Spatial Policies Towards the Seoul Capital Region

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1. Introduction

Korea's population and other resources were drawn to Seoul and other large cities with the start of rapid economic growth in the early 1960s. The trend changed in the early 1970s so that inter-regional migration was mostly destined toward the "Capital Region", which consists of Seoul, Incheon, a port city about 40 kilometers west of Seoul, and Gyeonggi Province that surrounds Seoul and Incheon (See Map 1).

<<<<<<Map 1: The Seoul Capital Region > here>>>>

As sudden influx of migrants caused many social and economic problems, the government started to control the growth of Seoul (and other large cities) in the mid-1960s. In response to the change in the migration pattern, policies were adjusted to target the whole Capital Region in the early 1970s. The main strategy of these policies was to discourage construction or expansion of facilities which would create jobs in or attract people into the Capital Region. This was hoped to disperse population from the region. Such policies were based on two fundamental premises. First, that the main cause of such problems as traffic congestion, environmental pollution and high housing prices is too many people living and working in the Capital Region. Second, that discouraging the growth of the Capital Region would help develop other regions of the country. With these presumptions, the Capital Region growth control measures have been counted on to secure a decent quality of life for residents of the Region and to promote balanced development of the nation's territory. Also, these policies have enjoyed strong support from the general public, although professional judgments on their effectiveness are more mixed and divergent.

Korea is faced with new challenges now. The nation's competitive edge has been eroded as the wage level in the manufacturing sector rose while new engines of growth have not been secured yet. A consensus is that the government should facilitate the transformation into a knowledge-based economy to stay competitive. We feel that such transformation is hindered by current spatial policies. In addition, trends of population growth, inter-regional migration, and economic structure of the nation and its regions have greatly changed since the current spatial policies were first formulated and developed, making them irrelevant or counter-productive.

This paper starts with a discussion of the background of spatial policies towards the Capital region and their current contents. Then it evaluates the effects of spatial policies on the dispersal of population and industries. We then argue that the policies should be repelled because they are

based on incorrect presumptions and also failed to achieve the goals assigned to them. The paper concludes with some thoughts on the way forward, considering the fundamental need for redirection in the changing policy environment.

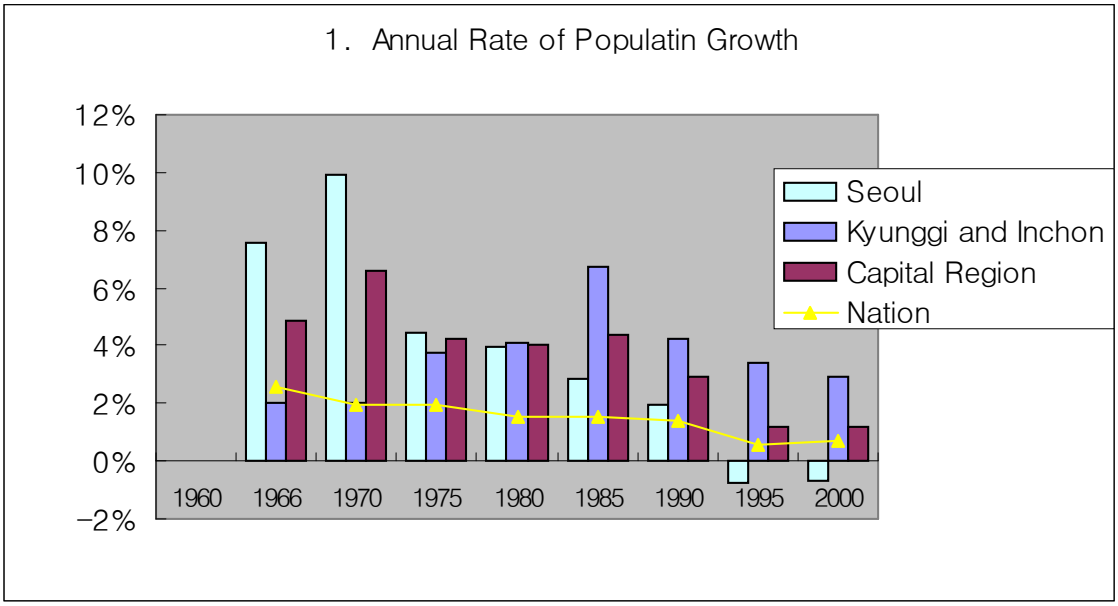
2. Population Trends and the Capital Region Spatial Polices

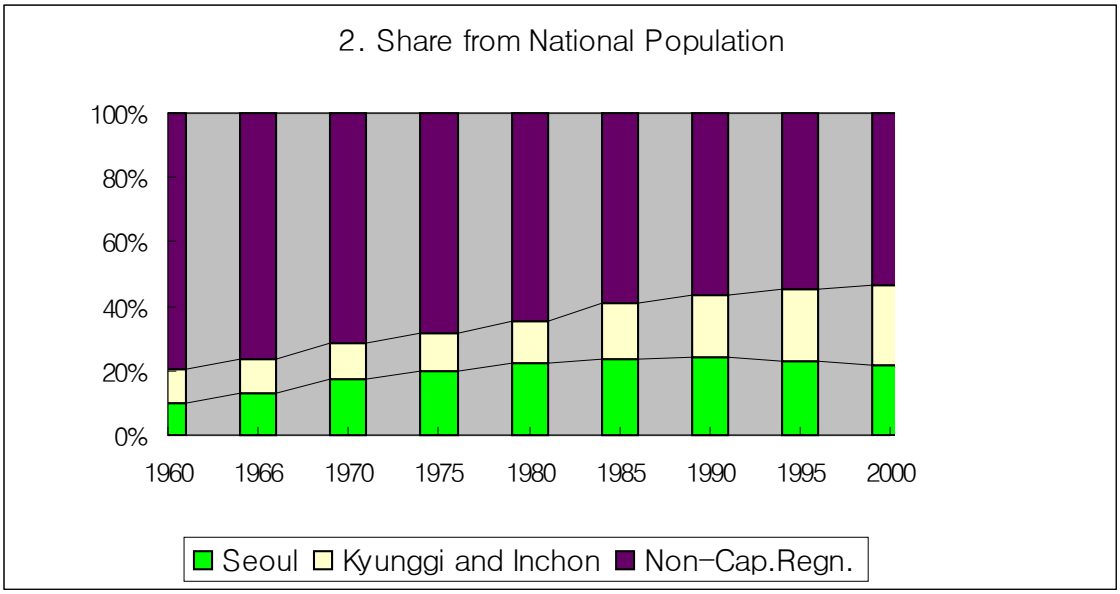
A. Concentration of population in the Capital Region

Korea has rapidly industrialized over the past 40 years during which period a backward agricultural economy has transformed into the 11th largest trader in the world based on the advanced manufacturing sector. Rapid urbanization accompanied rapid industrialization. The share of urban population increased from 39% to 87% during that period. Currently, almost 90% of Koreans live in cities and towns with 20,000 or more inhabitants.

In the 1960s, inter-regional migration consisted of the rural unemployed seeking jobs in Seoul and other major cities located in various parts of the country. In the late half of 1960s, population growth rate in Seoul was as large as 9.8% per year. In the 1970's, however, the pattern of inter-regional migration has changed. Large cities other than Seoul and Incheon stagnated while concentration of population in the Capital Region, rather than Seoul proper, became pronounced. Figure 1 shows that population growth rates of Incheon and Gyeonggi Province overtook Seoul's in the mid 1970s and continued to rise afterwards. During the 1990s Seoul's population decreased in absolute numbers, and the pace of population growth in Incheon and Gyeonggi also slowed down in the 1990s. The population growth rate of the Capital Region as a whole during the first half of the 1990s dropped to half the level of the second half in the 1980s.

<Figure 1> Population Trends of the Capital Region





Two factors explain these recent trends. First, national population growth rate fell dramatically. In the first of 1960s, the nation's population grew 2.6% annually, but the rate dropped to 0.7% in the later half of 1990s. Second, inter-regional migration has also slowed down substantially. In the late 1960s, 4.8 persons moved to Seoul for each birth within the city, but the number went down to -1.97 for Seoul and 0.76 for the Capital Region. In the early 1980s, two million people

have moved to the Capital Region from other regions, but the number dropped to one-fourth in the late 1990s. These figures indicate that far less people now seek new opportunities by moving to other regions than in the past. This in turn reflects the fact that living conditions and income opportunities among regions have become more even than before, and that many young people who would like to move to large cities have already done so.

In terms of the share from the national population, Seoul went up from 9.8% in 1960 to 19.9% in 1975 and currently stands at 21.4%, while that the Capital Region started from 20.8% in 1960 and is now at 46.3%. In summary, one can say that population in the Capital Region has continued to increase over the past four decades but the pace has been decelerating since the 1980s and that spatial decentralization has taken place within the region since 1975.

B. Evolution of spatial policies towards the Capital Region

Rural-to-urban migration in the 1960s overwhelmed the destination cities. Housing, transportation and other infrastructure, education facilities, and general public services were all in short supply compared to exploding needs. As early as in 1964, it was felt that policies were needed to slow down the migration into Seoul and other large cities. Various measures have been implemented since then to limit the growth of first Seoul first and then the Capital Region. The establishment of manufacturing plants, universities and colleges and corporate headquarters has been banned or allowed on a very selective basis, since they were deemed to attract population. Green belts were designated around Seoul in 1972 and expanded in other parts of the country until 1978 (See Map 1). Urban development was strictly prohibited on land zoned as green belts. Differential tax treatments were provided to discourage location in the Capital Region or to encourage dispersal from the Region. Some government offices were moved out of Seoul. Among these measures, the restrictions of the location of so-called population-inducing facilities have been consistently applied and have the most profound effects. Indeed, in the vocabulary of government officials, “the Capital Region Policy” refers to the regulations on establishment or expansion of factories, universities, government offices, and other population-inducing facilities.

The promulgation of the Capital Region Management Law in 1982 marked a consolidation of policy efforts into a comprehensive framework. According to the provision of the Law, the First Capital Region Management Plan for 1984-96 was prepared in 1984. The Plan was implemented together with other land use regulations at the same time. The basic tenet of the Plan was to divide the Capital Region into five zones and to restrict location of “population

inducing facilities" in each zone to different degrees. For example, new construction of large office buildings, colleges and universities, and large factories was in principle banned within the Density Abatement Area which includes Seoul and its vicinity, while the restrictions were more relaxed in outlying areas.

These five zones were consolidated into three as a result of a 1994 amendment to the Law (Map 2). The Second Capital Region Management Plan for 1997-2011, prepared according to the same Law, adopted a somewhat more flexible approach. For example, the requirement of case-by-case approval for construction of factories and large commercial buildings was replaced by a system of indirect incentives and disincentives to steer them in a manner consistent with government policy. Current policies are summarized in Table 1. Location of factories is subject to annual quota system. In addition, factories are subject to another law which regulates construction, expansion, and relocation of factories depending on firm size and product categories. For instance, new construction and expansion of existing factories owned by large firms are in principle prohibited in all three zones (i.e., the whole Capital Region). However, exceptions are made for a list of industries which are deemed vital for nation's future economic competitiveness. For instance, new construction and expansion of manufacturing plants in the Growth Management Area has been allowed for several high-tech giants.

Table 1. Regulations of location in the Capital Region

zones / facilities	**Density Abatement Area**	**Growth Management Area**	**Environment Protection Area**
Large commercial buildings	Subject to congestion charge	Allowed	Prohibited
Colleges, universities and other higher education institutions	Prohibited in principle (exceptions: new vocational school, increase of student roll within regional quota, relocation from Seoul)	Prohibited in principle (exceptions: new vocational school, new university with less than 50 annual entrants, increase of student roll within regional quota, relocation from other parts of the Capital Region)	Prohibited in principle (exceptions: new vocational school, new university with less than 50 annual entrants, increase of student roll within regional quota, relocation from other parts of Environment Protection Area)
Factories	Subject to annual quota. Other Area-specific restrictions by Industrial Agglomeration and Factory Construction Law		
Government offices	Prohibited in principle (exceptions: expansion of existing building, rental arrangement, and a few other exceptions)	Prohibited in principle (exceptions: expansion of existing building, rental arrangement, relocation within the Capital Region, others approved by the committee)	Prohibited in principle (exceptions: expansion of existing building, rental arrangement, others approved by the committee)

Corporate training Facilities	Prohibited	Prohibited in principle (exceptions: expansion of existing building, relocation within the Capital Region, others approved by the committee)	Prohibited in principle (exceptions: expansion of existing building, other labor-related facility approved by the Minister)
Residential land development	Approval by the committee required for large project after population impact study	Approval by the committee required for large project after population impact study	Small projects allowed (less than 30,000 m2: allowed, 30,000 to 60,000: approved by the committee)
Designation of Industrial Zone	Prohibited (exceptions: cases which does not increase total current industrial area on the provincial level)	Allowed in accordance with the Capital Region Management Plan (such as relocation from Congestion Suppression Area)	
Industrial land development	Approval by the committee required for large project after population impact study	Approval by the committee required for large project after population impact study	Small projects allowed (less than 30,000 m2: allowed, 30,000 to 60,000: approved by the committee)
Resort development	Approval by the committee required for large project after population impact study	Approval by the committee required for large project after population impact study	Small projects allowed (less than 30,000 m2: allowed, 30,000 to 60,000: approved by the committee)

Note: "Committee" in the table refers to the Capital Region Growth Management Committee headed by the Prime Minister.

<<< Map 2, here >>>

1994 Amendment was met with mixed responses. On the one hand, the other regions interpreted such moves as compromising the traditional spatial policy stance (Choe and Kim 1999), because they believed that increasing prosperity of the Capital Region is incompatible with the growth of other regions. On the other hand, many economists felt that the changes were only marginal, and rationality of the policies remained unproven and unwarranted. For example, they challenged the rationale for the annual quota on the allowable total floor area of manufacturing plants set by government officials and distributed over localities in the Region. All in all, it is fair to say that spatial policies towards the Capital Region have consistently aimed at controlling population and population-inducing economic activities, though there has been a shift away from containment to management over the last decade or so.

3. Effects of the Capital Region Growth Control Measures

Although we believe that the policy goal itself is flawed, we will set aside this issue for a moment and investigate whether the Capital Region growth control policies have achieved their intended goal. That is, have the policies dispersed population-inducing facilities such as factories, universities, large commercial buildings, and so on out of the Capital Region? If so, has such restriction succeeded in limiting the population growth of the Capital Region?

A. Effects on the Location of Higher Education Institutions

Early policy makers noticed that many high school graduates moved to Seoul for higher education and hence designated colleges, universities and other higher education institutions as population-inducing facilities. Accordingly, establishment of new higher education facilities, and expansion and relocation of existing ones have been regulated. Yoon(1983), Kim H (1986), Kwon (1992), Lim (1992), and KRIHS (1992) studied the effects of the policy. More or less common conclusion is that the policy encouraged major universities to establish second campuses in the 1970s. However, those second campuses are mostly located within the Capital Region rather than in under-developed regions outside of it. In retrospect, these second campuses contributed to population growth within the Capital Region outside of Seoul.

As with other facilities, the regulation had to allow exceptions occasionally. For instance, the government allowed universities to increase the number of science and engineering students in the early 1990s to promote research and development. This was the time when the economic boom of the late 1980s ended and the economy was showing a disappointing performance. The nation suddenly found that its firms lack high skilled scientists and engineers who would invent miracle products. The temporary allowance of several thousands of science and engineering majors was supposed to enhance economic competitiveness.

B. Effects on Manufacturing Location

The early migrants were attracted to large cities by plentiful jobs in the manufacturing sector. The government duly designated factories as population inducing facility, and elaborate system of regulations has been applied to establishment, expansion, and relocation of factories. In the 1970s, the effect of such regulations was to move factories outside Seoul, but not beyond the

Capital Region. The main reason was that the proximity to a high-quality workforce and product markets was the most important factor in firms' location decisions. As with regulations on universities, those on factories contributed to fast growth of Gyeonggi Province and Incheon.

On the other hand, restriction on factories has produced serious problems. Hwang(1996) estimated that 9,300 factories in Seoul, and 2,400 in Gyeonggi Province were operating without proper permits in 1995. These unregistered factories were outside the environmental and other regulatory systems, might produce air and water pollution, be nuisance to neighbors, and hinder orderly development of urban areas. The government had to accept existence of such factories. In the late-1990s, urban-type factories which do not produce pollution were given factory permits by the thousands, and others were relocated to industrial parks.

As we will discuss shortly, many large manufacturing plants have relocated to or were newly established outside the Capital Region in the 1980s and 1990s. However, many small and medium firms, especially new startups, stick to Capital Region location. Cho(2001) surveyed frustrated firms which were denied of factory construction permit because of insufficient quota. Most would rather postpone or cancel construction plan unless Capital Region location was denied. Specifically, 81% of the affected firms considered postponing their plan to expand, and 17% considered reducing or closing down their businesses, or moving abroad. Only 2% said they considered moving to any of the other regions within Korea. This result shows that the primary impact of the quota system is limited to delaying the timing of the construction of manufacturing premises.

C. Effects on Office Space

Large office buildings have also been considered as a population-inducing facility and the government has controlled their construction in Seoul. However, Kim and Son (2000) found that the construction of large office buildings in Seoul was driven primarily by non-economic factors unlike that of smaller buildings. This is because typical large buildings were built by big companies for their own use and to show off their status rather than by profit-maximizing professional developers. In light of such practices, spatial policies would not have had a significant impact on the supply of new office buildings. This conjecture is verified by the regression results reported in Table 2. Three dummy variables were used in the regression analysis to capture the effects of changes in spatial policies towards the Capital Region. DUM2 represents the impact of the adoption of a less strict approach to regulation in the Capital Region made in 1995. DUM3 is meant to capture the effects of special charges on population-inducing

developments including office buildings imposed since 1995. Finally DUM 4 represents the impact of restriction on permits for large office buildings implemented since 1985. None of the coefficients of the three dummy variables were statistically significant.[1]

<Table 2> Spatial policies & supply of large office buildings in Seoul: 1981-98

Dependent variable = CO

Variables	Explanation	Model 1	Model 2	Model 3	Model 4
C	Constant	158530.7 (1.250)	16929.7 (1.097)	-1373556^ (-1.795)	-1532252 (-1.785)
CO(-1)	Supply of large office buildings	.3923^ (1.771)	.3844 (1.630)		
R(-6)	Real rents per office space			14299* (2.369)	15099* (2.336)
DE(-6)	Changes in office workers	2.138 (1.240)	1.913 (.774)	2.511 (.633)	3.509 (.762)
DM(-6)	Changes in money supply			40.382 (1.072)	51.500 (1.134)
DUM1	1991～2 =1: introduction of a new tax on vacant land	485962* (2.251)	493098* (2.153)	652345* (2.871)	635121* (2.673)
DUM2	1985～94 =1: First NCR Management Plan		169709 (.8365)		220895 (1.054)
DUM3	1995～98 =1: Charge on population-inducing development		203558 (.5990)		34684 (.0745)
DUM4	1985～98 =1, Control on new office construction	167793 (.854)		233348 (1.160)	
Adj. R^2		.559	.532	.467	.430
D-W		1.831	1.810	1.318	1.383

Note: 1) CO= Increases in total office space of buildings with 11 floors or more

2) Figures in parentheses represent the length of leg in years

3)* and ^ represent statistical significance at 5% and 10% levels, respectively

4)D-W stands for Durbin-Watson statistic.

[1] DUM1 represents the period during which construction activity accelerated temporarily in order to avoid the burden of the announced new tax on vacant land holding.

D. Effects of the green belt

The assessment of the effectiveness of green belts is more controversial. Some planners argue that they have contributed to containing the growth of Seoul and other large cities while protecting the environment (Choe and Kim 1999). On the other hand, although green belts might have driven some people out of Seoul, it appears that most of them moved beyond the outer edge of Seoul's green belt but still settled within the Capital Region. In other words, green belts probably steered development away from Seoul and into the satellite cities around it, but failed to contain the growth of the Capital Region as a whole. The leap-frogging development caused by green belts has led to increases in infrastructure costs due to extending roadways and railways. It also resulted in increasing the number of commuters as well as lengthening the average commuting distance, thereby exacerbating traffic congestion and air pollution (Kim K 1993b). In addition Lee BS (2000) found that the green belts have had a negative impact on the productivity of manufacturing firms located in the Capital Region.[2] Furthermore, environmentally more valuable green space outside green belts gave way to development to preserve less valuable land inside green belts to maintain the belt shape.

But the most serious side effect of preserving green belts was realized in high prices of urban land and housing. By prohibiting the conversion of non-urban land inside green belts into urban use, the government created an artificial scarcity of developable land, thereby raising the price of land. The quantity of housing supplied depends upon the supply of developable land. Since the green belts have made the housing supply very inelastic, housing prices soared in response to the increasing demand for housing (Kim K 1993a, Son and Kim K 1998).

The government lifted green belts around provincial cities altogether and allowed some parts of land from green belts around Seoul and the 6 largest cities to be relaxed. The process of selecting sites to be rezoned is ongoing, but the Capital Region green belt is dealt with most conservatively. The current estimate is that only about 8% of the Capital Region green belt will be re-zoned.

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2 Incidentally, Evans (1996) has speculated that industrial revolution would not have taken place as it did in England had the Great London Fire not led to the removal of the first green belts.

E. Overall effects of spatial policies

The first scientific endeavor to investigate the overall effectiveness of spatial policies to contain the growth of the Capital Region was made by Son (1993). He showed that the path of population growth in Seoul and the Capital Region predominantly followed time trends and was essentially unaffected by government policy. He found that up to 99% of the total variation in population growth rate and population share of Seoul or the Capital Region was accounted for by the time trend variable and its square term. When dummy variables were added to the two explanatory variables to capture the impact of changes in growth control policies, they either carried the "wrong" sign or were statistically insignificant. These findings suggest that spatial policies did not have a substantial impact on population growth. However, Huh(1998) later showed that this conclusion may change if a different functional form were used. Although further research is needed on this issue, one should note that Huh's result still does not confirm the effectiveness of the Capital Region Policies. Population growth trends may have changed by other economic and social factors rather than by spatial policies.

4. Fundamental Flaws of Spatial Policies Towards the Capital Region

In the previous section, we evaluated the effectiveness of government spatial policies towards the Capital Region and found that they failed to achieve the goals assigned to them. In this section, we challenge the validity of the presumptions of the government policies.

A. Is the Capital Region too large?

The Capital Region control measures presume that concentration of population and industry would accelerate without the government intervention, and that their dispersal would automatically solve a variety of problems within the region (i.e., congestion and overcrowding) and outside (i.e., regional imbalance). Let us discuss the first part of this premise. The policies have restricted the location of certain facilities in order to disperse population and industry away from the region, because the region was deemed "too" large in terms of population and economic activities.

The typical argument relies on a set of statistics such as the Region's share of population, colleges and universities, the amount of deposits at and loans made by commercial banks, and

some other indicators representing differences in the economic prosperity. For example, an official government report on national land use describes the problem as “the region, consisting of 12% of the country's physical territory, holds 46% of total population, 54% of manufacturing premises, 42% of universities and colleges, and 85% of corporate headquarters (MOCT 2001, p.246)”.

This and other similar statements cannot guide spatial policies, however, since even distribution of facilities and functions over the entire national territory would be extremely inefficient. Cities are formed and developed because concentration of people and activities saves transportation and communication costs and enhance productivity. Also, any capital city, by definition, contains most central government functions, and as a result, attracts private sector facilities which rely on interaction with government offices.

Measures of concentration in the Seoul Capital Region are sometimes compared with those of the London, Paris and Tokyo Metropolitan areas. Kim T (2001, p.8) notes that the Capital Region’s population share of 46.3% is much larger than that of the capital regions of France (18.2 %) and Japan (32.3 %). However, as with all other international comparisons, the differences in primacy figures among different countries can partly be explained by the differences in the relative magnitudes of transport costs, scale economies, and labor migration underlying the process of urbanization (Puga 1998).

More fundamentally, we should ask if there is an optimal city size against which judgment of being “too” large is to be made. It would be the size at which the marginal benefit of increasing city size (i.e., agglomeration economies) equals the marginal cost (i.e. agglomeration diseconomy). Beyond this population size, overall quality of life in the region would deteriorate. The urban economics literature, however, is skeptical about the notion and its usefulness in guiding policy. For example, Richardson (1972, p.29, p.32) argues that the search for optimal city size is unsound even from a theoretical viewpoint and that a static framework is totally inappropriate for this exercise. The notion of optimum city size becomes elusive in a dynamic setting because the capacity of a city to accommodate population can be expanded through investments. Even in a static framework, Mills and Hamilton (1994, pp. 400-403) illustrate that the common sense view that large cities become too large does not always hold true. They show that it only happens if the incremental damage due to negative externalities increases with population size. Since agglomeration economies work in the opposite direction, however, large urban areas can be “too small” as well.

It seems safe to conclude that there is no single optimal size of a city in general. Then, how about determining the optimal size in the context of a specific city? To the best knowledge of the authors, no study has directly compared the margin benefits and costs of agglomeration to determine whether or not Korea's Capital Region is too large.[3] Instead, a fair amount of research has been carried out to estimate the costs of negative externalities caused by spatial concentration. For example, Kim D et al (2000) estimates the congestion cost of Seoul in 1999 at 4.2 trillion won ($1= 1,145 won in 1999).[4] This and other estimates cannot be considered social costs, however, because they are computed without reference to the socially optimal level of pollution or congestion. More practically manageable question is whether the marginal damage due to environmental and other externalities increases with population size making the Capital Region too large. Kim K (1993) estimated regression models linking air pollution, wastewater discharged, and garbage disposed of to population size and other explanatory variables using 1991 cross sectional data on Korean cities. He did not find evidence in favor of the common sense relationship posited above.

Far fewer studies have looked into the agglomeration economies in Korea. Lee B (2000) used firm level data to estimate the production function of the manufacturing industries located in the Capital Region. He found that localized economies were very significant while the effects of urbanization or agglomeration economies were not so apparent. He further noted that productivity in some industries was smaller in the largest urban areas. Also, Kim K.(2000) estimated a set of regression equations to see if urbanization economies exist and if the productivity of manufacturing firms in the Capital Region is different from that in other regions. The equation we estimated is given by

$$\ln(Y/L)_{ij} = \text{constant} + \beta_1 \ln P_{ij} + \beta_2 \ln(K/L)_{ij} + \beta_3 D$$

where Y is a measure of output, L is labor input, K is capital stock, and P is the size of population. D is a dummy variable that is equal to 1 for the Capital Region and 0 otherwise. The subscripts ij represent region i in year j. With the 1994-98 regional level pooled data for manufacturing industries, the estimation results suggest that agglomeration economies exist. These results are consistent with the conclusion of the literature on agglomeration economies

[3] Suh (1997) computed the net welfare cost of over-concentration in the Capital Region at 2.7% of GNP in 1985 and 3.1% of GNP in 1994. But his calculations were derived from simulation rather than estimation of costs and benefits using actual data.

[4] For other results, see Lee B (1998, p.56), Lee SB and Park (2000), and Lee SW (2000).

and productivity (Beeson 1992).

<Table 3 > Population size and manufacturing productivity

Dependent variable		Explanatory variables			Adj. R^2	D-W
		P	K/L	dummy		
Model 1	Output	.1786*	.7263*		.804	1.530
	Value added	.1286*	.6352*		.798	1.825
Model 2	Output	.1604*	.7362*	.0579	.803	1.512
	Value added	.0932*	.6545*	.1129+	.805	1.860

Note 1) * and ^ represent statistical significance at 5% and 10% levels, respectively .
2) D-W stands for Durbin-Watson statistic.

The government and supporters of the policies observe traffic congestion, housing price inflation, under-performing schools, and degrading environments, and blame population concentration for all those problems. They seem to dwell on trauma of the 1960s when large cities were overrun by massive in-migration. Trends of population growth and industrial distribution, however, indicate that Korea has moved on. Table 4 shows 20-year regional population growth rates and long-term forecasts. National population growth rate is expected to fall, and regional differences in the growth rate will be dramatically reduced. During the period of 2000 to 2020, the annual population growth rate for the Capital Region will be one tenth of the period of 1960 to 1980, and one fourth of 1980 to 2000. Continuing the trend of the 1990s, Seoul will lose population substantially.

<Table 4> Twenty-year Population Growth Rates and Their Projection

	1960-80	1980-2000	2000-2020 (Projection)
Total	49.8%	23.2%	7.7%
Seoul	242.1%	18.3%	-5.7%
Capital Region	156.0%	60.5%	15.9%
6 major city	198.1%	29.9%	0.7%

Data: National Statistical Office, Future Regional Population Forecast, 2002

If this forecast were correct, would the problems of overcrowding and congestion be solved automatically? The answer is no. As mentioned before, supply of public services and infrastructure, i.e., city's capacity to accommodate population, changes. Seoul's population was 2.8 million, only one fourth of its current size, when the first growth control measure was announced in 1964. However, the city in 1964 may have been more congested than now because its infrastructure capacity and public service provision were much more limited. The demand for public services and infrastructure also changes, even with fixed population, as income, tastes, and demography change. For example, housing demand in the Capital Region can increase faster than before even if population growth slows down. Changes in the number of households, family composition, income, and tastes may result in substantial increase in housing demands. Population is just one factor in determining the housing demand. On the supply side, there are numerous factors that affect housing supply, and ultimately, housing conditions. To improve housing conditions in the Capital Region, therefore, each aspect of demand and supply factors should be addressed.

We can make a similar argument with respect to traffic, environment, education, and other public services. As for the environmental pollution and traffic congestion, the essence of the problems is specific negative externalities, not the population size. Again, even if population growth stabilizes in the Seoul Capital Region, these externalities will not disappear automatically. The best way to address these problems is to tackle the problems directly through economic incentives and disincentives as well as regulations as appropriate (Mills and Kim 1998).

Spatial policies must ultimately aim at raising the quality of life. It is essential to ensure all citizens a certain level of quality of life regardless of location. In other words, policies should be

people-centered rather than place-oriented. In this sense, tight control on land supply in the Capital Region cannot be justified because it raises the cost of housing and also limits housing options for its residents. If taken to a limit, opposition to increasing the supply of housing in the Capital Region to control its further growth is equivalent to making the region too difficult and costly to live in so as to force poor people to move out. If successful, such a policy would be extremely inequitable. Considering that the resources required to improve the living standards of the Capital Region can be mobilized within the region, there is no reason to object to investments in the region.[5]

B. Does concentration in the Capital Region damage the rest of the country?

Another perceived problem associated with concentration of the Capital Region is the deprivation of economic and social developmental resources elsewhere in the country. For instance, opposing to a move by the National Assembly to relax the factory construction quota system in the Capital Region, four provincial Governors and their Assemblies issued a joint statement in May, 2001 saying, "(if the regulation is relaxed) it will proliferate disorderly development within the Capital Region and damage its environments. It will also aggravate chronic regional unbalance by luring firms away from local industrial estates, and as a result will produce inter-regional conflicts." Their joint effort successfully thwarted the deregulation movement.

However, very few studies have presented quantitative estimates or test on this issue. It is taken for granted that the indicators of excessive concentration of population and economic activities in the Capital Region constitute clear evidence of the damage being done to other regions of Korea and hence to the national economy. In other words, it is presumed that the size of economic pie is fixed, and regions are engaged in a zero-sum game. In order to see if such a relationship holds in Korea, Kim K(2001) performed a simple Granger causality test between real GDP growth rate and measures of primacy using the 1971-99 annual time-series data. No statistical evidence was found to indicate that primacy impairs economic growth or vice versa.

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5 For example, in the development of the largest new town (Bundang) south to Seoul, 100% of the costs of onsite infrastructures (access roads, water and sewage etc), 77 % of those of extending the fixed rail system, and 67% of those of constructing and expanding highways were financed with the revenue of the project.

Also, Table 5, reproduced from Son (2001), presents the result of a Granger test of causality between manufacturing employment in the Capital Region and those of three other regions of the country: Central, Southwest, and Southeast Region. Figures in the table clearly show that an increase in manufacturing employment in the Capital Region has had no negative impact on the growth of employment in any of the other three regions. Moreover, an increase in employment in the Capital Region was found to have a positive effect on employment in the Southeast with a one-year lag. These tests and other observations such as the survey result reported earlier indicate that the Capital Region and other regions are not engaged in a zero-sum game. Growth of the Capital Region leads the national economic growth, which helps other regions to develop.

<Table 5> Causality between manufacturing employment between the Capital Region and the three other regions

		Independent variables			
Dependent variable		X_{t-1}	X_{t-2}	Y_{t-1}	Y_{t-2}
Y: NCR X: Central	*Y*	(-), ○	(+), △		
	X	(+), ○			
Y: NCR X: Southwest	*Y*				
	X				
Y: NCR X: Southeast	*Y*	(+), ○	(-), ○	(+), ○	
	X	(+), ○			

Source: Son (2001)

Note: 1) Y = increases in workers by month

2) +/- in parentheses represent the sign of statistically significant causality relation

3) ○ : significant at 5% level, △: significant at 10% level

Although interregional disparities are considered a serious problem in Korea, international comparisons of the ratio between per capita income of the richest and the poorest regions shows that, relatively, Korea is not doing that badly. It can also be argued that a prosperous national economy is the most fundamental cure for interregional disparities. Moreover, there is a limit to which interregional disparities can be narrowed just as the unemployment rate cannot be pushed

below its natural rate (Mills and Kim K 1998).

Also, we must note another major long-term change in the regional distribution of industries. We have mentioned that industrial location was probably the most important factor that explained inter-regional migration in the 1960s. However, it no longer explains population concentration in the Capital Region, in which manufacturing employment fell 7% over the past five years whereas population increased 21%. A more complete picture emerges from Table 6 that presents the numbers of manufacturing plants, employment, value-added for the whole country and the Capital Region. The number of factories has increased faster in the Capital Region than the nation, but employment has kept up with the national trend. The region, however, lost its share in terms of manufacturing value-added. These trends reflect the fact that the nation's manufacturing sector moved from light industries operating within large cities to heavy industries located in newly developed industrial cities.

<Table 6> Long-term Trends in the Capital Region Manufacturing Sector

		1970		1985		1999	
	Unit	Nation	Capital Region	Nation	Capital Region	Nation	Capital Region
Establishments	Premises	24,114	7,916 (32.8)	44,037	24,142 (54.8)	91,156	50,689 (55.6)
Employee	Thousand persons	861.0	396.0 (46.0)	2,438	1,153.3 (47.3)	2,507.7	1,136.0 (45.3)
Value added	Billion Won	6,177	2,744 (44.4)	47,071	20,414 (43.4)	169,137	65,089 (38.5)
Employee per establishment	Persons	35.7	50.0 (140.1)	55.4	47.8 (86.3)	27.5.	22.4 (81.5)
Value added per establishment	Million Won	256.2	346.7 (135.3)	1068.9	845.6 (79.1)	1,855.5	1,284.1 (69.2)
Value added per employee	Million Won	7.2	6.9 (96.6)	19.3	17.7 (91.7)	67.4	57.3 (85.0)

Note: Value-added is on 1995 prices.
Numbers in parentheses are share from the nation.
Data: National Statistical Office, Survey on Manufacturing and Mining, each year.

As a result, manufacturing firms in the Capital Region are typically small and medium sized, labor intensive ones with low value added, such as firms within food and beverages, textile and clothe, paper and printing industries. These firms satisfy demands from the local area and provide low-wage jobs for unskilled laborers. They can not leave large urban area, since they are totally dependent on existing supply and demand networks. The other noticeable industries with heavy concentration in the Capital Region are a few high-tech industries. Seoul and its vicinity have been the home of new information and communication technology (hereafter, IT) ventures since the 1997 economic crisis. This was natural because the region offers an ideal mix of ingredients such as proximity to high quality professionals with varied expertise, excellent universities, opportunities for intellectually stimulating interaction, and a similarly dynamic living environment. The Capital Region serves as an incubator of high-tech start-ups which will lead the nation's endeavor in gaining international competitiveness.

Proponents of the regulation would like to assert that decentralization of factories owes much to the government intervention. Formal analysis has not been done on this question. Certainly, heavy industrial factories have been located in massive industrial estates developed by the government outside the Capital Region. Development of industrial land, coupled with financial and tax incentives, was, in certain times and locations, an effective instrument in attracting large factories which would otherwise find it impossible to find sufficient land. Other cases proved to be a total failure in that few firms would want to locate in industrial estates which were developed with a large amount of public money. In the 1980s, such waste became so large that the government had to completely stop developing large industrial estates.

In any case, the Capital Region regulations as explained in Table 1 is not a "carrot approach", since it restricts factory location in the region without offering sufficient incentive. The main effect is less investment rather than location in the other regions. More importantly, corporations in this globalizing world are so agile that they choose where to do business and their options include locations around the world. This power of so-called "footloose" industry dwarfs the effectiveness of government efforts to steer them from one region to another within national borders.

C. Can Spatial Policies Cope With the Future Challenge?

The future of a region within a country hinges upon the performance of the national economy, which in turn is determined by competitiveness of business firms and the labor force in its regions. As the national economy needs to facilitate its transformation into a knowledge-based

one, it is important for the government to provide a regulatory environment in which individuals and business firms can stay flexible and agile enough to adapt themselves to the changing economic environment. In this context, the current blanket control of location of so-called population-inducing facilities in the Capital Region should be reconsidered.

Knowledge-based economy is driven by the information technology. There has been much debate regarding spatial implication of advances in IT. The general consensus seems to be that certain functions which require face-to-face contacts would remain, or possibly become more, concentrated. On the other hand, much of back room operations would move out to low-rent, low-wage regions, possibly to other countries. Central management, international services, and legal and financial services will be naturally concentrated in large urban areas, since the accelerating pace of change and need to make fast decisions require constant contacts with collaborators who possess state-of-the-art know-how. Being physically close would help generate numerous networks of firms and people. Such advantages of large urban areas are not properly measured by the conventional manufacturing-based cost functions. The organization of the production and transfer of knowledge, and the organic process of learning through networks and clusters are essential for the development of a knowledge-based economy. Agglomeration now relates to differences in the size of cities as well as in the composition of their economic activities, and the largest cities are the best place for the concentration of complex activities (Lambooy 1998: 460). These facts suggest that the Capital Region is likely to continue growing.

Strength of these natural networks will determine competitiveness of the economy as a whole. This is why many urban economists argue that the future of national competitiveness depends on that of its metropolitan areas. For instance, Korea's position in the world economic order will be determined by the Seoul metropolitan area's position as compared to Tokyo, Singapore, Taipei, Beijing, and other metropolises. These large cities compete with each other in order to attract capital and human talents. Their weapons are efficient transportation systems and information networks, first-class business and research facilities, and predictable government policies and legal systems. In addition, living environments such as housing, leisure facilities, and schools are important to attract and retain talented people from abroad. Spatial policies must accommodate such needs. However, Korea's Capital Region growth containment policies work against this requirement. For instance, current strict regulations on factories make it difficult for firms to expand beyond the incubating stage, because they are not allowed to build or expand factories, research facilities, or staff housing nearby. The regulations also add costs of large commercial buildings, turn away world-class theme parks, and hinder improving housing condition in the region. These regulations should be repealed.

6. Conclusion

We have demonstrated that current spatial policies towards the Capital Region are both ineffective and founded on unjustifiable premises. Although we do not deny the value of government intervention altogether, we think that it should be fundamentally restructured. We argue that two distinct sets of issues should be separately addressed using appropriate policy instruments. The first concerns the efficient management of resources within the Capital Region. The right policy is to address externalities by adequate pricing, regulation, and planning. In this regard, inter-governmental cooperation in regional infrastructure planning, investment, and operation has much room for improvement. Lack of such cooperation is the cause of "disorderly development" in the late 1990s following deregulation in land use planning and development. In retrospect, good planning and infrastructure investments required for urban land development could not be achieved by deregulation drive alone. A similar argument can be made regarding environmental pollution, housing, transportation, education, and other public services. As a positive development, Seoul, Incheon and 15 smaller cities in the Capital Region have been designated as special areas for ambient pollution control. The respective local governments prepared action plans to reduce air pollutants in addition to the nationwide regulations. Such concerted efforts will greatly improve the quality of life in the Capital Region regardless of population size.

The second issue involves regional and national economic development. The appropriate approach is to allow the Capital Region to lead the national economic growth, and to promote the development of other regions at the same time by upgrading the soft infrastructures such as education and to assist the regions' efforts to innovate. Limiting the growth of population and jobs in the Capital Region is to address an inter-urban issue at the intra-metropolitan level. One fortunate aspect of urbanization is that it generates material and human resources that can be tapped to deal with the problems that may emerge in the process. We need to focus our attention on finding the best ways to improve the quality of life of urban residents using adequate resources and through sound policies, rather than with seemingly ineffective and sometimes counterproductive attempts to slow the process of urbanization.

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