

The Death of Regional Cities: A horrendous simulation Regional Cities Will Disappear by 2040 A Polarized Society will Emerge

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The first thing that we need to understand when envisioning the future of a nation is its demographics. Japan, whose population began to decline in 2008, will become a society with a population in full-scale decline. In considering methods to realize an affluent society in such a scenario, it is necessary to look squarely at Japan's current situation.

During my twelve years in office as the governor of Iwate Prefecture, my greatest issue of concern was the declining population and the resulting issue of marginal settlements. When I took office in 1995, the population in Iwate stood at 1,419,000. It was 1,363,000 when I left office in 2007, and by 2012 it had fallen to 1,300,300. A declining population not only lowers the functions of regional communities, but also makes it difficult to maintain services essential for daily life, such as medical care and education. While I was governor, measures I adopted included the introduction of a remote medical system based on the use of information technology (IT), providing subsidies for



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relocation expenses to those living in villages facing risks of natural disaster, and promoting consolidation of such villages. These policies were effective for the purpose of maintaining the functions of regional areas, but they were still passive.

Japan is now facing the crisis of the whole nation becoming marginal municipalities. Our ability to avoid such a crisis and make Japan a sustainable country solely depends on the choices we make.

Masuda Hiroya



The age of disappearing regional cities will arrive.

Declining population will first, like a giant wave, hit small-scale regional municipalities, and then will rapidly expand to entire regional areas, eventually even swallowing metropolitan areas with its vicious power. If the current pace of declines continues, in thirty years the reproduction potential of the population (details given below) will fall sharply, and there will potentially be a number of regions that, in sequence, will unavoidably disappear.

People shocked by these drastic changes wonder why such things are occurring in this way. The phenomenon of the falling birthrate and aging population hid the real picture from us. The declining population due to the falling birthrate has apparently remained unseen because of the continued increase in the number of the elderly as a result of the simultaneous increase in longevity. We will now face an age when even the number of such elderly will start declining in many areas.

People hope that the declining population will be halted sometime in the future, but once it starts, this phenomenon will be unstoppable. With a current total fertility rate of 1.41 in Japan, even if the birthrate gradually rises, the total number of live births will not increase.

Let me explain in more detail (Figure 1). The birthrate started to rise in 2005 from 1.26 to 1.41 in 2012. However, the last group of the second baby boomers who were born in 1971–1974 is already hitting thirty-nine years old, while the number of females younger than the generation of this group is dropping. Therefore, even if the birthrate gradually increases in the future, the declining population will not stop as the number of live births will continue to decline.

Raising the birthrate that fell to as low as that in Japan to a level at which the population can be sustained (2.1) is thought to be an extremely difficult task.

Still, assuming Japan achieves a birthrate of 2.1 in seventeen years, in 2030, even in this scenario it would be around 2090, sixty years later, when Japan's population finally stops falling. As if following the law of inertia, a falling birthrate that has already begun will continue to impact Japan over the next several decades. The impact will be felt more severely in the regional areas where the pace of population decline is particularly fast. This is the critical situation Japan is facing.

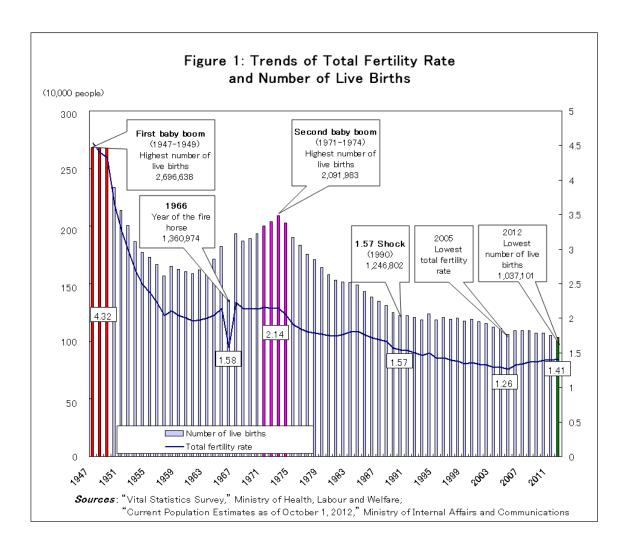
We cannot, however, just stand by, dumbfounded by this challenge. While calmly accepting the harsh future forecasts, we need to take effective measures as soon as possible.

For example, assuming that recovery of the birthrate to 2.1 as mentioned above is achieved by 2025, five years earlier than 2030, then by around 2090 the population will already be stabilized at 120 million; three million more than when 2.1 is achieved in 2030. On the contrary, if 2.1 is achieved five years later, in 2035, the population will be stabilized at 96 million; three million less than when reaching 2.1 in 2030.

Based on a simple calculation, every five-year delay in the recovery of the birthrate will result in a decline of three million in the future number of stabilized population. Moreover, if the timing of a recovery is delayed until 2050, the timing of a halt in declining population will be put off to around 2110 while the number of stabilized population will fall to 87 million. Needless to say, as long as the birthrate remains under 2.1, there is no prospect of ending the declining population.



The issue of a declining population is, if compared to illness, a chronic disease. It cannot easily be fixed, but the earlier measures to improve the population constitution are taken, the better the impact becomes.



I. Three-Stage Population Decline

Declining population takes place while each population generation makes different progress

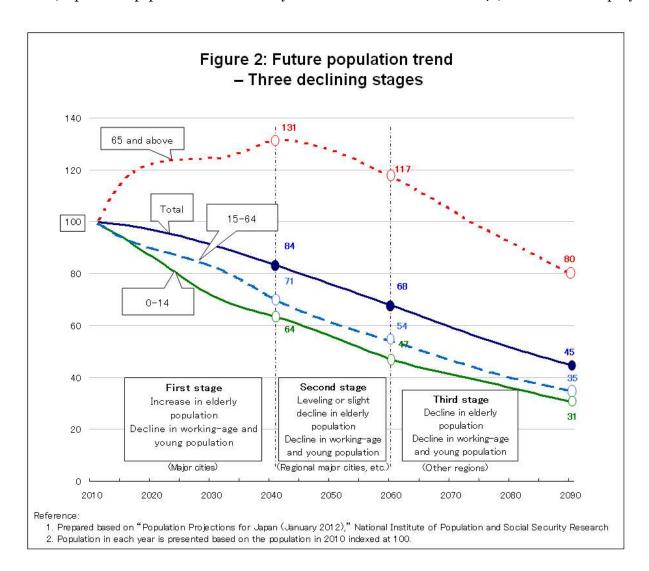
First, let's look at how the declining population in Japan will progress in the future.

Table 1 was prepared based on "Population Projections for Japan by Prefecture (March 2013)" issued by the National Institute of Population and Social Security Research. It is estimated that if the current situation prevails, Japan's population of 128 million in 2010 will fall below 100 million in 2060, and stand at below 50 million in 2110, in 100 years.



Table 1: Future population projection (2012 estimation – Up to 2110)					
Median estimate – Total fertility rate of 1.35					
Total population (10,000 people)	2010	2040	2060	2090	2110
Elderly population (65 and above)	2,948	3,868	3,464	2,357	1,770
Population aging rate (%)	23.0	36.1	39.9	41.2	41.3
Working-age population (15–64)	8,174	5,787	4,418	2,854	2,126
Young-age population (0–14)	1,684	1,073	792	516	391

Figure 2 shows this process of declining population in a simple manner by using an index. In the figure, the young population below fifteen years old and working-age population of fifteen- to sixty-four-year-olds continue to fall from 2010 to 2090. On the contrary, the elderly population aged sixty-five years old and above will increase until 2040 and then stay almost unchanged for some time before it starts falling in 2060. As a result, Japan's total population will decline only at a moderate rate until around 2040, but then will fall rapidly.





In other words, Japan is expected to experience the three stages of declining population through the first stage up to 2040 with a rising elderly population and falling working-age and young population, followed by the second stage in 2040–2060 with a leveling or slightly falling elderly population and falling working-age and young population, and the third stage in 2060–2090 with a falling elderly population and falling working-age and young population.

Each region has a significantly different pace of declining population

These population projections show that the pace of the declining population will enter full swing from 2040.

However, what requires attention is that this process of decline only shows the overall development in Japan, as a whole. Observations about each region will show very different pictures. The declining population in big cities and other major cities, such as prefectural capitals, is in the first stage, while in many regional areas the declining population progressing at a pace thirty to fifty years faster than the cities is already in the second stage, or even entering the third stage.

In other words, the declining population is by no means an issue we will face in the distant future; it is already happening in many regions (see Figure 3).

How has this disparity among areas taken place? The population migration particular to Japan has a great deal to do with this development.

Since the end of World War II, Japan has experienced three periods of major population migrations from regional areas to large city areas. The first was the period of high growth in 1960–1970. Through mass employment, young people in regional areas migrated as the labor force of the heavy and chemical industries concentrated in the three major cities (areas close to waterfront regions, suitable for import and export).

The second was the period of the bubble economy in 1980–1993. During this period, industries in the Tokyo area, centered on the service and financial industries, achieved significant growth, while the heavy and chemical industry operating in the regional areas faced challenging business conditions due to the strong yen. As a result, a significant number of the population migrated to the Tokyo area.

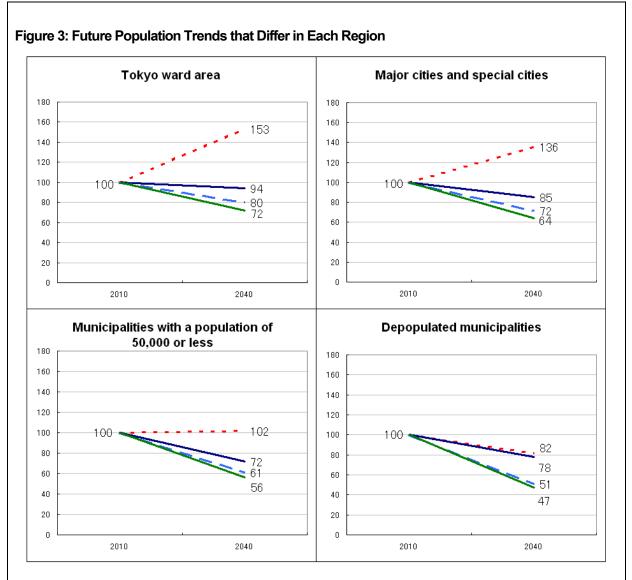
The third period was that from 2000. The population migration in this period was prompted by deterioration in the regional economy and employment situation, mainly reflecting damage to the manufacturing industry due to yen appreciation, a fall in the number of public works and the declining population. With these factors, the migration of people, mainly of the young generation, from the regional areas to the Tokyo area once again took place (Figure 4).

Migration of young people to big cities has accelerated the population decline

The population migration from the regional areas to the big city areas accumulated to as large as approximately 11,470,000 in 1954–2009. This migration was continually characterized by the center of the population consistently being the young generation. If the young generation that is going to produce children in the future is called the population reproduction power, the migration of this generation meant that the regional areas



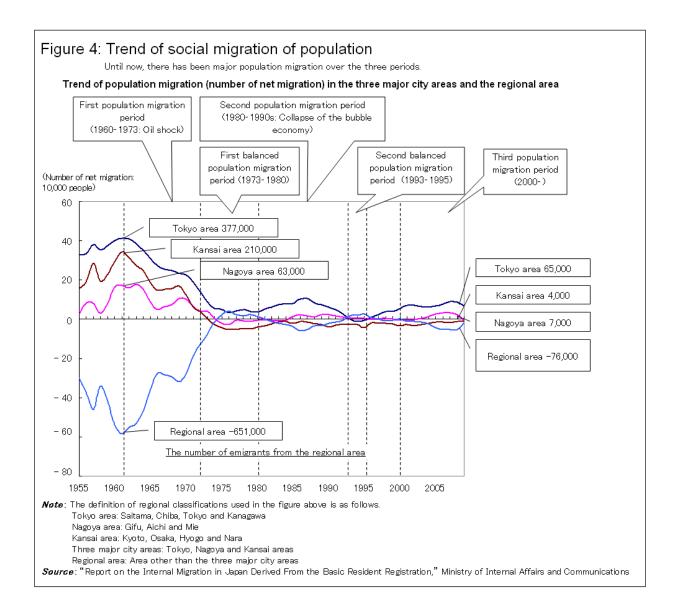
were experiencing not only population decline, but also a significant outflow of the population reproduction power itself to the big city areas. The pace of population decline in regional areas resultantly increased. These are the reasons why a declining population started from regional areas and the pace of population decline in regional areas has been very fast.



Reference:

- 1. Prepared based on "Population Projections for Japan by Prefecture (March 2013)," National Institute of Population and Social Security Research
- 2. The population in 2040 is presented based on that in 2010 indexed at 100 after calculating the total population for each category.

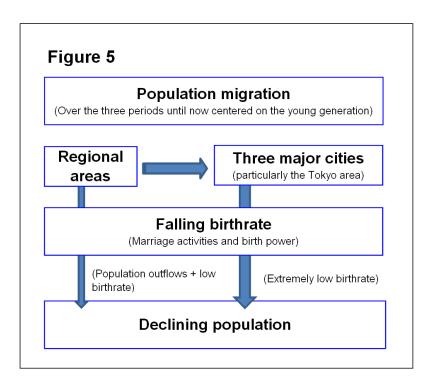




On the other hand, the population in the big city areas increased as a result of inflows of young people. But the big city areas were not necessarily an ideal place for young people to get married and raise children. Surveys and analyses have proven that the birthrate of the young generation that moved to the big city areas from regional areas has remained low. This is considered to be mainly a result of unstable housing conditions and weak support for childbirth and nursing from families and local communities in the big cities, as well as the development of an environment in which marriage is not encouraged, as indicated in the rising age of first marriages nationwide.

The phenomenon of the lowering birthrate in big city areas is a common issue reported in many other countries as well as Japan. However, in Japan, the inflows of young people, in particular, to the big cities that took place on a massive scale resulted in the acceleration of population decline nationwide (Figure 5).





II. Emergence of a polarized society

Areas whose pace of decline in number of young females is rapid may disappear in the future

What kind of indicators can we use to measure the sustainability of areas?

At the present, there are no firm immediate answers to this question. The same applies to the possibility of the disappearance in contrast to the sustainability. The report, the "Long-term Outlook of the National Land," prepared by the National Land Development Council of the Ministry of Land, Infrastructure, Transport and Tourism, presents one model of the scale of the population that is necessary for maintaining services related to living. However, it does not clearly show the process in which the local social economy and the foundation itself for the residents' living collapse due to population decline and eventually disappear.

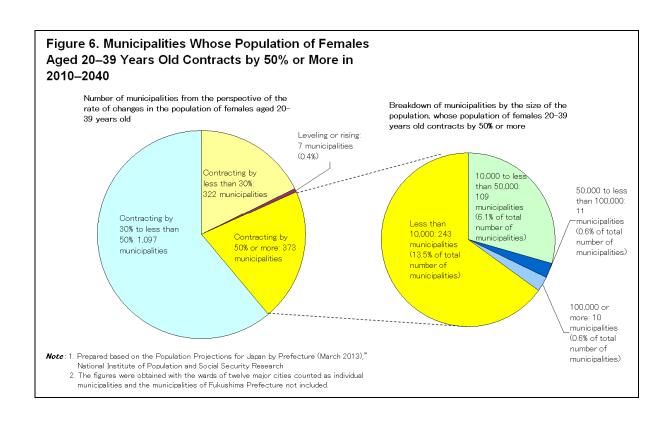
For this reason, as a trial, we can look at the reproduction power of the population. The indicators that show the population reproduction power include the gross reproduction rate, which is the rate of females of childbearing age to reproduce the next generation of girls, the net reproduction rate, which takes into account the mortality rate of girls born, and an indicator that applies the population migration rate to these rates. However, in this report, I will look at a simpler indicator, the population itself of females aged 20–39 years old who play the main role in population reproduction. As long as the population of these females is continually declining, the population reproduction power continues to fall, making it impossible to halt the decline of the total population.



The key point is the pace of decline. As in the case when the possibility of disappearance is high, imagine an area in which, even with the condition that the birthrate immediately recovers to 2.1, its total population will contract by 25% or more in thirty years, in 2040, and will halve in fifty years, in 2060. As a result of the recalculation from the perspective of the young female population, it turns out that an area in which, if the current birthrate continues, the young female population will halve in thirty years, is applicable to the area mentioned above. In such an area, no matter how much the birthrate is raised, population decline will not be halted because the negative impact of the outflows of young females exceeds the effects of the higher birthrate.

Meanwhile, there are also the results of a different calculation, that if the population is to be maintained, the birthrate is required to be immediately raised to between 2.8 and 2.9, which is an unrealistic level.

How many municipalities are there in which the pace of the decline of young females is noticeably fast? Based on a preliminary calculation using the figures in the projection made by the National Institute of Population and Social Security Research, there are as many as 373 municipalities (20.7% of the total number of municipalities) whose population of females aged 20–39 years old contracts by more than 50% over the thirty years of 2010–2040. Of these municipalities, there will be 243 small-scale municipalities (13.5% of the total number of municipalities) whose population is below 10,000 in 2040. I cannot help but conclude that these municipalities are highly likely to disappear. (Figure 6)

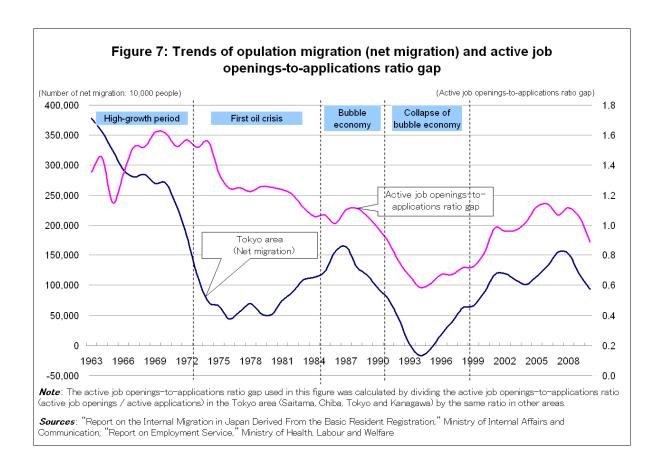




Population migration will not stabilize

Meanwhile, the National Institute of Population and Social Security Research's projection is based on the assumption that the population migration rate will stabilize at a certain level in the future. This assumption is not a rational method for projecting the population.

However, will inflows of population to the Tokyo area from regional areas really stabilize? I believe that these inflows will never stop. The analysis on the progress of population migration up to the present shows that population inflows to the big city areas (particularly Tokyo) are closely related to the income gap and the employment situation in regional areas and big city areas (Figure 7). In this aspect, these gaps are unlikely to be narrowed; which is the reason for my statement above.

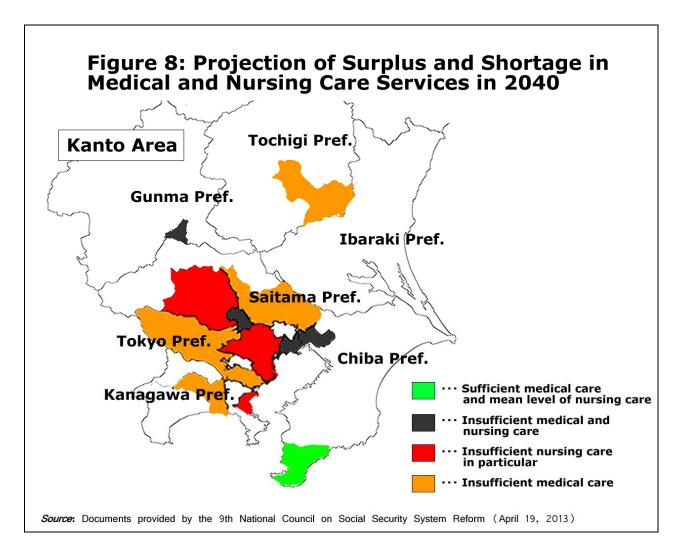


The key point in this observation is the employment situation in the medical and nursing care sectors in the big city areas. At present, employment in these sectors is halting the decline of employment in regional areas. Because the elderly population in regional areas will remain unchanged or decline, and as a result the situation in medical and nursing care services will remain unchanged or become oversupplied, the power to absorb the employment in the sectors is likely to remain sluggish or decline.

On the other hand, reflecting a time lag in the aging of population by areas, the big city areas will enter a



period when their population influx up to that point will abruptly become old. Particularly in the Tokyo area, because the medical and nursing care service foundation is weak, with the number of doctors per 100,000 people and the capacity of nursing care facilities per capita low, the supply of such services for the elderly will come up significantly short and a shortage of human resources for medical and nursing care is likely to intensify in the future (see Figure 8).



As a result, human resources in the medical and nursing care sectors that have been only supporting employment in regional areas are highly likely to start flowing out of regional areas to the Tokyo area. This development may even cause the complete elimination of employment opportunities for young people in regional areas. Looking at the impact of the population migration on the number of employees and needs for medical and nursing care by regional block, including the south Kanto block (Saitama, Chiba, Tokyo and Kanagawa), both the working-age population and the number of employees based on the assumption the current employment rate remains unchanged will fall significantly.

Consequently, if needs for medical and nursing care centered on the Tokyo area continue to increase at the





current pace, they could become a factor for a significant population migration by around 2040.

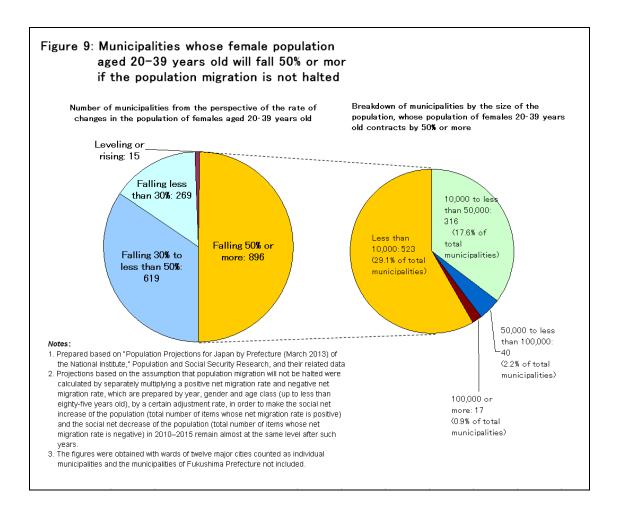
We projected what would happen if the population migration continues ceaselessly. This projection was made based on the level of population migration in 2010–2015 (inflows of population of around 60,000–80,000 into the big city areas) projected by the National Institute of Population and Social Security Research remaining almost unchanged.

The number of municipalities whose female population aged 20–39 years old was projected to fall by 50% or more during 2010–2040 reached 896, or 49.8%, of the total number of municipalities; a noticeable increase compared to the existing projection. As much as approximately half of the municipalities will actually face sharp population decline in the future should the situation remain the same.

By prefecture, there are five prefectures, Aomori, Iwate, Akita, Yamagata and Shimane, in which the number of municipalities mentioned above accounts for 80% or more of the total number of municipalities in each prefecture. Similarly, there are as many as twenty-four prefectures in which the number of such municipalities accounts for 50% or more of the total in each prefecture. On the other hand, it was projected that the population in Tokyo and the Tokyo area would also fall, but, given population inflows, the decline would be limited to approximately 10%.

Moreover, of these municipalities, those with a population of less than 10,000 in 2040, which are highly likely to disappear in the future, numbered 523, or 29.1%, of the overall total. There are seven prefectures — Hokkaido, Aomori, Yamagata, Wakayama, Tottori, Shimane and Kochi — in which the number of these municipalities accounted for 50% or more of the total number (Figure 9).



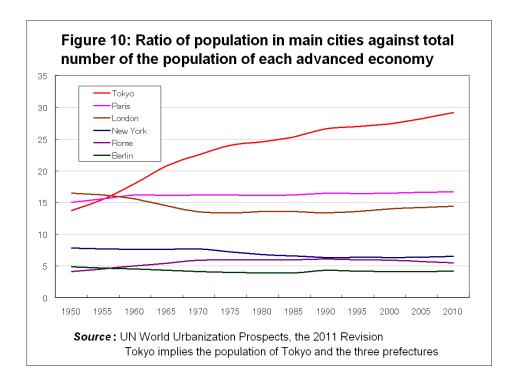


Population black hole phenomenon

As a result of inflows of the population of overall Japan into the Tokyo area and other big city areas, a society in which people are concentrated in limited areas, the big city areas, and live in a highly dense environment, will form. We call this a polarized society.

The concentration of population in the big city areas, particularly Tokyo, is conspicuous even compared with other advanced economies. Looking at the trends of the ratio of population in main cities against the total population of each country (Figure 10), we can see (i) Tokyo's share (Tokyo and the three prefectures) in the population of the nation's population grew greatly after World War II in Japan, but such an occurrence did not take place in other advanced economies, (ii) the level of Tokyo's share in the nation's population is higher than in other advanced economies and (iii) Tokyo's share in the nation's population even now continues to grow.





When considering the phenomenon of over-concentration in the Tokyo area, there is an idea that focuses on the economic merits, such as the economy of concentration. Of course, if strengthening the big city areas can ensure the sustainable growth of Japan as a whole, we have a bright future. However, as the declining population has actually started to emerge, such an optimistic view has come to no longer be accepted. While regional areas that have provided an endless stream of young people are disappearing, the birthrate in the big city areas, with concentrated population, has been consistently low. Notably, the birthrate in Tokyo is extremely low, at 1.09. Moreover, with a sharp rise in expenses for facilities for the elderly, fiscal resources allocated to countermeasures against the falling birthrate, such as childcare support, will be limited. Consequently, a dramatic improvement in the birthrate cannot realistically be expected. Meanwhile, Kyoto has the second lowest birthrate (1.23) after Tokyo, and Okinawa has the highest (1.90). Generally speaking, the birthrate is higher in regional areas than in the big cities.

The phenomenon of a low birthrate in areas of concentrated population is also seen in Singapore (1.15) and Hong Kong (1.11). As mentioned above, a declining birthrate as a result of population migration to big city areas is commonly reported in many countries other than Japan.

If so, what can be expected to lie beyond the polarized society, in which only big city areas exist, is the decline in Japan's overall population accelerating. As if many stars are being swallowed into a certain point in space, we can see the swallowing of population by the big city areas as a "population black hole" phenomenon. To raise Japan's overall birthrate and stop population decline, this major trend of population concentrating in the big city areas needs to be changed.

There are also a number of issues in a polarized society from the perspective of resilience against changes in economic society. A polarized society is likely to create an economic structure in which integrated effects are



pursued. Yet to the contrary, this can be regarded as a singular structure vulnerable to large-scale economic changes. It also has problems in dealing with the risks posed by major disasters. One of the most critical issues that polarized society contains is the possibility of a major disaster occurring in a certain area, such as an earthquake directly beneath the Tokyo Metropolitan area, paralyzing all of Japan. From this viewpoint, it is important for Japan to avoid the advent of polarized society and aim to realize a sustainable society in which regional areas can exert their independent diversity.

III. Necessary national strategies

Free from macro-policies and the existing decentralization theory

Adopting only macro-policies, such as financial and economic policies, will be inadequate for avoiding a polarized society and achieving a society in which regional areas have sustainability. Further promotion of macro-policies will further strengthen the power in the Tokyo area and work as a device to widen the economic and employment disparity between Tokyo and regional areas, even potentially accelerating the disappearance of regional areas. What is required now is the development of policies that focus on regional areas.

Discussions need to be held for exploring matters beyond the existing decentralization theory. The government cannot deny its responsibility for causing the present declining population and the concentration in big city areas. Having said that, the issue still won't be resolved by just transferring the central government to local governments on the assumption that this is a simple struggle between central and local governments. The policy of transferring financial resources to local governments adopted in the so-called triple reform of local finances actually expanded the disparity in tax revenues of municipalities. As this example shows, the simple transfer of authority to local governments might only accelerate population concentration in big city areas, and it will never be able to stop it.

The issue now needing resolution is related to the population that determines the sustainability of a nation and society and is related to the use of national land, the basis of resource allocation to conduct economic social functions as a nation. Designing a grand plan to solve this issue is a national strategy that the state or a competent central government needs to establish.

However, though a national strategy is required, the scope of the activities in which the central government is involved should be limited to designing the grand plan for the nation as a whole. Needless to say, individual municipalities should prepare specific plans for developing sustainable economic social structures in regional areas.

Japan once tried to establish such national strategies in the Plan for Remodeling the Japanese Archipelago and the Garden City State Concept, but failed to achieve maintenance and increase the regional population. The former, which was announced by Tanaka Kakuei in 1972, proposed the transfer of functions from the Pacific coastal belt zone to regional areas. It would do this mainly by aiming to simultaneously eliminate the negative effects from overpopulation and under-population to create a beautiful and comfortable country and society





with affluent lifestyles and free of future concerns, locating and promoting industries in regional areas in accordance with the development potential of each region, establishing transport networks to support reallocation of industries, relocating universities to regional areas, raising agricultural productivity and improving the plan for land use.

After the plan's announcement, public works were expanded and a series of measures to promote relocation of factories to regional areas took place. However, though these policies achieved a temporary halt in population inflows to Tokyo as a result of the transfer of income to regional areas, they never resulted in the self-sustained expansion of employment and maintenance of population because all the policies mainly focused on using public spending on development of physical infrastructure.

Meanwhile, the Garden City State Concept, which was announced in 1980 by the Garden City State Concept Study Group of Prime Minister Ohira Masayoshi, aimed to revive vigorous and diversified regional society realigning the unlimited number of small and large cities scattered like stars all over Japan and the overall network of farming, mountain and fishing villages. After the announcement, the government introduced a range of policies aimed at developing industry by using regional characteristics. Some of the policies also achieved the minimum impact in each region, but a majority did not result in the creation of employment substantial enough to support a population in regional areas.

Parallel implementation of proactive and adjusting strategies

As stated at the beginning of this report, even if measures to maintain or increase the population are immediately implemented, their impact will only become fully visible in thirty to sixty years. Until such time, population declines are unavoidable. Therefore, a national strategy needs to take the vantage point of this timeframe into account. This is to say that, while aiming at maintaining and increasing the population by halting the present declining trend, it is necessary to simultaneously and in parallel implement proactive strategies to develop the structure of the population and national land in which regional areas possess sustainability and adjust strategies to keep negative effects, such as a contraction in the economic employment scale and an increase in social security expenses as a result of population decline, to a minimum.

In these proactive strategies, it is important to implement policies that pay attention to people. To date, local policies have instead focused on buildings and other physical aspects. From here forward, people themselves will be the axis of the policies.

The first point is to aim at population maintenance and increase. To ensure this at the macro level, comprehensive support for marriage, pregnancy, childbirth and childcare need to be provided.

The second point is population reallocation. Policies need to be introduced that target reallocation that decisively changes the trends of population inflows into big cities.

The third point is training and acquisition of human resources. In a society with a declining population, improving the abilities of individuals will become even more important. Proactive measures to acquire highly trained human resources from overseas while providing training for developing competent human resources need to be adopted.



Establishing defensive and offensive lines

So then what economic social structure will enable regional areas to possess medium- to long-term sustainability? One example proposed here is the structuring of population and national land equipped with defensive and offensive lines that prevent population decline in each wide-area regional block and create a unique reproduction structure in each region by fully utilizing its various capabilities.

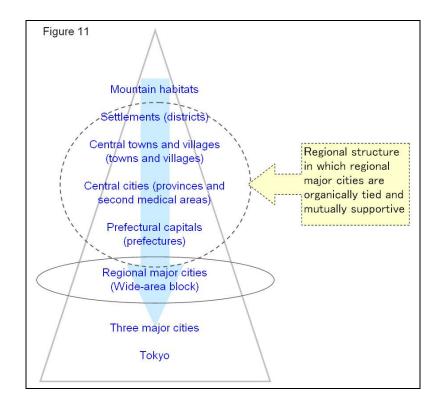
See Figure 11 for clarification of defensive and offensive lines.

This shows what we might call a similarity fractal structure in which each regional area in the lower part plays a role of tying regions in the part one-step higher together and supporting them like a tree trunk. Mountain habitats and certain settlements, the area positioned on the top of the structure, are already facing rapid population decline. A polarized society is a society that eventually only has the Tokyo area after this large triangle-like figure continues to shrink downward. In this sense, to avoid a polarized society, is it not necessary to develop a defensive line at a certain point? Efforts to achieve that in fact have previously been made, but most of them were indecisive and unproductive.

For example, fearing the disappearance of settlements, efforts were made to stop population decline by improving their infrastructure. But there was insufficient fiscal capacity for taking the same measures for all settlements. Ultimately only small-scale measures that pleased everybody were taken, and these did not work as a defensive line.

Taking measures that are merely an extension of the regional revitalization initiatives currently undertaken may end up repeating the same errors of the past. Forty-seven prefectures doing the same thing is not beneficial. The defense line must have a reproduction structure in which the merit of scale is realized and added value is generated through the concentration of human resources and resources in the structure. The defensive and offensive lines take offensive actions while taking defensive ones. Partly due to the perspective of restriction in fiscal capacity and population, the number of defensive and offensive lines is limited.





From these considerations, it becomes clear that a wide-area block unit of regional major cities will play key roles as the final base or the point in which all-out efforts should be made in conducting defensive and offensive measures. Intensively investing resources and taking measures in the regional major cities can create a base in which each region can exert such efforts.

It will take a long time before these proactive strategies show their effects in full scale. Until then, based on the assumption that the population will decline, adjusting strategies need to be implemented as efforts to minimize the negative impact from the decline. These strategies can be regarded as exit strategies and there are expected to be great challenges in implementing the policies they spawn. "Hemostatic" measures need to be taken promptly to prevent further population outflows, particularly of young people, from regional areas. On this point, it is possible to consider measures such as developing regional industries and decentralizing universities and other educational organizations to regional areas in order to create regional employment.

Streamlining social security also needs to be promoted. Population decline, particularly a significant decline in the working population, will rebound in the form of higher taxes and insurance premiums. Needless to say, social security and other public spending need to be streamlined to stem the rise of expenditures as much as possible.

In closing

So how can we avoid the crisis of population decline that Japan will face in the near future? Unfortunately, we do not have much time left to come up with solutions and the choices are limited.



First of all, the situation in which still only certain experts share a sense of crisis about the declining population needs to be rectified. By examining and analyzing on a national scale the impact of the declining population on various aspects of the social economy, all people must together understand the dire prospects at hand. Based on this understanding, by gathering competent human resources in various quarters, national strategies need to be developed and implemented as soon as possible.

To achieve this, the government must establish a command-center-like organization to illustrate basic concepts. Based on these concepts, it is important to draw up specific plans and establish an organization in each wide-area block, which will act as a regional command center to implement the plans.

The issue is grave enough to affect the existence of this nation, but it can be overcome if the Japanese people start dealing squarely with it. We hope the public at various levels will engage in a wide range of discussions.

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