

# **A CRITICAL REVIEW ON THE URBANIZATION AND SPATIAL DEVELOPMENT: INTER - REGIONAL COMPARISON**

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## **I. Introduction**

One of the most significant of all postwar demographic phenomena and the one that promises to loom even larger in the future is the rapid growth of cities in developing countries. In the 1950s, 275 million people were living in Third World cities, 38 per cent of the 724 million total urban population, and had reached 2.4 billion by 1990 with 60 per cent (1.45 billion) living in metropolitan areas of developing countries. The United Nations estimates that in the year 2,000, over 2.1 billion, or 66 per cent, of the urban dwellers of the world will reside in less developed regions. This will represent an overall increase of 166 per cent, or 1.32 billion new urbanites in Africa, Asia, and Latin America (United Nations, 1980).

It has been known that the main source of rapid urbanization in Third World is migration from the rural area to the urban area. Until recently, rural-urban migration was viewed favorably in the economic development literature (Brigg 1971, United Nations 1988). Internal migration was thought to be natural process in which surplus labor was gradually withdrawn from the rural sector to provide needed manpower for urban industrial growth. The process was deemed socially beneficial because human resources were being shifted from locations where their social marginal product was often assumed to be zero to places where this marginal product was not only positive but also rapidly growing as a result of capital accumulation and technological progress (Lewis 1954, Fei and Ranis 1964).

In contrast to this viewpoint, it is now abundantly clear from

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recent LDC (Less Developed Countries) experience that rates of rural-urban migration continue to exceed rates of urban job creation and to surpass greatly the absorption capacity of both industry and urban social services. No longer is migration viewed by economists as a beneficent process necessary to solve problems of growing urban labor demand. On the contrary, migration today must be seen as the major factor contributing to the ubiquitous phenomenon of urban surplus labor, as a force that continues to exacerbate already serious urban unemployment problems caused by economic structural imbalances between urban and rural areas (Todaro 1969, Harris and Todaro 1970). Furthermore, it is not doubt that rapid urbanization has brought serious urban problems - environment problems (pollution, sanitation, portable water problems, etc.), transportation problems, housing problems, violence, etc. These problems constitute social cost of the rapid urbanization, which is difficult to be calculated as private cost at resource allocation in the market.

Among the urban problems, for example, shelter problems would bring serious economic and social consequences because shelter is not only important for the social security but also one of important tools for the re-production activity of the labor. If the housing cost in urban area is high, the living cost of worker is also increasing, which implies that the production cost also increase because labor wage should be adjusted to compensate the increase of housing cost for the sustainable production activity. This weakens the price competitiveness of domestic product compared to foreign countries' products in international market, therefore, has deteriorated the terms of trade and the trade balance, which affects national economic situation adversely. Therefore, rapid urbanization problems should be understood and tackled by social welfare approaches. In order to bring down these urban problems, government interventions and institutional reformations might be needed.

However, to solve rapid urbanization problems, first of all, causes of them should be analyzed because policies recommended for them should be dependent on the cause. For example, one of ways to solve it would be to develop rural areas in creating job opportunities especially by rural development policies if the main cause of the rapid urbanization is the migration from the rural, while it is an overall population policy to control the fertility rate otherwise.

In this paper, pattern and structure of urbanization with spatial development and factors to determine the level of urbanization will be analyzed with international comparison focusing on the causes of the rapid migration and level of urbanization in less developed regions. This paper consists of six sections. In the next section, the structure of urbanization in Korea will be reviewed briefly to get a yard stick for the international comparison. In the third section, trends and patterns of urbanization will be analyzed inter - regionally, for setting urbanization problems. In the fourth section, migration effects on the urbanization and causes of rapid urbanization will be analyzed. In this section, we will find that it has no evidence to argue that major cause of rapid urbanization in less developed region is heavy migration from the rural area. In the fifth section, a regression analysis to find factors determining the level of urbanization will be given, and comparison of urbanization level in middle income regions with experience of more developed regions will be analyzed. Finally, some concluding remarks will be given.

## **II. A Brief Review on the Structure of Urbanization in Korea**

The economic development of the Korea has been among the most rapid and sustained in the world. By pursuing an industrialization-led development strategy since 1961, Korea has achieved considerable economic growth and structural transformation from a largely agricultural, subsistence economy into a newly industrialized one, despite the lack of significant natural resources and the burden of high defence expenditures.<sup>1</sup> In the promotion of economic development through mass industrialization, the distribution of the labor force underwent a drastic change. From 1960 to 1990, the agriculture sector was reduced to less than a third of its former size, while the mining, manufacturing, and construction sectors together more than tripled in magnitude.

Urbanization has accompanied industrialization, and Korea's cities have grown largely in response to the rapid growth of the industry sector. Since 1960, large numbers of people have moved from rural to urban areas, and urbanization has risen rapidly. In 1960,

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<sup>1</sup> For the details, see World Bank (1987)

less than 30 per cent of population lived in urban areas; by 1990, about 74 per cent could be found in urban areas.

This rapid urbanization and heavy population concentration in large cities has resulted in various social and economic problems including traffic congestion, pollution, housing shortages, unemployment, and proliferation of slums. In particular, the urban poor posed one of the most serious problems during the early stages of development. In the early 1960s, almost 55 per cent of the total urban population was estimated to be living in absolute poverty. Widespread urban poverty created a multiplicity of social problems, including legal complication due to the numbers of those living in unlawful dwellings in slum areas, health problems brought on by poor water and sewage systems, fire trucks, increased family distributions arising from cramped living quarters and unstable incomes, and increased public disorder stemming from growing conflicts between classes.

The government formulated and implemented domestic policies and programs to deal with those serious problems. From the 1970s, policy have some effective outcomes. The general living conditions of the poor in urban areas have improved significantly.

However, housing problems for the urban poor have become one of the most pressing political issues of the economy. Various policy measures have been instituted to solve the urban poor's housing problems, but with only limited success. As results, the urban poor have frequently been forced to relocate, often to unsuitable locations and far from their work places. Distortions in housing market characterized by extremely high prices and chronic shortages have worsened the housing conditions of the urban poor. Foremost among the reasons for the scare and unbalanced supply of housing is the shortage of urban land sites, resulted in high prices. These problems have been caused mainly by government policies which- in combination with the green belt policy-restricted the convention of agricultural, forest, and other non-urban land uses to urban use.

In the mean while, the structure of settlement in the rural area has become unplannedly after industrialization. Therefore, it is reasonable to say that Korea's settlement structure have had dichotomous rural - urban patterns since the 1960s.

### **III. Trends and Patterns of Urbanization: Cross-Region Comparisons**

Official definition of the term, "urban", vary and the quality of the data may be uneven; both will have a bearing on comparison of urbanization trends and patterns among countries/regions.<sup>2</sup> Therefore it would lead a mis-conclusion to do international comparison without reviewing the precise definition of urbanization used in each individual country. It is important, however, to be clear about the distinction between urbanization and urban population growth. The former is defined as the rise in the proportion of total population living in urban areas. It connotes the changing balance rural and urban populations brought about by spatial shifts (migration) of people from rural to urban areas and by differences in the two areas. Hence, urbanization-a structural phenomenon linked in some way to structural economic change-should not be confused with urban population growth- a measure of absolute change which refers only to urban areas and has not reference to rural population growth.<sup>3</sup>

In this section, measurement of urbanization (degree of urbanization, rate of urbanization), rate of urban growth (urban population growth) will be analyzed and compared by regions with explaining some stylized facts of the trends and patterns of urbanization according to economic development. In this paper, regions will be divided by their per capita income levels; more developed regions (MDR) and less developed regions (LDR) (see United Nations, 1992).

#### **1. Levels and Pace of Urbanization**

As mentioned in the previous, the concepts of urbanization include the social - economic structural changes. The most widely

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<sup>2</sup> There are also differences among countries in the definitions of large and small cities or towns. The definitions need in this section are those of countries concerned (a practice adopted by the United Nations) since national statistical offices are considered the appropriate judges in this regard. See Pernia (1994) for the details.

<sup>3</sup> It is obvious, nonetheless, that urbanization and urban population growth are closely related. See Pernia (1994), and the following explanation in this section.

used measures of urbanization are the degree of urbanization and the rate of urbanization, which is defined as the size of urban population divided by the size of total population, and the growth rate of degree of urbanization, respectively.

In 1990, Korea's degree of urbanization recorded as about 72 per cent which was almost same to MDR's (72.13 per cent) and two times of LDR's (34.31 per cent). It is about 3.4 times of the his own figure in 1950. In the end of this century, it would be expected as about 82 per cent which exceeds the MDRs' degree of urbanization and two times of those of LDRs (Table 1).

The degree of urbanization in Korea started to increase during the 1950s, and sharply increased in the 1960s and the 1970s. In 1950 and 1960, the degree of urbanization in Korea was less than half of MDR's, and was not so much different from LDR's. During the last three decades (the 1960s, the 1970s, and the 1980s), Korea had recorded unprecedented increasing trends in the degree of urbanization compared to the average corresponding figures of LDRs. Since around 1980, however, those increasing trends have been dampened even though degree of urbanization have shown the increasing trend.<sup>4</sup> In the coming two decades (the 1990s and the 2000s), the increasing trends in the degree of urbanization would be

**TABLE 1** Degree of Urbanization

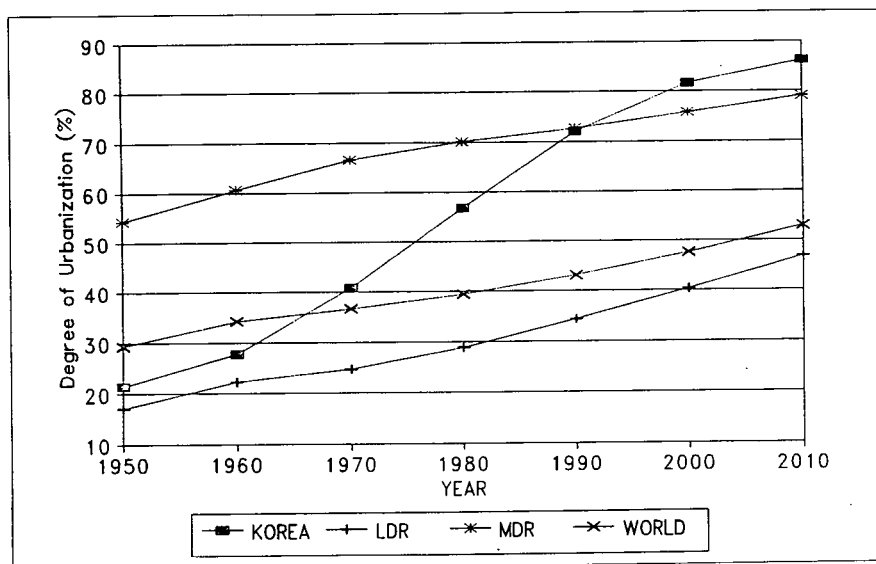
Unit: %

	Year						
	1950	1960	1970	1980	1990	2000	2010
Korea	21.35	27.71	40.71	56.86	72.13	81.62	86.26
LDR	16.95	22.16	24.69	28.82	34.31	40.27	46.79
MDR	54.31	60.61	66.59	70.21	72.74	75.78	79.13
World	29.31	34.19	36.57	39.40	43.10	47.56	52.85

Data Source: United Nations, 1992

<sup>4</sup> Changes in the degree of urbanization with respect to years could be calculated as follows; 63.6 % in the 1950s, 130.0 % in the 1960s, 161.5 % in the 1970s, 152.7 % in the 1980s, 94.9 % in the 1990s, and 46.5 % in the 2000s on the annual average. Corresponding figures of the second variants is 663.8% in the 1960s, 315.9 % in the 1970s, -88.6 % in the 1980s, -578.0 % in the 1990s, and -484.4 % in the 2000s. Therefore, we can see that the trends in degree of urbanization would be dampened and inflected around 1980.

**FIGURE 1** Trends in Degree of Urbanization



expected to be similar to those of MDRs<sup>1</sup>.

The degree of urbanization in MDRs has increased with decreasing rate while LDRs' degree of urbanization has increased with increasing rate. Trends and projections in the degree of urbanization by regions since 1950 are shown in Figure (1).

We can get more information about shape of trends in the degree of urbanization from the rate of urbanization - growth rate of degree of urbanization - to see those phase detailly. Korea's rate of urbanization trend recorded as 2.61 per cent in the 1950s, 3.85 per cent in the 1960s, 3.34 per cent in the 1970s, 2.38 per cent in the 1980s, and 1.24 per cent in the 1990s. And those figures will be expected as 0.55 per cent in the first decade of next century (see Table 2). The speed of urbanization was dramatically increased in 1960s, however, it has decreased since the 1970s and its decreasing speed is also dramatically recorded in the 1990s. That is, Korea got rapid urbanization in the 1960s and the 1970s. After that its speed was reduced in the 1980s, which was less than those of the 1960s. Furthermore, declines in its speed in the 1990s and the first decade in the next century would be prospected to be continued.

These phases would coincide with economic development

policies and stages, which Korea has taken as explained in the previous section. In the 1960s, Korea has started to take economic growth with heavy migration from the rural area to the urban area enabled to utilize labor forces cheaply for promoting the labor intensive industry. In the 1970s, Korea's economic growth policy was changed to promote heavy industry which was relatively less labor intensive so that pressures for demanding for labor in urban area was decreased compared to those of the 1960s even if migration from the rural area to the urban area was continuously done. As results, growth rate of degree of urbanization in the 1970s was less than those of the 1960s. Occurrences in the 1980s was almost same to those of the 1970s. As mentioned in the above, the growth rate of degree of urbanization in the 1980s was less than those of the 1960s and it could be projected at almost same rate of the MDRs' would mean that Korea have entered pace of urbanization which MDRs had experience since the 1980s. In the 1990s, furthermore, the level of urbanization might be same to those of MDRs while the pace of urbanization (rate of urbanization) was still higher than those of MDRs. However, Korea's rate of urbanization would be projected 0.55 per cent in the first decade of the next century, which would be almost same to MDRs'. In sum, during the last four decades (1950-90), the growth rate of degree of urbanization was 3.04 per cent on the annual average. This figure was less than those of MDRs (0.73 per cent) but greater than those of LDRs (1.76 per cent). In the next decade, Korea's rate of urbanization would be projected to level of MDRs.

**TABLE 2** Rates of Urbanization

Unit: %

	Year						
	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-10	1950-90
Korea	2.61	3.85	3.34	2.38	1.24	0.55	3.04
LDR	2.68	1.08	1.55	1.74	1.60	1.50	1.76
MDR	1.10	0.94	0.53	0.35	0.41	0.43	0.73
World	1.54	0.67	0.74	0.90	0.98	1.05	0.96

Note: Rates are annual averages of exponential growth rate.

Data Source: United Nations. 1992



In LDRs, the rate of urbanization was recorded as 1.1 per cent on the annual average in the 1960s. It was not only recorded as lowest figures in the second half of this century but it was also dramatically decreased compared to the previous decade. This situation would come from the deterioration of terms of trade in agricultural products in both of the domestic and the international market. In the 1960s, the terms of trade of agricultural product was favor for the farmer. However, in the 1970s, the LDRs governments endeavored to promote the industrialization and focus on the capital intensity industrialization strategy. For this purpose, the price of agricultural product (especially food grain) had to be kept at low level because the living cost in urban area, which was a main portion of labor cost of industrial sector located in urban areas, was needed to keep low for the price competition. Therefore, the terms of trade of agricultural product was worsened in the 1970s, and as the results of this, the rate of urbanization in the 1970s and the 1980s was recorded as increasing figures.<sup>5</sup>

So, if we exclude LDRs' rate of urbanization figure in the 1960s, we would conclude that the trend in rate of urbanization of LDRs has almost twenty years lag of the trend compared to those of Korea even though the actual level of the rate of urbanization in Korea was higher than those of LDRs. Korea's phrase in the rate of urbanization go ahead of those of LDRs by 20 years.

From the above analysis, we can see that Korea's trend of urbanization has an almost full shape of logistic function. That is, before 1980, its shape is belong to the early stage of the logistic function and after 1980 it is belong to the later shape of the logistic function. The stage of around of 1970 is belong to the stage of inflection point of the logistic function.

Trends in degree of urbanization of LDRs, on one hand, are almost belong to the early stage of the logistic population growth function, on the other hands, those of MDRs are almost belong to the late stage of it. So, according to the trend of urbanization, we can conclude that Korea's degree of urbanization in the 1980s is positioned in the middle stage of urbanization trend, and the figure in the 1990s is belong to the late stage of urbanization. Korea's degree of

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<sup>5</sup> For the details, see Todaro (1994)

urbanization has twenty years gap between MDRs and LDRs. Therefore, if we combine trends in degree of urbanization in Korea, LDRs, and MDRs, we can draw the full shape of a logistic population growth function.

In conclusion, Korea's level of urbanization has finished the early urbanization stage and enter the late urbanization stage. Nowadays, Korea has a characteristic of the MDRs' urbanization.

## **2. Growth Rates of Urban Population**

These trends and patterns of urbanization can be also back-up by the figure of urban population growth rate which measures the absolute changes in urban population not referred to the rural population growth as explained in the above (see Table 3). It is clear from the table that the growth rate of urban population in the developing countries in the post - war period is very much higher than those in the developed countries.

Considering the period 1950 - 90 as a whole, the urban population in the developing countries has grown at a rate which is nearly two - and - a - half times higher than the corresponding rate in the developed world (urban population growth rate in LDRs is 3.98 per cent for annum while those of MDRs is 1.67 per cent during last four decades). Moreover, this high rate in the developing worlds is maintained consistently all through this period.<sup>6</sup>

In sharp contrast to the developing world, the growth rate of urban population in the developed world appears to be slacking over time during same period (1950 -90): the rate in the later half of this period (1970 - 90) (2.18 per cent for annum) is almost half the rate in the initial twenty - year period (1950 - 70) (1.16 per cent for annum). Consequently, the gap between the urban growth rate in the developing and the developed world has widened.

The urban population growth rate in Korea was recorded as 4.66 per cent in the 1950s, 6.29 per cent in the 1960s, 5.12 per cent in the 1970s, and 3.67 per cent in the 1980s on the annual average.

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<sup>6</sup> High rates of urban population growth - of the order of more than 4 per cent for annum, which means doubling of the population in less than 20 years - has never occurred in the history of modern urbanization, not even during the Industrial Revolution in the developed countries (see Bairoch, 1988).

**TABLE 3** Growth Rates of Urban Population

Unit: %

	Year						
	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-10	1950-90
Korea	4.66	6.29	5.12	3.67	2.02	1.05	4.93
LDR	4.76	3.52	3.78	3.84	3.52	3.10	3.98
MDR	2.36	1.99	1.33	0.99	0.95	0.91	1.67
World	3.36	2.70	2.59	2.64	2.61	2.43	2.82

Note: Rates are annual averages of exponential growth rate.

Data Source: United Nations, 1992

Those figures in the 1990s and first decade of next century would be estimated as 2.02 per cent, and 1.05 per cent, respectively. The annual average growth rate of urban population during the last four decades was 4.93 per cent which was higher than those of LDRs. This means that Korea had gotten rapid urbanization compared to the LDRs during post - war period. Since the 1980s, however, this situation has been reversed. After 1980, the growth rate of urban population in Korea was not only less but also would be projected less than those of LDRs for the next decade.

The trend of the population growth rate in Korea urban area has been declining since the 1970s while the trend of urban population growth rate in LDRs would be expected to decline from the 1990s, which is 20 years lag compared to Korea's. MDRs' urban population growth rate has been declining since the 1950s continuously.

However, the growth rate of urban population itself does not tell us whether, say, a high rate of growth of urban population in a region is due to a high rate of growth of overall population (i.e. including the rural population) in the region, or due to some other factor like rural - urban migration, *etc.* We can see the main cause of the rapid urbanization by comparing the rate of urbanization and the growth rate of urbanization. In comparing two measures, we can get which portions of urbanization could be explained by the population growth itself in urban area and by migration of rural population. By comparing two measures, we can get a clue for measuring the differences of urban-rural population growth and migration effects on

the urbanization, respectively.<sup>7</sup>

$$\frac{d\ln U}{dt} : \text{growth rate of urban population} \quad (1)$$

$$\frac{d\ln(U/T)}{dt} = \frac{d\ln U}{dt} - \frac{d\ln T}{dt} = \text{growth rate of degree of urbanization} \quad (2)$$

where U: size of urban population, T: total population size, t: time.

From the above equations, we can see that the difference between the growth rate of urbanization and the growth rate of urban population measures the growth rate of total population, which is related to the difference of urban - rural population growth, and the ratio of them could measure the migration effects on the urbanization, respectively. We can see that the growth rate of urban population could be greater than those of degree of urbanization by amount equal to the growth rate of total population.

For example, the difference between them - the growth rate of urban population and the growth rate of degree of urbanization - which is equal to the growth rate of total population was 1.89 per cent in Korea, 2.22 per cent in LDRs, 0.94 per cent in MDRs, and 1.86 per cent in the world for annum during the last four decades. The ratio of them (eq. (2) / eq. (1)) would be an urban population elasticity of degree of urbanization which measures sensitivities of per cent changes with respect to the changes in urban population.<sup>8</sup> These figures in Korea, LDRs, MDRs, and World average during the last four decades are 0.617, 0.442, 0.437, and 0.340, respectively. From these, we can also confirm that Korea's response of degree of urbanization would be much sensitive compared to other regions,

<sup>7</sup> This will be detaily analyzed in the next section.

<sup>8</sup> It is easy to see the ratio of growth rate of degree of urbanization to the growth rate of urban population measures the sensitivity of changes in degree of urbanization with respect to the change in the urban population as follows;

$$\frac{\frac{d\ln(U/T)}{dt}}{\frac{d\ln U}{dt}} = \frac{d\ln(U/T)}{d\ln U}$$

which means that Korea's level of urbanization would come from the rapid migration from the rural area to the urban relative to those of other regions.

Now, it is interesting to compare this pattern of urban growth with that of rural growth. Table 4 gives us the relevant data.

While the growth rates of rural population in the developing countries are considerably higher than the rates in the developed countries - where in fact these rates are negative - what is noteworthy is that these rates in the developing countries are much lower than the growth rates of urban population in them; moreover these rates are also slackening over time. Thus it appears that it is only the urban population in the developing countries which is growing at considerably high rates in the post world war II period; the rural population in the developing region, or rural or urban population in the developed region cannot match this performance: they seem to be growing at low, and declining rates.

However, Korea's growth rates of rural population have been considerably declined during the last four decades. Especially, during the last two decades (the 1970s and the 1980s) Korea's rural population declined dramatically. This means that Korea's urbanization would mainly come from the rapid migration from the rural area to the urban area unlike LDRs and MDRs, especially compared to LDRs.

**TABLE 4** Growth Rates of Rural Population

Unit: %

	Year						
	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-10	1950-90
Korea	1.21	0.46	-1.41	-3.08	-3.38	-2.42	-0.70
LDR	1.44	2.11	1.67	1.30	0.97	0.45	1.63
MDR	-0.22	-0.60	-0.35	-0.25	-0.67	-1.01	-0.35
World	1.11	1.66	1.39	1.12	0.81	0.32	1.32

Note: Rates are annual averages of exponential growth rate.

Data Source: United Nations, 1992

#### **IV. Migration Effect and Concentration of Urban Population**

Now, we will see what is the main cause of rapid urbanization in LDRs - is it solely or largely due to high growth rates for overall population? One way of looking at it is to see how the urban - rural - growth - differentials behave and measure migration effects on the urbanization (urban-rural growth differential, percentage contribution of migration in urban growth). And related measure for concentration and dispersion of population in urban area (primacy index) will be analyzed.

##### **1. Migration Effects on the Urbanization**

As explained in the previous section, one of main reasons of the rapid urbanization is the migration from rural areas to urban areas. However, to get further insights for the rapid urbanization problems, an analysis of changes in rural population size and structure is needed. That is, measures of attributions of migration to the urban population growth rate (how much migration might attribute to the urban growth rate) will be needed. For this, the gap of urban and rural population growth rate and the contribution of migration in urban population growth was analyzed in Table (5) and (6).

The differences between urban and rural population growth rate, called as Urban-Rural Growth Differential (URGD), in Korea was 3.45 per cent in 1950s, 5.83 per cent in the 1960s, 6.52 per cent in the 1970s, 6.75 per cent in the 1980s, and expected 5.40 per cent in the 1990s, 3.47 per cent in the first decade of the next century. The figure of URGD in the 1980s was recorded the highest, after 1990 the trend of URGD showed to decline. However, the URGD of LDRs would expected to increase up to first decade of next century (see Figure 2). MDRs' already recorded as declining trends from the 1970s. But all regions showed the growth rate of urban population exceeds the rural population growth rate.

Therefore, how much portion of the urbanization in all regions (including MDRs) could be explained as migration effects is important to explain the urbanization structure. Net additions to urban population could be consist of two parts. One is reclassification component, the other is net addition to the population of existing

**TABLE 5** Urban - Rural - Growth - Differentials

Unit: %

	Year						
	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-10	1950-90
Korea	3.45	5.83	6.52	6.75	5.40	3.47	5.64
LDR	3.33	1.41	2.11	2.55	2.55	2.65	2.35
MDR	2.58	2.59	1.68	1.24	1.59	1.92	2.02
World	2.26	1.04	1.20	1.53	1.80	2.12	1.51

Note: Rates are annual averages of exponential growth rate.

Data Source: United Nations, 1992

towns. The former is the addition due to reclassification of a rural area as an urban area, the latter is net addition due to natural growth and migration.

One of measures for the pattern and structure of urbanization is to calculate the contribution of migration to urban population growth. This method is useful for obtaining migration effects on the urbanization when it is difficult to obtain reliable data of reclassification. That is, we assume that reclassification of rural area as urban area is negligible. If we accept this assumption, we could approximate the net addition to urban population as summation of natural growth in urban population and net migration to urban area. Therefore, we could get a following formula;

**Net addition to urban population  $\approx$  Natural Growth + Migration**

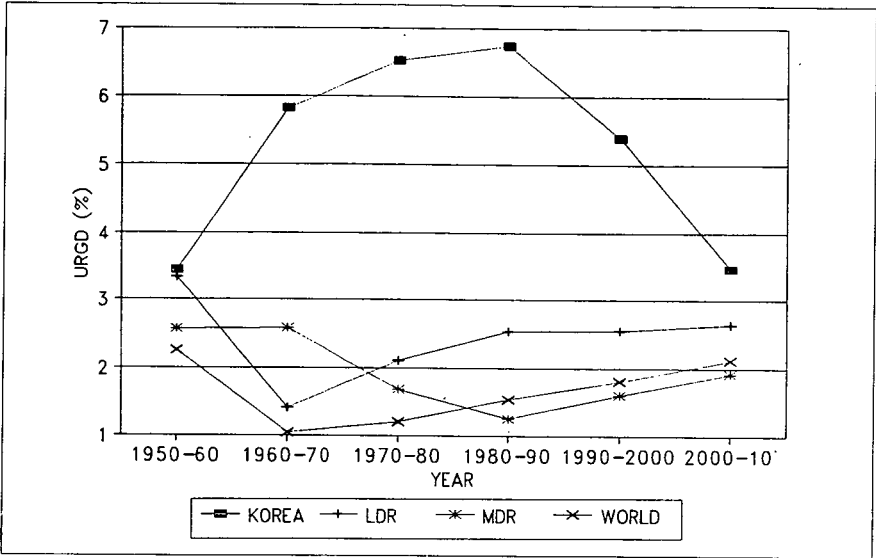
If we divide both sides of the above by the initial urban population size, we can obtain following identities;

$$r_u \approx n_u + m_u \quad (3)$$

$$m_u \approx r_u - n_u \quad (4)$$

where  $r_u$  is the growth rate of urban population,  $n_u$  is the natural growth rate of urban population, and  $m_u$  is the migration rate from rural areas to urban areas. If we divide both sides of equation (4) by

**FIGURE 2** Trends in Urban - Rural Differential



$r_u$ , and assume that migration to outside country is negligible<sup>9</sup> and the natural rates for urban and rural areas are the same<sup>10</sup>, we can obtain the percentage contribution of migration to urban population growth as follows;

$$\frac{m_u}{r_u} \approx \frac{r_u - r_t}{R_u} \tag{5}$$

where  $r_t$  is rate of growth of total population.

The figure of percentage contribution of migration to urban growth (PCMUR) is given in Table 6. Looking at the period 1950 - 90 as a whole, it appears that roughly about half of the urban growth in the developing countries is due to rural - urban migration; and hence the other half is due to natural growth in urban areas. Thus it appears that the consistently high urban population growth rates in LDRs in this period (except the 1950s, see Table 3) is due both to high levels

<sup>9</sup> That is, rate of growth of total population in a region is the same as its natural rate which means migration across the border are not substantial in relative terms. It is an acceptable assumption for a country.

<sup>10</sup> This is much more difficult to justify.



of rural - urban migration, and high level of natural urban population growth; and it would be a mistake to consider one or the other as the major cause. Therefore, if rapid urban growth is to be controlled, one has to have policies which consider both these dimensions: policies to reduce rural - urban migration and to reduce birth rates are both essential.

**TABLE 6** Percentage Contribution of Migration in Urban Growth

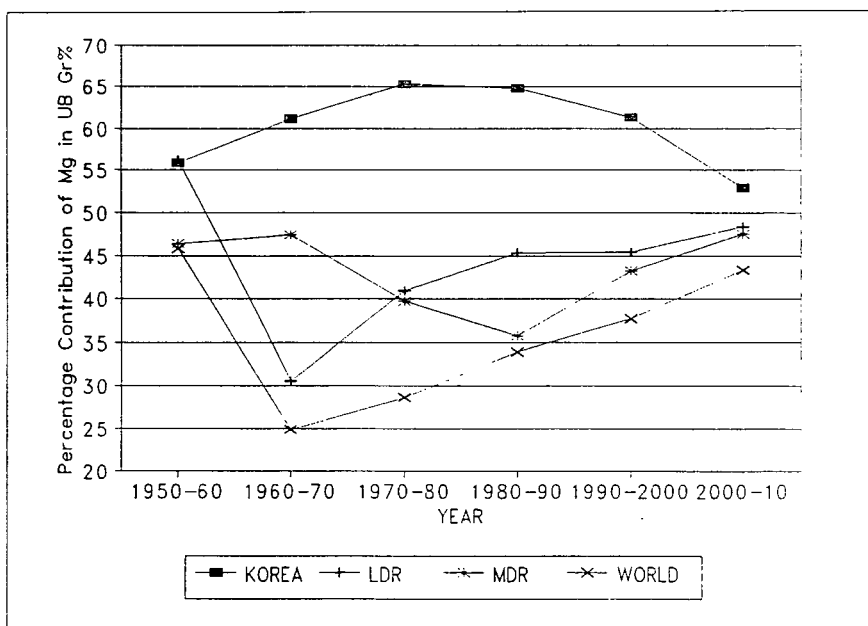
Unit: %

	Year						
	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-10	1950-90
Korea	55.90	61.15	65.31	64.82	61.30	52.89	61.67
LDR	56.24	30.64	40.97	45.36	45.44	48.37	44.32
MDR	46.42	47.38	39.77	35.74	43.28	47.48	43.79
World	45.82	24.94	28.73	33.96	37.75	43.33	34.14

Note: Rates are annual averages of exponential growth rate.

Data Source: United Nations, 1992

**FIGURE 3** Percentage Contribution of Migration in Urban Growth



Now, for the same period in the MDRs, migration accounted for roughly half of urban population growth. It was not much different from the (percentage) contribution of migration to urban growth in the case of MDRs. But to conclude from this that urbanization pattern in the LDRs is similar to those in MDRs is fallacious. This is for the simple reason that in the former, we have a situation where low rates of natural growth and low rates of migration lead to low rates of urban growth; and in the latter, we have a situation where high rates of natural growth and high rates of migration lead to high rates of urban growth. Thus even though migration and natural growth account for roughly half each of urban growth in both the places they represent entirely different situations.

In Korea, PCMUR was 55.90 per cent in 1950s, 61.15 per cent in the 1960s, 65.31 per cent in the 1970s, 64.82 per cent in the 1980s. And those figure would expected 61.30 percent in the 1990s, and 52.89 per cent in the first decade in next century, which showed declining trends from the 1980s. During last four decades (1950-90) the annual average of PCMUR in Korea was 61.67 per cent. That is, almost two over thirds of Korea's urban growth during those periods would be contributed by migration from rural to urban areas while LDRs and MDRs annual average of PVMUR during same periods was recorded as 44.32 per cent and 43.79 per cent, respectively. From this, we can see that one of main causes of Korea's rapid urbanization was migration from rural areas to urban areas. This implies the rural population was reduced dramatically during same period: rural population growth rates (on annual average) in Korea was 1.21 per cent in the 1950s, 0.46 per cent in the 1960s, -1.41 per cent in the 1970s, -3.08 per cent in the 1980s, and expected to be -3.38 per cent in the 1990s and -2.42 per cent in the first decade of next century (see Table 4). So, Korea's rapid urbanization could be built on the relative deterioration of rural economy and social structure compared to other regions. Korea's rapid migration from the rural area could be also analyzed by the concentration measures of urbanization. In sum, unlike Korea's case, other less developed regions have no evidence to argue that their rapid urbanization come from the migration from the rural area.

## 2. Urban primacy and Dispersal Trends: The Case of Korea

Now, for the concentration and dispersion of urbanization in Korea, the percentage of urban population residing in urban agglomeration was calculated as primacy index ( $P_1$ , and  $P_2$  in Table 7)<sup>11</sup>.  $P_1$  (= Seoul population / Pusan population) was decreasing in the 1970s because of strong dispersal policy of Seoul's (actual and potential growth in) population and economic activity to satellite cities of Incheon and Taejon, and Green Belt policy.

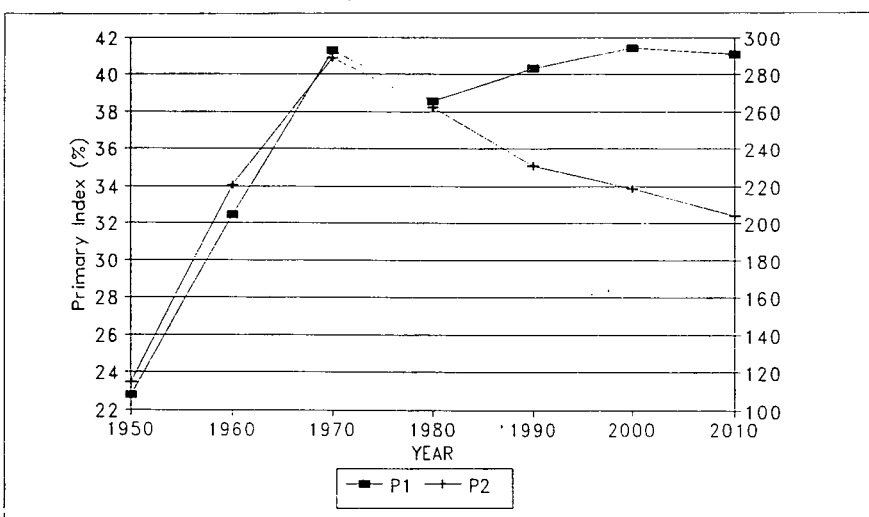
**TABLE 7** Primacy Index in Korea

Unit: %

	Year						
	1950	1960	1970	1980	1990	2000	2010
$P_1$	107.70	204.59	293.00	256.48	283.33	294.03	290.98
$P_2$	23.49	34.07	40.88	38.21	35.09	33.85	32.40

Data Source: United Nations, 1992

**FIGURE 4** Trends in Primacy Index.  $P_1$  and  $P_2$  in Korea



<sup>11</sup>  $P_1$  = (the population of the largest town in the region)/(the population of the second largest town in the region),  $P_2$  = (the population of the largest town in the region)/(the total urban population in the region)

That is, in Korea, policies have been directed at controlling the growth of Seoul, reducing the imbalance in the urban structure and stemming rural depopulation, by employing such measures as the 'green belt' project, installing legislation which regulates industrial location, providing fiscal incentives and disincentives, constructing satellite cities, promoting regional growth pole, and encouraging rural development through Saemaul Undoing (New Village Movement). This is also reflected in  $P_2$  (=Seoul population / total urban population in Korea). So before the 1980s,  $P_1$  and  $P_2$  have almost same trends. However, after Seoul Olympic (1988),  $P_1$  has been increasing in contrast to its declining trends during the 1970s while  $P_2$  have continuously declined since the 1970s (see Figure 4).

## V. Factors for Level of Urbanization and Some Implications : Regression Analysis

Now, to expect or forecast the urbanization in LDR and to determine the relative significance of specified factors in explaining the variation in degree of urbanization, regression estimation is needed. For regression estimation, data for 119 countries in the World were analyzed.

The hypothesized explaining variables for the urbanization included the per capita income (pgnp), the growth rate of per capita income (grgdp), and the growth rate of total population (pop). That is, degree of urbanization (UB) has functional relationship as followings;

$$UB = f(pgnp, grgdp, pop) \quad (6)$$

We expect that the higher per capita GNP, the higher degree of urbanization.

In this paper, we assume equation (6) has a specific functional forms as followings;

$$\ln(UB) = b_0 + b_1(pgnp) + b_2(grgdp) + b_3(pop) + \epsilon \quad (7)$$

because the degree of urbanization could follow the logistic function of time, which can be back-up by Figure (1) and reasoning explained in the previous section.<sup>12</sup> The key characteristics of the logistic

function is that the urban share responds slowly to economic development at low levels of per capita income, then accelerates, but again slows down at higher levels.

Logistic function can be written as follows,

$$Y = \frac{a}{b + k \exp(-aX(t))} \quad a, b > 0 \quad (8)$$

where  $k$  is a constant, and  $t$  is time.<sup>13</sup> Equation (8) can be changed to equation (9) by logarithm transformation on both sides and Taylor expansion.

$$\begin{aligned} \ln(Y) &= \ln(a) + \ln[b + k \exp(-aX(t))] \\ &\approx B - aX(t) \end{aligned} \quad (9)$$

where  $B$  is constant.<sup>14</sup> So we can treat an estimation equation (7) as reflecting the characteristics of the logistic population growth trends, approximately.<sup>15</sup>

The estimation results could be summarized as following table

<sup>12</sup> Renaud (1981) and Pernia (1988) also argued that scattergrams between the urbanization and per capita income showed an approximated logistic function.

<sup>13</sup> We assume that  $k > 0$  for the ordinal logistic curve. This function can be derived from logistic model of population growth;

$$\frac{\frac{dY(X(t))}{dt}}{Y(X(t))} = a - bY(X(t))$$

<sup>14</sup> Equation (9) would be derived from the following;

$$\begin{aligned} \ln Y &= \ln a + \ln[b + k \exp(-aX(t))] \\ &\approx \ln a + \ln[k \exp(-aX(t))] + \frac{\partial \ln[k \exp(-aX(t))]}{\partial X(t)} \times b \\ &= \ln a - aX(t) - ab \\ &= B - aX(t), \text{ where } B \text{ is a constant term.} \end{aligned}$$

<sup>15</sup> In precise, it is difficult to say that equation (9) could describe the whole shape of the logistic phase. It only describes the lower part of the logistic function because it is a kind of exponential functions. So, equation (9) only approximate the logistic shape. It is very difficult to have a concrete estimation equation form of logistic function if there are no ex ante information about  $a$  and  $b$  (in equation 8). Therefore, Mills and Becker (1986), for example, used simpler parabolic form of the functional relationship between urban share and per capita GNP.

(Table 8). Using data of 119 countries in the World, the results showed degree of correlation ( $R^2=0.395$ ) for the degree of urbanization function, with per capita GNP being the most significant independent variable. Total population growth had a significant negative effect, attributable to the negative association between per capita income and population growth.<sup>16</sup> Population growth tends to dampen the rise in the level of urbanization, though not urban population growth itself.

The growth of per capita income also exhibited a significant negative effect. This is because countries with high level of income and urbanization usually have relatively low per capita income growth rates, while these experiencing the most rapid per capita income increases are at intermediate stage of economic development and urbanization.

Mainly, high growth rate of population have come from higher fertility rates and lower mortality rates since the post second world war. This phenomena - defined as the intermediate phase of demographic transition - would be one common symptom of

**TABLE 8** Results of Estimation

Explanatory variables	Ln (degree of urbanization) $R^2 = 0.395$ , $N=119$ , $F^*[3, 115]=0.2505\ 480E+02$ , $\text{Prob}(F > F^*)=0.00\ 00000E+00$
constant term	4.0894 (37.794)
per capita GNP (pgnp)	0.25200E-04 (4.215)
growth rate of per capita GDP (grgdp)	-0.52123E-01 (-3.082)
growth rate of total population (pop)	-0.15301 (-3.469)

Note: t-values are given in parentheses

Data Sources: Estimated using World Bank (1995) data

<sup>16</sup> This estimated result would be consistent with Mills and Becker (1986). They used polynomial equations to estimate coefficients for urbanization level with the share of agricultural employment and per capita income as explanatory variables. However, according to their estimation result, the coefficient of per capita income was appear to be not significant.

demographic structure in LDRs. Children could be assumed as normal goods, and would be invested and reserved resources for the consumption in the future life-time on the view point of their own parents as well as be treated as resources for current income by making them to engage in the informal economic activities (helping their parents to cultivate lands and do farming activities). The latter is much more important in socio - economic structure of the rural area than in the urban area's because the formal sector in the rural area was not developed as much as those in the urban. Furthermore, opportunities of economic and social activities for women (eg. getting jobs and participating in off-home activities) are restricted in LDRs. And this trend is more strong in the rural area. Therefore, the opportunity cost of rearing children for LDRs' women is relatively low compared to those of MDRs' women, and women's economic opportunities in the rural area are more restricted compared to those in the urban area (Birdsall, 1988). This means not only that population growth rate of LDRs is higher than those of MDRs, but also that the growth rate of population in the rural is higher than those in the urban, in LDRs itself, because there are dual relationship between the urban area and the rural area in the labor market and the economic structure (Fei and Ranis, 1966).

Addition to utilizing labor forces and existing resources more effectively for economic developments via urbanization, the economic and demographic structure in both the rural area and LDRs could explain the reason why there are a negative relation between the population growth and the degree of urbanization. This would coincide with the trends in the degree of urbanization depicted in Figure (1) and the figures of population growth rate during the last four decades. Growth rates of total population in LDRs during the last four decades (1950 - 1990) was 2.22 per cent on the annual average, while those in MDRs was 0.94 per cent on the annual average. The degree of urbanization in MDRs has higher than those of LDRs (see Table 1).

The prediction from the above equation for the degree of urbanization in different income groups of countries are compared to the actual levels and are shown in Table 8.

The predicted urban share (degree of urbanization) is not as close to the actual value for middle-income countries as for the

**TABLE 9** Predicted and Actual Values of Urbanization in the World, 1993

	Country Type		
	Average low-income	Average Middle-income	Average High-income
Actual	28	60	78
Predicted	33.0	43.9	83.8

Note: According to World Bank (1995), the per capita income groups are low-income, \$695 or less in 1993 (45 economies); middle-income, \$696 to \$8,625 (63 economies); and high-income \$8,626 more (24 economies)

Data Source: World Bank (1995), and predicted by estimated regression equation (7)

average low-income and high-income countries. However, the actual urban share for the middle-income countries is higher than what would be expected on the basis of the experience of high-income countries.<sup>17</sup> From this evidence, it would be concluded that it is difficult to deny that present day developing countries (middle-income countries) are urbanizing too greatly or at too high a rate. This would coincide with historical findings calculating the degree of urbanization between MDRs and LDRs with long - term time series data. In relation to the level of industrial development in LDRs, however, LDRs today may be said to be over - urbanized (see Bairoch, 1988)<sup>18</sup>. This would be responsible not only for high fertility rates in both rural and urban areas but also migration from rural areas.

Another studies (Pernia 1982, Tolley and Thomas 1987) using a similar approach and focusing on developing countries yielded consistent and complementary results of our estimating. These could be summarized as followings: (1) degree of urbanization had a significant positive effect on the level of urbanization, while agricultural growth had a negative effect; (2) growth in manufacturing

<sup>17</sup> The above estimated results might have some functional fitted problems. However, it is difficult to deprive functional specification problems in estimation with logistic functional forms under unknown value of constant terms. See the previous footnote 15.

<sup>18</sup> According to Bairoch (1988), in the 1980s, the developing countries had about 31 per cent of their population in urban areas, the percentage of worker in industry sector was only 13 per cent, and the per capita GNP, which is used as a rough and ready measure of overall economic development, was 375 US dollars in 1960 prices. The corresponding characteristics in urbanization of developed countries is almost belong to figures in 1900.



had a positive though not a significant effect, while total population growth had a significant negative effect on the level of urbanization; (3) initial level of industrialization had a negative effect on the pace of urbanization, implying that urbanization tends to slow down at higher industrialization (or income) levels; (4) agricultural growth continued to exert a potent negative effect on the speed of urbanization, while manufacturing had a strong positive effect; (5) total population growth also had a potent negative effect on the pace of urbanization; (6) manufacturing had a significant positive impact, while population growth had a weak negative effect on spatial concentration (urban primacy); and (7) the degree of openness of the economy exerted a potent positive effect on spatial concentration.

In sum, while manufacturing growth influences urbanization in a positive way, population growth and agricultural development appear to exert the opposite effects. Population growth tends to dampen the rise in the level of urbanization, though not urban population growth itself. Agricultural growth also seems to retard urbanization in that it allows for greater labor abortion in the rural sector. This may reflect the effect of agricultural growth at low level of economic development. It is likely that at higher levels of the economic development, agricultural development have the reverse result, as in the experience of the industrial countries.

## **VI. Concluding Remarks**

To some extent and in a somewhat loose way, the degree and pace of urbanization can be predicted from the level of economic development and the rate of economic growth. Thus, the more progressive economies in LDRs have urbanized rapidly and appear to be in a transition not only to a slowdown in urban population growth but also to a diffusion of urban primacy.

However, a problem in LDRs has been rapid urban population growth, especially in terms of absolute increase on top of already large urban demographic bases, would come from both the migration from the rural area and the natural growth of urban population. Therefore, policies recommended for solving the rapid urbanization should not be biased only on the rural development measures but have interest on reducing the fertility rate of the urban area with creating

women's job opportunities.

Another critical issue concerns the excessive spatial concentration in the prime cities that have become or are fast emerging as megacities even though this issue was not critically analyzed in this paper. This is a visible issue because it manifests itself in terms of the highly charged problems of poverty, unemployment and underemployment, inadequate infrastructure and housing, deficient social services, and environmental degradation. Finally, the current level of urbanization in LDRs would be over - urbanized compared to the experience of MDRs.

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