four times faster than that of Seoul. It is also striking to find that manufacturing employment in the area outside the six satellite cities in the province grew faster than the average of these cities.

We may conclude that while the population share between Seoul and Gyeonggi remained remarkably stable, within Gyeonggi the population shifted to the six satellite cities from peripheral areas. Manufacturing employment, however, showed a strong decentralization trend from Seoul to six satellite cities and further to the outer areas.

Evidence of Decentralization of Manufacturing Employment in the Seoul Region

In this study, the Seoul region is defined as Seoul plus Gyeonggi province. In order to study the changing patterns of employment in terms of the distance from the central business district (CBD), the Seoul region is divided into five "rings": three within Seoul and two in Gyeonggi (see the attached maps).

Table 7: During 1973-1978, three rings in Seoul lost their shares of manufacturing employment while two rings in Gyeonggi (Rings 4 and 5) gained their shares substantially. Ring 1, the CBD, experienced a net loss

[Table 7] Changes in Employment and Establishment a/ by Ring in the Seoul Region, 1973-1978

	1973		1978		Annual Average
	Number	%	Number	%	Growth Rate (%)
Employment					
Ring 1	45,224	7.8	30,381	3.0	- 7.6
Ring 2	162,403	28.0	167,960	16.3	0.7
Ring 3	202,289	34.8	340,826	33.1	11.0
Ring 4	155,351	26.8	425,000	41.2	22.3
Ring 5	15,577	2.7	67,136	6.5	33.9
Total	580,844	100.0	1,031,328	100.0	12.2
Establishments					
Ring 1	1,567	19.0	1,144	8.8	- 6.1
Ring 2	2,786	33.7	3,091	23.8	2.1
Ring 3	1,479	17.9	3,515	27.1	18.9
Ring 4	1,829	22.1	4,248	32.7	18.4
Ring 5	608	7.4	981	7.6	10.0
Total	8,269	100.0	12,981	100.0	9.4

a/ Establishment with 5 or more employees.

Data Source: NBS Manufacturing Survey Files.

[Table 8] Distribution of Manufacturing Employment and Establishments by Ring in the Seoul Region, 1973-1980

	1973	1974	1975	1976	1977	1978	1979	1980
<u>Employment a/</u>								
Ring 1	7.8	5.5	6.1	4.1	3.8	3.0	3.1	3.1
Ring 2	28.0	26.9	22.5	20.4	19.3	16.3	15.2	14.8
Ring 3	34.8	34.7	34.6	36.2	34.2	33.1	32.0	30.3
Ring 4	26.8	29.9	33.3	35.0	37.7	41.2	42.2	43.4
Ring 5	2.7	3.0	3.5	4.2	5.0	6.5	7.5	8.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<u>Establishment a/</u>								
Ring 1	19.0	17.7	18.5	13.7	12.8	8.8	10.2	8.9
Ring 2	33.7	32.5	26.3	25.6	26.8	23.8	21.6	21.3
Ring 3	17.9	20.8	21.9	25.5	25.2	27.1	27.3	26.5
Ring 4	22.1	22.8	26.6	28.4	28.8	32.7	32.8	34.4
Ring 5	7.4	6.2	6.7	6.8	6.5	7.6	8.0	8.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

a/ Establishment with 5 or more employees.

Data Source: NBS Manufacturing Survey Files.

with an annual growth rate of -7.6 percent. Ring 2, the central area excluding the CBD in the northern Seoul, had virtually no growth of manufacturing employment, while the growth rate of Ring 3, the newly developing southern Seoul, was close to the region's average. As the distance from the CBD increases, the growth rate of manufacturing employment rose sharply in two rings in Gyeonggi province. The evidence of manufacturing employment decentralization in the Seoul region is similar to that of Bogota, Colombia, as established in a World Bank study (Lee, 1981), but the orders of magnitudes are about four times larger than those of Bogota.

Component of Changes Analysis

Changes in the location patterns of employment have been further analyzed by the location tenure of firms, i.e., newly established (births), defunct (deaths), and stationary (mature) firms for the 1977-80 period. Mature firms are those that appeared in the survey data file for all four years during 1977-80; births are those that entered the file for the first time during the period, and deaths are those that disappeared from the file during the period. Although computations were done for all four years, only the results for 1977-1978 are reported here, because the level of employ-

ment in 1980, a cyclical trough, was lower than that of 1977 and 1978 (see Table 5).

Table 9: The annual growth rate of employment with mature firms was less than half that of total manufacturing employment in the region (12.2 percent in Table 7). This implies the absence of on-site expansion in inner rings of Seoul (with the exception of the CBD where most of the firms are likely to be small). The growth of mature firms in Gyeonggi (Rings 4 and 5) was substantial however. In addition, the strong decentralization trend observed earlier can be explained by the location patterns of births and deaths: As the distance from the CBD increases, the birth rate (i.e., the

[Table 9] Composition of Changes in Manufacturing Employment a/ by Ring, Seoul Region, 1977-1980

Ring	Mature b/				Births c/		Deaths d/	
	1977		1978		1978		1979	
	Persons	%	Persons	%	Persons	%	Persons	%
1 (CBD)	15,289	2.35	16,383	2.40	3,192	2.57	2,958	3.64
2	106,463	16.37	104,244	15.28	18,211	14.69	20,365	25.05
3	219,219	33.70	219,908	32.24	41,229	33.25	32,248	39.67
4	271,874	41.80	298,485	43.75	47,313	38.16	23,605	29.04
5	37,640	5.79	43,159	6.33	14,036	11.32	2,108	2.59
Total	650,485	100.00	682,179	100.00	123,981	100.00	81,284	100.00
Average Firm Size	116		121		48		53	

Summary Statistics

Ring	Mature Growth (%)	Birth Rate (%) ^{e/}	Death Rate (%) ^{e/}	Birth/Death Ratio
	1977-1978	1978	1979	
1 (CBD)	7.16	8.87	8.22	1.07
2	-2.08	9.96	11.14	0.89
3	0.31	12.77	9.98	1.28
4	9.79	13.27	6.62	2.00
5	14.66	29.56	4.44	6.65
Total	4.87	13.11	8.59	1.53

a/ Establishments with 5 or more employees.

b/ Establishments which appeared in the manufacturing files for all years during 1977-1980.

c/ Establishments which entered the file in 1978.

d/ Establishments which disappeared from the file in 1979.

e/ Percent with respect to the 1977 total manufacturing employment.

Data Source: NBS Manufacturing Survey Files.

number of jobs created by new firms as percent of the base year employment) increases sharply while the death rate declines.

Table 10: The component of changes analysis was also performed by ci-

[Table 10] Composition of Changes in Manufacturing Employment a/ by City,
Seoul Region, 1977-1980

	Mature b/				Births c/		Deaths d.	
	1977		1978		1978		1979	
	Persons	%	Persons	%	Persons	%	Persons	%
Seoul	340,971	52.42	340,535	49.92	62,632	50.52	55,571	68.37
Gyeonggi	309,514	47.58	341,644	50.08	61,349	49.48	25,713	31.63
Total	650,485	100.00	682,179	100.00	123,981	100.00	81,284	100.00
Incheon	111,883	17.20	121,853	17.86	15,612	12.59	10,278	12.64
Suwon	28,692	4.41	30,450	4.46	1,678	1.35	693	0.85
Seongnam	22,559	3.47	24,668	3.62	5,156	4.16	2,678	3.29
Euijeongbu	8,631	1.33	8,323	1.22	813	0.66	1,323	1.63
Anyang	28,207	4.34	30,021	4.40	4,627	3.73	1,021	1.26
Bucheon	26,384	4.06	31,292	4.59	5,635	4.55	2,854	3.51
Subtotal	226,356	34.80	246,607	36.15	33,521	27.03	18,847	23.18
Rest of Gyeonggi	83,158	12.78	95,037	13.93	27,828	22.45	6,866	8.45

Summary Statistics

Ring	Mature Growth (%) 1977-1978	Birth Rate (%) ^{e/} 1978	Death Rate (%) ^{e/} 1979	Birth/Death Ratio
Seoul	0.00	11.56	10.26	1.13
Gyeonggi	10.28	15.19	6.37	2.39
Total	4.87	13.11	8.59	1.53
Incheon	8.91	10.83	7.13	1.52
Suwon	6.13	5.48	2.26	2.42
Seongnam	9.35	14.59	7.58	1.93
Euijeongbu	-0.04	7.10	11.55	-0.39
Anyang	6.43	13.87	3.06	4.53
Bucheon	18.60	16.01	8.11	1.97
Subtotal	8.95	11.55	6.49	1.78
Rest of Gyeonggi	14.28	24.47	6.04	4.05

a/ Establishments with 5 or more employees.

b/ Establishments which appeared in the manufacturing files for all years during 1977-1980.

c/ Establishments which entered the file in 1978.

d. Establishments which disappeared from the file in 1979.

e. Percent with respect to the 1977 total manufacturing employment.

Data Source: NBS Manufacturing Survey Files.

[Table 11] Distribution of Manufacturing Employment a/ by city and Industry Type in the Seoul Region, 1973 and 1978

	Food & Beverage	Textile & Leather	Wood	Paper & Publishing	Chemical	Nonmetal	Metal	Fabricated Metal	Other mfg	Total
1973										
Seoul	8.9	30.7	1.1	8.1	11.2	2.5	2.4	26.5	8.8	100.0
Incheon	5.7	21.5	20.5	0.7	4.8	5.1	9.0	23.6	9.1	100.0
Suwon	9.1	61.8	1.0	2.6	1.4	1.7	0.9	17.4	4.0	100.0
Seongnam	25.4	29.7	1.8	2.1	13.1	1.0	0.9	20.6	5.6	100.0
Euijeongbu	2.5	49.5	1.0	24.9	13.7	2.3	0.0	4.8	1.3	100.0
Anyang	1.3	39.9	3.2	11.7	13.6	2.3	1.4	26.5	0.2	100.0
Bucheon	4.8	16.4	0.1	3.0	8.1	7.9	10.2	41.3	8.3	100.0
Rest of Gyeonggi	11.7	34.1	2.1	9.9	8.5	12.0	1.0	15.1	5.7	100.0
Total	8.7	31.0	3.5	7.3	10.1	3.5	3.0	24.9	8.0	100.0
1978										
Seoul	7.7	30.1	1.7	7.3	11.0	2.9	2.3	30.8	6.2	100.0
Incheon	3.5	19.0	14.3	1.0	7.3	5.4	7.4	35.7	6.5	100.0
Suwon	7.1	32.1	0.4	2.2	4.5	6.7	0.5	45.4	1.2	100.0
Seongnam	8.2	29.7	3.5	3.7	10.9	2.0	0.9	33.5	7.6	100.0
Euijeongbu	2.1	64.1	2.6	11.0	6.5	3.6	0.6	6.9	2.7	100.0
Anyang	2.3	29.6	0.9	7.8	13.8	2.8	1.3	39.7	1.7	100.0
Bucheon	2.4	10.6	3.4	2.4	12.9	7.7	9.4	44.1	7.1	100.0
Rest of Gyeonggi	7.2	28.9	2.6	5.0	9.2	8.8	1.2	33.5	3.6	100.0
Total	6.4	27.7	4.0	5.5	10.0	4.5	3.1	33.2	5.6	100.0

a/ Establishment with 5 or more employees.

Data Sources: NBS Manufacturing Census Files.

[Table 12] Distribution of Manufacturing Employment a/ by Province and Industry Type, 1973 and 1978

	Food & Beverage	Textile & Leather	Wood	Paper & Publishing	Chemical	Nonmetal	Fabricated		Other mfg	Total
							Metal	Metal		
1973										
Seoul	8.9	30.7	1.1	8.1	11.2	2.5	2.4	26.5	8.8	100.0
Busan	7.0	31.7	8.6	1.8	26.2	2.1	4.6	16.9	1.2	100.0
Gyeonggi	8.2	31.8	9.3	5.4	7.5	5.9	4.6	21.2	6.2	100.0
Gangwon	21.3	25.4	4.8	3.4	5.4	17.4	6.2	13.1	3.1	100.0
Chungbug	27.1	34.7	2.9	2.9	12.4	9.8	0.9	7.2	2.1	100.0
Chungnam	17.2	40.0	2.0	5.1	11.6	6.6	3.0	10.3	4.3	100.0
Jeonbug	32.6	23.5	14.0	5.4	9.2	3.1	0.7	9.2	2.4	100.0
Jeonnam	32.7	25.1	5.8	3.9	10.3	6.2	0.8	13.4	1.7	100.0
Gyeongbug	12.2	50.7	2.1	2.5	3.9	2.6	5.9	17.9	2.1	100.0
Gyeongnam	9.6	41.5	1.3	2.1	10.2	5.2	1.8	26.7	1.6	100.0
Jeju	68.8	5.6	6.1	5.7	4.0	1.5	0.0	6.6	1.8	100.0
All	11.7	34.1	4.4	4.9	12.1	3.9	3.3	20.7	4.8	100.0
1978										
Seoul	7.7	30.1	1.7	7.3	11.0	2.9	2.3	39.8	6.2	100.0
Busan	4.8	33.5	5.9	1.8	27.9	1.7	5.0	17.6	1.7	100.0
Gyeonggi	5.1	25.0	6.4	3.5	9.0	6.2	4.0	35.9	4.9	100.0
Gangwon	19.6	26.0	4.9	7.2	7.0	20.0	3.6	9.5	2.3	100.0
Chungbug	20.6	33.5	1.4	5.4	6.8	17.3	0.8	13.3	1.1	100.0
Chungnam	12.5	47.9	1.7	6.5	8.0	7.2	2.4	12.0	1.8	100.0
Jeonbug	20.6	34.1	14.8	5.0	9.3	3.3	0.6	9.2	3.2	100.0
Jeonnam	29.9	21.3	2.8	3.8	14.6	9.3	1.1	16.4	0.8	100.0
Gyeongbug	6.3	51.2	1.1	2.3	4.3	3.1	8.9	20.4	2.4	100.0
Gyeongnam	7.1	24.3	0.9	1.9	7.5	4.1	4.5	48.7	1.1	100.0
Jeju	66.1	10.6	3.6	4.3	6.7	3.0	0.1	3.8	1.8	100.0
All	7.9	32.1	3.8	4.1	12.1	4.4	4.1	28.1	3.6	100.0

a/ Establishment with 5 or more employees.

Data Source: NBS Manufacturing Census Files.

ty: It is striking to find that Seoul as a whole did not have any growth of employment by mature firms, while such growth (i.e., on-site expansion) was substantial in Gyeonggi as mentioned above; especially, in Bucheon and the area outside the six cities. It should be noted that the birth rate of jobs in Seoul is the same as the average rate of the six satellite cities while the death rate is much higher for Seoul than the average of the six cities. For the "rest of Gyeonggi" the birth rate was four times larger than the death rate.

Industrial Composition by City and Province

Table 11 and 12 show the extent of industrial specialization by city and province. In 1978, more than 60 percent of manufacturing employment was in the textile and the fabricated metal industries in the Seoul region as well as Seoul alone. The share of employment in the fabricated metal industry became larger than that of the textile industry during 1973-1978. The dominance of these two industries was also true for the country as a whole (Table 12).

III. Policy Implications and Concluding Remarks

The strong decentralization of employment in the Seoul region, summarized in Section 2, is comparable to the trend observed for large U.S. cities during the past several decades (Hoover and Vernon, 1959; Leone, 1971). The main aim of spatial policy in the U.S. regarding intrametropolitan decentralization, however, has been quite different from that of LDCs. In the U.S. the major policy objective has been to reduce urban decentralization in the hope of preventing central city decay. Although this policy objective is based on the belief that decentralization occurs because of deteriorating conditions in the central city, little empirical evidence supports this view. Most decentralization is attributed to transportation improvements, suburban (new town) development programs, and federal subsidies to homeownership (Muth, 1969). Muth's findings suggest that federal programs intended to reduce decentralization, such as urban renewal programs which tend to lower a central city's housing density, have expedited the trend rather than reduced it. Therefore, attempting to reverse the tide of decentralization, which occurs from increased population and incomes, often results in economic inefficiency since transportation improvements have reduced the central city's comparative advantage for production and other economic activities.

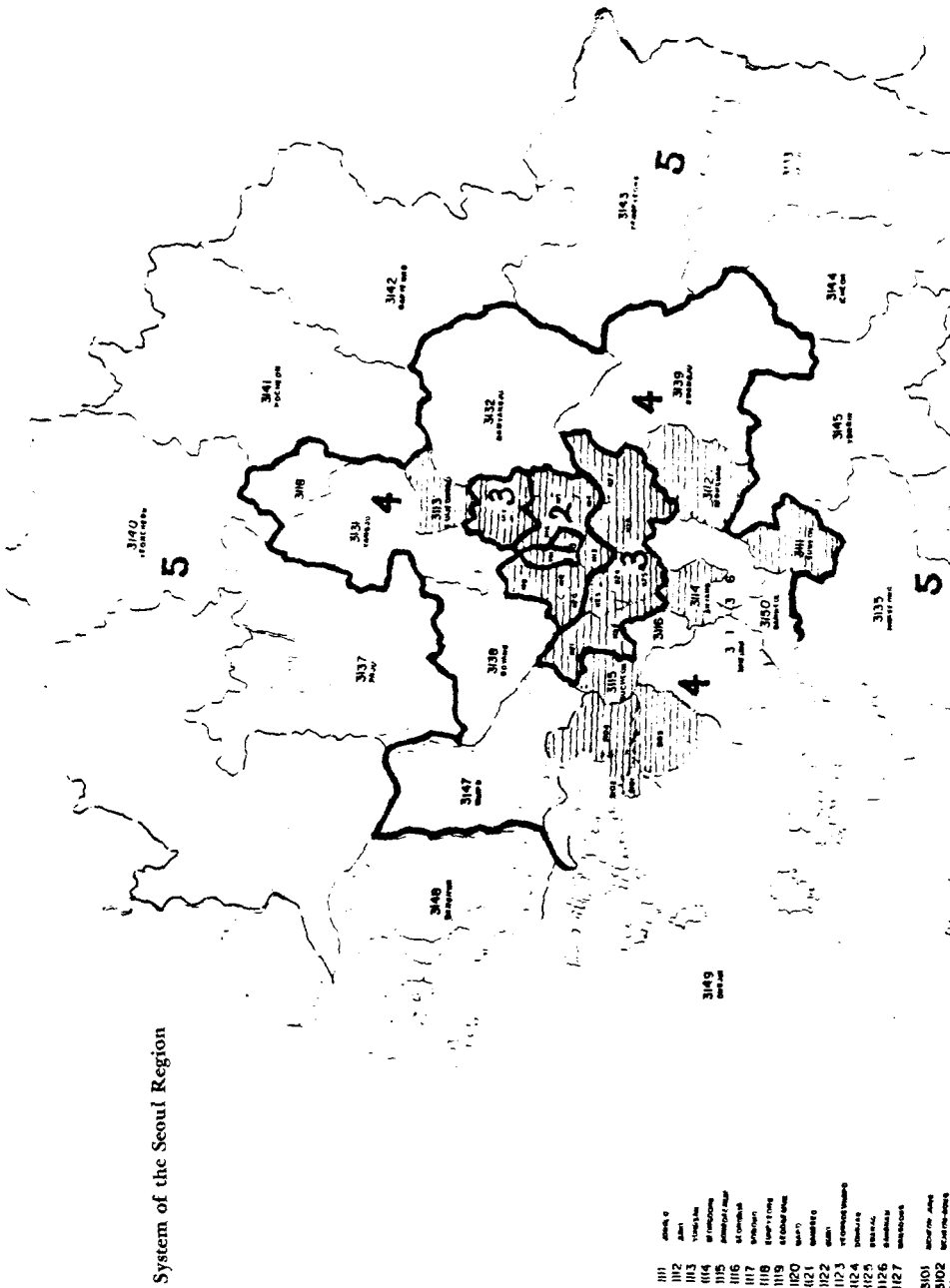
Large U.S. cities also have municipal fiscal problems that encourage decentralization. The high central city per capita tax burden relative to

suburbs provides incentives to move to the suburbs. It has been observed that "the lower the average income level of the central city relative to its suburbs, the smaller is the central city's population, and the larger is the land area occupied by the urbanized area." (Muth, 1969). Evidence from Seoul and Bogota, however, does not suggest an increasing concentration of low income population in the central city, and there is no sign of central city decay. In fact, the policies to decentralize economic activity from large cities in LDCs mainly stem from the increasing concentration of economic activity in the central city, accompanied by the perceived problems of congestion and pollution as the city's population grows rapidly. Also, municipal fiscal relationships in LDCs are different from those of the U.S. In Korea, for example, electric utility service charges, which are uniform nationwide, tend to subsidize central cities over outlying areas, hence encouraging centralization.

During the past decade various spatial policies to control the growth of Seoul and to disperse its population have been implemented. For example, in 1971 the greenbelt surrounding Seoul was established. Six years later the 1977 Industrial Location Act in effect prevented new manufacturing firms from locating within Seoul and enabled the government to issue relocation orders to establishments already setup there. That same year the government initiated a ten-year comprehensive plan for population and industrial redistribution from Seoul. The plan included a large number of policy instruments in five major categories: (1) the relocation of industries from Seoul; (2) inducements to relocate population to southern provinces; (3) the decentralization of education facilities; (4) the relocation of various urban functions within the capital region and the improvement of city plan implementation, particularly in dealing with clandestine housing construction in Seoul; and (5) tax and credit incentive schemes to aid relocating firms. The majority of the instruments stipulated in the plan address the location and relocation of manufacturing establishments. A comprehensive review of employment location policies in Korea appears in Choe and Song (1982), and a theoretical analysis of policy efficiency is discussed in Murray (1982). The empirical evaluation of such policies is the main task of the current Korean spatial study. Several other recent policy measures in Korea and Colombia are discussed below.

The "incubator hypothesis" states that small, new manufacturing firms start in central locations that provide needed services and infrastructure and then move to less central locations as they grow and need more space for expansion (Hooever and Vernon, 1959). This hypothesis was tested for Bogota, based on the industrial directory data (Lee, 1981). Data from the establishment survey conducted for the Bogota City Study do in fact in-

Ring System of the Seoul Region



- 111 3140 3140-3140
- 112 3141 3141-3141
- 113 3142 3142-3142
- 114 3143 3143-3143
- 115 3144 3144-3144
- 116 3145 3145-3145
- 117 3146 3146-3146
- 118 3147 3147-3147
- 119 3148 3148-3148
- 120 3149 3149-3149
- 121 3150 3150-3150
- 122 3151 3151-3151
- 123 3152 3152-3152
- 124 3153 3153-3153
- 125 3154 3154-3154
- 126 3155 3155-3155
- 127 3156 3156-3156
- 3101 3157 3157-3157
- 3102 3158 3158-3158

dicates that small firms start up in central locations (Lee, 1982a). The logit results also support this hypothesis (1982b). There is evidence that Korean firms also follow this pattern (Meyer, 1981). If central city incubation were indeed prevalent in Seoul, the 1977 Industrial Location Act, which prohibits starting new manufacturing firms within the city limits, should have restricted such incubation. A related issue is whether incubation can be replicated in new industrial estates or existing towns outside Seoul.

In 1978 as a major program to decentralize population and economic activity from Seoul the government established a new industrial town, Banweol, located less than 30 kilometers away. Although nearly 1,000 plant sites for small and medium sized firms were prepared, the occupancy rate has been less than 20 percent as of 1981. Many firms that moved to Banweol suffered excess capacity and financial losses, resulting from (1) overinvestment in plant and land area, induced by the government incentive schemes; (2) increased operating costs after relocation; and (3) the 1980 general recession.

According to a case study on Banweol (Choe and Song, 1982), the most serious problems facing the relocated firms have been reduced accessibility to product markets and input suppliers, the unavailability of production workers, and difficulties in obtaining day-to-day business information (poor telephone service and person-to-person contacts). Poor access to Seoul and Incheon is largely responsible for these problems. A related problem is the reluctance of production workers to relocate to Banweol or to commute from Seoul. Attrition of skilled workers has been high, and it is difficult for firms to replace them after they quit.

That such a seemingly short distance thwarted the development of Banweol is striking. Logit analysis used to study the Bogota data helps explain the Korean experience: Small and medium sized firms prefer central locations. Accessibility to local markets and proximity to production workers are the most important site attributes for them.

Unlike the bias against decentralization in the U.S., several developing countries have aimed at decentralizing economic of decentralization economic activity from the central city. Nevertheless, the desirability of decentralization policies on economic grounds has not been established, and little is known of their effects or their welfare implications. The key policy question is how to guard against excessive spatial policies relative to prevalent trends, since excessive measures might result in serious welfare losses. In developing countries the absence of empirical information on decentralization and policy effects does not yet permit the making of more efficient spatial policies. However, policies to decentralize population and economic activity are probably not good substitutes for better internal

management of city growth. For example, the effect on air pollution or on traffic congestion of reducing the population or employment in a large city by a certain amount is likely to be very small (Tolley, 1979; Henderson, 1980).

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