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特集Ⅰ：第一，第二の人口転換の解明に基づいた人口・ライフコースの動向と将来に関する研究（その１）

The First and Second Transitions: Japan and South Korea Compared*

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Introduction

According to the United Nations' *World Population Prospects* (UNPD 2011), the proportion of the world's working age population is estimated to shrink from 66 per cent in 2010 to 63 per cent in 2050 while that of the elderly (65 years or over) increases from 8 per cent to 16 per cent; but as far as the whole world is concerned, the share of the young (0-14 years) will still remain a little over 20 per cent in 2050. If we turn to East Asia the situation is very different. In Japan, the dependency ratio (the proportion of the sum of 0-14 year-olds and over 65 year-olds to the total population) will increase from 36 per cent to 49 per cent with the share of over 65 year-olds in the total population reaching the 35 per cent mark. The tempo of ageing is even more rapid in the Republic of Korea (South Korea, or simply "Korea" unless otherwise stated): the corresponding increase in the dependency ratio is from 28 per cent to 46 per cent and the share of over 65 year-olds is estimated to be 33 per cent in 2050. On the fertility side, moreover, the total fertility rate (TFR) now stands very low in both countries. In 1995, Korea's TFR was still 1.63 while Japan's stood at 1.42. In 2010, however, the Korean TFR of 1.28 and Japan's corresponding rate of 1.39 are two of the "lowest-low" of the present world (UNSD 2012).

However, this does not necessarily mean that the process has been more or less identical in the two countries. As is well known, Japan's move towards ageing in the past several decades was due primarily to a decrease in mortality in the 65+ age group, on the one hand, and a substantial rise in the female age at marriage and its unintended effect on the birth of a child of higher parity (see for example Kaneko et al. 2008)[1], on the other. As for Korea, the process took place more recently, as a result of which changes in both mortality and fertility tended to be more dramatic; but attention

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1) This implies that the completed family size of the married couple did not decline as dramatically as the observed TFRs would suggest.

has so far been paid almost exclusively to fertility decline. According to recent surveys of evidence and factors associated with such fertility change (Lee 2009; Suzuki 2012), some of the forces at work in Korea were similar to the case of Japan; for example, delayed marriage and hence delayed childbearing are significant correlates of declining fertility in both countries. But there are two distinct differences. One is contraception: as for the period after 1990, the proportion of married women practicing contraception was substantially higher in Korea than in Japan. The other is the demand for children: in both countries the ideal number of children the couple would like to have was generally larger than the actual number the couple had; but the level was lower in Korea than in Japan for the period from 1880 to 2005 (Suzuki 2012, pp. 63-64). Suzuki has also noted elsewhere that the magnitude of Korean fertility decline was "unexpected" given the prevalence of son-preference, which was much greater than in Japan (Suzuki 2009), indicating that preference change may have accounted for much of the "unexpected" change that took place in the period after 1990. These observed differences suggest that some aspects of reproductive behaviour differed significantly between the two countries, as far as the recent period of fertility decline is concerned.

This paper is therefore decidedly demographic. What we would like to accomplish in this paper is to decompose the ageing processes of Japan and Korea in the hope that it will go a substantial way towards a better understanding of the two countries' divergent as well as shared experiences. The next section takes a cursory look at the recent history from the demographic transition to the post-transition era. Section II is an attempt at the age group decomposition of changes in life expectancy, followed by an analysis of the components of declining fertility, i.e. the varying effects of age structure, marriage and reproductive behaviour on fertility decline (Section III). Section IV summarises the findings and explores their implications.

I. The demographic transition and post-transition changes

Historically, the ageing process is a stage emerging after the classical demographic transition, involving also two components: mortality decline and fertility decline. For any country, according to Jean-Claude Chesnais, the "historical markers" of the demographic transition are the starting- and end-points of the transition process, i.e. the starting point (T_{α}) marked by the beginning of mortality decline and the end-point (T_{ω}) by a near-zero or very low rate of natural increase; in between, comes the mid-point (T_{β}) at which fertility begins to decline (Chesnais 1992). His examination and periodisation of individual country cases is based largely on crude birth and crude death rates.

In the case of Japan, for example, T_{α} is identified to have been in the 1920s, T_{β} was in the post-World War II year of 1949, and T_{ω} came in the early 1970s, returning to a rate of natural increase at the end of the nineteenth century. One feature of Japan's transition is that there was a "fairly long period of stability" of 1956-72, and that the period was followed by "a modest decline,

reflecting a new downturn in fertility" (Chesnais 1992, Figure 8.4f on p. 246, and pp. 250-251), although he did not realise when he wrote the original French edition that this "new downturn in fertility" would eventually lead to lowest-low fertility. Perhaps, we should add a couple of additional points: first, that infant and child mortality had started to decline gradually in the inter-war years and then declined substantially before the era of strong economic growth began in the mid-1950s, and second that the average number of children a woman would have (i.e. TFR) had decreased from the level of 4.3-4.5 in years immediately after the war to the range of 2-3 in the 1950s, again before the growth drive started. The "fairly long period of stability" coincided with the age of this growth drive, and the end of the strong growth era with a renewed phase of fertility decline, another fertility transition leading, this time, to negative population growth. In other words, Japan's modern demographic history is characterised by the separation of this recent decline in fertility, often called by demographers the "second demographic transition", from the first[2].

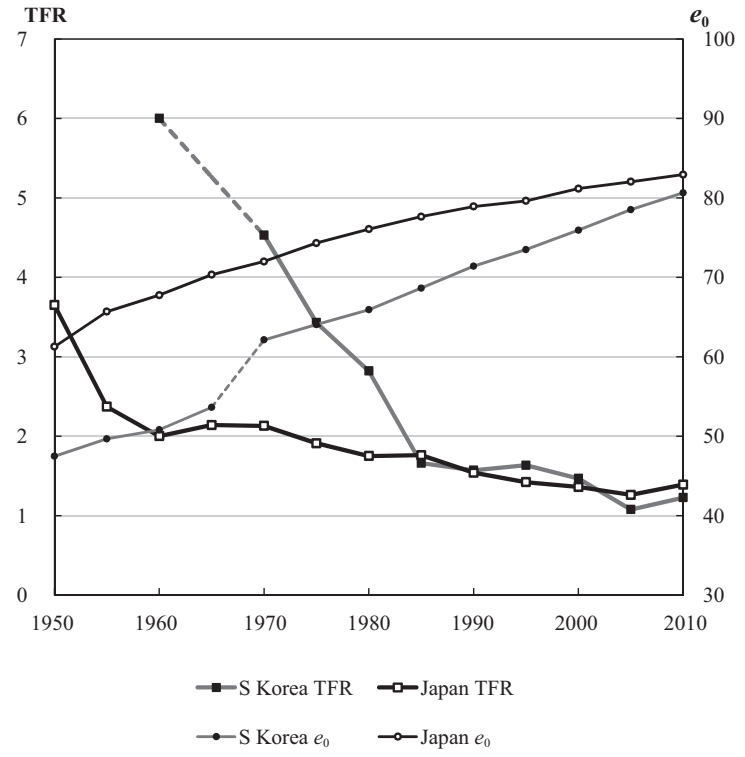
Turning to South Korea, unfortunately, not much is said about in Chesnais' book on the first demographic transition, although the accompanying graph (Figure 8.8b on p. 266) suggests that T_β came in about 1960, and also that even in 1980, at which the graph ends, the Korean demographic transition was not completed yet. Now that the country has already entered a lowest-low fertility regime, this observation implies that Korea had no intervening period of "stability" between the first and the second transition periods. Let us examine this possibility by looking at a graph showing the movements of both TFR and the expectation of life at birth (e_0, both sexes combined) in the two countries from 1950 to 2010 (Figure 1). Note that the Korean graphs are both linked series; the dotted line indicates where the linkage is made[3].

While the graph of Japan's TFRs simply confirms the afore-mentioned periodisation based on Chesnais' observations, the Korean graph is more suggestive. Given the 1960 figure of 6.0, the TFRs seem to have remained very high until the 1960s, which is lent support by the UN estimates of quinquennial averages for the 1950-70 period: 5.05 for 1950-54, 6.33 for 1955-59, and 5.63 for 1960-64 (UNPD 2013). Fertility decline began in the 1960s and it was rapid since then. In the early 1980s TFR came below 2; fifteen years later, i.e. between 1995 and 2000 it declined further. In 2000 it came below the 1.5 mark, the oft-quoted number at which a country is supposed to enter the lowest-low regime. The shape of the graph may be taken to suggest that in the Korean case too there was a period of stability, i.e. from 1985 to 2000. But the period is just too short, so short that

2) For the idea of a second demographic transition, see for example van de Kaa (2003). In comparison with the exploration of the first, however, emphasis in the discussion of the second has been placed almost exclusively on fertility decline. There are some notable geographical differences on the world scene. For this, see Reher (1998) and McDonald (2000), both taking a historical and cultural approach.

3) As for both e_0 and TFR figures after 1970, the data are taken from Statistics Korea's databases. TFR for 1960 is from Chesnais (1992)'s appendix table, and e_0 figures for 1950-65 from Kwon (1977). Tai Hwang Kwon estimated two types of life tables for the period from1925 to 1965: one based on model life tables and the other estimated by using a census survivorship method. As many economic historians prefer the latter's (see, for example, Kim 2006), so do we take the latter's estimates.

Figure 1. Trends in life expectancy and fertility: Japan and South Korea, 1950-2010



Sources: NIPSSR (2013), pp. 50-51, 79, for Japan; Statistics Korea, Kwon (1977) and Chesnais (1992), p. 551, for Korea.
Notes: 1) e_0: both sexes combined.
2) The dotted line indicates that two separate estimates are linked.
3) Japan's TFR for 1950 (on the graph) is from a 1950-52 survey.

we cannot stop wondering that the processes were more or less continuous. It could even be interpreted as a transitional period in which the first and second transitions overlapped.

On the mortality side, the changes that took place are more or less what we would expect. In Japan, the rate of improvement in longevity tended to be higher in earlier years while it slowed down towards the end of the period in question. In Korea too, the general pattern appears similar. Two additional points may be made, however. One is a rather discontinuous rise during the linked period from 1965 and 1970; it is likely that estimates for earlier dates are understated. The other is an observation that the slow-down in the tempo of longevity improvement is not as noticeable as in the Japanese case. In 2010, however, the Korean life expectancy is 77.2 for males and 84.1 for females, which are only marginally lower than the corresponding Japanese figures of 79.6 and 86.3 respectively.

If those gains in longevity are disaggregated by age group, the whole processes will turn out to be much less monotonous. It is obvious that improvements of survivorship in younger age groups

lead to an expansion of the society's workforce in about twenty years' time, which is part of the demographic dividend. It is the increases of survivorship in older age groups that result in ageing, which is most conspicuous in both countries in most recent years.

II. Mortality change

Economic consequences of ageing are closely associated with changing dependency ratios. A rise in the dependency ratio is thought to be correlated with a rise in the expectation of life, which in turn is usually regarded as an increase in economic burden, but this statement is not quite precise. If, for example, the increase is a consequence of fertility increase alone, it will enlarge the demographic dividend in about twenty years' time; on the other hand, if it is mortality of the elderly that was the cause of a change in the ratio, then its economic impact will be totally different. It is therefore necessary to pay attention, not just to fertility decline, but also to changes in mortality levels and structure.

In 1975, Japan's life expectancy at birth was 71.7 for males and 76.9 for females, and it increased to 79.6 and 86.3 respectively in 2010. The corresponding change in South Korea is from 60.2 to 77.2 for males and from 67.9 to 84.1 for females. Any change in e_0 between two time periods can be decomposed so as to show what mortality differences in a specific age group contributed to the total difference between the two e_0 values. There are several methods for this. A method using only e_0 and age-specific death probabilities was applied by Shigesato Takahashi applied to post-World War II Japanese life tables (Takahashi 1982; see also Goldman and Takahashi 1996, pp. 158-160), and a similar exercise has been made by the National Institute of Population and Social Security Research to cover the pre-World War II as well as the most recent periods (NIPSSR 2013, Table 5.15). Table 1 summarises the NIPSSR estimates.

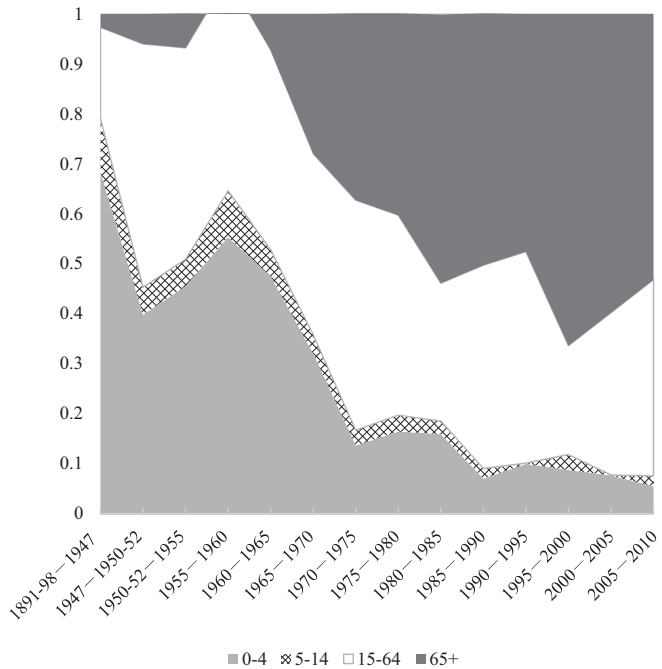
From this table and its accompanying graph (Figure 2), it is clear that up until 1965 much of the total gain in Japan's life expectancy at birth was accounted for by changes in the death rates for ages 0-1 and 1-4. Between 1960 and 1965, for example, 47.5 per cent of the change in e_0 for males (which increased from 70.2 to 72.9 years) and 40 per cent for females (e_0 increased from 65.3 to 67.7 years) were explained by changes in these two youngest age groups. By 2005-10 the rate of contribution by mortality decline in these two age groups decreased substantially: it now stands as low as 5.4 and 5.5 per cent respectively. Instead, mortality change in the 65+ age group has come to account for more than half of the e_0 decline: between 1960 and 1965 its rate of contribution was 7.2 and 12.9 per cent and during the next five years it was 28 and 36.6 per cent respectively, suggesting that ageing in the mortality sense started in the late 1960s. The change since then was rapid: now (in 2005-10) it accounts for as much as 53.2 and 73.0 per cent respectively. In other words, the rise in Japan's dependency ratio in recent times is associated almost exclusively with a decline in mortality among the elderly.

Table 1-1. Rates of contribution of age-specific mortality changes to the increase in life expectancy: Japan 1891-2010 (males)

Period	e_0 (year)		Contribution to the increase (%)					
	Beginning of period	Increase	0	1-4	5-14	15-39	40-64	65+
1891-98－1947	35.29	14.79	51.2	17.1	10.8	8.8	9.4	2.7
1947－1950-52	50.08	9.51	18.0	21.8	5.5	32.9	15.8	6.0
1950-52－1955	59.59	4.00	23.5	22.0	5.4	23.9	18.4	6.9
1955－1960	63.60	1.72	33.0	22.3	9.3	26.5	16.3	-7.4
1960－1965	65.32	2.42	35.6	11.9	5.3	20.2	19.8	7.2
1965－1970	67.74	1.58	26.1	5.9	3.8	8.6	27.6	28.0
1970－1975	69.31	2.42	10.9	2.7	3.1	15.6	30.4	37.4
1975－1980	71.73	1.62	12.8	3.6	3.3	14.7	25.3	40.4
1980－1985	73.35	1.43	12.5	3.4	2.6	6.6	21.0	53.8
1985－1990	74.78	1.14	6.0	1.0	2.0	10.3	30.4	50.4
1990－1995	75.92	0.46	6.3	3.6	0.2	10.2	32.1	47.6
1995－2000	76.38	1.34	6.3	2.4	3.1	3.2	18.6	66.4
2000－2005	77.72	0.84	5.1	2.5	0.1	7.5	25.0	59.8
2005－2010	78.56	0.99	3.3	2.1	2.1	6.5	32.8	53.2

Source: NIPSSR (2013), table 5.15.

Figure 2-1. Rates of contribution of age-specific mortality changes to the increase in life expectancy: Japan 1891-2010 (males)



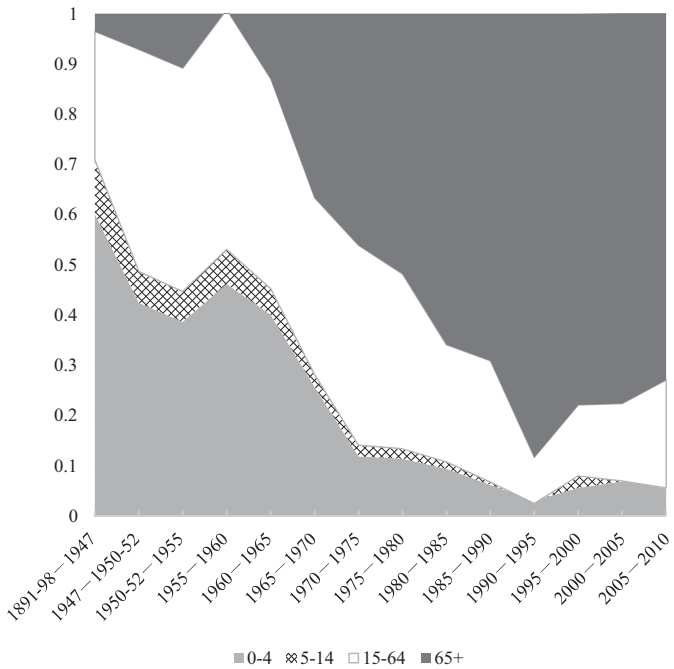
Source: Table 1-1.

Table 1-2. Rates of contribution of age-specific mortality changes to the increase in life expectancy: Japan 1891-2010 (females)

Period	e_0 (year)		Contribution to the increase (%)					
	Beginning of period	Increase	0	1-4	5-14	15-39	40-64	65+
1891-98－1947	36.86	17.10	46.4	13.7	10.8	16.9	8.7	3.5
1947－1950-52	53.96	9.02	18.5	24.0	6.2	31.0	13.2	7.1
1950-52－1955	62.98	4.77	18.0	20.7	6.0	26.9	17.6	10.8
1955－1960	67.75	2.45	27.6	18.6	6.9	26.3	21.4	-0.8
1960－1965	70.19	2.73	29.6	10.5	5.2	20.2	21.6	12.9
1965－1970	72.92	1.73	20.8	4.9	2.5	11.2	24.0	36.6
1970－1975	74.66	2.23	9.5	2.4	2.2	10.3	29.5	46.1
1975－1980	76.89	1.88	8.9	2.5	2.0	10.1	24.7	51.8
1980－1985	78.76	1.72	7.0	2.4	1.4	4.8	18.5	65.9
1985－1990	80.48	1.42	5.2	1.0	0.6	4.5	19.6	69.1
1990－1995	81.90	0.95	2.7	0.4	-0.6	2.9	6.3	88.3
1995－2000	82.85	1.75	3.8	1.8	2.4	1.4	12.7	77.9
2000－2005	84.60	0.92	5.7	1.2	0.1	0.9	14.5	77.7
2005－2010	85.52	0.78	4.1	1.4	0.1	5.9	15.6	73.0

Source: Same as in table 1-1.

Figure 2-2. Rates of contribution of age-specific mortality changes to the increase in life expectancy: Japan 1891-2010 (females)



Source: Table 1-2.

As to the Korean population, we have applied the same methodology to decompose the evolution of life expectancy. The results are set out in Table 2. A cursory look at the row for 1965-1970 reveals that the link of the latter to the former series is not free from problem: it is likely that survival rates of infants and young children estimated by Tai Hwang Kwon for the entire pre-1965 period were too low and, hence, the calculated increases too high for the 1965-1970 period. However, this does not prevent us from delineating the general pattern of life expectancy change in relation to age group decomposition.

The table and its accompanying graph (Figure 3) show that the contribution of increasing survivorship among the young to the overall rise in e_0 remained important until the 1980s (the percentage of contribution for male infants in 1930-1935 is abnormally low, which suggests another estimation problem in the Kwon series). With the two youngest age groups (0-1 and 1-4) combined, the rate of contribution fluctuated between 30 and 40 per cent between 1925 and 1960 (except for a few sub-periods). Even in 1980-85, 31.4 per cent of the rise in e_0 of the male population was still accounted for by an increase in survivorship among the two youngest age groups and 36.3 per cent in the case of the female population. This rate of contribution declined to 8.4 per cent and 11.0 per cent respectively in 1995-2000, and further to 6.9 per cent and 8.3 per cent respectively in 2005-10 (it is interesting to note in this respect that an improvement in the male rate of infant and early childhood mortality proceeded earlier than the female rate, but this gender gap has narrowed recently, implying that gender differentials in the treatment of children have changed considerably in very recent decades. To this issue, we will come back when discussing fertility change). On the other hand, an increase in the expectation of life among the elderly (over 65) started a little earlier. Its rate of contribution had been generally below the 10 per cent mark before 1960, but it reached to 10.4 per cent from 1975 to 1980 in the case of males and 11.3 per cent from 1980 to 1985 in the case of females. Since then the rate of contribution rose substantially for both males and females, exceeding the 50 per cent mark during the 2005-10 period in the case of the male population and during the 1995-2000 period in the case of the female population. In 2005-10, this percentage stands at 60.5 and 76.6 for the male and female elderly respectively.

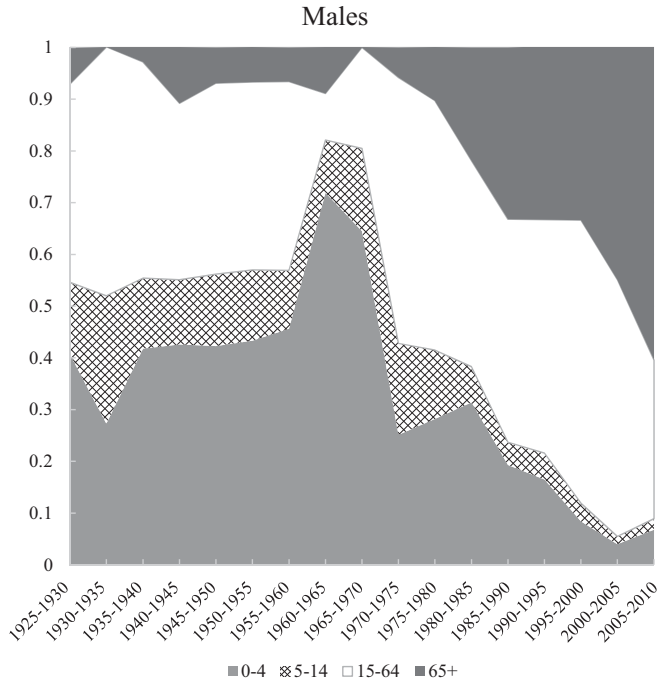
In contrast with the Japanese pattern, therefore, the mortality transition in Korea was achieved within a very short period; and during this compressed process, the decline in infant and early childhood mortality and the start of longevity increase overlapped, which implies that the age of the demographic dividend was shorter-lived. That said, however, both countries have shared the same general pattern of experience that increased life expectancies of the young came before the unmistakable increase in longevity of the elderly. In both countries, there is no longer room for further reduction in the death rates of the young population, a factor which would delay the worsening of the dependency ratio taking place in the present as well as in the near future.

Table 2-1. Rates of contribution of age-specific mortality changes to the increase in life expectancy: South Korea 1925-2010 (males)

Period	e_0 (year)		Contribution to the increase (%)					
	Beginning of period	Increase	0	1-4	5-14	15-39	40-64	65+
1925-1930	37.85	2.52	26.0	14.7	13.9	19.0	19.3	7.0
1930-1935	40.37	0.04	9.6	17.7	24.7	25.0	23.1	0.0
1935-1940	40.41	1.62	27.3	14.5	13.6	18.9	22.9	2.9
1940-1945	42.03	1.61	26.1	16.5	12.5	19.0	15.1	10.9
1945-1950	43.64	1.59	27.7	14.6	13.9	18.5	18.4	6.9
1950-1955	45.23	1.62	28.0	15.3	13.7	17.6	18.7	6.8
1955-1960	46.85	1.26	28.6	17.0	11.3	18.5	18.0	6.6
1960-1965	48.11	2.65	43.7	28.2	10.2	5.9	3.1	9.0
1965-1970	50.76	7.91	35.2	29.3	16.0	20.2	-0.7	0.1
1970-1975	58.67	1.52	19.4	5.7	17.7	23.0	28.4	5.8
1975-1980	60.19	1.59	22.2	6.0	13.3	20.4	27.8	10.4
1980-1985	61.78	2.67	23.7	7.7	6.9	14.7	25.1	21.9
1985-1990	64.45	2.84	14.8	4.5	4.4	10.5	32.6	33.2
1990-1995	67.29	2.28	13.0	3.5	5.1	13.8	31.3	33.5
1995-2000	69.57	2.68	6.2	2.2	3.5	21.5	33.2	33.5
2000-2005	72.25	2.89	2.6	1.4	1.5	12.3	37.3	45.1
2005-2010	75.14	2.06	5.4	1.4	2.1	1.8	28.9	60.5

Sources: Kwon (1977) and Statistics Korea (http://kostat.go.kr).

Figure 3-1. Rates of contribution of age-specific mortality changes to the increase in life expectancy: South Korea 1891-2010 (males)



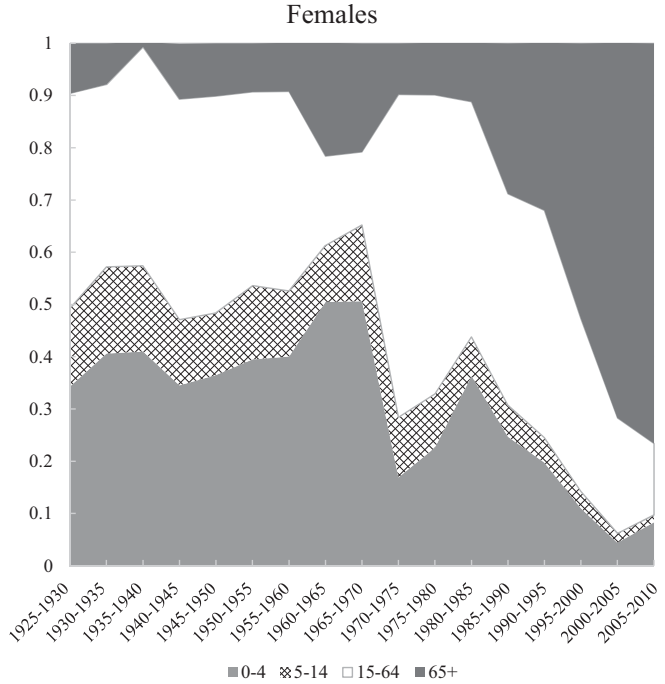
Source: Table 2-1.

Table 2-2. Rates of contribution of age-specific mortality changes to the increase in life expectancy: South Korea 1925-2010 (females)

Period	e_0 (year)		Contribution to the increase (%)					
	Beginning of period	Increase	0	1-4	5-14	15-39	40-64	65+
1925-1930	37.19	2.86	22.1	12.2	15.0	22.1	19.0	9.6
1930-1935	40.05	1.62	26.4	14.2	16.6	18.3	16.6	7.9
1935-1940	41.67	3.08	25.5	15.5	16.4	19.6	22.3	0.9
1940-1945	44.75	2.46	23.0	11.5	12.6	23.0	19.2	10.6
1945-1950	47.21	2.50	23.1	13.4	11.9	22.8	18.7	10.1
1950-1955	49.71	2.76	25.5	14.0	14.1	20.6	16.5	9.3
1955-1960	52.47	1.01	25.4	14.6	12.6	20.8	17.4	9.3
1960-1965	53.48	3.01	31.0	19.5	10.8	12.2	4.9	21.7
1965-1970	56.49	9.08	24.6	26.0	14.6	8.4	5.6	20.8
1970-1975	65.57	2.34	13.4	3.5	11.5	38.1	23.7	9.8
1975-1980	67.91	2.13	17.3	5.3	10.3	32.1	25.1	10.0
1980-1985	70.04	2.78	27.8	8.5	7.5	22.9	22.1	11.3
1985-1990	72.82	2.69	18.9	5.8	6.0	14.5	26.0	28.8
1990-1995	75.51	1.90	15.0	4.7	4.8	10.3	33.2	32.1
1995-2000	77.41	2.19	7.9	3.1	3.2	9.5	23.6	52.7
2000-2005	79.60	2.29	3.6	0.8	1.8	3.0	19.1	71.8
2005-2010	81.89	2.18	6.5	1.8	1.4	-0.1	13.8	76.6

Source: Same as in table 2-1.

Figure 3-2. Rates of contribution of age-specific mortality changes to the increase in life expectancy: South Korea 1925-2010 (females)



Source: Table 2-2

III. Fertility decline

Post-transition fertility decline has often been examined with reference to economic and social factors like women's employment and educational attainment and also to policy measures such as child allowances and day-care facilities. Here, however, we take a deliberately demographic approach, focussing on the effects of changing age structure, delayed marriage and changing reproductive behaviour of the married couple. As noted earlier, the tendency towards lowest-low fertility in recent Japan is accounted for by delayed marriage and its adverse influence on the birth of a child of higher parity, which is obvious even from tabular analysis. For Korea, however, the whole process was extremely rapid and compressed. We have already seen that the Korean TFR in 1980 stood at 2.82, and that even in 1995 it was above the 1.5 mark, the oft-mentioned cut-off point for the path towards lowest-low fertility. Since then, however, the decline was precipitous: TFR is now 1.28 (in 2010), lower than Japan's. For such a dramatic declining process, tabular analysis, even if detailed, is not quite adequate to separate one effect from another.

In this respect, a technique of decomposing fertility change into several proximate determinants, developed recently by Ryuichi Kaneko (Kaneko 2004a, 2004b), is useful and applicable to any country as long as illegitimate births are negligible. Here this method is applied to the Korean female population from 1980 to 2005, and will be compared with Kaneko's results for the Japanese female population from 1975 to 2000. The data we need for this exercise are: (1) total female population, (2) female population by age group, (3) proportion currently married by age group, (4) marital fertility by age group, and (5) female age at first marriage. There are two problems with the Korean data. First, the age groups to be covered are quinquennerian age groups from age 15 upwards: from Korean data sources (2) and (3) are available with this age range, but (4) is only from age 20 upwards. For this, we have extended the (4) series to the 15-19 age groups from tabulated age-specific fertility rates (available from age 15 upwards) together with (2) and (3)[4]. The second problem is that (5) is available only from 1990 as far as Statistics Korea data are concerned. However, there are some sporadic tabulations of age at marriage data for earlier dates, which are utilised for our exercise.

The point of the Kaneko method is to calculate the hypothetical numbers of births through the following consecutive steps:

4) Two problems arise for this calculation. One is the issue of illegitimate births and the other concerns a gap between the sum of estimated age-specific births and the published total of births. For the former, we have assumed that illegitimate births are negligible (indeed, the proportion to the total births remained very low from 1981 to 2000—in the range from 0.95 per cent to 1.13 per cent. During the first decade of the twenty-first century, the level went up to 2.16 per cent in 2005 but even this is very low by international standards). As for the latter problem, we simply take the estimated age-specific births as our input data since the differences are not great (within the range from 0.925 to 1.036).

O: with all the variables kept constant at 1975,
S: size of female population replaced by the actual values,
A: age structure replaced by the actual values,
M_1: proportion married replaced by the actual values,
M_2: effect of delayed marriage removed[5],
B: actual births.

Once the hypothetical numbers of births at all the steps are estimated, then the differences between the actual and estimated values are allocated to the following five components:

① O to S
② S to A
③ A to M_1
④ M_1 to M_2
⑤ M_2 to B.

The first two (O to S *plus* S to A) may be put together and called the size and age-structural effect, the second two (A to M_1 *plus* M_1 to M_2) the marriage effect, and the final one (M2 to B) the effect of changing reproductive behaviour.

Table 3 presents Kaneko's estimates for Japan and Table 4 sets out our estimates for Korea. Both are graphically presented in Figures 4 and 5. From these results, it is sufficiently clear that mechanisms at work differed in the two countries. First, the effect of the rising age at marriage was, as expected, negative in both countries. However, second, the size and age-structural effect reduced fertility in Japan throughout the period in question, whereas in Korea it took an opposite sign and its augmenting effect was substantial over the 1985-2005 period; and, third, while the impact of changing reproductive behaviour of the married couple was relatively small in Japan, it was the largest of all the factors examined for Korea in the period from 1985 to 2000.

The third point is consisted with another decomposition study. Suzuki's analysis of the average period parity for both 2000 and 2005 shows that the change in fertility between the two dates was accounted for more by a change in the progression of parity 1-2 and, to a lesser extent, in the progression of parity 2-3, than an increase in childless couples (Suzuki 2008, pp. 31-32). It is a finding which stresses the importance of the decline in fertility within marriage in relation to Korea's path to lowest-low fertility, as distinguished from the effect of delayed marriage, the factor that accounted for much of the decline in the number of births in Japan. This Korea-Japan contrast is even more highlighted if the second point above is taken into account, since it indicates that

5) To be more precise, age-specific fertility rates *times* the rates of change in age at marriage from t_0 to t_1 are subtracted.

Table 3. Decomposition of changes in births (%): Japan, 1975-2000

Year	Change from 1975 ('000)	Size & age-structural effect	Marriage effect	Effect of changing reproductive behaviour
1975-80	-324.6	58.2	15.4	26.4
1980-85	-469.9	78.1	17.9	4.1
1985-90	-679.9	55.7	26.3	16.1
1990-95	-714.3	34.6	41.8	23.6
1995-2000	-710.9	27.6	53.4	19.0

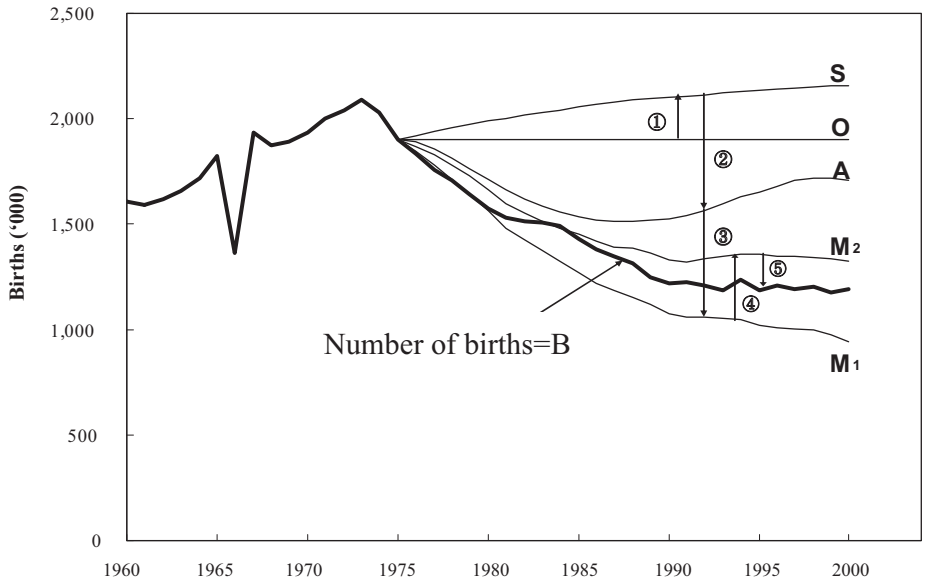
Source: Kaneko (2004a).

Table 4. Decomposition of changes in births (%): Korea, 1975-2005

Year	Change from 1975 ('000)	Size & age-structural effect	Marriage effect	Effect of changing reproductive behaviour
1975-80	0.2	122,030	-20,164	-101,767
1980-85	-202.1	-193.0	46.5	246.5
1985-90	-196.1	-271.5	109.4	262.1
1990-95	-188.4	-280.6	137.9	242.7
1995-2000	-282.5	-168.7	118.7	150.0

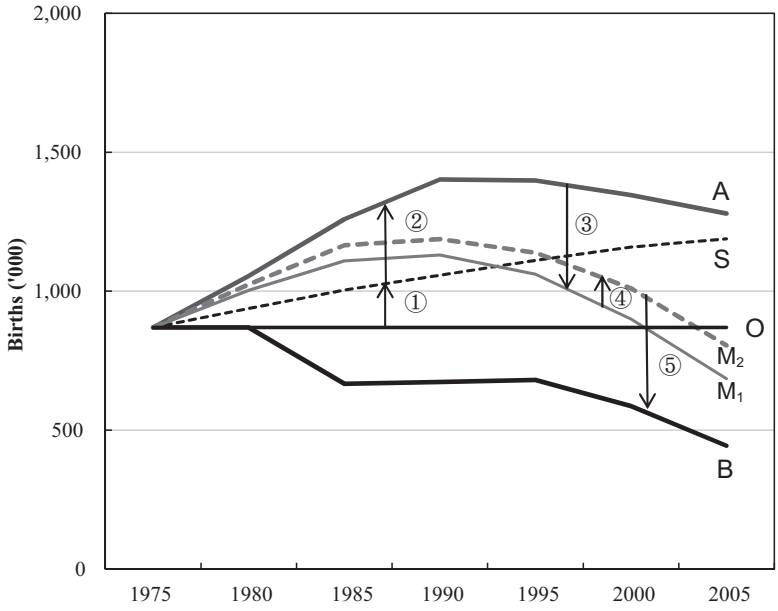
Source: Statistics Korea (http://kostat.go.kr).

Figure 4. Decomposition of changes in births: Japan, 1975-2000



Source: Table 3.

Figure 5. Decomposition of changes in births: South Korea, 1975-2005



Source: Table 4.

Japan's female population was already getting older in the late 1970s and 80s, while the Korean counterparts were not. Despite their relatively young average age, they applied a brake on their marital fertility, which resulted inevitably in the precipitous decline in TFR. After about 1890, moreover, the Korean women began to postpone marriage. It is worth noting here that, after 2000, this marriage effect overtook the marital fertility effect, although it is probably premature to say that this reversal of trends would go on for the time being.

What is certain is that at the end of this decline, the pattern of distribution of married women by number of children ever born looks different in the two countries. According to a 2006 survey, the proportion of Korean married women with just 0-1 child ever born at the end of their reproductive period (i.e. 45-49 years old) is 22 per cent, 57 per cent with 2 children, and 11 per cent with 3 or more children, while the corresponding proportions are 17 per cent, 50 per cent and 33 per cent for Japan in 2005 (KIHASA 2006; NIPSSR 2013, p. 70). The two-child norm seems prevalent in both countries, but it is clear that the shape of the distribution is substantially different. First, Korean couples with only one child or none are more numerous than in Japan. On the face of it, this might be taken to suggest that the Korean pattern would be more "Western" because in individualist, mostly north-west European populations the proportion of couples who choose to be childless is undoubtedly greater. However, Korean couples having three or more are fewer than in Japan, and even fewer than in the West. It is indeed likely that the sudden disappearance of such "prolific" families was one of the factors accounting for the precipitous decline in overall fertility.

Table 5. Sex composition of the existing children: families with three or more children ever born only, South Korea, 2005

Sex composition			%
First	Second	Third	
Boy	Boy	Boy	7.5
Boy	Boy	Girl	7.8
Boy	Girl	Boy	7.3
Boy	Girl	Girl	7.0
Girl	Boy	Boy	8.5
Girl	Boy	Girl	7.6
Girl	Girl	Boy	37.3
Girl	Girl	Girl	16.9
Total			100

Source: Statistics Korea.

Table 6. Sex composition of the existing children by mother's age: families with three or more children ever born only, South Korea, 2005

Age group	Sex composition			%	N
25-29	Boy	Boy	Girl	10.4	113
	Girl	Girl	Boy	21.6	234
30-34	Boy	Boy	Girl	9.3	794
	Girl	Girl	Boy	29.4	2,503
35-39	Boy	Boy	Girl	8.9	1,651
	Girl	Girl	Boy	34.6	6,449
40-44	Boy	Boy	Girl	5.9	876
	Girl	Girl	Boy	44.4	6,634
45-49	Boy	Boy	Girl	4.5	124
	Girl	Girl	Boy	48.9	1,340

Source: Statistics Korea.
Note: Percentages are to the age group total.

This is an interesting issue. It is worth dwelling on this issue for a while. Both Sam-sik Lee and Toru Suzuki have noted that women's attitude towards children changed considerably. In 1991 40.5 per cent of the married responded that people should have children, but the ratio declined to 10 per cent in 2006. Instead, answers for "better to have" and "does not matter" increased; in 2006, the latter stood as high as 50 per cent (Lee 2009, pp. 59-60; Suzuki 2008, p. 32). This is a significant change in cultural values. We suspect, on the other hand, that there may have a demographic aspect to it. A 2005 survey of couples by Statistics Korea allows us to break down "prolific" families (defined as married females in the 45-49 age group having three or more children ever born) by parity, sex composition of the existing children, and age of the mother. Table 5 takes a look at sex composition of the children ever born, which clearly indicates that more than half (54 per cent) of those "prolific" families surveyed had had girls for the first and second children. Indeed, the

preference for a "big family" is unlikely to have been the reason why they tried another childbearing; but it was their son-preference that was an underlying factor. This may be taken to reiterate the significance of the cultural constraints. However, there is another significant finding from Table 6: if broken down by mother's age, the younger the mothers were the lower the proportion of the combination of two girls and one boy became. For families whose mother was younger than 35, the proportion of that combination was less than 30 per cent; for those in the 35-39 age group it was 35 per cent; but for over 40-year-olds, it exceeded the 40 per cent mark.

All this suggests, first, that son-preference was widespread in Korean society and probably acted as a factor keeping TFR at relatively high levels until the 1980s; second, however, that the preference for sons became weakened from around 1990 onwards. This "liberal" turn, which may or may not be reflected in the above-mentioned change in attitude towards children, must have resulted in a sudden decline in the number of couples who would try for a son if the sex composition of the existing children was predominantly female. Our interpretation of this evidence is that the current decline in Korean fertility is not just a direct effect of delayed marriage but also a consequence of the significant break with the past in terms of reproductive culture. We could even speculate that it might have been triggered by a series of amendments of the civil code that started in 1990, paving the way towards gender equality at inheritance and other life-course events[6]. Of course, the causation may have been the other way round: it was voices of the general public that forced the government to revise the civil code. At this stage, therefore, we would like to await further research by specialists in this interdisciplinary field.

IV. Concluding remarks

In twenty-first-century East Asia, the problem of ageing populations is pressing. The foregoing analysis of Japan and South Korea has made it clear that for both countries, not just fertility change is responsible for the emergence of this ageing syndrome, but both mortality and fertility trends are. That said, however, it is on the fertility side that we have found some distinct differences between the Japanese and Korean cases. If put in a longer, historical perspective, first, the relationship between the demographic transition and the recent decline in fertility was more or less continuous in Korea, while the two are disconnected in more recent history. Second, in the Japanese case, the rising female age at first marriage is the major driving force for the emergence of lowest-low fertility, while in Korea it is evident that both delayed marriage and changes in reproductive behaviour of the couple account for the recent decline in fertility. In the Japanese context, to put differently, the decline in the average number of children ever born is to some extent "frictional"

6) For this issue of son-preference in historical as well as peninsula-wide contexts, see Moon (2011), ch. 4, where the exploration is made with reference to genealogies.

in the sense that the couple's reproductive period is substantially shortened by the rising age at first marriage, whereas the decline in Korean marital fertility is both "frictional" and "intentional", separated from the effect of the rising age at marriage. As a result, there remain more "prolific" families, i.e. those having three or more children ever born, in Japan than in Korea.

The findings have several implications. First, they raise a historical question about the relationship between the first and the second fertility transition. Little has been known about this potentially important topic. Our findings about the Korean case, it is hoped, will shed light on the sequential relationship in contemporary history.

Second, micro-economic theory has so far placed more importance on the price effect of child bearing than on its income effect. However, the Japan-Korea contrast in the distribution of families with respect to the number of children ever born would probably imply that the size of the income effect is even smaller for Korean than Japanese families, provided that all those surveyed were "modern" families in the sense that they were the product of the first fertility transition. This is a testable statement. It is hoped that this hypothesis will be taken up by econometricians and micro-data analysts.

Third, although this paper is never policy-oriented, it does have some policy implications. In the Japanese case, effective policies are those enabling the targeted couples to shorten the first and second birth intervals. Experts may continue to debate whether or not, for example, child allowances are more effective than day-care centre facilities, but it is clear that any measure which will reduce the gap between the ideal and actual numbers of children is a good policy. In the Korean context, on the other hand, the situation seems more complicated. As noted earlier, the ideal number of children the couple would like to have is generally lower than in the Japanese case, although the levels fluctuate from year to year. However, while it is acceptable—as long as the level stays above the two-child mark—to implement a set of policy measures similar to the one currently debated in Japan[7], any "pro-natal" measures that would go beyond the current level could be problematic, given the finding that there are comparatively fewer couples who want to have three or more children than in other countries.

The issue of lowest-low fertility has been discussed by demographers in a dichotomous framework. For example, there is an argument that in weak and simple family countries (mostly north-west European) the decline in fertility is less pressing while in big and strong family cultures (including both catholic Europe and East Asia) the decline tends to be more drastic (Reher 1998). Another argument relates the phenomena to the issue of gender equality, suggesting that the north-west European gender pattern is instrumental in sustaining fertility at moderate levels (McDonald 2000). However, it would be misleading if one argues that East Asia's fertility decline

7) From March 2013, a comprehensive scheme was introduced by the Park government, under which family allowances are given, in the form of child allowances or day-care fees, or both, according to their child-rearing style, to families with children aged 0-5 irrespective of their household income.

is particularly pressing because of its traditional family cultures and gender patterns, since, first, the East Asian populations are not homogeneous, and, second, since the Korean population is going to experience a rapid and fundamental change in terms of both reproductive behaviour and the attitude to the gender question, although its immediate consequence is likely to be an even more rapid decline in fertility.

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第一および第二の人口転換
―日韓比較―

文 浩一・斎藤 修

現在の日韓両国はともに超少子化国とされ，一括して論じられることが多い．しかし，第一の人口転換にまで遡って歴史的プロセスをみたとき，どの程度に類似していて，どの程度に異なっていたのであろうか．本稿では，出生力だけではなく死亡サイドをも考察の対象とし，平均寿命はその伸びを年齢別死亡率の変化に分解，出生数の変動は人口規模および人口構造の変化，配偶関係の構造変化，夫婦出生行動の変化に分解して，人口学的に厳密な日韓比較を試みる．その作業結果から，平均寿命延伸のパターンにはかなりの類似性がみられたのに対して，出生サイド，とくに近年の「第二の人口転換」と呼ばれる過程に関しては，両国間で予想以上の違いが観察された．この要因としては，日韓の男児選好意識の違いが関係していた可能性を示唆した．

キーワード
出生数の要因分解，平均寿命延伸の年齢別死亡率変化への分解，人口転換，超少子化，日韓比較