

〈論文〉

Changes in Regional Population Distribution and the Compact City Policy in Japan

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Abstract

This study examines the consistency between housing preferences and the compact city policy in Japan by analyzing population changes over the whole country, each prefecture, prefecture capitals and designated cities between 1985 and 2005 using population growth indices and population distribution indices. The population was found to have concentrated in prefecture capitals and designated cities over the period. The proportion of the population in business districts has increased in designated cities. In addition, the population has concentrated in cities that have adopted the compact city policy. In conclusion, the trends in population are consistent with the compact city policy in prefecture capitals and designated cities.

JEL Classification : Q56, R23

Keywords: compact city, migration, population distribution, housing preference

1. Introduction

The purpose of this study was to examine consistency between preferences for location of housing and the compact city policy² in Japan. Whilst some people prefer to live in urban areas, some prefer rural areas. Many researchers have discussed the compact city in recent

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² Compact city is defined as a relatively high-density, mixed-use city, based on an efficient public transport system and dimensions that encourage walking and cycling. It contrasts with the car-oriented urban sprawl (Burton (2000)).

years.

Bregheny (1996) found 1.2 million people moved to rural and semi-rural areas during the period 1981 to 1991 in UK. He claimed this trend reflected a major desire for lifestyles in such areas, and also implied that strict containment policies are likely to be very unpopular.

In Japan, Roychansyah et al. (2005) investigated changes in compactness of Tohoku region over the period 1980 to 2000 by using original compactness indicators, and concluded that the degree of compactness decreased over time.

This study analyzes regional population growth and distribution in Japan and whether changes in distribution imply consistency with the compact city policy.

2. Methodology

In this study, Population Growth Index (PGI) and Population Distribution Index (PDI) are defined as follows.

2.1 Population Growth Index (PGI)

The population growth index in a area, PGI_t^i is defined as follows:

$$PGI_t^i = P_t^i / P_{t-1}^i \quad (1)$$

where P_t^i is population at time t in area i , which can be all of Japan (n), a prefecture (p), a city (m), a business district (b), and so on. Population growth is indicated by $PGI > 1$ and population decline by $PGI < 1$.

2.2 Population Distribution Index (PDI)

The population distribution index in a prefecture, PDI_t^p is defined as follows:

$$PDI_t^p = (P_t^p / P_t^n) / (P_{t-1}^p / P_{t-1}^n) \quad (2)$$

where P_t^p is population at time t in prefecture p , and P_t^n is population at time t in Japan. An increase in relative population distribution for a prefecture compared to the whole of Japan is indicated by $PDI > 1$ and a decrease of relative population distribution is indicated by $PDI < 1$.

The population distribution index in a city, PDI_t^m is defined as follows:

$$PDI_t^m = \frac{(P_t^m / P_t^p)}{(P_{t-1}^m / P_{t-1}^p)} \quad (3)$$

where P_t^m denotes population at time t in city m , and p_t^p denotes population at time t in prefecture p in which m lies.

In this study, three districts are defined in each designated city³ as follows:

A business district consists of wards whose ratio of the day to night population is more than 1.0.

A residential district consists of wards whose ratio of the day to night population is less than 1.0.

A central business ward has the highest day to night population ratio of all wards in each designated city.

The population distribution index in a business district, PDI_t^b is defined as follows:

$$PDI_t^b = \frac{(P_t^b / P_t^d)}{(P_{t-1}^b / P_{t-1}^d)} \quad (4)$$

where P_t^b is the population at time t in business district b of designated city d in which b lies.

The population distribution index in a residential district, PDI_t^r is defined as:

$$PDI_t^r = \frac{(P_t^r / P_t^d)}{(P_{t-1}^r / P_{t-1}^d)} \quad (5)$$

where P_t^r is the population at time t in residential district r of designated city d in which r lies.

The population distribution index in a central business ward, PDI_t^c is defined as:

$$PDI_t^c = \frac{(P_t^c / P_t^d)}{(P_{t-1}^c / P_{t-1}^d)} \quad (6)$$

³ 12 cities those are designated in cabinet orders including Tokyo 23-ward area of Tokyo prefecture, Sapporo, Sendai, Tokyo, Yokohama, Kawasaki, Nagoya, Kyoto, Osaka, Kobe, Hiroshima, Fukuoka, Kitakyushu city in this study.

where P_i^c is the population at time t in central business ward c of the designated city d in which c lies.

3. Data

Population Data were obtained from “*Chiiki Keizai Soran (Directory of Regional Economies) 2008*” (2007) which is based on the Population Census of Japan by the Japanese Statistics Bureau. Data was collected in 1985, 1990, 1995, 2000, 2005,⁴ and the areas of data were all of Japan, the 47 prefectures, the 47 prefecture capitals, 12 designated cities.

4. Result

4. 1 Results for Japan and each prefecture

As shown in Table 1, PGI_{1990}^* was 1.021, and PGI_{2005}^* was 1.007, indicating that the population growth rate in Japan has declined.

As for the prefectures, 61.7% of PGI_{1990}^p were greater than 1.0, but 63.8% of PGI_{2005}^p were less than 1.0, indicating that the number of prefectures experiencing population growth has declined.

68.1% of PDI_{1990}^p were less than 1.0, and 80.9% of PDI_{2005}^p were less than 1.0. The population distribution amongst prefectures has become centralized in the Tokyo Metropolitan Area, Tokai Area, Kansai Area and Fukuoka Area from 2000 to 2005.

⁴ Merger of municipalities in this period are took account in this database.

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Table 1. PGI and PDI for Japan and 47 prefectures

Japan & prefectures	PGI (Population Growth Indices)				PDI (Population Distribution Indices)			
	1990/1985	1995/1990	2000/1995	2005/2000	1990/1985	1995/1990	2000/1995	2005/2000
Japan	1.021	1.016	1.011	1.007	—	—	—	—
Hokkaido	0.994	1.009	0.998	0.990	0.973	0.993	0.988	0.984
Aomori	0.973	0.999	0.996	0.974	0.953	0.984	0.985	0.967
Iwate	0.988	1.002	0.998	0.978	0.968	0.986	0.987	0.972
Miyagi	1.033	1.036	1.016	0.998	1.012	1.020	1.005	0.991
Akita	0.979	0.989	0.980	0.963	0.959	0.973	0.969	0.957
Yamagata	0.997	0.999	0.990	0.978	0.977	0.983	0.979	0.971
Fukushima	1.011	1.014	0.997	0.983	0.990	0.998	0.986	0.977
Ibaragi	1.044	1.039	1.010	0.996	1.023	1.023	0.999	0.990
Tochigi	1.037	1.025	1.010	1.006	1.016	1.009	1.000	0.999
Gumma	1.023	1.019	1.011	1.000	1.002	1.003	1.000	0.993
Saitama	1.092	1.055	1.026	1.017	1.070	1.039	1.015	1.010
Chiba	1.079	1.044	1.022	1.022	1.057	1.027	1.011	1.015
Tokyo	1.002	0.993	1.025	1.042	0.981	0.978	1.014	1.036
Kanagawa	1.074	1.033	1.030	1.057	1.052	1.017	1.019	1.050
Niigata	0.998	1.006	0.995	0.982	0.978	0.990	0.984	0.976
Toyama	1.002	1.003	0.998	0.992	0.981	0.987	0.987	0.985
Ishikawa	1.011	1.013	1.001	0.994	0.990	0.997	0.990	0.988
Fukui	1.007	1.004	1.002	0.991	0.986	0.988	0.992	0.985
Yamanashi	1.024	1.034	1.007	0.996	1.003	1.018	0.996	0.989
Nagano	1.009	1.017	1.010	0.991	0.988	1.001	0.999	0.985
Gifu	1.019	1.016	1.004	1.000	0.998	1.000	0.993	0.993
Shizuoka	1.027	1.018	1.008	1.007	1.006	1.002	0.997	1.000
Aichi	1.036	1.027	1.025	1.030	1.015	1.011	1.015	1.023
Mie	1.026	1.027	1.009	1.005	1.005	1.011	0.998	0.999
Shiga	1.058	1.053	1.043	1.028	1.036	1.036	1.032	1.021
Kyoto	1.006	1.010	1.006	1.001	0.985	0.995	0.995	0.995
Osaka	1.008	1.007	1.001	1.001	0.987	0.991	0.990	0.995
Hyogo	1.024	0.999	1.028	1.007	1.003	0.984	1.017	1.001
Nara	1.054	1.040	1.008	0.985	1.032	1.024	0.998	0.979
Wakayama	0.988	1.006	0.990	0.968	0.968	0.990	0.980	0.962
Tottori	1.000	0.999	0.997	0.990	0.979	0.983	0.987	0.983
Shimane	0.983	0.988	0.987	0.975	0.963	0.972	0.977	0.968
Okayama	1.005	1.013	1.000	1.003	0.984	0.997	0.989	0.997
Hiroshima	1.011	1.011	0.999	0.999	0.990	0.995	0.988	0.993
Yamaguchi	0.982	0.989	0.982	0.977	0.962	0.974	0.972	0.970
Tokushima	0.996	1.001	0.990	0.983	0.975	0.985	0.979	0.976
Kagawa	1.001	1.004	0.996	0.990	0.980	0.988	0.985	0.983
Ehime	0.990	0.995	0.991	0.983	0.970	0.979	0.980	0.977
Kochi	0.982	0.990	0.997	0.978	0.962	0.974	0.986	0.972
Fukuoka	1.019	1.025	1.017	1.007	0.998	1.009	1.006	1.000
Saga	0.998	1.007	0.991	0.988	0.977	0.992	0.981	0.982
Nagasaki	0.981	0.988	0.982	0.975	0.960	0.973	0.971	0.969
Kumamoto	1.001	1.011	1.000	0.991	0.981	0.995	0.989	0.984
Oita	0.989	0.995	0.992	0.991	0.969	0.980	0.981	0.984
Miyazaki	0.994	1.006	0.995	0.986	0.974	0.990	0.984	0.979
Kagoshima	0.988	0.998	0.996	0.982	0.968	0.982	0.985	0.975
Okinawa	1.037	1.042	1.035	1.033	1.015	1.026	1.024	1.026
prefectures(>1)	29 61.7%	34 72.3%	24 51.1%	17 36.2%	15 31.9%	17 36.2%	10 21.3%	9 19.1%
prefctures(<1)	18 38.3%	13 27.7%	23 48.9%	30 63.8%	32 68.1%	30 63.8%	37 78.7%	38 80.9%
total	47 100.0%	47 100.0%	47 100.0%	47 100.0%	47 100.0%	47 100.0%	47 100.0%	47 100.0%

Note: For example, column of PGI, 1990/1985 is PGI_{1990}^1 .

4. 2 Results for prefecture capitals and designated cities

As shown in Table 2, 81.6% of PGI_{1990}^m and 61.2% of PGI_{2005}^m were more than 1.0 for prefecture capitals and designated cities. This means that the number of prefecture capitals experiencing population growth has declined.

In contrast, 67.3% of PDI_{1990}^m and 81.6% of PDI_{2005}^m were more than 1.0. This means that the relative distribution of population in prefecture capitals and designated cities compared to rural areas has increased.

4. 3 Results for designated cities

As indicated in Table 3 and 4 and Figure 1 to 4:

- ① 66.7% of PGI_{1990}^m and 91.7% of PGI_{1990}^m for designated cities were more than 1.0. Furthermore 58.3% of PDI_{1990}^m and 75.0% of PDI_{2005}^m for designated cities were more than 1.0. Concentration to designated cities has been intensified.
- ② PDI_{1990}^b for all business districts of designated cities were less than 1.0, but 66.7% of PDI_{2005}^b were more than 1.0. As shown in Figure 2 and 4, the population distribution to business districts has become higher both in the Tokyo 23-ward area and Sapporo city.
- ③ 90.9% of PDI_{1990}^r and 41.7% of PDI_{2005}^r for residential districts of designated cities were more than 1.0.
- ④ PDI_{1990}^c for all central business wards were less than 1.0, but 75.0% of PDI_{2005}^c were more than 1.0.

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Table 2. PGI and PDI for 47 prefecture capitals and two designated cities

prefectural capital and designated city	PGI (Population Growth Indices)				PDI (Population Distribution Indices)											
	1990/1985	1995/1990	2000/1995	2005/2000	1990/1985	1995/1990	2000/1995	2005/2000								
Sapporo	1.083	1.051	1.037	1.032	1.090	1.042	1.039	1.042								
Aomori	0.977	1.020	1.012	0.977	1.004	1.021	1.016	1.004								
Morioka	1.020	1.027	1.007	0.993	1.032	1.025	1.009	1.015								
Sendai	1.071	1.058	1.038	1.017	1.037	1.021	1.022	1.019								
Akita	1.019	1.028	1.015	0.989	1.041	1.039	1.036	1.027								
Yamagata	1.018	1.020	1.003	1.003	1.020	1.021	1.014	1.026								
Fukushima	1.025	1.030	1.019	0.999	1.013	1.015	1.022	1.016								
Mito	1.026	1.003	1.001	1.004	0.983	0.966	0.991	1.008								
Utsunomiya	1.058	1.026	1.022	1.030	1.020	1.000	1.011	1.024								
Maebashi	1.032	1.003	1.003	0.994	1.008	0.984	0.993	0.994								
Saitama	1.092	1.070	1.051	1.038	1.000	1.014	1.024	1.021								
Chiba	1.051	1.033	1.035	1.042	0.974	0.990	1.013	1.019								
Tokyo ward-area	0.977	0.976	1.021	1.044	0.975	0.983	0.996	1.001								
Yokohama	1.076	1.027	1.036	1.045	1.002	0.994	1.006	0.989								
Kawasaki	1.078	1.025	1.039	1.062	1.004	0.992	1.009	1.005								
Niigata	1.023	1.025	1.016	1.006	1.024	1.020	1.021	1.024								
Toyama	1.020	1.021	1.008	1.001	1.018	1.018	1.010	1.009								
Kanazawa	1.029	1.025	1.005	0.996	1.018	1.012	1.005	1.002								
Fukui	1.007	1.008	0.987	0.998	1.000	1.003	0.985	1.007								
Kofu	0.991	1.002	0.975	0.990	0.968	0.969	0.969	0.994								
Nagano	1.026	1.030	1.003	0.999	1.017	1.012	0.994	1.008								
Gifu	0.998	0.994	0.992	0.996	0.979	0.978	0.988	0.996								
Shizuoka	1.004	1.000	0.989	0.991	0.977	0.982	0.981	0.985								
Nagoya	1.018	0.999	1.009	1.020	0.982	0.973	0.984	0.990								
Tsu	1.024	1.022	1.000	1.007	0.998	0.995	0.991	1.002								
Otsu	1.106	1.066	1.048	1.045	1.046	1.012	1.005	1.017								
Kyoto	0.988	1.002	1.002	1.000	0.982	0.992	0.997	0.999								
Osaka	0.995	0.992	0.999	1.012	0.988	0.985	0.998	1.010								
Kobe	1.047	0.964	1.049	1.021	1.023	0.964	1.021	1.014								
Nara	1.065	1.030	1.019	0.987	1.010	0.991	1.010	1.002								
Wakayama	0.988	0.993	0.981	0.972	1.000	0.988	0.991	1.003								
Tottori	1.026	1.012	1.014	1.005	1.026	1.013	1.017	1.015								
Matsue	1.012	1.018	1.020	0.987	1.030	1.031	1.033	1.012								
Okayama	1.035	1.036	1.017	1.032	1.030	1.023	1.017	1.029								
Hiroshima	1.040	1.021	1.015	1.018	1.029	1.010	1.016	1.019								
Yamaguchi	1.032	1.035	1.025	1.016	1.051	1.046	1.044	1.040								
Tokushima	1.021	1.020	0.998	0.999	1.025	1.019	1.008	1.016								
Takamatsu	1.015	1.014	1.010	1.003	1.014	1.011	1.014	1.014								
Matsuyama	1.031	1.034	1.022	1.013	1.041	1.040	1.032	1.031								
Kochi	1.015	1.015	1.026	1.000	1.033	1.026	1.030	1.022								
Fukuoka	1.066	1.039	1.044	1.045	1.046	1.013	1.027	1.038								
Kitakyushu	0.972	0.993	0.992	0.982	0.953	0.969	0.976	0.976								
Saga	1.011	1.011	0.982	0.991	1.013	1.003	0.990	1.003								
Nagasaki	0.977	0.986	0.965	0.968	0.997	0.997	0.983	0.993								
Kumamoto	1.042	1.038	1.018	1.011	1.041	1.027	1.018	1.021								
Oita	1.039	1.039	1.018	1.017	1.051	1.043	1.026	1.027								
Miyazaki	1.029	1.043	1.017	1.010	1.035	1.037	1.022	1.024								
Kagoshima	1.013	1.021	1.012	1.004	1.025	1.023	1.017	1.023								
Naha	1.004	0.990	0.997	1.038	0.968	0.951	0.963	1.005								
cities(>1)	40	81.6%	39	79.6%	38	77.6%	30	61.2%	33	67.3%	30	61.2%	32	65.3%	40	81.6%
cities(<1)	9	18.4%	10	20.4%	11	22.4%	19	38.8%	16	32.7%	19	38.8%	17	34.7%	9	18.4%
total	49	100.0%	49	100.0%	49	100.0%	49	100.0%	49	100.0%	49	100.0%	49	100.0%	49	100.0%

Table 3. PGI and PDI for twelve designated cities

designated cities	area	PGI (Population Growth Indices)				PDI (Population Distribution Indices)			
		1990/1985	1995/1990	2000/1995	2005/2000	1990/1985	1995/1990	2000/1995	2005/2000
Sapporo	city	1.083	1.051	1.037	1.032	1.090	1.042	1.039	1.042
	business district	0.991	0.967	1.046	1.118	0.914	0.921	1.009	1.083
	residential district	1.096	1.061	1.036	1.023	1.011	1.010	0.999	0.991
	central business ward	0.991	0.967	1.046	1.118	0.914	0.921	1.009	1.083
Sendai	city	1.071	1.058	1.038	1.017	1.037	1.021	1.022	1.019
	business district	—	1.025	1.017	1.013	—	0.969	0.980	0.996
	residential district	—	1.109	1.068	1.022	—	1.048	1.029	1.005
	central business ward	—	1.040	1.027	1.013	—	0.984	0.989	0.996
Tokyo	city (ward-area)	0.977	0.976	1.021	1.044	0.975	0.983	0.996	1.001
	business district	0.922	0.944	0.888	1.251	0.943	0.967	0.907	1.149
	residential district	1.005	0.991	1.018	1.027	1.028	1.015	1.041	0.943
	central business ward	0.782	0.881	1.036	1.159	0.800	0.903	1.059	1.064
Yokohama	city	1.076	1.027	1.036	1.045	1.002	0.994	1.006	1.009
	business district	0.982	0.995	1.054	1.109	0.913	0.969	1.017	1.061
	residential district	1.083	1.029	1.035	1.041	1.006	1.002	0.999	0.996
	central business ward	0.976	0.984	1.034	1.085	0.907	0.958	0.998	1.038
Kawasaki	city	1.078	1.025	1.039	1.062	1.004	0.992	1.009	1.025
	business district	1.031	0.981	0.989	1.050	0.957	0.958	0.951	0.989
	residential district	1.088	1.034	1.049	1.064	1.009	1.009	1.009	1.002
	central business ward	1.031	0.981	0.989	1.050	0.957	0.958	0.951	0.989
Nagoya	city	1.018	0.999	1.009	1.020	0.982	0.973	0.984	0.990
	business district	0.984	0.975	0.996	1.019	0.967	0.976	0.987	0.999
	residential district	1.044	1.016	1.018	1.021	1.025	1.017	1.009	1.001
	central business ward	0.979	0.957	1.026	1.094	0.961	0.958	1.017	1.072
Kyoto	city	0.988	1.002	1.002	1.000	0.982	0.992	0.997	0.999
	business district	0.952	0.979	0.998	1.007	0.964	0.977	0.996	1.007
	residential district	1.024	1.023	1.006	0.994	1.036	1.021	1.004	0.994
	central business ward	0.933	0.962	1.008	1.059	0.944	0.960	1.005	1.059
Osaka	city	0.995	0.992	0.999	1.012	0.988	0.985	0.998	1.010
	business district	0.993	0.985	1.007	1.037	0.997	0.993	1.008	1.025
	residential district	0.998	0.999	0.991	0.987	1.002	1.007	0.992	0.976
	central business ward	0.911	0.930	1.046	1.208	0.916	0.938	1.048	1.194
Kobe	city	1.047	0.964	1.049	1.021	1.023	0.964	1.021	1.014
	business district	0.947	0.794	1.070	1.022	0.904	0.824	1.020	1.000
	residential district	1.087	1.022	1.043	1.021	1.038	1.060	0.995	1.000
	central business ward	0.976	0.892	1.041	1.080	0.932	0.926	0.993	1.057
Hiroshima	city	1.040	1.021	1.015	1.018	1.029	1.010	1.016	1.019
	business district	1.010	0.974	0.987	1.024	0.971	0.954	0.972	1.006
	residential district	1.063	1.055	1.034	1.014	1.022	1.033	1.018	0.996
	central business ward	0.991	0.953	0.972	1.024	0.953	0.933	0.957	1.006
Fukuoka	city	1.066	1.039	1.044	1.045	1.046	1.013	1.027	1.038
	business district	1.008	1.010	1.076	1.092	0.946	0.972	1.030	1.045
	residential district	1.087	1.048	1.034	1.029	1.019	1.009	0.990	0.985
	central business ward	1.017	1.022	1.067	1.083	0.954	0.984	1.022	1.037
Kitakyushu	city	0.972	0.993	0.992	0.982	0.953	0.969	0.976	0.976
	business district	0.936	0.950	0.964	0.968	0.963	0.957	0.972	0.986
	residential district	0.992	1.017	1.006	0.989	1.021	1.024	1.015	1.007
	central business ward	0.944	0.961	0.966	0.977	0.971	0.968	0.974	0.994

Changes in Regional Population Distribution and the Compact City Policy in Japan

Table 4. Analysis of PGI and PDI of twelve designated cities

area		PGI (Population Growth Indices)								PDI (Population Distribution Indices)							
		1990/1985		1995/1990		2000/1995		2005/2000		1990/1985		1995/1990		2000/1995		2005/2000	
designated cities	(>1)	8	66.7%	7	58.3%	10	83.3%	11	91.7%	7	58.3%	4	33.3%	7	58.3%	9	75.0%
	(<1)	4	33.3%	5	41.7%	2	16.7%	1	8.3%	5	41.7%	8	66.7%	5	41.7%	3	25.0%
business districts	(>1)	3	27.3%	2	16.7%	7	58.3%	11	91.7%	0	0.0%	0	0.0%	5	41.7%	8	66.7%
	(<1)	8	72.7%	10	83.3%	5	41.7%	1	8.3%	11	100.0%	12	100.0%	7	58.3%	4	33.3%
residential districts	(>1)	9	81.8%	10	83.3%	11	91.7%	9	75.0%	10	90.9%	12	100.0%	7	58.3%	5	41.7%
	(<1)	2	18.2%	2	16.7%	1	8.3%	3	25.0%	1	9.1%	0	0.0%	5	41.7%	7	58.3%
central business wards	(>1)	2	18.2%	2	16.7%	9	75.0%	11	91.7%	0	0.0%	0	0.0%	6	50.0%	9	75.0%
	(<1)	9	81.8%	10	83.3%	3	25.0%	1	8.3%	11	100.0%	12	100.0%	6	50.0%	3	25.0%
total		11	100.0%	12	100.0%	12	100.0%	12	100.0%	11	100.0%	12	100.0%	12	100.0%	12	100.0%

Figure 1. Changes in population of Tokyo prefecture and Tokyo 23-ward area

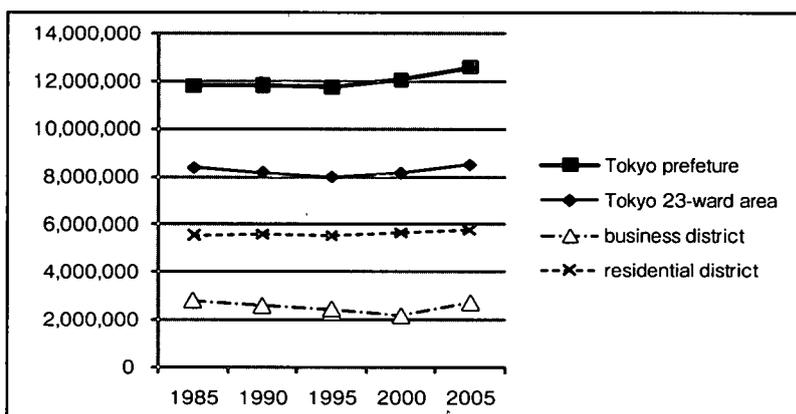


Figure 2. Changes in PDI of Tokyo prefecture and Tokyo 23-ward area

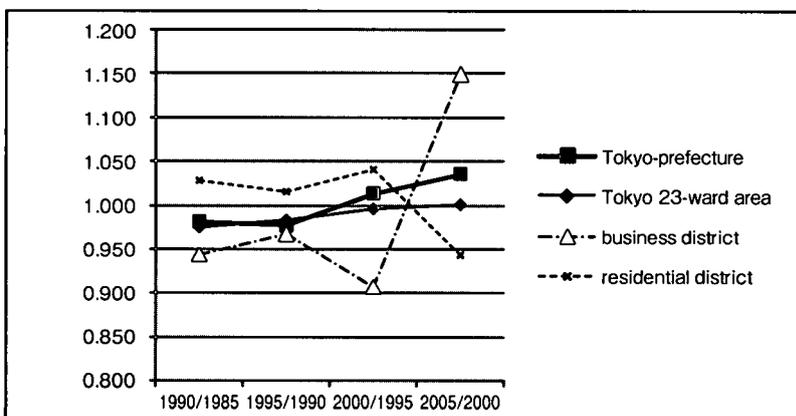


Figure 3. Changes in population of Hokkaido prefecture and Sapporo city

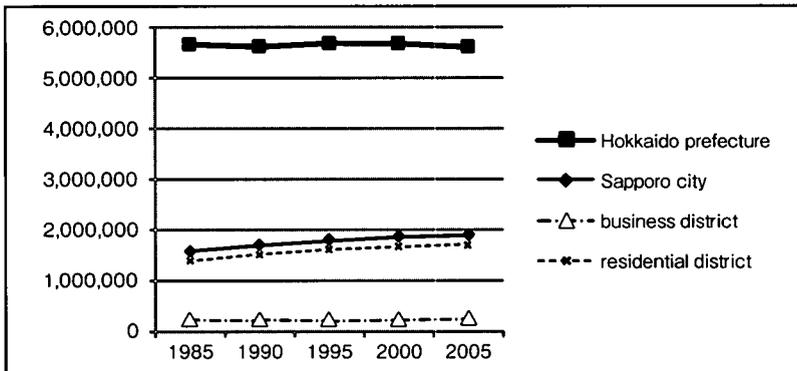
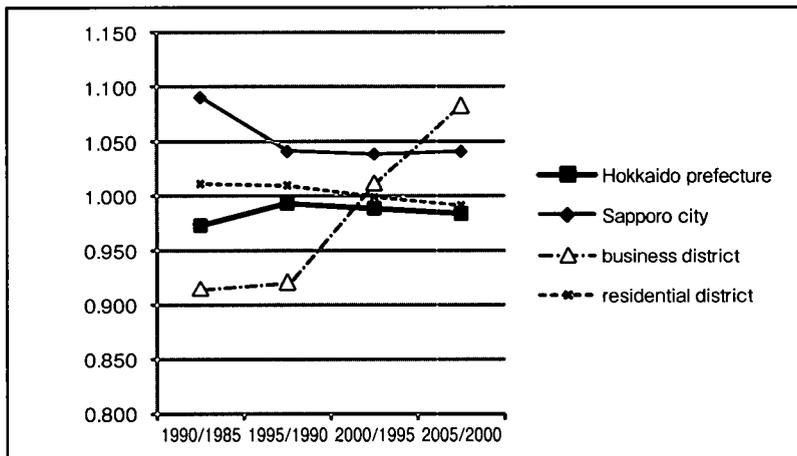


Figure 4. Changes in PDI of Hokkaido prefecture and Sapporo city



4. 4 Results of 10 prefecture capitals that adopt compact city policy

Sapporo, Aomori, Sendai, Akita, Toyama, Kanazawa, Fukui, Nagano, Kobe and Saga city adopt compact city policy in city master plans.

As shown in Table 5, of these ten cities, 40% of PGI_{2005}^m was more than 1.0, and all PDI_{2005}^m was more than 1.0.

Table 5. Analysis of PGI and PDI for ten prefecture capitals that have adopted the compact city policy

prefectural capital	PGI (Population Growth Indices)								PDI (Population Distribution Indices)							
	1990/1985		1995/1990		2000/1995		2005/2000		1990/1985		1995/1990		2000/1995		2005/2000	
Sapporo	1.083		1.051		1.037		1.032		1.090		1.042		1.039		1.042	
Aomori	0.977		1.020		1.012		0.977		1.004		1.021		1.016		1.004	
Sendai	1.071		1.058		1.038		1.017		1.037		1.021		1.022		1.019	
Akita	1.019		1.028		1.015		0.989		1.041		1.039		1.036		1.027	
Toyama	1.020		1.021		1.008		1.001		1.018		1.018		1.010		1.009	
Kanazawa	1.029		1.025		1.005		0.996		1.018		1.012		1.005		1.002	
Fukui	1.007		1.008		0.987		0.998		1.000		1.003		0.985		1.007	
Nagano	1.026		1.030		1.003		0.999		1.017		1.012		0.994		1.008	
Kobe	1.047		0.964		1.049		1.021		1.023		0.964		1.021		1.014	
Saga	1.011		1.011		0.982		0.991		1.013		1.003		0.990		1.003	
cities(>1)	9	90%	9	90%	8	80%	4	40%	10	100%	9	90%	7	70%	10	100%
cities(<1)	1	10%	1	10%	2	20%	6	60%	0	0%	1	10%	3	30%	0	0%
total	10	100%	10	100%	10	100%	10	100%	10	100%	10	100%	10	100%	10	100%

5. Conclusions

The conclusions of this study are as follows.

- ① The population distribution of prefectures has centralized to the Tokyo Metropolitan Area, Tokai Area, Kansai Area, Fukuoka Area over the period from 2000 to 2005.
- ② The population distribution of prefecture capitals and designated cities has concentrated in all but nine of 49 cities from 2000 to 2005.
- ③ The populations of business districts and central business wards in designated cities have increased in all except 4 or 3 of twelve cities over the period from 2000 to 2005.
- ④ In prefecture capitals and designated cities in Japan, housing preferences are consistent with the compact city policy.
- ⑤ The population distribution of cities which have adopted the compact city policy have been consistent with such policy.

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