

**Urban Growth Determinants in Korea**  
**- With Special Reference to the Three Regional Metropolitan Cities -**

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## Abstract

Korea has severe spatial problems as a result of rapid urbanisation and urban growth. In order to clarify urban growth processes, this study involves the identification of the major urban growth determinants which have influenced urban growth and change in Korea.

Through both theoretical and empirical studies, three major determinants were identified: accessibility, industrial structure, and development institutions. The term "accessibility" indicates not only physical nearness but also functional connections with relevant areas. The findings of the research show that there are strong positive relationship between accessibility and urban growth in Korea. As a composite economic indicator, urban industrial structure reflects the soundness of urban economic activities in terms of employment opportunities, income generation, and innovation adoption. Thus, it can be assumed that an urban place which has a more advanced industrial structure can bring more urban growth than one without such a structure. This study suggests that urban growth in Korea has been strongly influenced by manufacturing oriented industry growth. Development institutions have particular meanings for urban growth in Korea as urban growth has been greatly influenced by development policies initiated by central government. These include economic development, national land development, and industrial location policies. These three determinants reinforce or counteract each other to influence the speed and direction of urban growth and change.

The impacts of these determinants can change according to the circumstances of the urban growth environment in Korea. The meaning of locational factors has changed from their physical aspects to their functional oriented aspects. In many more developed countries, the emphasis has shifted

from manufacturing oriented industrial structures to service and/or information oriented industrial activities. Development institutions can also be changed from centralised to decentralised forms in terms of decision making regarding urban growth and change. However, although circumstances may change, the importance of the three determinants will not be weakened because of their critical importance for urban growth and change.

These three determinants are proxy factors of three important aspects in the urban environment: accessibility for location, industrial structure for economic activities, and development institutions for the institutional context.

The findings of this research suggest that urban growth policies should focus on the administration of these three determinants. Without efficient management for these determinants, it will be very difficult to tackle national spatial problems. To encourage urban growth in particular areas, the situational circumstances of the three determinants in those places should be improved with control measures in other areas. Further research on these three determinants is required to test their validity under changing circumstances and different urban growth environments.

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## Acronyms

- EPB : Economic Planning Board
- KRIHS : Korea Research Institute  
for Human Settlement
- LDCs : Less Developed Countries
- MDCs : More Developed Countries
- MOC : Ministry of Construction
- MOHA : Ministry of Home Affairs
- MSCs : Medium Sized Cities
- NLDP : National Land Development Plan
- NMCs : National Metropolitan Cities  
(Seoul and Pusan)
- NUDS : National Urban Development Strategies
- RMA : Regional Metropolitan Area
- RMCs : Regional Metropolitan Cities  
(Taegu, Kwangju, and Taejeon)
- SSCs : Small sized Cities  
(City with less than 10,000 residents)

# Chapter One

## Introduction

### 1.1 Introduction

During the two and half decades since the early 1960s, Korea has experienced rapid changes in almost all aspects of activities related to rapid economic growth. Among these changes, rapid urbanisation accompanied by industrialisation is probably the most salient feature. Thus, Korea is known as one of the Newly Industrialising Countries (NICs) and a highly urbanised society among Less Developed Countries (LDCs). Rapid urbanisation has brought various spatial problems which have to be solved urgently. In consequence, urbanisation and urban growth have emerged as one of the most important social issues to be solved in the Korean society.

Most developing countries, including Korea, are deeply concerned about spatial factors in national development in accordance with the advancement of urbanisation. It is clear that urbanisation and urban growth problems in Less Developed Countries have reached a magnitude and importance necessitating explicit consideration in overall national development policies. At present, spatial problems relating to urbanisation and urban growth can be categorised into three broad domains of issues; urban concentration, problems of urban-rural linkages, and regional disparities. The first category concerns problems arising from the concentration of population and economic activities in a limited number of urban places, typically large cities. The second problem reflects the unbalanced relations between urban and rural sectors. The last issue is the matter of



disparities between regions. Inequality and uneven development are one of the peculiar characteristics in contemporary society at all spatial scales ranging from the intra-urban to the regional level in the country. Despite their strenuous efforts to tackle the problems, most developing countries still confront various urban-related problems which appear in peculiar forms in different situations. As a consequence, new insights for urbanisation and urban growth in developing countries are urgently required in the form of logical explanations for urban areas- why they exist, how they grow and how change occur and what the quintessences of city life are.

With these considerations in mind, this study focuses on one aspect of urban growth and development phenomena, viz., the nature of urban growth determinants in Korea. By way of introduction, this chapter presents an overview of urbanisation and urban growth problems, sets out the objectives of this study and the hypotheses to be verified, and outlines the research methodology.

## **1.2 Urbanisation and Urban Growth: An Overview**

### **1.2.1 Definitions of Urbanisation and Urban Growth**

Broadly speaking, it is possible to consider three facets of the urbanisation process; the behavioural, the structural, and the demographic facets (Lampard, 1967, pp. 519-520; Diederiks, 1981, pp. 4-5). The first conceives urbanisation as an adjustment of personal behaviour and life styles to those which are considered to be urban. The second focuses on the change of the patterns of activities of the whole population. One of most succinct examples of this concept is the change from agricultural occupations to non-agricultural ones. Lastly, the demographic approach

stresses the process of population movement from rural to urban places. Among the three, the demographic concept is most commonly used in the social science.

Urbanisation, in a demographic sense, is defined as a process of population concentration which is expressed by the ratio of people living in urban areas to the total population in the country. In general, a population within a given territory may redistribute itself through either centripetal or centrifugal movements (Hatt and Reiss, 1964, p. 79). The former refers to movements by which population moves from the periphery to the centre, while the latter means the movement from the centre to periphery. The former movement results in polarisation effects but the latter movement is characterised by spread effects. The urbanisation process is a centripetal movement.

Historically, urbanisation and the growth of cities have occurred hand in hand, which accounts for the confusion in terminology (Davis, 1965, p. 7). It is important to distinguish clearly between urbanisation and urban growth. In technical terms, the former indicates the increase in the proportion of the population living in urban places while the latter refers to the absolute increase of urban population (Glass, 1972, p. 21; Goldstein, 1983, pp. 10-11; Slater, 1986, p. 8). This means that urban growth can occur in the absence of increasing urbanisation in situations where there is an average growth in the total population. On the contrary, urbanisation can take place, even while the population of urban places is decreasing in conditions of overall population decline. In fact, the urban population in the most advanced countries, for example, is still growing but the proportion of the total population in those countries is tending to remain stable or to diminish.

In relation to these definitions, it seems clear that urban growth is a consequence of three factors: natural increase, net in-migration, and the reclassification of urban boundaries (Todaro, 1980, p. 167; Renaud, 1981, pp. 16-29; Slater, 1986, p. 8). Demographers interpret urban growth as the direct consequence of natural population increase and of net urban in-migration (Rogers and Williamson, 1982, p. 464). Accordingly, it can be said that urban population growth evolves from a spatial interaction of economic vitality and personal mobility changes. As a whole, economic vitality is more stable than personal mobility in terms of spatial variations and growth rates. Thus, an individual city's population growth is mostly influenced by net in-migration to that city from other places. In addition to these factors, the redrawing of city boundaries with the annexation of nearby areas is a major source of urban population growth. Among the three factors, in-migration and changes in city boundaries appear to be much more important sources of urban growth in developing countries than in developed countries (Todaro, 1980, p. 167).

Settlements are rarely static in size but grow or decline in physical area, in population, or in both (Stone, 1973, p. 234) reflecting their changing situational and/or circumstantial characteristics. As a container, the physical area of a city is, in general, reflected by both population and their activities. Thus, as the population increases, the activities appear more diversified with much stronger density and consequently a more spacious accommodation area is required. In other words, growth creates size and size reacts to restructure the physical appearance of the city and its functional characteristics. Thus, it can be said that urban size is simply reflected from the cumulation of growth and change of city (Thompson, 1965, p. 52).

### 1.2.2 Characteristics of Urbanisation and Urban Growth

Contemporary urbanisation in Less Developed Countries (LDCs) is generally characterised as rapid urbanisation with little association with industrialisation (Reissman, 1964, pp. 158-166). The extent to which there are major differences in the urbanisation process between today's LDCs and the nineteenth century Western experience is clearly outlined by Davis (1965, p. 19) as follows:

In the 19th and early 20th centuries the growth of cities arose from and contributed to economic advancement. Cities took surplus manpower from the countryside and put it to work producing goods and services that in turn helped to modernise agriculture. But, today in underdeveloped countries, city growth has become increasingly unhinged from economic development and hence from rural-urban migration.

Urbanisation in LDCs results from different circumstances to those experienced in More Developed Countries (MDCs). Among the differences, the following factors have had a great effect on urbanisation: rapid population growth, differences in the man-land ratio, differences in technology, and different international situations (Hauser, 1965, pp. P34-38; Beier, et al., 1975, pp. 1-4; Cohen, 1976, p. 12). The increase in population growth during the 20th century is the most important factor which distinguished present from past urbanisation. During the rapid urbanisation period in the west, national population growth rates were around 0.5% per year but the rates for Less Developed Countries today are usually between 2.5% and 3.0% (Cohen, 1976, p. 12). These higher rates of population growth have resulted both in a large migration to urban areas and in high rates of natural population increases within cities. The ratio of population to arable land in most Less Developed Countries far exceeds that found in Western countries during the period of rapid urbanisation.

This high man-land ratio acts as the push factor for rural people to move to urban areas. Technological developments, especially in the transport and communication sectors in the current period have encouraged population movement by reducing the friction effect of distance and by providing more information on urban opportunities. Lastly, the international political and economic situations at present are totally different from those of the past, with relatively fixed territorial boundaries and the disappearance of colonial economies. In short, urbanisation in Less Developed Countries is occurring far more rapidly than that of More Developed Countries' experience, against a background of higher population growth, lower incomes, and fewer opportunities for international migration (World Bank, 1979, p. 72).

Because of its rapidity, the urbanisation process in Less Developed Countries has been concentrated particularly on large cities. Traditionally, the city in Less Developed Countries, especially in Asian countries, has played an enormously significant role in both the traditional societies of the past and their current transformation (Murphey, 1972, pp. 61-65). The roles and functions of Asian cities, in general, can be considered in terms of their economic, political, and social aspects (McGee, 1971a, pp. 172-177). Historically, commercial functions and urban infrastructure have been concentrated in the major cities. Thus, various development plans have been implemented in connection with these large cities to pursue economic efficiency within the limited resources available. The concentration of the national political energies and the national ethos in the national capital, generally the primate city, has a more meaningful role to the people than other aspects (McGee, 1971a, pp. 172-177). Finally, large cities function as centres of information and innovation for further development. In consequence, many cities in

Less Developed Countries have been regarded as providing places for employment opportunities, areas of possibilities, and matrices for opportunities (Potter, 1985, p. 37). It is generally assumed that larger cities can provide more varied opportunities than the smaller ones. Therefore, large cities have experienced more rapid growth rates than the smaller cities.

The main features of urban growth have changed as time passes by. The largest city in the Less Developed Countries continues to grow but less fast than those of intermediate cities. There is also a downward trend in the growth rate for the total urban population which provides some explanation of the gradual decline in the growth rates of large cities in the Less Developed Countries (World Bank, 1972, pp. 12-13). At the same time, present patterns of urbanisation in More Developed Countries are also showing features that have never been experienced before. The features can be summarised as follows (Cameron, 1983, p. 10): the decline of population and economic dominance of the primate city with the re-emergence in the form of an even more geographically extensive spread primate city region, the decline of major industrial cities which have failed to transform their economic base to capture the growing tertiary sector, the growth of medium-sized manufacturing centres which locate in the vicinity of the major metropolitan areas, and the emergence of major new centres in areas of high environmental amenity. For this reason, urbanisation in Less Developed Countries can be called 'expanding urbanisation' while that of More Developed Countries is 'mature urbanisation' (Renaud, 1981, pp. 57-59). During expanding urbanisation, industrialisation usually plays an important role. Three successive phases in this process can be identified; initial concentration, decentralisation to selected locations, and more through diffusion of growth to the

national space. Mature urbanisation is characterised by a reshuffling of urban population among urban regions with accompanying suburbanisation within metropolitan areas. At this stage, city-to-city migration is the dominant factor affecting the urban system.

In addition to those trends, some More Developed Countries, especially the United States, have experienced population loss in the major metropolitan areas since the 1970s, combined with an accelerated growth of the rural areas which suggest a turning-point in the urbanisation process. Beale (1975, p. 6) has shown that the population of nonmetropolitan counties in the United States increased by 4.2% from 1970-1973, compared to 2.9% in metropolitan counties. This was the first time the growth rate of metropolitan areas has dropped below that of nonmetropolitan areas. More significantly, the long term trends of migration from rural areas to metropolitan areas have been reversed. This phenomena can be called "counterurbanisation" which denotes a movement from a state of more concentration to that of lesser concentration (Berry, 1976, p. 17; Perry, et al., 1986, p. 2). To interpret these trends, there are three different explanations; the clean-break, the continuation, and the cyclic approaches (Burns, 1984, pp. 1-2). The "clean-break" approach maintains that this development is a clean and wholly unprecedented break with past trends and insists that the metropolitan areas have shrunk and infers that they will continue to do so (Beale, 1975; Tucker, 1976; Vining and Strauss, 1977; Wardwell, 1977; Frey, 1988). The second approach interprets these trends as simply a continuation of past trends, representing primarily an accelerated overspill of population from the metropolitan areas into their exurban counties. It refuses to accept the conclusions of the first approach and asserts that the clean-break is a statistical illusion (Gordon, 1979). The

third view holds that what appeared as trends are really segments of a cycle reflecting different stages of urban development which is described in greater detail in the following sub-section.

### 1.2.3 Stages of Urban Growth and Development

The stage theory is based on the premise that each element in a system evolves through a sequence of stages over time (Birch, 1971, p. 84). Concerning urban growth and development, it is assumed that a city changes or evolves its character over time, following a well-defined sequence.

A variety of approaches has emerged in the literature on urban growth and development. Each of these has its own special features. Most stage theories have focused on specific components and/or aspects of urban growth and change but limited numbers of studies have considered the urban evolution process in relation to its effects on the settlement system as a whole. The former can be called sectoral approaches while the latter can be termed general approaches. A further distinction can be made on the basis of interpretations of the sequences of events in terms of urban phenomena: these are the cyclical and the secular approaches.

Among secular theories, Sjoberg's (1960, pp. 7-13) designation of the preindustrial city is the one of the best known attempts to classify types of cities in relation to stage of development. He distinguishes and compares the pre-industrial city with the industrial city in terms of factors such as available technology and the status of industrialisation. Reissman (1964, pp. 195-238), using a broader basis of differentiation, lists four main components of the urban process and selects a single key variable for each component, those are: the percentage



share of urban population to the national total as a consequence of urban status, the percentage contribution of manufacturing industries to GDP as an index of industrialisation, the per capita income as a measure of the prevalence of middle classes, and the literacy rate for prevalence of nationalism. Given these factors, he identifies modern urbanisation as four main stages of urbanisation with thirteen sub-categories. On the other hand, Friedmann (1966, pp. 35-37) sets out the four stages of spatial development based on the relationship between economic development and its corresponding impacts on spatial subsystem change. The suggested stages are as follows: independent local centres with no hierarchy, a single strong centre, a single national centre with strong peripheral subcentres, and a functionally interdependent system of cities. In general, almost all secular theories pick out the importance of economic and technological development as major determinants of urban growth and change.

The idea of a systematic cycle of urban growth and development can be traced back, via Lewis Mumford (1944, pp. 283-299), to Patrick Geddes (Norton, 1979, p. 3). After the revision of Geddes' ideas, Mumford (1944, pp. 283-299) raised the six stages of city development, i. e., eopolis, polis, metropolis, megalopolis, tyrannopolis, and nekropolis. The well known S-shaped urbanisation curve has also been presented as the cycle of urbanisation and urban growth after examining historical development of urbanisation (Davis, 1965, p. 11; Paelinck, 1970, p. 35; Northam, 1979, pp. 65-67; Norton, 1979, pp. 65-67). Starting from the bottom of the "S", the first bend tends to come early and is followed by a long attenuation. The percentage share of urban population to the total at this point is less than 25%. This period can be regarded as an initial stage which is characterised by an agriculture-

oriented traditional society. The curve climbs steeply up to around the 50% level before flattening and faltering when the urban population reaches about 75%. The period between 25% and 75% is called the accelerated stage which is characterised by a manufacture-oriented economy. The final stage, which is reached when urbanisation levels exceed 75% is called as terminal one, where the importance of service industry is increasing.

Recently, significant empirical studies on urban growth and development have been carried out in relation to European cities (Hall and Hay, 1980; Berg, et al., 1982). These studies are based on similar data sources for 14 European countries and their findings and outlines indicate a process of urban growth with very similar stages (Suarez-Villa, 1988, p. 3). Hall and Hay (1980, pp. 229-231) examined and analyzed changes in the European urban system from 1950 to 1975, looking particularly at population and employment change. The findings of these empirical studies led them to suggest six sequential stages of urban development in terms of population change in the cores and hinterlands of the urban systems (Cheshire and Hay, 1986, pp. 149). The suggested six stages are as follows; centralisation during loss, absolute centralisation, relative centralisation, relative decentralisation, absolute decentralisation, and decentralisation during population decline. Berg, et al. (1982, pp. 24-45) outlined the process of urban growth in terms of four stages with eight substages. The criterion for this classification is the population change in the core, the ring, and the total area of functional urban region of each city. The difference between Hall and Hay's classification and that of Berg, et al. is the first and the last stage. In other words, Hall and Hay's first and last stages are respectively subdivided into two categories in Berg, et

al.'s classification. The major features of each stage are summarised in Table 1.1.

The overall strength of the stage theory lies in its usefulness as a causes for explaining the process of urbanisation and urban growth, but there are also many shortcomings in this theory. The major defects of the theory can be summarised as follows (Choguill, 1979, pp. 6-7); firstly, the stage theory supposes that all urban

Table 1.1 Stages of Urban Growth and Development

Stage	Sub-stage	Features of Pop. Change		
		Core	Ring	Agglomeration
I Urbanisation	1. Abs. Cen.	++	-	+
	2. Rel. Cen.	++	+	+++
II Suburbanisation	3. Rel. Decen.	+	++	+++
	4. Abs. Decen.	-	++	+
III Disurbanisation	5. Abs. Decen.	--	+	-
	6. Rel. Decen.	--	-	---
IV Reurbanisation	7. Rel. Decen.	-	--	---
	8. Abs. Cen.	+	--	-

Note: +, ++, +++ = population growth, slow(+) to fast(+++)  
 -, --, --- = population decline, slow(-) to fast(---)

Source: Berg and Klaassen, (1987), p. 88.

places pass from one stage to another but many urban places, both in More Developed Countries and in Less Developed Countries, do not necessarily conform to this sequence, secondly, support for the theory is based on the analysis of past trends which may not apply in the future. For example, if the life cycle hypothesis is a valid concept, the deurbanisation phase should be followed by

reurbanisation, a trend which cannot, as yet, be firmly established, although there are some signals in this direction (Davelaar and Nijkamp, 1986, p. 2).

#### 1.2.4 Approaches to Urbanisation and Urban Growth

Concerning urban growth in Less Developed Countries, there are two different perspectives; pessimistic and optimistic views. Pessimists stress the Third World's inability to cope with the resource and social systems requirements of rapid urban growth and high urban densities, thus prompting the term 'overurbanisation' whereas optimists view urban growth as the natural outcome of economic development and as the central mechanism by which average living standards and labour productivity are raised (Kelly and Williamson, 1982, p. 595). Apart from this argument, analysis of urbanisation and urban growth should also focus the underlying causes of growth, accumulation, and spatial distribution of population (Ibid, p. 622).

While few would dispute that most Less Developed Countries are undergoing rapid urbanisation, debates over its causes and effects are intense and severe. At present, there are three streams to the causes and effects of urbanisation and urban growth in Less Developed Countries (Bradshaw, 1987, pp. 224-226): theories of modernisation, urban bias, and economic dependency.

Modernisation scholars assert that urban expansion is part of the natural transition from a traditional (agrarian) society to a modern (industrial) society (Bradshaw, 1987, p. 224). Accordingly, urbanisation and urban growth positively enhance the total output of society and thus increase economic growth (Berliner, 1977, p. 448).

Although urbanisation and urban growth bring some positive effects to development, this approach cannot fully explain negative effects of urbanisation and urban growth such as unemployment and poverty in the city.

Urban bias theorists argue that government policies favouring large cities have stimulated migration from rural to urban places. The policy bias in favour of city areas has produced disparities between rural and urban areas and thereby enhanced urbanisation and urban growth (Lipton, 1977, pp. 145-159).

The dependency approach postulates that urbanisation and urban growth in Less Developed Countries can be accelerated by foreign investment either in large-scale agricultural production or in capital-intensive manufacturing activities (Timberlake and Lunday, 1985, pp. 325-349; Bradshaw, 1987, p. 226). In general, dependency scholars have argued that foreign investment pushes peasants to the city where it is difficult to find high-paying employment. But, these scholars have not examined the pulling factors introduced by foreign investment in urban manufacturing.

These three approaches address different aspects of urbanisation and urban growth in Less Developed Countries with somewhat burgeoning arguments. However, these approaches suggest valuable insights on the causes and effects of urbanisation and urban growth.

#### 1.2.5 Problems of Urbanisation and Urban Growth

Urbanisation, in general, is closely linked to industrialisation and changing patterns of employment, and to rapid changes in cultural, social and political conditions throughout the world (Beier, et al., 1975, p. 1;

World Bank, 1979, p. 72). As a consequence, the resulting patterns of world urban growth represent an intriguing set of paradoxes (Hall, 1984a, p. 14): decentralisation and deconcentration trends -- from city to country, from inner-city to suburb, and from metropolis to smaller city -- are found in More Developed Countries while, on the other hand, the burgeoning growth of the large cities is found in Less Developed Countries. Urban growth in Third World has occurred and does occur under a great variety of economic and political circumstances; these have constantly changed, particularly during the present century. The mix of factors within which urban growth has taken place has produced enormous variations in both the morphological and social character of the Third World cities and this is reflected today in a range of planning problems (Drakakis-Smith, 1981, p. 17). Thus, the problems cities in Less Developed Countries must address are growing in complexity, the environment is subject to significant unforeseen change, and events are less predictable (Rider, 1982, p. 271).

Korea is known as one of the most rapidly urbanised countries among Less Developed Countries. As late as the 1920s, less than 10% of the population was recorded as urban population but the urbanisation rate has increased rapidly since the Liberation in 1945 and the Korean War (1950-1953). The period between the Liberation and the War was a decade of dislocation for Korea's urban system because of the surge of overseas repatriates after Liberation, the massive influx of war refugees, and the destruction of the War (Kim and Donaldson, 1979, p. 661). Consequently, about one third of the total population lived in urban places which had more than 20,000 residents in 1955. Since the mid 1960s, substantial migration from rural to urban areas has taken place in accordance with industrialisation. As a result, more than half the total population has lived in urban places since 1970. During the

period 1955-1985, urban population increased about 4.3 times while that of total population marked about 1.9 times. The average increase rate of urban population during that period was about 4.9% per year, more than twice that of the total population which was 2.1%.

Unlike many Less Developed Countries, there is a close correspondence between urban growth and economic growth in Korea. Korea has achieved a remarkable economic growth for over 20 years since the early 1960s. During the period 1966-1985, the GNP increased from 3.7 billion to 83.1 billion U.S. dollars, and per capita GNP also rose from \$ 125 to \$ 2.032 (EPB, 1986, p. 3). In general, Korea's economic growth relied upon a strategy of export-oriented industrialisation, thus favouring large cities in the expectation that the self-reinforcing agglomeration economies will move the national economy at an increasing rate. This policy option seems inevitably to bring polarised urbanisation and its concomitant city-ward migration widened the disparities between the urban and rural sectors as well as between different regions and social sectors.

During the process of rapid economic growth, the spatial dimension of development has been largely ignored by planners. This neglect of the spatial role and the importance of urban growth and development has created some problems which are now perceived as politically important by Korean planners.

### 1.3 Objectives of the Research

There has long been discussion as to how urbanisation and urban growth can be explained, and there now exists plenty of literature on those subjects. But the theoretical

explanation of urban growth is one of less developed area in the field of urban and regional studies (Richardson, 1969, p. 156). This is a result partly of the diversity of urbanisation experience which does not easily lead to generalisation and is also due to the complexity of the urban growth process. Actually, each city has emerged through time as a product of the complex interplay of physical, social, and economic forces. As a consequence, it is very difficult to incorporate all these relevant forces into a general theory which can be applied to different situations and circumstances. Thus, many existing urban growth theories are based on principles and models borrowed from the rather better developed field of regional science and they reveal some weakness and limitations in terms of their applicability to urban situations. Existing urban growth theories also tend to emphasise particular growth factors. For example, economists are inclined to concentrate on the structural aspects of the urban economy while geographers tend to investigate the ecological aspects of the spatial distribution of population and economic activities.

Moreover, remarkably little has appeared that aims directly to explain urban growth in developing countries such as Korea despite their increasing need for a better theoretical base of urban growth phenomena for tackling urban problems. Although the site and situational characteristics of cities in developing countries are obviously different from those of developed countries, most of the existing theories are mainly based on the experiences in MDCs and consequently are very difficult to apply directly to the situation in LDCs. In other words, there are few studies of the determinants of urban growth in developing countries in relation to the situational and circumstantial characteristics of particular cities.



A reason for urban growth theory is to provide a basis for the policy-maker to make sound policy decisions. In effect, a theory should suggest how the urban problems might be expected to occur and give some idea on their solution. Lacking theoretical explanations of urban growth and change, developing countries are confronted with critical spatial issues revolving around the need to formulate spatial development policies that can have a distinct impact on the direction and magnitude of urban growth. But, it is very difficult to induce appropriate policy measures for urban growth management without a better understanding of urban growth phenomena. Ideally, those involved should first identify the major factors which influence urban growth and change.

The purpose of this study is to identify some of the dominant determinants of urban growth which impact upon the speed and scale of urbanisation and the pattern of urban growth in Korea. The study seeks to explain and to clarify these determinants in terms of their nature, characteristics, and spatial meaning. Given this objective, there are two accompanying aims to identify salient features of urban growth in Korea and to induce the appropriate policy measures.

#### 1.4 Research Hypotheses

Urban growth takes different shapes reflecting different urban environments. The characteristics of urban growth and change in Less Developed Countries are quite different from those of More Developed Countries in their rapid urbanisation period owing to the different urban growth environment. Even within Less Developed Countries, there is a wide range of variation in terms of the speed, scale, and contents of urbanisation and urban growth. For

example, urban growth in Korea has had the typical characteristics of urbanisation and urban growth of developing countries, but it is now showing somewhat particular features which are usually found in more developed countries. In other words, Korea is now showing the characteristics of "polarisation reversal"-- a process in which the primacy level of Seoul begins to decline and the rank-size distribution also emerges (Richardson, 1980, p. 74). This tendency indicates that urbanisation and urban growth show area- and time-specific characteristics reflecting different urban circumstances of each country. Each city has its own history and its own pattern of growth reflecting urban growth environments (Donnison, 1980, p. 175). Concerning the diversity in urban growth characteristics, Lampard (1955, p. 84) mentions as follows:

Each city, in fact, serves a variety of social purposes and meets an array of human needs. Yet, no two are exactly alike in every respect of their functions, each is more or less unique product of its individual history or circumstances. A city is a concrete manifestation of general social forces; but its identity stems from being a particular accommodation to them.

Thus, it is generally regarded that the characteristics of urban growth and change are determined by various growth factors reflecting differences in physical, historical, economic, social, and institutional circumstances.

As an open system, a city interacts continuously with its environment. Its functions are stimulated and activated by its changing outer environment. Thus, an urban phenomenon can be interpreted as the cumulative result of dynamic interactions between the various urban activities and their surrounding environment. The elements of such a system do not evenly respond to the impulses from the environment. Each component of the system acts according to the strength of its interactions with the outer environment. Among the components, some elements take a

leading role in system adaptation or change. These components can be called principal or leading components. With respect to urban growth, it is assumed that some principal factors are more crucial than others. They must be regarded as major determinants of the system because of their functional importance in system growth and change. Thus, it is meaningful to try to identify the major determinants in system change. Consequently, it can be assumed that the characteristics of urban growth are mainly influenced by the activities of the major determinants originating from locational, economic, and institutional aspect. The major hypothesis to be tested in this study, therefore, is as follows: *Urban growth in Korea is mainly determined by the influence of locational, economic, and institutional factors.*

The initial location of many cities reflects favourable geographical factors. Site characteristics of the city were probably more important in the location of preindustrial cities than modern industrial cities. A favourable ecological base of the preindustrial city was conducive to repeated contacts among peoples of divergent cultures, in turn permitting urban development (Sjoberg, 1960, p. 27). Consequently, it can be said that the present urban location reflects the historical origins of the city in terms of its geographical advantages. Although the importance of site characteristics has dwindled with the advance of technology, that of situational characteristics, the relative location of a city with respect to the other cities with which it interacts, has maintained its importance. In short, the situational characteristics of the modern city have played a more important roles than site characteristics. As a result, Korean cities in some locations have shown relatively high growth rates than other cities in different locations. Thus, the first sub-hypothesis can be formulated as follows: *The locational*

*characteristics of each city is an influential factor in urban growth in Korea.*

Urban areas have evolved as an effective economic mechanism in response to the ever-changing economic needs of society in the production, distribution, and consumption of goods and services (Goodall, 1972, p. 22). As an economic entity, a city functions as a centre of production, distribution and consumption activities and the place where secondary and tertiary industries concentrate. In other words, most non-agricultural activities take place in urban places. Consequently, a city is regarded as the centre of economic activities and the matrix of employment opportunities. Although other factors contribute to urbanisation and urban growth, economic factors are one of the prime motivators. Thus, it can be said that urban growth is due mainly to the mix of the industries located there. The industrial structure of a city can function as an important barometer of urban growth and change. Therefore, the second sub-hypothesis can be formulated as follows: *The industrial structure of the urban place is one of the major determinants of urban growth and change.*

A city can be understood as the resultant artifact of cumulative decision-making and the activities of various institutions from the family to government. A city itself can be regarded as a complex institution which encompasses many other institutions which have their own activities and their own value systems. In practice, these institutions' decisions and their activities sometimes conflict with themselves because of the competing aims that are pursued. Most institutions relate, either directly or indirectly, to spatial development efforts with different degrees of relevance. Thus, every institution can be assumed to be a development institution to some context. Among them, the development efforts initiated by government, especially

central government, have greatly influenced the growth of urban places in Korea. These development efforts are usually expressed in the form of spatial development policies. In this study, the term "development institution" is restricted to the government-related development efforts. In fact, basic guidelines for urban growth management and development strategies in Korea are usually laid down by central government for local government under the highly centralised government system adopted since the 1960s. Under these circumstances, it can be assumed that urban growth has been greatly influenced by central government spatial development policies. As a consequence, the third sub-hypothesis is as follows: *The nature of the development institutions is one of the crucial growth determinants in urban growth in Korea.*

In the light of the previous hypotheses, the following sub-hypothesis can be formulated: *Most urban problems can effectively controlled by management of major determinants in Korea.* The present urban problems in developing countries have been increased by improper management. Most policy measures, which aim to alleviate urban problems in developing countries have been borrowed from developed countries without deliberate consideration of their adaptability to the special circumstances of developing countries. Basically, urban problems in developing countries must be treated differently to the ways that have been employed in developed countries because of the different urban growth circumstances and urban growth determinants.

## 1.5 Methodology

### 1.5.1 Overall Research Strategy

Basically, three stages are employed in turn in the research. These are: macro, micro and macro-level analysis. In the first macro stage, the phenomena of urbanisation and urban growth will be reviewed with reference to the identification of urban growth factors through theoretical and empirical studies. The theoretical study evaluates existing theories on urban growth and development while the empirical study seeks to identify the main urban growth characteristics in Korea.

The macro level analysis is followed by micro level research based on the intensive study of the limited issues. Thus, the second stage seeks to identify the major determinants of urban growth and change in three selected case cities. The determinants identified through the case study cities will be examined in terms of both their spatial and policy implications.

In the third stage, the characteristics of each determinant identified in the micro-stage are examined in a broader spatial perspective, in terms of their relationship to urban growth in the national space. In this way, the last stage of the analysis tries to generalise the major findings of the research in relation to urban growth theory.

### 1.5.2 Hypothesis Testing

The aim of hypothesis testing will be to clarify the relationships between urban growth and its relevant determinants by means of both qualitative and quantitative studies. The perceptions of urban growth determinants that

are held by both experts in spatial planning fields in Korea and residents in the three case study cities will be explored in the qualitative analysis with particular reference to non-quantitative determinants such as institutional factors. In the quantitative analysis, the relationships between urban growth and its determinants will be examined in statistical terms.

To verify the relationship between the major determinants and urban growth, the major determinants should be induced from existing spatial theories. After the selection of major determinants, the spatial implications of each determinant will be reviewed through a bibliographic study which focuses on the meanings of urban growth and change. Although major urban growth factors can be identified through theoretical study of this kind, it is very difficult to apply such experience directly to the urban situation in Korea. Thus, these major urban growth factors will be separately reexamined in Korean circumstances and the findings will be correlated to those expected on 'a priori' grounds. Then two qualitative survey techniques will be employed to explore the implications of these factors. These are, the Delphi method and attitudinal techniques. The Delphi survey will screen the major factors in relation to city size and the characteristics of the case study cities. The factors identified by the Delphi study will be reexamined in an attitudinal survey involving residents in the three case study cities. By means of these procedures, perceptions of the major determinants of urban growth can be clarified.

Some of the spatial and policy implications of each determinant will be explored in statistical analysis. Each determinant's implications for urban growth will be tested by a correlation analysis of the percentage changes of the determinant and those of population growth in fifty urban

places in Korea. In the policy analysis which concludes the study, the policy implication of each determinant will be considered.

Each sub-hypothesis is tested in three distinct phases. The first phase begins with the identification of each determinant by both theoretical and empirical investigation. Then the characteristics of each determinant will be induced from the national and the area-specific perspectives in the second stage. Lastly, the implications of each determinant to urban growth will be examined by both quantitative and qualitative analysis.

### 1.5.3 Selection of Case Study Cities

In 1985, about 54% of the national total population lived in two national metropolitan areas, Seoul and Pusan (KRIHS, 1986). This bipolarisation trend has incurred severe regional disparities which form not only spatial diseconomies but also socio-political problems. Thus, government have launched various policy measures for balanced national development such as decentralisation policies and the secondary city development policies.

The concept of secondary city development has been developed since the beginning of the *First National Land Development Plan (1972-1981)* in the form of a growth pole strategy. In the *Second National Land Development Plan (1982-1991)*, two groups of secondary cities are designated as growth pole cities; three cities for the first level growth poles and twelve cities for the second level growth centres. The secondary city development policy aims to strengthen the growth potential of each city to stimulate the economies of the surrounding rural areas, to slow migration to the largest urban place, and to spread the



benefits of economic growth to lagging or depressed regions (Rondinelli, 1983).

In the *Second National Land Development Plan*, three cities -- Taegu, Kwangju, and Taejeon -- have been designated as first level growth pole cities and are expected to be developed as centres for balanced national development by means of strengthening the existing commercial and administrative functions with a reinforcement of industrial activities. These three cities, together with five other cities, have been designated as the central cities of the intermediate regions which were adopted as the basic planning region in the *First National Land Development Plan*. In other words, these three cities have been regarded as strategic centres for balanced national development since the early 1970s.

Traditionally, these three cities have been regarded as three nuclei for national development because of their strategic location. They are located in the central parts of their hinterlands and function as central places for their surrounding areas; Taejeon for the central region (the central part of peninsula), Kwangju for Honam (south-west Korea), and Taegu for Yeoungnam (south-east Korea). Because of their strategic importance, these three cities have been functioned as provincial capitals for their surrounding provinces; Taegu for Kyeongbuk, Kwangju for Cheonnam, and Taejeon for Chungnam province. These three case cities have the administrative status of "government directly controlled cities".

In 1985, the populations of the three case study cities, Taegu, Kwangju, and Taejeon, were 2,031,000, 906,000, and 867,000, respectively and they held 3rd, 5th, and 6th places in population rank-order in the overall urban system in Korea. During the 1964-1985 period, the

annual population growth rates of these three case study cities were Taegu 4.51%, Kwangju 4.62%, and Taejeon 5.00%.

At present, these three cities are situated in different environments of spatial development. Taegu is surrounded by or situated near to the industrial belt surrounding Pusan, Kwangju is surrounded by agricultural areas, and Taejeon is adjacent to the capital region. In consequence, these three cities reflect the different status of spatial development; Taegu situated in a more developed region, Kwangju in a less developed region, and Taejeon in a rapidly developing region in the country.

In short, these three cities have different growth environments in terms of locational, economic, and institutional features. In addition, these three cities are expected to function as development poles in national space because of their spatial importance not only for their surrounding regions but also for the balanced national development. Thus, they are particularly appropriate for an investigation of urban growth factors. It is, therefore, these three cities are selected as the case study cities in this study.

#### 1.5.4 Data Collection

Both secondary information and primary survey data have been utilised in this study. Korea is relatively well-equipped with various kinds of data such as yearbooks, census data, and reports compared with many other developing countries but there is a lack of non-quantitative data concerning urban growth and change. Consequently, the qualitative data has been collected by primary survey.

Korea has had relatively good census data on various socio-economic activities since the mid 1960s, but census data is mainly static in character and there is limited flow data. In addition, almost all census data is available only for administrative units. Thus it is very difficult to get functional data which has trans-boundary characteristics.

The problems facing the analyst are further complicated by the fact that the number of urban places in Korea has increased greatly during the last two decades from 123 (32 cities and 91 towns) in 1964 to 250 (50 cities and 200 towns) in 1985. Because of the rapid increase in the number of urban places, it is often very difficult to compare time periods consistently. To overcome these difficulties, fifty cities were selected as study cities based on urban population in 1985 to explain the relationships between urban growth and the major determinants in Chapter 6. In other words, all other eups (towns) were excluded from this stage of analysis because of data problems in terms of availability and consistency.

Since 1964, the Korean government has published its *Municipal Yearbook of Korea* which contains almost all urban related data such as population and area, socio-cultural, economic, finance, and urban planning data on all urban places and it is very difficult to get systematic data on urban related activities before that time. In consequence, the time period of this study is effectively limited to the period from 1964 to 1985.

## 1.6 Presentation of Findings

The findings will be presented in five parts as follows: i) a theoretical study of urban growth determinants; ii) an overview of urbanisation and urban growth in Korea; iii) a more detailed examination and identification of growth characteristics in the three case study cities; iv) a qualitative analysis of urban growth determinants; and v) a review of the implications of the analysis for Korea as a whole.

The study begins with a review of the theoretical literature on major urban growth factors. At this stage, existing spatial growth and development theories will be evaluated to identify the dominant determinants of urban growth and change. The bibliographical studies on spatial growth and development theories and their major determinants can be found in Chapter 2.

In Chapter 3, the characteristics of urbanisation and urban growth will be studied through the systematic analysis of urban growth and change over the last twenty years in Korea as a whole. In this Chapter, the stage and system of urbanisation and urban growth in Korea will be identified.

The growth characteristic of the three case study cities will be examined in chapter 4 through the intensive analysis of their respective geographical, historical, socio-economic, and institutional aspects. The functional roles and growth characteristics of the three case cities will be further explained by comparisons between them and other cities such as Seoul and Pusan. The main aim of this Chapter is to identify salient features of urban environment which reflects urban growth and change.

Chapter 5 focuses on the perceptions of major determinants that are revealed by qualitative questionnaire surveys of key individuals. In the process particular attention will be given to four facets of urban growth determinant. These are, the geographical, social, economic, and institutional facets. The analysis seeks to identify the relative importance of each urban growth factor within the three case study cities and in Korea as a whole. The last part of this chapter compares the findings of this analysis with those of the theoretical study in Chapter 2.

Finally, the spatial and policy implications of the findings of the previous analysis will be discussed in Chapter 6. In the analysis of spatial implication, the relationships between the key determinants and urban change is statistically tested. The last part of this Chapter focuses on the policy implications of the analysis and suggests the possible policy measures to tackle these urban problems.

In this way, major urban growth determinants can be identified with special reference to Korea. The findings of this study will give valuable insights for urban growth policies. They may also raise questions not only for Korea but for Less Developed Countries as a whole.

## Chapter Two

# Theoretical Approaches to Urban Growth Determinants

### 2.1 Introduction

The theory of urban growth is a relatively underdeveloped area in the field of urban and regional planning (Button, 1976, p. 73; Richardson, 1969, p. 156). This is due partly to the great diversity of urbanisation experience and partly to the complex nature of the urban growth process. In addition to this, the growth process, in general terms, seems to be a very complicated social phenomenon. Boulding (1953, p. 326) describes the situation as follows:

Growth itself is not a simple or a unified phenomenon, and we cannot expect all the many forms of growth to come under the umbrella of a single theory. Nevertheless, all growth phenomena have something in common, and what is more important, the classification of forms of growth and hence of theories of growth seem to cut across most of the conventional boundaries of the science.

Despite its complexity, the need for clarification on urban growth phenomena has grown owing to the increasing importance attached to urban issues which occupy a central part of development policy in Less Developed Countries.

Despite these difficulties, several theories have appeared to explain urban growth and development in the last few decades based on different viewpoints. In consequence, efforts have been made to consolidate the existing spatial theories of urban growth and development (Chapin, 1965, pp. 75-95; Molle, 1983, pp. 36-39; Hall, 1984b, pp. 2-7; Nijkamp and Schubert, 1985, pp. 80-83;

Rees, 1986, pp. 24-50). In the process, the following six theories have been singled out on grounds such as the frequency of use and their importance in the spatial development process (Richardson, 1973a, p. 15): central place theory, growth pole theory, uneven development theory, industrial location theory, economic base theory, and innovation diffusion theory. In the final part of this chapter, each of these theories is examined from the standpoint of its impact on urban growth and change. Then some of the implications of these theories are considered with reference to the development of a conceptual framework for research on Korea.

The sections of this chapter divide into two: reviewing six spatial theories focused on the identification of their major determinants and examining the spatial implications of major determinants identified in association with urban growth.

## 2.2 Major Theories on Spatial Growth and Development

### 2.2.1 Central Place Theory

Central place theory was formulated by Walter Christaller in his book entitled *Die zentralen Orte in Suddeutschland* (Central places in southern Germany) in 1933. The basic aim of his study was to identify the general principles in the distribution of human settlements (Christaller, 1966, p. 1).

The theoretical framework developed by Christaller was based on the following assumptions (Dacey, 1966, p. 27; Richardson, 1969, p. 160): (1) population is evenly distributed over a homogeneous area, (2) central places provide goods and services for surrounding hinterlands of

fixed sizes, (3) central places locate to maximise the spacing of places, (4) central places form a hierarchy.

Under these postulates, he argued that hexagonal market areas will be formed in space. The size and shape of each central place are determined by two key concepts: the demand threshold and the range of goods or services (Beavon, 1977, pp. 19-22; Whysall, 1978, pp. 4-5; King, 1984, pp. 30-31; Carter, 1985, pp. 61-62). The demand threshold is defined as the minimum population that is required to support a service and the range is the maximum distance over which people will travel to purchase a good or to use a service offered at a central place. Thus, the upper limit of a good from a central place is determined by the range and the lower limit by the threshold. In other words, the upper limit is the result of the economics of consumer and the lower limit relates to the supplier.

Given these assumptions, different orders of central places will develop and places of the same order will have tributary areas of the same size. To avoid overlaps and to match the densest distribution of settlement points, the circular regions are transformed into hexagons. It should be apparent that the threshold and range of any good or service will be an arbitrary figure and consequently it is possible that each kind will demand a different hierarchical structure.

The notion of central place theory was further developed by August Losch. His central problem was the location of economic activity and the creation of economic regions. Unlike Christaller, Losch began at the fundamental level of a single economic activity producing a good to be sold in a region. He proceeded to demonstrate that his analysis results in a series of circular market areas but in order to cover the territory most economically these



areas are converted into hexagons. The Losch model also contains two geometric features (Parr, 1978, pp. 36-37). The first is that there exist as many market area sizes as possible, up to some unspecified maximum size. It is obvious that the number of possible market area sizes is much greater than in the Christaller model. The second feature is that there are centre-rich sectors and centre-poor ones radiating from a single centre, the only centre in the system which supplies every bundle.

It is unlikely that any of the idealised systems will be directly matched by reality, but the theory has provided many concepts and methodologies which have been extensively used in the study of urban systems (Herbert and Thomas, 1982, pp. 134-141). The concept of central place contains at least four major principles: the principles of centrality, accessibility, hierarchy, and nesting (Berry, 1962, pp. 90-91). The principle of centrality relates to the character of central places to seek out the point of minimum aggregate travel in a trade area. The second principle indicates that consumers tend to travel to the nearest centre which offers the goods demanded except in the very largest cities. In the concept of central place theory, there is a hierarchy of certain levels of central places. Lastly, each level of centre has a certain size of trade area and the higher level trade areas contain a cluster of trade areas of the next lower centres.

Although central place theory contains much that is conceptually useful, its overall value has been diminished by the fact that the theoretical models are frequently incapable of satisfactorily describing and analyzing actual situations (Parr, 1978, p. 35). The weakness of the central place concept can be summarised as follows (Whysall, 1978, pp. 6-11; Allen and Sanglier, 1979, pp. 256-258; Parr, 1981, p. 60). Firstly, the theory is generally presented in

static-equilibrium situations, with little attempt at introducing the time dimension. Secondly, it is not clear about the geographical pattern of economic interaction within the region. For example, a centre commonly supplying lower level centres but never higher level or same level centres-- a consequence of the existence of a successively inclusive hierarchy. Thirdly, there is no provision for a positive or innovative role for the entrepreneur in the concept. Lastly, this concept presents a highly simplified model of consumer behaviour. On the whole, it can be said that central place theory is more applicable to agricultural than to highly industrialised regions (Richardson, 1969, p. 162).

Despite these weaknesses, central place theory is regarded as one of the most fruitful theoretical and operationally feasible approaches to the study of urban growth. In Richardson's (1969, p. 157) view:

According to the central place theory, the growth of a city depends upon its specialisation in urban service functions, while the level of demand for urban services over the services area determines how fast central places grow. Moreover, it is a general theory in the sense that it not only explains growth in the individual city but also the spatial ordering of urban centres over the regional and national economy

The theory insists that the city grows as a result of supplying goods and services to its surrounding region. In other words, it can be said that a city's growth is determined by the status of its hinterland population and income level. Thus, it also can be said that the cornerstone of the Christaller concept is the idea of a functional interdependence between a city and its surrounding rural areas (Johnson, 1970, p. 124; King, 1984, p. 29).

In relation to urban growth, there are some additional limitations to the theory when it is applied to highly urbanised economies (Richardson, 1971, p. 82). Firstly, cities grow for reasons other than servicing their hinterland, and large cities do not necessarily specialise in goods as the theory claims. Secondly, the theory exaggerates the role of service activities but undervalues that of manufacturing activities. Thirdly, cities grow to a considerable extent by attracting resources from outside, but the theory takes little account of the inflow of migrants and resources from other areas, except primary goods. Nevertheless, central place theory gives valuable insights into urban growth and change.

### 2.2.2 Growth Pole Theory

The growth pole concept was initially suggested by F. Perroux in 1955. Based on observations of the process of economic development, he argued that growth does not appear everywhere and all at once; it appears at points or development poles with variable intensities; it spreads along diverse channels and with varying terminal effects for the whole of the economy (Hermansen, 1972, pp. 2-3; Glasson, 1978, p. 171; Choguill, 1979, p. 17). He was originally concerned with economic growth and primarily interested in firms and industries and their interactions rather than the geographical pattern of economic interaction. His ideas can be summarised as follows (Higgins, 1981a, p. 19):

Growth is not spread uniformly among sectors of an economy but is concentrated in particular growth industries. These growth industries tend to form clusters and to dominate other industries with which they are connected. When these industries generate spread effects to other industries, raising output, income, employment and technology in the other industries, they are called propulsive industries. A growth pole is a cluster of propulsive industries.

The application of the growth pole concept in a specific geographical and regional context was developed by J.R. Boudeville (1966). He emphasised the regional character of economic space which is tied to geographical space through functional transformation by describing the relevant properties of economic processes (Hermansen, 1972, pp. 28-29). More specifically, Boudeville defined a growth pole as a "set of expanding industries located in an urban area and inducing further development of economic activity throughout its zone of influence" (Glasson, 1978, p. 171). In the hands of Boudeville, a growth pole came increasingly to mean an agglomeration of propulsive industries in a particular place, and since most propulsive industries are found in cities, the place where propulsive industries cluster came to be thought of as a city (Higgins, 1981a, p. 19).

Growth pole theory encompasses some important concepts such as leading industries and propulsive firms, industrial linkages, and polarisation and spread effects. A leading industry means a relatively new and dynamic industry with an advanced level of technology while a propulsive firm has relatively large, fast growing and innovative characteristics (Glasson, 1978, p. 174). These industries tend to form clusters or industrial complexes because of their strong linkages with other relevant industrial activities. Thus, industrial activities linked to the leading industries and their locations grow much faster than counterparts elsewhere (Lasuen, 1969, p. 139). Consequently, leading industries or sectors are assumed to play a central role in stimulating and transmitting growth effects in spatial development (Beyers, 1974, p. 203). As a result, the concepts of inter-industry linkages and industrial interdependence play a major role in growth pole theory (Hermansen, 1972, pp. 21-25). In relation to spatial

development, the creation of growth poles has involved (a) the building up of some vertically integrated industrial complexes; (b) the provision of modern infrastructure and often the whole range of public expenditures embodied in new or substantially expanded towns; and (c) the construction of advanced factories and the offer of generous fiscal inducements to encourage linked or symbiotic and other newer industries (Hamilton and Linge, 1983, p. 32).

The concept of a growth pole maintains its popularity and development policies based on the growth pole concept are presented as effective and efficient measures in the countries where scarce capital, manpower and organisational resources have been committed to spatial development efforts (Appalraju and Safier, 1976, p. 144). According to Parr (1973, p. 174), the reasons for its popularity are as follows: first, it combines spatial economic growth and its spatial structure; second, it lends itself to treatment by a variety of conceptual frameworks and analytical techniques; third, it provides a theoretical basis for public intervention in the economic development of depressed regions.

Despite its popularity, however, the growth pole theory still leaves many unanswered questions (Darwent, 1969, pp. 23-24; Misra, 1972, pp. 155-158; Holland, 1976, pp. 50-54; Choguill, 1979, p. 22; Daly, 1983, p. 400): first, there is no clear explanation as to how growth is situated and where it is likely to occur; second, it is not clear how to decide on a mix of economic activities which ensures that they grow; third, there is little agreement as to the size of growth pole that is required to meet a given set of goals in the planning field; fourth, it is not clear how growth effects will be transmitted to other sectors within the economy and to other areas within the nation;

finally it is also not clear what kind of policy measures are needed to promote spread effects. In general, there are many difficulties with growth pole strategies, especially in translating theory into practice. For example, many questions have arisen in the context of Asian developing countries (Lo and Salih, 1975, p. 213). Thus, growth pole strategy is regarded as a conditional theory which is only applicable to places where the economic situation is propulsive (Richardson and Richardson, 1975, p. 163; Holland, 1976, pp. 50-54).

Nevertheless, the growth pole concept brings together many diverse elements of spatial growth theory such as agglomeration, diffusion, leading industries, industrial linkages, and spread and polarisation effects. Perroux also made considerable use of the concept of external economies as a vehicle for spreading the possibilities of growth into many sectors following a lowering of the propulsive industry's cost curves, and scale economies and innovations are obviously thought to be major sources of internal economies. Thus they contribute substantially to the foundations of growth pole theory (Thomas, 1972, pp. 59-63).

### 2.2.3 Theories of Uneven Development

Almost simultaneously, Myrdal (1957) and Hirschman (1958) developed similar concepts of uneven development. Both saw the process of development as involving the development of backward linkages between processing industries in the core and material suppliers in the periphery (Hall, 1984, pp. 2-3). The centre-periphery model developed by John Friedmann is a partial reformulation and refinement of the work of Myrdal and Hirschman. Friedmann proposed that economic growth can be

transmitted from the core into the periphery through a hierarchical system of settlements, the creation of which helps to achieve the spatial integration of the economy (Smith, 1971, p. 455).

In *Economic Theory and Underdeveloped Regions*, Myrdal (1957) argued that economic development, having started in certain favoured locations, would continue through a process of circular and cumulative causation. From a geographical stand-point, growth would be transmitted through a network of spread and backwash effects, which relate respectively to the positive and negative impacts of continued growth in the central areas of the region (Weaver, 1984, pp. 82-83). He emphasised the process of cumulative causation, enhanced by the movement of trade, capital, and labour to the growth centres and stressed the selective nature of migration from the hinterlands to these growth centres (Gilland, 1977, p. 8).

In 1958, Hirschman discussed trickle down and polarisation instead of spread and backwash effects in *The Strategy of Economic Development*. In general, prosperous regions can influence to depressed areas in two ways through backwash or polarisation effects or through spread or trickling-down effects. The former indicate the flow of labour, capital, goods and services from poor to rich regions while the latter include markets for the primary products of lagging regions and the diffusion of innovation from centre to periphery (Richardson, 1973a, p. 29). For the growth of depressed regions, the former brings favourable effects and the latter has the opposite effect. Practically, spread effects are outweighed by polarisation ones. In consequence, depressed regions are always situated in less adventurous circumstances with respect to trade and this results in unbalanced growth.

The process of 'cumulative causation' as described by Myrdal (1956) has particular meanings in the developing country situation. It means that once a particular region has become the locus of new growth- due to some initial advantage of its location- then new or added growth will occur in that region or closely related to it (Chadwick, 1987, p. 160).

The core-periphery relationship has been intensively studied at the city level by Friedmann (1966). His model assumed a previously uninhabited area which was colonised from the sea. As a consequence, the initial settlements were located around the coastal area, and eventually certain towns were developed there. The early settlements mainly relied upon agriculture until the introduction of industry led to a concentration of investment in a few cities. The "core" can be developed at the place where there is a rapidly developing industrial centre. Generally speaking, core regions are territorially organised subsystems of society that have a high capacity for innovative change; peripheral regions are subsystems whose development path is determined chiefly by core region institutions with respect to which they stand in a relation of substantial dependency (Friedmann, 1972, p. 93). As a specific form of urban-based industrial growth, the main concepts of this uneven development can be summarised as follows:

The logic of uneven development led to certain conclusions for regional planning: an emphasis on the growth of large cities, the pursuit of unequal development as a matter of policy, a view of regional planning that regarded it primarily as a way of influencing the location of manufacturing, and a belief that 'growth impulses' would eventually spread from major centres of innovation to the remainder of the economy (Friedmann and Weaver, 1979, p. 114).



The analysis of core-periphery relations has involved structural, evolutionary, and socio-economic approaches (Strassoldo, 1981, pp. 76-86). The structural approach emphasises the systematic principles and processes that explain the emergence of peripheries. It focuses on the core-periphery differentiation in a system with reference to hierarchy, control and organisation, and closure of boundaries between them. The evolutionary approach stresses societal systems, emphasising the historical processes that explain the emergence of particular core-periphery relations in the country and/or in the world system. The last approach is related to the spatial translation of the economic model of accumulation-exploitation.

The core-periphery concept can be described in terms of colonial relationships, and in so far as the periphery remains an area of primary production, the secular trends in the interregional trade will continually favour the centre (Friedmann, 1966, pp. 12-13). Thus, it can be said that this model succinctly explains uneven spatial development, but fails to explain why some centres develop as cores while others do not (Choguill, 1979, p. 27). The weakness of the model also can be found both as a description of the past and a guide to government policy for spatial development (Gilbert and Gugler, 1982, pp. 33-35).

In the concept of spread-polarisation, it is generally regarded that three concepts play important roles in the process of spatial growth and change; innovation diffusion, functional linkages, and agglomeration. In the centre-periphery model, three additional factors play key roles in the growth process (Choguill, 1979, pp. 25-26); interdependent economic activities, externally induced growth impulses, and the quality of local leadership.

#### 2.2.4 Industrial Location Theory

Spatial economics deals with "what", "where" and "why" (Hoover, 1970, p. 3). The "what" refers to economic entities, "where" to location in relation to other economic activities, and "why" to explanation within the somewhat elastic limits of the economist's competence. Location theory describes this kind of analysis when the emphasis is upon alternative locations for specific kinds of industrial activities.

Most analytical work on industrial location before 1960 was concerned with interpreting the location of the individual plant or industry with reference to a conceptual framework provided by normative location theory which seeks to identify the best or optimal location at a particular time (Chapman and Walker, 1987, pp. 16-21). This neoclassical location theory is a substantial elaboration of Weber's classical theory which goes beyond his preoccupation with spatial cost variations to incorporate variations in revenue (Smith, 1987, p. 23). This approach includes various assumptions about optimality: least cost, market area, and locational interdependence. The least cost approach attempts to explain location in terms of the minimisation of factor costs. Market area analysis emphasize the demand for market factors. The locational interdependence school recognizes the competitor's influence on locational decision-making.

The behavioural approach which was initially developed in the mid-1960s, focuses on the geographical growth and behaviour of the firm, not as optimising economic decision-making rationally, but as one characterised by conflicting goals, limited knowledge and control of its environment (Keeble, 1976, p. 2). This approach recognizes the

possibility of sub-optimal behaviour in the choice of industrial location instead of the optimum location pursued by the classical approach under rather idealised assumptions. It can be said that the development of the behavioural school was not the result simply of a process of intellectual refinement but a response to changing empirical realities in the locational environment (Massey, 1979, p. 64). Pred (1967) incorporated these ideas in his concept of the behavioural matrix, which describes the information characteristics of decision-makers or locational actors.

These two approaches have a number of limitations. Neoclassical theories, by and large, have followed partial equilibrium approaches which hold constant most extraneous locational forces and consider the locations and costs of all resources as fixed. Such approaches also neglect the mutual relations and interdependences of economic elements as well as the temporal and spatial character of the economic process (Karaska and Bramhall, 1969, p. 6). Consequently they are difficult to apply to practical situations. On the other hand, the behavioural approach also suffers from major defects (Keeble, 1969, pp. 3-4). It is difficult to apply to location changes on a national scale and it is also difficult to apply to the aggregate effects of firms or industries. Despite their respective shortcomings, industrial location theory embraces the total spatial array of economic activities with attention to the geographical distribution of inputs and outputs and the geographical variations in prices and costs. Without the aid of industrial location theory, it is impossible to fully identify industrial activity in relation to spatial development.

In a word, industrial location theory relies upon factors of location. Locational factors may be defined as

characteristics of places that affect the costs of pursuing a given economic activity. These factors are determined by the activity's structure of production, markets, competition, and internal organisation. Therefore, locational change can be studied by investigating changes in the economic activity, resultant changes in locational factors, and changes in the relevant characteristics of particular places (Harrington, 1985, p. 343).

#### 2.2.5 Economic Base Theory

Economic base theory conceives the structure of urban economy as made up of two broad classes of economic activities—basic activities which produce and distribute goods and services for export, and non-basic or services activities whose goods and services are consumed at home (Chapin, 1965, p. 137). This theory assumes that basic activities are the key to urban growth, and that expansion in this sector induces growth in services activities and hence in the urban economy as a whole (Richardson, 1969, p. 166).

The city's economic dichotomy has been recognized in theory for more than three decades using different terminologies such as primary, urban growth, and external for basic activities and secondary, service, and internal for non-basic ones (Alexander, 1954, p. 247). This theory was developed by the efforts of many scholars including Hoyt (1939), Alexander (1954), Blumenfeld (1955), North (1955), and Tiebout (1956). Among them, Hoyt's methodology is regarded as the cornerstone of the concept.

From the beginning, the application of this concept was much wider in scope and more complex in method than original idea. For example, in Europe, the concept has been

the importance of export industries, especially manufacturing activities, for urban growth.

#### 2.2.6 Innovation Diffusion Theory

Innovation is the successful introduction of ideas perceived as new into a given social system (Friedmann, 1972, p. 87). More broadly, innovations refer in general to the design, construction, and successful introduction of new or improved products, services, production processes, and institutional/managerial procedures (Dieperink and Nijkamp, 1987, pp. 66-67).

Innovation diffusion is by definition a function of communication (Hagerstrand, 1975, p. 185). Hagerstrand posited a hierarchy of networks of social communication through which an innovation filters from a few people to the population as a whole (Brown, 1975, p. 185). In this view, innovation diffusion depends upon a local network of social communications and four main elements of diffusion can be identified; innovations, communication channels, time and the social system (Rogers, 1983, p. 10). In other words, the diffusion process can be variously conceptualised but basically includes two types of actors (an advocator of change and a potential acceptor of change) the situation in which these actors operate; communication channels between the actors; and the new things or ideas which form the subject to be communicated (Fliegel, 1966, p. 235).

Innovation diffusion occurs at the macro, meso, and micro scales (Brown and Lentnek, 1973, p. 291). Examples of these are, respectively, diffusion to urban places, diffusion within the functional area of a single urban place, and diffusion within a small local area.

One can view development as being made up of a series of elementary innovations which usually occur in cities. These innovations merge into innovative clusters and finally develop as systems of evolutionary innovations which produce a system change (Berry and Horton, 1970, p. 87). In other words, rapid development at the regional level hinges upon the rapid flow of information, the rapid diffusion of innovations, and lastly the rapid acceptance of new ideas (Gould and Tornqvist, 1971, p. 148). In general, rapidly growing urban places are more likely to adopt innovation than more stagnant ones of a similar size and location (Mosley, 1974, p. 65). In economic perspective, urban growth depends to a large extent on the innovation potential of the area. Consequently, the locational patterns of innovative activities have received a great deal of attention in urban and regional economic research (Nijkamp, 1988, p. 173).

Pred (1977, pp. 121-127) hypothesized that differential urban growth is a function of the different processes of innovation adoption and diffusion. This suggests not only a changing urban hierarchy but also changes in the diffusion process reflecting changes in the hierarchical distance between urban systems. He also noted that the diffusion process is speeded up when cities grow (Pederson, 1970, pp. 228-229). In consequence, it can be said that there is a strong correlation between innovation diffusion and urban growth.

## 2.3 Major Urban Growth Determinants

### 2.3.1 Approaches

Urban growth factors can be categorised into several groups as follows: economic or non-economic; structural or

functional; static or dynamic; and partial or general factors. In general, existing spatial theories have mainly focused on factors which have economic, structural, static, and partial characteristics while the other aspects have generally been neglected in the debate. Table 2.1 summarises the findings of the previous section in these

Table 2.1 Urban Growth Factors suggested by Major Spatial Theories

Theories	Major Factors
Central Place Theory	<ol style="list-style-type: none"> <li>1. Central place location</li> <li>2. Functional interactions between core and its hinterland</li> </ol>
Growth Pole Theory	<ol style="list-style-type: none"> <li>1. Leading industries</li> <li>2. Industrial structure</li> <li>3. Agglomeration</li> <li>4. Innovation adoption / diffusion</li> </ol>
Uneven Development Theories	<ol style="list-style-type: none"> <li>1. Spread and polarisation</li> <li>2. Functional interactions between core and its periphery</li> <li>3. Industrial structure</li> </ol>
Industrial Location Theory	<ol style="list-style-type: none"> <li>1. Physio-environmental factors</li> <li>2. Economic factors</li> <li>3. Institutional factors</li> </ol>
Economic Base Theory	<ol style="list-style-type: none"> <li>1. Basic industries</li> <li>2. Industrial structure</li> </ol>
Innovation Diffusion Theory	<ol style="list-style-type: none"> <li>1. Innovation accommodation diffusion</li> <li>2. Functional interactions with surrounding areas and with cities in the country</li> </ol>

terms. In the economic aspect, following factors are emphasised as major determinants of spatial growth and change: leading industries, industrial structure, and basic industries. Locational factors are also stressed in

existing spatial theories in relation to functional relationships. These are central place location, innovation accommodation and diffusion, and functional interactions. In short, most theories stress economic factors and locational factors in association with functional interactions.

There are also a number of alternative viewpoints on urban growth which must be considered. According to the stage theories of urban growth and development described in Chapter 1, many forces work to shape the characteristics of urban growth and development with different intensities at each stage. Urbanisation has long been linked to industrialisation, and they have been considered synonymous with one another. Industrialisation leads to the concentrated accumulation of both capital and labour and this accumulation inevitably brings urbanisation (Jakobson and Prakash, 1971, p. 22). When new industrial employment is created, there will be a migration flow from rural areas to the urban places where it is concentrated. With the advancement of industrialisation, various supporting facilities for the industrial activities and their relevant infrastructures are developed. Some disparities inevitably appear between economic and non-economic sectors and between rural and urban areas and these disparities stimulate further migration from the rural areas. Thus, the determinants of urbanisation can be said to be actual or perceived disparities in economic opportunities and in social and cultural amenities between urban and rural areas (Goldstein, 1983, p. 3). Urbanisation is also greatly influenced by area- and time-specific factors. These include the size of the total population, the control of the natural environment, the level of technical development, and the development of social organisation (Hauser, 1965, p. 1).



The most characteristic feature of present day urbanisation in most More Developed Countries is that of dispersion, of the outward movement of population from the city to the surrounding areas. This suburbanisation trend arises from the increasing space requirements of modern industrial production processes, services, and retailing activities; increasingly affluent households wanting lower density housing; and the growing importance of quality of life factors such as accessibility to better living environments (Rothblatt and Garr, 1986, p. 16). Four factors are regarded as particularly important variables in determining the shape and rate of urban growth. These are: resources availability, social and individual values, institutional structure, and the availability of given technologies including transportation (Tobin, 1976, p. 95).

Although the underlying factors are different from stage to stage, there are some common driving forces for each development stage. In the urbanisation stage, the most important factor can be found in relation to the advancement of industrialisation. Industrialisation connotes not only economic transformation from agriculture to manufacturing-oriented industries but also consequent changes in institutional factors in urban environment. Major causes of the suburbanisation trend can be identified in association with changes in industrial activities accompanying institutional change. In short, it can be said that stage development of urban growth and change is the results of changes in industrial activities and/or institutional environment. Although their numbers are quite limited compared to those of economic factors, institutional factors are increasingly cited by many scholars (Johnson, 1972, p. 16; Richardson, 1973a, pp. 200-208; Tobin, 1976, pp. 95-96; Bird, 1977, pp. 106-107; Pressman, 1985, pp. 357-358; Berg and Meer, 1988, p. 1472), especially in connection with urban growth in developing

countries (Morris, 1978, p. 299; Rondinelli, 1983, p. 87; Hardoy and Satterthwaite, 1986, p. 280).

With these considerations in mind, three sets of factors can be selected as major determinants of urban growth and change for the research on Korea. These are: locational factors, industrial structure and development institutions.

### 2.3.2 Locational Factors

The location of economic activity is the central concern of spatial economics and hence forms a key part of any discussion of a local economy such as that of a city or region (Vickerman, 1984, p. 28). The importance of geographical location for city growth and development is emphasised as follows (Eschman and Marcus, 1972, p. 27):

The geographic and topographical setting of cities plays a major role in their location and growth. First, the physical landscape is a major factor in the initial selection of site for settlement. Second, topography and landform strongly influence the early growth and development of settlements, particularly the evolution of their spatial pattern. Last, even though in these days the technology has greatly progressed, the economic costs of overcoming geologic and geomorphologic factors continue to impose directional and aerial constraints on urbanisation.

The locational setting of cities plays a major role in their growth and change. Physical location and relationships among sites have had considerable effects on the growth of cities throughout the developing world (Rondinelli, 1983a, p. 44). The factors of urban location can be grouped, in general, into two, those of site and those of situation (Smailes, 1967, pp. 43-55; Eschman and Marcus, 1972, pp. 27-28; Berry and Kasarda, 1977, pp. 10-11). Site refers to those features of the physical environment on which settlements are established and over

which they grow. Situation, on the other hand, refers to the relative location of a city with respect to other places with which it interacts. In general, site and situation are both important in examining the origins of a city, as well as its relation with other settlements in an urban system. By and large, site tends to remain static, whereas situation changes through time in response to urban expansion and the development of activities within the city (Eshman and Marcus, 1972, p. 28). The condition of site has a special importance in localising the original function at a particular spot, but its subsequent growth in size and its functional enhancement are greatly influenced by the situational characters of the city (Smailes, 1967, p. 43).

Although some locations are the result of historical accidents or chance, most patterns of urban location can be explained by the potential that exists at various sites for a population to exploit the environment and provide for more efficient production and the distribution of goods. Because some types of activities are better suited to particular types of location than others, different kinds of cities will emerge at various kinds of location. Thus, locational factors have several important functions in urban and regional analysis (Richardson, 1973a, pp. 174-175). First, they simplify the task of constructing a general model of spatial development by fixing some key locational variables. Second, they affect the number of urban places in a region which in turn influence the intra-regional spatial distribution of industry and population. Third, they are the key factors to explain agglomeration phenomena in spatial economies. Consequently, the locational aspect of urban places can be regarded as a major determinant of urban growth and change.

Traditionally, locational factors have been regarded as major factors which determine the shape and pattern of

land use. In relation to urban land use, Hurd (1903) summed up as follows:

Since (land) value depends on economic rent, and rent on location, and location on convenience, and convenience on nearness, we may eliminate the intermediate steps and say that value depends on nearness (Alonso, 1968, P6).

In the 1920s, Haig (1926) saw rent as the charge for accessibility or the saving in transport costs and involved a bidding process to determine the occupancy and use of land. In a word, the role of accessibility in shaping a urban spatial structure, via the pattern of land rents, has been stressed by scholars of the land economic school.

The spatial meanings of locational factors have changed in accordance with the changing urban environment mainly caused by the advancement of technology. In general, technology is an important factor in urban growth and development, and changes in technology over time have left their imprint on urban development and urban form (Brotchie, 1984, p. 583; Moss, 1987, pp. 534-536). The urban context of technological change is particularly apparent in its impacts on urban form and structure and on the urban growth cycle and content. Technological development in transportation and communication can directly impact on urban land use pattern. Meier (1962) insisted that technological development reduces the necessity for face-to-face interactions but transportation overloads can also be imposed as a result of improved technology. Consequently, technological development can expand the functional area of the urban centre and can reduce agglomeration economies in metropolitan areas because of faster and cheaper transportation and communication technology (Illeris, 1987, p. 21). The stage development of urban places is strongly connected with the development of transportation and communication technologies (Kellerman, 1984, pp. 232-235). In a word,

technological development has changed the meaning of locational factors in association with urban growth and change. Nijkamp (1985, p. 206) mentions as follows:

Whereas conventional spatial analysis has been concerned primarily with location, modern spatial analysis has increasingly addressed movement or allocation questions with the analysis of dynamic spatial processes.

This indicates the growing importance of functional interactions between urban places in the analysis of urban growth and development. Therefore, the functional aspect of locational factors will be emphasised more strongly in this research than the physical concepts by employing the concept "accessibility".

### 2.3.3 Industrial Structure

Industrial structure can be defined as the relative importance of individual industries, or groups of related industries, within an economy (Jones and Lee, 1985, p. 31). The "structure of industry" refers to the selected characteristics of sectors in the economy in terms of production and factor use (Syrquin, 1988, p. 206). These characteristics include, for example, cost conditions, concentration, vertical integration, diversification, and entry barriers (Needham, 1971, p. 1).

Structural change in economic activities is often discussed in terms of a three-sector economy in which economic activity is classified as either primary, secondary or tertiary. In other words, the three-sector model is very useful for describing the broad pattern of the industrial structure of economies at different stages of economic development and is indicating the ways in which

the structure of economic changes as they become more developed (Jones and Lee, 1985, pp. 35-36).

Industrialisation involves a number of changes in the economic structure including (1) a rise in the relative importance of manufacturing industry, (2) a change in the composition of industrial output, and (3) changes in production techniques and sources of supply for individual commodities (Chenery, 1960, p. 635). In other words, industrialisation is a process of structural change in industrial activities from the primary to the manufacture-oriented secondary sector. The importance of manufacturing activities in the economic development has been emphasised because of their characteristics of production (transforming natural materials into goods which satisfy needs and wants) and their role in a multisectoral framework (the high income elasticity, the high tradeability, and the possibility of a more efficient allocation of resources). Thus, manufacturing growth is regarded as one of the main sources of economic growth and the growth of large cities is seen as the result of specialisation in some branch of manufacturing industry (Florence, 1969, p. 68). In short, a manufacturing oriented industrial structure, or a secondary sector has been regarded as the leading sector in urban economic structure.

The concept of leading industries is central to growth pole theory. In general, leading industries can be defined as fast growing, highly innovative, large scale, and growth generated industries with high interindustry linkages (Hermansen, 1972, p. 168; Thomas, 1972, p. 66; Beyers, 1974, p. 203; Erickson, 1975, pp. 17-24; Balchin and Bull, 1987, p. 21). Lead firms embodying rapid growth characteristics exert growth-generating forces on other elements of the regional economy. These induced growth effects are transmitted to the regional economy through

interindustry linkages. It is also assumed that lead sectors have rapidly growing levels of demand, above average levels of productivity improvement and are highly innovative in character. In brief, the activities of propulsive industries have multiplying and polarising effects to the regional economy (Boudeville, 1966, p. 66).

The role of industrial linkages and their spatial economics has attracted much attention from regional analysts. Four types of linkages study can be distinguished; macro, static micro, dynamic, and information flow studies (Taylor and Thrift, 1982, pp. 1602-1603). The macro level approach seeks to explain location patterns in terms of minimising the costs imposed by flows of goods and materials by the juxtaposition of functionally linked activities. These studies usually employ an input-output techniques. The second approach, static micro level, focuses on a few regions and a few industrial sectors using single cross-sector data. Dynamic studies stress the changes of linkages over time while the information flow approach emphasises the spatial dimensions of information flows among organisations.

There are four linkage variables; frequency, magnitude, form, and transfer technology (Moore, 1972, p. 260). Those four variables are interrelated and the first two are most closely tied because the amount of material exchanged over a given period of time can be varied merely by changing the magnitude and the frequency. Transfer technology indicates the contents of linkages transferred between/among interrelated industries. Linkage forms can be divided into three major types: (1) simple linkages of one plant to another; (2) multi-destination interplant linkages; and (3) multi-origin interplant linkages (Ibid, p. 259).

The importance of industrial linkages and the resultant external economies in accounting for the growth and persistence of distinctive concentrations of firms in particular industries is attested by many studies (Keeble, 1969, p. 164). Industrial linkages are regarded as one of the most important driving forces for agglomeration (Richer, 1969, p. 27). Consequently, they can influence greatly to growth of urban places. In fact, the structural linkages between economic activities in the region result in strong spatial linkages between cities specialising in particular complementary activities (King, et al., 1969, p. 213). But there are also some limitations in most industrial linkage studies as follows (Hoare, 1978, p. 167): firstly, there is little awareness of the heterogeneous composition of linkage flows; secondly, linkage studies pay little attention to explaining how the linkage phenomenon itself can be seen as multi-faceted.

As a major determinant, industrial structure can reveal the economic vitality by showing the status of following aspects: employment opportunities, leading industries, and industrial linkages.

#### 2.3.4 Development Institutions

Broadly speaking, the notion of an 'institution' means an established form of activity (Bogdamor, 1987, p. 290) which is usually conceived of as a basic forces in social organisation. More specifically, the term 'institution' refers to an organisation considered in relation to the effects of its internal structure and operating constraints on how it acts (Manion and Flowerdew, 1982, p. 4) and institutional analysis explores the administrative and political factors which affect the implementation of government programmes (Mead, 1979, p. 26). In general, the



institutional framework is concerned with the role of man's cultural environment and the forces of social and collective action play in influencing his behaviour as an individual and as a member of his family, his various groups, and his community (Barlowe, 1978, p. 7). There is, as yet, no established method for the study of institutional issues, but the institutional approach seeks an explanation of events through the study of the institutions affecting them with particular reference to the effects of rules, procedures, and the internal structure of these institutions (Manion and Flowerdew, 1982, p. 4).

The importance of institutional aspects in spatial development has been emphasised by some scholars. For example, Cheema (1980, p. 4) regards institutional machinery as a factor which influences regional development performance:

The institutional machinery provides the channel through which various regional development ends are accomplished; relevant societal issues and priorities are articulated; short-term and long-term plans are formulated; regional development projects are implemented; people are involved in specific activities undertaken by the government; and the planning and implementation processes are integrated.

As a institution, government activities have assumed great significance in the economic and social affairs including urban problems of all nations in recent decades (Estall and Buchanan, 1973, p. 132). Spatial policy decisions, an important aspect of government activities, are political decisions; that is, they are taken by policy-makers, usually with the explicit justification that they are reflecting social preferences and take account of not only economic costs and benefits but also social impacts, political gains and losses, and political feasibility. In Richardson's (1973a, p. 207) view:

In few countries is regional growth left to the free play of market forces. Government activity has both unintended and purposeful impacts on regional growth differentials. In regard to the latter, political factors assume some importance particularly where political gains are clear-cut while economic benefits are nebulous and ill-defined.

In other words, public policy is not formulated, legislated, and implemented on the basis of rationality alone, but is a result of the interplay of political power, cultural values, competing priorities, and the known facts about problems and solutions (MacLellan, 1981, p. 85). Therefore the city is considered as a mosaic of decisional spaces (Wirt, 1985, p. 84). All urban decisions are made under the influences of national cultural values as well as by local citizen expectations. The whole set of decisions is composed of subsets, which, when combined, constitute the decisional spaces of an urban place. Thus, it can be said that the policy decisions concerning to urban growth and development are strongly influenced by the institutional aspects of urban environment originated from both internal and external circumstances. Consequently, urban researchers have begun to include a more informed consideration of the institutional context of spatial and technical processes affecting urban growth and change in their research perspectives (Yago, 1983, p. 113).

The nature of specific causes of urban growth and change, and their relative importance will vary among countries due to non-economic factors ranging from each nation's intergovernmental framework to its cultural system (Ebel, 1985, pp. 13-16). Actually, cities are shaped and influenced by various institutions such as social, economic, governmental, religious and cultural ones (Vance, 1978, p. 97). Thus, urban growth phenomenon cannot be explained appropriately if non-economic variables are left out of the analysis.

Non-economic aspects of spatial development include such fields as the social, psychological, religious, cultural, and governmental sectors. These various sectors impact on the growth and development of urban places. Almost all these non-economic variables impact on urban growth and change indirectly while the actions of the government sector also have direct consequences.

A simple indicator of urban growth is the expansion of urban land area (Norton, 1979, p. 7). The expansion of municipal boundaries is a natural response to urban population growth which involves political and administrative coordination between the relevant authorities. In general, one may discern three types of underlying considerations for administrative area reform: a measure for improvement in the provision of services; an instrument for political/ideological control; and a condition for economic development (Krishan, 1988, p. 98). In any case, it also seems that administrative area reform has been influenced more by matters of political ideology than by the development level of urban places. In some cases, urban growth or decline, in physical terms, is the product of administrative or political decisions. According to Kaufman and Schnore (1975, p. 2):

Annexation is identified as the major factor in city growth and must be taken into account so as not to understate the rates of suburbanisation.

In general, government spatial policies have directly influenced the growth of individual cities in many Less Developed Countries and even in More Developed Countries (Morris, 1978, p. 299). This is a particularly important factor in understanding the origin and growth of small and intermediate urban centres. In other words, the administrative and political context of small and medium sized cities has played an important role in their growth

and development, and this is particularly true in Less Developed Countries (Rondinelli, 1983, p. 299; Hardoy and Satterthwaite, 1986, p. 280). Governmental development policies can also impact on the stages/phases of urban growth. Spatial development policies can influence, directly or indirectly, the growth of a city in terms of its speed and shape of the trajectory growth (Tobin, 1976, p. 96; Berg and Meer, 1987, p. 39). Thus, the growth differentials of urban places can in some part be explained by differences in government development policies which effect the location of public and private investments, households, and economic activities (Bradbury, et al., 1982, pp. 78-83).

## 2.4 Summary

Theories of urban growth phenomena are a relatively less developed area than spatial theory. Thus, it is desirable to screen the general characteristics of spatial growth and development theories in order to identify the major determinants for the empirical research on Korea. Six theories have been reviewed in this chapter: central place, growth pole, uneven development, industrial location, economic base, and innovation diffusion theory. Central place theory helps in the identification of general principles underlying the distribution of human settlement emphasising the functional interaction between urban places and their hinterlands. Growth pole theory provides valuable insights into the process of urban growth with particular reference to the role of leading industries, industrial structure, and polarisation and spread effects. Uneven development theories, both the centre-periphery and the cumulative causation models, explore the relationships between the centre and periphery regions which are reflected in their dependent industrial structures.

Industrial location theory draws attentions to various locational factors from physical variables to a government's industrial development policies. Economic base theory focuses on manufacturing-oriented industries as a major factor of urban growth and change while diffusion theory considers the role of innovations in urban growth with particular reference to the flow of information between urban places, their hinterlands and other urban places.

With these considerations in mind, three sets of variables have been selected as the major determinants of urban growth and development, viz., locational factors, industrial structure, and development institutions. The locational characteristics of urban places are determined by both the site and the situational circumstances of a city. The former deals with the physical aspects of urban environment while the latter is mainly concerned with the socio-economic aspect. Both aspects can be consolidated into one general term, accessibility. Industrial structure describes various aspects of the economic status of the urban place. In other words, there is more potential for growth if a city has a more advanced industrial structure than other cities. Industrial structure encompass leading industries which have high growth generation capabilities, strong industrial linkages, and rapid innovative adoption and diffusion characteristics. Lastly, development institutions play an important role in urban growth and change especially through the medium of spatial development policies.

The relative importance and implications of these three determinants will be examined and reviewed in Chapters 5 and 6 of this thesis following a general review of Korean urbanisation experience and an analysis of trends in the three case study cities.

## Chapter Three

# Urbanisation and Urban Growth in Korea

### 3.1 Introduction

Korea has achieved remarkable economic growth since the early 1960s. In the process of economic growth, Korea has undergone a profound transformation in all aspects of its society. Structural changes and economic growth have accelerated urbanisation and urban growth. In other words, rapid industrialisation in Korea has dramatically transformed its spatial structure in terms of urban growth patterns and the urban system since 1960.

Urbanisation and urban growth in Korea have been mainly determined by economic development policies. For example, export-oriented industrial policies have fostered the growth of large cities. At the same time, however, urban growth and change also reflect the impacts of non-economic variables incorporating historical, social, cultural, and institutional factors. Consequently, it is necessary to review the overall circumstances of urbanisation and urban growth in Korea over the last 25 years to identify the peculiar feature of urban growth and its determinants in this chapter. With this in mind, the overall features of urban growth are described and the various definitions of urban places that are used in Korea are outlined in the first part of this chapter. This is followed by an analysis of growth in terms of population change, economic change, and spatial development policies. In the last part of the chapter, some key indicators of urban growth are estimated from secondary sources.

## 3.2 Overview

### 3.2.1 Definition of Urban Places in Korea

Urban places in Korea are defined in terms of administrative areas. In 1985, the country was divided into one special city (Seoul), three directly-controlled cities (Pusan, Taegu, and Incheon) and nine provinces (See Map 3.1). These three types of administrative unit are treated as equals, but their supervisory ministries are different; the special city is supervised by the Prime Minister while the other two are the responsibility of the Minister of Home Affairs. Each province is composed of 'Shis'(cities) and 'Kuns'(counties). A 'Kun' is divided into 'Eup(s)'(Town) and 'Myeons'(Townships) (See Fig.3-1). Under this administrative structure, urban places mean 'Shis'(cities) including special and directly-controlled cities and 'Eups'(Towns).

The criteria for urban places are stipulated in the *Temporary Act on Local Autonomy* (1962). As shown in Table 3.1, a 'Shi'(city) must have more than 50 thousand residents while a 'Eup'(town) must have at least 20,000 residents. Some 'Eups' have more than 50,000 population, while others have less than 20,000 residents. The former cases 'Eup' are candidates for legal promotion to 'Shi' status. The latter are 'Myeons'(townships) which have the 'Kun'(county) office within the territory. All urban places must be equipped with urban physical infrastructure and meet the criteria set out in Table 3.1.

Map 3.1 Division of Provinces, 1985

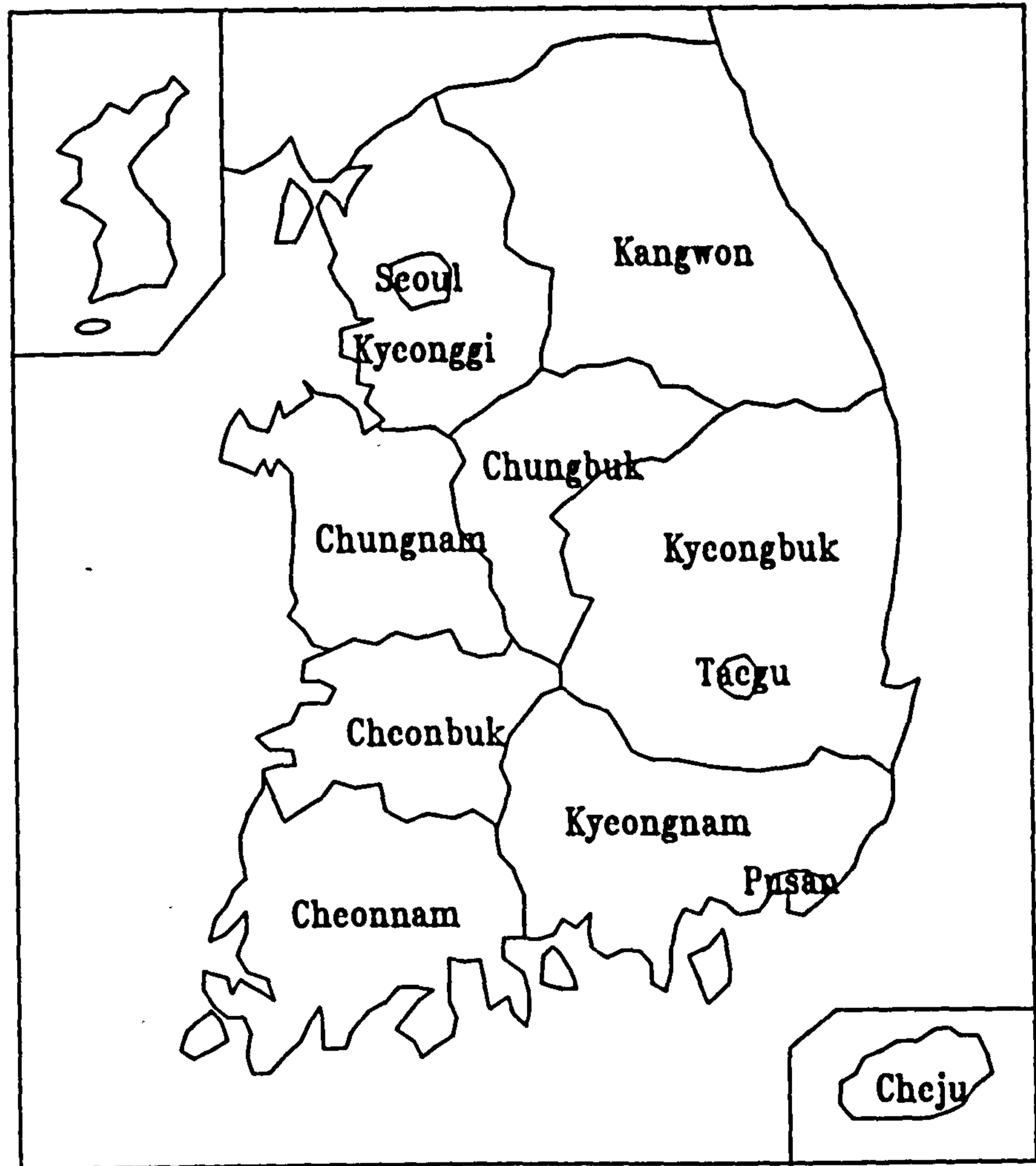
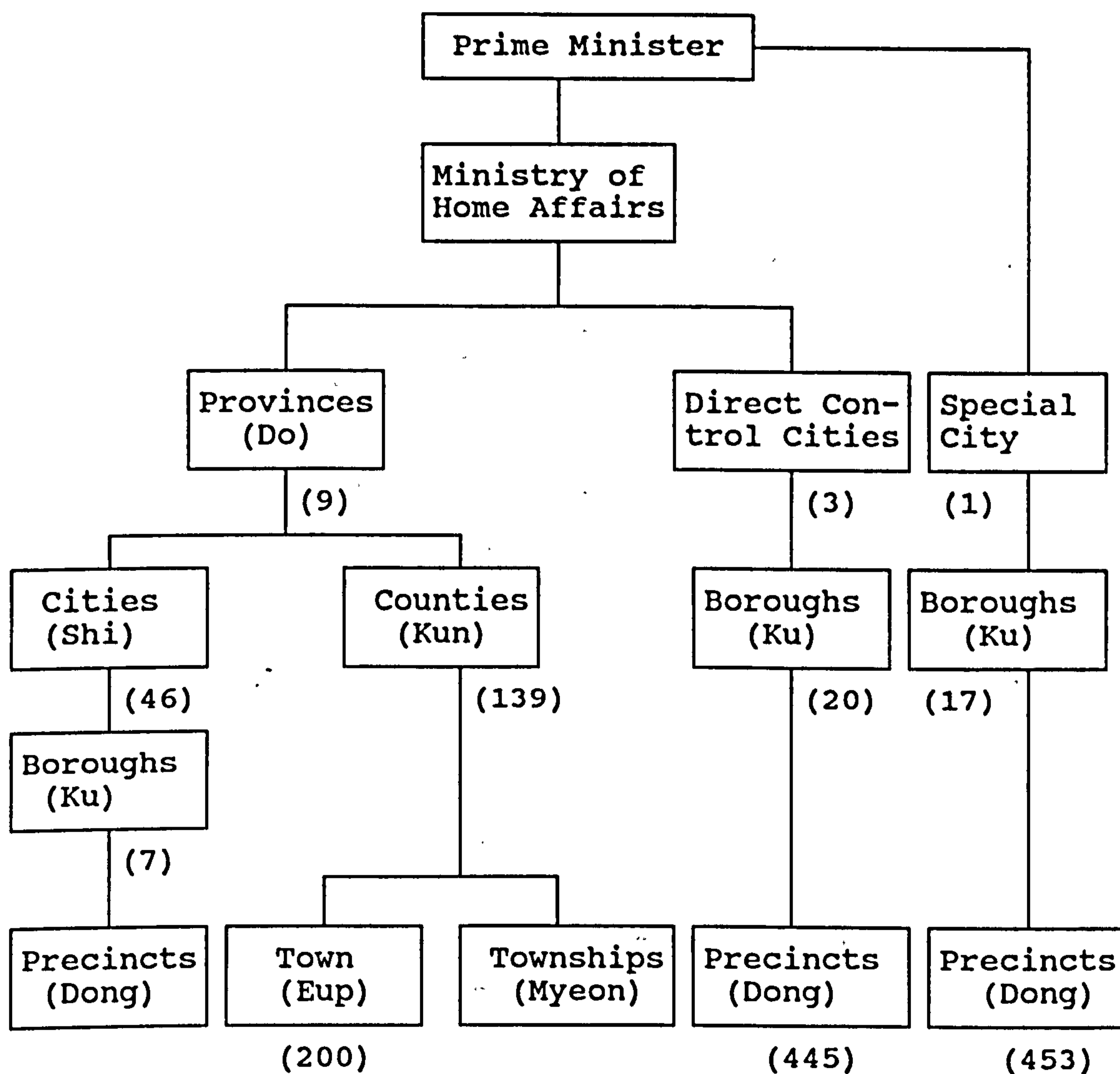




Fig.3.1 Structure of Administrative Units



Figures in bracket mean the number of administrative unit in 1985.

Source: MOHA, 1986, pp. 22-23.

Table 3.1 Legal Requirements for Urban Places

Urban	Legal Requisites	Considerations
'Shi' (City)	<ol style="list-style-type: none"> <li>1. Population: more than 50,000</li> <li>2. Being equipped with physical infrastructure</li> </ol>	<ol style="list-style-type: none"> <li>1. Residents living in built-up area: more than 50% of the total population.</li> <li>2. Population employed in secondary and tertiary industries: more than 50% of the total employed.</li> <li>3. Built-up area: more than 15% of the total area.</li> <li>4. Population growth rate: more than 3% per year.</li> <li>5. Others</li> </ol>
'Eup' (Town)	<ol style="list-style-type: none"> <li>1. Population: more than 20,000</li> <li>2. Being equipped with urban physical infrastructure</li> </ol>	<ol style="list-style-type: none"> <li>1. Residents living in built-up area: more than 30% of the total population.</li> <li>2. Population employed in secondary and tertiary industries: 30% of the total employed.</li> <li>3. Built-up area: more than 10% of the total area.</li> <li>4. Population growth rate: more than 2% per year.</li> <li>5. Others</li> </ol>

Source: Song, (1982), pp. 105-106.

At present, four different urban concepts are being used in Korea for the analysis of urban growth (Song, 1982, pp. 101-106):

- (1). Urban population defined as the population of all 'Shis' (cities).
- (2). Urban population defined as the population of all 'Shis' and those 'Eups' (towns) which have a population of over 50,000.
- (3). Urban population defined as the population of all 'Shis' and 'Eups' with population of over 20,000.
- (4). Urban population defined as the population of all 'Shis' and all 'Eups'.

Among the above four definitions, '1' and '4' are widely used by the Government because they strictly follow administrative concepts of cities and towns. But there are some drawbacks in these two definitions; Eups which have more than 50,000 residents are excluded in definition 1, while Eups with less than 20,000 residents are included in the urban population as defined in '4'. Thus, definitions 2 and 3 are preferable to both 1 and 4 in terms of logical consistency and these will be used wherever possible in this study.

### 3.2.2 Urbanisation Trends

Korea has been transformed into a highly urbanised nation in the last two and a half decades. As shown in Table 3.2, only 35.8% of the total population lived in urban places in 1960, as against 74.3 percent in 1985. The share of urban population to the national total was exceeded that of rural since 1970. Between 1960 and 1985, the urban population of Korea grew at an average annual rate of 5.0%, while that of the rural population decreased by 1.7% per annum. Compared to Asia as a whole and the World in general, Korea shows much higher growth rates between 1960 and 1980. During this period, the annual urban population growth in Korea was 5.4% while those of Asia and the World were 3.6% and 2.9% , respectively.

As might be expected, the number of urban places has increased during this period. Between 1960 and 1985, the number of urban places with more than 20,000 residents increased from 103 to 158. The number of intermediate cities with 100,000 to 500,000 residents also increased greatly during this period by comparison with other city-

Table 3.2 Urbanisation Trends

In Percent

Year	Korea		Asia		World	
	Urban	Rural	Urban	Rural	Urban	Rural
1960	35.6	64.4	20.8	79.2	33.9	66.1
1970	48.9	51.1	23.8	76.2	37.5	62.5
1980	68.7	31.3	27.4	72.6	41.3	58.7
1985	74.3	25.7				

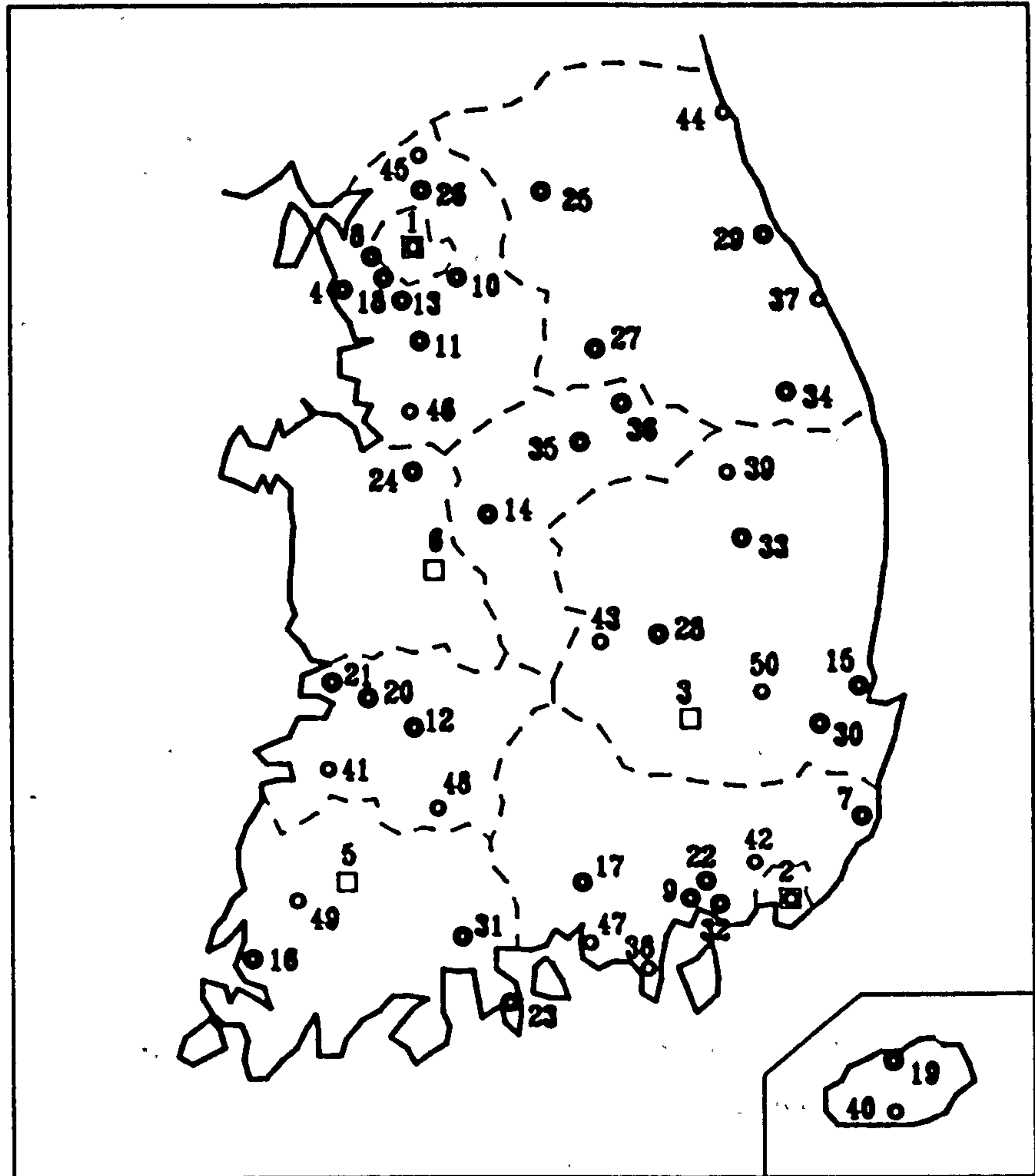
Urban population means the residents living in urban places with more than 20,000 peoples.

Source : 1. MOHA, 1986, p. 16.  
2. Desai, (1982), p. 225.

size groups from 6 places in 1960 to 29 places in 1985. Map 3.2 shows the location of 50 urban places with more than 50,000 residents. These urban places are divided into four groups based on their population and spatial importance: National Metropolitan Cities (Seoul and Pusan), Regional Metropolitan Cities (Three Case Study Cities: Taegu, Kwangju, and Taejeon), Medium Sized Cities, and Small Sized Cities (less than 10,000 residents).

The urban population in Korea is highly concentrated in a limited number of urban areas. As shown in Table 3.3, the share of the largest cities (i.e., those with more than one million residents) to the total urban population increased from 39.4% in 1960 to 55.2% in 1985, and there has been a corresponding decrease in the share of small-sized cities (20,000 to 100,000 residents) from 37.7% to 15.4% during the same period. This indicates that the

Map 3.2 Urban Places in Korea, 1985



NMCs    
  RMCs    
  MSCs    
  SSCs

- |              |                |                |              |                 |
|--------------|----------------|----------------|--------------|-----------------|
| 1: Seoul     | 11: Suwon      | 21: Kunsan     | 31: Suncheon | 41: Jeongju     |
| 2: Pusan     | 12: Cheonju    | 22: Changwon   | 32: Chinhae  | 42: Kimhae      |
| 3: Taegu     | 13: Anyang     | 23: Yeosu      | 33: Andong   | 43: Kimcheon    |
| 4: Incheon   | 14: Cheongju   | 24: Cheonan    | 34: Taebaek  | 44: Sokcho      |
| 5: Kwangju   | 15: Pohang     | 25: Chuncheon  | 35: Chungju  | 45: Tongducheon |
| 6: Taejeon   | 16: Mokpo      | 26: Euijeongbu | 36: Checheon | 46: Songtan     |
| 7: Ulsan     | 17: Chinju     | 27: Wonju      | 37: Tonghae  | 47: Samcheonpo  |
| 8: Pucheon   | 18: Kwangmyung | 28: Kumi       | 38: Chungmu  | 48: Namwon      |
| 9: Masan     | 19: Cheju      | 29: Kangleung  | 39: Yeongju  | 49: Naju        |
| 10: Seongnam | 20: Iri        | 30: Kyeongju   | 40: Seoguipo | 50: Yeongcheon  |

Table 3.3 Population Distribution by City Size, 1960-1985

City Size (in 000 )	1960		1970		1980		1985	
	No. of Urban Areas	Share of Urban Pop.	No. of Urban Areas	Share of Urban Pop.	No. of Urban Areas	Share of Urban Pop.	No. of Urban Areas	Share of Urban Pop.
over 1,000	2	39.4	3	53.9	4	57.0	4	55.2
500-1,000	1	7.4	2	7.4	2	5.5	3	7.7
100 - 500	6	15.5	14	14.8	30	22.3	29	21.7
50 - 100	19	14.6	22	10.1	21	5.3	32	7.1
20 - 50	75	23.1	73	13.8	81	9.8	90	8.3
Total	103	100.0	114	100.0	138	100.0	158	100.0

Source : 1. EPB<sup>C</sup>, 1960, 1970, 1980  
2. MOHA, 1986, pp. 24-63.

larger cities have grown at a much faster than average rate, while the small and medium-sized cities have generally grown at a slower than average pace during the period.

As a consequence of population concentration in a few very large cities, there are marked disparities between population distribution and land resources in Korea. For example, Seoul had 23.8% of the national population and 36.6% of total urban population in 1985, living on only 0.61% of the national land area. As shown in Table 3.4, there is a general tendency for the population share of each province to decrease over time except for Kyeonggi province which forms the hinterland of Seoul. Among the provinces, only Chungnam, Chonbuk, and Chonnam had greater shares of population than land area in 1966, but their shares of population in 1985 were less than their land area. On the contrary, Kyeonggi province increased its population share from a position below that of land area in

1965 to one which is above land area in 1985. This phenomenon is largely due to the population spill-over effects of Seoul to nearby cities in Kyeonggi province.

During the last quarter of a century, urban population has become even more concentrated than the total population. Almost half the total

Table 3.4. Population Distribution by Province, 1966-1985  
In Percent

Province	Area	Total Population			Urban Population		
		1966	1975	1985	1966	1975	1985
Seoul	0.61	13.0	19.9	23.8	38.8	41.0	36.5
Pusan	0.44	4.9	7.1	8.7	14.6	14.6	13.3
Kyeonggi	11.16	10.7	11.6	15.3	7.5	9.8	13.6
Kangwon	17.04	6.4	5.4	4.3	3.4	2.5	2.7
Chungbuk	7.50	5.3	4.4	3.4	2.1	1.8	2.1
Chungnam	8.91	10.0	8.5	7.4	4.0	3.6	3.9
Chonbuk	8.12	8.6	7.1	5.4	4.1	3.5	3.6
Chonnam	12.36	13.9	11.5	9.3	7.6	6.2	5.7
Kyeongbuk	20.07	15.3	14.0	12.5	11.4	10.2	10.9
Kyeongnam	11.96	10.9	9.5	8.7	5.7	6.0	6.6
Cheju	1.84	1.2	1.2	1.2	0.9	0.8	1.1
Total	100.00	100.0	100.0	100.0	100.0	100.0	100.0

- 1). Taegu and Incheon are included in Kyeongbuk and Kyeonggi, respectively.
- 2). Urban population means the population living in the urban places with more than 50 thousand residents.

Source : EPB<sup>a</sup>, 1976, 1986.

urban population now lives in the two National Metropolitan Cities (NMCs), Seoul and Pusan, even though the trend of population concentration in them has decreased since 1975. As a result, most provinces' shares of urban population have increased since 1975. Among the provinces, there are important variations in the changes of their respective

shares to the total urban population. For example, the shares of Kyeonggi and Kyeongnam have steadily increased while that of Chonnam has decreased since 1966. In other words, it can be said that cities in the first two provinces have grown more than those of Chonnam during the last two decades. Major cities in the first two provinces include Pucheon, Seongnam, Anyang, and Kwangmyung in Kyeonggi and Masan, Changwon, Chinju, and Kimhae in Kyeongnam province while Kwangju, Mokpo, Yeosu, and Suncheon are the main cities in Chonnam province.

### 3.3 Elements of Urban Growth

#### 3.3.1 Population

##### 1) Natural Increase

In 1985, there were about 41 million people in an area of about 99 thousand square kilometres in Korea. With a population density of 408 persons per square kilometre in 1985, Korea is one of the most densely populated countries in the world. The average population growth rate in Korea between 1965 and 1985 was about 1.73% per annum. This is a much higher rate than that of Japan (1.00%) and the U.K. (0.18%) but considerably less than most developing countries in Asia. The annual growth rate in Korea fell from 1.9% between 1965 and 1980 to 1.5% in the 1980-1985 period and is expected to fall further to 1.2% between 1985 and 2000 (See Table 3.5). This decrease is largely due to the fall in the crude birth rate which has declined from 43 births per thousand population in 1960 to 21 births per 1,000 population in 1985. The total fertility rate also fell from 5.6 children to 2.4 during the same period (World Bank, 1976 and 1987). Declining fertility is largely due to the execution of family planning programmes by the Government, people's changing value systems regarding the



family, and the diversification of women's roles in society as a result of industrialisation (KDI, 1978, pp. 135-136).

Table 3.5 Population Growth and Projection

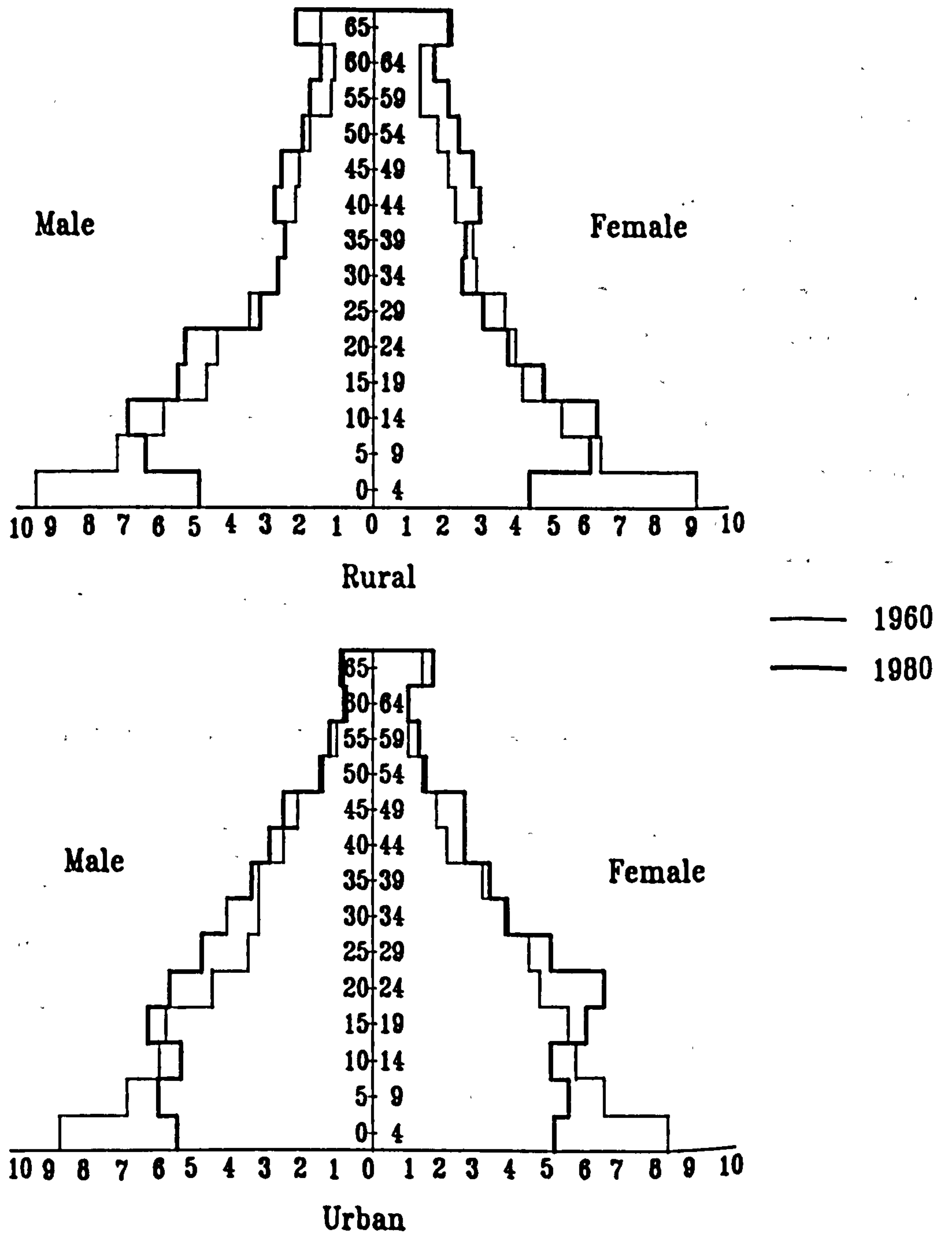
Country	Population (million)			Annual Growth Rate(percent)		
	1965	1985	2000	65- 80	80- 85	85-2000
Korea	29	41	49	1.9	1.5	1.2
Japan	99	121	129	1.2	0.7	0.4
U.K.	55	57	57	0.2	0.1	0.1

Source : 1. World Bank, (1983).  
2. World Bank, (1987), pp. 254-255.

As shown in Fig.3.2, Korea's age structure in 1960 had the pyramid shape which is a feature of the early stages of population development. This had changed into the bell-shaped structure which is characteristic of more developed stages by 1980. As a result, the proportion of under 15 year-olds to the total population decreased from 42.9% in 1960 to 34.4% in 1980 and these was a corresponding increase in the percentage share of 15 to 64 year-olds from 53.7% to 61.7% during the same period.

There are marked differences in population structure between urban and rural areas. This is a reflection of the movement from the farm to the non-farm sector by 14-35 year-olds during the 1955-1975 period (Renaud, 1977, p. 19). Because of these trends, rural Korea reveals a significant ageing of the farm population and the share of the 65+ year-olds age group in rural areas (5.6%) is correspondingly greater than its urban counterpart (2.6%). As a result, the median age in rural areas rose from 23.1 years in 1960 to 27.2 years in 1980 while that in urban area rose from 22.1 years to 24.5 years.

Fig. 3.2 Age Structure, 1960 and 1980



## 2) Migration

During 1970, 4 million people or 12.6% of the total population of Korea changed their places of residence. 68.7% of these migrants moved to destinations within the same province while 31.3 percent moved to a new province (EPB<sup>b</sup>, 1970, p. 29). The vast majority of interprovincial migrants went to Seoul, Pusan, and Kyeonggi province. During 1985, about 21.4% of the total population changed their place of residence and the percentage shares of inter- and intra-provincial migration were 33.7% and 66.3%, respectively. The overall trend of population movement was similar to that of 1970, but the net balance between the receiving regions had greatly changed. Whereas in 1970, 63.2% of the total net-migrants were concentrated in Seoul only 9.5% fell into this category in 1985 and 86.3% of the total net in-migrants went to Kyeonggi province. This phenomenon indicates the extent to which Kyeonggi has enjoyed the spill-over effects of Seoul.

Table 3.6 Share of Net-migration between Province  
In Percent

Province \ Year		1970	1985
Gain	Seoul	63.21	9.49
	Pusan	15.60	4.20
	Kyeonggi	21.19	86.31
Loss	Kangwon	7.79	8.90
	Chungbuk	10.30	10.47
	Chungnam	10.17	11.25
	Chonbuk	19.63	18.78
	Chonnam	18.58	19.17
	Kyeongbuk	13.44	18.09
	Kyeongnam	18.77	9.43
	Cheju	0.68	1.07
	Others	0.63	2.84

Source : EPB<sup>b</sup>, 1970, 1985.

Most of the migration has been arisen in connection with movements to the metropolitan cities. In 1985, 57.8% of the total in-migration and 56.2% of the total out-migration was associated with the six largest cities. The major features of the migration process in Korea can be summarised as follows: firstly, net gains in terms of migration to the major cities (apart from Seoul) largely due to the movement from their surrounding provinces, i.e., Pusan from Kyeongnam, Taegu from Kyeongbuk, Kwangju from Chonnam, and Taejeon from Chungnam; secondly, Seoul's population growth is the result of relatively even contributions from almost all provinces reflecting Seoul's influence over the whole country; thirdly, Kyeonggi province has gained population particularly from Seoul because of metropolitanisation trends around Seoul.

### 3.3.2 Economic Growth

#### 1) Structural Change

The Korean economy has experienced a very rapid growth since the early 1960s. It grew at an average rate of 9.5% per year during the period from 1965 to 1980, the fifth highest country in the world. It also recorded an average annual growth rate of 7.9% during the 1980-1985 period, making Korea the third highest country in the world (World Bank, 1987, pp. 204-205). Per capita GNP at current prices rose from \$ 125 in 1966 to \$ 2,032 in 1985 (EPB, 1986, p. 3). Economic growth in Korea was mainly led by the industrial sector, particularly by manufacturing activities. During the 1965-1980 period, the industrial sector grew at an annual average rate of 16.6% at 1975 constant prices, while the agriculture and services sectors grew by 3.0% and 9.4% respectively. Within the industrial sector, the annual growth rate of manufacturing activities

was 18.8% during this period (World Bank, 1987, pp. 204-205).

Rapid economic growth has led to the transformation of Korea's economic structure. The primary sector's share of Gross Domestic Product fell from 39% in 1965 to 14% in 1985 while the share of the secondary sector increased from 26% in 1965 to 41%. Similar trends can be found in the changes of employment structure shown in Table 3.7. The secondary industries's share of employment increased from 13% to 31% during the 1965-1985 period. Within the secondary sector, the expanded role of manufacturing activities in GDP and employment is worth close attention.

Table 3.7. Structural Changes in Production

Industry	In Percent			
	G.D.P.		Employment	
	1965	1985	1965	1985
Primary	39	14	59	25
Secondary	26	41	13	31
(Manufacturing)	19	28	9	23
Tertiary	35	45	28	44

Source : 1. World Bank, (1987), p. 207  
2. ILO, 1966, 1986.

The structure of the manufacturing sector has shifted from a light-industry dependent structure to a heavy and chemical oriented one during the last quarter of a century. The percentage share of heavy industries in the total output of the manufacturing sector has exceeded that of light industries since 1975. In 1985, the shares of light and heavy industries were 45.6% and 54.4% , respectively (EPB, 1987a, p. 169).

Parallel to structural changes in the manufacture sector, the export sector has also experienced a considerable expansion and a significant change in its structure. The volume of exports during the period 1965-1980 increased at a rate of 27.3% per year, the highest in the world, and 13.0% in the period 1980-1985, the third highest in the world, (World Bank, 1987, pp. 220-221). The engine of this phenomenal expansion is the growth of manufactured exports (Rao, 1979, pp. 16-17). The percentage share of manufacturing goods to total exports has been very high since the early 1970s and accounted for 96.1% of the total in 1984 (UN, 1976 and 1984). As in the economy as a whole, the structure of manufactured exports has shifted from light manufacturing goods to heavy ones. The share of goods such as textiles, wood products, and paper products which were the major items in the past has fallen from 54.4% in 1970 to 32.4% in 1984. On the other hand, the share of heavy manufacturing commodities such as cars, ships, and electronic goods which are the products of capital and skill intensive industries, has increased from 30.0% to 63.7% of all exports during the same period.

## 2) Spatial Distribution

Korea's rapid economic growth during the last two and a half decades has given rise to marked regional disparities in terms of income and economic activities. As shown in Table 3.8, manufacturing activities in Korea are heavily concentrated in two regions: the capital (Seoul and Gyeonggi province) and the south-east (Pusan, Taegu and Gyeongbuk and Gyeongnam provinces). These two regions accounted for at least 80% of all manufacturing activities. This skewed distribution of manufacturing activities has deepened since 1970. For example, the percentage share of employment in these two regions was 80.4% in 1970 but this increased to 85.1% in 1985 with a corresponding reduction in the share of other regions from 19.6% to 14.9%.

Table 3.8 Regional Distribution of Manufacturing Activities  
(1985)

Economic Region*	In Percent			
	Area of Ind. Estates	No. of Establish.*	No. of Employees	Output
Capital	31.2	53.1	45.8	39.6
Central	7.7	6.2	6.2	5.6
South-West	11.0	9.3	5.7	9.2
South-East	48.0	28.6	39.3	43.3
Others	2.1	2.8	3.0	2.3
Nation	100.0	100.0	100.0	100.0

\* Establish.= Establishment.

Each economic region indicates following provinces:

Capital=Seoul, Incheon, and Gyeonggi;

Central= Chungbuk and Chungnam;

South-West= Cheonbuk and Cheonnam;

South-East= Pusan, Taegu, Gyeongbuk and Gyeongnam;

Others=Kangwon and Cheju province.

Source : EPB, 1987a, p. 229.

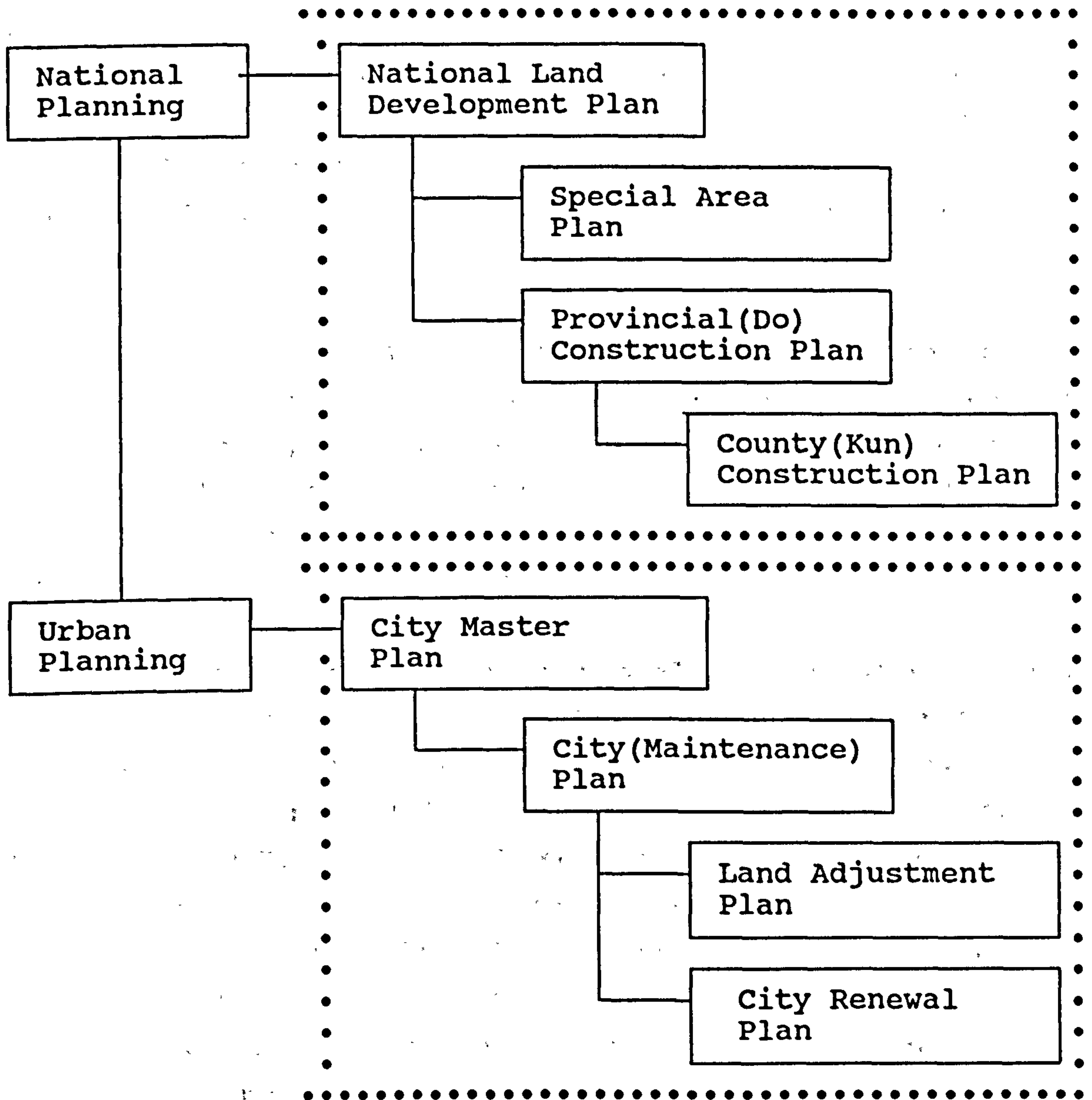
### 3.3.3 Spatial Planning Policies

#### 1) Planned Spatial Development

The two important laws for spatial development planning in Korea are the *City Planning Act* of 1962 and the *Comprehensive National Land Development Planning Act* of 1963. The former provides the basic machinery for urban planning and management while the latter provides the foundation for national and regional planning. At present, there are five kinds of spatial development plans. These are, the National Land Development Plan, Special Area Plans, Provincial Construction Plans, County Construction Plans and City Master Plans. The legal basis of the first four plans is the *Comprehensive National Land Development Plan Act* while that of the last can be found in the *City*

Planning Act. The National Land Development Plan is the basic plan for national land development which sets out the basic guidelines for land development.

Fig. 3.3 Structure of Spatial Development Plans





The hierarchy of plans was supposed to be form the top downward but no rule was provided for the solution of possible jurisdictional conflicts between the first four sets of plans (Renaud, 1974, p. 458).

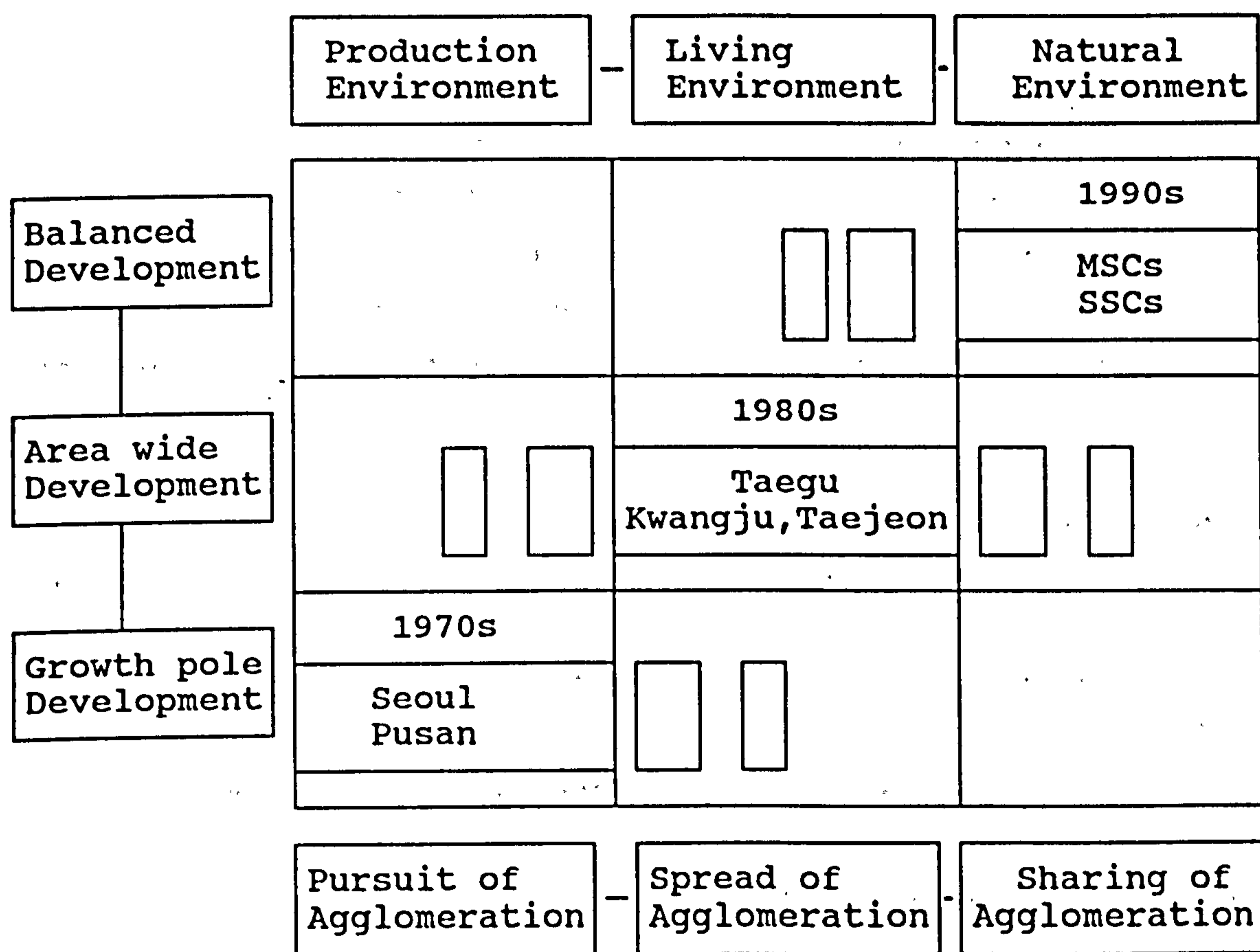
Fig. 3.3 shows the spatial planning structure focused on urban planning. The National Land Development Plan (NLDP) sets out basic guidelines for national spatial development and the Provincial Construction Plan (PCP) presents more detailed development directions at province level. Special Area Plans (SAP) are prepared for areas which are to be developed by central government instead of the local autonomy unit. These three kinds of plan, NLDP, SAP, and PCP, function as the higher level plan for urban planning.

Basic guidelines for urban development are usually contained in the city master plan. Under the guidance of the master plan, a city (maintenance) plan is prepared with more detailed contents. Lower level plans such as the city renewal plan and the land adjustment plan are also relevant for implementing urban growth and development schemes.

Under the Comprehensive National Land Development Plan Act, the first National Land Development Plan (NLDP) was prepared in 1972 for the 1972-1981 period while the second NLDP was made in 1982 for the ten year period from 1982 to 1991. In 1987, a revised second NLDP was prepared to supplement the policy measures for the alleviation of regional disparity. In setting the basic guide-lines for national land development , the NLDP functions as a comprehensive, long-range, physical-oriented plan. The long-range policy for national land development as suggested in the second NLDP can be summarised in terms of three different development stages (See Fig. 3.4). During the 1970s, the objective of development was to strengthen

the productive capacity of selected areas to obtain agglomeration economies for national economic growth. The spatial development strategy employed during this period was "growth pole development" within the Seoul and Pusan regions. The development objective of the 1980s period is to improve the quality of the living environment and to spread the benefits of economic growth.

Figure 3.4 Stages of National Land Development



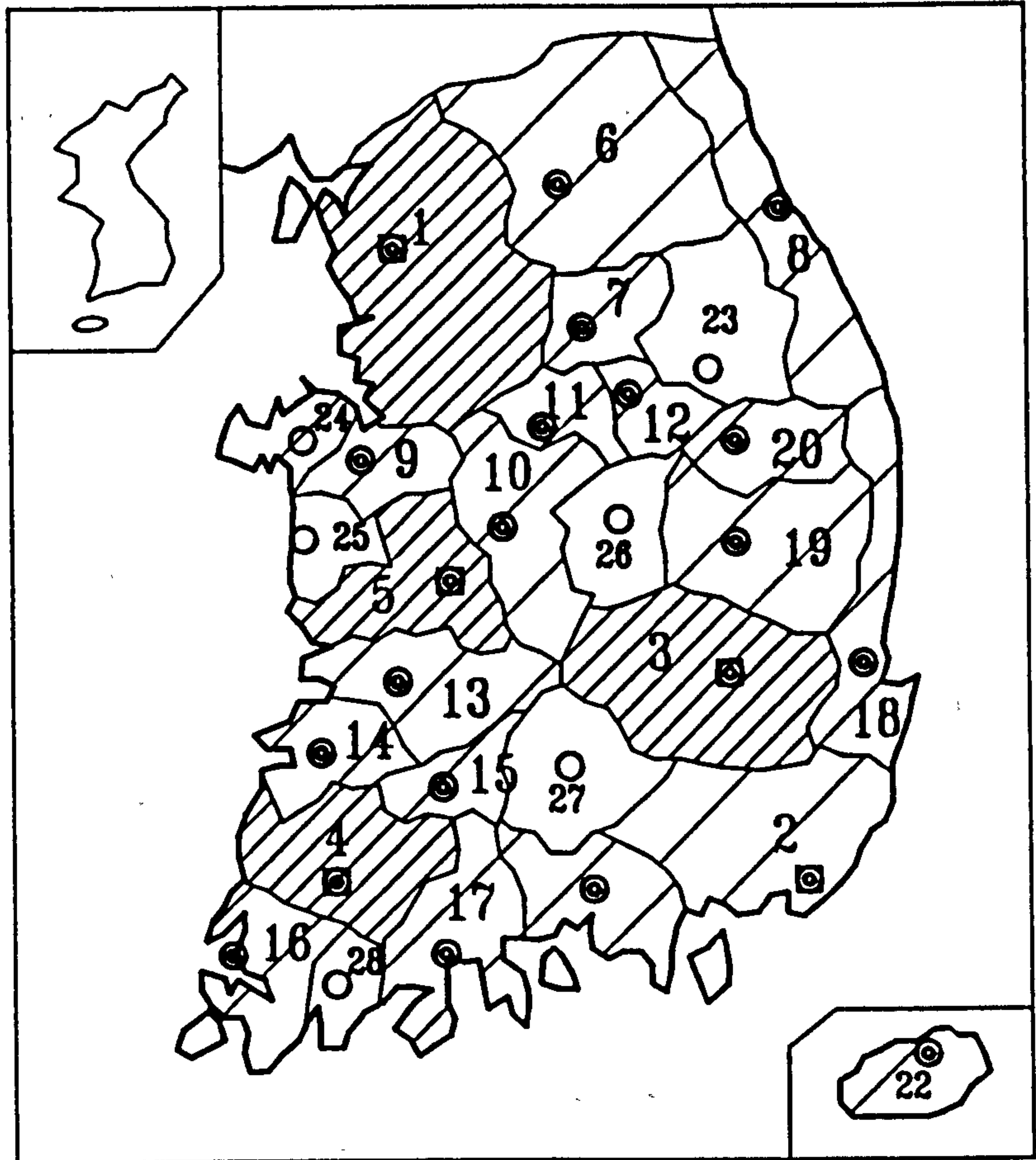
MSCs: Medium Sized Cities.                      SSCs: Small Sized Cities.  
Source: Government of ROK, (1982), p. 17.

The focus of spatial development is "area-wide development" by the introduction of "regional settlement areas". To control the concentration to Seoul and Pusan, three Regional Metropolitan Cities- Taegu, Kwangju, and Taejeon- are proposed for "growth pole" development during the plan period. In the 1990s, the creation of balanced development will be pursued by the means of growth policy for small- and medium-sized city development and balanced regional development through the equal distribution of agglomeration economies. During this period, the conservation policies for natural and environmental resources will be emphasised as a basic strategy for spatial development.

Table 3.9 shows the national planning regions defined by the National Land Development Plans. The first NLDP divided the country into four developmental regions based on homogeneity in resource endowment. These are, the Han, the Keum, the Yeongsan, and the Nakdong river basin regions. These four regions were subdivided into eight planning regions based on topographical features, central cities with their hinterlands, and resource endowment. These eight planning regions were adopted as basic planning units and various development projects implemented in the regions mainly focused on the improvement of physical infrastructure such as the construction of multi-purpose dams, industrial estates, and transport networks.

The second National Land Development Plan emphasised balanced national development through the equitable distribution of industrial activities and population throughout the country. The development strategies proposed in the plan focused on multi-nuclei development, the formation of regional settlement areas, the control and management of the growth of Seoul and Pusan, and the development of depressed regions. For this purpose,

Map 3.3 Integrated Regional Settlement Areas



☐ METROPOLITAN

⊙ LOCAL CITY

○ RURAL TOWN

1. Seoul

4. Kwangju

6. Chuncheon

10. Cheongju

14. Jeongju

18. Pohang

22. Cheju

23. Yeongwoel

27. Keochang

2. Pusan

5. Taejeon

7. Wonju

11. Chungju

15. Namwon

19. Andong

24. Seosan

28. Kangjin

3. Taegu

8. Kangleung

12. Checheon

16. Mokpo

20. Yeongju

25. Hongseong

Table 3.9 Division of Major Planning Regions

Province	1st NLDP (72-81)		2nd NLDP ('82-'91)	
	Major Region	Inter-mediate Region	Integrated Settlement Area (First)	Regional Eco. Area (Revised)
Seoul	Han River-Basin Area	Capital	Capital Metropolitan Area	Capital Area
Kyeonggi				
Kangwon		Taebaek	3 L and 1 R	S. Area
Chungbuk	Keum River-Basin Area	Chungcheong	Taejeon M. 4 Local and 2 Rural Areas	Central Area
Chungnam				
Chonbuk		Cheonju	3 Local Areas	South-West Area
Chonnam	Yeongsan River-Basin	Kwangju	Kwangju M. 2 L and 1 R	
Kyeongbuk	Nakdong River-Basin Area	Taegu	Taegu M. 3 L and 1 R	South-East Area
Kyeongnam		Pusan	1 L and 1 R	
Pusan			Pusan M.	
Cheju	Cheju	Cheju	1 Local Area	S. Area
Number of Regions	4	8 5M, 17L&6R)	28 (4E and 2S)	6

M: Metropolitan Area; L: Local City Area;  
R: Rural Town Area; E: Economic Area; S: Special Area.

Source : Government of ROK, 1971, 1982, 1987.

integrated regional settlement areas were designed as follows: 5 metropolitan, 17 local cities, and 6 rural towns areas (See Map 3.3). The three case study cities discussed at length in Chapters 4 and 5 are included in the

metropolitan settlement areas. The development guidelines for these areas involve similar policies: the expansion of employment opportunities in the area, the enhancement of the living environment in the central city, and the improvement of accessibility between the central city and its hinterland.

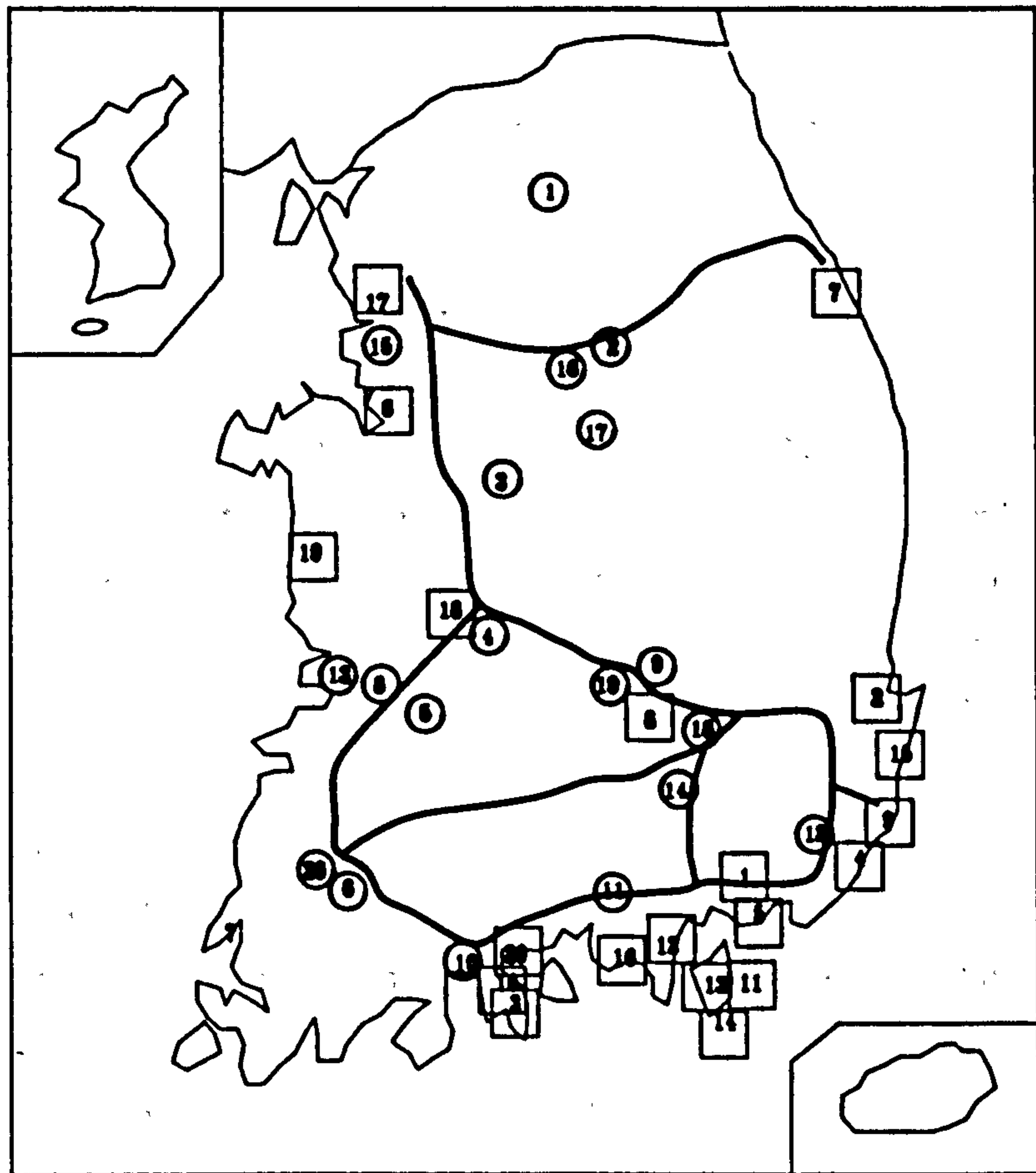
In general terms, the first National Land Development Plan dealt primarily with the spatial aspects of economic and resources development, but little attention was given to the means of achieving balanced regional development (Masser, 1980, p. 14). In other words, the plan focused on sustained economic growth through the pursuit of agglomeration economies. Thus, the benefits of growth were concentrated on a limited sectors and areas. This led to increasing disparities between the different regions and sectors. As a result, balanced national development was adopted as the one of the basic objectives of the second NLDP and the revised second NLDP puts even more stress on balanced development than the second NLDP.

## 2) Industrial Location Policies

The regional distribution of economic activities is closely related to Government industrial location policies and plans. To implement the national economic development plans and National Land Development Plans, the Government has constructed many industrial estates since the mid 1960s. It has also initiated planned industrial relocation policies from the Seoul region. At present, most of these industrial activities are concentrated in the south-east part of the Korean peninsula and in the Seoul Metropolitan Area.

At present, there are five main types of industrial estates in Korea. These are, heavy industrial bases, "special purpose" estates, local industrial estates,

Map 3.4 Industrial Estates



□ INDUSTRIAL BASES

- |             |               |               |                |
|-------------|---------------|---------------|----------------|
| 1. Changwon | 6. Asan       | 11. Okpo      | 16. Samcheonpo |
| 2. Pohang   | 7. Bukdu      | 12. Anjeong   | 17. Banweol    |
| 3. Yecheon  | 8. Kumi       | 13. Jukdo     | 18. Taeduck    |
| 4. Onsan    | 9. Ulsan      | 14. Jisepo    | 19. Kojeong    |
| 5. Chinhae  | 10. Kwangyang | 15. Weolseong | 20. Samil      |

○ LOCAL ESTATES

- |              |              |              |              |
|--------------|--------------|--------------|--------------|
| 1. Chuncheon | 6. Kwangju   | 11. Chinju   | 16. Munmak   |
| 2. Wonju     | 7. Mokpo     | 12. Yangsan  | 17. Chungju  |
| 3. Cheongju  | 8. Iri       | 13. Kunsan   | 18. Oeokwan  |
| 4. Taejeon   | 9. Kumi      | 14. Nonkong  | 19. Kimcheon |
| 5. Cheonju   | 10. Suncheon | 15. Hyangnam | 20. Hanam    |

export-related industrial estates and agri-industrial areas (KRIHS, 1985c, pp. 349-351). The first type are constructed by central government to transform the national industrial structure from light- to heavy- manufacturing industries. By 1985, 13 estates with a total of more than 100 km<sup>2</sup> of land area, mainly located in the south-east coastal belt, had been constructed. The major estates and their main products are as follows; Pohang (steel), Ulsan (ship building), Onsan (non-metal), Changwon (machinery), Yecheon (petro-chemical), and Kumi (electronics). The second type of estate created by central government for special purposes includes provision for relocated industries from Seoul (Panwoel), nuclear power plants (Woelseong), and scientific research establishments (Taeduck). Thirdly, local estates, designated by central government but created by local government, have been constructed in 21 cities in order to boost regional incomes. Fourthly, export-related industrial estates have been developed in Seoul, Incheon, Masan, and Iri. Finally, the agri-industrial areas have been designated in 28 places to enhance rural incomes through the activation of local industrial activities (See Map 3.4).

### 3) Urban Development Policies

The basic guidelines for urban development suggested in the National Land Development Plans mainly refer to intra urban policies and regionally oriented ones. The former deal largely with matters relating to the living environment and functions that take place in urban places while the latter emphasise the functional interactions between urban places and the surrounding areas.

In the first National Land Development Plan, the population decentralisation policy for the two National Metropolitan Cities (Seoul and Pusan) and a growth promotion policy for the main regional centres were



simultaneously suggested. To accelerate the growth potential of the regional centres, a variety of measures were proposed including expanding the social overhead capital facilities and strengthening economic and cultural functions by means of an optimum industrial location policy. Five regional centres were identified: Kwangju, Taejeon, Cheonju, Kangleung, and Cheju. To ameliorate the living environment, basic criteria or indicators for urban facilities were defined as targets to be attained within the planning period.

In the second National Land Development Plan, 15 cities (3 growth poles and 12 growth centres) were selected as growth pole cities to function as provide a nucleus of balanced regional development. At the same time, growth control measures were suggested for the two National Metropolitan Cities, Seoul and Pusan. Similar policy measures are presented in the revised second National Land Development Plan in a more comprehensive ways. The revised plan emphasises the need for area-wide management of the metropolitan cities and 'the remarkable promotion' of small and medium sized city development.

In short, growth control strategies for two National Metropolitan Cities, Seoul and Pusan, have been in force since the beginning of the First National Land development Plan. However, the effect of these strategies has been less than expected one because of the lack of consistency in other policy measures such as economic and industrial development plans.

### 3.4 Some Features of Urban Growth

#### 3.4.1 Urban Concentration

Urban places do not exist in isolation. All cities have certain relationships with each other. Thus, it is broadly said that cities constitute a 'system' in the sense that they are related to each other in some orderly way (Browning and Gibbs, 1961, p. 437). Actually, the cities and urban regions of a modern industrial economy constitute a set of interrelated subsystems nesting in a complex hierarchy of increasing scale upwards from individual urban areas to a national urban system (Bourne, 1975, p. 11). Therefore, urban systems can be analyzed from individual city level to the national urban level. At the national level, the urban system structure can be succinctly displayed by a few standard indices; the degree of urban concentration, the number of cities and their size distribution, and the overall growth rates (Bourne, 1975, p. 27).

The tendency towards population concentration in a limited number of urban areas is generally recognized as a feature of the early stages of urbanisation. The Hoover index is a simple technique for measuring the degree of population concentration. The Hoover index,  $H_t$ , can be calculated by the following formula (Hoover, 1941, pp. 199-205);

$$H_t = (1/2) \sum_{t=1}^n \text{Abs}(P_i - A_i) * 100$$

where,

$P_i$  is the ratio of the population in the  $i$ th region to the national population.

$A_i$  is the ratio of the area in the  $i$ th region to

the national total area, and

$n$  is the number of regions that form the nation.

A value of  $H_t$  which varies between '0' (a perfectly even distribution) to '100' (a perfect concentration) indicates the degree of population concentration in relation to the land area (Sakashita, 1979, p.1107). Table 3.10 shows the Hoover index for Korea for the period between 1966 and 1985. For the calculation of the index, it is assumed that 11 provinces or the 32 cities with more than 50,000 residents in 1964 respectively form the nation as a whole. Thus, newly designated cities after 1964 and rural areas are excluded from the calculation. As might be expected, the values of both the Provincial Hoover Index and the City Hoover Index have steadily increased over this period. This trend highlights the extent to which there is population concentration in both particular provinces and cities.

Table 3.10 Changes of Hoover Index, 1966-1985

Year	Province		City	
	No.of Sample	Index	No.of Sample	Index
1966	11	19.96	32	28.31*
1975	11	26.35	32	34.66
1985	11	47.73	32	35.95

\* Based on the data in 1964.

Source: MOHA, 1967, 1976, 1986.

In general, the size distribution of cities is positively skewed to the right: there are many small but only a few very large cities with a tendency for the number of cities in each size-class to decline as city size increases. To measure city size distribution, three different indices are normally used. These are, the

lognormal, the Pareto, and the rank-size distributions (Richardson, 1973b, p. 240). In developing countries, there appear to be deviations from the rank-size distribution where the actual population of the largest city exceeds that expected on the basis of the rank-size rule (Berry, 1971, pp. 3-4). This phenomenon indicates the condition of "primacy" which exists in those countries. The primacy indices in Korea also show a higher value for Seoul than the predicted ones. As shown in Table 3.11, the value of primacy indices, both the Davis index and two-city index, have risen steadily since 1960 reaching a peak in 1970. Thereafter the values have fallen slowly up to 1985. These results indicate that the population concentration in the primate city, Seoul, increased dramatically between 1960 and 1970 and then slowly decreased up to 1985.

Table 3.11 Changes of Primacy Index, 1960-1985

Year.	$P_1/P_2$	$P_1/(P_2+P_3+P_4)$
1960	2.10	1.09
1966	2.66	1.36
1970	2.94	1.53
1975	2.81	1.51
1980	2.65	1.43
1985	2.74	1.39

Source: MOHA, 1966, 1971, 1976, 1986.

The Pareto distribution can be calculated by using the following formula ( Parr, 1976, p. 285 ):

$$P_r = P_1/R^q$$

where,

R is the rank of a city;

$P_r$  is the population of the city of rank r;

$P_1$  is the population of the largest city; and

q is a constant.

Using the natural logarithms for both sides, this equation yields a downward-sloping straight line with  $P_1$  equal to

the value of the y-intercept and  $q$  representing the slope. The result can be expressed as follows:

$$\ln P_r = \ln P_1 - q \ln r$$

According to this formula, the Pareto distribution in Korea can be estimated as shown in Table 3.12. The 'q' value of 40 cities in Korea has been above '1' during the whole period 1960-1985. This result indicates the extent to which Korea is still situated in the state of primacy. In the Pareto distribution, the value of 'q' is a very meaningful for explaining the city distribution. If  $q > 1$ , city sizes

fall off faster than proportionately with 'r', and if  $q < 1$ , they fall off more slowly (Mills and Song, 1979, p. 45). The rank-size distribution is regarded as the special case of the Pareto distribution in which  $q = 1$ .

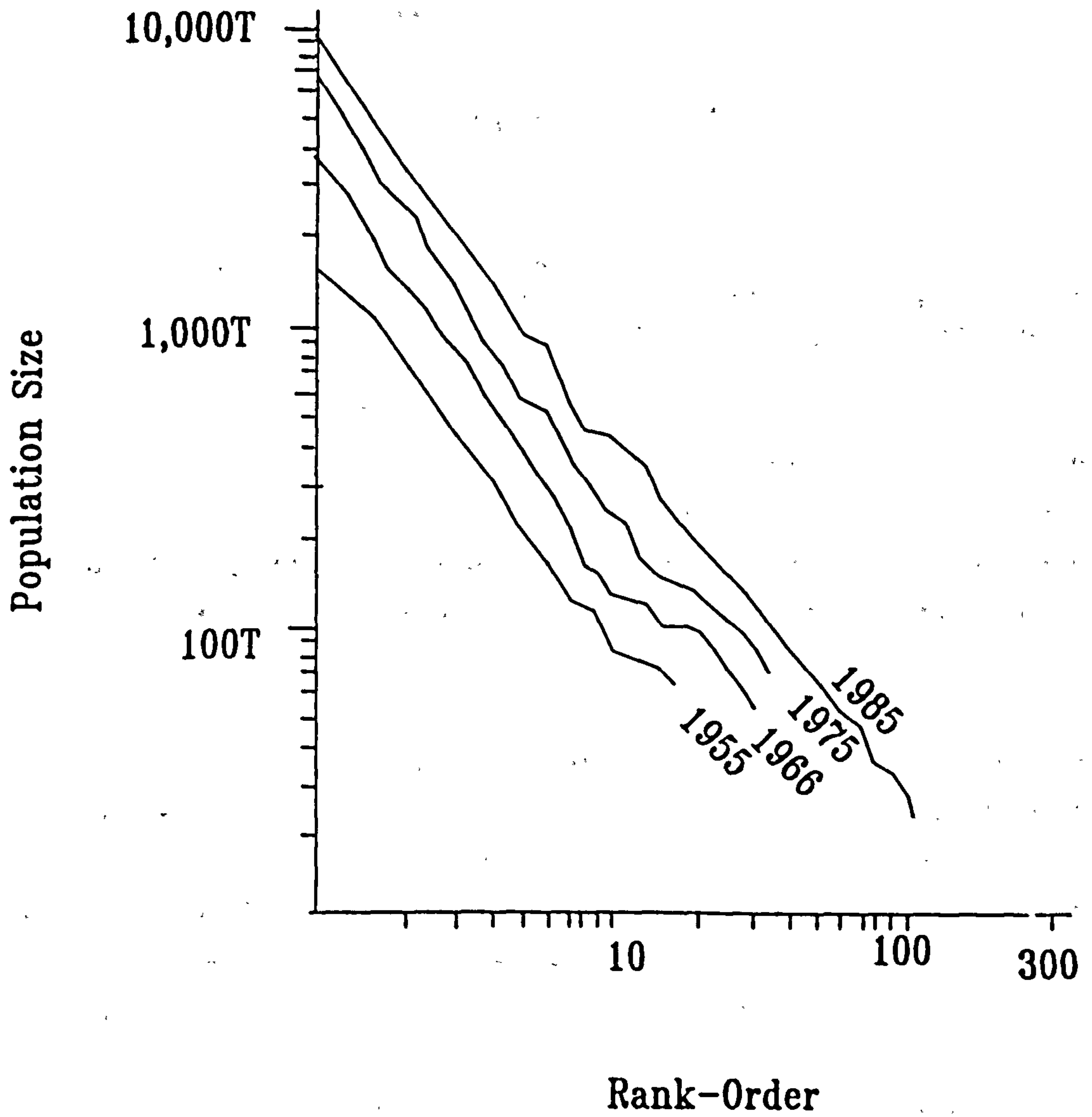
Table 3.12. Estimates of Pareto Distribution, 1960-1985

Year	$P_1$	$q$	$R^2$	$t$
1960	7.541	1.1099	.9716	214.3
1966	7.762	1.1026	.9661	178.8
1970	8.067	1.1498	.9641	168.4
1975	8.437	1.2073	.9841	384.0
1980	8.691	1.2051	.9872	477.0
1985	8.917	1.2061	.9907	660.4

Number of sample city: 40.

In most cases, the lognormal distribution has proved to be useful in characterising a settlement system over its entire size spectrum while the rank-size and Pareto distributions mainly focus on the upper end of the range (Richardson, 1973b, p. 240; Parr, 1976, pp. 286-287). Fig 3.5 shows the changes of lognormal distribution during the period between 1955 and 1985. In general, city-distribution in Korea approaches nearly to a straight line against time.

Fig 3.5 Rank-Size Distribution in Korea  
(1955-1985)



### 3.3.2 Urban Population Growth

Key features of urban population growth and change can be highlighted by using different techniques. The measure used in this sub-section is the technique proposed by Gibbs (1961, pp. 107-108). Its expression is as follows:

$$r = \frac{(P_1 - P_0) / t}{(P_1 + P_0) / 2} \times 100$$

where,

$r$  is the growth rate,

$P_0$ ,  $P_1$  are the population of the city at the start and the end of the period 't', respectively.

Growth rates calculated in this way are close approximations to true exponential growth rates. These rates have a normal or nearly normal distribution and do not exhibit the marked skewness that is a common characteristic of conventional growth rates (Marshall and Smith, 1978, p. 27).

Table 3.13 shows the average growth rate of urban population in Korea during the 1960-1985 period. From this it can be seen that highest growth rate occurred in the 1966-1970 period. Thereafter the rate has decreased slowly. The mean size of urban places has steadily increased since 1960 from about 181,000 to 504,000 in 1980.

Table 3.14 shows the regional variations in urban growth in relation to the eight intermediate regions used in the first National Land Development Plan as the basic planning units. From this it can be seen that cities in the Seoul region which includes Kyeonggi province grew at 5.81% per year on an average, the highest rate among the eight regions during the 1964-1985 period, while those in the

Table 3.13 Urban Population Growth Rates, 1960-1985

Period	Average Growth Rate per Year ( % )	Standard Deviation	Mean Size of Urban Places ( 000 person )
'60 - '66	3.99	3.84	180.62
'66 - '70	4.30	2.54	246.93
'70 - '75	4.07	2.94	323.17
'75 - '80	3.85	2.97	404.98
'80 - '85	3.08	2.72	503.86

1. Among 50 cities in 1985, 42 cities are analyzed.
2. Urban sizes are taken at the start of each period.

Taebaek region grew at 2.20% per annum, the lowest level, during the same period. Cities in the Seoul, Taejeon, Taegu and Cheju region showed higher growth rates than the national average during the 1964-1985 period whereas cities in the Taebaek, Kwangju, and Cheonju regions showed lower than national average rates. The former regions have benefited considerably from the government's industrialisation policies while the latter regions have only received limited government assistance.

Table 3.14 Average Urban Growth Rates by Region, 1964-1985

Region	Number of Cities	Period		
		'64-'75	'75-'85	'64-'85
Seoul	8	5.81	5.82	5.81
Taebaek	5	2.27	1.60	2.20
Taejeon	5	3.71	4.20	3.94
Cheonju	5	2.93	3.11	3.01
Kwangju	5	2.58	2.07	2.34
Taegu	8	3.88	3.79	3.84
Pusan	8	4.30	3.16	3.76
Cheju	2	5.29	4.24	4.79
Total	46	3.96	3.60	3.79

Among 50 cities in 1985, 46 cities are analyzed.

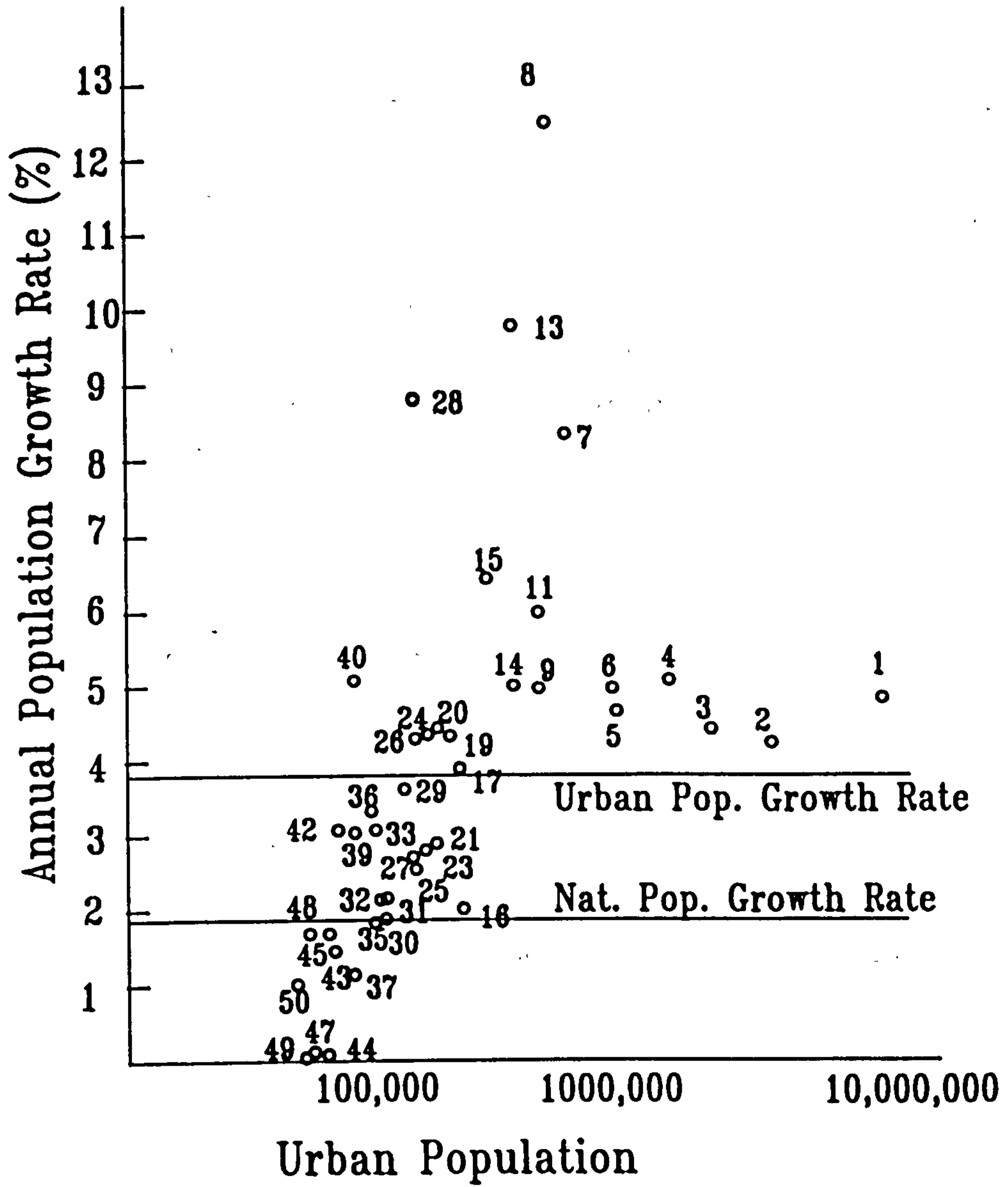


Fig. 3.6 shows the distribution of population growth by urban place in association with the national average growth rate and the average urban growth rate during the 1964 - 1985 period. Four groups can be identified: growing large cities, high growing intermediate cities, slowly growing intermediate cities and relatively declining cities. The first group shows a higher annual growth rate than that of the urban total but not the highest growth rates. The six largest cities belong to this category. The second group shows the highest growth rate and it can be divided into two sub-groups, i.e., industrial cities and Seoul's satellite cities. Ulsan (7), Pohang (15), and Kumi (28) belong to the former group and the latter group includes cities such as Pucheon(8), Anyang (13), and Suwon (11). The slowly growing cities show higher growth rates than that of national total population growth but lower than the average urban population growth. Lastly, the relatively declining cities are those whose growth rates are lower than that of the national total population growth.

During the last three decades, many Korean cities have experienced considerable fluctuations in their respective population growth rates. These variations in growth rates result partly from the circumstances of individual city and partly from the overall environment of urban growth. Thus, the measurement of the variance of urban places is an important aspect of urban growth and change in Korea. To measure the variation, the following simple formula can be used;

$$\sum_{t=1}^n | G_1 - G_0 | / n$$

Fig. 3.6 Distribution of Urban Pop. Growth  
( 1964 - 1985)



where,

$G_0, G_1$  are the urban population growth rates at the start and the end of period or year, respectively.

$n$  is the number of years or periods.

Table 3.15 shows the average variations of 42 cities from 1955 to 1985 in terms of annual growth rates at 5-year time intervals. The highest variation is found in the intermediate cities with a population between 200,000 and 1,000,000, whereas both the larger and the smaller cities show relatively lower values. The high variabilities in the intermediate cities reflect the changes that have occurred in the cities in and around the Seoul area such as Pucheon, Anyang, and Euijeongbu and in newly designated industrial cities such as Ulsan and Pohang. In contrast, the low values are found mainly in small sized cities located some distance from major large cities such as Checheon, Jeongju, and Kimcheon.

Table 3.15 Annual Growth Variations by City Size, 1955-1985

City - Size ( 000 persons )	Number of Cities	Average Annual Variation
more than 1,000	4	1.59
500 - 1,000	3	3.01
200 - 500	10	2.78
100 - 200	14	1.84
50 - 100	11	1.72
Total/Average	42	2.18

City-sizes are based on the population in 1985.

These variations are directly reflected in changes in the population rank-order in the national urban system. Fig. 3.7 shows the changes of urban population rank-order during the 1960-1985 period. During the 1960s, Ulsan rose dramatically from the lowest rank to 11th position. Its abrupt emergence is due to the construction of the large-scale industrial estate which symbolised rapid industrialisation in Korea at that time. On the other hand, Euijeongbu, located in the northern part of Seoul, entered the 20th rank in 1970. Although there are minor variations in general no marked changes can be found in the 1960-1970 period. The three satellite cities of Seoul, Pucheon, Seongnam, and Anyang, emerged during the period from 1970 to 1975 and rose to occupying the 8th, 10th, and 13th positions, respectively, in 1985. As might be expected, new industrial cities, mainly specialising in heavy industry, have emerged or been upgraded since the mid-seventies. These are Pohang, Kumi, and Changwon. In contrast to the emergence of industrial cities and satellite cities around Seoul, the traditional administrative cities which have had little benefit from economic and industrial development policies have been downgraded during this period. These cities are Cheonju, Chuncheon, Mokpo, Suncheon, and Wonju, etc.

The major feature of changes in urban rank-order during the 1960 - 1985 period can be summarised as follows: firstly, although there have been marked variations in the rank-order amongst small and medium sized cities, no changes have taken place among the six largest cities including the three case study cities discussed in Chapter 4; secondly, most administrative centres designated as cities before 1960s have declined in respective importance in the national space; thirdly, cities located around Seoul such as Pucheon, Seongnam, Anyang, and Kwangmyung have moved into high rank-order positions since 1970; fourthly,



new industrial cities, such as Ulsan, Pohang, Changwon, and Kumi have risen in the order as the result of the implementation of the five-year economic development plans since 1960; fifthly, small and medium sized cities located relatively far from Seoul and Pusan such as Wonju, suncheon, Chungju, and Kimcheon have moved down the overall rank-order during the period.

### 3.4 Summary

Korea has been undergoing rapid urbanisation since the early 1960s. The number of urban places has increased accordingly, but urban population is concentrated in a limited number of large cities. In consequence, there are severe disparities between population distribution and land resources. These are due partly to export-oriented industrialisation and partly to the unbalanced spatial development policies implemented since the early 1970s.

The main features of urbanisation and urban growth in Korea over the last twenty five years can be summarised as follows: first, urbanisation in Korea has been characterised by concentration in a few large cities; second, although the rate of growth of the primate city, Seoul, has decreased since 1970, Korea is, in general, still situated in a state of primacy; third, there have been no changes in the rank-order of the six largest cities but have been revealed severe variations among small and medium sized cities. In general, Korea is still in the stage of population concentration to a limited urban place and to particular provinces, even though these tendencies have decreased in some measure since 1970.

The three regional metropolitan cities, Taegu, Kwangju, and Taejeon, have been designated as growth pole

cities since the early 1970s for balanced national development to counter the bipolarisation effects of Seoul and Pusan. The determinants of urban growth in these cities will be explained in great depth in Chapters 4 and 5 using quantitative analysis based on secondary sources and qualitative analysis based on field survey, respectively.

## Chapter Four

# Urban Growth and Change in the Three Case Study Cities: Taegu, Kwangju, and Taejeon

### 4.1 Introduction

The previous chapter explored urbanisation and urban growth in Korea in overall terms. The salient features identified can be summarised as rapid, large city-oriented, and government-initiated urban growth. The main aim of this chapter is to examine some of the more concrete features of urban growth by a more intensive analysis of the three case study cities than the previous chapter.

The three case study cities, Taegu, Kwangju, and Taejeon, have functioned as the regional centres and central places of their respective hinterlands. The spatial importance of these cities is increasing owing to their strategic importance for balanced spatial development. Three cities are also situated in somewhat different circumstances in terms of their bases of economic activities, level of development, and cultural backgrounds. Because of their importance, these three cities are known as the Regional Metropolitan Cities (RMCs) and have been designated as the development poles in national development. The main items to be reviewed in this chapter are the urban setting, urban growth characteristics and major factors of urban growth and change.



## 4.2 Geographical and Administrative Setting

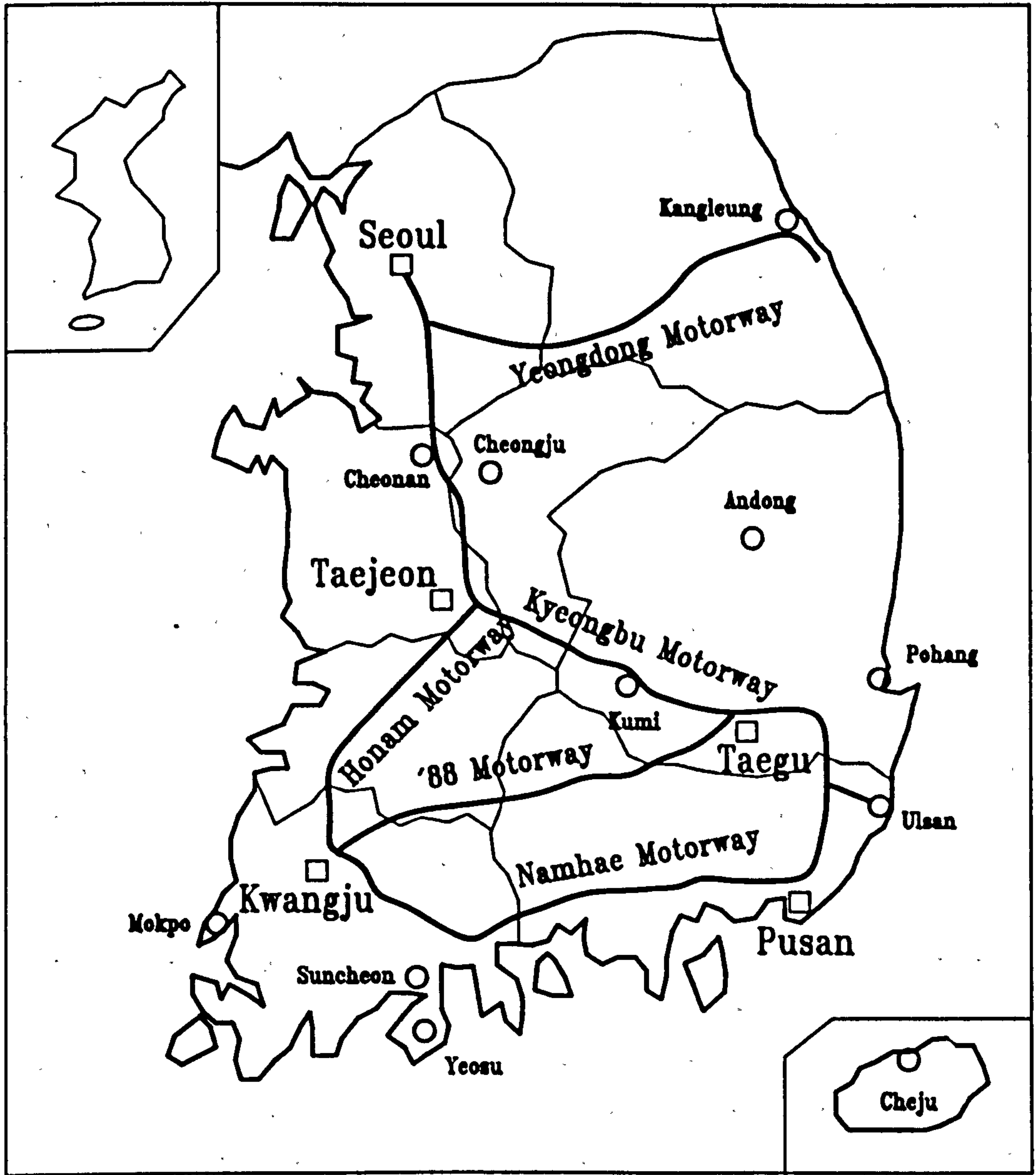
### 4.2.1 Geographical Setting

#### 1) Location

Map 4-1 shows the location of the three case study cities. Taegu is situated in the south-east, Kwangju in the south-west, and Taejeon in the central part of the Korean peninsula. The physical distances of the three cities, Taegu, Kwangju, and Taejeon, from Seoul and Pusan by motorway are as follows; 302 km, 329 km, and 164 km from Seoul and 151 km, 260 km, and 289 km from Pusan, respectively. In 1980, the time distances of the three case study cities by car were as follows; 230 min., 250 min., and 110 min. from Seoul and 110 min., 275 min., and 220 min., respectively. Taejeon lies closer to Seoul than the other two cities, while Taegu is situated near to Pusan. The major railway and motorway routes which originate from Seoul, both branch off in two directions from Taejeon; one to the Yeongnam region where Taegu and Pusan are situated, and the other to the Honam region where Kwangju and Cheonju are located. Therefore, Taejeon, the central city of the central region, is regarded as the transport crux of the country.

Taegu, central city of the Yeongnam region, lies in the central part of the region but has a lopsided location to the south with its surrounding province, Kyeongbuk. The distances from Taegu to the major cities in the province are as follows; it is about 54 km to Kyeongju, the historic capital of Korea, 72 km to Pohang, the steel city in eastern coastal area, 41 km to Kumi, the new industrial city for electronics and 105 km to Andong, a small-sized inland city.

Map 4.1 Location Map, Three Case Cities



Kwangju is the largest city in the 'Honam' region which comprises the whole area of Cheonnam and Cheonbuk provinces. The city is located in the centre of its surrounding hinterland. The distances from the city to other major cities in the province are as follows; it is about 80 km to Mokpo, the gate port of the region, 130 km to Yeosu, the western boundary of 'south-east coastal industrial zone', 90 km to Suncheon, a medium-sized city, and 27 km to Naju, the source of nationally famous 'Naju pears'.

Taejeon is situated in the central part of its region which includes the area of Chungnam and Chungbuk provinces. It is located in the south-eastern part of its surrounding province, Chungnam. The distances from Taejeon to other major city in the region are as follows; it is about 76 km to Cheonan, a famous transport city in preindustrial society like Taejeon in the present era and 48 km to Cheongju the provincial capital of Chungbuk.

## 2) Topography

Korea is a mountainous country and highlands cover about two thirds of the total land area. The Taebaek mountains form the backbone of the country. These crests have steep slopes to the east and less steep slopes to the west. Consequently, most of the major rivers run from the mountains to the west with lengthy but slow currents. Because of these geographical features, the southern and western parts of the country consist mainly of plains and hills, while the northern and eastern parts are mainly mountainous areas. The Taebaek mountains end around the border area of Kangwon and Kyeongbuk provinces, and the smaller Sobaek range runs to the south-central part of the country. The Sobaek range forms the boundary between Honam and Yeongnam regions and has functioned as a barrier between the two regions for a long time. Because of these

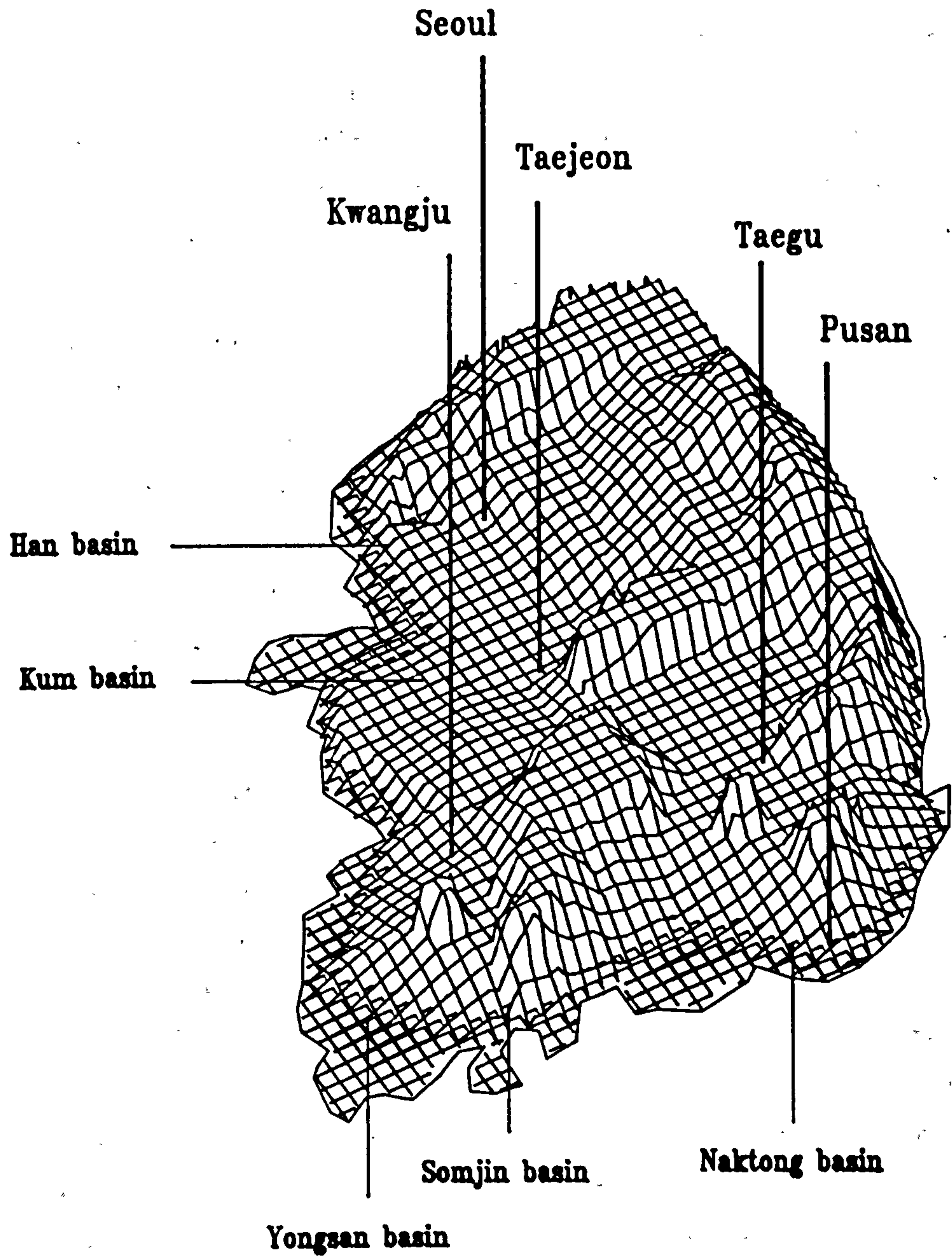
physical limitations, the Korean transport system is more developed along the north-south axis than along the east-west axis. This is evident in the Kyeongbu (Seoul to Pusan) and the Honam (Taejeon to Suncheon) motorways, the two main arteries of the country while the 'Namhae' (Pusan to Suncheon) and '88 Olympic' (Taegu to Kwangju) motorways, are less important and have been only recently constructed.

Taegu is surrounded by mountains and hills forming the 'Taegu basin'. Those include the Hwanseong, Waryong, Baekak and Munam mountain. The great range of mountains to the north called Palgongsan is noted for its jagged peaks while Taeducksan is the great range to the south. The Shincheon river which is half dry except in the rainy season runs through the city and joins the larger Keumho river to the north of the city. The Keumho river flows westward to join the Nakdong river, the second largest in the country, a few miles west of the city. The climate of Taegu can be classified as continental which implies hot summers and bitter winters. In general, Taegu is noted as being both the hottest and the coldest city in southern Korea.

Kwangju is also surrounded by the Noryeong mountains which originate from the Sobaek range and act as the boundary line between Cheonnam and Cheonbuk provinces. From Mt. Mudeung, a mountain of the Noryong, the Kwangju stream originates. It runs through the city and joins the Keukrak river, a branch of the Yeongsan river, to the north of the city.

Taejeon is also encompassed by mountains, namely, Mt. Bomun to the south, Mt. Kaejok to the north and Mt. Kubong and Mt. Doduck to the west. Yedeung stream which originates in the southern part of city runs through its central part to join Kapcheon stream and flows to the north-west to link

Map 4.2 Topography, Three Case Cities



with Keum river, one of the four largest river in the country, to the north-east of the city (See Map 4.2).

#### 4.2.2 Historical and Administrative Context

The historical background of the three cities, especially Taegu and Kwangju, can be traced back two thousand years. During the 1st century B.C. to 668, A.D., the Korean peninsula was divided into three kingdoms, namely, 'Kokuryu' to the northern part above Seoul, 'Baekjae' to the western part, and 'Shilla' to the eastern part of the peninsula. This period is called the 'Three Kingdom Period' in Korean history. Taegu belonged to the land of the Shilla kingdom while Kwangju and Taejeon were part of the Baekjae kingdom. Traditionally, Taegu has functioned as the major inland city in the south-eastern part of the peninsula. It was called 'Talgubul' which means an important military stronghold under the rule of the Shilla. During the 'Yi Dynasty' (1392 - 1910), Taegu was designated the provincial capital of Kyeongsang which covered the whole of the present area of Kyeongbuk, Kyeongnam, and Pusan. In other words, Taegu was the largest city in the region during the Yi Dynasty. The capital of Cholla province (the whole area of Cheonnam and Cheonbuk) during the same period was Cheonju, the second largest city in the region after Kwangju at the present time. Kwangju was called 'Mujin' during the Three Kingdom Period. The role and function of Kwangju during the preindustrial society were less important than at present. It was a smaller city than Cheonju and even smaller than Taegu. Unlike Taegu or Kwangju, Taejeon remained a small hamlet until the last part of the Yi Dynasty.

A modern administration system was introduced in Korea during the last part of the Yi Dynasty. In 1896, central

government issued a Royal decree on the administrative reorganisation of local government and the whole area of the Korea peninsula divided into 13 provinces. According to the decree, Kyeongsang province was divided into two separate provinces, namely, Kyeongbuk and Kyeongnam, Cholla province into Cheonbuk and Cheonnam, and Chungcheong province into Chungbuk and Chungnam, respectively. At the same time, Taegu and Kwangju were designated as the provincial capitals of their respective provinces, i.e., Kyeongbuk and Cheonnam. The capital of Chungnam was placed to Kongju, a small-sized city at present, instead of Taejeon.

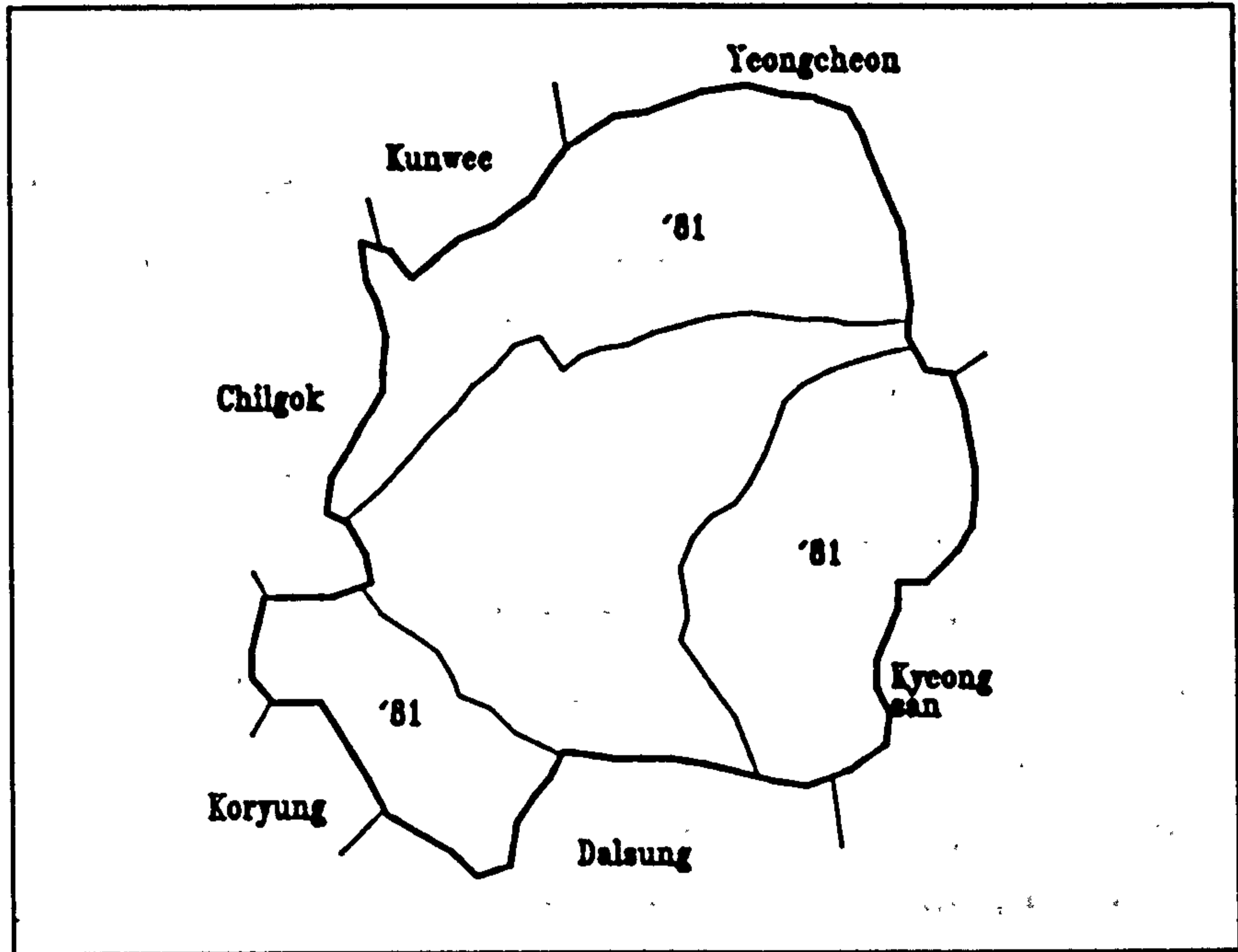
During the late nineteenth century, the peninsula underwent severe changes in the political, social, and economic spheres. After the Treaty of Kanghwa in 1876, the Korean central government officially ended her isolation policy towards foreign countries, and opened Incheon, Wonsan, and Pusan ports as trading centres. In consequence, many Japanese, mainly troops and merchants, entered Korea largely through Pusan, and began to expand their influence on the whole peninsula by constructing roads and railways to connect major cities and strategic points. Under this policy, work on the Seoul-Pusan railway began in 1903 and Taegu and Taejeon were respectively designated as major stations on the line. Taejeon began to grow as a result of this decision and in 1932, the provincial capital of Chungnam province transferred from Kongju because of Taejeon's increasing national importance. In 1949, three years after liberation from Japanese rule, the Korean government promulgated the local autonomy law. According to this law, 95 places were designated as urban places; 1 special city (Seoul), 19 cities, and 75 towns and the three case study cities, Taegu, Kwangju, and Taejeon, acquired the legal status of city. Moreover, they have been promoted from the 'general city' status to the 'government directly-

controlled city'; Taegu in 1981, Kwangju in 1986, and Taejeon in 1989. Under the present centralised government system in Korea, 'directly-controlled cities' are governed and controlled by central government and have a similar legal status to that of a provincial government, whereas general cities are controlled by the provincial government. The three case cities have been given this legal status because of their strategic importance for balanced regional development.

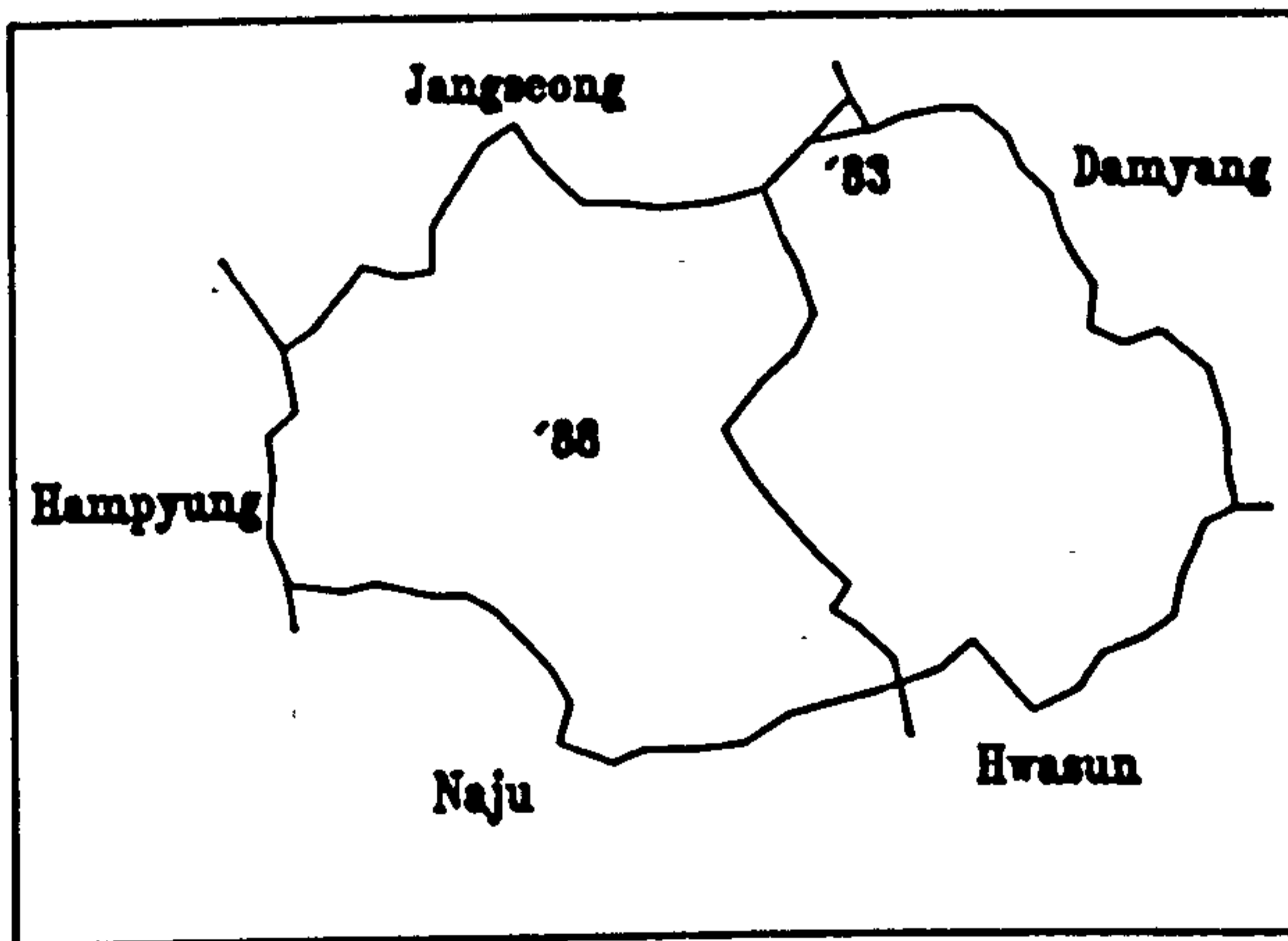
In 1989, the administrative area of three case study cities are 455.06 Km<sup>2</sup> in Taegu, 500.67 Km<sup>2</sup> in Kwangju, and 544.85 Km<sup>2</sup> in Taejeon, respectively. Although the administrative area is the result of the several boundary extensions, the present areas of the three case study cities were mainly demarcated in relation to their upgrading in administrative status from the general city to the directly controlled city: Taegu enlarged its area from 179.72 km<sup>2</sup> to 455.06 km<sup>2</sup> in 1981, Kwangju from 215.11 km<sup>2</sup> to 500.67km<sup>2</sup> in 1988, and Taejeon from 204.38 km<sup>2</sup> to 544.85 km<sup>2</sup> in 1989. Map 4.3 shows the changes of administrative boundaries in the three case study cities during the period between 1960-1985. The size of administrative areas in the three case study cities are quite opposite to those of population size, viz., Taegu has the smallest area but the largest population size whereas Taejeon has the largest area but the smallest population of the three cities. This is the result of boundary extensions to the adjacent counties to meet partly for the minimum population requisite for a government directly controlled city, one million residents, and partly for future needs. The present administrative area of Kwangju incorporated the whole area of Kwangsan county while that of Taejeon included the whole area of Taeduck county. This indicates the extent to which administrative areas of Korean cities



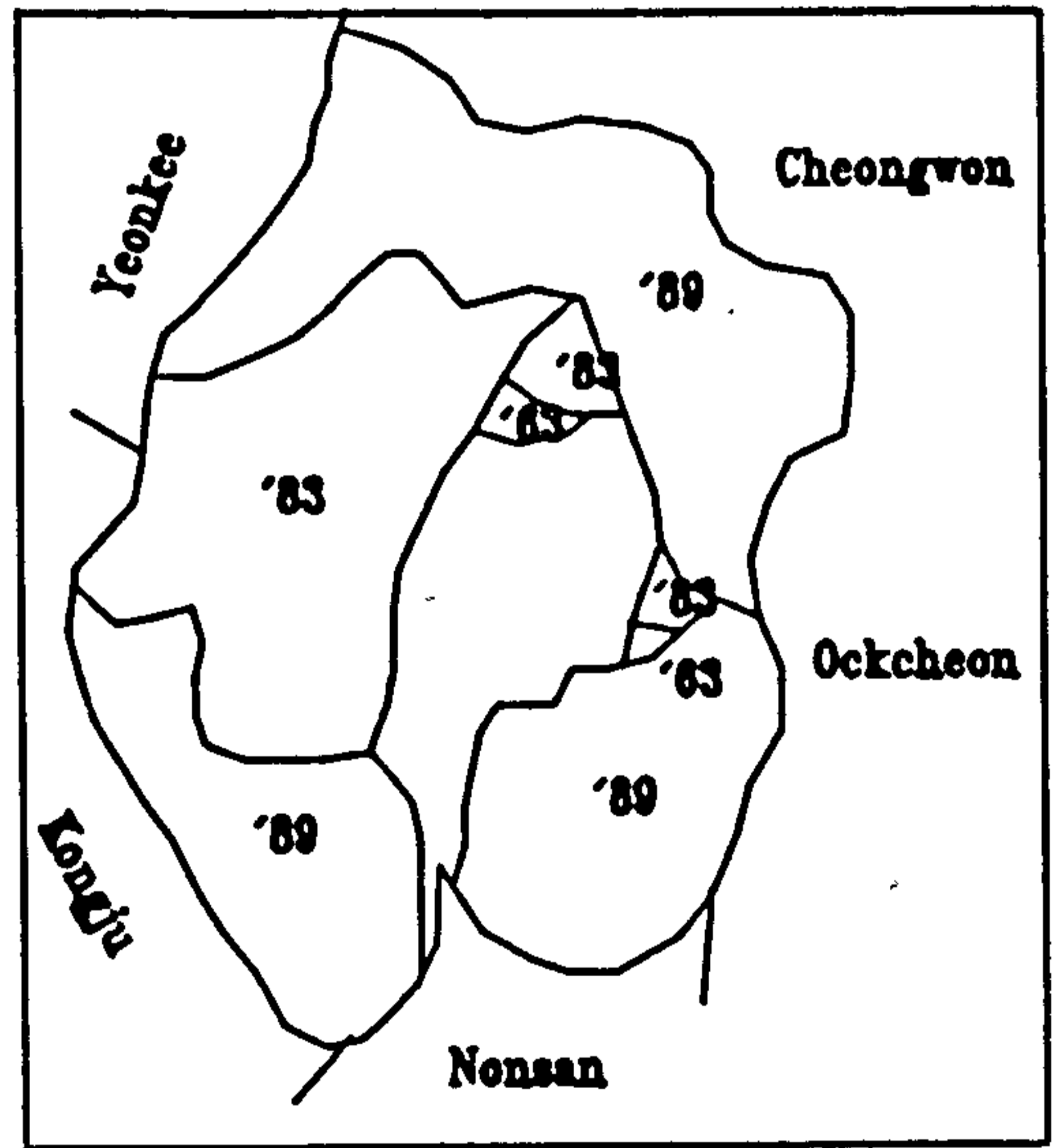
Map 4.3 Changes of Administrative Area  
Three Case Cities



Taegu



Kwangju



Taejeon

do not necessary coincide with the actual urbanisation area and urban population size.

### 4.3 Urban Growth and Change

#### 4.3.1 Population Change

##### 1) Population Growth

In 1985, the population of Taegu, Kwangju, and Taejeon was about 2,031,000, 906,000, and 867,000 residents, respectively. The population shares of the three case study cities to their respective surrounding provinces have increased markedly during the last twenty-five years. Taegu's share of its provincial population rose from 17.6% in 1960 to 40.3% in 1985. Over the same period, Kwangju's share increased from 8.8% to 24.3% while Taejeon's share of its provincial population increased from 9.1% to 28.9%. This trend indicates the extent of the concentration of regional population in the central city and the relative growth in importance of these cities to their respective provinces.

Table 4.1 Population Growth in the Three Case Cities, 1960-1985

City	Population(000 person)				Increasing Rate (%/Yr.)			
	'60	'70	'80	'85	60-70	70-80	80-85	60-85
Taegu	767	1,062	1,608	2,031	4.50	4.15	4.67	4.40
Kwangju	311	493	728	906	4.60	3.89	4.39	4.28
Taejeon	229	406	652	867	5.73	4.72	5.71	5.32

Source : EPB<sup>a</sup>, 1971, 1981, and 1986.

Table 4.1 shows the trend of population growth in the three case study cities during the last 25 years. As might be expected from their geographical location, Taejeon

recorded the highest growth rate among the three cities and Kwangju the lowest. The annual growth rates Taegu, Kwangju, and Taejeon were 4.40%, 4.28%, and 5.32%, respectively, during this period. Compared with the urban total for Korea as a whole (4.90%), only the growth rate of Taejeon was higher, while the other two cities recorded a lower than average rate. However, it should be noted that the growth rates for the three case cities during the first half of the 1980s were much higher than the urban average for Korea as a whole (3.16%). This is due largely to the slow down in the rate of growth of Seoul and Pusan. The annual growth rate of urban population has also slowly decreased from 5.35% in the 1960s, to 5.31% in the 1970s, and to 3.16% in the first half of 1980s. The growth rates of the three case study cities show a different trend because of the implementation of spatial growth policies which aim to accelerate the growth of the three regional metropolitan cities while controlling that of the national metropolitan cities, Seoul and Pusan.

## 2) Migration

In 1985, 8.68 million persons were classified as migrants in Korea, of which Seoul and Pusan accounted for about 41.6% (Seoul; 32.1%, Pusan; 9.1%). At this time, the three case study cities gained only 11.5% (Taegu 6.2%, Kwangju 2.8% and Taejeon 2.5%). Table 4.2 shows the net-migration from other regions of Korea to the three case study cities in 1970 and 1985. In 1970, the total number of in-migrants to Taegu was about 251,000 persons as against 199,000 persons out migrants. Thus, the gain to the city from net-migration was about 52,000 persons. In 1985, the total number of in-migrants to Taegu was about 539,000, more than double that of 1970, and the number of out-

Table 4.2 Population Net-Migration, 1970 and 1985

Province	In Persons					
	Taegu		Kwangju		Taejeon	
	'70	'85	'70	'85	'70	'85
Seoul	-7,467	-11,857	-7,416	-7,336	-6,901	-4,207
Pusan	-1,714	-1,120	-307	33	38	731
Kyeonggi	195	-1,948	-731	-1,558	-167	574
Kangwon	1,708	634	212	-126	591	427
Chungbuk	1,393	899	304	-53	4,706	3,193
Chungnam	1,462	-154	218	-205	10,363	9,906
Cheonbuk	2,316	380	1,933	941	2,892	2,042
Cheonnam	2,327	585	3,060	23,607	-340	1,055
Kyeongbuk	39,171	29,613	264	87	1,309	1,326
Kyeongnam	12,492	3,195	119	-682	659	208
Cheju	77	93	-2	105	75	103
Others	-	499	2	131	-	88
<b>Total</b>	<b>51,960</b>	<b>20,801</b>	<b>-2,344</b>	<b>14,944</b>	<b>13,225</b>	<b>15,446</b>

Source : EPB<sup>b</sup>, 1970 and 1985.

migrants was about 519,000. Because the number of out-migrants had increased more than that of in-migrants, net-migration to Taegu in 1985 was about 21,000 persons, a 60% decrease on the 1970 level. In- and out-migration to Kwangju in 1970 were about 52,000 and 54,000 persons, respectively. By 1985, these levels had increased nearly fivefold to about 245,000 and 230,000 persons. In the process, Kwangju moved from a net loss of about -2,000 persons in 1970 to a net gain of 15,000 persons in 1985. Similarly, Taejeon had about 79,000 in-migrants and about 66,000 out-migrants in 1970 and about 214,000 in-migrants and 198,000 out-migrants in 1985. Despite the increase in overall volume, the level of net in-migration remained roughly the same in both years at 13 - 15,000.

Most of the migrants to the case study cities came from their surrounding provinces, Taegu from Kyeongbuk, Kwangju from Chonnam, and Taejeon from Chungnam followed by other nearby provinces such as Kyeongnam in the case of Taegu, Cheonbuk for Kwangju and Chungbuk for Taejeon. The main destinations for out-migrants were Seoul, Pusan, and Kyeonggi. Quite exceptionally, Taejeon gained its population from all provinces including Pusan and Kyeonggi in 1985. This trend indicates its strong growth potential for the future. On the contrary, Kwangju lost population not only to Seoul and Kyeonggi but also to Kyeongnam, Chungnam, Kangwon, and Chungbuk provinces in 1985.

#### 4.3.2 Economic Structure

##### 1) Industrial Structure

In 1986, the total number of employees in the case study cities were as follows; Taegu 726,000, Kwangju 295,000, and Taejeon 276,000 persons, respectively (EPB, 1987, pp. 44-69). The percentage shares of the three case study cities of the national total employment were 4.7% in Taegu, 1.9% in Kwangju, and 1.8% in Taejeon while those of their surrounding provinces were Taegu 36.2%, Kwangju 19.1%, and Taejeon 22.6%.

Table 4.3 Industrial Structure by Employee, 1980

City \ Industry	In Percent		
	Primary	Secondary	Tertiary
Taegu	1.91	40.11	57.98
Kwangju	7.79	21.37	70.84
Taejeon	2.77	32.17	64.84

Source : EPB<sup>C</sup>, 1980.

Table 4.3 shows the industrial structure of the three case study cities in 1980. Taegu had a higher share of employment in the secondary sector than the other two cities with 40% of the labour force falling into this category. By way of contrast, only 25% of Kwangju's labour force was in the secondary sector. From this, it can be said that the economic basis of Taegu is closely linked to industrial activities in the secondary sector whereas that of Kwangju is derived from the tertiary sector.

The location quotient (L. Q.) is an useful device for highlighting the relative strengths of particular industrial activities in a region by comparison with the whole country. It compares a region's percentage of employment in a particular activity with that activity's share of the national total employment. The advantages of the locational quotient method are its simplicity and the fact that it can be based on readily available data (Isard, 1966, pp. 124-125). But this method suffers from some deficiencies (Glickman, 1977, p. 23): it assumes uniform national consumption and production patterns; presumes an equal level of productivity throughout the country; supposes no international exports and imports; finally, it assumes all local demand is filled by local production. Table 4.4 shows the locational quotients of industrial activities in the secondary and tertiary sectors in 1985. From this, it can be seen that Taegu recorded over unity in manufacturing and transport. communications and warehousing, Kwangju has concentrations of all services activities but only 43% of the national average of manufacturing industries. The results indicate that Taegu specialised in manufacturing activities whereas Kwangju depended heavily on services, and Taejeon revealed a relatively balanced structure between manufacturing and services.

Table 4.4 Location Quotients by Worker, 1985

Activity \ City	Taegu	Kwangju	Taejeon
1. Mining	0.03	0.02	-
2. Manufacturing	1.12	0.43	0.94
3. Elect. Gas and Water	0.40	0.83	1.72
4. Construction	0.54	1.07	0.88
5. Wholesale & Retail	0.73	1.75	1.01
6. Transport. Comm. & Warehouse	1.23	2.29	1.14
7. Banking & Insurance	0.78	1.93	1.18
8. Other services	0.91	2.06	1.28

National total workers mean the workers employed in urban places which have more than 20 thousand residents.  
Source : MOHA, 1986.

In 1985, the total number of workers employed in manufacturing factories in the three case study cities, Taegu, Kwangju, and Taejeon, was about 152,000, 21,000, and 42,000, respectively. Kwangju's total was only about a half that of Taejeon and less than one seventh that of Taegu. Table 4.5 shows the locational quotients for classes of manufacturing activities. Manufacturing in Taegu heavily concentrated on textiles, as to a lesser extent, was the case in Taejeon. No manufacturing activity in Kwangju marked more than the unity value thereby highlighting the relatively weak industrial base of that city.

Table 4.5 Location Quotients in Manufacturing Activities, 1985 ( based on number of worker )

Activity \ City	Taegu	Kwangju	Taejeon
1. Textile	2.61	0.64	1.87
2. Chemical	0.25	0.24	0.58
3. Machinery	0.61	0.59	0.41
4. Food	0.62	0.70	0.90
5. Others	0.48	0.23	1.05

Source : MOHA, 1986.

The coefficient of specialisation is a helpful device for measuring the degree of diversification of economic activities. The limits to the value of this coefficient are "0" and "1". If the city has a proportional mix of industry identical to the country as a whole, the value will be "0". In contrast, if all the employment of the city concentrated in a single industry, the coefficient will approach unity (Isard, 1966, p. 271). In 1985, the coefficients of the three cities were as follows; 0.0948 in Taegu, 0.3791 in Kwangju, and 0.0478 in Taejeon. These figures imply that economic activities in Kwangju are relatively concentrated on particular activities whereas the other two cities have a similar industrial mix to the whole country. The high value of Kwangju reflects its poorly developed manufacturing sector and its pronounced tertiary sector.

## 2) Changes in Industrial Activities

During the period between 1964 and 1985, the total increase in the number of workers in urban places in Korea was about 6.17 million. The percentage share of three cities of the increase was 1.9% in Taegu, 0.2% in Kwangju, and 1.1% in Taejeon. The sum of three case study cities' share was about 3.2% of the total net increase as against 17.5% in Seoul. These findings suggest that the three case study cities have had little impact on Korea's industrial development during the last two decades in comparison with Seoul Metropolitan Area and the south-east coast industrial belt. Despite of their small overall shares, however, some activities in the three case study cities recorded above average increases: namely, manufacturing and transportation/communications in Taegu, banking/insurance in Kwangju, and electricity/water/gas in Taejeon (See Table 4.6).

The shift-share technique has traditionally been used as a descriptive device for explaining historical trends in



regional employment (Zimmerman, 1975, p. 29). Despite continued criticism of its weak theoretical foundation and equivocal empirical support, its use in the structural analysis of region's growth has grown steadily because it is simple to use, easy to understand, and requires limited amounts of easily accessible data (Brown, 1969 p. 2; Richardson, 1978, pp. 204-206; Fothergill and Gudgin, 1979, pp. 309-310; Stevens and Moore, 1980, p. 419; Armstrong and

Table 4.6 Distribution of Employment Increase, 1964-1985

Industry \ City	In Percent		
	Taegu	Kwangju	Taejeon
1. Mining	0.1	-	-
2. Manufacturing	2.5	0.2	1.0
3. Construction	0.8	1.1	1.1
4. Electricity, Water & Gas	-8.1	0.6	2.3
5. Wholesale & Retail	-0.7	0.8	0.3
6. Transportation & Comm.	3.4	0.2	1.4
7. Banking and Insurance	0.9	1.9	1.3
8. Others	1.9	-3.6	2.2
Total	1.9	0.2	1.1

Source : MOHA, 1966 and 1986.

Taylor, 1985, p. 124). In recent years, shift-share analysis and various transformations of the technique have been extensively employed by regional economists. The basic form of the analysis is designed to decompose the growth of a regional variable such as employment, income, and output to highlight the components of that growth (Herzog and Olsen, 1977, p. 441). The basic models can be summarised as follows (Herzon and Olson, 1977, pp. 441-443; Stevens and Moore, 1980, pp. 419-421) : the technique divides the change,  $d$ , over the time period into the following effects, namely, national growth, NG, the industrial mix, IM, and the regional share, RS. The difference between the actual

employment change and the national growth effects is called the net shift, NS, of industry  $i$  in the  $j$ th region.

If the analysis is applied to employment,

$$NG_{ij} = E_{ij} [ (E^* - E)/E ] \quad \text{----- (1)}$$

$$IM_{ij} = E_{ij} [ (E^*_i/E_i) - (E^*/E) ] \quad \text{----- (2)}$$

$$RS_{ij} = E_{ij} [ (E^*_{ij}/E_{ij}) - (E^*_i/E_i) ] \quad \text{----- (3)}$$

where,

$E_{ij}$  = employment in the  $i$ th industry in the  $j$ th region.

$E_i$  = employment in the  $i$ th industry in the nation.

$E$  = total employment in the nation.

The superscript \* denotes employment in the terminal year, while the other indicates the base year.

Table 4.7 shows the results of shift-share analysis of the secondary and tertiary sectors in the case study cities during the 1964-1985 period. In general, the values of national growth effect of the three case study cities were positive in all industries but those of regional share were mostly negative value. These phenomena can be interpreted that the major parts of employment growth in the three case study cities have mainly benefited from the overall employment growth in the country, but the competitive situation of industrial activities in the three case study cities situated in a weaker position, on average, than the other cities. Because of the negative value in the regional share, the value of net shift of the case study cities were mostly shown in negative figures. The value of net shift indicates the degree of self-generated growth of the region. In consequence, it can be said that the employment growth in the three case study cities has been mostly generated not by their relative advantages but by the national industrial growth during the 1964-1985 period.

Table 4.7 Shift-Share Analysis of Economic Activities, 1964-1985

Activities \ Effects		IM	RS	NS
Taegu	1. Mftg.	281,651 ( 463,652)	-479,321 (-676,523)	-197,670 (-212,872)
	2. Const.	43,582 ( 30,909)	- 68,054 (- 56,812)	- 24,473 (- 25,903)
	3. Water/Gas	- 1,067 (- 1,352)	- 1,968 (- 1,851)	- 3,036 (- 3,203)
	4. Wholesale	- 82,708 (- 92,104)	- 24,327 (- 20,335)	-107,034 (-112,439)
	5. Transport	10,087 ( 21,286)	- 18,674 (- 31,415)	- 8,586 (- 10,129)
	6. Banking	13,314 ( 24,544)	- 9,661 (- 21,229)	3,653 ( 3,315)
	7. Others	- 51,725 (- 60,291)	- 8,253 (- 3,139)	- 59,978 (- 63,430)
	Total	0.0	-425,712	-425,712
Kwangju	1. Mftg.	49,628 ( 81,698)	- 91,855 (-126,603)	- 42,227 (- 44,905)
	2. Const.	119 ( 847)	2,520 ( 2,828)	3,715 ( 3,676)
	3. Water/Gas	- 361 (- 457)	- 439 (- 399)	800 ( 856)
	4. Wholesale	- 38,066 (- 42,390)	- 7,275 (- 5,438)	- 45,341 (- 47,828)
	5. Transport	8,476 ( 17,886)	- 22,039 (- 32,745)	- 13,563 (- 14,859)
	6. Banking	6,086 ( 11,218)	- 736 (- 6,023)	5,350 ( 5,195)
	7. Others	-184,861 (-215,478)	- 76,991 ( 58,713 )	-261,852 (-274,190)
	Total	0.0	-354,886	-354,886
Taejeon	1. Mftg.	42,976 ( 70,746)	- 78,402 (- 78,402)	5,336 ( 7,656)
	2. Const.	1,611 ( 1,142)	1,814 ( 2,230)	3,425 ( 3,372)
	3. Water/Gas	- 225 (- 285)	598 ( 623)	373 ( 338)
	4. Wholesale	- 31,307 (- 34,864)	- 7,099 (- 5,588)	- 38,406 (- 40,452)
	5. Transport	1,121 ( 2,555)	3,978 ( 2,448)	5,188 ( 5,003)
	6. Banking	8,729 ( 16,092)	- 7,035 (- 14,619)	1,694 ( 1,472)
	7. Others	- 5,741 (- 6,692)	6,410 ( 6,978)	669 ( 285)
	Total	0.0	- 32,494	- 32,494

Numbers in bracket calculated by the exclusion of Seoul's employments.

Source : MOHA, 1966, 1986.

There were some variations among the cities and industrial activities in terms of growth composition. The Industrial Mix effects of the three case study cities have shown similar results with different intensities: these three cities recorded a positive value for manufacturing, construction, transportation/communications, and banking activities whereas negative values for wholesale/retail, water/gas/electricity, and miscellaneous sectors have been recorded. Positive values for the Regional Share can also be found for construction in Kwangju, construction, gas/water/electricity, transportation/communication, and miscellaneous sectors in Taejeon. The positive effects of the Net Shift were found in the following industries: banking in Taegu, construction, gas/water/electricity, and banking in Kwangju, and all industrial activities except wholesale/retailing in Taejeon.

Because of Seoul's influence on the three case study cities, the value of each effect was calculated excluding Seoul's employment. This is shown in the figures in brackets in Table 4.7. Although the actual changes were similar to those of the previous analysis, the extent of each effect is markedly changed in every industrial sector in the three case study cities. The major findings of this analysis were as follows: the effects of Industrial Mix were obviously increased with a corresponding decrease in the effects of Regional Share. This suggests that the growth of Seoul has had a profound influence on industrial activities in Korea which is reflected in the mix of activities in the three case study cities.

### 4.3.3 Institutional Aspect

#### 1) Administration of Urban Government

Since the enforcement of the Temporary Law on Local Autonomy in 1961, most mayors of major cities have been appointed by the central government and the functions of the local parliament have been removed to the Minister of Home Affairs for directly-controlled cities and to Provincial Governor for general cities. The appointed mayors are usually selected from civil servants working in central government. Thus, the administration of urban government has been directly influenced by central government control and supervision. As a result, it operates mainly to foster national aims instead of local needs and/or citizens' desires. The mayors of the three case study cities have also been appointed by the central government.

The organisation of municipal government differs from city to city. In 1984, the municipal government of Taegu consisted with of 2 Chambers, 9 Bureaus, and 63 Departments while Kwangju has 4 Chambers, 7 Bureaus, and 55 Departments. Taejeon had a very similar administrative organisation to that of Kwangju. Fig. 4.1 shows the Bureaus and Departments which have close connections with urban development and maintenance in Taegu and Kwangju. Five Bureaus deal with urban development and planning in both cities but the numbers of Departments in each Bureau differ between the two cities. Meanwhile, the total number of civil servants in the three cities in 1985 was as follows; Taegu 5,711, Kwangju 2,445, and Taejeon 2,264 persons. These indicate that the largest of the three case study cities has more specialised activities with more civil servants than the two smaller cities.

Fig 4.1 Administrative Structure of Urban Development, Taegu

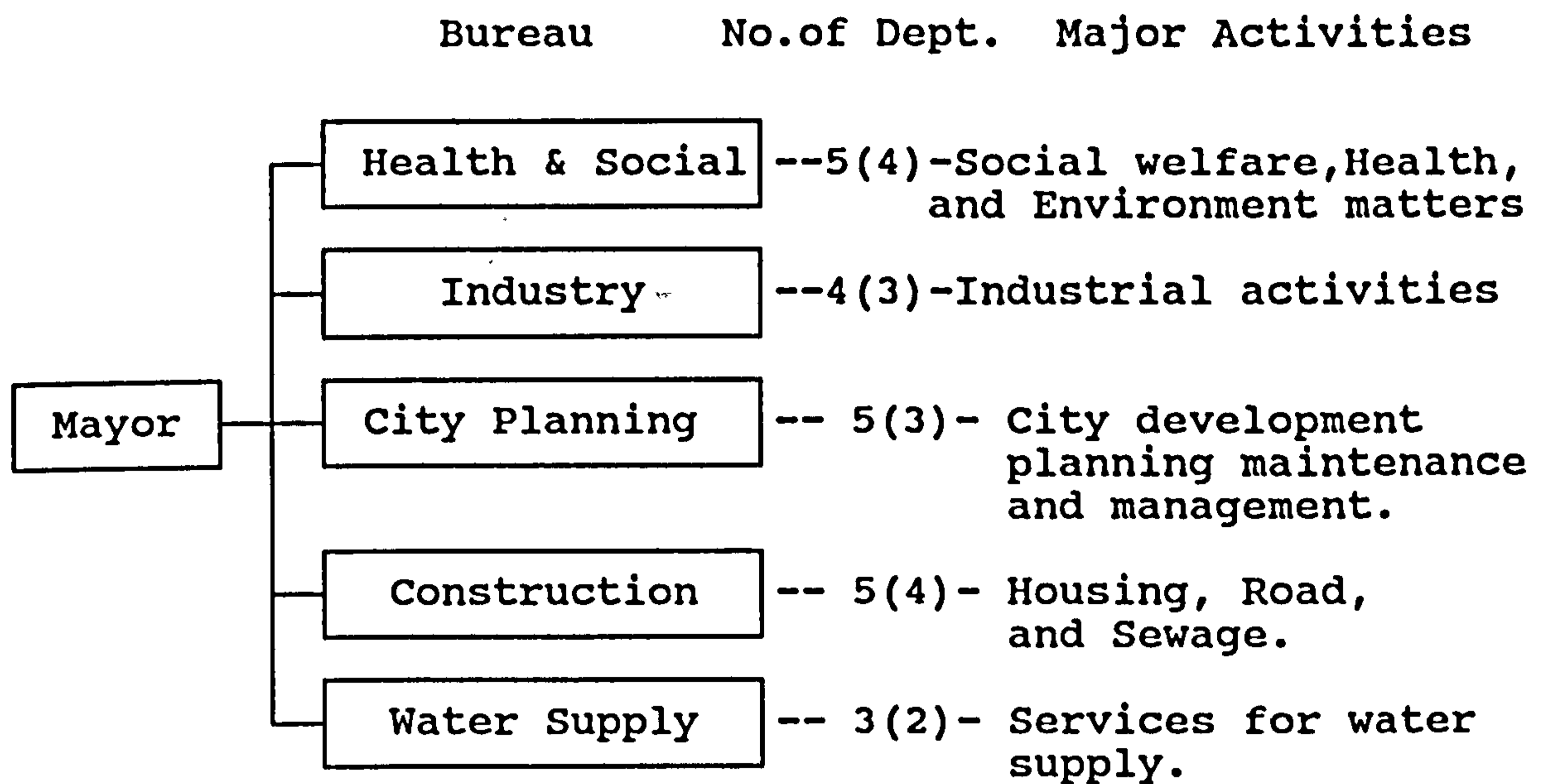


Figure in bracket means the number of Dept. in Kwangju.  
Source : Taegu, 1984, p. 310.

The settled amount of budget in the three cities in 1985 was 120 billion won in Taegu, 49 billion won in Kwangju, and 51 billion won in Taejeon. Although the total amount in Taegu was more than twice larger than that of the other two cities, the per capita amount in Taegu was very similar to that of Taejeon (about 59 thousand won) but higher than that of Kwangju (about 55 thousand won). The self-financing ratio of the settled amount in the three case study cities was 97% in Taegu, 67% in Kwangju, and 75% in Taejeon. The lower ratio of self-support finance reflects the relatively weaker economic status in the city. Table 4.8 shows the expenditure structure of the general account in the three case study cities. In general, Taegu and Taejeon allocated more of their respective budgets to capital expenses such as public works and industrial items while Kwangju spent more on consumer services such as general administration and civil defence.

Table 4.8 Settled Expenditure of General Account, 1985

Expenses \ City	In Percent		
	Taegu	Kwangju	Taejeon
1. General Administration	33.46	42.07	32.80
2. Social Welfare	16.36	17.23	20.22
3. Industrial & Economic	9.29	3.61	4.18
4. Public Works	34.38	24.86	35.26
5. Civil Defence	2.22	3.12	3.00
6. Others	4.30	9.11	4.53
Total	100.00	100.00	100.00

Source : MOHA, 1986.

## 2) Spatial Development Plans and Performance

The functional roles of the three case study cities in the national space has changed with each National Land Development Plan but their spatial importance has been increasingly emphasised. Of the eight intermediate regional centres in the First National Land Development Plan, it was suggested that Kwangju and Taejeon together with three other cities be developed intensively by provision of social overhead capital including transport and by strengthening their economic and cultural functions in the region. In contrast, Taegu, together with Seoul and Pusan, was the subject of measures designed to regulate its excessive growth. In other words, dispersion policies for Seoul, Pusan, and Taegu, and growth boosting policies for some regional centre cities including Kwangju and Taejeon were adopted as the basic guidelines for balanced urban development by the First Plan.

Policies for balanced urban development were reinforced by the Second National Land Development Plan. To slow down the excessive growth of Seoul and Pusan, development policies for the three case study cities,

Taegu, Kwangju, and Taejeon, were suggested which involved strengthening their economic base, improving their accessibility to major cities in their regions, and attracting advanced management functions in various fields to the city. These policies remain unchanged in the Revised Second Plan.

The basic approach to industrial development changed from large-scale projects in the particular areas such as the south-east coastal belt during the First National Land Development Plan period to small and medium sized projects in local areas based on local resources to achieve balanced spatial development in the Second National Land Development Plan. Among the proposed local industrial estates proposed in the Second Plan, there were three estates which had originally been designated in the First Plan which were directly connected with the three case study cities. The suggested major functions were textile and electronics in the Taegu-Kumi belt, machinery in the Kwangju-Mokpo belt, and electronics and information industries in the Taejeon-Cheongju industrial belt. The same general development guidelines for the three industrial belts are incorporated in the Revised Second Plan.

During the First National Land Development Plan period (1972-1981), Kwangju Region (one of eight intermediate regions in the Plan) was selected as the target area for regional development because of its lowest development status in the country in terms of income, employment, and infrastructures (CRD, 1984, p. 32). During the Plan period, 31 development projects were implemented mainly focused on the provision of physical infrastructures in major cities in the region such as Kwangju, Mokpo, Yeosu, and Suncheon. The second regional development projects are being implemented in Cheonju Region for the Second National Land Development period (1982-1991). Although those regional



development projects have been implemented, there still exists severe regional disparities in the south-west coastal area compared to the other areas

Table 4.9 Development Projects for West Coast Area

Industrial Estate Development Projects		Area (km <sup>2</sup> )	Amounts (Million/US \$)	Target Year
Kwangju Region	Kwangju High-Tec.	33.00	1,000.0 (21.0)	2,001
	Kwangju (Hanam)	2.44	84.1 ( 1.8)	1,992
	Mokpo (Daebul)	9.50	294.3 ( 6.2)	1,998
Taejeon Region	Taejeon (Third Estate)	1.29	84.6 ( 1.8)	1,991
	Cheonan (Second Estate)	0.99	37.9 ( 0.8)	1,991
	Asan Industrial Base	16.50	1,317.1 (27.6)	2,011
	Cheongyang High-Tec.	1.65	71.4 ( 1.5)	'90s
Cheonju Region		76.20	1,878.6 (39.4)	-
Total		-	4,768.0 (100.0)	-

1 US \$ = 700 Won

Source: Jung-Ang Daily Newspaper, 7th October, 1988.

such as the south-east or the capital area of the country. Thus, the government formulated large-scale development projects focused on the south-west and the central economic areas, called " the Western Coastal Area". Of the 1.37 billion dollars for 72 development projects, about 33.7% of the total was allocated to the construction of industrial estates as shown in Table 4.9. The aim of these projects is to boost the economic activities in these economic areas and consequently to reduce regional disparities compared to the other developed regions.

Table 4.10 shows the plan and performance of population growth in the three case study cities compared with Seoul and Pusan. During the First National Land Development Plan period (1972-1981), the actual growth rate

of the three cities, Taegu, Kwangju, and Taejeon, was 3.50%, 3.36%, and 4.00% per annum respectively as against their planned growth rates was 2.81%, 7.49%, and 5.40%. The actual growth rates of Kwangju and Taejeon were far below planned targets and only Taegu exceeded the target level. Over the same period, the planned growth rate in Seoul and Pusan was 0.74% and 2.25% per year whereas their actual rates were 3.58% and 4.86%, respectively. These results indicate that the dispersal policy from the three largest cities (i.e., Seoul, Pusan, and Taegu) was not effectively implemented during the First Plan period.

During the first half of the Second National Land Development Plan period (1982-1985), the three case study cities nearly attained their respective population targets while growth rates in Seoul and Pusan have decreased correspondingly. In other words, the three case cities grew at the expense of excessive population concentration in the two national metropolitan centres over this period.

Industrial estates for the three cities were constructed during the First National Land Development Plan period except for some areas in Taegu which were constructed before the Plan. The size of these industrial estates in 1985 was as follows; Taegu 5.03 Km<sup>2</sup>, Kwangju 2.75 Km<sup>2</sup>, and Taejeon 1.26 Km<sup>2</sup> (KRIHS, 1985a, pp. 349-351). Within a radius of 50 km, Taegu has relatively vast industrial estates such as Kumi electronics bases with an area about 25 km<sup>2</sup> and Taejeon also has Taeduck research site which functions as the technopolis with an area about 28 km<sup>2</sup>. This research site was constructed during the period between 1974 and 1978 in order to accommodate the research institutions which were removed from Seoul as a decentralisation policy. In 1983, this site embraced 13 institutions (7 government sponsored, 3 private institutions, 1 miscellaneous one and 2 universities) with

23,000 residents including 1,300 researchers (KPA, 1987, pp. 99-101). In general, this research site which was incorporated into Taejeon in 1983 has accelerated the growth of Taejeon in terms of economic vitality.

Table 4.10 Plan and Performance of Population Growth

In Thousand Persons, %

Plan	1st NLDP				2nd NLDP			
	1971		1981		1985		1991	
Year	Actual	Plan	Actual	%	Plan	Actual	%	Plan
Taegu	1,133	1,500	1,607	107.1	2,149	2,031	94.5	2,600
Kwangju	520	1,100	728	66.2	951	906	95.3	1,300
Taejeon	437	750	652	86.9	879	867	98.6	1,240
Seoul	5,851	6,300	8,367	132.8	9,083	9,646	106.2	9,600
Pusan	1,944	2,500	3,160	126.4	3,736	3,517	94.1	4,200

Plan population in 1985 was calculated based on the target population in 1986.

Source : 1. KRIHS, (1982a), pp. 136-138.  
2. KRIHS, (1982b), pp. 194-198.

The three case study cities adopted their first city plans around the late 1930s under the Chosun City Planning Ordinance of the Japanese Colonial Government. This ordinance was the law by which contemporary techniques of city planning such as zoning and street map were introduced to Korean cities for the first time. Although nothing much of these first plans is known today, it is regarded that these were the first attempts by government to guide urban change in a long-range perspective.

The first full-scale city planning, labelled formally by law as the "city master plan", appeared after the legislation of two important laws for spatial development,

the *City Planning Act* (1962) and the *Comprehensive National Land Development Act* (1963). The three case study cities prepared their city master plans around the mid 1970s under the guidance of the First National Land Development Plan (1972-1981). These plans focused mainly on physical planning with zoning techniques. In the early 1980s, the three case study cities revised their city master plans based on the development guidelines of the Second National Development Plan (1982-1991). These new plans stress more socio-economic aspects than physical environment compared to the former city master plans.

#### 4.4 Urban Growth Character

##### 4.4.1 Functional Area of the Three Case Study Cities

###### 1) Approaches to Functional Area

There is a growing realisation that urbanisation has recently proceeded significantly beyond the administratively defined city boundary in many countries (Kawashima, 1982, p. 22). Therefore, the political and administrative boundaries of cities no longer provide a meaningful framework for the analysis of urban activity systems involving urban growth and change. In consequence, the concept of "metropolitan" was introduced into statistical practice, as part of the attempt to capture "the greater city" which exceeds the administrative boundary (Berry and Horton, 1970, p. 251). In the United States, there have been many attempts to define the functional regions around urban places starting with the Metropolitan Region (MA) of the 1940 census, and running through the Standard Metropolitan Area (SMA) of 1950 to the Standard Metropolitan Statistical Area (SMSA) of 1960 (Hall, 1973, p. 124). In Britain, the Statistical Metropolitan Labour Area (SMLA) and Metropolitan Economic

Labour Area (MELA) were suggested by Hall in the early 1970s (Hall, 1973, pp. 128-129). Meanwhile, the concept of Regional Economic Clusters (REC) was also coined by Glickman (1979, pp. 31-33) in order to measure urban growth and change. Recently, the Functional Urban Region (FUR) concept has been developed by the scholar such as van den Berg (1982, pp. 55-59) and Kawashima (1982, pp. 21-40), etc. The common aim of these efforts is to identify the actual boundary of urbanised area of the city. Thus, these functional areas are usually composed of the central city or urban centre(s) and its depending hinterlands. The areas have been delimited by the functional integration between their respective central city and contiguous counties as the hinterland. As a consequence, the spatial delimitation of functional area should consider following three conditions, namely, the condition of central city, the urban characters of surrounding hinterland and the functional integration between two areas.

Table 4.11 Criteria for Functional Area Definition

Criteria \ Functional Area		SMSA	SMLA	REC	FUR
Core	threshold population	50,000	20,000 worker	100,000 (in 1970)	100,000 (in '70)
	ratio of daytime to nighttime population	n. a.	n. a.	> 1	> 1
Ring	population density	150 per M/L <sup>2</sup>	5 work /acre	n. a.	n.a.
	% of nonagri. occupat.	75	n. a.	75	75
Integ ration	% of commuters from ring to core	15	15	15	15
	min. distance between a core and ring areas	20 M/L	n. a.	20 km	20 km
Minimum Population of Functional Area (Core + Ring)		n. a.	70,000	n. a.	200,000

n.a.= not available.

Table 4.11 shows the criteria for area definition by major functional areas. It can be seen that the threshold population of the central city or urban core varies from 50,000 to 100,000 persons. In addition, the ratio of daytime to nighttime population is also suggested as a means for identifying the volume of population flow from the surrounding areas to the potential core. As criteria for urban character in the ring areas, the population density and the percentage of non-agricultural occupation to the total employment are proposed. Meanwhile, the criteria for functional integration of the core and the ring are the percentage of commuters from the ring to the core to the total population and the minimum distance between one core and another.

## 2) Functional Areas of the Three Case Study Cities

The three case study cities generally meet the criteria of central cities in terms of their respective population. To define the ring areas of the central city, the following criteria have been employed in this analysis, i.e., geographical location, population density, and the proportion of non-agricultural households. In geographical location, the distance from the central city and contiguity to the boundary of the city are considered to be key criteria. Population density and the ratio of non-agricultural occupations are used to identify the urban character of the potential ring areas. With these, the administrative boundaries of the area will also be considered.

As shown in Map 4.4, the administrative boundaries of the three cities are respectively surrounded by several counties. Taegu is directly contiguous to 6 counties, Kwangju to 5 and Taejeon to 2 counties. On the other hand, many other counties are located within a radius of 30 km

from their respective central cities. These are two counties in Taegu and Kwangju and six counties in Taejeon. Among the six counties in Taejeon, two belong to a different province, Chungbuk.

The urban character of these ring areas can be measured by their population density and the percentage of non-agricultural occupations. As shown in Table 4.12, the following counties showed relatively higher population densities than the others, namely, Dalsung, Kyeongsan, Chilgok and Yeongcheon in Taegu, Kwangsan, Naju, Damyang, and Hwasun in Kwangju, and Taeduck, Nonsan, and Yeonkee in Taejeon.

Table 4.12 Characters of the Ring Areas, 1980

In Person, Percentage

	Taegu			Kwangju			Taejeon		
	County	Den	Job	County	Den	Job	County	Den	Job
Directly contagi- ous counties	Dalsung	284	57	Kwangsan	451	47	Taeduck	332	46
	Kyeon g	389	57	Naju	314	30	Keumsan	181	25
	Chilgok	225	57	Damyang	200	25			
	Kunwee	87	20	Hwasun	138	-			
	Yeong- cheon	173	34	Jang- seong	185	29			
Non- contagi- ous counties	Cheong- do	118	22	Hampy- ong	249	23	Nonsan	342	39
	Seongju	125	22	Gokseong	135	18	Yeongkee	260	35
							Kongju	178	34
							Okcheon	171	-
							Boeun	135	20

1. Den.= Population density per square kilometre.
2. Job = Percentage of non-agricultural households to the total.

Source : 1. Kyeongsangbukdo, 1981.  
2. Chollanamdo, 1981.  
3. Chungcheongnamdo, 1981.  
4. Chungcheongbukdo, 1981.

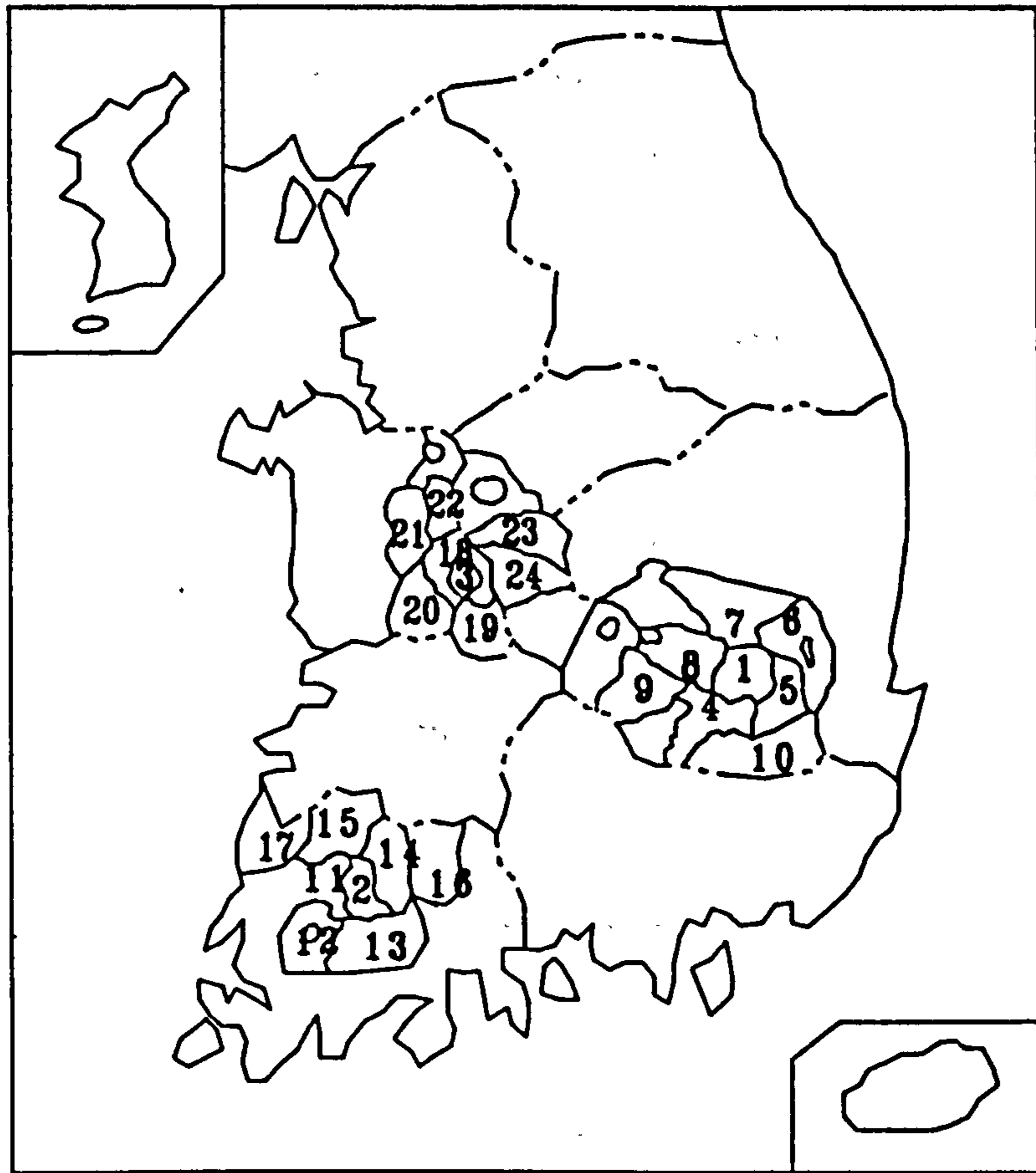
The proportion of non-agricultural households in the potential ring areas is generally much lower than the level suggested by most scholars. For example, Dalsung county in Taegu had one of the highest ratios in non-agricultural households among the whole counties as shown in Table 4.11, but its ratio of about 57%, was below the suggested level, 75%. It should also be noted that many counties recorded levels far below the national average of 27%. In 1980, only the following counties were above the national average in their ratio of non-agricultural households: Dalsung, Kyeongsan, Chilgok, and Yeongcheon county in the Taegu area, Kwangsan, Naju, and Jangseong county in the Kwangju area, and Taeduck, Yeonkee, Nonsan and Kongju county in the Taejeon area.

The ratio of commuters from the ring areas to their respective central cities indicates functional relationships between the centre and the ring area. In 1980, the following counties had a relatively high proportion of commuters to the total population, those were: Dalsung (34%), Kyeongsan (21%), Chilgok (19%) in the Taegu area, Kwangsan (26%), Hwasun (13%), and Damyang (11%) in the Kwangju area and Daeduck (84%), Nonsan (36%), Kongju (34%), Yeonkee (31%) and Okcheon (32%) in the Taejeon area. On the other hand, some counties recorded very low figures such as Kunwee (0.4%) in the Taegu, Hampyeong (0.9%) in the Kwangju, and Cheongwon (5%) in the Taejeon area.

Generally speaking, it is difficult to apply the criteria for functional areas suggested by scholars based on the western experiences to the Korean situation, directly. Consequently, the following amended criteria were employed for the selection of the ring areas; geographical location, population density, the ratio of non-agricultural households, functional interaction, and administrative boundaries. Under the heading of geographical location,



Map 4.4 Functional Areas, Three Case Cities



	1. Taegu	2. Kwangju	3. Taejeon
Contagious counties	4. Dalsung 5. Kyeongsan 6. Yeongcheon 7. Kunwee 8. Chilgok	11. Kwangan 12. Naju 13. Hwasun 14. Damyang 15. Jangseong	18. Taeduck 19. Keumsan
Non-contagious counties	9. Seongju 10. Cheongdo	16. Gokseong 17. Hampyeong	20. Nonsan 21. Kongju 22. Yeonkee 23. Okcheon 24. Yeongdong

distance and contiguity to the central city are considered. The national level for each criteria is also used to evaluate the urban character of the ring areas and the administrative boundaries of the county are also kept in mind. On the basis of the above criteria, the following counties have been selected for inclusion; Dalsung, Kyeongsan, Chilgok, and Yeongcheon in the Taegu, Kwangsan, Naju, Hwasun, Damyang, and Jangseong in the Kwangju, and Taeduck, Nonsan, Keumsan, Kongju, Yeonkee, and Okcheon in the Taejeon area. In the process, some other counties have been excluded from functional area because of their poorly developed urban character and/or their weak functional interactions with the central city. These counties are Kunwee in Taegu, Hampyeong in Kwangju, and Cheongwon in Taejeon area (See Map 4.4). The selected functional area will be called as Regional Metropolitan Area (RMA) hereafter.

#### 4.4.2 Characters of Urban Growth and Change

##### 1) Growth Character and Stage

Table 4.13 shows the population growth trends in three Regional Metropolitan Areas over the last two and half decades. The three case study cities, Taegu, Kwangju, and Taejeon, have grown at a rate of 4.40%, 4.22%, and 5.32%, respectively, per annum during this period. The highest growth rates were found during the 1966-1970 period, with remarkably low rates during the 1970 - 1975 period. Among the three cities, Taejeon has grown fastest while Kwangju has the lowest rate.

The ring areas of three cities have markedly different growth trends from those of their respective central cities. The ring areas recorded negative growth rates during the period between 1966 to 1985, except for Taegu during the 1970s. The annual growth rates of the three ring

areas during the period 1960-1985 were as follows ; -0.64% in Taegu, -0.81% in Kwangju, and -0.89% Taejeon. Taken as a whole, the ring area of Taegu recorded the lowest rate of decrease while that of Taejeon was the highest among the three ring areas.

Table 4.13 Population Growth Trends in  
The Three Case Study Cities

In Percent

Period	Taegu			Kwangju			Taejeon		
	Core	Ring	Area	Core	Ring	Area	Core	Ring	Area
60-66	3.78	2.78	3.35	4.16	2.14	2.80	5.36	1.12	2.10
66-70	6.12	-0.44	3.58	5.44	-1.63	1.01	6.80	-1.27	1.04
70-75	3.80	0.66	2.74	3.75	-1.00	1.07	3.99	-0.14	1.28
75-80	4.10	0.15	2.92	3.64	-2.72	0.49	5.05	-1.27	1.28
80-85	4.67	-6.98	2.04	4.39	-1.58	1.89	5.70	-3.37	1.16
60-85	4.40	-0.64	2.92	4.22	-0.81	1.52	5.32	-0.89	1.42

Source : 1. Taegu, '86.

2. Chungcheongnamdo, '61, '67, '71, '76, '81, '86

3. Chungcheongbukdo, '61, '67, '71, '76, '81, '86

4. Chollanamdo, '61, '67, '71, '76, '81, '86.

5. Kyeongsangbukdo, '61, '67, '71, '76, '81, '86.

Although the ring areas show negative growth rates for the period 1960-1985, the rates differ from place to place according to the distance from the central city. Actually, two groups of township or myeon in the ring areas show different growth rates from the overall pattern. The first of these groups contains areas contiguous to central city's boundary and the second group is located next to the first. The first circle of ring areas in the three cities recorded the following annual growth rates, i.e., 0.39% in Taegu, 0.29% in Kwangju, and -0.52% in Taejeon, whereas those of the second circle recorded very different growth rates: these were, Taegu -1.24%, Kwangju -1.41%, and Taejeon -0.59%. Generally speaking, the ring area of the first

circle in Taegu and in Kwangju marked positive growth rates whereas the second circles recorded negative growth over the last 25 years. On the other hand, the ring areas of both circles in Taejeon marked negative growth rates during the same period.

The population growth rates of metropolitan areas differ from place to place according to the distance from the centre of city. As shown in Table 4.14, the highest growth area of larger cities such as Seoul and Pusan can be found in the outer zone whereas that of smaller cities is closer to the city centre. The highest growth areas of major metropolitan cities during the 1970-1980 period were 20-30 km for Seoul, 10-20 km for Pusan, 5-10 km for Taegu,

Table 4.14 Changes of Population Growth by Distance, 1970-1980

Distance\City	In Percent				
	Taegu	Kwangju	Taejeon	Seoul	Pusan
Less than 5km	48.6	42.9	60.2	-10.8	8.4
5 - 10	109.1	43.8	33.9	73.2	82.3
10 - 20	19.5	15.1	3.2	114.8	178.7
20 - 30	-19.5	-	-	117.0	51.1
30 - 40	-	-	-	32.0	-
40 - 50	-	-	-	5.8	-
More than 50km	-	-	-	-2.7	-

Source : KRIHS, 1985a, p. 48.

and within 5 km for Taejeon. This trend indicates that larger cities in Korea have experienced some population dispersion while the less large cities are still underlying population concentration around the centre. For example, Seoul shows a negative growth rate in the area within 5km from the centre whereas Taejeon has its highest ones in that distance.

Table 4.15 summarises the results of the analysis of the urban growth characteristics in the three Regional Metropolitan Areas. Generally speaking, the three Regional Metropolitan Areas are all situated in the urbanisation stage, the first stage of urban growth, but their growth character differs from city to city. In other words, on the basis of the growth characteristics of the core, ring, and whole area, it can be argued that Taegu is at the stage of relative centralisation whereas Kwangju and Taejeon are respectively situated at the absolute centralisation stage.

#### 4.15 Stages of Urban Growth, the Three Case Study Cities

Area	Core	Ring			Area	Growth Stage
		1st	2nd	Total		
Taegu	++	+	-	-	++	Relative Centralisation
Kwangju	++	+	-	-	+	Absolute Centralisation
Taejeon	++	-	-	-	+	Absolute Centralisation

++ : high growth, + : growth, - : negative growth.

#### 2) Major Factors of Urban Growth and Change

In the national perspective, the three case study cities have been regarded as the strategic places for balanced national development. Having followed the growth-oriented economic policies since the early 1960s, Korea tackled regional problems in the 1970s. The Government pursued balanced spatial development policies in the First and the Second National Land Development Plans. According to these Plans, the three case study cities have been

respectively designated as growth pole cities and centres of regional development. The selection of the three cities as the growth pole cities can be attributed to their spatial characteristics in the national land and their different socio-economical backgrounds. The three cities reached their 'threshold population for self-propelled growth' (Thompson, 1965, P24) during the mid (Taegu)- or late (Kwangju)-1950s and early 1960s (Taejeon). Thereafter, they have functioned as central cities for their respective regions, i.e., Taegu for 'Yeongnam (Kyeongbuk and Kyeongnam areas)', Kwangju for 'Honam (Cheonnam and Cheonbuk areas)', and Taejeon for 'Chungbu (Chungnam and Chungbuk areas) region'.

The three case study cities are situated in different socio-economic environments in connection with their respective surrounding regions; Taegu is located in more industrial oriented surroundings, Kwangju in a more agricultural environment than the other two cities and Taejeon is on the edge of Seoul's influence area. Taken as a whole, the three case study cities have been designated as the strategic points for regional development because of their high growth potential and have consequently enjoyed more policy support from central government than other cities. This development support is an important factor in their respective growth.

The functional relationship between the three Regional Metropolitan Cities and their respective regions can be measured by various indicators. In 1985, the percentage shares of the three case study cities to their respective surrounding provinces in major items were as follows: Taegu accounted for 66% of the total amount of deposits, 64% of the motor vehicles, 69% of the total number of physicians, and 40% of the total number of employees, while those of Kwangju were 52%, 54%, 52%, and 22% and Taejeon recorded

50%, 54%, 55%, and 33%, respectively. These figures show the functional role of the three cities as regional centres to their respective hinterlands. Consequently, it can be said that the growth and change of the three Regional Metropolitan Cities is also due to their regional character and depends upon regional growth and change.

Table 4.16 shows an aspect of the relationship between population growth and changes of major items in the three cities. Generally speaking, the urban population growth has a strong relationship with finance related- items such as amounts of expenditure for public construction works, amounts of grants and subsidy from central government, and total amounts of settled expenditures. The scale of urban finance including expenditures for public construction works have expanded in accordance with population increase but the increase of financial support from central government reveals an aspect of the unstable revenue system in the case cities. The weak financial basis results from the weak industrial activities and makes the cities dependent on central government financial policies. Therefore, the urban financial structure can be treated as an indicator for urban growth and change. In 1985, the financial self-help rates of the three cities, Taegu, Kwangju, and Taejeon, were 89%, 58% and 81%, respectively.

Table 4.16 shows the relationship between urban population growth and major relevant variables in the three case study cities during the 1964-1985 period.

In economic aspect, the changes of employment in Taegu show a relatively stronger relationships with population growth than those of Kwangju and Taejeon. The growth of employees in manufacturing sector has a higher correlation to the population growth than the increase in total

employees. This indicates the leading role of manufacturing sector in urban growth and change.

The changes of administrative area in the three case study cities show a relatively weak correlation with population growth than changes in the dwelling area in the three cities. This is largely due to the rigidity of administrative operation. In the table, the low value in Kwangju in the administrative area reflects the small increase in that variable from 214.92 km<sup>2</sup> in 1964 to 215.11 km<sup>2</sup> in 1985 in contrast with the population growth.

Table 4.16 Correlations between Population Growth and Major Variables ( 1964 - 1985 )

In Correlation Coefficient

Items \ City	Taegu	Kwangju	Taejeon
1.Dwelling Area	.8046	.8386	.9918**
2.Administrative Area	.7752	.0454	.8393
3.Employee in Manufacturing	.9270	.7260	.5276
4.Total Number of Employee	.7688	.2988	.4431
5.Expenditure on Public Works	.9395	.8563	.9207
6.Amounts of Grants and Subsidy	.9787*	.9132	.9385
7.Amounts of Settled Expenditure	.9241	.9011	.9433

2 tailed Significance: \* - .01, \*\* - .001

#### 4.5 Summary

The three case study cities have functioned as the central city of their surrounding provinces, viz., Taegu in Kyeongbuk, Kwangju in Cheonnam, and Taejeon in Chungnam. Because of their strategic importance, the spatial importance of these three case study cities has increasingly emphasised both national development and administrative perspectives. In the spatial development



perspective, these three case study cities have been regarded as the strategic centres for balanced national development and consequently have been designated as the development poles in the national land development plans. In consideration of their administrative and political importance, the three cities promoted their administrative status from "general city" to "directly controlled city": Taegu in 1981, Kwangju in 1988, and Taejeon in 1989.

In 1985, the population rank-order of these three cities, Taegu, Kwangju, and Taejeon, marked the 3rd, 5th, and 6th places in the urban system in the nation. The three cities usually gained their migrants from their surrounding provinces but they redistributed their gained population to such provinces as Seoul, Pusan, and Kyeonggi. The annual population growth rate of the three cities was higher than that of the urban total during the first half of 1980s whereas it was markedly lower during the period between 1960 and 1980. Among three cities, the annual population growth of Taejeon marked the highest rate while that of Kwangju showed the lowest.

The industrial structure of three cities was somewhat different from city to city, viz., Taegu and Taejeon showed manufacturing-oriented industrial structure whilst that of Kwangju was service-oriented. The relatively specialised industries of three cities were textile and transportation/communication in Taegu, construction and miscellaneous services in Kwangju and transportation/communication and electricity/gas in Taejeon. In general, the major parts of employment growth in the three cities have been induced from the growth of national employment and consequently the degree of self-generated growth in the three RMCs was relatively lower compared to the other cities during the last two decades.

The functional areas of three case cities were delimited by employing five selection criteria as follows; geographical location, population density, the ratio of non-agricultural households, functional interaction, and the contiguity to the central city. The functional areas selected were Dalsung, Kyeongsan, Chilgok, and Yeongcheon in Taegu, Kwangsan, Naju, Hwasun, Damyang and Jangseong in Kwangju, and Taeduck, Nonsan, Keumsan, Kongju, Yeonkee, and Okcheon in Taejeon. The selected functional area can be called as the Regional Metropolitan Area (RMA). The growth characteristics of the three Regional Metropolitan Areas showed somewhat different stage of urban development; Taegu was at the stage of relative centralisation whereas both Kwangju and Taejeon were situated at the absolute centralisation stage.

The major growth factors of the three cities can be induced from their different situational characteristics in the national land. Three aspects of analysis seem important to induce the major factors, these are, national, regional, and urban level. At the national level, these three cities have been greatly indebted to the government's development policies and plans because of their strategic locations for balanced national development. The regional perspective suggests the central place functions of the three cities to their surrounding hinterlands. Lastly, the industrial and administrative structures of each city are to be considered in relation to urban perspective. In short, the common factors for urban growth in the three case cities can be summarised as their strategic location, functional roles with surrounding areas, industrial structure, and institutional perspectives of spatial development.

The implications of the major findings in this chapter will be reviewed in the next chapter in the viewpoints from the experts in the spatial planning fields and the residents of the three case cities.

## Chapter Five

# Perceptions of Urban Growth Factors

### 5.1 Introduction

The previous two chapters reviewed urban growth characteristics in Korea from both a macro (Chapter 3) and a micro (Chapter 4) perspective to identify some of the major urban growth factors with reference to the conceptual framework set out in Chapter 2. The aim of this chapter is to examine the perceptions of urban growth factors held by key individuals by means of questionnaire based surveys.

The survey work sought to collect information from these individuals regarding their evaluation of major urban growth factors in Korea with particular reference to the three regional metropolitan cities. The survey techniques employed in this study were the Delphi method and an attitudinal surveys based on postal questionnaires.

This chapter consists of two main sections, one describing the findings of the Delphi work and the other the attitudinal survey. Three rounds of the Delphi method were conducted and the survey results are given with reference to both national urban growth factors and urban growth factors in the three case study cities. The attitudinal survey focused on the identification of urban growth factors perceived by the residents in the three case study cities.

## 5.2 The Delphi Surveys

### 5.2.1 Methodology

#### 1) Approaches

The Delphi method was developed in 1953 by Olaf Helmer and Norman Dalkey as a means of technological forecasting in the defence field (Overbury, 1969, pp. 76-77; Helmer, 1983, p. 146). It may be characterised as a method for obtaining a consensus of opinion from a group of experts through controlled opinion feedback (Helmer, 1983, p. 135). The Delphi technique is essentially a means for combining the knowledge and abilities of a diverse group of experts and applying it to the development of a consensus aimed at the production of policies and plans (Fagence, 1977, pp. 292-293). The Delphi method has three basic components: the creation of a panel of experts that can be consulted; the use of a series of questionnaires for consultation purposes; and the provision for feedback of major findings to respondents (Pill, 1971, p. 57; Judd, 1972, p. 173; Dickey and Watts, 1978, p. 217; Morgan, et al., 1979, p. 381; Masser and Foley, 1987, p. 218). As a form of structural communication among the participants, the Delphi method normally involves six phases. These are, formulating the issues that should be under consideration, exposing the available options, determining the initial positions on the issues, exploring and evaluating the underlying reasons behind the positions on the issues, and reevaluating the options (Turoff, 1979, p. 88). In principle, the whole process requires five rounds of surveys, but, in practice, most Delphi applications involve only three or four rounds (Ibid, p. 88).

The main advantage of the Delphi method lies in the way that it utilises expert opinions and the wide range of interrelated variables that can be taken into account in

the process (Masser and Foley, 1987, p. 218) and it also eliminates the distortion which can arise from face-to-face panel interaction (Gardi and Petel, 1975, p. 182). There are also a number of limitations which arise in relation to the selection of the respondents and the survey procedures (Hill and Fowles, 1975, p. 182). In practice, this method is particularly useful where it is necessary to rely upon the relevant intuitive insights of experts and to use their judgements as systematically as possible (Brockhaus, 1975, p. 127). Because of its methodological advantages, it is regarded as an useful device for exploring complex problems. In the Delphi method, a postal survey is usually employed. The major advantages of the postal questionnaire are as follows (Fagens, 1977, pp. 293-294): first, it has the advantage that experts can be widely separated geographically yet still participate, and they can also participate at their own convenience; second, it overcomes the problems of poor attendance levels, the tendency for nominees rather than the chosen experts to attend, and the tendency for certain individuals to dominate the proceedings because of their charisma; third, the participant's knowledge of the subject matter may be challenged by the views of the other participants. As a result, a postal survey was employed to explore opinions on urban growth factors in Korea.

## 2) Survey Design

The Delphi surveys were conducted between October 1987 and February 1988. The respondents were selected from members of the Korea Planners Association who were working as faculty members in universities or as researchers in research institutes during the survey. This selection sought to draw upon the expertise and experience of the respondents on the main issues of this survey, i.e., major urban growth factors in Korea. The Korea Planners Association (KPA) is the best known professional group for

spatial development planning in Korea. Among the faculty member of universities in the KPA members, the choice of respondents was restricted to faculty members who belonged to relevant departments such as those of Regional Development, Urban Planning, and Community Development. The researchers were mainly selected from the Korea Research Institute for Human Settlement (KRIHS) which functions as the main government think-tank on various spatial problems and physical planning in Korea. In addition to these criteria, the location of respondents was divided into two spatial groups, namely, Seoul and the three case cities. It was anticipated that more general views on urban growth factors could be expected from the former group and more area-specific opinions from the latter one. The names and addresses of the respondent were picked out by reference to the membership handbook published by the Korea Planners Association in 1986. The distribution of selected respondent candidates is summarised in Table 5.1.

Table 5.1 Distribution of Respondents, The Delphi Surveys

		In Person		
Area		Univ.	Institute	Total
Seoul		51	17	68
Case City	Taegu	18	-	18
	Kwangju	13	-	13
	Taejeon	14	-	14
	Others	2	-	2
Total		98	17	115

During all the three rounds, the questionnaires were distributed to the same persons as selected at the first stage. But the response rates were relatively low, as in

most other postal questionnaire surveys. The response rate of each round was as follows; 34% or 39 person in the first, 36% or 42 responses in the second, and 37% or 43 responses in the third survey.

Three rounds of Delphi questionnaires were undertaken by the researcher. The first contained four sections; questions on urban growth factors in general, growth factors in the three case study cities, needed functions in the three case study cities, and general views on urban growth in Korea. On urban growth factors, the respondent was required to list the three most important factors which in their opinion have influenced urban growth by major aspects such as economic, socio-cultural, and institutional areas. The questionnaire also required respondents to give their views on the three most important factors of urban growth in the three case cities without dividing the major fields of influence. A list of needed functions which have to be strengthened for further growth was then required for each of the case cities. The last section of the questionnaire included questions on urban growth characteristics, growth stages, growth factors, and growth management polices. The aim of last section was to give respondents the opportunity to enlarge on their previous responses and to enable them to bring in additional information(See Appendix "The Delphi Survey").

The main aim of the second round questionnaire was to allow respondents to adjust their initial ideas in the light of the findings of the first round which were attached to the second round questionnaire. This questionnaire was divided into four parts. The first part required respondents to evaluate the major growth factors identified in the first round in terms of their contribution to urban growth. This involved sixteen items and respondents were asked to evaluate them by four city

size categories: National Metropolitan Cities (Seoul and Pusan), Regional Metropolitan Cities (Taegu, Kwangju, and Taejeon), Medium Sized Cities, and Small Sized Cities (with a population of less than 10,000). The second part required participants to evaluate ten major factors identified in the first round in connection with urban growth in the three case study cities, respectively. The third part required respondents to select the two most important factors by city size group and major aspect.

The final round questionnaire mainly focused on the comparative evaluation of urban growth factors by city size group in the form of rank-order responses. The questionnaire was also divided into four sections; urban growth factors in a national perspective, growth factors in the three case study cities, evaluation of major aspects of urban growth and the summary results of second survey. The factors listed in the first and second sections were respectively selected from the second round findings. As a result of this survey, the panel's perceptions of the comparative importance of each urban growth factor can be measured by city size and by aspect.

### **5.2.2 National Urban Growth Factors**

#### **1) First Round Responses**

Table 5.2 summarises the rankings of major urban growth factors suggested by the experts for each category. In their replies to the questionnaires respondents listed a wide variety of factors: 84 economic, 98 socio-cultural, 102 administrative-institutional aspects and 66 miscellaneous factors. For purposes of this table they have been grouped into eight headings for each category.

The top four economic factors listed by the experts were employment opportunities, the diversity of economic



Table 5.2 Suggested Urban Growth Factors,  
the First Round Survey

Aspects	Urban Growth Factors	Response Rate	
		%	Cum.Pct
Economic	1. Employment opportunities	26.2	26.2
	2. Diversity of economic activities	23.8	50.0
	3. Manufacture-oriented industrial structure	20.2	70.2
	4. Growth of basic industries	14.3	84.5
	5. Urban-oriented investment	6.0	90.5
	6. Low productivity in agri. sector	6.0	96.5
	7. Industrialisation	2.4	98.9
	8. Export-oriented policies	1.2	100.0
Socio-Cultural	1. Residents' urban oriented value system	28.2	28.2
	2. Population growth and migration	27.6	55.8
	3. Opportunities for education	12.5	68.3
	4. Access to cultural activities	10.2	78.5
	5. Opportunities for personal development	8.2	86.7
	6. Good living environment	7.1	93.8
	7. Citizens' participation to development	4.2	98.0
	8. Historical/cultural background	2.0	100.0
Admin.- Institutional	1. Industrial location policies	21.6	21.6
	2. Spatial development policies	20.6	42.2
	3. Central gov't support/subsidies	14.7	56.9
	4. Urban gov't's financial basis	13.7	70.6
	5. Efficient operation of urban government	7.8	78.4
	6. Centralised government system	7.8	86.2
	7. Urban oriented policy making	7.8	94.0
	8. Enhancement of regional character	5.9	100.0
Others	1. Favourable geographical location	27.3	27.3
	2. Good urban infrastructure	21.2	48.5
	3. Sufficient human resources	18.2	66.7
	4. Accommodation/diffusion of innovation	12.1	78.8
	5. Functional interaction with surrounding areas	7.6	86.4
	6. Resources endowment in surrounding areas	7.6	94.0
	7. Development status in surrounding areas	1.5	95.5
	8. Functional specialisation in the nation	1.5	97.0
	* Others	3.0	100.0

Cum. Pct.= Cumulative Percentage

activities, a manufacturing oriented industrial structure ,and the growth of basic industries. These four factors accounted for 85% of the total listed items in this category. Minor factors were urban-oriented investment, low productivity in the agricultural sector, and industrialisation. In general, respondents regarded the soundness of manufacturing activities as vital for urban growth. In other words, they assumed that the city could provide sufficient employment opportunities but only through a vigorous manufacturing sector could it attract people from the surrounding areas and consolidate related activities. Only a few experts emphasised the role and contribution of industrialisation and/or export policies to individual city growth. This suggests that many experts undervalued those items in terms of their direct contribution to individual city growth, but not their indirect impacts.

The major socio-cultural items suggested by the experts were residents' urban-oriented value systems (28.2%), population growth and migration (27.6%) , opportunities for education (12.5%), and access to cultural activities (10.2%). These results suggest that urbanisation and urban growth in Korea, can be attributed mainly to high population growth and migration from rural to urban places which reflects residents' urban-oriented value systems associated with modernisation and industrialisation and to a lesser extent to the opportunities that exist for education, cultural activities, and personal development in urban places. Minority factors included the importance of citizen participation in development activities and the historical /cultural background of the urban places.

Four main institutional factors were suggested by respondents as the crucial causes for urban growth: namely, industrial location policies and plans (21.6%), spatial development policies and plans (20.6%), central government support and subsidies (14.7%), and the urban government financial base (13.7%). These factors accounted for about 71% of the total suggested institutional items. Other suggested factors included the efficient operation of urban government, a centralised government system, and urban-oriented policy making. Most respondents recognized the influential role played by industrial location policies /plans and spatial development policies /plans in urban growth. This reflects the extent to which the newly emerging industrial cities in Korea have recorded rapid growth rates during the last two and half decades as a result of growth-oriented economic policies and their associated industrial location policies which are contained in spatial development plans. During this period as the analysis in Chapter 3 shows, traditional cities which function as the administrative centres and are located outside Korea's industrial areas have experienced a diminution in their national importance. The experts also stressed the importance of the financial base in urban government together with central government support and subsidies. This suggests that the soundness of the financial base in urban government depends heavily upon support and subsidies from central government. Under a highly centralised government system like Korea, the major revenue sources of governmental finance are mostly concentrated in central government. As a result, most urban government agencies have experienced financial problems. It is, therefore, the degree of financial soundness or the extent of self-help in urban government that can be regarded as an important indicator of future urban growth potential. Because of the emphasis on the national level policy and plans, the importance of urban administration is

evaluated weakly in terms of the mayor's leadership, the administration of urban government and citizens' participation in planning or development activities.

Favourable geographical location (27.3%), good infrastructure (21.2%), sufficient human resources (18.2%), and the accommodation and diffusion of innovation (12.1%) were also suggested as important additional factors. Functional interaction with surroundings areas (7.6%), resources endowment in the hinterlands (7.6%), and the development status of the surrounding areas (3.0%) were also cited by some respondents.

## 2) Second Round Responses

Table 5.3 summarises the results of the adjusted responses on national urban growth factors from the second round questionnaire. In contrast to the open-ended questions employed in the first round survey, the second round questions asked the respondents to select the two most important factors among eight items suggested by the first round responses in relation to different city-size categories.

The three most important economic factors in the first round responses were sufficient employment opportunities, diversity of economic activities and a manufacturing-oriented industrial structure while those of the second survey were the growth of basic industry, sufficient employment opportunities, and diversity of economic activities, respectively. The percentage share of the three factors to the total response was about 70% in the first round but in the second round it was only about 53%. There were some significant adjustments in the responses compared with those of the first round. For example, the rank-order of basic industry was upgraded from fourth in the first to

Table 5.3 Adjusted Responses on National  
Urban Growth Factors

In rank-order

Aspect	City-size	Factors by Rank-Order*							
		1	2	3	4	5	6	7	8
Economic	NMCs	1	2	6	4	3	8	7	5
	RMCs	2	1	4	2	5	6	6	6
	MSCs	7	6	2	1	4	5	2	8
	SSCs	5	7	6	3	2	1	4	8
	Total	2	3	6	1	4	5	7	8
Social	NMCs	2	3	1	5	4	6	6	8
	RMCs	2	3	1	4	5	6	7	8
	MSCs	7	2	1	7	5	3	6	3
	SSCs	6	2	3	8	7	4	5	1
	Total	3	2	1	7	5	4	8	5
Institutional	NMCs	5	2	3	5	7	1	4	7
	RMCs	3	1	2	5	7	4	6	8
	MSCs	2	3	1	8	6	6	3	5
	SSCs	5	4	2	6	7	8	3	1
	Total	3	2	1	7	8	6	5	4
Others	NMCs	3	2	1	4	6	8	7	5
	RMCs	1	5	4	6	2	7	7	3
	MSCs	2	5	8	6	1	3	3	6
	SSCs	4	5	8	6	2	3	1	6
	Total	1	3	4	7	2	7	5	5

\* | Number means the list of factors in rank-order by city-size and categories as shown in Table 5.2.

1. NMCs : National Metropolitan Cities (Seoul and Pusan)  
 RMCs : Regional Metropolitan Cities (Taegu, Kwangju, Taejeon)  
 MSCs : Medium Sized Cities  
 SSCs : Small Sized Cities (less than 10 thousands pop.)

first place in the second round whereas manufacturing-oriented industrial structure was downgraded from third to sixth place. But, the two least important factors,

industrialisation and export-oriented economic policies, maintained the same rank-order respectively during the two round.

In the second round, respondents also evaluated the importance of each factor in relation to different city size categories (see Table 5.3). At this stage, sufficient employment opportunities and a diversity of economic activities were valued as first and/or second rank in the two large city categories, but only seventh and sixth in the Medium Sized Cities and fifth and seventh in the Small Sized Cities. On the other hand, the low productivity of the agricultural sector was regarded as the most crucial factor in the case of the smaller cities, although it was evaluated as the least influential factor in the growth of National Metropolitan Cities such as Seoul and Pusan. In the opinion of the panel then, the growth of Small Sized Cities is related to the growth and decline of the agricultural sector in their rural based hinterlands, while that of National Metropolitan Cities and/or Regional Metropolitan Cities is linked to the provision of sufficient employment opportunities and the soundness of economic activities in the respective cities. In economic terms, basic industry and employment opportunities were generally highly evaluated, but industrialisation and export-oriented economic policies were regarded as less important factors than the other six items.

Table 5.3 also shows that the most important socio-cultural factors in the second round survey were opportunities for education and residents' urban-oriented value systems in both National Metropolitan Cities and Regional Metropolitan Cities, educational opportunities and population growth and migration in Medium Sized Cities and historical background and population growth and migration in the Small Sized Cities. Educational opportunities

emerged as a more important factor than the other items in almost all cases, but the meanings attached to each of the other factors varied from city to city. For example, residents' urban-oriented value systems were regarded as a major factor in the National Metropolitan Cities and Regional Metropolitan Cities but were regarded as being of the lesser important factor in the Medium Sized Cities and Small Sized Cities. On the contrary, the historical background of the city was evaluated as an important factor in smaller cities, i.e., the first factor in Small Sized Cities and the third one in Medium Sized Cities, but it was not regarded as a higher factor in the growth of either National Metropolitan Cities or Regional Metropolitan Cities. Generally, then, educational opportunities, population growth and migration and citizens' urban oriented value systems were regarded by the respondents as important factors in city growth while the citizens' consciousness and participation in development and access to cultural activities were considered less important than the other factors.

Table 5.3 also shows that the two most important institutional factors for each size category were the centralised government system and spatial development policies/plans in the National Metropolitan Cities, spatial development policies/plans and the central government support and subsidies in the Regional Metropolitan Cities, central government support and subsidies and industrial development policies/plans in the Medium Sized Cities, and area-specific development and the central government's support and subsidies in the Small Sized Cities. Less importance was attached by respondents to the efficient operation of urban government and area-specific development in the National Metropolitan Cities and Regional Metropolitan Cities and the centralised government system and the efficient operation of urban government in the

Medium Sized Cities and Small Sized Cities. In general, then, central government support and subsidies for development and spatial development policies/plans were regarded as crucial factors in city growth whereas the administration of urban government was regarded as the least important factor among the eight items suggested in the first round.

The growth of National Metropolitan Cities such as Seoul and Pusan was largely attributed by the respondents to the availability of human resources and favourable infrastructure in the miscellaneous category. The functional interaction with the surrounding areas and a favourable geographical location were regarded as major factors in the growth of Regional Metropolitan Cities and Medium Sized Cities. In the case of the Small Sized Cities, the development status of the surrounding areas was regarded as the most important factor. In general, a favourable geographical location and the functional interactions with the hinterland of each city were considered to be the two most important factors in this category, while innovation diffusion and resources endowment in the surrounding areas were rated as less important than the other factors.

The most important factor suggested by the responses to the second round can be selected from each category by city size as follows: employment opportunities, educational opportunities, the centralised government system and human resources in the National Metropolitan Cities, the diversity of economic activities, educational opportunities, spatial development policies/plans, and geographical location in the Regional Metropolitan Cities, basic industry, educational opportunities, central government support and subsidies, and functional interaction with surrounding areas in the Medium Sized



Cities, and historical background, area-specific development, and the status of development in surrounding areas in the Small Sized Cities. In consequence, the respondents' perceptions of urban growth factors can be rearranged by category as follows: basic industry, employment opportunities, and diverse economic activities for economic factors; educational opportunities, population growth and migration, urban oriented value systems for the social factors; central government support, spatial development policies/plans, and industrial location policies/plans for the institutional factors; and favourable geographical location, functional interaction and infrastructure for the miscellaneous category.

Table 5.4 shows the results of the experts' evaluation of each factor in terms of the degree of its relevance to urban growth. In answering this question, the respondents were required to assess the comparative importance among the items suggested by city size within each category. The aim of this question was to identify the comparative importance of major factors among different categories with particular reference to the institutional and the functional categories, which reveal non-quantitative features.

As identified in Table 5.3, national land development policies/plans, economic development policies/plans, and industrial location policies were regarded by respondents as the most important factors while citizen participation, implementation systems for development plans and development administration were seen as less important than the other factors within the institutional category. The same trends can be found when these are compared with the factors belonging to other categories. Among the 16 factors suggested in Table 5.4, the former three factors were

ranked as 2nd, 3rd, and 5th overall while the latter three were ranked as 16th, 15th and 13th, respectively.

Table 5.4 Comparative Importances of Major Urban Growth Factors

In rank-order

Category	Urban Growth Factor	Ranks in Category					Ranks in Total				
		N	R	M	S	T	N	R	M	S	T
Institutional	1. Industrial Location Policies	4	3	1	1	3	10	7	1	1	5
	2. National Land Development Policies	2	1	3	4	1	2	1	3	6	2
	3. Central Government Support and Subsidy	5	4	2	2	4	13	11	2	3	9
	4. Efficient Admin. of Urban Government	5	5	7	7	5	13	12	5	9	13
	5. Economic Development Policies	1	1	4	6	2	1	1	5	9	3
	6. Implementation System	3	7	6	5	6	9	16	13	10	15
	7. Citizen Participation	7	6	5	3	7	16	14	12	5	16
Functional	8. Surrounding Area's Development Status	6	6	6	6	6	12	13	15	15	12
	9. Functional Roles in the Country	3	3	5	5	5	7	6	14	14	11
	10. Functional Interaction with Hinterland	1	2	2	3	2	3	4	6	11	4
	11. Functional Interaction/Major Urban Placs	5	5	2	2	4	11	10	6	8	10
	12. Convenient Transport Systems	2	1	1	1	1	4	1	3	4	1
	13. Innovation Capacity	3	4	4	4	3	7	8	11	12	9
Others	14. Favourable Geographical Location	2	2	2	2	1	6	8	9	6	6
	15. Resources Endowment in Surrounding Areas	3	3	1	1	3	15	15	8	1	14
	16. Historical Background	1	1	3	3	2	5	5	10	13	7

N: NMCs, R: RMCs, M: MSCs, S: SSCs, T: Total.

Within the functional category, a convenient transport system and functional interactions with surrounding areas were regarded by the respondents as highly important factors in urban growth while development status of surrounding areas and functional specialisation in the national land were considered to be of less importance. Although the importance of convenient transport system emerged as a minor factor in the first round, in the second round, unexpectedly, it was regarded by respondents as the most important factor not only within the functional category but also among all the factors considered in Table 5.4. This finding suggests that a convenient transport system was regarded as a proxy indicator of functional interactions with other areas. On the other hand, the development status of surrounding areas and functional assignment in the national land were not ranked highly within the functional category. In contrast, a favourable geographical location and historical background were marked as 6th and 7th overall while resources endowment in the surrounding area was ranked relatively low (14th).

The relative importance of each factor can easily be grasped from the findings of the comparative review of all factors. In the National Metropolitan Cities and the Regional Metropolitan Cities, economic development plans/policies, national land development plans and policies, convenient transport systems, and functional interactions with surrounding areas were regarded as highly relevant factor for urban growth, while resources endowment in surrounding areas and citizens' participation were viewed as less important factors. In the Medium Sized Cities and Small Sized Cities, industrial location policies/plans, central government support and subsidies, and convenient transport systems were considered to be the

more positive factors than the others while administration of urban government and the development status of surrounding areas were regarded as less important for urban growth.

### 3) Third Round Responses

The third round questionnaire asked respondents to make a comparative evaluation of the ten most important factors based on the results of the second round survey (as shown in Table 5.4). Figures 5.1 to 5.4 show the distributions of ranking responses toward the ten most important factors using box and whisker diagrams. These boxplots give a useful impression of the overall levels, the amount of spread, and the symmetry of the data (Tukey, 1977, pp. 39-40; Velleman and Hoaglin, 1981, pp. 66-67; Foley and Masser, 1988, p. 21). The boxes provide an indication of the spread of the data. The whiskers that stretch out from each end of the box mark the extreme values and the range of their spread. Outliers on values so low or so high that they, stand apart from the rest of the box, are displayed as "\*". The median is marked with a "+" and the parentheses represent the 'notches' which indicate the 95% confidence intervals about the median.

The highest values for the medians were economic development plans/policies, historical background, and national land development policies/plans in the National Metropolitan Cities, transportation systems, economic development policies/plans, and national land development policies/plans in the Regional Metropolitan Cities, transportation systems and industrial location policies/plans in the Medium Sized Cities, and geographical

Figure 5.1 Responses on Major Urban Growth Factors, National Metropolitan Cities

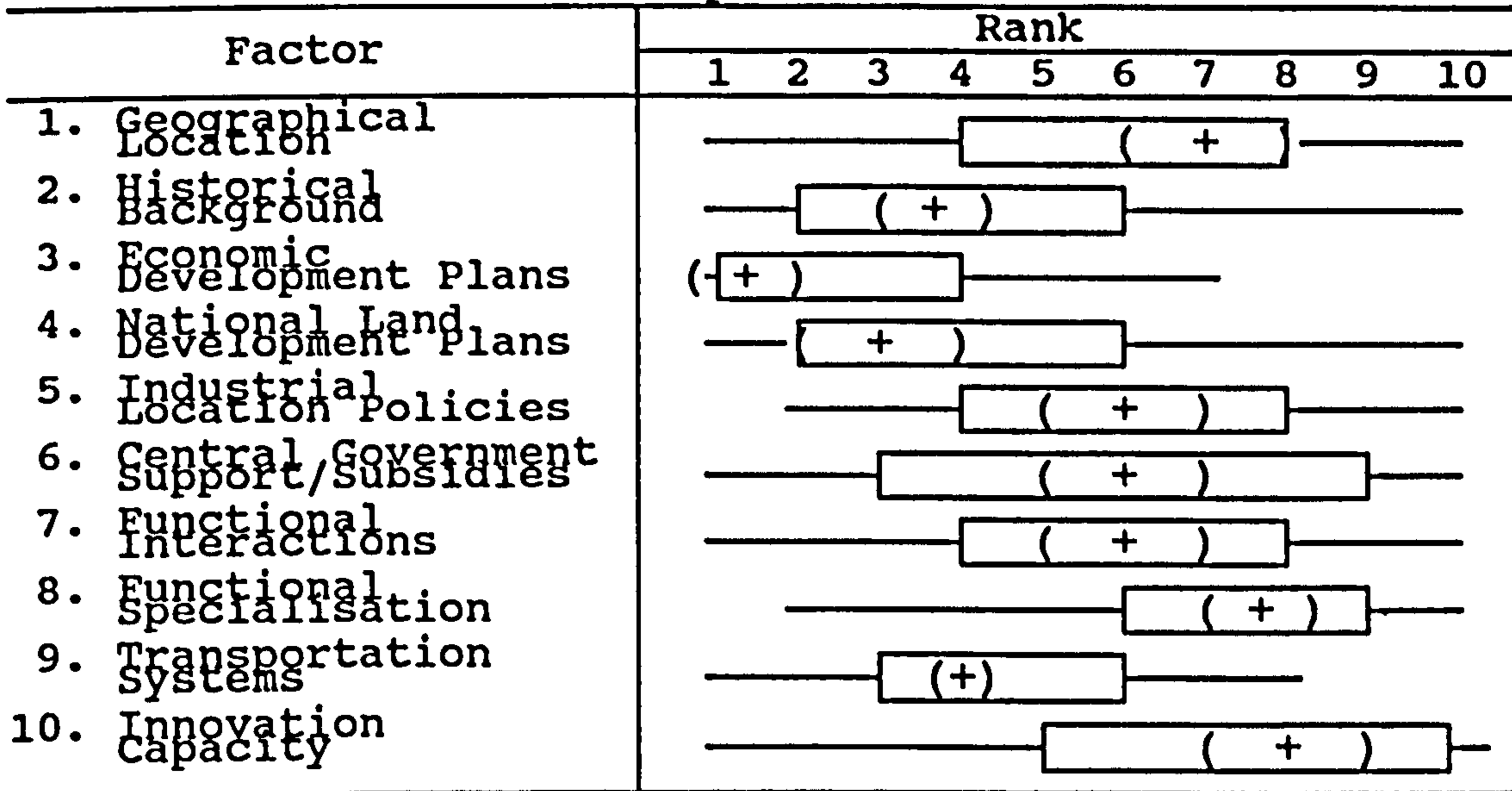


Figure 5.2 Responses on Major Urban Growth Factors, Regional Metropolitan Cities

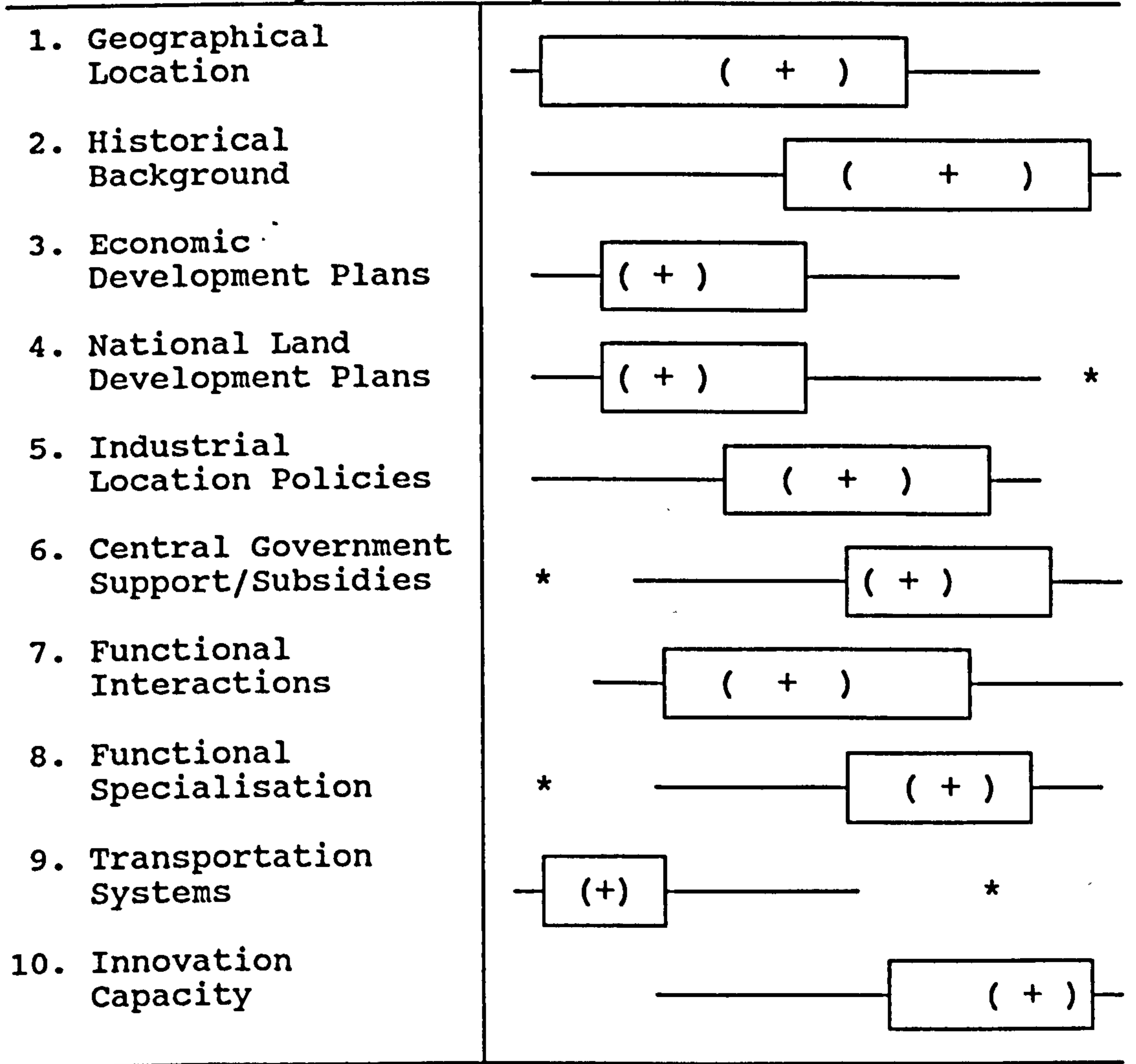


Figure 5.3 Responses on Major Urban Growth Factors, Medium Sized Cities

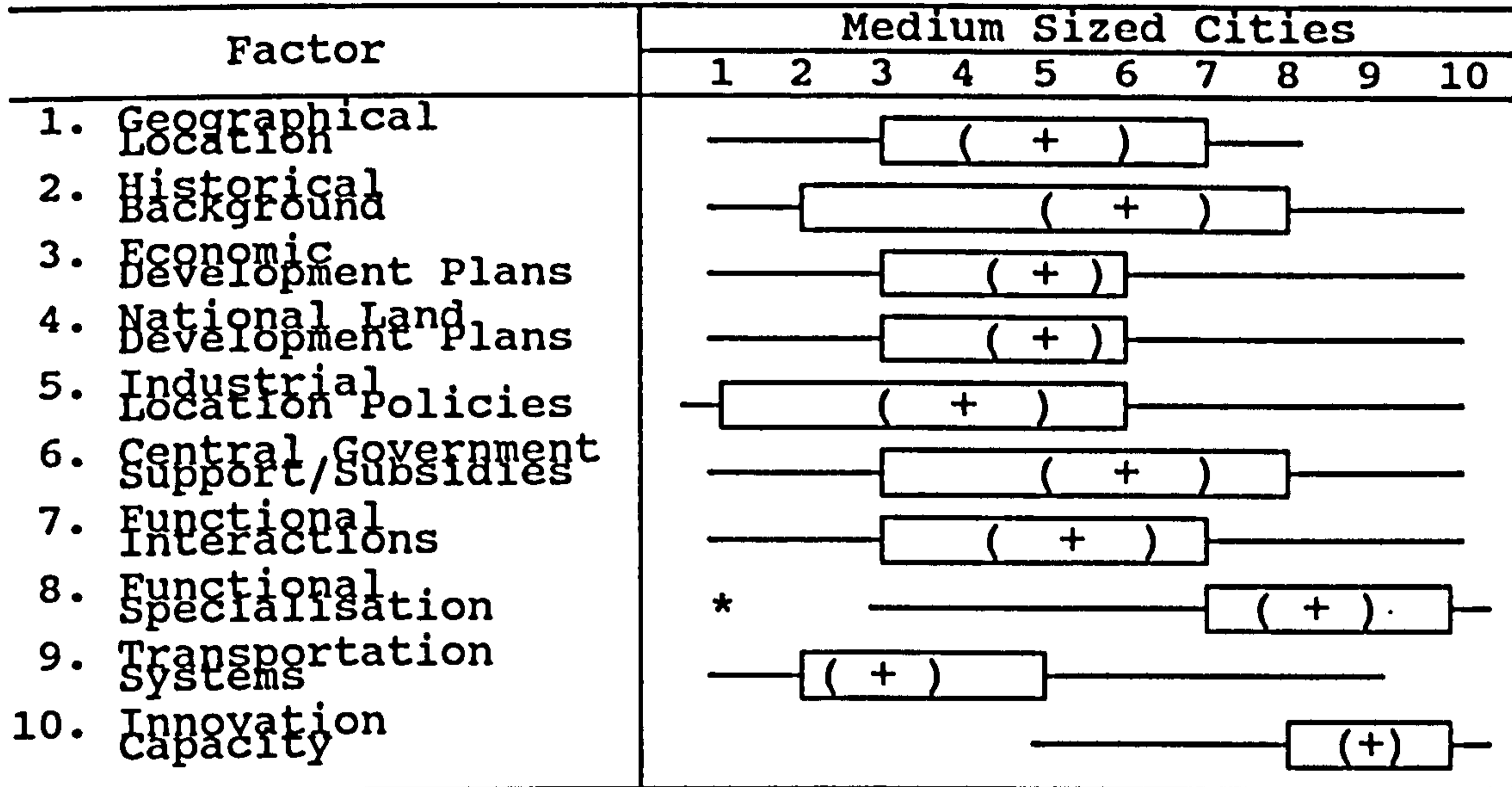
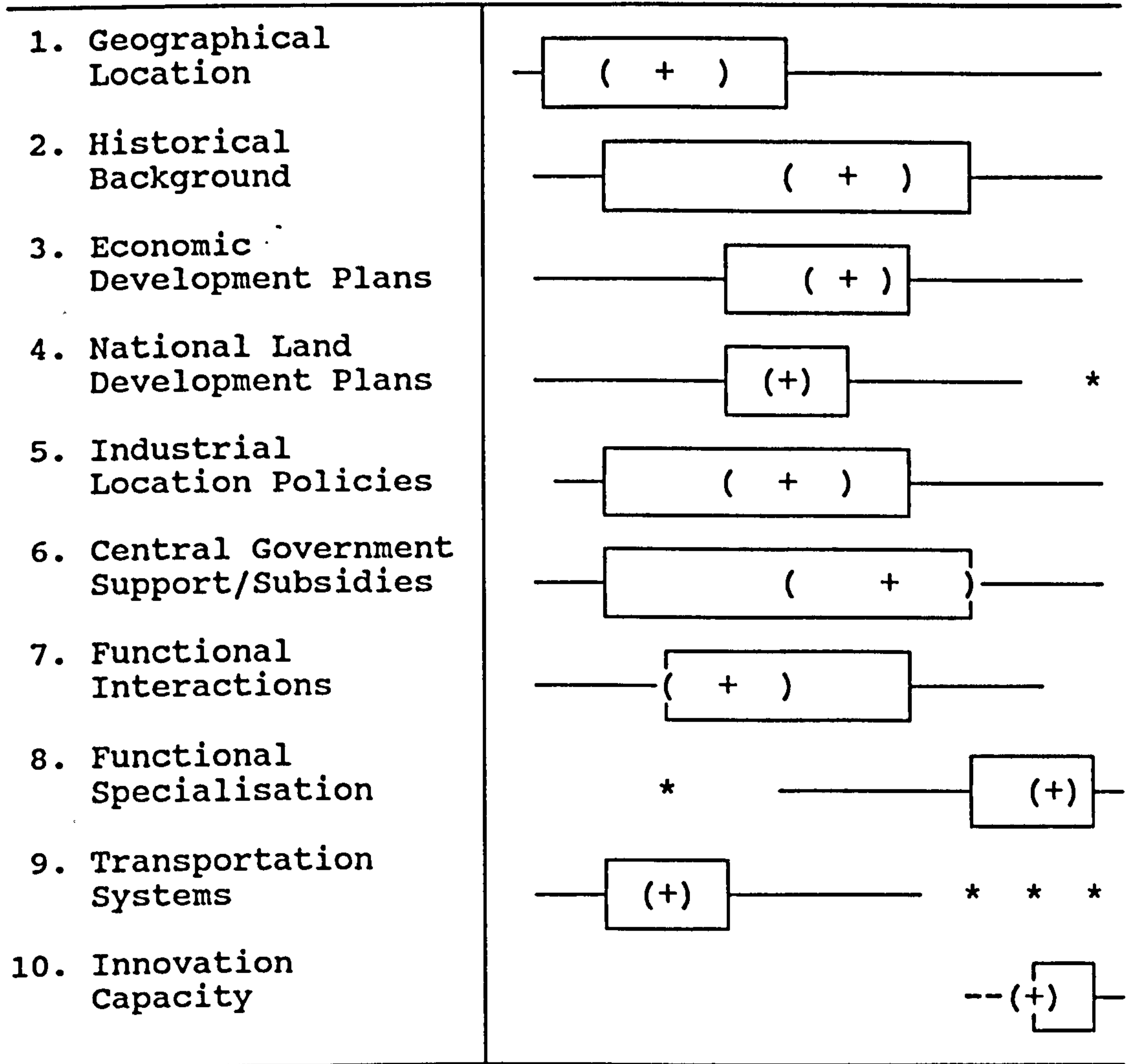


Figure 5.4 Responses on Major Urban Growth Factors, Small Sized Cities



location and transportation system in the Small Sized Cities whereas the low median values were found in functional specialisation and innovation capacity commonly to all size categories. The most concentrated responses were found for economic development policies/plans and functional specialisation in the National Metropolitan Cities, functional specialisation and transportation system in the Regional Metropolitan Cities, national land development the policies/plans and innovation capacity in the Medium Sized Cities, and transportation systems and innovation capacity in the Small Sized Cities, while the most dispersed responses were found in central government support and subsidies and innovation capacity in the National Metropolitan Cities, geographical location and functional interactions in the Regional Metropolitan Cities, historical backgrounds and industrial location policies/plans in the Medium Sized Cities, and historical backgrounds and central government support and subsidies in the Small Sized Cities, respectively. A concentrated response indicates relatively similar opinions about urban growth factors while a dispersed response points to marked differences in opinion among the respondents.

Table 5.5 summarises the overall findings and shows that there were fluctuations among factors in terms of their respective rank-order between the second and the third rounds. The upgraded factors included central government support and subsidies (from 10th to 6th places) and historical background (from 5th to 2nd places) in the National Metropolitan Cities, geographical location in the Regional Metropolitan Cities (from 8th to 4th places), Medium Sized Cities (from 7th to 3rd places), and Small Sized Cities (from 4th to 1st places). At the same time, some factors were downgraded in terms of their relative

importance. These included functional specialisation in the national land in the National Metropolitan Cities (from 7th to 10th places) and Regional Metropolitan Cities (from 6th to 8th places) and central government support and subsidies in the Medium Sized Cities (from 2nd to 7th) and Small Sized Cities (from 2nd to 8th places). These phenomena can be explained to some extent by the different methods used in the two questionnaires: the second round questionnaire required an absolute assessment of each factor while the third asked for a comparative evaluation of the suggested factors. It is also probably due to the adjustments made by respondents after screening the results of the second round which were attached to the third round questionnaire.

Generally speaking, institutional factors such as economic development policies/plans and national land development policies/plans were evaluated as more important factors than the others while functional factors such as functional specialisation and the capacity for innovation accommodation were regarded as less important items. In general, the three most important factors suggested by experts were the transportation system, economic development policies/plans, and national land development policies/plans.

Table 5.6 indicates the relative importance of each category of urban growth factors. Generally speaking, economic and institutional factors were ranked by the panel as the crucial factors for the growth of each level of city while physical/environmental and political factors were considered to be of lesser importance.



Table 5.5 Evaluation of Major Urban Growth Factors

In rank-order

Aspect	Factor	NMC	RMC	MSC	SSC	Ttal
Physical	1. Geographical location	7	4	3	1	4
Historical	2. Historical background	2	7	8	6	7
Instituti- onal	3. Economic develop. plans	1	2	4	7	2
	4. National land develop. plans	3	3	5	5	3
	5. Industrial location policies	8	6	2	4	5
	6. Central gov't support	6	9	7	8	8
Functional	7. Functional interactions	5	5	6	3	6
	8. Functional specialisation	10	8	9	9	9
	9. Transportation system	3	1	1	2	1
	10. Innovation capacity	9	10	10	10	10

Table 5.6 Ranking of Urban Growth Factors

In rank-order

Aspect	NMC	RMC	MSC	SSC	Total
1. Physical/environmental	6	6	5	1	5
2. Socio-cultural	4	3	3	2	3
3. Economic	1	1	1	5	1
4. Admin./institutional	2	2	2	4	2
5. Historical/traditional	5	4	4	2	4
6. Political	3	5	6	6	6

### 5.2.3 Urban Growth Factors in the Case Study Cities

#### 1) First Round Responses

In their responses to the question on major urban growth factors in the three case study cities, most respondents stressed the importance of central place functions for their respective surrounding areas or hinterlands. Table 5.7 shows that the percentage share of

this factor was greater than all other items in the three case study cities: 60.4 % in Kwangju, 56.4% in Taejeon and 42.7% in Taegu. Despite the overwhelming importance attached to this factor, there were important variations between the three cities in the significance attached to central place functions. In the case of Taejeon, the city's function as a transportation centre was felt to be of considerable importance whereas administrative functions were stressed in the other two cities.

Table 5.7 Suggested Urban Growth Factors in the Case Study Cities

Taegu		Kwangju		Taejeon	
Factor	%	Factor	%	Factor	%
1. Central place functions	42.7	Central place functions	60.4	Central place functions	56.4
2. Basic industry	25.0	Geographical location	4.4	Geographical location	10.6
3. Employment opportunities	7.3	Relative advantage from depressed areas	4.4	Spill-over effects from Seoul	5.3
4. Central gov't support	5.2	Industrial estates	4.4	Development plans	5.3
5. Industrial location plan	5.2	Historical background	3.3	Central gov't support	4.3
6. Others	14.6	Others	23.1	Others	18.1

The relatively low response for Taegu on this factor reflects the importance attached to the growth and development of the basic textiles industries which were its second most important factor (25.0%).

In general, the listed factors reflect the urban characteristics of each city. Among the factors suggested by respondents, the depressed area factor in Kwangju refer to the relative position of Kwangju city in terms of its hinterlands compared with those of the other two cities. In other words, some respondents suggest that urban growth in Kwangju has benefited from regional development projects implemented in its hinterland which had the lowest development status in the nation in mid 1970s. The percentage shares of 'others' in the three cities includes a wide range of minor opinions. The high figures for that category reflects the diversity of opinions about possible growth factors. Apart from the prime factor which is common to all cities, respondents highlighted basic economic activities employment opportunities in Taegu, favourable geographical location and benefits from institutional policies in Taejeon, and favourable geographical location and industrial estates in Kwangju.

On the question as to the functions needing to be strengthened to promote further growth, the respondents replied as follows; manufacturing (15.2%), cultural activities (13.0%), and high-tec. industry (10.7%) in Taegu, manufacturing (28.3%), high-tec. industry (14.1%), and the living environment (10.1%) in Kwangju and high-tec. industry (15.3%), administration (14.1%), cultural activities (10.2%), and manufacturing (10.2%) in Taejeon. It was assumed that all three cities need to reinforce manufacturing activities mainly based on high-tech. industries, but the strength of requirement varied considerably from city to city according to its industrial situation. The desire for manufacturing related functions was recognised much more in Kwangju (42.4%) by comparison with the other two cities, Taegu (26.1%) and Taejeon (25.5%). Many experts indicated that the living environment in Taegu (29.3%) should be improved compared with other

functions whereas this was a given a lower priority in Kwangju (17.2%) and Taejeon (18.4%). On the other hand, the need for administrative functions in Taejeon can be explained in relation to its desire for promotion in its administrative status from a general city to a directly controlled city, like Taegu or Kwangju.

## 2) Second Round Responses

On the question of the comparative evaluation of urban growth factors among the suggested factors, the replies varied considerably from city to city. Table 5.8 shows that the three most important factors suggested by the respondents were central place functions, geographical location, and employment opportunities in Taegu, geographical location, central place functions, and citizens' participation in Kwangju, and geographical location, functional specialisation, and central place functions in Taejeon. In general, the experts considered geographical location and central place functions to be major factors in the growth of the three case study cities. However, they felt that eight out of the ten listed factors which have played a positive role in the growth of Taegu have had a negative effects in the case of Kwangju. For example, Taegu scored well in terms of economic and institutional factors while Kwangju received negative scores for all of them. Particularly large differences can be found between the two cities in the growth of basic industry, employment opportunities, and central government support and subsidies. Taejeon occupied an intermediate position among the three cities, except in relation to items such as geographical location and functional roles in the national land. Almost all respondents assessed the geographical location of Taejeon in the national space as the most important factor in its growth.

Table 5.8 Evaluation of Urban Growth Factors in the Case Study Cities

In rank-order

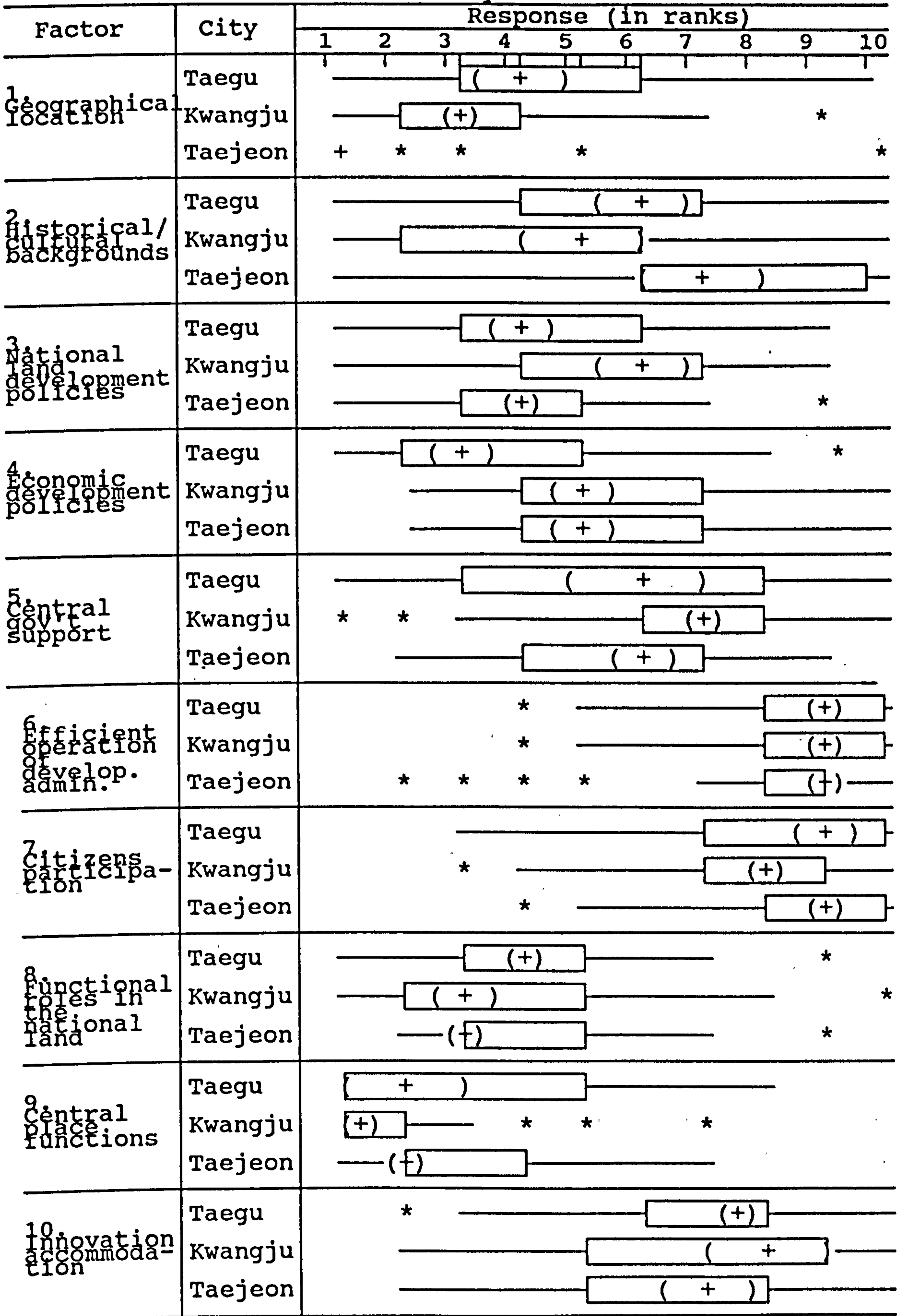
Aspect	Factor	Taegu	Kwangju	Taejeon	Total
Locational	1. Geographical location	2 (34)	1 (32)	1 (55)	1 (121)
Economic	2. Growth of basic industry	4 (32)	10 (-58)	7 (-4)	10 (-30)
	3. Employment opportunities	3 (33)	9 (-30)	6 (-3)	5 (0)
	4. Diversity in eco. activities	5 (21)	7 (-26)	8 (-5)	8 (-10)
Functional	5. Functional specialisation	6 (20)	4 (-8)	2 (22)	3 (34)
	6. Central place functions	1 (44)	2 (22)	3 (21)	2 (87)
	7. Innovation accommodation	8 (14)	5 (-10)	5 (5)	4 (9)
Institut.	8. Central gov't support	7 (17)	8 (-29)	4 (9)	6 (-3)
	9. Citizen's participation	9 (4)	3 (-2)	9 (-9)	7 (-7)
	10. Development administration	10 (0)	6 (-20)	9 (-9)	9 (-29)
Total		(219)	(-129)	(82)	(172)

1. Number in bracket means the evaluation score.
2. Calculation method : very satisfactory ; +2,  
satisfactory ; +1,  
unsatisfactory ; -1,  
very unsatisfactory. ; -2,  
Don't Know ; 0.

### 3) Third Round Responses

Based on the findings in the second round survey, ten major factors were selected for comparative evaluation. Figure 5.5 illustrates the distribution of responses to the question of ranking the ten factors. The boxplot compares the responses on urban growth factor by city. The higher medians were found for central place functions and economic development policies/plans in Taegu, central place

Figure 5.5 Responses on Major Urban Growth Factors, Three Case Study Cities



functions and geographical location in Kwangju, and geographical location and central place functions in Taejeon, whereas lower medians were generally found in the three case study cities for efficient operation of development administration and citizen participation. Although there were some similarities in the overall responses, the intensity of preferences toward particular factors varied considerably from city to city. For example, in the case of Taejeon, 34 out of the 42 respondents indicated geographical location as the most important among the ten suggested factors while only one out of this number regarded this factor as the most important factor in the growth of Taegu. The most concentrated responses were found for geographical location in Taejeon, central place functions in Kwangju, and development administration in all three cities whereas the most dispersed responses were found in respect of innovation accommodation in Kwangju, central place functions in Taegu, and historical backgrounds in both Kwangju and Taejeon.

Table 5.9 presents a comparative evaluation of the ten major factors for the three case study cities. The findings are generally similar to those shown in Table 5.8 in terms of rank-order among factors but there are some differences in items such as economic development policies/plans and historical/cultural background and/or tradition. This is probably due to the particular situations of the three case study cities concerned. Taegu, for example, has received greater benefits from economic development plans than the other two cities because of its locational proximity to the south-east coastal industrial belt while Kwangju, on the other hand, has somewhat benefited from its cultural background.

Table 5.9 Evaluation of Urban Growth Factors  
in the Case Study Cities

In rank-order					
Aspect	Factor	TG	KW	TJ	Total
Physical	1. Geographical location	3	2	1	2
Historical	2. Historical/cultural background & tradition	7	4	8	7
Institutional	3. National land develop. policies and plans	5	5	4	4
	4. Economic develop. plans	2	6	5	5
	5. Central gov't support	6	7	6	6
	6. Development Admin.	10	10	9	10
	7. Citizens' participation	9	9	10	9
Functional	8. Functional roles in the national land	4	3	3	3
	9. Central place functions	1	1	2	1
	10. Innovation accommodation	8	8	7	8

TG: Taegu, KW: Kwangju, TJ: Taejeon

In overall terms, central place functions, geographical location, and functional roles in the national land were regarded as the most important factors in the growth of the three case study cities, while development administration, citizens participation, and capacity for innovation accommodation were of relatively less importance.

#### 5.2.4 Evaluation

The major findings of the Delphi survey can be summarized as follows. First, the experts' initial opinions were adjusted considerably during the three survey rounds. Particularly large modifications took place after the second round because of the attached data and the city-size check method. Second, the experts' responses concentrated on a limited number of factors in each category. As a



result, there was a clear distinction between major and minor opinions in each case. Third, the major factors identified varied from city to city and the significance attached to each factor was also different in terms of city size. Generally, however, there were some similarities between the National Metropolitan Cities and the Regional Metropolitan Cities, and between Medium Sized Cities and Small Sized Cities than between the National Metropolitan Cities and the Small Sized Cities. Fourth, transport systems, economic development policies/plans, and national land development policies/plans were generally regarded as a major factors while innovation capacity, citizens participation, and the operation of urban government were seen as minor factors. Fifth, the major factors of the three Regional Metropolitan Cities were central place functions, spatial location in the national land, and functional roles in the national land.

### 5.3 The Attitudinal Survey

#### 5.3.1 Methodology

##### 1) Approach

An attitudinal survey was undertaken to identify the urban growth factors which were felt to be of particular importance in each of the three case study cities. The main aim of this attitude survey was obtain the opinions of citizens who occupied influential positions in various social strata in the cities. In designing the questionnaire it was recognised that a good questionnaire needs to meet the following criteria; to be clear, unambiguous, and uniformly workable (Hoinville and associates, 1977, p. 27). In other words, the questionnaire must be designed to be easily understandable to the respondents and easily administrable by the investigators. The survey

questionnaire employed a closed form of questions which can be completed within at least half an hour to encourage a high response from the respondents (Dixon and Leach, 1980, p. 12; Schman and Pressur, 1981, pp. 7-8). The questionnaires were distributed to respondents by mail. A postal survey was adopted in this study because of its easy access to respondents, its cheap cost, and the elimination of interview distortions, even though it has many limitations such as a low response rate and does not generate additional information (Oppenheim, 1973, pp. 32-34; Hoinville and associates, 1977, p. 125; Nachmias and Nachmias, 1981, pp. 180-181).

## 2) Survey Design

The aim of the survey was to identify citizens' attitudes to the factors governing urban growth in their respective cities. Candidates were selected from persons working in influential positions in various social strata during the survey period in February, 1988. The assumption was that those who work in influential positions of various social strata have a better understanding of their activity fields than most other people and can in consequence present a clearer image of their city to outsiders. Respondents were restricted as far as possible to the heads or deputy heads of the organizations involved. The name and addresses of the respondents were picked out of telephone directories published in 1987. The total number of selected persons were 182 for the three case study cities (Taegu, 59; Kwangju, 65; and Taejeon, 58). The distribution of selected persons by major activity fields was as follows; 18 from social welfare, 6 from education, 50 from economic organisation, 59 from public servants, 9 from the mass media and 40 from miscellaneous fields.

Table 5.10 Distribution of Respondents,  
the Attitudinal Survey

In Percent

Index \ City	Taegu	Kwangju	Taejeon	Total	
Age	Less than 40	66.7	34.4	62.5	53.0
	40 - 49	3.7	25.0	20.8	16.9
	More than 50	29.6	40.6	16.7	30.1
Occupation	Civil servant	44.4	37.5	41.7	41.0
	Company employee	29.6	31.3	50.0	36.1
	Others	22.2	31.3	4.2	20.5
	No reply	3.7	0.0	4.2	2.4
Education	High school & less	11.1	3.1	8.3	7.2
	Univ. and college	70.4	68.8	75.0	71.1
	Graduate school	14.8	28.1	16.7	20.5
	No reply	3.7	0.0	0.0	1.2
Income (million won/month)	Less than 0.5	40.7	34.4	37.5	37.3
	0.5 - 1.0	48.1	46.9	50.0	48.2
	More than 1.0	11.1	18.8	8.3	13.3
	No reply	0.0	0.0	4.2	1.2
Duration of Residence	Less than 5 yrs	25.9	25.0	25.0	25.3
	5 - 20	33.3	46.9	45.8	42.2
	More than 20 yrs	40.7	28.1	29.2	32.5
Total Number of Respondents		27	32	24	83

The format of the questionnaire was based on the findings of the Delphi survey to facilitate comparisons between two surveys. The questionnaire consisted of three parts, namely, an introduction, a personal column, and the questions themselves. The questions included in the questionnaire can be grouped into four categories; economic, institutional, functional aspects and others. Among them, the institutional aspect was more emphasized than the other categories because of its non-quantitative characteristics. The major items belonging to the institutional aspect were mayor's leadership, urban management, the government system, the financial basis of urban government, and citizen participation. Most questions

required a comparative evaluation of the items which raised in the Delphi survey to identify their relative importance (See: Appendix " Attitudinal Questionnaire").

The overall response rate was as follows; 45.8% in Taegu, 49.2% in Kwangju, and 41.4% in Taejeon. The main features of respondents are summarised in Table 5.10. In general, respondents had the following characteristics: their main occupations were civil servants and company employees; their educational levels were more than university or college graduates; their average monthly income was more than half million won (in current prices); and they had lived for more than five years in their cities.

### 5.3.2 Findings

#### 1) Attitudes to Urban Growth

The findings of the attitudinal survey suggest that citizens' attitudes toward their own city growth were quite different in the three regional metropolitan centres. Table 5.11 shows the responses assessing the present status of urban growth in each city. In general, respondents in Taejeon expressed relative satisfaction with their city growth whereas those in Kwangju reflected, on the contrary, much more dissatisfaction than the other two cities. In Kwangju, 59.4% out of the total number of respondents regarded their city growth as either unsatisfactory or very unsatisfactory, as against only 25.9% in Taegu and 20.8% in Taejeon, respectively. Generally, there were more unsatisfactory attitudes toward city growth than satisfactory ones. Actually, 37.4% respondents in the three case study cities regarded their respective city growth as at least unsatisfactory in terms of pace and direction as against 13.3% of the total respondents who considered growth as satisfactory. No one

regarded urban growth in their city as very satisfactory. Taken as a whole, the respondents were not satisfied with their respective city growth.

Table 5.11 Perceptions on the City Growth

City	In Percent					
	Very Sat.	Sat.	Average	Unsat.	Very unsat.	D.K.*
Taegu	-	14.8	59.3	25.9	-	-
Kwangju	-	0.0	37.5	15.6	43.8	3.1
Taejeon	-	29.2	50.0	12.5	8.3	-
Total	-	13.3	48.2	18.1	19.3	1.2

\* D. K.= Don't Know

The respondent's views on the meanings of urban growth give some useful insights into their responses. As shown in Table 5.12, most respondents in the three cities emphasized the economic aspect of urban growth. Three economic factors, namely, increase in income, diversity of economic activities, and advanced industrial structure, accounted for about 79% of the total response. In consequence, the percentage shares of the other factors were correspondingly low, i.e., 8.4% for 'population growth' and 5.4% for 'expansion in administrative area'. These findings suggest that most respondents interpreted urban growth in terms of its economic status and these results reflect the present urban environment of their respective cities. In other words, it can be argued that their views of urban growth are influenced by the economic situation of their respective cities compared with other cities and also by the influence of other rapidly growing industrial cities due to the strength of their economic bases. Under these circumstances, it is not surprising that many respondents pointed to the importance of adopting new technology and improving the locational attractiveness of their cities by

the establishment of appropriate support systems in their replies to the question on ways of strengthening the local economy.

Table 5.12 Concepts on Urban Growth

In Percent

Item \ City	Taegu	Kwangju	Taejeon	Total
Population Growth	7.4	6.3	12.5	8.4
Increase in Income	20.4	23.4	16.7	20.5
Expansion of Admin. Area	9.3	4.7	2.1	5.4
Diversity of Eco. Activities	24.1	35.9	35.4	31.9
Advanced Industrial Structure	29.6	23.4	27.1	26.5
Don't Know	9.3	6.3	6.3	7.3
Total	100.0	100.0	100.0	100.0

Admin.= Administration Eco.= Economic

## 2) Major Urban Growth Factors

The findings of the Delphi survey suggested that five factors were regarded as major urban growth factors in the three case study cities. These are: favourable geographical location, central place functions, functional roles in the national land, national land development policies/plans, and economic development policies/plans. Citizens' attitudes toward these factors varied from city to city. Respondents in Taegu regarded central place functions and national economic development policies/plans as the most important factors, while those in Kwangju suggested the same factors but with lesser intensity. However respondents in Taejeon selected national land development policies/plans and favourable geographical location as the two most important factors for their city growth (See Table 5.13). Compared with the other two cities, the different views in Taejeon originate partly from its central location in the nation and partly from its better accessibility to accommodate the decentralisation policies from the National

Metropolitan Cities, particularly from Seoul, as suggested in the national land development plans.

Table 5.13. Urban Growth Factors in the Three Case Study Cities

		In Percent			
Factor	City	Taegu	Kwangju	Taejeon	Total
1. Favourable geographical location		16.7	12.5	20.8	16.3
2. Central place functions		33.3	32.8	16.7	28.3
3. Functional role in the national land		13.0	14.1	16.7	14.5
4. National land develop. policies/plans		9.2	9.3	22.9	13.2
5. Economic development policies/plans		20.4	15.6	10.4	15.7
6. Others		.7	9.4	4.2	6.0
7. No Reply		3.7	6.3	8.3	6.0
Total		100.0	100.0	100.0	100.0

When asked to select the two most important factors from the five, 47% of the total respondents in the three case study cities selected central place function, 19.3% favourable geographical location, 15.7% functional roles in the national land, and 12.0% economic development policies and plans. These findings suggest that the respondents regarded the central place function of the three cities to their respective hinterlands as the most important single factor governing urban growth.

In their replies to the question on the factors that have contributed most to their own city growth, respondents from the three case study cities replied quite differently according to the area-specific characteristics and different background of each city. As shown in Table 5.14,

the two most important aspects of each city were historical background and administrative-institutional aspects in Taegu, economic and socio-cultural factors in Kwangju, and administrative-institutional and physical factors in Taejeon. In other words, respondents regarded the growth of Taegu and Taejeon as largely due to institutional factors. The reasons for selection of physical aspect in Taejeon reflect its locational advantage in the national land. The selection of socio-cultural aspect in Kwangju is probably due to the peculiar background of cultural activities, affection for the region, and strong togetherness among residents. Taken as a whole, respondents selected the institutional aspect as the most important factor for urban growth. This result is quite different from that of the Delphi survey. Although experts regarded economic factors as more important than institutional factors, civic leaders emphasized institutional over economic factors (See 5.9).

Table 5.14 Important Aspects for Urban Growth

		In Percent			
Aspect \ City	Taegu	Kwangju	Taejeon	Total	
1. Physical	11.1	14.1	20.8	15.1	
2. Historical	18.5	12.5	8.3	13.3	
3. Socio-cultural	14.8	18.8	6.3	13.9	
4. Economic	16.7	20.3	12.5	16.9	
5. Admin.-institutional	18.5	14.1	29.2	19.9	
6. Political	13.0	14.1	12.5	13.3	
7. No Reply	7.4	6.3	10.4	7.8	
Total	100.0	100.0	100.0	100.0	

In their answers to the question on the means of reinforcing further urban growth in their cities, most respondents in the three case study cities regarded the improvement of the institutional environment of their respective cities as a prerequisite for further growth. Out



of five suggested items, 58.0% of the respondents from the three case study cities felt the institutional environment should be given first priority, as against 16.5% for the production environment and 15.4% for the living environment.

From a list of questions relating to industrial activities, respondents of the three cities emphasised the need to improve the institutional environment of industrial activities based on regional characteristics. On the question about methods for boosting industrial activities, 29.5% of the respondents chose the accommodation of new technologies, 25.3% the improvement of the industrial location environment, and 19.9% support systems for industrial activities, whereas support systems for local residents (12.7%) and entrepreneur's management abilities (6.0%) were felt to be of less importance. On the other hand, most respondents stressed the importance of industrial development based on regional characteristics (34.3%), the need for a diversity of economic activities (28.3%), and an advanced industrial structure (18.1%) as against service-oriented industrial structure (6.0%).

### 3) Institutional Aspects of Urban Growth Factors

Table 5.15 summarises the responses of the civic leaders' views on urban administration. It shows that among the five listed qualities of the administration of urban government, a sound financial basis for urban government and planning and implementation of development plans were regarded as having a stronger influence than other items such as mayor's leadership and citizens' participation. Although financial soundness in urban government is regarded as not only the prerequisite for local autonomy (Davey, 1971, p. 45) but also an important condition for urban economic activities (World Bank, 1988, p. 158), the financial bases of the three case study cities are

relatively weak in terms of their self-supporting revenues. In 1985, the financial self-supporting rates of the three case study cities were as follows: 89% in Taegu, 58% in Kwangju, and 81% in Taejeon.

The high responses for planning and implementation of development plans can be interpreted in terms of the respondents' preferential attitudes to various development policies and plans. The lower assessment for mayor's leadership and citizen's participation can be attributed to the centralised government system in Korea. Under a centralised government system, most major spatial development efforts are naturally concentrated in central government, in isolation from local government (Cochrane, 1983, p. 1). Thus, mayor's leadership is usually regarded as a less important factor for the city growth because of his relatively weak influence under such circumstances.

Table 5.15 Relationship between Urban Administration and Urban Growth

In Percent

Item \ Respons	Very Strong	Strong Relat.	Relat.	Weak Relat.	Little Relat.	No Reply
1. Mayor Leadership	12.0	34.9	24.1	16.9	10.8	1.2
2. Citizen Participation	12.0	30.1	34.9	15.7	7.2	-
3. Financial Basis	26.5	25.3	20.5	20.5	6.0	1.2
4. Planning and Implementation	20.5	28.9	24.1	12.0	10.9	3.6
5. Urban Managemet	13.3	42.2	19.3	14.5	10.8	-

Relat.= Relationship

Although there are some variations in the responses from column to column, the percentage shares of positive responses were very similar when the responses to the very strong and the strong relationship columns are combined.

For example, the combined shares for these columns were 55.5% for the administration of urban government, 51.8% for a sound financial basis, 49.4% for the planning and implementation of development plans, 45.5% for mayor's leadership, and 42.1% for citizens participation. Most respondents acknowledged the importance of urban administration factors in urban growth and there were relatively few differences in the responses.

Table 5.16 summarises the responses to a number of questions related to the operation of urban government. One of these explored the need for area-wide administration including the core city and its adjacent counties to coordinate urban planning and development. In other words, a metropolitan approach is required to ensure efficiency, effectiveness or equity, or some combination of these in urban administration (Honey, 1976, p. 426). In Korea, cities with a population of more than fifty thousand can form area-wide administration systems or councils for urban-regional administration. The three case study cities have established councils of this kind, but their operation has only been put into effect in very limited fields. Most respondents were sceptical about the role of area-wide administration in urban growth. Only 22.9% saw them as a strong influences, while 41.0% regarded them as weak. In contrast, in their responses to the question on directly-controlled city systems, 56.7% of the citizens regarded this as a strong factor, and only 20.4% rated it 'weak or less'. In other words, most respondents saw the growth of their respective cities as being closely related to the promotion of the administrative status of the city from a general city status to a directly-controlled city.

It should also be noted that many citizens saw positive effects from the local autonomy system in terms of

city growth if this system is put into practice in the near future. In fact, 72.2% of respondents regarded the local autonomy system as a strong positive factor. In contrast, only 26.5% of the total respondents drew attention to the positive role of the present centralised government system on their city growth. On the other hand, supports and aids from the central government were felt to be an important factor in city growth owing to the present centralised government system in Korea. Until now, no city in Korea meets its expenditure from its self-revenue sources. Thus, all cities rely upon financial supports from central government in the form of grants and subsidies. (See Table 5.16).

Table 5.16 Urban Administration and Urban Growth

In Percent

Item \ Response *	1	2	3	4	5	6
1. Areawide Administration	4.8	18.1	31.3	25.3	15.7	4.8
2. Directly-Controlled City	15.7	41.0	16.9	12.0	8.4	6.0
3. Central Gov't Subsidies	20.5	27.7	20.5	12.0	15.7	3.6
4. Centralised Gov't System	7.2	19.3	30.1	21.7	16.9	4.8
5. Local Autonomy System	34.9	37.3	13.3	6.0	7.2	1.2

\* Response: 1. Very Strong Relationship  
 2. Strong Relationship  
 3. Relationship  
 4. Weak Relationship  
 5. Little Relationship  
 6. Don't Know

### 5.3.3 Evaluation

The aim of the attitudinal survey was to identify residents' felt needs on urban growth and development focused on their cities. The questionnaire was divided into three parts: attitudes to present urban growth aspects,

major urban growth factors, and institutional factors.

The major findings of the attitude survey can be summarised as follows: first, citizens' concepts of urban growth were formulated in terms of economic factors instead of population growth or the expansion of administrative area; second, most respondents of this survey regarded the central place function as the most important single factor in the growth of the three case study cities; third, many citizens of the three cities drew attention to the extent to which institutional aspects of urban growth factors have played a more critical role in urban growth than the other aspects; fourth, among the major institutional factors, a sound financial basis and a system of development administration were felt to have had a relatively stronger impact on urban growth than the other factors, such as mayor's leadership and citizen participation; lastly, almost all respondents preferred a local autonomy system to the present centralised government system for the further growth of their respective cities.

In general, respondents in the attitudinal survey laid greater stress the importance of economic and institutional factors in urban growth and development than the experts in the Delphi surveys. In economic aspect, most respondents in the attitudinal survey emphasised the role of manufacturing activities as a basic driving force for urban growth and development. Thus, they understood urban growth as the growth of manufacturing activities itself. In addition to this, they also recognised the need for accommodation of leading industries based on new technology to maintain urban growth continuously. This finding indicates that the respondents stressed the economic vitality based on advanced industrial structure as a urban growth determinant. The respondents in the attitudinal survey also highlighted the important role of institutional factors for

urban growth and development in Korea. Among institutional factors, they paid marked attention on spatial development policies and urban government's financial basis. They regarded favourable development policies, especially at national level, as vital factors for urban growth and development because major development guidelines were formulated by central government. With this, most local governments confronted with financial problems to implement spatial development plans. Thus, urban governments depend heavily upon central government support and subsidies. Therefore, the respondents stressed the sound financial basis in association with urban growth and development.

#### 5.4 Summary

The aim of the Delphi surveys was to identify the experts' opinions on urban growth factors in Korea. Through three rounds of surveys, the following characteristics emerged: first, many respondents modified their previous opinions after seeing the previous survey results; second, the major growth factors suggested by the respondents were different from city size to size; third, the relative importance of each factor changed slightly according to the combination of factors in a question. The major factors suggested by respondents were manufacture-oriented industrial structure, opportunities for education, central government support and subsidies, and a favourable geographical location. The most important factors by city size were economic development plans/policies in the National Metropolitan Cities, good transportation systems in the Regional Metropolitan Cities and the Medium Sized Cities, and geographical location in the Small Sized Cities. The most important factors for urban growth in the three case study cities central place functions and geographical location. As a whole, economic and

institutional factors were perceived to be more important by respondents than other factors.

Most respondents in the attitude survey associated urban growth with economic factors such as industrial structure, diversity in economic activities, and increase of income. In consequence, they emphasised the importance of economic factors as major urban growth factors. Apart from economic factors, respondents suggested that the most important factors for urban growth in the three case study cities were central place functions and a favourable geographical location. They also recognized the importance of institutional factors. These findings are generally similar to those from the Delphi surveys. They emphasise the institutional aspects but attach less importance to mayor's leadership, citizens participation, and urban development administration. They stress the importance of financial basis and central-local relationships. These findings reflect the effects of the centralised government system in Korea.

The major urban growth factors identified by the respondents of the two surveys can be considered in Korea of the locational, economic, and institutional factors that were identified in Chapter 2.

Location-related factors such as geographical location, spatial location in the national land, and convenient transport systems emerged from the surveys as the important factors for urban growth in Korea. Among the ten most important factors suggested in the Delphi survey, the transport system was regarded as the most important factor while a favourable geographical location was ranked in fourth place. To measure the spatial meaning of the physical and functional locational factors, the concept of accessibility will be employed to examine urban growth in

Korea in Chapter 6.

The main economic factors suggested by the respondents of the two surveys were employment opportunities, a diversity of economic activities, manufacture-oriented industrial structure, and growth of basic industries, etc. Among them, the growth of basic industries was regarded as the most important factor while employment opportunities and a diversity of economic activities were regarded as the second and third most important factors, respectively. The importance of a manufacturing oriented industrial structure was ranked in sixth place out of the ten economic factors suggested by the first round Delphi survey. These results suggest that the vitality of basic industries was regarded as a crucial prerequisite for urban growth in Korea. Under the heading of basic industries, the industrial structure of each city will also be analyzed in the next chapter to specify the characteristics of basic industries.

Institutional aspects such as industrial locational policies, spatial development policies and economic development policies were also regarded as important factors for urban growth. The institutional aspects of the spatial development environment on the Korean urban system will be further examined in Chapter 6.



## Chapter Six

# Implications of Major Urban Growth Determinants

### 6.1 Introduction

Throughout the previous four chapters, some theoretical and empirical aspects of urban growth have been explored with a view to identifying determinants of urban growth and change. In Chapter 2, existing spatial theories were reviewed and three main determinants were identified: locational factors, industrial structure, and development institutions. With these considerations in mind, urban growth characteristics in Korea were reviewed from both a macro- and a micro-perspective. A macro-approach was employed in Chapter 3 to examine overall trends in urbanisation and urban growth in Korea. A detailed analysis of the urban growth environment in the three case study cities was carried out in Chapter 4. The perceptions of these determinants held by key individuals in the planning field and leading citizens in the case study cities were explored using qualitative analysis in Chapter 5. The focus of the empirical work centred around the three determinants identified above: viz., locational factors, industrial structure, and development institutions.

This chapter reviews some of the implications of the findings from the above analysis in relation to each of the three determinants from both a spatial and a policy perspective. The relationships between the determinants and overall urban growth patterns in Korea will be examined in the discussion of spatial perspectives while the policy implication of the determinant are considered in the light of urban policy suggestions.

## 6.2 Locational Factors

### 6.2.1 Overview

#### 1) Concepts

The term "accessibility" has been used frequently in planning and transportation studies in the explanation of various spatial activities (Wachs and Kumagai, 1973, p. 438). It has been considered as a key variable in the location of facilities and functions, urban land use, and the growth of towns (Ingran, 1971, p. 101; Dalvi and Martin, 1976, p. 17). Despite its increasing use in spatial analysis, there is still no general agreement on the definition of accessibility related terms because of their ambiguous and slippery notion (Gould, 1969, p. 64; Bach, 1981, p. 955). Thus, the interpretation of these concepts varies from person to person, but, in general, they usually relate to the concept of nearness, proximity, easiness of spatial interaction, potential opportunities for interaction, and potential for contacts with various activities (Weibull, 1980, p. 54).

Basically, the term 'accessibility' is used to express the relationship between two separated places such as central place and user location, supply and demand points, and central and peripheral areas (Bach, 1981, p. 957). The separation of these two places can be expressed in terms of physical, cost, and perceptual distance, and their mutual relationships can be measured by the intensity of activities and the number of contact opportunities.

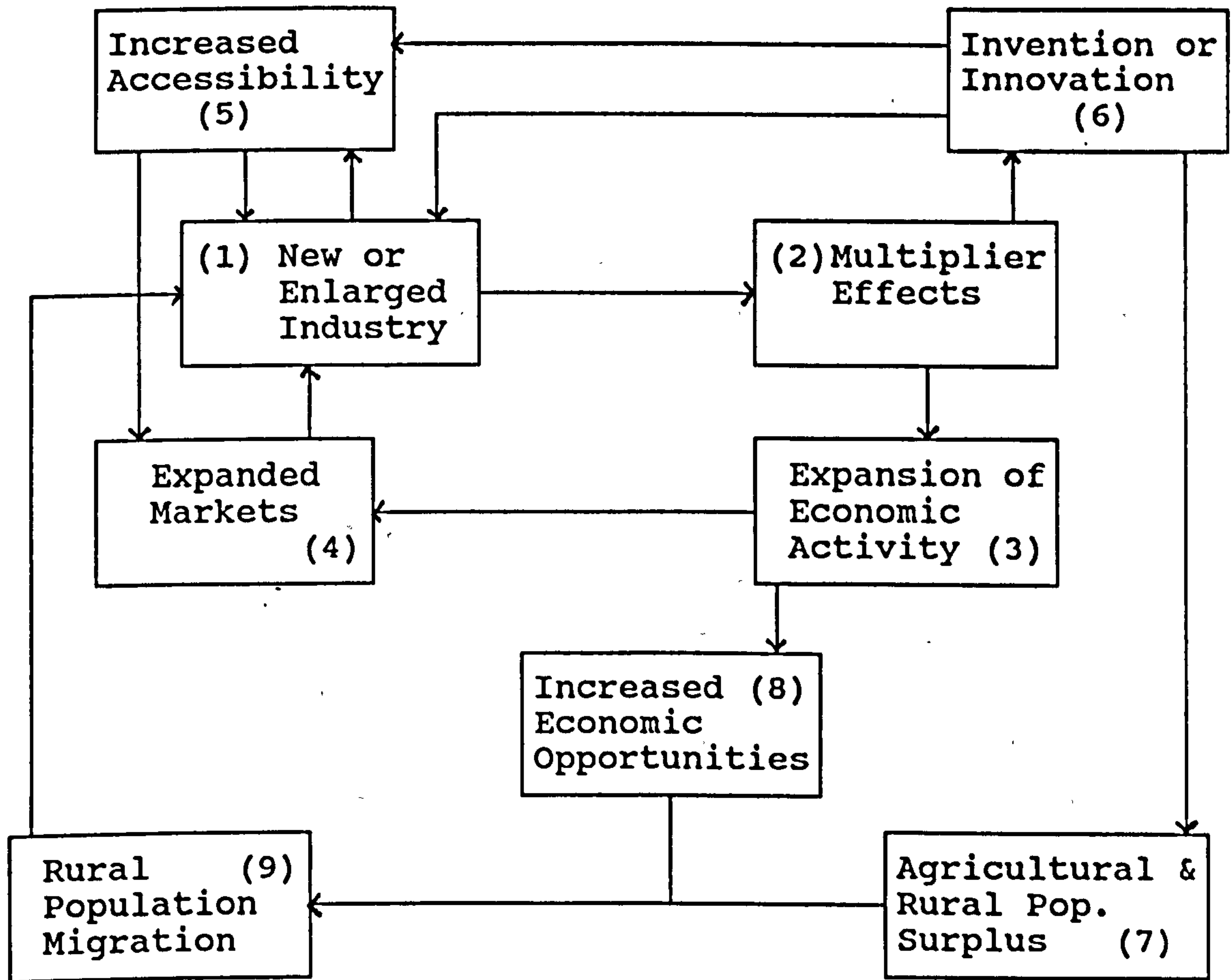
Accessibility is an important element in growth pole theory, central place theory, centre-periphery analysis, and diffusion concepts. The rationale of growth pole theory

is based on the spread effects of economic improvements initiated in the growth centre for their less developed hinterlands. Many scholars are interested in this concept because of the spillover effects from the pole or centre to its surrounding hinterlands and accessibility is a key factor in facilitating spread effects from core to hinterland. Central place theory considers urban centres, their associated market areas, and the transportation routes which link them. It also assumes functional relationships between urban centres and their respective market areas which reflect accessibility. According to the core-periphery model, core regions are territorially organised subsystems of society which have a high capacity for innovative change and peripheral regions are subsystems whose development path is determined chiefly by their accessibility to core region institutions (Friedmann, 1973, p. 63). Diffusion models also assume that accessibility is an important factor in ensuring the spread of innovations from core to hinterlands through the urban system. In general, then, it can be argued that the relationships between a centre, core or pole and the periphery, hinterland, or surrounding area are determined by the degree of accessibility between them. In relation to urban growth, it can be argued that cities which have a high level of accessibility to their hinterland will enjoy a higher growth potential than cities which are less accessible. Notwithstanding the alternative views expressed by von Boverter (1970, p. 917), a high level of accessibility can be regarded as a principal reason for city maintenance and growth (Friedmann, 1968, pp. 235-236).

The simple model shown in Fig. 6.1 highlights some of the important factors in urban growth: manufacturing activities, accessibility, innovation, and trade. The increasing growth of local industry and the expansion of the local economic base (step 1), along with technological

improvements in communication and transportation (step 6), increases the accessibility of the urban place to the other settlements (step 5), again expanding the potential markets for locally produced goods (step 4) (Smith and Weller, 1977, p. 107).

Fig. 6.1 Accessibility and Urban Growth



1. Number in brackets indicates Sequence (step) of Relationship.

Source: Smith and Weller, (1977), p. 105.

## 2) Measurement

The measurement of accessibility involves a number of related questions (Robinson, 1976, pp. 65-66): first, which are the locations whose accessibility is important; second, in what units is the accessibility to be measured; third,

what transport mode is being considered; fourth, what is being moved; fifth, how is the capacity of the networks and modes of transport involved to be included in the assessment; sixth, can the results from different measures and modes be sensibly combined to give a general index of accessibility.

Accessibility has at least two sides; social and physical concepts (Moseley, et al., 1977, pp. 89-90). The former relates to institutionalised social limitations to access while the latter focuses on physical friction between two separate places. In general, the latter concepts are frequently used in relation to urban growth and change. This study is also concerned only with physical accessibility.

To quantify accessibility, four different measures have been developed; distance, topology, gravity, and cumulative-opportunity (Pirie, 1979, pp. 300-303). In respect of distance, Ingran (1971, pp. 101-102) introduced two subsidiary notions, relative and integral accessibility, to measure the physical separation of two places. The former is the accessibility between a pair of places, the latter is the accessibility of one place to other relevant places. Topological nearness is derived by reference to the number of links between places rather than the distance. Gravity measures are probably the most widely used in practice. A good example is Hansen's (1959) measure which couples internode distances on a network with a measure of the opportunity at, or attractiveness of, each node of interest. The cumulative opportunity techniques calculate the accessibility of various opportunities according to the number which can be reached from the origin of interest within specified distance or time (Stone, 1973, p. 230).

A gravity measure will be employed in this study using the following formula (Abler, et al., 1971, pp. 216-217; Davidson, 1977, pp. 1401-1403;; Fotheringham, 1978, p. 197; Koenig, 1980, pp. 147-148; Bruton, 1985, p. 194; Hansen, 1986, pp. 5-6):

$$A_i = \sum M_j d_{ij}^{-b}$$

where,

$A_i$  is the accessibility of the urban place  $i$ ;

$M_j$  is the number of activities or opportunities at urban place  $j$  in the form of number of jobs, population, or employment;

$d_{ij}$  is some measure of the distance between  $i$  and  $j$  such as travel time or simple distance;

$b$  is an exponent describing the effects of separation.

Selecting appropriate mass and distance variables is not an easy task and the choice of the mass variable is particularly difficult partly because of the great range and variety of measures to choose from, and partly because the concept of agglomeration effects is much more elusive than that of distance (Richardson, 1974, pp. 331-332). In practice, the measure of mass that is used depends upon the problems to be studied, the available data, and related considerations (Isard, 1966, p. 505). The distance decay parameter ( $b$ ) reflects the relationships between observed interaction patterns and distance when all other determinants of interactions are held constant. A high negative value of parameter indicates that distance is perceived to be a strong deterrent to interaction, whereas a low negative value suggests that distance is a weak deterrent to interaction (Fotheringham, 1981, p. 425). To determine an appropriate exponent, Fotheringham (1978, pp. 197-198) suggests a range of eight values; from 0.3 to 3.5. Among them, the meaningful range is 1.0 to 2.0 and the

highest reliability has been discovered in the value of 1.0 (Keeble, Owens, and Thompson, 1982, p. 423). Thus, the employed value of parameter 'b' that is used in this study is 1.0.

It should be noted that there are a number of drawbacks to the use of gravity models in general. These fall into two broad categories (Isard, 1966, pp. 504-533; Jensen-Butler, 1972, pp. 70-77): theoretical and operational problems. The models lack a theoretical base for the aggregate analysis of population behaviour, they assume equilibrium conditions. In operational terms, the problems arise in connection with the measurement of the two variables, mass and distance: what variables should be chosen, how to measure them and with what kind of data. In practice, the measurement of mass and distance depends on the problems being analysed, the available data, and related considerations. Despite these problems, gravity models have been widely used for the analysis of interaction between the separate places.

In this study, five variables will be employed to measure the accessibility of urban places. These are population, total employment, employment in the manufacturing sector, the number of physicians, and the number of vehicles. The best well-known composite accessibility measure is the index of population potential based on the gravity model (Moseley, 1979, pp. 59-63). Employment potentials for both total and manufacturing employment will be calculated to measure the importance of economic activities of each urban place. In the same vein, the number of motor vehicles will also be used and welfare aspects of urban places will be measured by the number of physicians. The distances used in the model are measured in terms of physical distance by motorway and secondary roads

are also considered for the cities which have no direct connections with the motorway system in Korea.

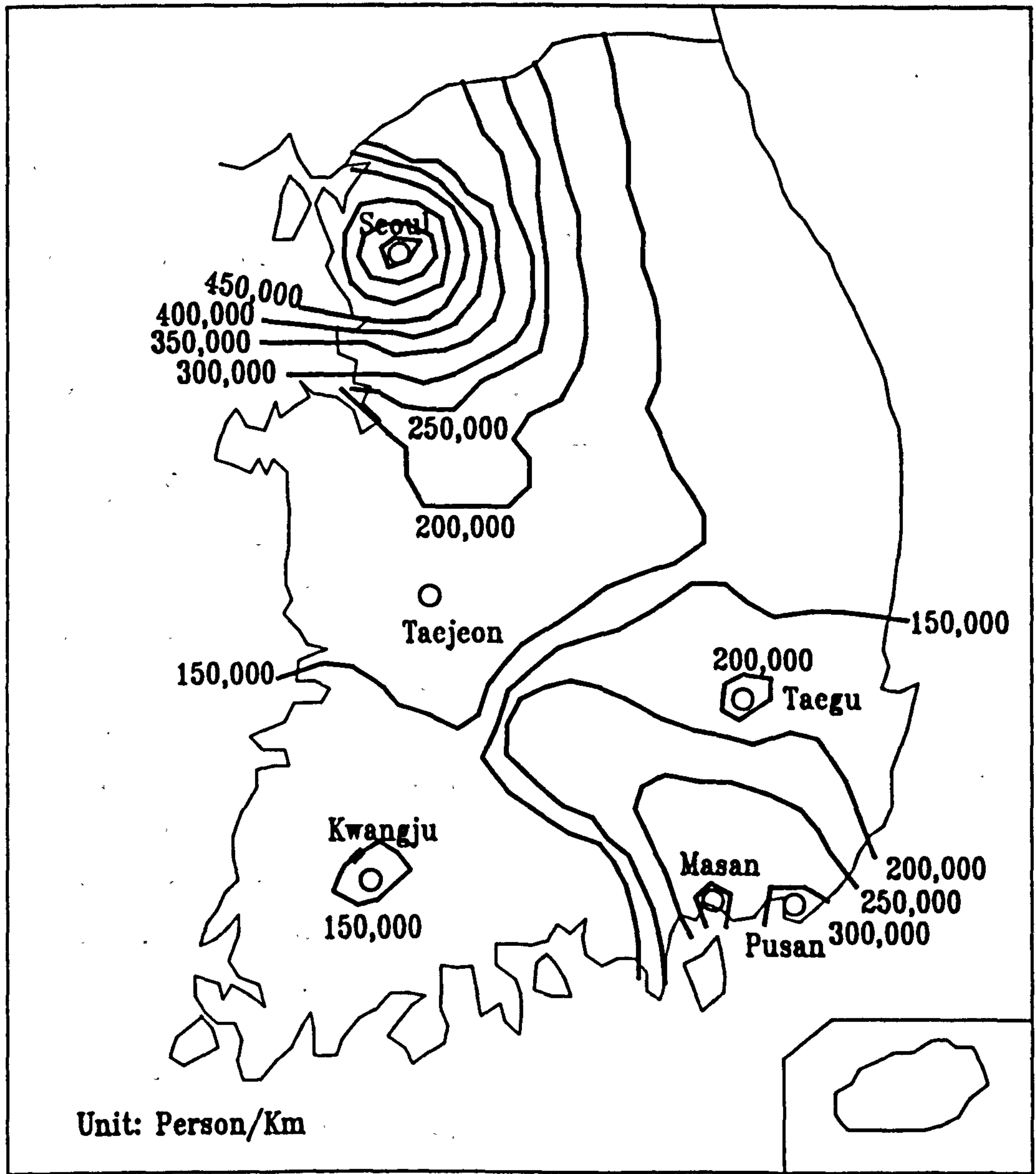
### 6.2.2 Accessibility in Korea

Map 6.1 depicts the population potential surface in 1985. As might be expected, the peak of population potential was located in Seoul. As a result of Seoul's influence, most of the cities around Seoul had higher population potentials than that of Pusan, the second largest city in Korea. For example, Tongducheon, which is located 40 Km away from Seoul with about 69,000 residents, (45th rank of the 50 cities in 1985) had a potential recorded of 339,000 person/km, as against Pusan's score of 295,000 person/km. Seoul's influence extended over almost all central parts of Korea including Incheon, Gyeonggi, Chungbuk, Chungnam (including Taejeon), and Kangwon provinces. A second peak was found in the Yeongnam region centred around Pusan and Masan-Changwon. This included Pusan, Taegu, Gyeongbuk, and Gyeongnam provinces. An interesting fact regarding this zone is that the highest point of this area was found in Masan with the value of about 329,000 person/km rather than Pusan itself which had a potential of about 295,000 person/km in 1985. This is due to the close proximity of three large cities, Masan, Changwon, and Chinhae which form a conurbation. A small peak was also found around Taegu under Pusan's influence. An independent small peak was found around Kwangju.

Table 6.1 shows the correlation between the distance from major cities to all other cities and their respective population potentials. Seoul or Taejeon recorded negative values for their correlation coefficients while the other three cities had positive values. This result indicates that the value of individual city's population potential, in general, decreases as the distance increases from Seoul



Map 6-1 Population Potential, 1985



or Taejeon. In general, the relationship between distance and population potential has increased slightly over time, reflecting Korea's overall agglomeration tendencies, and the growing influence of the greater Seoul region.

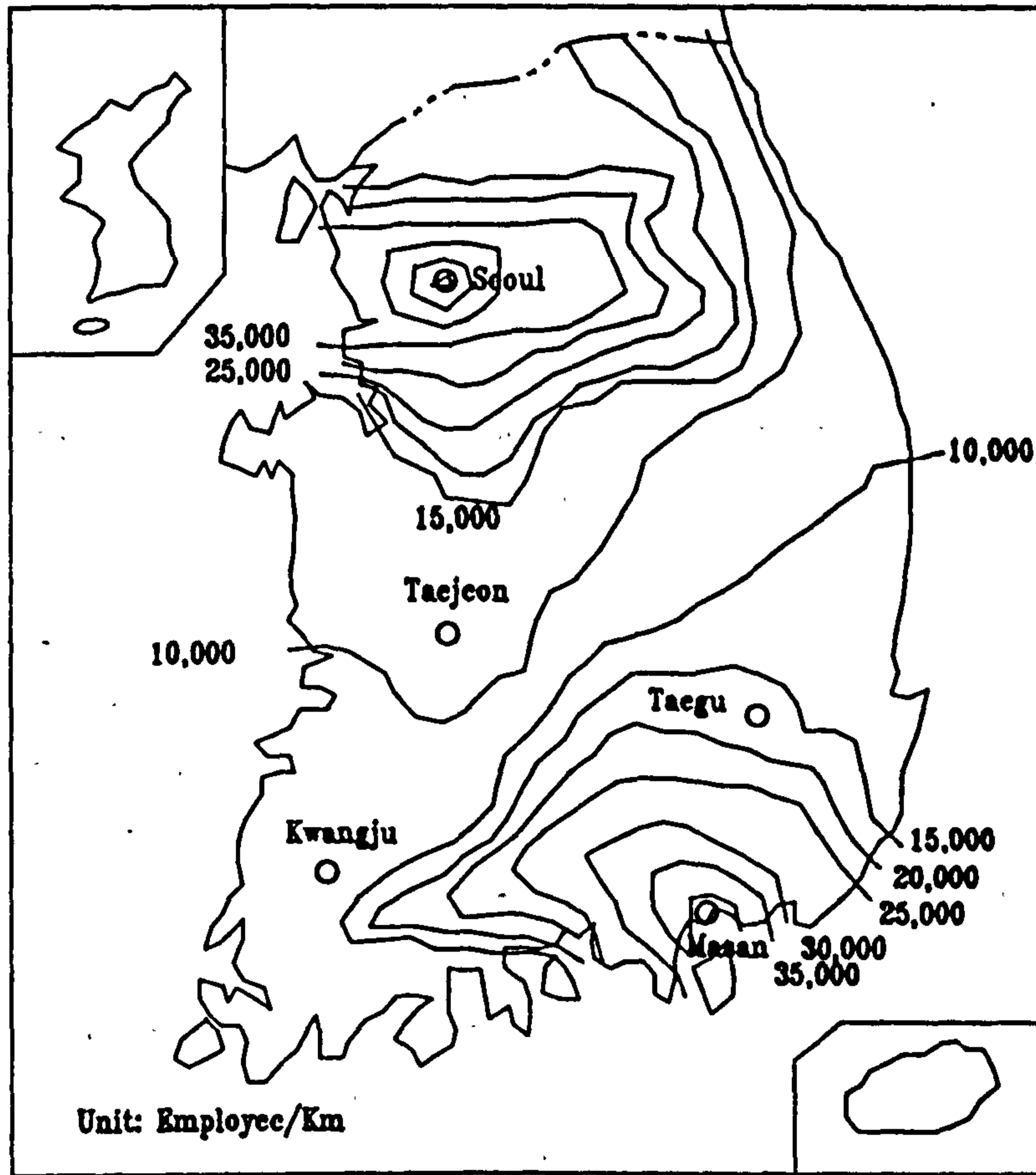
Table 6.1 Correlations between Distances and Population Potential

City \ Year	In Correlation Coefficient		
	1964	1975	1985
Seoul	-.5996**	-.6135**	-.6235**
Pusan	.4341*	.4511**	.4573**
Taegu	.3470*	.3639*	.3657*
Kwangju	.2142	.2349	.2387
Taejeon	-.1217	-.1125	-.1175

Significance level: \* - .01 \*\* - .001

Map 6.2 shows the potential surface of manufacture employment in 1985. Like the population potential, there are two peaks. The highest peak is based on the Seoul region and the second peak is based on Masan, not Pusan. The peak of manufacturing potential in Yeongnam region was based on Pusan in 1964 but had moved to Masan by 1985. This reflects the growth of Masan and neighbouring cities such as Changwon and Chinhae and their increasing functional importance in the south-east coastal industrial belt. Compared to the findings for population potential, the two manufacturing potential peaks have even more extensive hinterlands. Seoul's influence spreads to almost all areas of Kangwon province while that of Masan/Pusan was incorporated into many parts of Kwangju and Chonnam province. This finding indicates that manufacturing activities are mainly concentrated in those two areas, Seoul and Pusan/Masan. Thus, the country can be divided into two manufacturing potential areas; Seoul and Pusan. The former includes all areas of Seoul, Incheon, Kyeonggi, Chungbuk, Chungnam, Kangwon, and some parts of Cheonbuk

Map 6-2. Employment Potential, 1985  
(Manufacturing Sector)



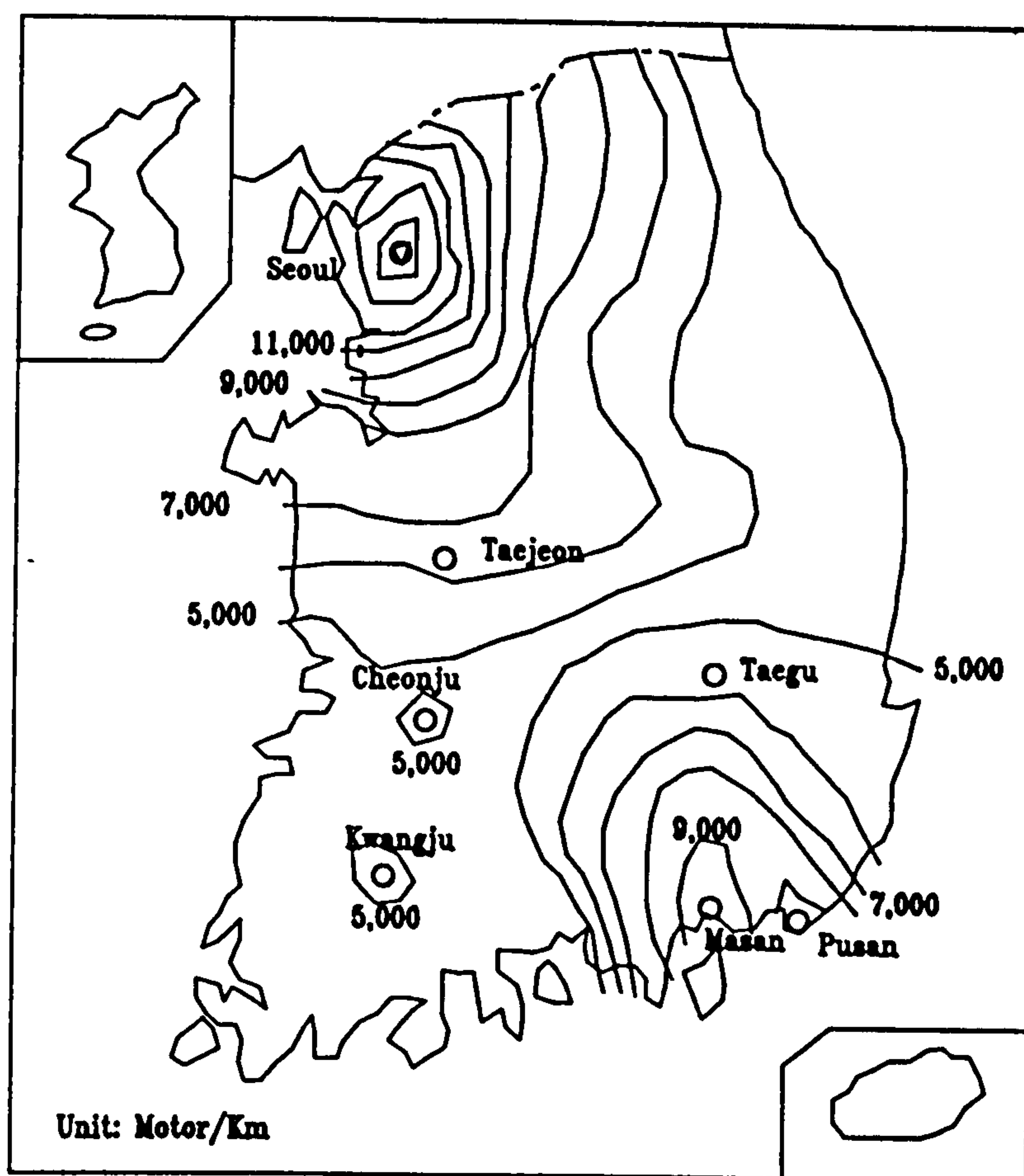
province while the latter contains all parts of Pusan, Taegu, Kyeongbuk, Kyeongnam, and a major part of Cheonnam province. This spatial dichotomy reflects the extent to which urban manufacturing activities have been heavily influenced by the economic development of Seoul and Pusan.

Map 6.3 and 6.4 show the potential surfaces based on the numbers of motor vehicles and physicians. These maps reveal very similar shapes to those of the population and the employment potentials. Taken as a whole, the four potential surfaces suggest that the nation can be broadly divided into two influence areas based on Seoul and Pusan/Masan area.

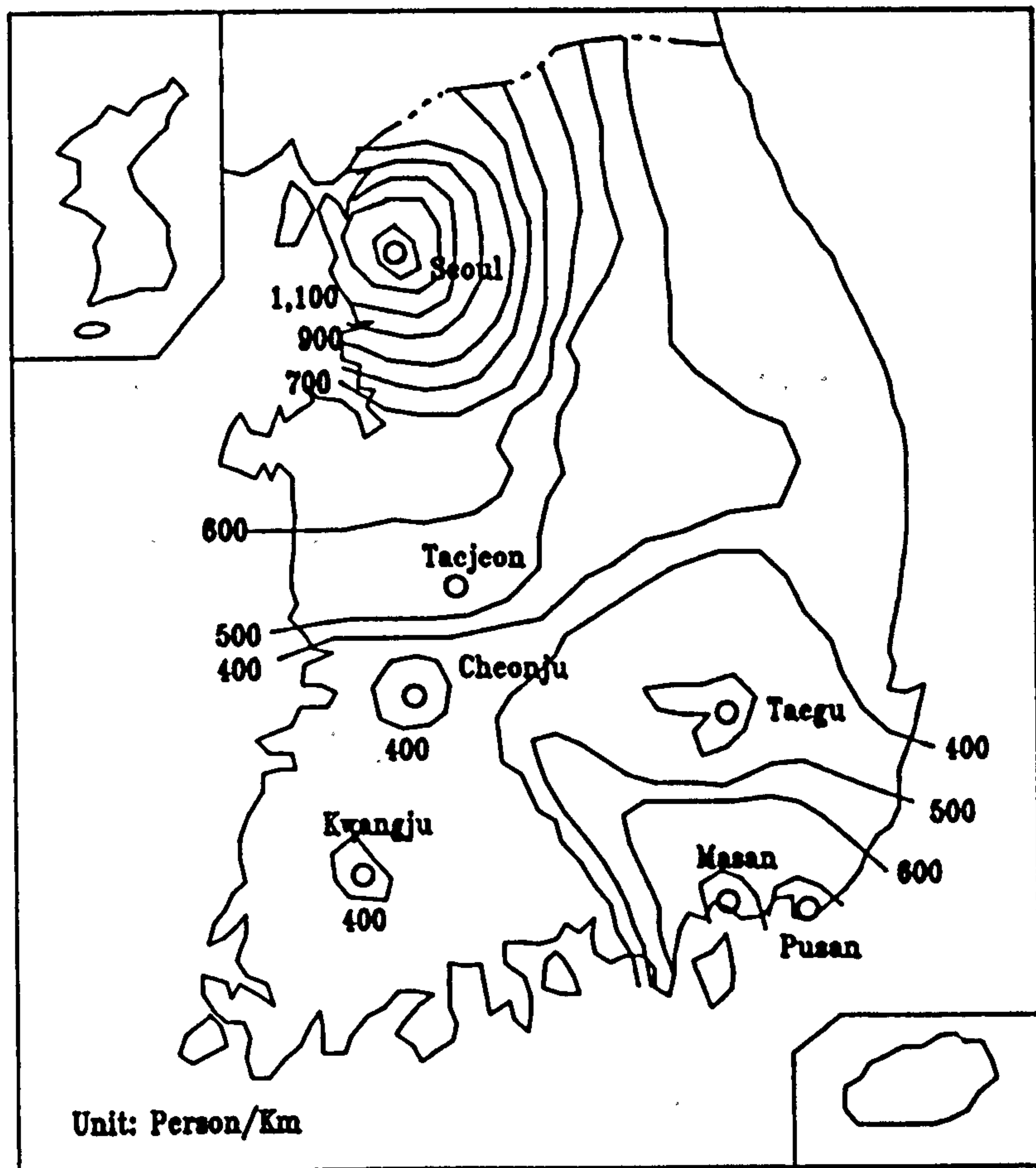
### 6.2.3 The Relationship between Accessibility and Urban Growth

Table 6.2 shows the annual rates of increase of selected urban growth indices by three types of areas from 1964 to 1985. The fifty major cities were divided into three groups for the analysis: cities in the Seoul region, the Pusan region, and other areas. Cities under the direct influence of Seoul include cities in Kyeonggi province including Incheon, while those under Pusan includes cities in Kyeongbuk and Kyeongnam province including Taegu. The table shows that, in general, the annual rates of increase for those indicators in Seoul's sphere of influence was markedly higher than those for the other two areas except in the case of manufacturing where the Pusan area recorded the highest rate. Cities outside Seoul's or Pusan's sphere of influence revealed the lowest rates. This finding highlights the importance of Seoul's and/or Pusan's influence on their respective hinterlands. In other words, a city which has a higher degree of accessibility to Seoul and/or Pusan than other cities can expect to enjoy higher

Map 6.3 Potentials based on No. of Motor Vehicles, '85



Map 6.4 Potentials based on No. of Physicians, 1985



annual rates of increase in terms of these indicators of urban growth.

Table 6.2 Annual Increase Rates of Selected Urban Growth Indices (1964-1985)

In Percent

\Index Area\	Pop. Growth	Pop. Potential	Total Employee	Employee in Mftg.	No. of Physicians	No. of Motor Vehicles
Seoul	5.81	5.38	8.40	9.70	8.86	16.53
Pusan	3.80	4.73	6.69	9.75	8.37	15.99
Others	2.87	4.63	6.29	9.21	7.85	15.87
Nation	3.75	4.82	6.85	9.50	8.25	16.05

Table 6.3 Correlation Matrix for Selected Indicators ( 1964 - 1985 )

In Coefficient

\	1	2	3	4	5	6
1.No. of Population	-	.6057**	.4136**	.3140	.4201*	.4915**
2.Pop. Potential		-	.8607**	.5846**	.7015**	.8768**
3.Total Employment			-	.4730**	.7936**	.8207**
4.Employee in Mftg.				-	.4904**	.3418
5.No. of Physicians					-	.7088**
6.No./ Motor Vehicles						-

Significance level: \* - .01 \*\* - .001

Table 6.3 shows the relationship between key indicators based on the changes that have taken place in fifty cities between 1964 and 1985. There is a strong relationship between population potential and all the other indicators. Manufacturing, on the other hand, has relatively weak relationships with the other indicators. In general, urban population growth has a weak relationship with other indicators.

There is also an intensive relationship between the distance from Seoul and/or Pusan and the changes in potentials over time. As shown in Table 6.4, all indicators show a negative relationship with the distance from Seoul and a positive relationship with that from Pusan. These results suggest that the growth potential of urban places decreases as the distance from Seoul increases. The opposite findings for Pusan indicate its relative weakness by comparison with Seoul. Among the indicators, the lower values for manufacturing indicate the strange position occupied by Pusan.

Table 6.4 Correlation between Distances and Potentials, 1964-1985

Potential \ Distance from	In correlation coefficient	
	Seoul	Pusan
Population	-.7544**	.5206**
Total employment	-.7376**	.4997**
Manufacturing employee	-.0443	.0219
Physician	-.3740	.2969
Motor Vehicle	-.6886**	.5112**

Significance level: \*\* - .001



The findings of this analysis show the extent to which Seoul, the primate city of Korea, has extended an influence not only its nearby urban places but also on urban growth throughout Korea since 1964. In summary then, Seoul has successfully functioned as the national metropolitan centre in Korea in the way described by Berry (1977, p. 288):

It is the nation's metropolitan centres that stand at the centre of each region and at the top of each regional hierarchy-centres of activities and the innovation, focal points of the transportation and communications networks, location of superior accessibility, at which firms can most easily reap economies of scale, and at which industrial complexes can obtain the economies of localisation, and urbanisation, encouraging labour specialisation, areal specialisation in productive activities, and efficiency in the provision of services.

As the national metropolitan centre, Seoul is regarded as the focus for development opportunities and the key site with potential for human development. Because of its well-equipped infrastructure, Seoul has been not only the principal beneficiary but also the main creator of rapid economic growth during the last two and a half decades (Masser, 1981, p. 12; Meier, 1970, pp. 383-384). Consequently, the degree of accessibility to Seoul must be regarded as a major determinant of a city's growth in Korea.

## 6.3 Industrial Structure

### 6.3.1 Overview

While urban growth is not always synonymous with economic growth, cities with rapidly growing populations usually experience a rapid growth of economic activity. If the spatial distribution of these growth rates is changing, a major determinant of these changes is the growth of the manufacturing sector (Richardson and Townroe, 1986, p.658).

Thus, most regional development policies in Less Developed Countries focus on the instruments which will influence the location of manufacturing activities.

The manufacturing industry transform raw materials into goods which satisfy needs and wants (Peet, 1987, p. 9). They deserve particular attention because of their high income elasticity, high tradeability, the way in which they utilise labour and capital, the potential gains from specialisation and economies of scale, and their technology dependent character (Chenery, Robinson and Syrquin, 1986, p. 351). Manufacturing has been considered by many to be the most important of the basic activities of regions to the extent that regional growth and development depend upon such basic activities (Latham, III, 1976, p. 3). Because of this, it is argued that the manufacturing-oriented basic sector has played a key role in causing the growth and decline of urban economies even though there is some evidence that the growth of services is of increasing importance in the metropolitan economies in some More Developed Countries. Even though the role of manufacturing activities in metropolitan economies in More Developed Countries has decreased, they still maintain their strong position in the urban economies of Less Developed Countries.

Manufacturing has been considered a major determinant of spatial growth and development in the major spatial growth related theories. In export base theory, manufacturing activities are regarded as the basic activities for urban growth and development. This theory argues that the basis of urban growth is dependent on the vitality of basic manufacturing activities which bring in income to the urban economy. Export base theory suggests that a given number of workers employed in the manufacturing led export sector will support a given number

of local service workers (Thompson, 1965, p. 29). The importance of manufacturing activities is also emphasized in the growth pole theory which argues that the forces underlying growth poles come from industrial complexes containing propulsive or leading industries based on manufacturing activities, especially heavy industries. Because of their strong forward and backward linkage effects, manufacturing activities stimulate polarisation and trickling-down effects simultaneously. Industrial interdependence around a leading industry leads to the creation of an industrial complex which is an ensemble of technologically and economically interconnected industrial units usually located in a given territory. The core of such complexes is often based on heavy industry (Hermansen, 1972, p. 26). In general, the multiplier effects associated with manufacturing complexes are higher than those generated by spatial groupings of service activities (Czamanski and Czamanski, 1977, pp. 109-111). The centre-periphery model assumes that industrial activities in core regions are mostly based on manufacturing whereas those of peripheral areas are based on primary production. Thus regional disparities between two areas are inevitable because of their industrial structures. Consequently, policy measures which accelerate the decentralisation of manufacturing activities from the core to the periphery are required to reduce these disparities (Hall, 1987, p. 104).

Although it has generally been accepted that the concentration and growth of manufacturing activities has been the prime mover of modern urban dynamics since the industrial revolution (Gottmann, 1974, p. 254), relatively little attention has been given to the spatial implications of manufacturing activities even in developed countries. Table 6.5 considers some of the spatial implications of manufacturing activities in relation to the development of the manufacturing process cycle. The linkages and

Table 6.5 Spatial Implications of Manufacturing Process Cycles

Mftg. Process	Manufacturing Characteristics	Spatial Aspects	
		Spatial Preference	Development Impacts
Phase A	E: Non-existent C: High K: Non-existent	Location close to major research centres/instit.	Insignificant
Phase B	E: Rapid growth C: " increase K: " expansion	Major location serving regional/national markets	Rapid growth of complementary industries
Phase C	E: Growing C: Increasing K: Moderate expansion	Decentralisation starts/location in or close to large cities	Backward and forward linkages strengthened
Phase D	E: Stagnant C: Increasing K: Increasing Automation	Decentralisation branch plants	Significant linkages and multiplier effects
Phase E	E: Stagnant/decl C: Relat. high K: Further automation	Branch plants in relation to low wage regions	Linkages and multiplier effects reduced
Phase F	E: Declining C: Relat. high K: Capacity reduction	Plants closings / liquidation	Linkages and multiplier effects rapidly declining

E: Overall Employment      C: Costs      K: Capital Equipment

Source: Suarez-Villa, (1984), pp. 94-95.

multiplier effects which induce spatial growth are expected to occur particularly during the phases B and C but the effects start to decrease after phase E. In short, positive spatial effects with respect to manufacturing activities

can be expected in the middle stages of the manufacturing process whereas negative effects can be anticipated in the later stages of the cycle. Most manufacturing activities in the large cities in developed countries are situated in phases E and F of the manufacturing process. Consequently, they have slowly moved out towards the periphery of these cities and even beyond to small towns. In consequence, some large cities have lost employment in the manufacturing sector in absolute terms or have experienced relatively slow growth compared with other sectors. In contrast, manufacturing activities in medium and small sized cities in both developed and developing countries have maintained their importance for urban growth and development.

With respect to industrial structure, there is growing interest in investigating the relationship between the diversification of industrial structure and the stability of local economic activities (Richardson, 1969, p. 148; Kort, 1981, p. 596; Brewer, 1985, p. 463). It is argued that the stability of economic activities depends upon the degree of industrial diversification within an urban or regional economy and Thompson (1965, p. 148) raised the possibility that the diversity of industrial structure and the cyclical stability of urban economies will vary in accordance with city size,

The tentative hypothesis is that large urban economies tend to have a diversified industrial structures and, therefore, tend to replicate the national degree of cyclical instability; the smaller urban economies exhibit a much greater range of cyclical instability, as some tend to specialise in the more unstable and some in the more stable industries.

Thompson implies that there is a positive relationship between city size and its industrial diversity. The index of specialisation for a large city might be expected to be lower than for smaller urban places and vice versa (Parr, 1965, p. 23). With this in mind, the industrial diversity

of urban places in Korea will be examined in relation to urban growth in the next section.

### 6.3.2 Spatial Elements of Industrial Structure

#### 1) Overall Structure

In 1985, the average number of employees per ten thousand persons in the fifty cities was about 1,046 persons of which 49.2% or 515 persons were employed in the manufacturing sector. The importance of manufacturing activities to total employment has increased since the mid-sixties in accordance with the advance of industrialisation. Thus, the share of manufacturing to total employment has risen from 26.8% in 1964 to 49.2% in 1985. The employment opportunities that are offered by urban places reveal a positive relationship to population size; larger cities offer more employment opportunities than smaller ones.

Table 6.6 Shares of Manufacturing to Total Employment  
In Percent

city size \ year	1964	1975	1985
500,000 and more	34.9	54.4	59.8
200,000 - 500,000	32.7	49.3	56.9
100,000 - 200,000	21.8	37.5	44.0
100,000 and less	22.1	23.5	43.4
Total	26.8	37.6	49.2

Source: MOHA, 1966, 1976, 1986.

Urban basic industry can be identified through the use of locational quotient. Table 6.7 shows the changes in basic industry among the fifty cities from 1964 to 1985. In this table, the basic industry implies industries which have the highest locational quotients in each city. The

findings show the extent to which the structure of urban basic industries has changed between 1964 and 1985. In 1964, 16 cities had their highest locational quotients in commercial activities such as wholesaling, retailing, and restaurants. By 1975, 18 cities had their highest location quotients in banking, insurance, and real estate. By 1985, the greatest concentration was in transportation, communication, and warehousing with 13 cities. In consequence, few cities in Korea have maintained the same basic industries during last two decades. This also reflects their poor urban industrial bases in 1964. No city had its highest locational quotient in manufacturing in 1964 but by 1985 11 cities came into this category, and it was second only to transport in number. This trend indicates the growing importance of manufacturing activities in urban places in Korea.

Table 6.7 Changes of Urban Basic Industries

Yr\Act	Number of Cities								
	Const	Mftg.	Comm.	Bank	Trans.	Gas	Other	N.A.	Total
1964	5	-	16	6	3	8	7	5	50
1975	-	5	9	18	1	2	10	5	50
1985	2	11	7	1	13	10	6	-	50

Const: construction

Mftg : manufacturing

Comm.: wholesale, retail, trade, and restaurant

Bank : banking and insurance

Trans: transportation, communication, and warehousing

Gas : gas, water, and electricity services

N. A. : not available

Table 6.8 shows the average locational quotients for the different spheres of influence. Cities under Seoul's direct influence are marked by higher locational quotients in the manufacturing sector and lower values for other industries than the other two regions. In contrast, the

intermediate cities recorded the higher locational quotients in other industries and much lower scores for manufacturing than the other two regions. These findings highlight the extent to which the urban economic base of cities within Seoul or Pusan's sphere of influence was built upon manufacturing activities and relative absence of such a base in intermediate cities.

Table 6.8 Average Location Quotients  
by Spheres of Influence, 1985

Region \ Industry	Manufacturing	Other Industries
Seoul	1.14	.90
Pusan	1.01	1.04
Other	.56	1.53
Total	.83	1.24

## 2) Industrial Diversity

Various techniques have been used to measure industrial diversification including the ogive, the national average, the minimum requirements method, the percentage of durable goods production, the portfolio, and the entropy method (Conroy, 1975, pp. 492-494; Kort, 1981, pp. 600-601). Each technique has its strong points and its limitations (Conroy, 1975, p. 493), and the national average and the entropy approach will be used in this study. The national average measure (NDIV) defines a diversified regional economy as one in which the proportion of value-added or employment in each industry is identical to that found in the nation. The entropy diversification measure (EDIV) takes the difference between the proportional changes in industries and the natural logarithm of those proportions. The general form of these two measures may be written as follows;



$$\text{NDIV}_j = \frac{[ (E_{jk}/E_j) - (E_k/E) ]^b}{E_k/E} \quad \text{---- (1)}$$

$$\text{EDIV}_j = -- (E_{jk}/E_j) \ln (E_{jk}/E_j) \quad \text{---- (2)}$$

In addition, the coefficient of specialisation (CS) and the localisation coefficient (LC) will also be employed to measure industrial diversification. These coefficients are defined as follows (Isard, 1966, pp. 251-252, 271; Goldsmith and Rothschild, 1974, pp. 187-189);

$$\text{CS}_j = (1/2) ( E_{kj} / E_j ) - ( E_k / E ) \quad \text{--- (3)}$$

$$\text{CL}_j = (1/2) ( E_{kj} / E_k ) - ( P_j / P ) \quad \text{--- (4)}$$

where

$E_{kj}$  = employment in sector k in city j;

$E_j$  = total employment in city j;

$E_k$  = national employment in sector k;

$E$  = national employment in all sectors;

$n$  = number of sectors;

$b$  = positive constant, usually given a value of 1;

$P_j$  = population in city j;

$P$  = population of all regions.

The interpretation of diversity indices and those of location coefficients are quite different. In the case of diversity indices, higher values indicate the greater diversification and lower values means relatively greater specialisation. In contrast, higher values of the coefficient of specialisation and the localisation coefficient indicate the greater concentration in a specific industry and a low diversity of industrial structure.

Table 6.9 shows the status of industrial diversification by city size. The values of national average measure (NDIV) and/or entropy diversification measure (EDIV), in general, decrease with city size increase indicating that the smaller cities apparently have higher level of diversification than the larger cities. Similar trends can be seen in the case of the localisation coefficient where industrial activities in cities with more than half a million population showed a higher value than those for other size groups. In contrast, the values for the coefficient of specialisation point to a different interpretation. In this case, cities with more than half a million population had the lowest scores suggesting a greater diversification of industrial activities than cities with 100,000 to 200,000 populations.

Table 6.9 Industrial Diversification by City Size, 1985

City Size \ Index	Number of Cities	CS	LC	NDIV	EDIV
500,000 and more	7	.17	.17	-.81	1.24
200,000 - 500,000	12	.21	.03	.26	1.25
100,000 - 200,000	17	.30	.02	2.11	1.39
less than 100,000	14	.27	.01	2.41	1.42

CS : Coefficient of Specialisation  
 LC : Locational Coefficient  
 NDIV: National Diversification Value  
 EDIV: Entropy Diversification Value

The urban industrial structure differs from region to region. As Table 6.10 shows, cities in the Seoul region show a greater degree of specialisation in industrial activities than the other two regions and cities outside the spheres of influence of Seoul or Pusan show higher levels of diversification than the other cities. Once again, scores for the coefficient of specialisation point

to different interpretation when compared with the other indexes.

Table 6.10 Industrial Diversification by Region, 1985

region \ index	CS	LC	NDIV	EDIV
Seoul	.18	.09	-.49	1.09
Pusan	.21	.04	.15	1.18
Other	.31	.02	3.20	1.56

CS : Coefficient of Specialisation  
 LC : Locational Coefficient  
 NDIV: National Diversification Value  
 EDIV: Entropy Diversification Value

These findings go against Thompson's hypothesis that larger cities will have more diversified industrial activities and reflect two reasons: process of development and regional disparities. A high level of specialisation was found even in large cities which have grown rapidly in accordance with economic growth. The high scores of specialisation in newly developed industrial cities such as Ulsan, Pohang, Changwon, and Anyang can be explained by the former reason. The high value of the coefficient of specialisation in intermediate cities reflects some aspect of regional disparities as against functional specialisation either in the country.

### 6.3.3 Relationships between Industrial Structure and Urban Growth

#### 1) The Analysis of Industrial Growth

In shift-share analysis, a net-shift indicates the degree of self-generated growth. During the last two decades, ten cities have recorded the relatively high net-shifts in manufacturing activities. These are in rank-order, Seoul, Pusan, Incheon, Ulsan, Pucheon, Masan, Kumi,

Suwon, Anyang, and Pohang. All these cities are located in the spheres of influence of Seoul or Pusan. In contrast, many other cities recorded a negative net-shift in their manufacturing activities which points to a weaker competitive position than other cities. As shown in Table 6.11, many cities which are located far from Seoul and Pusan recorded negative values in their net shifts. It is worth noting that not one city under Seoul's influence had a negative value and only a few cities under Pusan's influence recorded negative values. This indicates Seoul's stronger position with respect to its neighbouring cities than that of Pusan. Two of the case study cities, Taegu and Kwangju as indicated in Chapter 4, had negative values for their net shifts despite policy measures to boost their industrial activities.

Table 6.11 Negative Net-Shift in Manufacturing Sector  
by City Size

City size	'64 - '75	'75 - '85	'64 - '85
over 500,000		Kwangju	Taegu Kwangju
200,000 - 500,000	Cheju	Mokpo Chinju Cheju	Mokpo Cheju
100,000 - 200,000	Chuncheon Kangleung Kyeongju	Kunsan Chuncheon Wonju Kangleung Kyeongju Suncheon Chinhae Andong	Kunsan Chuncheon Wonju Kangleung Kyeongju Andong Suncheon
50,000 - 100,000	Yeongju Socho Samcheonpo Namwon Jeongju	Tonghae Chungmu Yeongju Seoguiipo Jeongju Socho Samcheonpo Namwon	Chungmu Yeongju Seoguiipo Jeongju Kimcheon Socho Samcheonpo Namwon

## 2) Manufacturing Activities and Urban Growth

Table 6.12 shows the annual average rates of urban population growth by city group classified by the percentage share of the manufacturing sector to total employment. Since 1964, cities in the first group have recorded the highest population growth rates while the cities in the third and fourth group have recorded relatively low growth rates. In general, cities in the first and second group recorded an increasing rate of population growth during the period whereas the other cities showed a decreasing rate. There also appears to be some trends which suggest that the cities which had higher manufacturing shares had higher population growth rates in the period between 1975 and 1985. These results point to the need for a correlation analysis of manufacturing activities and urban growth.

Table 6.12 Annual Population Growth by City Group

Mftg. Share\Period	In annual growth rate		
	1964-1975	1975-1985	1964-1985
I (more than 70%)	7.19	7.50	7.41
II (50 - 70)	3.64	3.71	3.67
III(30 - 50)	3.07	2.50	2.80
IV (less than 30%)	3.48	2.09	2.91

Manufacturing share means the percentage share of manufacture sector to total employment(based on 1985 data).

Figs 6.1 and 6.2 depict the relationships between the annual growth rate of manufacturing and/or total employment and urban population growth rates between 1964 and 1985. The correlation coefficient between manufacturing and urban growth (0.46374) is lower than that for total employment and urban growth (0.68460). The two relationships can also be expressed as linear relationships with the following equations:

Fig. 6.1 Correlation between Manufacturing and Urban Population Growth

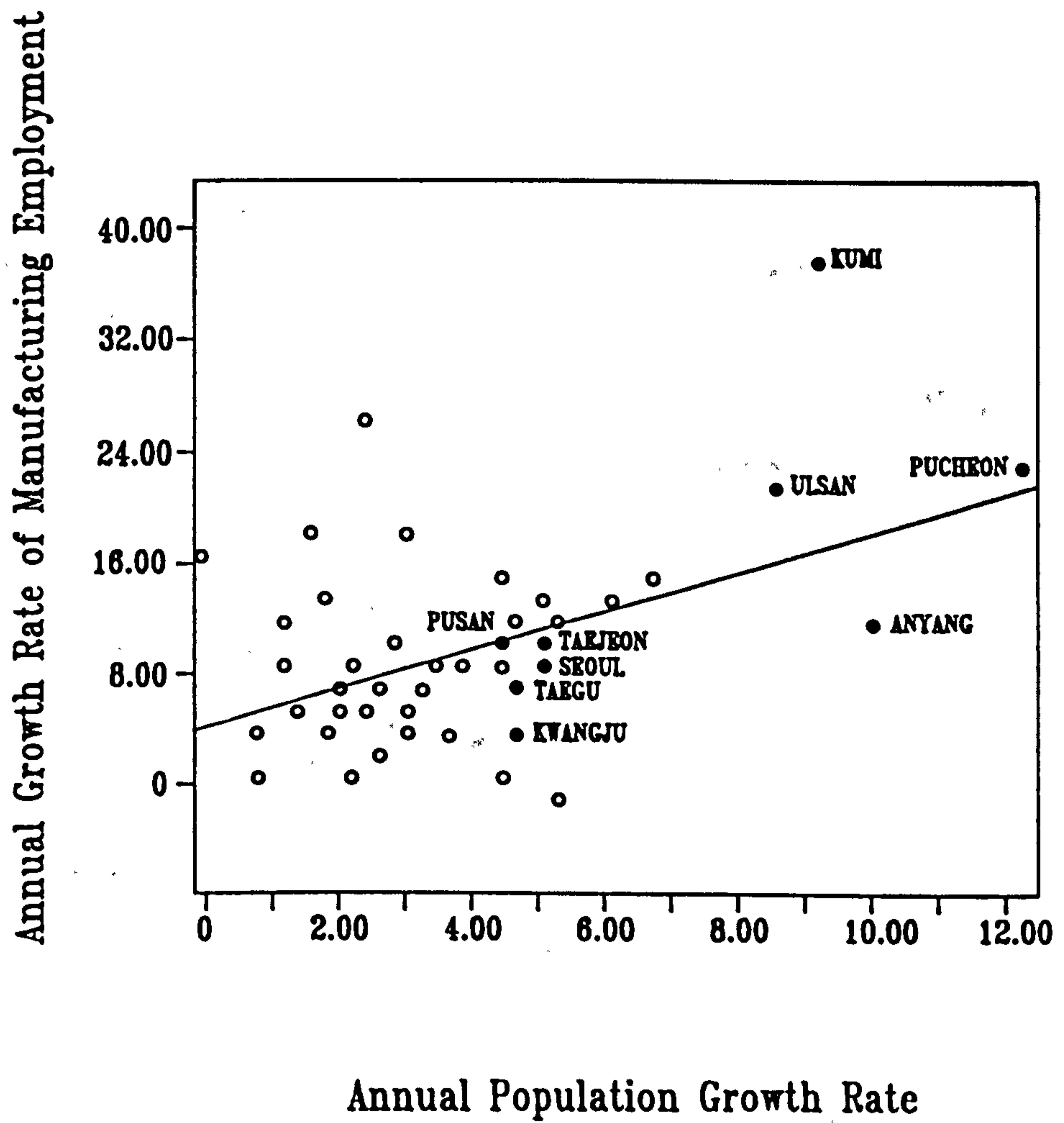
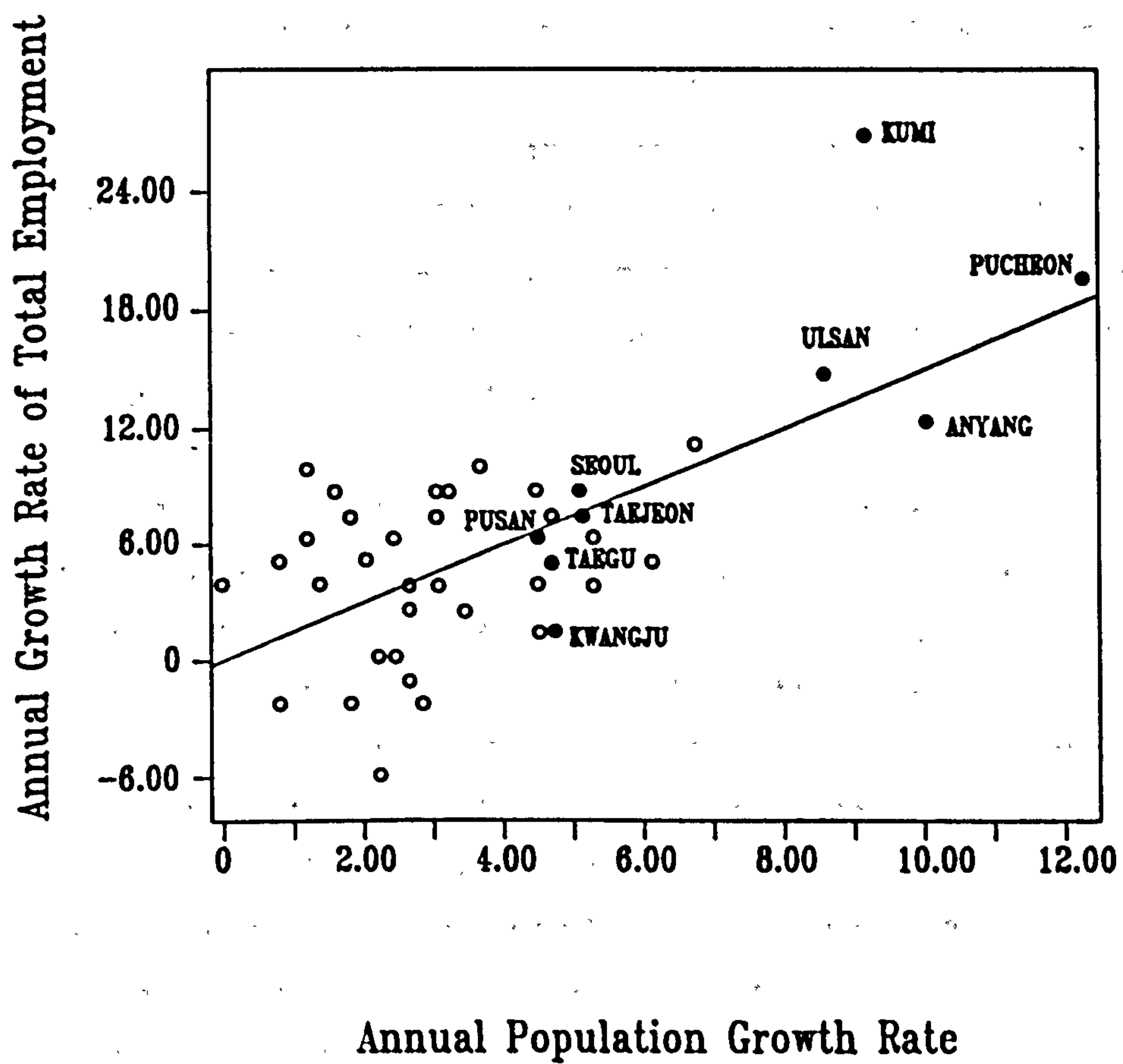


Fig. 6.2 Correlation between Total Employment and Urban Population Growth



$$Y_1 = 3.9280 + 1.41 X_1$$

$$Y_2 = -0.2267 + 1.55 X_2$$

where,

$Y_1$  is the annual growth rate of manufacturing employment

$Y_2$  is the annual growth rate of total employment

$X_1$  or  $X_2$  are respectively the annual growth rate of urban population.

As expected, newly developed industrial cities and cities located in Seoul Metropolitan Area showed relatively high employment growth, both total and manufacturing sector, and high population growth rate. Kumi and Ulsan belong to the former category while Pucheon and Anyang fall into the latter category. Among the three case study cities, Taejeon showed the highest employment growth rates whereas Kwangju revealed the lowest level.

Table 6.13 shows the relationships between manufacturing growth and urban growth by city size. In the period 1964 to 1975, the largest city group shows the strongest relationships between the two variables and the smallest city group the weakest relationship. The importance of the manufacturing sector in the largest cities slightly decreased between 1964 and 1985 compared with the 1964-1975 period while that of the 200,000-500,000 group increased to a level about that of the largest group. The negative coefficients of city sizes of less than 100,000 indicate the low contribution of that has been made by the manufacturing sector to their growth.



Table 6.13 Correlation between Manufacturing Activities and Urban Growth

city-size \ period	1964-1975	1975-1985
500,000 and more	.7694	.6163
200,000 - 500,000	.6705	.7185
100,000 - 200,000	.6075	.5597
100,000 and less	-.0418	-.3005
Total	.3486	.2296

## 6.4 Development Institutions

### 6.4.1 Overview

Development institutions refer to government activities not only to manage urban problems but also to induce positive aspects of urban growth such as fostering the basis of socio-economic development and political integration. Urban administration includes the whole range of governmental organisation and processes for planning at all levels, for decision-making, and for performing public services related to an urban area (U.N., 1970, p. 7). This definition suggests the growing importance of development institutions in urbanisation and urban growth. Under this heading, two important aspects of urban administration will be reviewed, these are, the effects of the structure and operation of urban government on urban change and the extent to which major development policies influence urban growth and development in Korea.

Urban government in Korea has become more complex in its structure and more diverse in its activities as a result of rapid urbanisation and urban growth and also because of rising expectations brought about by higher

income and education levels. Thus, it is generally assumed that there are positive relationships between the size of urban government and urban growth. The magnitude of urban government is measured not only by the scale of operations but also by the functions performed by it. Urban financial structure is a good indicator for both these terms. The significance of urban finance is also growing in Korea as measures taken to provide urban infrastructure and services to stimulate urban economies. Despite the growth of urban economies, city revenues have not kept up with urban population growth and their demand for services (Blair, 1985, p. 7). However, like most urban governments in developing countries, Korea has a severe imbalance between the expenditure requirements of municipal governments and the resources that are available to them particularly where those governments are financially dependent on central government (Cheema, 1989, p. 3). In other words, most municipal governments in Less Developed Cities experience financial difficulties, especially in connection with development investments.

In general, the effects of government policies can hardly be identified because of their difficulties in isolating these effects from normal evolutionary changes in the economy and the shortage of relevant data for assessing the effects (Frost, 1975, pp. 172-173). To overcome these difficulties, the qualitative approaches were employed in this study in Chapter 5 mainly focused on the identification of development institutions as the influential factors for urban growth and change. Under the heading of development policies and plans in this section, the major spatial development policies that are being implemented in Korea will be analyzed with respect to their influence on urban growth and development. As the expressed government intentions or actions taken to achieve policy objectives (Bardes and Dubnik, 1980, p. 106), spatial

development policies may be divided into various categories according to the criteria employed, to the objective pursued, and to the area influenced. In this study, the following three policy categories will be examined; economic, industrial, and urban policies.

#### 6.4.2 Development Institutions and Urban Growth

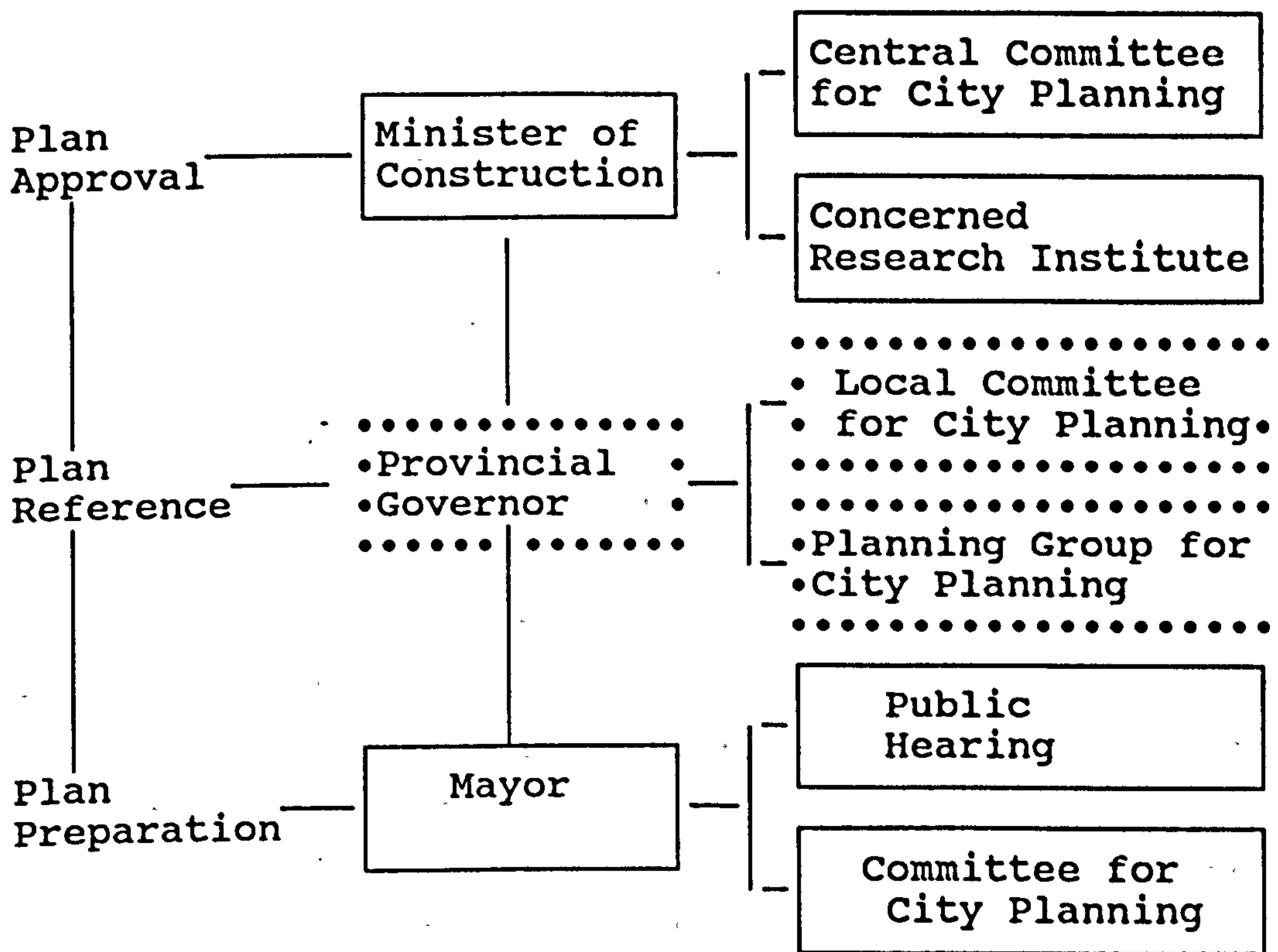
##### 1) Urban Administration and Planning Structure

As explained in Chapter 4, Korea has adopted a highly centralised government system based on the *Provisional Act on Local Autonomy* of 1961 which, in fact, abolished the concept of local autonomy completely and provided for central government to appoint almost all officials. This decision was based on three factors: the population's lack of familiarity with local autonomy, the weakness of local financial resources, and the very authoritarian nature of the regime (Renaud, 1974, p. 458). Thus, all government operations are heavily centralised and most local operations are almost completely dependent upon goals assigned by central government. Consequently, major policy-decisions affecting urban growth and development are inevitably influenced by central government's intentions and suggestions.

The administration of urban development and planning is undertaken by two main ministries in central government; the Ministry of Home Affairs (MOHA) and the Ministry of Construction (MOC). The former is concerned mainly with general administration while the latter is largely involved with development. Fig.6.2 shows the general planning process as suggested by the *City Planning Law* of 1971. Although the city master plan is prepared by the mayor based on area-specific characteristics and local needs, it must be submitted to the Minister of Construction for

approval. During the process of plan approval at central government, it is likely that modification will be made to the plan. After their approval, it is also likely that key elements cannot be implemented without financial support from central government. Consequently, it can be said that all cities in Korea are heavily dependent on central government in both plan preparation and implementation.

Fig.6.2 Urban Planning Process



A good indicator of the extent of consideration is the length of the terms of mayors and vice mayors. Table 6.14 shows that the average mayors' term in Korea was 20 months while that of vice-mayors was 22 months. More than one third of the total mayors surveyed were removed from their mayorships within one year and more than two thirds within

two years. This result indicates the extent to which mayorships are changed according to mainly central government needs. Under these circumstances, it is very difficult to develop any long-range, consistent, and continuous development administration including development planning. Consequently, most mayors inevitably seek to achieve short-term objectives during their office periods.

Table 6.14 Distribution of Mayors' Terms, 1964-1980

	Total Number Surveyed	Average Terms	Distribution of Terms (%)			
			1Year>	1 - 2	2 - 3	3Year<
Mayor	499	20 Mths	35	33	21	11
V. Mayor	306	22 Mths	36	34	14	16

1) V. Mayor: Vice Mayor 2) Mths.: Months

Source: Korea Planners Association, 1987, p. 66

## 2) Urban Financial Structure

At present, urban finance in Korea is based on two types of account: a general one for general administrative activities and a special account including such account as public corporation, and education. The general account in 50 Korean cities occupied about 69% of the total budget in 1985. Table 6.15 shows the expenditure structure in the general account by city size. As noted already in Chapter 4, the expenses for general administration occupied the largest share of total expenditure while industrial development received the smallest share. The percentage share of general administration expenses decreased with city size. In other words, smaller cities devoted the largest shares of their general accounts to general administration expenses. This suggests that smaller cities spent more on simple maintenance activities whereas the share of industrial and welfare items accounted for only a

small portion of the total budgets. In contrast, the larger cities accounted for a higher proportions of their general account budgets to public works and special projects.

Table 6.15 Expenditure Structure by City Size, 1985

In Percent					
\Item City\	General Admin.	Social Welfare	Indust.& Economic	Public Works	Others*
NMCs	23.32	15.92	2.52	36.47	21.72
RMCs	35.53	17.94	5.69	31.50	9.34
MSCs	43.36	12.92	4.26	33.92	5.49
SSCs	49.14	12.81	3.27	27.67	7.11
Total	43.56	13.34	4.00	32.12	6.98

Item 'others' includes expenses for civil defence, subsidies, and contingency.

NMCs: National Metropolitan Cities

RMCs: Regional Metropolitan Cities

MSCs: Medium sized Cities

SSCs: Small Sized Cities

Source: MOHA, 1986, pp. 122-125.

The revenue sources of the general account consists of local tax and non-tax revenues and revenues brought in by grants and subsidies whereas the special accounts relate to special purpose programmes with their own sources of financing (KPA, 1987, pp. 439-443). At present, most urban governments in Korea face a shortage of locally generated resources. In 1985, the average self-financing component of the general account in urban places with more than 50,000 populations was about 54%. Among the fifty urban places, Seoul, the highest self-financing city, received only 1.67% of financial subsidy and grants from central government while Samcheonpo, the lowest self-financing city, received

73.3% from central government sources. These low self-financing rates reflect the poor economic base of the individual city and an unbalanced tax structure which favours central government. Through the financial controls, central government can effectively control the major activities of municipal government including urban growth and development efforts.

Table 6.16 Correlations amongst Major Financial Items, 1964-1985

In correlation coefficient

	1. Urban Pop.	2. Total Expdt.	3. Grants Subsidies	4. Expdt. Public Const.	5. Per Capita Tax
1. Urban Pop.	-	.8317 **	-.1046	.4312	.4719 *
2. Total Expdt.		-	.1280	.7459 **	.1991
3. Grants/ Subsidies			-	.1137	-.4678
4. Expdt./ Public Const.				-	.3741
5. Per capita tax					-

Const: Construction      Expdt.: Expenditure  
Two tailed Significance Level: \* - .01    \*\* - .001

Table 6.16 shows the correlation coefficients for various financial indicators including urban population for the 50 Korean cities. Urban population shows a relatively high correlation with that of total expenditure and expenditure on public construction works. This suggests that there is a positive relationship between urban growth and the changing scale of financial operations. It is

interesting to note that the relationship between urban growth and the changes in grants and subsidies increases showed a weak negative trend. This suggests that higher urban growth rates can be expected in urban places with a sound financial structure based on their self-financing capabilities.

#### 6.4.3 Relationships between Development Policies and Urban Growth

##### 1) Economic and Industrial Policies

As described in Chapter 3, Korea has successfully implemented five consecutive five-year plans over the last two and a half decades. With a basic strategy of export-oriented industrialisation, the first three plans focused on growth-oriented policies but the following two five-year plans stressed the importance of income distribution and the enhancement of living environment. In other words, the economic policies of the first three five-year plans emphasised aggregate national growth which favoured large urban centres with well-developed infrastructures. Consequently, the nation's economic activities have been polarized through the process of circular and cumulative causation which has resulted in an overconcentration of economic activities (Kim, 1989, p. 148). The role of government policy and its influence on industrial development and hence on the regional system reflects the belief that regional policies in most countries are, *de facto*, industrial development policies (Hewings and O'hUallachain, 1983, p. 52). Consequently, it is widely acknowledged in Korea that balanced regional development will not be achieved without a redistribution of industrial activities, and that the spatial relocation of manufacturing industries is one of the most effective means for population redistribution (Choe and Song, 1984, p. 77).



Industrial location has emerged as an factor for achieving socio-economic development in Korea since the first five year economic plan. During this period, the government pursued import substitution policies for industries such as cement, chemical fertilizers, and synthetic fibres. From the late sixties to the early seventies, a number of basic laws to promote the development of heavy and chemical industries were enacted including the Machinery Industry Promotion Law (1967), the Ship-building Industry Promotion Law (1967), the Electric Industry Promotion Law (1969), and the Steel Industry Promotion Law (1970). Industrial policies in the seventies were based on the twofold objectives of promotive dispersal from major cities to local cities and industrial complex construction. The former sought to reduce regional disparities whereas the latter sought to create large scale oriented industrial complexes using the heavy industry promotion laws. During the eighties, industrial dispersal policies have become even more important in the spatial related development plans.

As noted in Chapter 3, Korea's heavy and chemical industries have developed remarkably since the seventies in accordance with government-initiated industrial policies. To enjoy agglomeration economies, these manufacturing activities have been usually concentrated in either major large urban places or on particular areas. This inevitably resulted in growing regional disparities which need to be solved quickly from both an economic and a political viewpoint. The concentration of industrial activities in a limited number of areas has brought about important differences in urban growth from place to place. Table 6.17 shows the urban population growth rate for the types of industrial city during the period between 1970 and 1985. The industrial base cities located mostly around the south-

east coastal area recorded a higher growth rate than the other two types of industrial cities during the period between 1970 and 1975 but their growth rates have decreased thereafter and recorded 3.28% per year in the 1980 to 1985 period. In contrast, industrial cities in the Seoul region have shown a steady increase in their annual growth rates throughout the whole of the period, averaging 9.09% between 1980 and 1985. These trends suggest that the industrial base cities had higher growth rates when the designation and development of industrial bases for heavy and chemical industries was a key component of national economic planning. Since then, cities in the Seoul region have recorded the higher growth rates as a result of industrial decentralisation policy from Seoul since the mid seventies. Throughout the whole of this period, cities with local industrial estates have recorded much lower growth rates than those of the other industrial cities but even there are slightly higher figure than those cities which have not been beneficiaries of industrial policy.

Table 6.17 Urban Population Growth by  
Types of Industrial City

In Percent/Year

City		No./Cities	70-75	75-80	80-85
Industrial Cities	Industrial Base	10	7.00	6.18	3.28
	Seoul Area	8	5.88	7.47	9.09
	Local Area	14	3.23	2.76	2.50
	Total	32	4.95	4.88	4.80
Other Cities		18	2.77	2.19	2.38

1. Industrial base cities indicate industrial cities which have large scale industrial bases constructed by central government.
2. Seoul area cities indicate industrial cities in capital region.
3. Local area cities indicate local industrial cities with local industrial estates.

## 2) Urban Development Policy and Urban Growth

Urban growth and development policies employed in Korea have been classified into three categories by Rondinelli (1987, p. 64); the control and management of growth in the National Metropolitan Cities, especially for Seoul, the strengthening of the economies of the secondary and intermediate cities including the three case study cities, and the development of small sized cities.

Since the early 1970s, various policy measures have been implemented to slow down the growth of Seoul. These include decentralisation policies for industrial activities and public facilities, direct control measures through taxation, and tight land use regulation within the city. Consequently, many cities around the Seoul area have benefited considerably from these policy measures and recorded very high growth rates. However, these policies have, on the whole, been

Table 6.18 Distribution of Population and Public Construction Works, 1971-1985

			In Percent
Region \ Item	Population <sup>a</sup> ( 1985 )	Amounts <sup>b</sup>	b/a
Capital (Seoul)	39.12 (23.84)	80.07 (76.22)	2.05 (3.20)
Taebaek	4.27	1.17	0.27
Central	10.86	3.09	0.28
South-east	21.16	7.31	0.35
South-west	14.70	4.14	0.28
Cheju	1.21	0.39	0.32

Amounts are based on construction contracts only through authorised firms or establishments.

Source: Korean Construction Association, 1976, 1981, 1986.

less successful than expected because of their lack of comprehensiveness or consistency in implementation. For example, as can be seen in Table 6.18, Seoul accounted for 76.2% of the total volume of construction works in Korea during the 1971-1985 period. In other words, Seoul was responsible for more than three times the amount of national construction investment than would have been expected on the basis of the population share.

Growth promotion measures for secondary cities have been emphasized since the first National Land Development Plan to promote balanced regional development and growth pole concepts have been employed as major development policy measures. In the second National Land Development Plan, the three case study cities are designated as the primary growth poles and twelve other cities have been selected as secondary growth poles. These development policies in general give greater emphasis to the primary cities than the secondary cities. Consequently, it might be expected that the average growth rates of the primary growth pole cities would be higher than those for the other cities, but in fact the opposite is the case (See Table 6.19).

Table 6.19 Comparison of Population Growth Rates between Growth Pole Cities

City \ Period	In Percent			
	'64-'70	'70-'75	'75-'80	'80-'85
Primary	5.62	3.85	4.26	4.92
Secondary	3.23	3.42	3.47	2.86
Sub-total	3.71	3.50	3.63	3.27

## 6.5 Some Policy Implications

### 6.5.1 The Nature of Urban Growth Policy

#### 1) Overview

Urban policy can be interpreted as government measures which aim to influence and guide urbanisation and urban growth in such a way that its outcome is in agreement with government objectives (Berg, et al., 1982, p. 106). In practice, almost all urban government activities may be regarded as purposive and self-conscious attempts to manage the process of urban change. That is to say, policies are developed and applied to achieve (or avert) real world change (Young, et al., 1980, pp. 35-36). Therefore, urban growth policies can be defined as government attempts to influence the scale, pace, location or form of urbanisation and urban growth and to ameliorate the problems which typically accompany them (OECD, 1983a, p. 13). Most national urban policies are framed in terms of two distinct but related characteristics of the development process (OECD, 1986, p. 14): first, they seek to guide the location of urban development, and second, they seek to influence the character of urban development and redevelopment.

The goals and objectives of national urban policies vary from country to country according to country specific characteristics. The basic themes underlay most urban policy goals in all countries (Bourne, 1975, p. 189): reducing the negative consequences of population overconcentration in a few metropolitan core areas; achieving a geographic balance of both social and economic opportunities across the national territory; and maintaining the rate of national economic growth and thereby the effective increase of the standard of living. National urban policies in developing countries tend either to focus on issues related to productivity, growth and

economic efficiency on the one hand on an questions of distributive justice and equity on the other (OECD, 1983b, p. 21; Scott, 1983, p. 118). More specifically, four major objectives have been suggested for urban policy in developing countries: viz., the full development of the national resources in the country, the maintenance of national cohesion among various regions, the prevention or correction of excessive concentration of economic activities in particular regions, and the more efficient and equitable management of urban growth (Renaud, 1981, p. 7).

Many countries have experimented with national urban policies over the last two decades, but there is little evidence to show that these policies have been successful. Increasingly, analysts and policy makers have come to realise that the policy instruments conventionally employed in a national urban development strategies are largely ineffective in altering the larger patterns of urban growth (Evans, 1989, p. 253). Some of the failures can be explained by poorly designed policies, inadequate implementation or unfeasible goals, but a more general reason for policy failure is the isolation of national urban policy from the national economic planning process and from the overall context of macroeconomic and sectoral policies (Renaud, 1981, p. 9; Richardson, 1987a, p. 227). In practice, national urban policy goals make little sense without a consideration of general societal and economic goals (Richardson, 1987b, p. 280). Conceptually, national economic policy, national spatial policy, and national urban policy are linked in a descending hierarchy which gradually becomes location-specific (Scott, 1983, p. 115). It should be borne in mind, however, that first, urbanisation in itself is not bad for development but rather an integral and probably essential part of it, and that urbanisation policies are a matter of national or

regional concern and rarely lend themselves to effective treatment at the level of the particular city or locality (Linn, 1987, pp. 234-235). The important area in which city-level policies can contribute to efficient and equitable urbanisation is in the costing and pricing of urban services. Thus, the key to successful and effective national urban policies is the integration of their spatial elements with national macro and sectoral economic and social policies (Richardson, 1987a, p. 240).

## 2) Urban Development Strategies

Richardson (1981, pp. 273-276) has suggested eleven types of national urban development strategies which are shown in Table 6.20. The suggested national urban development strategies can be classified under the general headings of concentration and dispersal strategies (Habitat, 1985, p. 23). Strategies I to III relate to the former and the remainder to the latter strategy.

Concentration strategies emphasize reorganisation within the core region, whether it takes place via doing nothing policies or through some form of metropolitan regional planning (Ibid, p. 22). Strategy I could result in the continued polarisation of the primate city and the core region. The distinction between Strategy II and III is whether contiguous multiple centres (subcentres or satellites) linked by metropolitan transportation systems are involved in the promotion of urban centres outside the contiguously developed metropolitan regions.

Strategies from IV to XI involve some degree of interregional dispersion and the promotion of cities outside the core region (Ibid, p. 22). They vary in their degree of spatial dispersion and in the favoured city size-class. Strategies IV and V represent the extremes of the dispersion spectrum (Richardson, 1981, p. 274). The

countermagnets strategy requires the development of one or two major centres to compete with the primate city for industry and migrants. Strategy V is based on agropolitan development which aims to develop rural regions by introducing and adapting elements of urbanism to specific rural settings (Friedmann and Douglass, 1975, p. 372). Strategy VI attempts to combine some of the elements of Strategies IV and V by focussing on all levels of the regional urban hierarchy in one or two regions of the national spatial system (Richardson, 1981, p. 274). Growth centre strategy (VII) involves the selection of a limited number of urban centres which to function as regional development centres. Strategy VIII aims to create mutually reinforcing growth cities via the promotion of axes of development along inter-city transportation corridors. The efficiency of provincial capitals strategy (IX) is somewhat uncertain because it involves the development of all capitals without a deliberate consideration of their development potentials. The strategy of secondary city development (X) has been emphasized recently because of its universal applicability to almost all countries (Rondinelli, 1983b, p. 197).

The suggested strategies are obviously difficult to apply without the appropriate modification based on country specific characteristics (Richardson 1981, p. 272):

It is dangerous to think in terms of a general NUDS that could be applied to all, or even to a wide range of, developing countries. The economic, social, political, and cultural differences are so varies that strategies must be tailor-made to the specifics of each country.



Table 6.20 Typology of selected National Urban Development Strategies

	Development strategy	Characteristics
Concentration Strategies	I. Laissez-faire	do-nothing
	II. Polycentric development of primate city region	subcentres/satellite within metropolitan area
	III. Leapfrog decentralisat. within core region	urban centres outside metropolitan region
Dispersal Strategies	IV. Countermagnets	competing cities to the primate city
	V. Small service centres and rural development	agropolitan development
	VI. Regional metropolis and subsystem development	combine of strategies IV and V.
	VII. Growth centres	development centres
	VIII. Development axes	corridors
	IX. Provincial (state) capitals	development of sub-national capitals
	X. Secondary cities	subsets of the provincial capitals
	XI. Hybrids	combined development strategies

Source: Richardson, (1981), pp. 273-276.

### 3) Policy Instruments

Most policies can be divided into two broad groups; implicit and explicit policies. Implicit policies are unarticulated, unintended and unperceived policies, whereas

explicit policies intentionally aim at a desired result (Robinson, 1987, p. 169). In this case, implicit spatial policies refer mainly to policies adopted for other purposes, such as macroeconomic and sectoral policies, which have unintended geographical impacts, while explicit spatial policies refer to urban and/or regional development policies that are expressly designed to influence the spatial distribution of population and economic activities within a country (Habitat, 1985, p. 42). When looking at national urban policy, it is crucial to bear in mind that most of the important public sector effects on cities result from the actions that have little specifically urban focus (Glickman, 1984, p. 471). Thus, in examining urban policy, both the explicit and the implicit policies should be included. The term 'instruments' refers to the tools of policy, that is the methods employed to attain the objectives articulated in the policies (OECD, 1983?, p. 13).

Implicit spatial policy instruments include pricing policies, tariffs, industrial promotion, public utilities provision and services, credit policies, transportation and communication policies, and human resources investments while explicit instruments include locational incentives, industrial or residential location controls, growth poles, agricultural promotion measures and rural development, administrative decentralisation, industrial estates and other spatially selective infrastructure investments and interregional price adjustment (Habitat, 1985, p. 43). In recent years, the explicit policy instruments have been increasingly employed in developing countries (Rhoda, 1982, pp. 9-10). It should, however, be noted that direct policy instruments are often regarded as less effective than the implicit ones (Alonso 1972, p. 639):

It is curious paradox that most present explicitly territorial policies are thought to be ineffective, while

it appears that many other policies and programmes, whose intent was not originally territorial, powerfully affect the distribution of population and economic activity. This paradox may be explained by returning to the image of the national socio-economic system as a multidimensional one, where the territorial distribution is merely one perspective- a projection upon geographical space.

### 6.5.2 Policy Implications and Suggestions

#### 1) Policy Implications

It is also important to distinguish between generative and competitive approaches to national spatial growth (Richardson, 1973a, pp. 86-88; Miernyk, 1982, p. 72). Generative theory maintains that the national growth is in effect the product of the growth rates of the individual regions. It postulates therefore that the national growth rate can be improved as a result of each region's efforts. The competitive approach, on the other hand, views national growth as a zero-sum game. There is only so much growth in the system, and it must be distributed among regions. In this model, the national growth rate is determined exogenously, and is allocated among regions. Although their intentions were originally to explain regional growth rates, these two approaches can be directly applied to the analysis of urban growth policies.

In the urban policy context, these two approaches relate to two urban policy goals, viz., the generative growth emphasising efficiency and competitive growth focussing on equity. To facilitate, generative growth, strong national growth tendencies are required through the efficiency of spatial industrial activities. Proponents of this approach advocate unbalanced spatial growth through the realisation of scale and agglomeration economies. This approach inevitably brings about regional disparities in

urban growth rates. Competitive growth requires the adequate allocation of growth forces to facilitate balanced regional development. In this case, urban growth policy can be considered in terms of policy measures to reduce disparities between the more prosperous and the less prosperous regions.

The three determinants identified in this study have important implications for both generative and competitive urban growth strategies. In principle, accessibility can be used to accelerate concentrated urbanisation or to promote balanced urban development. In practice, there always exists biased or unbalanced accessibilities between places. Thus, accessibility is particularly important in terms of generative growth and overall efficiency. Advanced industrial structures with leading industries also favour generative growth rather than the competitive growth model because of the extent to which they seek to identify locations where agglomeration economies can be more easily acquired. Development institutions also tend to pursue the efficiency in development efforts to achieve rapid growth with limited resources. Nevertheless, the three determinants also have some particular implications for the competitive urban growth model. To achieve satisfactory distribution of economic activities, particularly leading industries, among regions is a crucial reason for the balanced distribution of development institutions. Good accessibility within the region is also a major prerequisite to balanced regional development, as is a dynamic industrial structure. In summary, then, the spatial implications of three determinants must be considered with respect to improving both the efficiency and the equity of the development of cities (World Bank, 1979, p. 79).

## 2) Policy Suggestion

Korea is one of the few countries to have pursued multiple programs for redistributing urban population and economic activities from its primate city to other parts of the country in an attempt to achieve a more balanced pattern of urban development since the early 1970s alongside economic policies which lead to greater concentration (Rondinelli, 1987, p. 66). The rationale for these decentralised policies is not only disillusionment with the results of centralised development but also the realisation that development is a complex and uncertain process that cannot easily be planned and controlled from the centre (Rondinelli and Cheema, 1983, p. 10; Cheema, 1987, p. 159).

As part of the decentralised concentration policy, the growth pole strategy was employed in association with the growth control policy for two National Metropolitan Cities, Seoul and Pusan, by decentralising their economic activities and the rural development policy to slow down rural out-migration by providing services and facilities that will make rural life more tolerable (Rondinelli, 1980, p. 25). Neither policy has been very effective. The ineffectiveness of growth pole policy can be attributed to both logical and technical grounds (Parr, 1979, pp. 199-206). In technical terms, the major weakness of growth pole policy are its highly selective nature, the proliferation of a large number of relatively small centres, and inadequate implementation systems including funding (Hansen, 1972, p. 103 ; Cheema, 1987, p. 159). Logically, the concept of unbalanced development is not as attractive to the public because of the regional disparities it produces. The widely dispersed development policies have little impact on urban development because of their lack of agglomeration economies.

Despite its weakness, the growth pole concept should be pursued with vigour and greater emphasis should be given to secondary city development to promote more balanced development (Rondinelli, 1984, pp. 12-17; Hardoy and Satterthwaite, 1986, pp. 6-8). This indicates that the growth pole strategy can function as a good policy measure to achieve growth with equity if appropriate supplementary measures accompany its use.

The three determinants suggest some explicit policy measures in relation to such development strategies as growth poles and secondary city development. The adequate allocation of leading industries based on regional potential is a crucial instrument for both growth poles and secondary development strategies. Without the provision of leading industries, a growth pole policy cannot function properly and secondary city development is unlikely to occur. In other words, the vitality of leading industries in the city is a prerequisite condition for sound urban growth. In addition the experience of Korea suggests, the decentralisation of development institutions is also essential for the effective implementation of development efforts.

The failure of many policy measures in Less Developed Countries is often attributed to the problems of development administration. In development administration, the lack of efficiency in urban administration, lack of financial resources, short sighted policy making and implementation, and inconsistencies in policy implementation are frequently cited as major problems. To deal with these institutional problems, a decentralisation of power to development authorities is needed which includes the strengthening of the financial base of urban government.

## 6.6 Summary

The meanings of three determinants, accessibility, industrial structure, and development institutions have been examined in this chapter in terms of their spatial and policy implications for Korea. As a proxy for locational factor, accessibility can measure the functional potential of an area with reference to other areas. The population potential map for the 1985 urban population showed that the peak values for Korea were found in Seoul and a much lower peak was situated around Masan/Pusan. These findings suggest that most of the country comes within the sphere of influence of either Seoul or Pusan and that urban areas in peripheral regions outside either of these spheres of influence have grown very slowly by comparison with urban areas within them. Seoul in particular has suggested a dominant position and accessibility to Seoul must be regarded as a major determinant of urban growth in Korea.

Although the importance of the manufacturing sector in the urban economy in some More Developed Countries has decreased, its role in Less Developed Countries remains unquestioned. The shares of manufacturing to the total employment in Korean cities have increased dramatically during the period from 1964 to 1985. However, the industrial structures differed from city to city reflecting area-specific characteristics. In Korea, in contrast to most developed countries, the larger cities showed a more manufacturing-dependent industrial structure with more specialised activities whereas the smaller cities showed more less dependence on the manufacturing sector and had more diversified economic activities. Self-generated growth in the manufacturing sector over the last two decades has been restricted to cities under the influence of either

Seoul or Pusan. Cities outside their spheres of influence have developed only a relatively weak capacity in those sectors.

Rapid urbanisation and urban growth requires governmental action in all levels. These governmental actions take various forms according to the content and characteristics of the problems. The development institutions determinant deals mainly with the structure of urban government and the influence of major development policies on urban growth. Central government in Korea exerts a strong influence on urban growth and development in the form of both implicit and explicit development policies. Among these policies, economic development policies and national land development policies have had a profound effect on urban growth both in relation to individual cities and on the urban system as a whole. To implement export-oriented rapid growth policies, larger cities with relatively well equipped infrastructures at the beginning of the first five -year plan were selected for intensive investment for industrial development and consequently the major benefits of rapid economic growth were concentrated in those places. At the same time, the newly designated industrial cities have grown rapidly in accordance with government industrial promotion policies. National land development policies have also influenced urban form. For example, cities in the Seoul region have experienced very rapid growth as a result of decentralisation policies. On the other hand, attempts to provide balanced development through growth pole policies have been less successful for a number of reasons. In this way, however, the nature of development institutions has proved an important determinant of urban growth in Korea.

The three determinants identified in this study have policy implications for both generative and competitive



urban growth strategies. Through the improvement of the three determinants' circumstances, generative growth and overall efficiency can be acquired in target urban places whereas the balanced development by competitive growth strategy can also be achieved in depressed areas. Thus, spatial policy measures must be considered in relation to the three determinants: provision of advanced industrial structure with leading industries, establishment of efficient development institutions, and improvement of accessibility for target areas. For balanced development in Korea, the following policy measures are required: accelerating the advance industrial structure with leading industries based on regional characteristics, improving the accessibility by the method of infrastructure investment, and establishing the decentralisation of development institutions in target areas.

## Chapter Seven

# Summary and Conclusions

### 7.1 Introduction

This chapter summarises the findings of the research and reviews them in the light of the research hypotheses set out in Chapter 1. It consists of three parts: a summary of the findings of the study, a review of the implications of these findings on the research hypotheses which includes an examination of the needs for further work in Korea and in other developing countries.

### 7.2 Summary

In Chapter 1, it was argued that the purpose of this research was to identify major urban growth determinants which have influenced the speed and scale of urbanisation and the characteristics of urban growth in Korea. The main hypothesis was that the features of urban growth in Korea are mainly determined by the influences of growth factors originating from locational, economic, and institutional factors. Locational factors include both the physical and the circumstantial characteristics of each city. The industrial structure of each city represents its economic vitality in terms of employment opportunities, the status of the leading industries, and the diversity of industrial activities. Institutional factors include the institutional environment of urban places with particular reference to the impact of the spatial development policies and plans.

As a result of the review of six major spatial theories in Chapter 2, attention was drawn to the importance of functional interactions in the central place theory, industrial structure and spread effects in growth pole theory, industrial structure and functional interactions in the uneven development model, various locational factors in industrial location theory, manufacture-oriented industrial structure in economic base theory, and spread and innovation diffusion in the diffusion theory, respectively. These factors, together with the institutional factors identified in other studies can be grouped together under the following main headings: locational factors, industrial structure, and development institutions. After screening their theoretical implications, it was found that all these factors have particular implications for urban growth and change.

The findings of the overall analysis that are presented in Chapter 3 show that urban population in Korea has increased rapidly since the mid 1960s. The percentage share of urban population to the national total has exceeded that of rural population since 1970. In 1985, urban population accounted for about 74% of the national total. The main features of urbanisation and urban growth in Korea can be summarised as follows: first, the concentration of population in the primate city, Seoul, has slightly decreased since 1970 even though Korea is still situated in the state of primacy; second, there has been no changes in the population rank-order amongst the six largest cities but there are marked variations among medium sized cities; third, a number of particularly rapidly growing cities can be found around two National Metropolitan Cities, Seoul and Pusan; fourth, almost all cities show signs of suburbanisation within their administrative boundaries but most are still situated at the stage of absolute concentration. Since the early 1970s,

National Land Development Plans have been implemented to pursue more comprehensive, long range, and balanced spatial development. The focus of these plans has shifted from concentrated development in the 1970s to more balanced development in the 1980s.

Three regional metropolitan centres were selected for more detailed analysis of urban growth in Chapters 4 and 5 because of their growing importance in national land development. The three case study cities, Taegu, Kwangju, and Taejeon, are designated in the second National Land Development Plan as growth pole cities for balanced national development to counter over concentration in Seoul and Pusan.

Net-migration to the three case study cities comes mainly from their surrounding provinces. This indicates the extent for which they function as the centres for their respective hinterlands. The industrial structures of the three case study cities are quite different from one another; Taegu city is primarily an industrial city concentrating on textile production whereas Kwangju is essentially a service centre with a weak industrial base. Taejeon comes some way between the two with a well developed textile sector and its own transport functions. The analysis of population and economic activities in the functional areas of the three cities suggests that Taegu is at the stage of relative concentration while the other two cities, Kwangju and Taejeon, are still at the stage of absolute concentration, the first stage of urban development.

Expert opinions and the views of civic leaders on the importance attached to different urban growth factors were discussed in Chapter 5 using qualitative analytical techniques. The results of a Delphi based survey of

planners suggest that economic development policies/plans and national land development policies/plans are regarded as particularly important in the National Metropolitan Cities while the transportation system and economic development policies/plans in the Regional Metropolitan Cities. Transportation systems and industrial location policies/plans are most important in the Medium Sized Cities while geographical location and transportation systems are key factors in the Small Sized Cities. Overall, the following factors were regarded as key urban growth factors: transportation systems, economic development policies/plans, national land development policies/plans. Additional factors for the three case study cities were central place functions, geographical location, and functional roles in the national land.

The main findings of the attitudinal survey that was conducted with the residents who were working in influential positions in the three case study cities show that most respondents regarded central place functions as the most important single factor in the growth of the three case study cities. Many respondents also drew attention to the importance of institutional factors. A sound financial basis and a good system of development administration were felt to have had a relatively strong impact on urban growth than other factors.

Chapter 6 explored the spatial and policy implications of the three determinants identified through both theoretical and empirical research. The concept of accessibility is regarded as a proxy variable for the functional interactions of an urban place with other areas. The findings of the potential surface analysis indicate that the peak of accessibility was found in Seoul and a second peak was situated around Pusan and Masan. Urban

growth within these two spheres of influence was markedly higher than in the rest of Korea.

The analysis of industrial structure confirms that larger cities offer more employment opportunities than the smaller ones. However, in contrast to the findings of most other research the larger cities depended more upon manufacturing activities than smaller ones. Consequently there was a positive relationship between employment growth in the manufacturing sector and urban population growth in Korea.

The discussion of development institutions demonstrates the impact that the centralised government system in Korea has on urban growth and change. Urban growth has been particularly influenced by various forms of government policies such as economic development policies and national land development policies.

### 7.3 Major Findings

This study was conducted under the assumption that urban growth characteristics are determined by factors reflecting differences in overall urban circumstances. Thus, the major hypothesis was formulated as follows: the features of urban growth in Korea are mainly determined by the influence of locational, economic, and institutional factors.

As a result of the reviews of existing spatial theories together with the institutional factors identified in other studies, three sets of urban growth factors were identified: locational factors, industrial structure, and development institutions. The spatial implications of these determinants were examined with particular reference to

urban growth in Korea by means of both qualitative and quantitative analysis.

Locational factors refer to the site and situational characteristics of urban places. This implies that locational factors include not only geographical terms but also functional interactions. Major location-related factors identified in this study were geographical location, transport systems, and central place functions. Of these three factors, the first factor describes physical location itself while the latter two factors relate to functional interactions based on locational characteristics. The concept of accessibility was employed as a proxy variable for both the physical and the functional characteristics of urban location. As expected, the highest value of accessibility was found in Seoul and the second highest peak was found in the Pusan/Masan area with a much lower value. This indicates that most urban places in Korea come under two spheres of influence, Seoul and Pusan/Masan. In general, there were positive relationships between accessibility and urban growth. There were also strong negative relationships found between urban growth and distance from Seoul. In other words, cities located around Seoul have experienced rapid growth while cities that are remote from Seoul have recorded a relatively lower growth. This indicates Seoul's strong influence on urban growth in Korea and highlights locational importance for urban growth.

Industrial structure describes the overall economic vitality of urban places in terms of their employment opportunities, income generation, and innovation adoptions. Thus, an advanced industrial structure with well developed leading sectors is crucial for sound urban growth. Most existing spatial theories stress the importance of industrial structure as a driving force for urban growth

and change. This study identified the influential role of manufacturing-oriented industrial structure as a prime mover of urban growth and change in Korea. The manufacturing sector has been regarded as the prime driving force underlying urban growth because of its strong multiplier effects through intense forward and backward linkages. This study found some positive relationships between changes of employment in the manufacturing sector and urban growth. Because of Korea's strong manufacturing sector, the new industrial cities on the coast of Korean peninsula, have shown markedly higher growth rates than other cities. These findings indicate that manufacturing activities in Korean cities still play an influential roles in urban growth although their importance has been decreasing in cities in More Developed Countries.

Government initiated spatial development efforts and development institutions have greatly influenced urban growth and change in Korea through their spatial development policies and plans. This set of urban growth factors has a particular meaning in Less Developed Countries which have adopted centralised policy-making systems like Korea. Under the heading of development institutions, the following were identified as key factors: these are, national development policies, economic development policies, and industrial location policies. Cities supported by development policies recorded relatively higher growth rates than other cities. Among various proxy variables of development institutions, urban financial structure showed a positive relationship with urban growth.

In general, it can be said that most urban growth phenomena in Korea can be explained by the interaction of the three sets of determinants identified in this study. Similarly, most urban problems confronted in Korea can be



alleviated by the management of these three determinants. This fact is directly related to the fourth sub-hypothesis set out in Chapter 1: urban problems can effectively be managed by controlling major urban growth determinants.

#### 7.4 Further Research

The research has concentrated on the identification of major urban growth determinants with particular reference to the three regional metropolitan cities in Korea. Further research on urban growth determinants should be considered with respect to three aspects: research themes, methodology, and study areas.

The three identified determinants should be studied separately to explore their spatial characteristics in greater detail. Among the three determinants, further research must focus more on development institutions than the other two determinants because of its growing importance and also because research on this topic is the least developed. After separate studies of this kind aggregate research with a view to developing more general urban growth models is required.

A special feature of this research was the use of Delphi and attitudinal surveys to explore perceptions of the spatial characteristics of three determinants, especially for non-quantitative factors such as development institutions. The findings of this part of the research clearly suggest that techniques of this kind can fruitfully be used in countries like Korea and point to the need for the some widespread use of such methods in urban and regional analysis. In particular, the dynamic aspects of urban growth and the nature of functional interactions with relevant areas should be analyzed. The respondents should

be selected from decision-makers, both government sector (central and local) and private sector, to identify decision making processes with respect to spatial development policies. To evaluate their impacts, the respondents should be selected from a wider social stratum.

The findings relating to the three determinants should be examined under more diverse urban growth circumstances in terms of both time- and area-specific characteristics in Korea. The time span of urban growth analysis should be lengthened to include various urban growth circumstances and in the same vein, further case studies should be undertaken to explore various area-specific characteristics. From a national perspective, case study cities should be selected on the basis of city size, locational, functional, and growth criteria. With these considerations in mind, the following cities might be selected as case study cities for future study: two Seoul area cities (Seongnam and Anyang), two industrial cities (Ulsan and Kumi), two local administrative centres (Cheonju and Chuncheon), and two depressed cities (Mokpo and Chungju).

The use of national case studies in comparative research on urban growth determinants presents a number of problems with respect to generalisation. Nevertheless, comparative studies must be regarded as a prerequisite procedure for theorising about social phenomena such as urban growth and change. Without comparative studies between countries under different situations, it is not possible to separate the general from the specific elements of urban growth experience. The main reasons for comparative studies have been summarised as follows:

Cross national comparative planning studies are valuable for two reasons: as a means of improving planning practice through the interpretation and transfer of experiences from one country to another; and as a way of developing planning

theory by transcending national cultural boundaries (Masser, 1984, p. 148).

This view is very important for the study of urban growth characteristics and their determinants because of the degree to which they tend to reflect country-specific circumstances. Therefore, more international comparative studies are needed on urban growth characteristics and their determinants. The countries for comparative study should be selected taking into consideration historical and cultural backgrounds, socio-economic characteristics, political systems, resources endowment, and the degree of development. After selecting the case study countries, the case study cities should also be chosen using the same criteria. From the standpoint of this research, the obvious choice for comparative evaluation is Japan.

## 7.5 Concluding Remarks

The three determinants identified in this study suggest some policy directions for urban growth management in Korea. To achieve balanced spatial development, the following measures are required for the target areas: infrastructure investments for improving accessibility, inducing leading industries with advanced industrial structures and establishing appropriate development institutions for development planning and implementation.

This study has mainly focused on the identification of major urban growth determinants in Korea and further research should include more diverse urban growth circumstances both nationally and internationally. In addition, a major research theme for the future should be to explore the interactions among major growth determinants to clarify urban growth phenomena.

## Appendix: Questionnaire Formats

### 1. The Delphi survey

#### The First Delphi Survey

##### Greetings

In the process of urbanisation during the last quarter of a century, Korea has experienced unbalanced urban growth which leads to regional disparity. At this juncture, this centre has begun to study the determinants of urban growth in Korea in order to formulate desirable urban growth policies. You have been selected as a respondents in this survey because of your high reputation in this field. Please give us your opinions on urban growth based on your knowledge and experience so that we can draw upon it in formulating basic guidelines for this study. Thank you.

Director, Director,  
The Centre for Regional Development  
Chonnam National University

##### Introduction

1. This survey will involve three consecutive rounds. The findings of each round will be treated anonymously but will be used as a reference data for the next round.
2. Please reply to all questions on an appropriate form as indicated in the questionnaire.
3. Please send back the questionnaire after completion according to the following time-schedule.

Times	Sending	Arrival
1	13th, November	20th, November
2	25th, November	2nd, December
3	7th, December	14th, December

Questionnaire

1. What do you think are the most important factors which have been influenced greatly to urban growth in Korea? Please suggest three factors by each category.

(1). Economic Aspect

1).

2).

3).

(2). Socio-cultural Aspect

1).

2).

3).

(3). Administrative-Institutional Aspect

1).

2).

3).

(4). Others

1).

2).

3).

2. Please write in the three most important factors which have influenced the growth of the following cities.

(1). Taegu

1).

2).

3).

(2). Kwangju

1).

2).

3).

(3). Taejeon

1).

2).

3).

3. Which functions do you think should be strengthened to promote the growth of the following cities so that they can fulfil their respective functions. Please suggest three functions for each city.

(1). Taegu

1).

2).

3).

(2). Kwangju

1).

2).

3).

(3). Taejeon

1).

2).

3).

4. Please give your ideas and/or opinions on the following items in the context of urban growth in Korea.

(1). Growth Characteristics

1).

2).

(2). Growth Stages

1).

2).

(3). Growth Factors

1).

2).

(4). Growth Management Policy

1).

2).



The Second Delphi Survey

Greetings

The first round (13th, Nov.-20th, Nov.) was completed with your warm support. Because of a slight delay in processing the first survey, this questionnaire is being distributed behind schedule. Please cooperate with our survey. Thank you.

Director  
The Centre for Regional Development  
Chonnam National University

Introduction

1. Please complete each question by column and city according to the examples.
2. You can screen the reference data of the first survey as attached to this questionnaire before reply.
3. Please send back the questionnaire according to the following time-schedule.

Times	Sending	Arrival
1	13th, November	20th, November
2	11th, December	18th, December
3	8th, January	15th, January

### Questions

1. How do you evaluate the following factors in the context of urban growth in Korea? Please fill up each blank with an appropriate number in the example.

Example	1	2	3	4	5
	very strong relation	strong relation	some	little	Don't know

Growth factor \ city-size	NMCs	RMCs	MSCs	SSCs
1. Favourable geographical location	( )	( )	( )	( )
2. Resources endowment of surrounding areas	( )	( )	( )	( )
3. Historical and cultural background and traditions	( )	( )	( )	( )
4. Functional interactions with surrounding areas	( )	( )	( )	( )
5. Development status of surrounding areas	( )	( )	( )	( )
6. Functional specialisation in the national land	( )	( )	( )	( )
7. Citizen participation in development activities	( )	( )	( )	( )
8. National land development plans and policies	( )	( )	( )	( )
9. Economic development plans and policies	( )	( )	( )	( )
10. Industrial location plans and policies	( )	( )	( )	( )
11. Efficient administration of urban government	( )	( )	( )	( )
12. Central government supports and subsidies	( )	( )	( )	( )
13. Innovation accommodation capacity	( )	( )	( )	( )
14. Functional interactions with major cities	( )	( )	( )	( )
15. Convenient transport system	( )	( )	( )	( )
16. Planning & implementation system	( )	( )	( )	( )

\* NMCs: Seoul and Pusan.

RMCs: Taegu, Kwangju, and Taejeon

MSCs: Medium sized cities.

SSCs: City with less than 100 thousands residents.

2. How do you evaluate the present status of the following three cities on the suggested items in connection with their respective city growth?

Please select the relevant number from the example after carefully screening the item and fill up the blank by city and item.

Example	1	2	3	4	5
	highly satisfactory	sat.	unsat.	highly unsat.	Don't know

Growth Factor \ City	Taegu	Kwangju	Taejeon
1. Spatial location in the N. L.*	( )	( )	( )
2. Functional share in the N. L.*	( )	( )	( )
3. Innovation accommodation	( )	( )	( )
4. Central gov't support/subsidies	( )	( )	( )
5. Growth of basic industry	( )	( )	( )
6. Employment opportunities	( )	( )	( )
7. Diverse economic activities	( )	( )	( )
8. Central place functions	( )	( )	( )
9. Citizen participation and support	( )	( )	( )
10. Efficiency in development admin.	( )	( )	( )

\* N. L.: National Land.

3. Among the following items which were suggested by the first survey (refer to the relevant number on the attached sheet), please select the two most important items by city size and category and mark the bracket of the selected number.

Aspect	NMCs	RMCs	MSCs	SSCs
Eco. aspect	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )
	5 6 7 8	5 6 6 8	5 6 7 8	5 6 7 8
Socio-cult. aspect	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )
	5 6 7 8	5 6 7 8	5 6 7 8	5 6 7 8
Admin./Instit. aspect	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )
	5 6 7 8	5 6 7 8	5 6 7 8	5 6 7 8
Others	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )
	5 6 7 8	5 6 7 8	5 6 7 8	5 6 7 8
	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )	( ) ( ) ( ) ( )

Eco. : Economic  
 Socio-cult. : Socio-cultural  
 Admin./Instit.: Administrative and Institutional

## " Appendix "

Results of the First Survey  
( Suggested Urban Growth Factors)

Category	Urban Growth Factors		Response
	No.	Suggested Items	%
Eco.	1	Employment opportunities	31
	2	Diverse economic activities	20
	3	Manufacture-oriented industrial activities	20
	4	Growth of urban basic industry	19
	5	Urban-oriented investment	3
	6	Low productivity in agricultural sector	2
	7	Industrialisation	2
	8	Export-oriented economic policy	2
Socio-cult.	1	Urban-oriented value system	34
	2	Population growth and migration	32
	3	Educational opportunities	18
	4	Opportunities for cultural activities	7
	5	Opportunities for personal development	4
	6	Favourable living environment	2
	7	Citizen participation in development	2
	8	Historical/cultural traditions/backgrounds	2
Admin. instit	1	Industrial location policies and plans	22
	2	Spatial development policies and plans	21
	3	Central gov't support and subsidies	15
	4	Sound financial basis in urban government	14
	5	Efficiency in urban administration	8
	6	Urban-oriented decision-making	8
	7	Centralised government system	7
	8	Enhancement of regional characters	6
Others	1	Favourable geographical location	27
	2	Good urban infrastructure	20
	3	Sufficient human resources	13
	4	Accommodation capacity for innovation	11
	5	Functional interactions with hinterlands	13
	6	Resources endowment in surrounding areas	8
	7	Development status in surrounding areas	5
	8	Functional specialisation in national land	5

Eco. : Economic  
 Socio-cult. : Socio-cultural  
 Admin./Instit.: Administrative and Institutional

The Third Delphi Survey

Greetings

The first and the second surveys were completed with warm support. Although it is troublesome work, please cooperate with your ideas so that the survey can be completed successfully.  
Thank you

Director,  
The Centre for Regional Development  
Chonnam National University

Introduction

1. Please give the rank of the factor in each question after careful comparison among the factors by city and/or city size.
2. The results of the second survey attached to this questionnaire for reference.
3. Please send back the questionnaire after completion according to the following time-schedule.

Time	Sending	Arrival
1	13th, November	20th, November
2	11th, December	18th, December
3	8th, January	15th, January

Questions

1. How do you evaluate the following urban growth factors? Please give a ranking ( 1, 2, 3, -----, 10 ) by city size according to their respective influences on urban growth in Korea.

Growth Factor \ City	NMCs	RMCs	MSCs	SSCs
1. Convenient transport networks	( )	( )	( )	( )
2. National land development plans and policies	( )	( )	( )	( )
3. Economic development plans and policies	( )	( )	( )	( )
4. Functional interactions with hinterlands	( )	( )	( )	( )
5. Industrial location plans and policies	( )	( )	( )	( )
6. Favourable geographical location	( )	( )	( )	( )
7. Historical/cultural background and tradition	( )	( )	( )	( )
8. Central government support and subsidies	( )	( )	( )	( )
9. Accommodation capacity of innovation	( )	( )	( )	( )
10. Functional specialisation in national land	( )	( )	( )	( )

2. How do you evaluate the following factors in the context of urban growth in the Three Regional Metropolitan Cities ? Please give a ranking ( 1, 2, 3,-----, 10 ) by city according to their contribution to the those cities.

Growth Factor \ City	T.G.	K.J.	T.J.
1. Spatial location in the national land	( )	( )	( )
2. Functional specialisation	( )	( )	( )
3. Central place functions	( )	( )	( )
4. Innovation accommodation and diffusion	( )	( )	( )
5. Central government support and subsidies	( )	( )	( )
6. National land development plans /policies	( )	( )	( )
7. Citizen participation in development	( )	( )	( )
8. Efficiency in urban administration	( )	( )	( )
9. Historical/cultural background/traditions	( )	( )	( )
10. Economic development plans and policies	( )	( )	( )

T.G.: Taegu K.J.: Kwangju T.J.: Taejeon

3. How do you evaluate the following urban growth factors by category ? Please suggest a rank ( 1, 2, 3,-----, 10 ) by city size according their respective contribution to urban growth in Korea.

Category \ City size	NMCs	RMCs	MSCs	SSCs
1. Physical/environmental aspect	( )	( )	( )	( )
2. Socio-cultural aspect	( )	( )	( )	( )
3. Economic aspect	( )	( )	( )	( )
4. Administrative/institutional aspect	( )	( )	( )	( )
5. Historical/cultural aspect	( )	( )	( )	( )
6. Political aspect	( )	( )	( )	( )



## Appendix

The Results of the Second Survey

## 1. Ranking of urban growth factors by city size

Growth Factor \ City size	NMCs	RMCs	MSCs	SSCs
1. Economic development plans/policies	1	3	5	6
2. National land development plans	2	2	4	4
3. Functional interactions/hinterlands	3	4	6	7
4. Convenient transport network	4	1	3	3
5. Historical/cultural backgrounds	5	6	8	8
6. Favourable geographical location	6	5	7	5
7. Innovation accommodation capacity	7	9	9	9
8. Functional specialisation	8	7	10	10
9. Central gov't support and subsidies	9	10	2	2
10. Industrial location policies/plans	10	8	1	1

## 2. Ranking of urban growth factors by city.

Growth Factor \ City	T.G	K.W	T.J
1. Central place functions	1	2	2
2. Employment opportunities	2	7	7
3. Growth of basic industry	3	8	5
4. Spatial location in the national land	4	1	1
5. Diverse economic activities	5	6	6
6. Functional specialisation in national land	6	3	3
7. Innovation accommodation and diffusion	7	5	8
8. Central government support and subsidies	8	9	4
9. Citizen participation in development	9	4	10
10. Efficiency in development administration	10	10	9

T.G.: Taegu K.W.: Kwangju T.J.: Taejeon

## 2. The Attitudinal Survey

### Greetings

This survey aims to collect information about opinions on urban growth factors from local leaders who work in various social strata. You selected as the respondent because of your reputation in your working field. Please give your ideas and/or opinions on urban growth for your city. The survey results will be treated anonymously and will only be used for academic purpose. Although it is troublesome work, please cooperate heartly.  
Thank you.

Director,  
The Centre for Regional Development  
Chonnam National University

### Introduction

1. Please select "one" ( from No. 1 to No. 3 ) or "two" (from No. 4 to the end) item(s) per questions and tick the appropriate space.
2. When you select the column "others" in a each question, please give your reasons.
3. Please put this questionnaire in the enclosed envelope and send it back to the centre by 5th February.

Personal Column

( Please tick ("v") one item per question.)

1. Sex :                   (    ) (1). Male                   (    ) (2). Female
2. Age :                   (    ) (1).less than 30 (    ) (2). 30 -- 39  
                           (    ) (3). 40 -- 49           (    ) (4). 50 -- 59  
                           (    ) (5). 60 -- 69   (    ) (6). 70 and over
3. Education :           (    ) (1).Junior high school  
                           (    ) (2).Senior high school  
                           (    ) (3).College/University  
                           (    ) (4).Graduate School
4. Occupation :          (    ) (1). Public servant  
                           (    ) (2). Entrepreneur  
                           (    ) (3). Company employee  
                           (    ) (4). Liberal Job  
                           (    ) (5). Others (                    )
5. Field of Activity     (    ) (1). Social(welfare) work  
                           (    ) (2). Education  
                           (    ) (3). Economic  
                           (    ) (4). Religious  
                           (    ) (5). Public Administration  
                           (    ) (6). Mass-media  
                           (    ) (7). Other (                    )
6. Income :               (    ) (1). less than half million  
    (Won/Month)           (    ) (2). 0.5 -- 1  
                           (    ) (3). 1 -- 1.5  
                           (    ) (4). 1.5 -- 2  
                           (    ) (5). 2 -- 2.5  
                           (    ) (6). More than 2.5 million
7. Duration of Residence : (    ) (1). less than 5 Yr.(    ) (2). 5 -- 10  
                           (    ) (3). 10 -- 15           (    ) (4). 15 -- 20  
                           (    ) (5). More than 20 Yr.

Questions

Please select one item per number and tick ("v") in the relevant bracket

1. What do you think about the present status of your city on the following items ?

Item	Response					
	very sat.	sat.	average	unsat	very unsat	D.K
1.Industrial activities	( )	( )	( )	( )	( )	( )
2.Living environment	( )	( )	( )	( )	( )	( )
3.Urban administration	( )	( )	( )	( )	( )	( )
4.Urban development plan	( )	( )	( )	( )	( )	( )
5.Degree of urban growth	( )	( )	( )	( )	( )	( )

2. What do you think about the following items in terms of their contribution to the growth of your city?

Item	Response					
	very highly con.	highly con.	con.	some con.	little con.	D.K
1.Spatial location	( )	( )	( )	( )	( )	( )
2.Functional specialisation	( )	( )	( )	( )	( )	( )
3.Central place functions	( )	( )	( )	( )	( )	( )
4.NLD Policies and Plans	( )	( )	( )	( )	( )	( )
5.Economic development P/P	( )	( )	( )	( )	( )	( )

NLD: National Land Development. P/P: Policies and Plans  
D.K.: Don't Know

3. Generally speaking, how do you evaluate the following items in the context of your city's growth?

Item	Response					
	1	2	3	4	5	6
1. Urban government's financial basis	( )	( )	( )	( )	( )	( )
2. Efficiency of urban administration	( )	( )	( )	( )	( )	( )
3. Mayor's leadership	( )	( )	( )	( )	( )	( )
4. Citizen participation in development	( )	( )	( )	( )	( )	( )
5. Central government's support and subsidy	( )	( )	( )	( )	( )	( )
6. Development plans and their implementations	( )	( )	( )	( )	( )	( )
7. Centralised gov't system	( )	( )	( )	( )	( )	( )
8. Area-wide admin. system	( )	( )	( )	( )	( )	( )
9. Directly controlled system	( )	( )	( )	( )	( )	( )
10. Local autonomy (if it put into practice)	( )	( )	( )	( )	( )	( )

Response 1: Very strong relation      2: Strong relation  
           3: Relation                        4: Some relation  
           5: Little relation                5: Don't know

( Please tick ("v") two places, the most and the second most relevant items, per question, henceforth.)

4. What do you think are the most important factors in terms of their contribution to the growth of your city?

- ( ) (1). Favourable geographical location.
- ( ) (2). Central place functions.
- ( ) (3). Functional roles in the national land.
- ( ) (4). National land development policies and plans.
- ( ) (5). Economic development policies and plans.
- ( ) (6). Others ( \_\_\_\_\_ ).

5. Among the following items, which factors, do you think, have most influenced the growth of your city?

- ( ) (1). Urban government's financial basis.
- ( ) (2). Central government's support and subsidy.
- ( ) (3). Efficiency in urban administration.
- ( ) (4). Mayor's leadership.
- ( ) (5). Citizen participation and support in development.
- ( ) (6). Others ( \_\_\_\_\_ )

6. Which aspects, do you think, have most contributed to the growth of your city?

- ( ) (1). Physical/environmental aspect.
- ( ) (2). Historical/cultural background and traditions.
- ( ) (3). Socio-cultural aspect.
- ( ) (4). Economic aspect.
- ( ) (5). Administrative/institutional aspect.
- ( ) (6). Political situation.

7. Which aspects, do you think, should be strengthened to promote the further growth of your city?

- (1). Industrial environment.
- (2). Living environment.
- (3). Development administration.
- (4). Institutions and policies.
- (5). Development plans.
- (6). Others (\_\_\_\_\_).

8. Among the following items, which functional interactions should be strengthened for your city growth?

- (1). Interactions with hinterlands.
- (2). Interactions with small cities in the area.
- (3). Interactions with regional metropolitan cities (Taegu, Kwangju, and Taejeon).
- (4). Interactions with Seoul and/or Pusan.
- (5). Interactions with most cities in national urban system.
- (6). Others (\_\_\_\_\_).

9. In general, which factors are most important for urban growth?

- (1). Diverse economic activities.
- (2). Industrial development based on regional character.
- (3). Manufacturing-oriented industrial structure.
- (4). Service-oriented industrial structure.
- (5). Advanced industrial structure.
- (6). Others (\_\_\_\_\_).

10. Which measures, do you think, are needed to strengthen industrial activities in your city?

- (1). Enhancement of entrepreneur's management ability.
- (2). Accommodation and development of new technology.
- (3). Improvement of industrial location environment.
- (4). Citizen attitudes.

(5). Support system to industrial activities.

(6). Others (\_\_\_\_\_).

11. What aspects, do you think, are critical for urban growth?

(1). Population growth.  (2). Income Generation.

(3). Territorial enlargement.  (4). Economic diversity

(5). Advanced industrial structure.

(6). Others(\_\_\_\_\_).

**Thank You for Your Cooperation.**



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