

AGING IN JAPAN: POPULATION POLICY IMPLICATIONS

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This paper describes the trends in population aging in Japan and its demographic determinants and consequences. It discusses the sociocultural contexts of aging with special reference to the family. Then, it presents the results of multinomial logit analysis of data from the National Opinion Survey on Population Issues conducted by the Institute of Population Problems in 1990 to explore the possible acceptance of alternative population policies to slow population aging.

INTRODUCTION

The terms for aging (*koreika*) and hyper-aging (*cho-koreika*) have been popular in Japan for a decade or two. After the "1.57 Shock" (the public sensation associated with the announcement of the record-low total fertility rate of 1.57 for 1989) in 1990, the term "*shoshika* (trend toward less children)" has also become popular and had come to be often used side by side with "*koreika*" by scholars, policy-makers, politicians and businessmen. At the same time, the term for population policy has stopped being a semi-taboo word although the terms for "child-rearing support (*kosodate shien*) policy" or family policy have been preferred. Naturally, they are often considered as policies to cope with "*shoshika*" but their link to "*koreika*" is often mentioned, implying that these measures also have population policy motives.

On the other hand, there was a large influx of foreign workers in the late 1980s due to the labor shortage during the period of "bubble economy" and the revaluation of yen. Some opinion leaders have suggested that the introduction of foreign workers is inevitable or desirable in the long run to cope with the aging of population and the shortage of young workers associated with the continued low fertility. However, they are usually talking about "the guest worker (temporary migrant) scenario" rather than "permanent migrant scenario" while their opponents suggested that some temporary migrants might end up staying permanently as in the West.

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Therefore, the foreign worker issue has been mainly discussed in terms of labor policy rather than population policy although its link to population policy is sometimes pointed out.

This paper describes the trends in population aging in Japan and its demographic determinants and consequences. It discusses the sociocultural contexts of aging with special reference to the family. Then, it presents the results of multivariate analysis of public opinion survey data to explore the possible acceptance of alternative population policies to slow population aging.

TRENDS IN POPULATION AGING

Japan's population, which was 84.1 million in 1950, has reached 125.1 million in 1994, making Japan the seventh most populous country in the world. The annual growth rate was about 3 percent during the immediate postwar period, but decreased to the order of 1 percent in the mid-1950s, and remained at this level through the mid-1970s. Then, it fell below 1 percent and has continued to decline further to the level around 0.3 percent. The slower growth of population is mainly due to the decline in fertility and mortality. Both declined rapidly in the immediate postwar period. Then, the fertility stayed around the replacement level and declined further beginning in the mid-1970s. The mortality continued to fall further, particularly in the old age group.

This led to a sharp decline in the percentage of the child population (aged 0-14) while that of the aged population (aged 65 and over) continued to rise, as Table 1 shows. The share of the working-age population (aged 15-64) rose from 59.6 percent in 1950 to 68.9 percent in 1970, and has virtually leveled off at around 70 percent thereafter. The share of the child population, which was 35.4 percent in 1950, has dropped to 18.2 percent by 1990. On the other hand, the proportion of the aged population rose rapidly, from 4.9 percent in 1950 to 10.3 percent in 1985. The speed of aging has been accelerated since then and the share of the aged population in 1994 has been 14.1 percent. As a consequence, the median age of population increased by 15.5 years from 22.2 in 1950 to 37.7 in 1990 (Table 2).

As Table 1 shows, the aged population is projected to increase further by the new series of official population projections for Japan, which was published by the Institute of Population Problems (IPP), Ministry of Health and Welfare in September 1992. According to the medium-variant, the total population will increase continuously from 123.6 million in 1990 to 130.4 million in 2011 and decrease continuously thereafter to 125.8 million in 2025

TABLE 1. TRENDS IN THE AGE COMPOSITION OF POPULATION: 1920-2090 (%)

Year	Total (× 1000)	0-14	15-64	65+	65-74	75+
<i>Enumerated</i>						
1920	55,963	36.5	58.3	5.3	3.9	1.3
1930	64,450	36.6	58.7	4.8	3.4	1.4
1940	73,075	36.1	59.2	4.7	3.5	1.2
1950	84,115	35.4	59.6	4.9	3.7	1.3
1960	94,302	30.2	64.1	5.7	4.0	1.7
1965	99,209	25.7	68.0	6.3	4.4	1.9
1970	104,665	24.0	68.9	7.1	4.9	2.1
1975	111,940	24.3	67.7	7.9	5.4	2.5
1980	117,060	23.5	67.3	9.1	6.0	3.1
1985	121,049	21.5	68.2	10.3	6.4	3.9
1990	123,611	18.2	69.5	12.1	7.2	4.8
<i>Projected</i>						
1995	125,463	16.0	69.4	14.5	8.8	5.7
2000	127,385	15.2	67.8	17.0	10.2	6.9
2005	129,346	15.6	65.2	19.1	10.7	8.4
2010	130,397	16.4	62.4	21.3	11.3	10.0
2015	130,033	16.3	59.5	24.1	13.0	11.2
2020	128,345	15.5	59.0	25.5	13.0	12.5
2025	125,806	14.6	59.7	25.8	11.3	14.5
2030	122,972	14.2	59.8	26.0	11.0	15.0
2040	117,290	15.3	56.7	28.0	13.7	14.3
2050	111,510	15.7	56.1	28.2	12.1	16.1
2060	105,516	15.5	58.6	25.8	10.0	15.8
2070	101,023	16.6	58.2	25.2	11.8	13.4
2080	98,249	17.2	57.1	25.6	11.9	13.8
2090	95,732	17.2	58.4	24.5	10.2	14.2

Note: The figures are as of October 1 each year and includes Okinawa.

Source: Institute of Population Problems (1992, 1995), Association of the Employment Development for the Elderly (1995).

and 95.7 million in 2090. While both the child population and the working-age population will gradually decrease, the aged population will continue to increase from 14.9 million in 1990 to 32.7 million in 2020. The median age of population will increase from 37.7 years in 1990 to 48.8 years in the mid-2030s and then have cyclical movements with the two peaks of 49.9 years around 2060 and 49.8 years in the late 2080s due to the echo effects of baby booms and busts (Table 2).

The population of Japan is expected to experience rapid aging not previously observed in the West. The proportion of the elderly among the

TABLE 2. TRENDS IN MEAN AGE AND AGE AND ECONOMIC DEPENDENCY RATIOS: 1920-2090

Year	Median Age	Dependency Ratio			Aged		Non-Active
		Total	Child	Aged	Child	Active	
<i>Enumerated</i>							
1920	22.2	71.6	62.6	9.0	14.4	105.3	
1930	21.8	70.5	62.4	8.1	13.0	117.6	
1940	21.9	70.9	62.7	8.2	13.1	125.0	
1950	22.2	67.7	59.4	8.3	13.9	133.5	
1960	25.6	55.9	47.0	8.9	19.0	114.1	
1965	27.4	47.1	37.9	9.2	24.4	106.9	
1970	29.0	45.1	34.9	10.3	29.4	99.0	
1975	30.6	47.6	35.9	11.7	32.6	110.6	
1980	32.5	48.4	34.9	13.5	38.7	109.7	
1985	35.2	46.7	31.6	15.1	47.9	107.9	
1990	37.7	43.5	26.2	17.3	66.2	100.2	
<i>Projected</i>							
1995	39.6	44.0	23.1	20.9	90.7	—	
2000	41.0	47.5	22.4	25.1	112.2	92.8	
2005	41.9	53.3	24.0	29.3	122.2	—	
2010	42.9	60.4	26.3	34.1	130.0	103.3	
2015	44.4	68.0	27.4	40.5	147.7	—	
2020	46.0	69.4	26.2	43.2	165.1	—	
2025	47.2	67.5	24.3	43.2	177.8	—	
2030	47.6	67.2	23.7	43.5	183.6	—	
2040	46.1	76.4	27.1	49.4	182.4	—	
2050	45.8	78.3	28.1	50.2	179.0	—	
2060	45.9	70.5	26.5	44.1	166.4	—	
2070	44.3	71.9	28.6	43.3	151.7	—	
2080	43.7	75.1	30.2	44.9	148.8	—	
2090	43.5	71.3	29.4	41.9	142.6	—	

Note: The figures are as of October 1 each year and includes Okinawa.

Source: Institute of Population Problems (1992, 1995), Association of the Employment Development for the Elderly (1995).

total population will rise from 12.1 percent in 1990, through 17.0 percent in 2000, to 25.8 percent in 2025, which will probably make Japan the most aged country in the world. It is projected to rise further to the highest level of 28.4 percent in the mid-2040s before starting to decrease. Among the elderly, the proportion of "older old" population (aged 75 and over) will dramatically increase from 4.8 percent in 1990 to 14.5 percent in 2025. It is projected to reach the highest level of 16.4 percent in the mid-2050s. Even higher level of aging is expected for Japan by the 1994 UN population projections

(United Nations 1994).

DEMOGRAPHIC DETERMINANTS AND CONSEQUENCES OF AGING

Demographic Determinants

As mentioned above, the rapid aging of Japan's population has been led by the rapid decline in both fertility and mortality. After falling below the replacement level at 2.05 in 1974, total fertility rate (TFR) went into steady decline and reached the record low level of 1.46 in 1993 (although it has increased to 1.50 in 1994). This TFR decline is explained by the respective trends of its two components: the fertility rate among married women and the proportion married among women. While the former has remained fairly constant, the latter has greatly declined.

In other words, the trend toward higher age at marriage and higher proportion remaining never-married has greatly reduced the incidence of marriage among women in their twenties, and this may be regarded as the primary demographic determinant of the recent TFR decline and population aging. In fact, in 1990, the percent married among women aged 20-34 was only three fourths as high as in 1975. It can also be noted that the mean age at first marriage among women rose constantly from 24.7 in 1975 to 26.2 in 1994.

Life expectancy at birth in 1994 has come to be 76.57 years for males and 82.98 years for females, longer than in any other countries in the world.

It has been lengthened by 2 years during the last decade. In recent years, however, the number of total deaths is on the increase due to population aging which has increased the relative number of older persons with a higher mortality risk. At the same time, the mortality has been declining in old ages.

An examination of lengthening life expectancy in the light of age-specific death rates shows that mortality decline among infants and children and among youth during the early 1960s made a great contribution to the lengthening. Since the 1970s, however, mortality decline in the middle and old ages have been responsible for most of the lengthening. In recent years, there has been a particularly large mortality decline in old ages, which is promoting population aging. Life expectancy at birth is expected to reach around 78 years for males and 84 years for females in the early twenty-first century.

Demographic Consequences

One of the most direct demographic consequences of population aging is the increase in the age dependency ratios and the aged-child ratio (Table 2), although some demographers regard them as indicators of aging itself. The total dependency ratio is the ratio of the combined child population and aged population to the working-age population (per 100), while the child dependency ratio and the aged dependency ratio represent the ratio of each population to the working-age population (per 100). As Table 2 shows, the total dependency ratio, which was 67.7 in 1950, kept decreasing until it attained the lowest level of 43.3 in 1991 and 1992. Then, it has risen to 43.7 in 1994. It is projected to continue rising to the first peak of 69.6 in 2018, then to decline slightly before resuming its rise to reach the highest peak of 79.2 in 2045 and 2046. It will decline to the level of the first peak in the mid-2060s to attain another peak of 75.1 around 2080 before it resumes its decline.

This fluctuation of the total dependency ratio reflects the fluctuation of both the child dependency ratio and the aged dependency ratio. However, it largely reflects the movement of the aged dependency ratio because that of the child dependency ratio is much simpler but equally dramatic. The child dependency ratio has kept decreasing from 59.3 in 1950 to 23.5 in 1994 and is projected to attain the lowest level of 22.4 around 2000 and to fluctuate mostly below 30 thereafter. The aged dependency ratio, which was 8.3, has risen to 20.2 in 1994. It is projected to continue its rise almost monotonously to 50.9 in 2045, to decline to 42.5 in 2065 before resuming its rise to another peak of 45.0 in 2078 and 2079, and to resume its decline.

The aged-child ratio is the ratio of the number of aged persons to the number of children (per 100), which simultaneously takes into account the numbers and changes at both ends of the age distribution. Its change is very dramatic, especially after 1970 when the proportion of the aged surpassed the ten-percent mark. It was only 14.0 in 1950 and has risen to 86.1 in 1994. It is projected to continue its rise to the highest level of 183.6 in 2030, to remain at a slightly lower level until the beginning of the 2050s, and to start its decline to attain 142.6 in 2090.

In contrast to the total dependency ratio which is a measure of demographic dependency or age composition, the economic dependency ratio is a measure of economic dependency. It is defined as the ratio of the economically inactive population to the active population over all ages (per 100). It was 133.5 in 1950 and decreased to 99.0 in 1970. But it increased to 110.6 in 1975. Then, it kept decreasing to 100.2 in 1990. It is projected to

continue its decline to 92.8 in 2000 and to resume rising, at least until 2010 which is the last year for the projection by the Employment Policy Research Committee (Ministry of Labour). It is expected to rise to some extent after 2010 because this measure, at least partly, moves in parallel with the total dependency ratio. Other demographic consequences include the changes in sex ratio and marital status composition among older persons. Because mortality is generally lower among females than among males, females outnumber males among the elderly. The sex ratio (100 males / females) of the aged population was 67.2 in 1990 and it decreased with age. It was 72.5 in 1950, 76.6 in 1960, 78.3 in 1970 and 73.2 in 1980. These changes do not seem to be systematic, but the change by age group generally shows the trend toward lower sex ratio, especially in recent years.

There is a trend toward higher proportion married among the elderly due to the mortality decline, especially among middle and old ages, although the level is much higher for males due to their higher mortality and higher age at marriage. The proportion married was 64.6 percent among older males and 25.1 percent among older females, but it increased to 83.3 percent and 40.1 percent respectively in 1990. Conversely, the proportion widowed has declined rapidly among males and "younger old" females (aged 65-74) due to the mortality decline. But the decline is much slower among "older old" females (aged 75 and over) due to the sex differential in mortality and the larger age difference between spouses. On the other hand, the absolute number of "older old" widows increased rapidly from 0.58 million in 1950 to 2.78 in 1990, while the male counterpart increased from 0.19 million to 0.53 million. There is a growing concern as to who will take care of those "older old" widows because many of them have been taken care of in intergenerationally extended households and because the potential availability of kin to take care of them is said to be declining.

SOCIOCULTURAL CONTEXTS OF AGING

Intergenerational Household Extension of the Elderly

While Japan has many individual demographic features in common with developed societies in the West, including low levels of fertility and mortality, it exhibits different developments in the area of family demography, which it seems to share more with newly industrializing and developing societies in the East. Given that Japan does not lag behind other developed societies in socioeconomic development, this suggests that family patterns do not necessarily change in the same direction with

TABLE 3. TRENDS IN LIVING ARRANGEMENTS OF THE ELDERLY (AGED 65+): 1960-1990 (%)

Year	Total (x1000)	Inst. HH	Relative	Ordinary Household		Non-Rel.	1-Person
				Exte.	Couple		
1960	5,398	1.1	93.8	86.8	7.0	0.2	4.3
1965	6,236	—	—	83.8	9.1	0.3	4.6
1970	7,393	2.2	90.3	78.7	11.6	0.2	5.8
1975	8,865	3.0	89.1	74.1	14.9	0.1	6.6
1980	10,647	3.6	87.8	69.8	18.1	0.1	8.3
1985	12,468	4.2	86.1	65.5	20.6	0.1	9.5
1990	14,895	4.3	84.6	60.5	24.1	0.1	10.9

Note: The figures are as of October 1 each year and includes Okinawa after 1975.

Source: Institute of Population Problems (1995).

socioeconomic developments. It is even possible that some aspects of socioeconomic and demographic development may facilitate the realization of the traditional family patterns that vary from society to society. The rapid change in sibling configuration among adults in Japan, as a result of fertility decline in the past, may be one of those aspects because of the normative pressure on the eldest children to live with older parents and support them.

In many parts of prewar Japan, the intergenerationally extended or stem family household was the normative living arrangement for the older parents and their eldest sons. When parents did not have any sons, they often lived with their eldest daughter and son-in-law. Coresidence was generally continuous, or began again when the eldest child married or the parents retired, and normally ended with the death of parents. Living arrangements were closely related to the primogeniture custom which gave priority to males.

Although there has been a steady decline in the proportion of intergenerationally extended households in the postwar period, this decline seems to have ended recently. As Table 3 shows, many older persons still live with their adult children (in the extended household). Although the percentage of older persons in the extended household keeps decreasing, the pace of decline is slowing down. The proportion of older persons in one-person and couple-only households is on the rise, but lower than in the West. Although the percentage of older persons in institutions is also increasing, they are still a minority. Moreover, the majority of "older old" persons still live with a married child.

Intergenerational Household Extension of Married Children

While the proportion of older persons in the extended household has decreased in recent years, the proportion of married males aged 20-39 in the extended household seems to have increased slightly (Hirosima 1987). The two trends may seem contradictory, but the prevalence of intergenerationally extended households can differ according to whether the unit of observation is parents or married children. Similarly, the postwar fertility decline has had different effects on the potential availability of kin to live with for each generation because only one married child is expected to live with the parents. Considering the increasing number of "older old" widows and the decreasing potential source of their support due to the fertility decline, it would be appropriate to analyze which married child lives with an older woman.

Table 4 shows the results of multinomial logit analysis of the IPP's 1985 national household survey data, focusing on the effects of sibling

TABLE 4. DETERMINANTS OF CORESIDENCE OF MARRIED COUPLES WITH AN OLDER MOTHER

Independent Variables	Head's Mo. vs Separate	Wife's Mo. vs Separate	Head's Mo. vs Wife's Mo.
<i>H's Age</i>			
15-39	0.57***	1.10	0.52*
40-44	0.90	0.87	1.03
45-49	1.00	1.00	1.00
50+	1.58**	1.75	0.90
<i>H's Eldest-Son St.</i>			
Eldest Son	3.36***	0.72	4.63***
Non-Eldest	1.00	1.00	1.00
<i>H's Sib Size</i>			
1-2	0.73	0.74	1.00
3-5	1.00	1.00	1.00
6+	1.25	0.93	1.35
<i>H's Birth Posi.</i>			
Oldest	1.30	1.26	1.03
Middle	1.00	1.00	1.00
Youngest	0.73	0.78	0.93
<i>H's Older Sis.</i>			
Have Older Sis.	1.31	1.25	1.04
No Older Sisters	1.00	1.00	1.00

TABLE 4. (CONTINUED)

Independent Variables	Head's Mo. vs Separate	Wife's Mo. vs Separate	Head's Mo. vs Wife's Mo.
<i>H's Younger Bro.</i>			
Have Y. Brothers	0.80#	0.98	0.82
No Y. Brothers	1.00	1.00	1.00
<i>H's Younger Sis.</i>			
Have Y. Sisters	0.76**	1.16	0.65
No Y. Sisters	1.00	1.00	1.00
<i>W's Eldest-D. St.</i>			
Eldest Daughter	0.85	3.15*	0.27*
Non-Eldest	1.00	1.00	1.00
<i>W's Sib Size</i>			
1-2	1.03	1.74	0.59
3-5	1.00	1.00	1.00
6+	0.90	0.81	1.11
<i>W's Birth Posi.</i>			
Oldest	2.16**	0.77	2.79
Middle	1.00	1.00	1.00
Youngest	0.56*	1.30	0.43
<i>W's Older Bro.</i>			
Have O. Brothers	1.31*	1.05	1.25
No O. Brothers	1.00	1.00	1.00
<i>W's Older Sis.</i>			
Have O. Sisters	1.49**	0.82	1.82#
No O. Sisters	1.00	1.00	1.00
<i>W's Younger Bro.</i>			
Have Y. Brothers	1.01	0.63	1.61
No Y. Brothers	1.00	1.00	1.00
<i>W's Younger Sis.</i>			
Have Y. Sisters	1.05	1.19	0.89
No Y. Sisters	1.00	1.00	1.00

Note: *** $p < .001$, ** $p < .01$, * $p < .05$, # $p < .10$.

Source: Kojima (1993)

configuration on the coresidence of married male household heads with their mother or mother-in-law who is at least 60 years old. The dependent variable in this model is trichotomous: coresidence with the head's mother, coresidence with the wife's mother and separate residence from either of them. The sibling configuration variables used in this analysis consist of

those representing eldest-child status (the oldest among sons or the oldest daughter without brothers), sib size (the number of brothers and sisters), birth position (the order of birth among all children in the family), and the possession of either older brothers (in the case of wives), older sisters, younger brothers, or younger sisters. The age of household heads is also included as a control variable. The results are presented in the form of relative odds instead of the original coefficients for easier interpretation. The odds for the reference category of each variable is set at 1.00 and the relative odds for other categories are calculated as the exponentiated coefficients.

The first column presents the effect of each variable or category on the odds of coresidence with the head's mother relative to the separate residence. The household heads who are an eldest son are three times as likely as non-eldest sons to live with his mother, while those who have either younger brothers or younger sisters are significantly less likely to live with his mother. He is also more likely to live with his mother when his wife is the oldest child or she has either older brothers or older sisters, while he is less likely to live with his mother when his wife is the youngest child.

The second column shows the effect on the odds of coresidence of the household head with the wife's mother relative to separate residence. He is three times more likely to live with her when his wife is the eldest daughter than otherwise. The third column presents the effect on the odds of coresidence with his own mother relative to coresidence with his mother-in-law. He is more likely to live with his own mother compared with living with his mother-in-law when he is an eldest son or when his wife has an older sister, while he is less likely when his wife is an eldest daughter.

The effects of the household head's eldest-son status and the wife's eldest-daughter status suggest that the primogeniture custom still remains in contemporary Japan: the eldest children are more likely than the non-eldest to live with their parents, possibly for old-age support in exchange for a larger share of inheritance. The sib size of either spouse does not have any significant effects on the living arrangements possibly because its effect is indirectly captured by other sibling configuration variables. The effects of the wife's birth position on coresidence with the head's mother as well as the effects of the head's possession of younger siblings suggest that the crowding in the household encourages the departure of older siblings.

The positive effects of eldest-child status on coresidence with own parents are much larger than the effects of other sibling configuration variables in terms of the absolute size of coefficients. If these tendencies are relatively stable through time, fertility decline, which has caused population aging, may not necessarily decrease the potential availability of old-age support by

adult children to parents through coresidence because it will increase the proportion of eldest children in younger generations while it will decrease the average sib size.

POSSIBLE ACCEPTANCE OF POPULATION POLICIES

Potential Needs for Population Policy to Counter Aging

The IPP's 1985 national household survey also asked household heads their opinion about the statement, "Since the burden of the society will increase as the proportion of the elderly increases, the number of children that couples bear might as well increase." Only 8.9 percent chose "strongly agree", 19.2 percent "somewhat agree", 52.3 percent "hard to say", 13.8 percent "somewhat disagree" and 5.9 percent "strongly disagree". The results of multinomial logit analysis show that being female, old age, being non-migrant, low education, living in Tohoku/Hokuriku Areas (with a higher prevalence of extended households) tend to be associated with positive response to this statement (Kojima 1992).

This survey also asked opinion about the statement, "The government might as well take some measures so that Japanese couples can bear the number of children that they want," in order to explore the potential needs for fertility policy. In contrast to the response to the previous question, 23.9 percent chose "strongly agree", 18.8 percent "somewhat agree", 41.2 percent "hard to say", 9.0 percent "somewhat disagree" and 7.1 percent "strongly disagree". According to the results of multinomial logit analysis, being female, being married, being non-migrant, middle-level education, middle-level income (spending) and rural residence are associated with positive attitudes toward fertility policy (Kojima 1992). This may suggest that household heads with these characteristics have potential needs for fertility policy. However, population aging is not referred to in this question about population policy. Moreover, immigration policy as an alternative population policy is not referred to, either.

Determinants of Attitudes toward Population Policy

The IPP conducted a public opinion survey on population issues in 1990. It asked more directly opinions towards population aging and population policy to slow it down. It asked all the respondents whether hyper-aging in the near future was good or bad and asked those who had a negative opinion about it the possible measures to slow it down. Table 5 shows the results of cross-tabulation by sex of combined answers to these two

TABLE 5. ATTITUDES TOWARD THE HYPER-AGING OF POPULATION AND THE CHOICE OF POSSIBLE MEASURES AGAINST IT (%)

Sex	Total (N)	Posi. or Neutral	Negative Immig.	Attitude Pronat.	toward Both	Aging None
Both	19,142	47.9	4.5	33.0	9.3	5.3
Male	9,648	47.2	5.8	31.2	10.5	5.4
Female	9,494	48.7	3.1	34.9	8.1	5.3

Note: This is based on the combination of answers to two questions.

Source: National Opinion Survey on Population Issues (1990)

questions, excluding DK (Don't Know) and UK (Unknown). About 48 percent of respondents have positive or neutral attitudes toward hyper-aging although those with positive attitudes accounted for less than five percent of the total. Females are a little more likely to have these attitudes than males. Among those who have negative attitudes toward hyper-aging (52 percent of respondents who are asked about the possible measures to slow it down), 4.5 percent are in favor of immigration policy, 33 percent pronatalist policy, 9.3 percent both and 5.3 percent non-intervention. Females are less likely to favor immigration policy than males and a little more likely to favor pronatalist policy.

In order to clarify the differentials in opinion towards hyper-aging and possible population policy measures at the same time, multinomial logit analysis is conducted on this five-category dependent variable. Table 6

TABLE 6. DETERMINANTS OF CHOICE OF MEASURES AGAINST HYPER-AGING: RELATIVE ODDS

Independent Variables	Immigra. vs OK	Pronatal. vs OK	Immi./Pro. vs OK	None vs OK
<i>Sex</i>				
Male	1.00	1.00	1.00	1.00
Female	0.56***	1.15**	0.84*	1.07
<i>Age</i>				
20-24	1.00	1.00	1.00	1.00
25-29	1.03	1.10	0.98	1.03
30-34	0.86	0.96	0.81	0.87
35-39	0.83	0.90	0.76#	0.61**
40-44	0.70#	0.92	0.79	0.55***
45-49	0.89	1.02	0.71*	0.46***
50-54	0.87	1.09	0.84	0.72#
55-59	0.73	1.11	0.90	0.51**

TABLE 6. (CONTINUED)

Independent Variables	Immigra. vs OK	Pronatal. vs OK	Immi./Pro. vs OK	None vs OK
60-64	0.74	1.31	1.03	0.53
65-69	0.65	1.37*	1.00	0.47**
<i>Marital St.</i>				
Never-Mar.	1.02	0.65***	0.73**	1.13
Married	1.00	1.00	1.00	1.00
Widowed	1.15	1.10	0.74	1.20
Divorced	0.73	0.80#	1.18	1.13
<i>Education</i>				
Junior HS	0.79*	0.84***	0.65***	0.69** HS
1.00	1.00	1.00	1.00	
Junior Col.	1.06	1.08	1.29*	1.25#
4-Year Col.	1.33**	1.00	1.17#	1.59***
<i>Employment</i>				
Self-Emp.	1.27*	0.91	1.03	1.25#
Full-Timer	1.00	1.00	1.00	1.00
Part-Timer	0.95	0.87*	0.88	0.88
Non-Emp.	1.08	0.92	0.87	0.92
<i>Occupation</i>				
Prof./Manag.	1.14	1.08	1.17	1.02
Clerical	1.00	1.00	1.00	1.00
Sales		0.82	1.13	1.15 0.78
Service	0.93	1.10	0.91	0.98
Manual	0.72*	0.95	0.84	0.77#
Agri./Fish	0.28**	1.33*	0.63*	0.74
Others	0.68#	0.92	0.79#	0.54**
<i>U/R Resid.</i>				
City	1.00	1.00	1.00	1.00
Non-City	0.97	0.77	0.95	1.01
<i>Area</i>				
Hokkaido	0.48**	0.82#	0.95	0.98
Tohoku	0.77	0.90	0.87	1.28
Kanto	0.94	1.09	1.27**	1.19
Chubu	1.00	1.00	1.00	1.00
Kinki	0.63**	0.89#	0.82#	1.48**
Chushikoku	0.75#	1.11	0.98	1.05
Kyushu	0.45***	0.96	0.66***	0.86

Notes: The dependent variable is based on the combination of answers to two questions.

*** p<.001, ** p<.01, * p<.05, # p<.10.

Source: National Opinion Survey on Population Issues (1990)

shows the results in the form of relative odds. Demographic independent variables include sex, age and marital status. According to the results, females are less likely to favor immigration policy and more likely to favor pronatalist policy, as shown by Table 5. Among various ages, middle age is associated with unfavorable attitudes toward immigration policy, while old age with favorable attitudes toward pronatalist policy and young age with favorable attitude toward non-intervention. The never-married and the divorced are less likely to favor pronatalist policy.

Socioeconomic independent variables include education, employment status and occupation. Low education is associated with positive or neutral attitudes toward hyper-aging while high education with favorable attitudes toward immigration policy and non-intervention. The self-employed tends to be also in favor of both immigration policy and non-intervention while part-timers tend to be against pronatalist policy. Manual workers and farmers tend to have negative attitudes towards immigration policy, while the latter has positive attitudes toward pronatalist policy. Those in the "others" category are more likely to have positive or neutral attitudes toward hyper-aging.

Regional independent variables include urban-rural residence and Areas, but the former does not have any significant effects. Inhabitants of Hokkaido Area are less likely to favor immigration or pronatalist policies, while those in Kanto Area (Tokyo Metropolitan Area) are more likely to favor both immigration and pronatalist policies. Inhabitants of Kinki Area (Kyoto-Osaka- Kobe Metropolitan Areas) are more likely to favor non-intervention (less likely to favor immigration or pronatalist policies), while those in Chushikoku and Kyushu Areas are less likely to favor immigration policy. There seems to be possible acceptance of alternative population policies to slow down hyper-aging among Japanese with certain demographic, socioeconomic and regional characteristics.

CONCLUSION

Even though pronatalist strategy is better accepted than immigration strategy as a possible population policy measure to slow the hyper-aging of population, their relative effectiveness in slowing population aging should be assessed before their possible implementation is planned. Recent literature based on simulation, including Lesthaeghe et al. (1988) for the EC, Blanchet (1988) for France, Steinmann (1991) for Germany and Espenshade (1994) for the U.S., shows that immigration strategy is not effective in maintaining the age composition under the condition of currently low

fertility unless the annual net inflow of immigrants amounts to 20 to 70 percent of the annual number of births. For Japan, which is projected to undergo faster population aging than these developed countries, even larger amount of immigrants may be necessary to stop further aging. But it is unrealistic, particularly because Japan does not seem to be well-prepared for becoming a multicultural society on a larger scale. Some of these works suggest that immigration strategy can be used only as a partial complement to pronatalist strategy in slowing population aging. Perhaps, the Japanese respondents of the 1990 survey sensed this and favored pronatalist strategy more than immigration strategy.

However, the pronatalist policy does not seem to be very effective in raising fertility according to Kojima's (1989 and 1994) literature review of empirical studies in the West, although it is usually difficult to isolate measures specifically designed for pronatalist purposes. Kojima's (1995a) recent analysis of the 1992 national fertility survey data shows that those mothers who quitted their job after the second birth have a lower probability of the third birth. Income support program could be effective if this is due to the financial problem of the household, health program could be effective if this is due to the health problem of either the mother or the child, and child care program could be effective if this is due to the difficulty to get the child care service for a working mother in a nuclear family household (as suggested by Kojima 1995b). Neither of them is exclusively designed for pronatalist purposes even though they could have some pronatalist effects.

Therefore, the effectiveness of pronatalist policies should be also evaluated in relation to that of indirect policies on fertility such as those of social security, health, education, employment, housing, empowerment, etc. Actually, some demographers in the West believe that the impact of indirect policies on fertility is much stronger than that of the population policies designed explicitly to affect fertility (Hohn 1988). This could be true if the actual measures can be distinguished by the underlying intentions, but it is not always possible because some measures (e.g., family allowances) are used for both direct and indirect fertility goals. In addition, the effectiveness of population policies should be evaluated in relation to that of population-responsive policies. All these policies could be integrated as the comprehensive family policy for intergenerational support and societal reproduction.

The comprehensive family policy should be based on a group of principles which may be universal or country-specific. They include intergenerational solidarity and gender equity which may be universal as

underlying principles (Kojima 1994-95), but their surface representation as policy measures may be modified by demographic and sociocultural contexts of each society. Those modifications fit for Japan may have policy relevance to other countries in the East and possibly those in the West.

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