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GROWTH AND CHANGE IN THE JAPANESE URBAN SYSTEM:
THE EXPERIENCE OF THE 1970s

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Preface

This paper reports on research undertaken within the context of the IIASA research task on Human Settlement Systems: Development Processes and Strategies. It is one of a series which examine the nature and significance of the evolution of the Japanese urban system and complements. Professor Tatsuhiko Kawashima's interim report on spatial changes in Japan's population structure (RM-77-25). Extensions of the work presented here will be published in two forthcoming research memoranda that will be prepared by Professor Kawashima during the next year.

Papers in the IIASA Series on Human Settlement Systems: Development Processes and Strategies

1. Peter Hall, Niles Hansen and Harry Swain, *Urban Systems: A Comparative Analysis of Structure, Change and Public Policy*, RM-75-35, July 1975.
2. Niles Hansen, *A Critique of Economic Regionalizations of the United States*, RR-75-32, September 1975.
3. Niles Hansen, *International Cooperation and Regional Policies Within Nations*, RM-75-48, September 1975.
4. Peter Hall, Niles Hansen and Harry Swain, *Status and Future Directions of the Comparative Urban Region Study: A Summary of Workshop Conclusions*, RM-75-59, November 1975.
5. Niles Hansen, *Growth Strategies and Human Settlement Systems in Developing Countries*, RM-76-2, January 1976.
6. Niles Hansen, *Systems Approaches to Human Settlements*, RM-76-3, January 1976.
7. Allan Pred, *The Interurban Transmission of Growth in Advanced Economics: Empirical Findings Versus Regional Planning Assumptions*, RR-76-4, March 1976.
8. Niles Hansen, *The Economic Development of Border Regions*, RM-76-37, April 1976.
9. Piotr Korcelli, *The Human Settlement Systems Study: Suggested Research Directions*, RM-76-38, April 1976.

10. Niles Hansen, *Alsace-Baden-Basel: Economic Integration in a Border Region*, RM-76-51, June 1976.
11. Peter Nijkamp, *Spatial Mobility and Settlement Patterns: An Application of a Behavioral Entropy*, RM-76-45, July 1976.
12. Niles Hansen, *Are Regional Development Policies Needed?*, RM-76-66, August 1976.
13. Galina Kiseleva, *Commuting: An Analysis of Works by Soviet Scholars*, RM-76-64, August 1976.
14. Koren Sherrill, *Functional Urban Regions in Austria*, RM-76-71, September 1976.
15. Niles Hansen, *Economic Aspects of Regional Separatism*, RM-77-10, February 1977.
16. Koren Sherrill, *Functional Urban Regions and Central Place Regions in the Federal Republic of Germany and Switzerland*, RM-77-17, April 1977.
17. Tatsuhiko Kawashima, *Changes in the Spatial Population Structure of Japan*, RM-77-25, June 1977.

Abstract

Data for Japanese Regional Economic Clusters and Standard Consolidated Areas for the period 1970 to 1975 are analyzed with respect to regional growth and metropolitan decentralization and compared to similar data for the 1950s and 1960s. It is found that the Japanese urban system continued to centralize (i.e. metropolitan regions grew faster than nonmetropolitan regions) and that metropolitan decentralization was slight. The data also reveal more rapid growth among middle-size regions than previously. Analysis of intercensal migration data is also undertaken to show the relative decline in immigration to large, metropolitan regions. Comparisons are made with migration data for other industrialized nations and similar patterns are shown to exist.

Acknowledgments

Funds for this research were provided by the Ford and Japan Foundations and much of the data were collected when I was a Japan Foundation Fellow in Japan during 1976. Helpful comments on this research and some data used in Section 3 were provided by my colleague at the University of Pennsylvania Daniel R. Vining, Jr. I am responsible for any remaining errors.

Growth and Change in the Japanese Urban System:
The Experience of the 1970s

1. INTRODUCTION

In a previous paper (Glickman [1976]) we outlined the development of the Japanese urban system from 1950-1970. There we defined the Regional Economic Cluster (REC)¹, analogous to the U.S. Standard Metropolitan Statistical Area, as a unit of analysis. We found that there was rapid urbanization and a high spatial concentration of population and economic activity in Japan: two-thirds of the 1970 population was in 903 cities, towns and villages which constitute the 80 RECs. Moreover, a full one-half of the population was located in only 33 of the RECs which made up 8 Standard Consolidated Areas (SCA).² Over time, we found that the system of cities was centralizing: the large, centrally-located metropolitan regions were growing at the expense of the smaller, more peripheral ones. This rapid urbanization and highly-centralized urban system was accentuated by rapid economic growth and the spatial concentration of public investment in the Tokaido megalopolis; see Patrick and Rosovsky [1976] and Glickman [1977]. Thus, there was heavy growth near Tokyo, Osaka, and Nagoya (particularly their suburban areas such as Chiba, Hiratsuka, and Yokohama) as well as some independent growth in the area surrounding Sapporo.

¹A REC is defined as a central city with a surrounding commuting field. Central cities with a population of 100,000 or more in 1970, net incommuting during the work day and a substantially urban character were selected. The satellite cities, towns and villages were related to the central city via commuting patterns: 500 workers, or at least 5% of total employment, must commute daily. Also, the suburban cities had to have urban character as well. For further details see Glickman [1976, pp. 317-319]. For another use of this data set see Kawashima [1977]. Please note that due to some boundary changes, there are some minor differences in the data in the following tables and those in Glickman [1976].

²The SCAs were defined as three or more contiguous RECs.

Furthermore, when compared to other developed capitalist countries, there was relatively little metropolitan decentralization between 1950 and 1970. For instance, the percentage of the REC population living in central cities declined only from 55.0 percent to 54.8 percent over that 20 year period; it actually increased (denoting relative metropolitan centralization) during the 1950s. These patterns are different from those in North America and Western Europe where population concentration was much less and there was considerable systemic and metropolitan decentralization. Finally, Japan's important growth regions were manufacturing-oriented, rather than service-based as in the United States and elsewhere.

Mera [1976] and Vining and Kontuly [1976], among others, have examined more recent migration data and have found evidence of low immigration to the major metropolitan centers during the 1970s. There has also been considerable discussion in Japan of what has been called the "U-turn" phenomenon. It has been seen that many people have migrated from rural areas to large metropolitan centers and then have return-migrated to areas near their home cities ("U-turn").³ Most of the U-turners are young (20-29 years old) according to Kuroda [1977]. Economic, social and "quality of life" reasons are commonly given to explain these trends.

Does this mean that there has been a changing pattern of urbanization within Japan in the 1970s? Has there been significant development in smaller regions at the expense of the larger ones? Has Japan moved into a stage of urban growth in which decentralization of both the urban system and individual regions is paramount? In Glickman [1976] it was argued that some answers to these questions might be answered with the publication of the 1975 population census. The preliminary count of that census (Bureau of Statistics, Office of the Prime Minister, [1975b]) has recently been released and this paper

³For additional discussion of Japanese migration, see Glickmann and McHone [1977].

presents some highlights of that enumeration as well as an examination of the intercensal migration data. Following a presentation of the census data in Section 2, an examination of the migration data are offered in Section 3. Japan's inter-regional migration is compared to that of other countries in Section 4. Section 5 presents some concluding remarks.

2. GROWTH AND CHANGE IN THE JAPANESE URBAN SYSTEM, 1970-1975

2.1. Aggregative Growth for Regional Economic Clusters and Standard Consolidated Areas

Using the REC and SCA conceptualizations of Japanese city-regions, we collected data for the 903 cities, towns and villages which make up the RECs for 1975. The data for this enumeration are summarized in Table 1 where aggregates and comparisons between 1970 and 1975 are made. According to the census figures, population growth for all Japan was 6.926 percent, from 104.7 million to 111.9 million-persons from 1970 to 1975. However, this growth was highly concentrated in the 80 RECs and 8 SCAs. Of the 7.2 million person increase in population in Japan, 6.2 million (86.1 percent) was accounted for by the RECs and 4.6 million (63.9 percent) by the SCAs. In the more than 2,000 cities, towns and villages in Japan which were not part of the RECs, population increased by only one million persons, or only 13.9 percent of all population growth. Thus, REC and SCA growth were 8.705 percent and 8.716 percent respectively for 1970-1975, both considerably faster than the national rate of increase. Non-REC areas only grew by 3.264 percent over the period. As a result of these differential growth rates, the REC share in total population increased from 67.30 percent to 68.42 percent. Also if one examines the three major metropolitan areas--Tokyo, Osaka and Nagoya--their combined growth was 8.659 percent, a very high rate for such large and congested areas.⁴

⁴These three Standard Consolidated Areas had a total population of 48 million people, nearly 63 percent of all those in Japanese RECs and a full 43 percent of all in Japan.

Finally, there is some indication of greater growth in the non-SCA RECs than those RECs which were in the SCAs. The former grew by 9.357 percent and the ratio of SCA to REC population fell slightly over the period.

Table 1
Growth of Regional Economic Clusters,
Standard Consolidated Regions and
All Japan, 1970-1975

<u>Area</u>	Population (millions)		Percent Change <u>1970-1975</u>
	<u>1975</u>	<u>1970</u>	
All Japan	111.9	104.7	6.926
All Regional Economic Clusters	76.6	70.4	8.705
All Standard Consolidated Areas	57.9	53.3	8.716
Tokyo, Nagoya and Osaka SCAs	48.0	44.2	8.659
All Non-REC Japan	35.3	34.2	3.264
RECs as Percent of All Japan	68.42	67.30	--
SCAs as Percent of All Japan	51.73	50.89	--
SCAs as Percent of RECs	75.61	75.63	--
Tokyo, Nagoya and Osaka SCAs as Percent of All RECs	62.89	62.73	--

N.B.: Percentages are calculated on the basis of unrounded data and may not agree with data in Table 1 if calculations made with Table 1's rounded data are employed.

This means that the Japanese urban system continued to centralize during the early 1970s as there was increased concentration in a relatively small number of metropolitan regions --despite the U-turn movement. Thus, to a certain extent, the experience of the 1950s and 1960s continued. We shall discuss this in more detail below.

2.2 The Growth of Individual RECs

Table 2 presents data for the 80 individual RECs. Here we have the 1975 population, the percent change in population between 1970 and 1975 for each REC and its component central city, the average annual growth rates for the 1960s and the 1970s and the 1970-1975 "shift index".⁵ The total REC population in 1975 was 76.6 million, compared to 70.4 million in 1970; this growth, as noted above, was 8.705 percent and this must be compared to the central city growth of 6.794 percent. Thus, for the RECs taken as a whole, there was relative metropolitan decentralization since suburban growth (11.010 percent) exceeded that of central cities. Central city population was 54.7 percent of the REC population in 1970, but fell to 53.7 percent in 1975. This is a continuation of the slight amount of decentralization which occurred in the 1960s.⁶

Table 2 also shows that there was a decline in the REC growth rates from 2.177 percent per year in the 1960s to 1.683 percent per year in the 1970s. But even though the REC growth rate fell, it was still much higher than the

⁵The shift index indicates the relative growth of a region with respect to all RECs. An index value of 1.0 shows the same growth as all RECs; a value below 1.0 indicates slower growth. See Glickman [1976, pp. 329-332].

⁶We shall return to a discussion of decentralization in our discussion of Table 4 (Section 2.4) below. As we shall see, the composition of spatial development holds some interesting conclusions.

Table 2

Population of RECs, REC and Central City Growth Rates

City	(1)	(2)	(3)	(4)		(5)
	REC Population (000) 1975	Percent Change REC Population 1970-1975	Percent Change Central City Population 1970-1975	Average Annual Growth Rates of REC Population 1960-1970 1970-1975		Shift Index 1970-1975
Sapporo	1542.5	39.166	22.807	4.002	6.833	1.28
Hakodate	353.3	5.798	5.165	0.670	1.130	0.97
Muroran	242.9	2.016	-2.097	1.699	0.400	0.94
Kushiro	221.6	6.847	7.712	1.927	1.333	0.98
Morioka	237.7	11.754	10.306	2.156	2.247	1.03
Sendai	1113.4	14.136	12.915	1.874	2.680	1.07
Ishinomaki	154.2	6.492	7.875	0.883	1.266	0.98
Akita	408.4	6.604	10.725	0.594	1.287	0.98
Yamagata	410.1	4.778	7.692	0.213	0.938	0.96
Fukushima	347.2	6.177	8.352	0.635	1.206	0.98
Aizuwakamatsu	124.4	3.151	4.419	0.116	0.622	0.95
Koriyama	356.6	7.184	9.475	0.734	1.397	0.99
Mito	459.0	10.923	13.924	1.432	2.095	1.02
Hitachi	348.3	3.939	4.762	0.523	0.776	0.96
Utsunomiya	650.5	11.482	14.343	1.183	2.198	1.03
Maebashi	326.5	6.874	7.106	1.401	1.338	0.98
Takasaki	424.8	8.533	9.425	1.030	1.651	1.00
Kiryu	169.1	4.190	0.083	0.831	0.824	0.96
Kumagaya	296.0	9.833	8.858	1.098	1.894	1.01
Chiba	1051.9	28.909	36.416	4.617	5.211	1.19
Tokyo	18503.9	4.474	-2.241	3.062	0.879	0.96
Yokohama	3931.0	18.268	17.124	4.815	3.413	1.09
Hiratsuka	279.1	19.019	19.486	4.175	3.544	1.09
Odawara	302.5	6.627	6.051	1.965	1.292	0.98

Table 2 (continued)

Niigata	740.8	7.114	10.237	0.867	1.384	0.99
Nagoaka	233.0	3.971	5.792	0.520	0.782	0.96
Toyama	522.4	5.856	7.724	0.324	1.146	0.97
Takaoka	376.2	-3.323	6.199	-0.094	0.656	0.95
Kanazawa	565.1	4.571	-0.058	1.130	0.898	0.96
Fukui	532.7	-6.625	7.578	0.294	1.291	0.98
Kofu	401.8	6.324	6.130	0.475	1.234	0.98
Nagano	443.8	7.823	7.428	0.739	1.518	0.99
Matsumoto	315.6	7.274	6.057	0.712	1.414	0.99
Gifu	821.5	9.592	5.963	1.005	1.849	1.01
Shizuoka	993.4	7.094	7.349	1.569	1.380	0.99
Hamamatsu	891.9	7.706	8.491	1.072	1.513	0.99
Numazu	468.5	11.151	5.450	2.451	2.137	1.02
Nagoya	4641.6	12.589	2.141	2.351	2.400	1.04
Toyohashi	489.9	10.080	9.745	-0.153	1.877	1.01
Toyota	525.9	18.153	26.166	3.645	3.392	1.09
Tsu	339.0	8.619	6.897	0.701	2.667	1.00
Yokkaichi	500.2	10.322	7.766	1.665	1.984	1.01
Ise	183.7	2.856	1.351	0.262	0.564	0.95
Otsu	424.4	19.180	11.467	1.656	3.572	1.10
Kyoto	1984.8	9.694	2.952	1.818	1.868	1.01
Osaka	10252.2	7.972	-6.761	3.424	1.546	0.99
Kobe	1908.2	9.645	5.555	1.904	1.859	1.01
Himeji	838.7	7.141	6.783	1.382	1.389	0.99
Nara	341.3	19.881	23.620	3.338	3.693	1.10
Wakayama	589.1	4.617	6.704	1.564	0.907	0.96
Kurashiki	480.2	14.743	10.741	2.185	2.789	1.06
Tottori	205.0	3.015	8.039	-0.283	0.596	0.95
Yonago	197.8	6.173	8.433	0.256	1.205	0.98
Matsue	236.7	3.861	7.692	0.075	0.761	0.96
Okayama	719.9	12.169	11.488	1.048	2.323	1.03
Hiroshima	1196.1	16.613	57.306	2.949	3.122	1.07

Table 2 (continued)

Fukuyama	605.0	11.030	29.283	1.364	2.115	1.02
Shimonoseki	336.8	2.433	3.173	-0.093	0.482	0.94
Ube	221.9	5.017	5.952	-1.355	0.984	0.97
Yamaguchi	123.3	5.295	4.950	-0.015	1.037	0.97
Iwakuni	181.5	4.071	4.713	0.372	0.801	0.96
Tokushima	472.7	6.225	7.069	0.363	1.215	0.98
Takamatsu	647.7	7.431	8.965	0.390	1.444	0.99
Matsuyama	482.5	12.602	13.812	1.511	2.402	1.04
Imabari	182.1	6.367	7.201	0.433	1.242	0.98
Niihama	200.7	3.882	4.524	-0.207	0.765	0.96
Kochi	399.2	10.368	13.260	1.226	1.993	1.02
Kitakyushu	1554.3	3.510	1.516	-0.112	0.692	0.95
Fukuoka	1540.5	16.317	14.971	2.217	3.069	1.07
Omuta	258.4	-1.861	-5.197	-1.542	-0.375	0.90
Kurume	453.3	2.233	5.304	-0.127	0.443	0.94
Saga	263.1	2.693	6.132	-0.411	0.533	0.94
Nagasaki	592.0	8.544	5.507	0.742	1.653	1.00
Sasebo	275.6	1.212	1.129	-0.868	0.241	0.93
Kumamoto	568.6	10.151	8.636	1.316	1.952	1.01
Yatsushiro	140.1	-0.497	1.766	-0.768	-0.010	0.92
Oita	514.2	15.059	22.870	1.472	2.845	1.06
Miyazaki	257.0	15.454	15.475	1.821	2.916	1.06
Nobeoka	151.2	5.146	4.832	0.394	1.009	0.97
Kagoshima	527.6	12.423	13.266	1.486	2.370	1.03
All RECs	76567.1	8.705	6.794	2.177	1.683	1.00

1970-1975 growth rate for all of Japan, the latter being 1.352 percent per year.⁷

The most rapid growth of the RECs occurred in the regions near the major metropolitan centers. For instance, if we look at the shift indices (which compare the growth of each region with that of all RECs as shown in column 5 of Table 2) we see that indices of greater than 1.05, i.e., relatively fast growth, are recorded for the Tokyo suburbs of Chiba, Yokohama, and Hiratsuka, the Nagoya suburb of Toyota, and Otsu and Nara near Kyoto. As in the 1960s, there were several independent urban growth centers such as Sapporo, Miyazaki and Hiroshima. Note that there was rapid growth only for relatively few regions. Shift indices of greater than 1.05 are recorded only for the RECs noted above and for Kurashiki and Fukuoka. All but Sapporo and the three RECs in Kyushu (Fukuoka, Oita and Miyazaki) are in or near the Tokaido belt.

If one looks at the RECs which had shift indices between 1.00 and 1.05, about half are in the spheres of Tokyo, Nagoya, and Osaka. However, there is considerable growth among five RECs in Tohoku (in northern Honshu) such as Sendai, Morioka and Utsonomiya. This is probably a result of the spillover of population and industry from the Tokyo region. There is also some substantial growth among certain RECs in Shikoku (Matsuyama and Kochi) and in Kyushu (Nagasaki, Kumamoto and Kagoshima). Thus we see some growth of regions away from the metropolitan core. This is a somewhat different pattern when compared to previous decades. However, most of the regions which grew relatively slowly (those with shift indices of less than one) were situated away from the major metropolitan areas: the other RECs

⁷The declining growth rate was largely a reflection of the relative decline of the largest cities. A comparison of the unweighted interdecade growth rates by population shows an increase over time (1.150 percent/year for 1960-1970 to 1.620 percent/year for 1970-1975).

in Tohoku, those bordering on the Japan Sea and those in Kyushu.⁸

A detailed examination of column 4 of Table 2 also reveals that 63 of the 80 RECs had higher growth rates during the 1970s than they did in the 1960s. Of the seventeen RECs with declining growth rates, several were large metropolitan centers (for instance, Tokyo, Osaka and Kobe⁹), independent centers such as Sapporo and Shizuoka and suburban regions such as Yokohama, Hiratsuka and Toyota. But, overall, the group with declining growth rates is dominated by major centers.

There was some considerable convergence towards the mean growth rate for our group of urban regions. Fifty-nine cities with growth rates below the average for 1960-1970 had faster growth during 1970-1975; seven additional cities with faster-than-average growth in the earlier period had declining rates in the 'seventies (these were principally some suburban regions around major centers). There were only 15 regions which showed polarizing effects: 7 fast-growing regions in the 1960s grew even faster in the 1970s and 8 with slow growth in the 1960s grew even more slowly in the 1970s. The "fast-getting-faster" group (Chiba, Nagoya, Nara, Kurashiki, Hiroshima, Fukuoka and Sapporo) was a mixture of large centers and suburbs. The eight regions which diverged from the mean in a negative way were generally at the periphery of the Japanese urban system.¹⁰

⁸Table 2 shows relatively little growth for such regions as Muroran, Aizuwakamatsu, Takaoka, Ise, Tottori, Shimonoseki, Kitakyushu, Kurume, and Sasebo. In addition, the RECs of Omuta and Yatsushiro, both in Kyushu, were the only RECs which lost population absolutely.

⁹Tokyo and Osaka grew at rates above the mean for all RECs in the 'sixties but below the mean in the 'seventies.

¹⁰These were Muroran, Kushiro, Maebashi, Kiryu, Odawara, Kanazawa, Shizuoka and Wakayama.

2.3 Regional Growth and Regional Size

We see the changing relationship between regional growth and region size in Table 3 and Figure 1. In Table 3 the RECs are aggregated into size classes (generally in groups of 100,000) for 1960-1970 and 1970-1975. In the former period, when the average annual growth rate for all RECs was 2.177 percent, the growth rate for regions with population below 200,000 persons was 0.176 per annum, only about 6 percent of the growth rate for the fastest-growing category (1,000,000 or more). During the 'sixties, the growth rate increased directly with region size. This can be seen from a simple regression relating region size (SIZE) and average annual growth (AAG) using grouped data which is given in Equation (1):

$$\text{AAG} = 0.9189 + 0.4657 \text{ SIZE} \quad \bar{R}^2 = 0.5462 \quad (1)$$

(3.1021)

where both the "t" test (given in parenthesis) for the SIZE variable and the F test for the correlation coefficient are significant at a 95% confidence level.

The 1970s showed a somewhat different pattern between region size and region growth, however. The smaller regions had relatively higher growth rates vis-à-vis the larger ones. For instance, those with population below 200,000 grew by 0.862 percent per year, nearly five times their 1960s figures and 49 percent of the growth rate of the largest size class. The fastest-growing group in the 1970s was that in the 600,000-700,000 range. Moreover, the relationship between region size and growth is clearly weaker. This mixed pattern with respect to region size is shown in the Equation (2) where the SIZE variable and the correlation coefficient are statistically insignificant at a 95% confidence interval.

$$\text{AAG} = 1.4663 + 0.7857 \text{ SIZE} \quad \bar{R}^2 = 0.1008 \quad (2)$$

(0.9299)

Table 3
Average Annual Growth Rate of Population by
Size of Region, 1960-1975

<u>Size of Region (000)</u>	<u>Growth Rate</u>	
	<u>1960-1970</u>	<u>1970-1975</u>
0-200	0.177	0.862
201-300	0.878	1.118
301-400	0.641	1.403
401-500	1.092	1.783
501-600	1.214	1.804
601-700	0.775	1.911
701-800	1.634	1.840
801-900	2.665	1.579
901-1,000	1.723	1.380
1,000 or more	2.954	1.753
All Cities	2.177	1.683

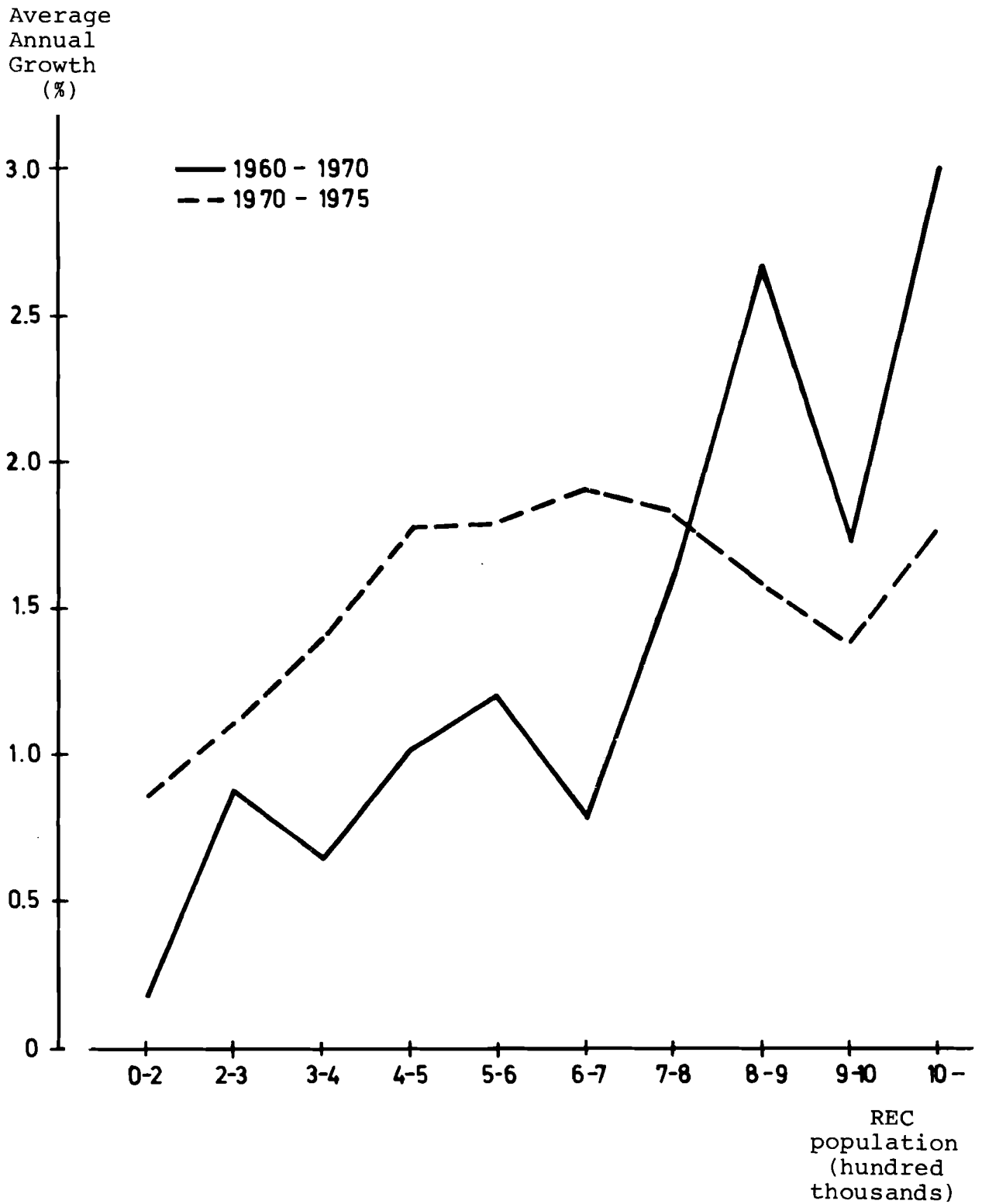


Figure 1.--Average Annual Growth Rates of RECs by Region Size, 1960-1970 and 1970-1975.

Table 3 and Chart 1 indicate that growth increased with region size up to about 600,000-700,000 population. But for larger regions the relationship was erratic, falling for the size classes up to 1,000,000 and then rising for the largest class.

2.4. Metropolitan Decentralization

We are also able to see some interesting trends with respect to metropolitan decentralization when we view this from a perspective of region size in Table 4. Note that for regions with population of less than 800,000 persons, the central cities were growing faster than the suburbs during the 1970s. Therefore, there was relative centralization of those regions during that period. It is for the larger regions, with the exception of the size class of 900,000-1,000,000, that relative decentralization took place. Thus, the slight amount of decentralization we noted with respect to our discussion of Table 2 must be qualified to indicate that the smaller regions centralized while the larger regions decentralized. It must be remembered that 63 of the 80 RECS in Japan encountered relative centralization during the 1970s as the central cities grew faster than their suburbs.

It is also important to closely observe the development of the Standard Consolidated Areas during the 1970s as in Table 5. There are 8 such agglomerations with a 1975 total population of 57.9 million. If we look at the individual SCAs, we see Tokyo with 24.8 million people and Osaka (16.3 million people) are the largest, but these two SCAs are growing at the SCA average or below it. The overall growth of the SCAs was 8.716 percent for 1970-1975, but there was a wide variation of SCA growth rates. The fastest growing SCAs, Nagoya (12.256 percent growth) and Okayama (12.643 percent growth) were in the Tokaido belt but were not two major center of that belt, Tokyo and Osaka. The slowest growing SCAs were Kanazawa (4.707 percent) which is on the Japan Sea followed by the older regions of Tokyo, Kitakyushu and Osaka.

Table 4
Regional Population Growth and Decentralization
by Size of Region, 1970-1975

<u>Population in Region (000)</u>	<u>Percent Change in Population, 1970-1975</u>		<u>Central City Share of Regional Population</u>	
	<u>Region</u>	<u>Central City</u>	<u>1975</u>	<u>1970</u>
0-200	4.383	4.643	0.719	0.718
201-300	6.083	6.611	0.718	0.704
301-400	7.219	8.393	0.662	0.660
401-500	9.237	9.389	0.563	0.562
501-600	9.349	9.577	0.640	0.639
601-700	9.929	17.154	0.511	0.480
701-800	9.547	10.919	0.641	0.633
801-900	8.149	7.127	0.515	0.520
901-1,000	7.094	7.349	0.450	0.449
1,000 or more	9.086	4.616	0.497	0.518
All Cities	8.685	6.794	0.539	0.548

Table 5

Population and Population Growth of Standard
Consolidated Areas, 1970-1975
(000)

<u>SCA and Component RECs</u>	<u>1975 Population</u>	<u>1970 Population</u>	<u>Percent Change 1970-1975</u>
<u>Sendai SCA</u>			
Sendai REC	1113.4	975.5	14.136
Yamagata REC	410.1	391.4	4.778
Fukushima REC	347.2	327.0	6.177
Koriyama REC	356.6	332.7	7.184
Total SCA	2227.3	2026.6	9.903
<u>Tokyo SCA</u>			
Tokyo REC	18503.9	17711.5	4.474
Yokohama REC	3931.0	3323.8	18.268
Chiba REC	1051.9	816.0	28.909
Kumagaya REC	296.0	269.5	9.833
Hiratsuka REC	279.1	234.4	19.070
Odawara REC	302.5	283.7	6.627
Numazu REC	468.5	421.5	11.151
Total SCA	24832.9	23060.4	7.686
<u>Kanazawa SCA</u>			
Kanazawa REC	561.1	540.3	4.590
Takaoka REC	376.2	364.1	3.323
Toyama REC	522.4	493.5	5.856
Total SCA	1463.7	1397.9	4.707
<u>Nagoya SCA</u>			
Nagoya REC	4641.6	4122.6	12.589
Toyota REC	425.9	445.1	18.153
Gifu REC	821.5	749.6	9.592
Tsu REC	339.0	312.1	8.619
Yokkaichi REC	500.2	453.3	10.346
Total SCA	6828.2	6082.7	12.256
<u>Osaka SCA</u>			
Osaka REC	10252.2	9495.2	7.972
Kyoto REC	1984.8	1809.4	9.694
Kobe REC	1908.7	1740.8	9.645
Himeji REC	838.7	782.8	7.141
Wakayama REC	589.1	563.1	4.617
Otsu REC	424.4	356.1	19.180
Nara REC	341.3	284.7	19.881
Total SCA	16339.2	15032.1	8.695
<u>Okayama SCA</u>			
Okayama REC	719.9	641.8	12.169
Kurashiki REC	480.2	418.5	14.743
Fukuyama REC	605.0	544.9	11.030
Total SCA	1805.1	1605.2	12.453

Table 5 (continued)

<u>SCA and Component RECs</u>	<u>1975 Population</u>	<u>1970 Population</u>	<u>Percent Change 1970-1975</u>
<u>Matsuyama SCA</u>			
Matsuyama REC	482.5	428.5	12.602
Imabari REC	182.1	171.2	6.367
Niihama REC	<u>200.7</u>	<u>193.2</u>	<u>3.882</u>
Total SCA	865.3	792.9	9.131
<u>Kitakyushu SCA</u>			
Kitakyushu REC	1554.3	1501.6	3.510
Fukuoka REC	1540.5	1324.4	16.317
Kurume REC	<u>453.3</u>	<u>443.4</u>	<u>2.233</u>
Total SCA	3548.1	3269.4	8.524
All SCA's	57909.9	53267.2	8.716

The spatial pattern of urban development can be seen from Table 5. If we examine the group of SCAs we see that there was little growth within the central RECs and fast growth in the outlying RECs. For instance within the Tokyo SCA the Tokyo REC grew by 4.5 percent but Chiba (28.9 percent growth), Hiratsuka (19.0 percent) and Yokohama (18.3 percent) grew much faster. For Osaka there was a similar pattern as the Osaka REC had a population increase of less than 8 percent whereas Otsu and Nara grew by over 19 percent. Within both large SCAs one can see an interesting pattern of growth. The central RECs (Tokyo and Osaka) and the outer RECs (Odawara, Numazu, Kumagaya, Wakayama, and Himeji) grew more slowly than the "middle" layer of the RECs (e.g., Chiba, Yokohama, Hiratska and Nara).¹¹

We are also able to see some of the "layers" of spatial development within the SCAs in Table 6. There, the central REC is broken out by its own central city, the rest of the REC, and the remaining portions of the Standard Consolidated Area. For Tokyo and Osaka (as well as Kanazawa) there was an absolute population loss within the central cities of the RECs. Osaka, for instance, lost nearly 7 percent of its population between 1970 and 1975. In Tokyo, we find the rest of the REC (the non-central city portion) growing quickly (11.2 percent) but the remainder of the Standard Consolidated Area grew even more quickly (18.3 percent). Thus, there is considerable sprawl from the Tokyo-ku area. The fast-growing RECs within the SCA were Chiba, Yokohama and Hiratsuka. For Osaka, the outward flow was mainly to the rest of the Osaka REC; similarly for Nagoya, Kanazawa and Okayama. For Matsuyama and, to a lesser extent, Sendai, the central cities of the central RECs grew relatively fast. Therefore if one observes the major metropolitan areas, one sees far more sprawl from Tokyo than from Osaka and Nagoya. In the outlying SCAs there is much less metropolitan decentralization.

¹¹This is also true of Nagoya where far-away Tsu is the slowest-growing REC and nearby Toyota is the fastest growing.

Table 6

Population Growth Rates Among Components of
Standard Consolidated Areas, 1970-1975

<u>Standard Consolidated Area</u>	<u>Percent Change of Population, 1970-1975</u>
<u>Sendai SCA</u>	
Sendai-shi	12.915
Rest of Sendai REC	15.683
Rest of SCA	5.975
Total SCA	8.724
<u>Tokyo SCA</u>	
Tokyo ku area	-2.241
Rest of Tokyo REC	11.166
Rest of SCA	18.323
Total SCA	7.686
<u>Kanazawa SCA</u>	
Kanazawa-shi	-0.058
Rest of Kanazawa REC	14.972
Rest of SCA	4.781
Total SCA	47707
<u>Nagoya SCA</u>	
Nagoya-shi	2.141
Rest of Nagoya REC	22.785
Rest of SCA	11.556
Total SCA	12.256
<u>Osaka SCA</u>	
Osaka-shi	-6.761
Rest of Osaka REC	14.713
Rest of SCA	9.935
Total SCA	8.696
<u>Okayama SCA</u>	
Okayama-shi	11.488
Rest of Okayama REC	13.900
Rest of SCA	12.642
Total SCA	12.453
<u>Matsuyama SCA</u>	
Matsuyama-shi	13.812
Rest of Matsuyama REC	8.902
Rest of SCA	5.049
Total SCA	9.131
<u>Kitakyushu SCA</u>	
Kitakyushu-shi	1.516
Rest of Kitakyushu REC	8.034
Rest of SCA	12.784
Total SCA	8.524

2.5. Conclusions from the Census Data

What kind of conclusions can we draw from the 1975 Census? First, we see that there was a continuation of relatively rapid population growth of the Regional Economic Clusters at the expense of non-metropolitan areas; a full 86 percent of all population 1970-1975 growth occurred in the RECs. Second, the highest growth rates among the RECs occurred in the regions adjacent to the largest metropolitan centers. The central regions of the SCAs grew less quickly than the suburban regions and, in fact, the central cities of Tokyo and Osaka lost population absolutely. Third, there were signs that some less central regions were attaining higher population growth rates. However, the more peripheral regions were the slowest growing of all. Fourth, the fastest-growing regions were middle-sized rather than large-sized as in the 'sixties. Fifth, although there was metropolitan decentralization for the weighted average of all RECs (i.e., all REC suburbs grew faster than all REC central cities), 63 of eighty RECs--most of the smaller ones, obviously--centralized during the 1970s.

Therefore the urban development experience of the 'sixties is repeated in the 'seventies, but with much less clear direction. There is an evening of growth rates between large and small regions and there are signs of more vibrant independent growth outside of the metropolitan core. Yet non-metropolitan Japan continued to decline relative to the metropolitan areas and there was still very low growth at the spatial periphery of the metropolitan group.

3. MIGRATION TRENDS IN POSTWAR JAPAN

How can we relate these findings to those based on data for migration among regions? Although there are some problems of strict comparability between our RECs and the prefectural data on migration, it is important to examine the latter to see intercensal movements.

If one aggregates prefectures into the nine major regions as defined by the Economic Planning Agency¹² one gets an interesting picture of interregional migration (Table 7). For the metropolitan regions--Kanto, Kinki and Tokai (the regions surrounding Tokyo, Osaka and Nagoya respectively)--there was substantial net immigration until the 1970s. After peaking at 575.7 thousand in 1962, net immigration fell rapidly to only 32.2 thousand in 1975. By 1975, Kanto was the only region of the three to maintain positive immigration. The non-metropolitan regions (Hokkaido, Tohoku, Hokuriku, Shikoku, Kyushu and Chugoku) had, of course, a mirror image of the metropolitan migration picture since there is not a significant amount of foreign migration. Thus, from a trough in 1962, net outmigration decreased significantly, especially in the period after 1970. Still, as late as 1975, all of the non-metropolitan regions except Kyushu continued to show net outmigration.¹³

Table 7 also divides portions of Japan into several categories: "core", "suburban", and "exurban", and "periphery" prefectures. The definitions of these categories are given in Kornhauser [1976] and summarized in Table 7. It is seen that the core prefectures reached their collective peak of immigration in 1961 (594.0 thousand) and declined rapidly thereafter, with net outmigration beginning in 1972. As the core prefectures began to decline in attractiveness for new migrants, the suburban prefectures began to take their place as destinations for interprefectural migrants. Net immigration to suburban prefectures, negative until 1958, grew significantly until it reached its peak in 1970 (265.0 thousand); then decline set in from 1971 to 1975 although net immigration by 1975 was still strongly positive (172.2 thousand). Table 7 and Figure 2 also show that as suburban net immigration began to subside in the early 1970s, the exurbs began to grow substantially, first becoming net recipients of

¹²For these definitions, see Glickman [1976, p. 328, footnote 3].

¹³See Japan Bureau of Statistics, Office of the Prime Minister [1973, 1975a]. Kuroda [1969, 1977] also discusses these issues.

Table 7 Annual Net Migration to Japanese Regions, 1954-1975
(000)

	(1) Kanto, Kinki and Tokai Regions ^a	(2) Other Regions ^b	(3) Core Prefectures ^c	(4) Suburban Prefectures ^d	(5) Exurban Prefectures ^e	(6) Peripheral Prefectures ^f	(7) Prefectures Other than Core, Suburbs, Exurbs & Periphery ^g
1954	265.3	-265.3	418.8	-35.1	-118.4	-59.2	-206.1
1955	242.2	-242.2	383.0	-27.3	-113.5	-53.0	-189.2
1956	279.5	-326.8	429.9	-24.4	-126.0	-50.8	-228.7
1957	371.2	-371.2	523.9	-10.7	-142.0	-65.1	-306.1
1958	294.7	-294.7	430.0	- 3.6	-131.7	-50.3	-244.4
1959	370.4	-370.4	482.8	16.7	-129.1	-82.7	-287.7
1960	491.9	-491.9	552.3	43.8	-104.1	-121.0	-371.0
1961	572.6	-556.5	594.0	62.4	- 83.8	-139.7	-432.9
1962	575.7	-575.7	539.1	112.4	- 76.2	-128.1	-447.2
1963	557.1	-557.1	477.0	151.9	- 71.8	-138.7	-418.6
1964	521.4	-521.4	421.2	166.0	- 65.8	-108.2	-413.2
1965	426.1	-426.1	337.9	158.7	- 70.5	- 78.6	-347.5
1966	348.9	-348.9	251.0	174.2	- 76.3	- 61.0	-287.9
1967	374.7	-273.8	229.5	195.4	- 50.2	- 62.2	-312.5
1968	399.6	-399.6	231.3	208.5	- 40.2	- 60.2	-339.4
1969	430.5	-430.5	212.5	233.1	- 15.1	- 60.6	-369.9
1970	427.5	-427.5	147.3	265.0	15.2	- 49.2	-378.3
1971	318.7	-318.7	77.4	231.7	9.6	- 28.7	-290.0
1972	229.1	-229.1	-11.0	259.5	- 19.4	- 13.0	-216.1
1973	168.5	-167.5	-105.4	244.3	28.6	- 5.8	-161.7
1974	78.2	- 78.2	-152.8	202.7	28.3	6.0	- 84.2
1975	32.2	- 32.2	-151.6	172.2	11.6	19.6	- 51.8

^aTokyo, Kanagawa, Chiba, Saitama, Tochigi, Ibaraki, Gumma, Yamanashi, Nagano, Shiga, Kyoto, Nara, Wakayama, Osaka, Hyogo, Shizuoka, Aichi, Gifu, and Mie prefectures.

^bPrefectures not included in column (1); see footnote a.

^cTokyo, Osaka, Kyoto, Hyogo, Aichi, and Kanagawa prefectures.

^dGifu, Nara, Saitama, and Chiba prefectures.

^eGumma, Ibaraki, Tochigi, Shizuoka, Mie, Shiga, Wakayama, Yamanashi and Nagano prefectures.

^fMiyagi, Fukushima, Okayama, Hiroshima, Yamaguchi and Tokuoka prefectures.

^gPrefectures not included in columns (3) through (6); see footnotes c-f of this table.

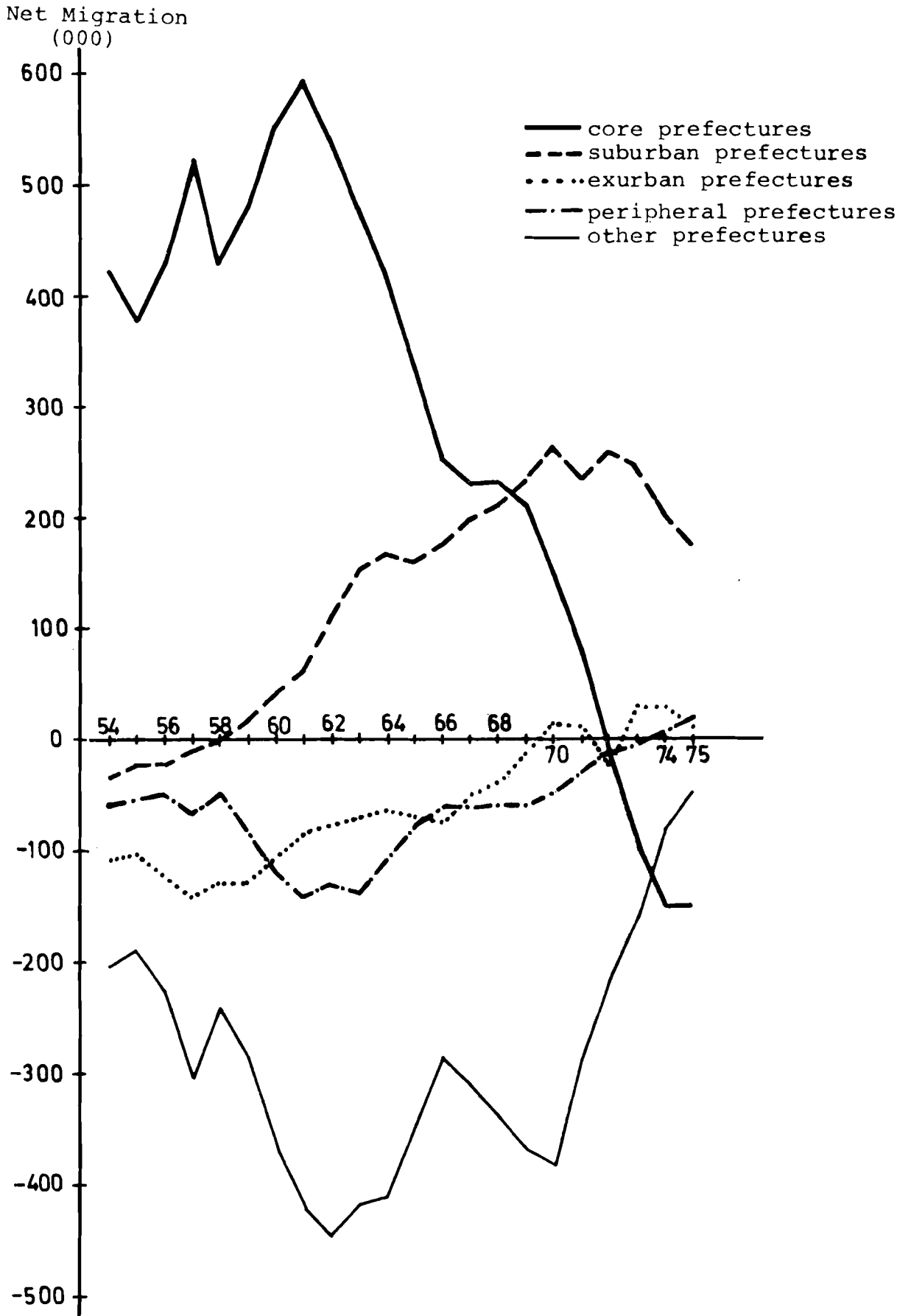


Figure 2.-- Net Migration for Japanese Regions, 1954-1975

migrants in 1970. The peripheral urban region, which had negative net migration throughout the earlier part of the period, shows positive immigration beginning in 1974. Finally, the remaining prefectures--the most rural in Japan--showed sharply declining amounts of outmigration beginning after 1970, falling from 378.3 thousand (1970) to 51.8 thousand (1975).

Thus, Table 7 shows the continuing spread of population movements from the core of the metropolitan centers outwards in successive stages to the more peripheral prefectures of Japan.¹⁴ However, Table 7 indicates that the metropolitan regions continue to attract migrants from metropolitan areas, albeit fewer in later years than previously. This is a partial explanation for the patterns found in the census data described in Section 2 above.

Another reason for the higher population growth rates in the metropolitan areas can be found by reference to the relative age structure of the population in metropolitan and non-metropolitan areas. The immigrants to the metropolitan areas tend to be concentrated in the prime childbearing ages. As a result, the structure of the metropolitan areas' population is more heavily dominated by those age classes. For instance, although 33.9 percent of the entire 1974 Japanese population was in the age grouping of 20 to 39, urbanized areas had much higher percentages: Tokyo had 40.9 percent of its population in that category, and other urbanized prefectures also had similarly high levels.¹⁵ On the other hand, the more rural

¹⁴This can also be seen with respect to the Tokyo region. The *ku*-area of Tokyo (Tokyo city) experienced its peak amount of immigration in 1957; it then had, with the exception of 1964-1965, continuously decreasing amounts of immigration. By 1967, net immigration had become negative, peaking at a net outmigration of 172.8 thousand in 1973 (there was less outmigration in 1974 and 1975 than there was in 1973). The inner ring around Tokyo (Saitama, Chiba and Kanagawa prefectures) had increasing immigration until a peak in 1970 (374.7 net immigrants); thereafter net immigration decreased to 194.4 thousand by 1975. The outer ring (Tochigi, Ibaraki, Gumma, Yamanashi and Nagano prefectures) of Tokyo had net outmigration until 1970, when net immigration became positive (except for 1972). Thus, here too, the flow of population from the core to the suburbs to the periphery was clear.

¹⁵For instance, Osaka (38.3 percent), Chiba (36.5 percent) and Kanagawa (39.2 percent).

prefectures had much lower percentages in the prime child-bearing age group: Saga and Iwate had only 27.0 percent and 29.0 percent of their respective populations in the 20-39 age group. This, of course, has led to higher birth rates in the metropolitan regions than in non-metropolitan regions.¹⁶

4. JAPANESE MIGRATION PATTERNS AS COMPARED TO THOSE OF OTHER COUNTRIES

How does the recent Japanese migration experience compare to other countries? Several authors have written on the subject of population dispersal policies and patterns¹⁷ and we will present some interesting data recently provided by Vining and Kontuly [1976, 1977]. They show that Japan's experience was not at all unique. During the late 1960s net migration to the major metropolitan areas of Sweden fell from +18,977 (1969) to -4,379 (1975). Italy's combined Northwest Region and Lazio Province showed sharp declines in net immigration beginning in 1970. Similarly, Oslo had net outmigration after 1973. We present these data in Figures 3, 4 and 5 and the reader will likely note the striking similarity to the situation with respect to Japan's core prefectures as shown in Figure 2.¹⁸

Thus, the experience in Japan is shown not to be unique. The relative decline of the major metropolitan centers, as noted in Section 3. is repeated in several other industrialized countries at approximately the same time. We make some comments on the future of the Japanese urban system in Section 5.

¹⁶Johnson and Vining [1976] show that for the Kanto, Tokai, and Kinki regions, the natural increase in population from 1973 to 1974 was 1.42 percent. However, for the rural regions such as Tohoku (0.87 percent), Shikoku (0.77 percent) and Kyushu (0.82 percent), it was much lower.

¹⁷For instance, Sundquist [1975]

¹⁸Vining and Kontuly [1976] also note a similar situation for the United States but do not present comparable data. The problems of highly urbanized regions in the Northeast United States, particularly New York City, has been widely discussed; see for instance, Alscaly and Mermelstein [1977] and Sternlieb and Hughes [1975].

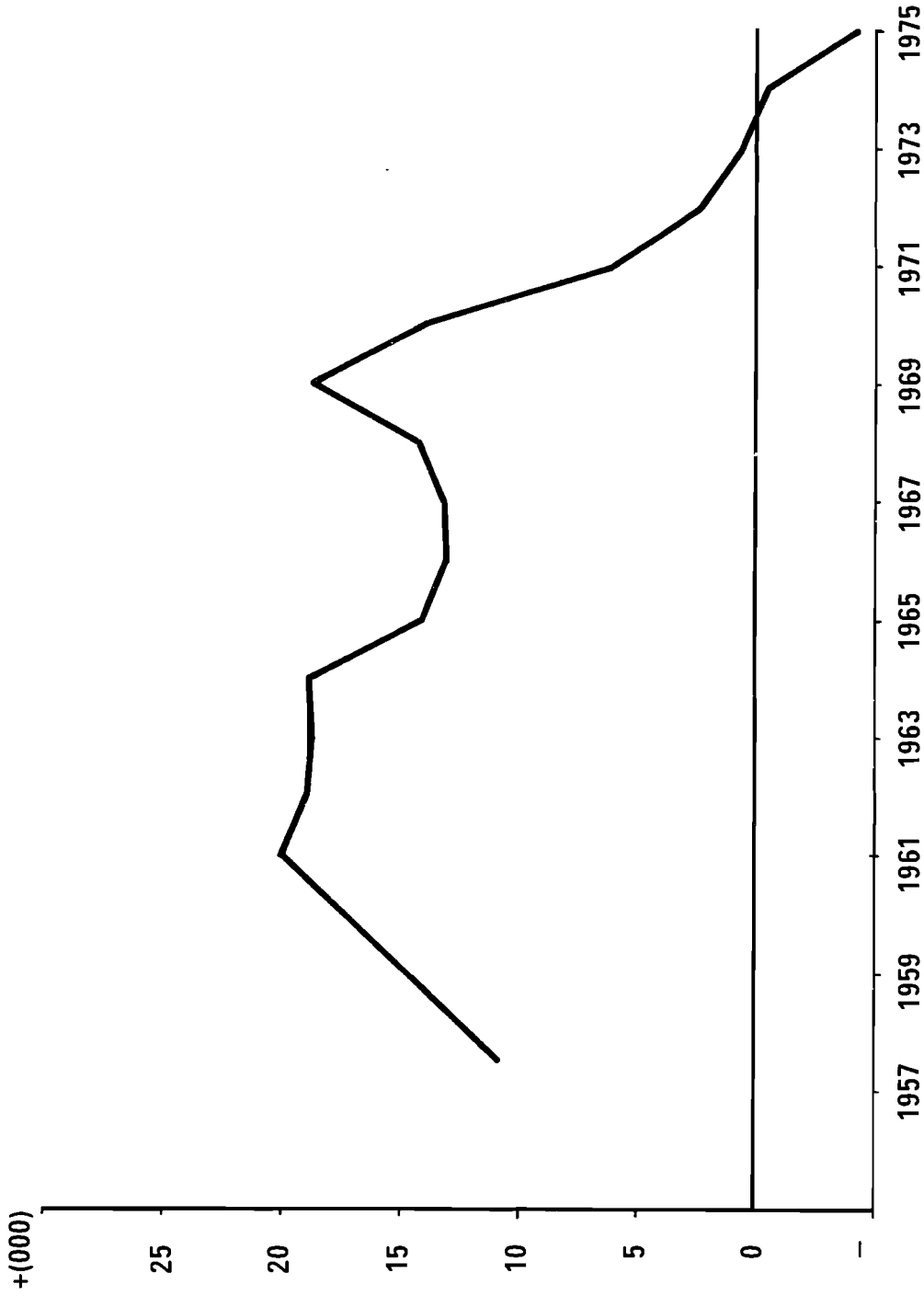


Figure 3.--Annual Net-Migration, in Thousands, in the Swedish regions of Stockholm, Western and Southern Metropolitan, 1957-1975.

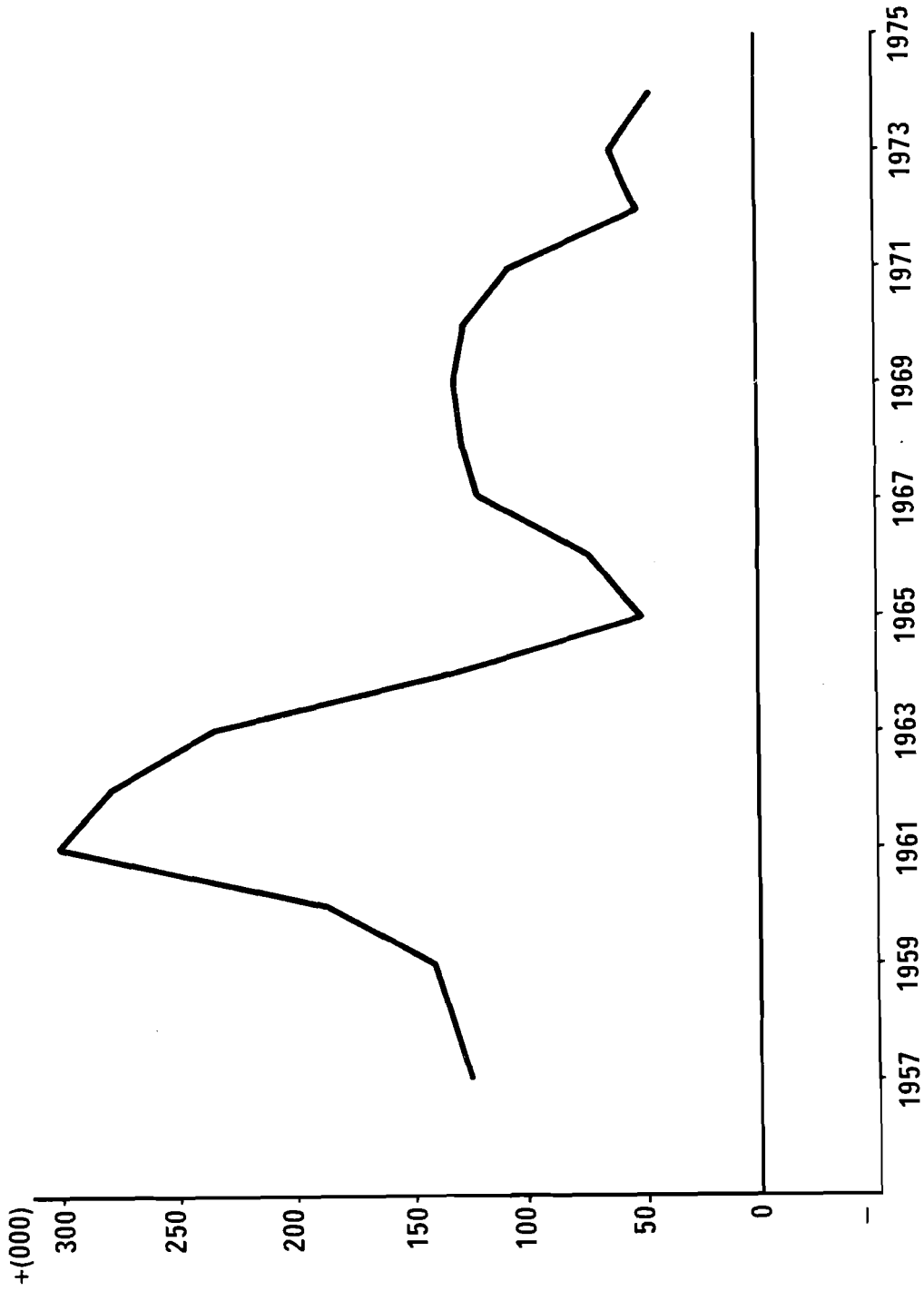


Figure 4.--Annual Net-Migration, into the Italian Regions in the North-West and Lazio Province, 1957-1974.

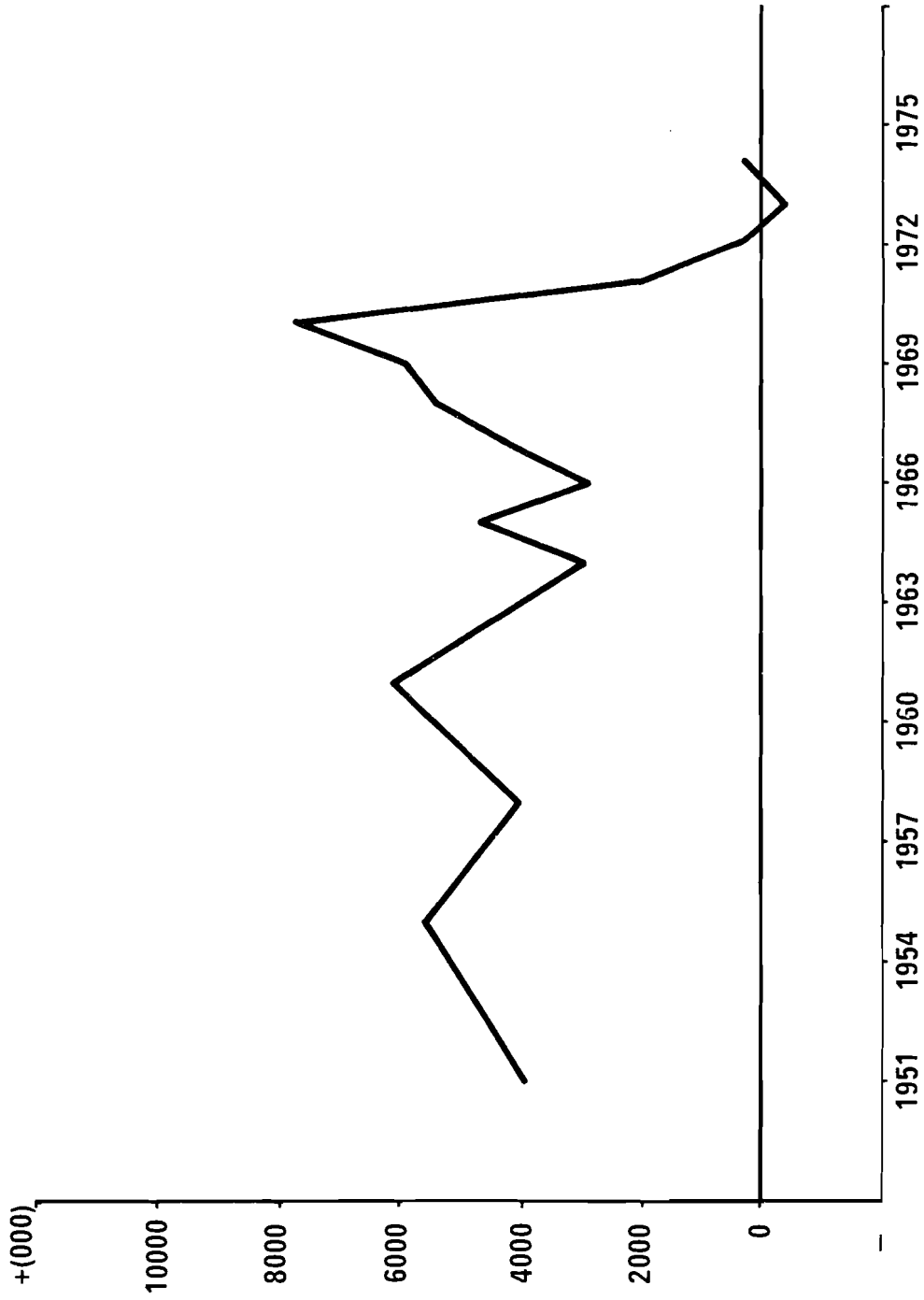


Figure 5.--Annual Net-Migration into the Ostlandet Region of Norway, 1951-1974.

5. CONCLUDING REMARKS

The results, then, from the migration and other demographic data are consistent with our analysis in Section 2 and Glickman [1976] concerning the relative increase in population in the major metropolitan centers. Immigration, though lower than previously, is positive through 1975 (the last year for which complete data are presently available) and birth rates in these regions are also considerably higher than in the more rural areas. Thus, the metropolitan regions continue to increase their population at the expense of the rural areas. Whether this will continue, in the face of the changing pattern of internal migration, remains to be seen. Should net outmigration accelerate in the highly urbanized areas, then outmigration may be high relative to the natural increase rates there, and such areas will decline relative to the more rural areas or perhaps even on an absolute basis. Neither case has occurred to date.

The patterns of the 1970s, then, are a bit closer to those of the U.S., U.K. and other western developed nations in previous decades: the rate of increase of population of the larger metropolitan centers is declining and large cities such as Tokyo and Osaka are now experiencing absolute declines. Concomitantly, there is considerable growth of moderately-size cities near the major centers and, to a lesser extent, in more rural areas. If these trends continue--some, for instance, might argue that a portion of the mid-1970s outmigration from the core cities was partly due to cyclical economic causes--then Japan will increasingly appear like Western developed countries in the shape of its urban system.

An important question--and one not answerable directly by this study--involves the continuing evolution of the Japanese urban system during what many believe will be a period of relatively slow economic growth: what will be the future shape of the system?¹⁹ The answer to this question involves a set of subsidiary questions which are difficult to answer at this point in urban history.

¹⁹And the urban systems of other developed countries which face similar economic conditions.

We know that Japan's urban system centralized during the high economic period of the 1950s and 1960s but how will it change if growth slackens? Will there be more outmigration from the metropolitan RECs to smaller ones? Will jobs decentralize under the stress of relative economic stagnation? Or, on the other hand, will slow growth make large cities more attractive for jobs and housing and will the economic slowdown inhibit new investment in smaller cities?

And what of the role of the public sector in determining land use policy? Although there has been a conscious decentralization policy since the early 1960s,²⁰ regional planning has not been very strong and effective. What directions will the government follow regarding settlement policies? Also, how will sharply higher energy prices effect the shape of the urban system and individual cities? Will this tend to centralize the urban system as many have argued? Additionally, what of the social and cultural factors which have appeared to make smalltown living more attractive to the Japanese in the last ten years? Under the pressure of slow economic growth and higher energy costs, will the "U-turners" again begin to favor large-city living? How will the cultural homogenization which has come with mass communications in Japan impact on living patterns in the future?

It is only with the answers to this set of interrelated questions that the future shape of the Japanese urban system can be predicted.

²⁰On the subject of regional planning in Japan, see Glickman [1977].

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