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Farming population in Japan : a retrospect

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Abstract: Bhutan Population Census 2005 has founded the reliable basis for population projection. Recently, the increase in rural-urban migration and vacant houses in villages and the decline in fertility rate were reported by a few newspapers. These two issues originated the common cause, namely urbanization. This preliminary note tries to find out policy implication of urbanization by looking back on Japanese experience.
Key words: Population projection, Demographic transition, Depopulation, Urbanization, Industrialization, Bhutan, GNH.

Introduction

1.1 Quickest Aging Population in the World

Prof. Hayashi's book entitled Political Economy of Japan published in 2011 point out: The most notable characteristics of Japan's demography is that the population is aging quickly. Fig.1 illustrates this matter. The proportion of people over 65 years in the total population is rising in all developed countries, not only in Japan. Aging is occurring in the populations of Korea and China as well. However, the speed of increase of the elderly cohort is more remarkable in Japan than in any other country.

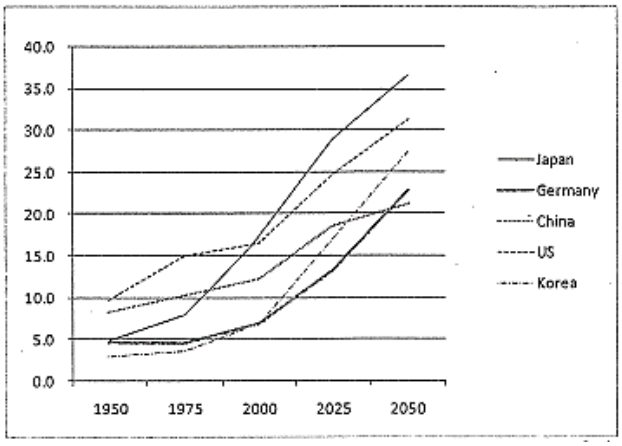

Fig. 1. Aging population, Source: Hayashi (2010)

In the background of this phenomenon two important factors lie, which are both consequences of the success of Japan's economic development. For one, Japan has the highest life expectancy at birth in the world today. As Fig.2 illustrates, a Japanese new born baby girl can expect to live up to 86 years old and a baby boy to 79 years old. Taking the average between male and female, Japan has the highest longevity, surpassing Iceland.

There can be many reasons for Japanese longevity; including climate, diet, health care system, medical technology, working condition, social capital and many more. However, we should not ignore the fact that the rise in Japanese longevity is positively correlated with the rise in Japan's per capita income.

The other factor that contributes to the longevity is the decline in fertility rate. Japanese women are having fewer and fewer children in their lifetime. The fertility rate for Japan stands at 1.27, well below the 2.1 level which is necessary for a stable population.

Thus, due to a combination of a decline in young people and an increase in elderly people, the Japanese age structure is changing from the traditional pyramid shape to a lopsided pyramid. The graying of the population is simply a result of this demographic change, which poses an unprecedented challenge for the economy and politics of Japan (Hayashi:13-15).

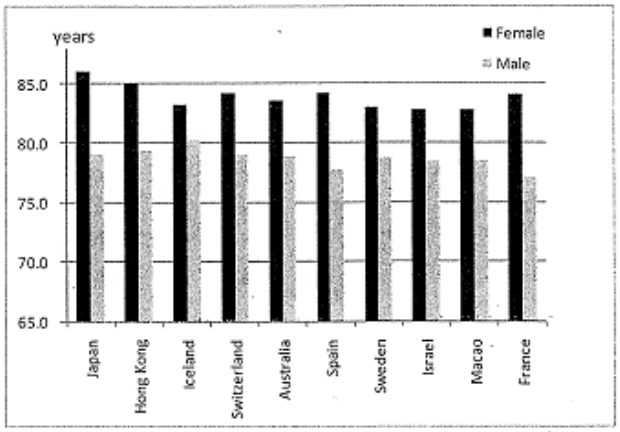

Fig. 2. Life expectancy at birth, Source: Hayashi (2010)

The cause of the Japanese aging population is discussed from the demographic point of view. The decline in fertility rate is related with the rise in Japan's per capita income. Is the decline in fertility rate in Bhutan determined by the rise in Bhutan's per capita income?

1.2 Aging Rural Population faster than Urban

During the period of high-speed of economic growth from 1955 to 1973, bulk of young population had moved to cities. Most of industrial areas are concentrated along seashore, where material for industries and manufactured products are easily shipped for import and export. We import crude oil, iron stone, other various metals and export products such as cars, television, refrigerator and so on. Young boys and girls after lower secondary school at the age of 15 years old, had left their home villages and been employed mainly by manufacturing industries located near seashore. Tokyo, Nagoya, Osaka and other urban areas absorbed the young population and population density became very high.

The household income gap between rural farming population and urban industrial workers increased, which accelerated rural-urban migration. The first generation who left villages during the high-growth epoch of 1955 to 1973 got married and purchased houses in urban industrial areas. They brought up their children. Now, third generation come up. The first generation migrants used to

visit their parents often for celebrating happy new year days and religious festivals. They met classmates who remained in villages. While their parents could cultivate lands, they enjoyed agricultural products sent by parents. Rural scene and rural life were still very close to them. However, the third generation migrants live far away from rural life and natural environment.

As the result of the migration from villages to cities, population had decreased in rural districts sharply and steadily.

We have observed the general demographic trend of concentration into the urban industrial cities since the high-speed economic growth epoch. However, when we trace the rural population in particular, another scene appears. The more young working population flow into industrial region near seashore, the less young population remain in villages. Even during the high-speed economic growth epoch, rural population had started to decrease. Where the youth continue to leave villages, the remaining elderly people cannot live an ordinary life particularly in remote areas or islands. The state of being unable to earn livelihood by farming and maintain minimum standard of life is called KASO (depopulation). In Japan industrial areas became overpopulated and certain villages are depopulated. Overpopulation and depopulation are observed at the period of high-speed of economic growth in Japan.

We could safely say that high-speed of economic growth and Japan's reaching most aging society is the reverse of the medal. In Japan manufacturing industries are concentrated in big cities near the sea, which had absorbed great number of working population from villages. Therefore, in villages population started aging far faster than cities. In villages aging population became issue to overcome even in the middle of the 1960s. Soon or later cities started facing the aging population problem. Less number of rural to urban migration and low fertility rate are responsible for this.

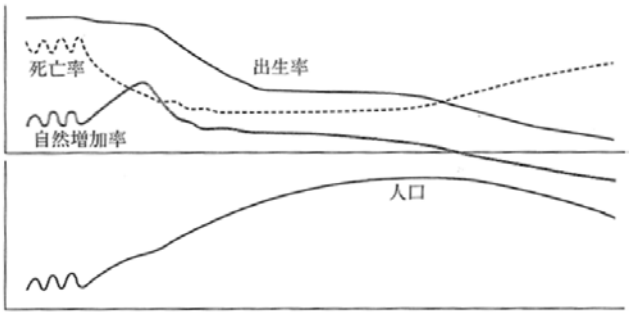

Fig. 3. Demographic transition, Source: Miyamoto (2011) p.28.

1.3 Demographic transition

Demography tells us demographic transition are caused by the changes in birth rate, death rate, growth rate and total population. There are three phases; stagnant, increase and stagnant/decrease. Phase I is characterized by high birth rate and high death rate, Phase II; by high birth rate and low death rate and Phase III; by low birth rate and low death rate. Fig. 3 shows growth rate was stagnant in phase I and went up in phase II. Total population increased as the result of upward growth rate. This demographic transition is called mortality transition caused by decrease in death rate.

However, in phase III, birth rate steadily declines, which causes decrease in the total population. This transition is called fertility transition caused by decrease in birth rate. Japan has entered phase III after reached the peak of total population in around 2005. The total population of Japan has started to decrease since then.

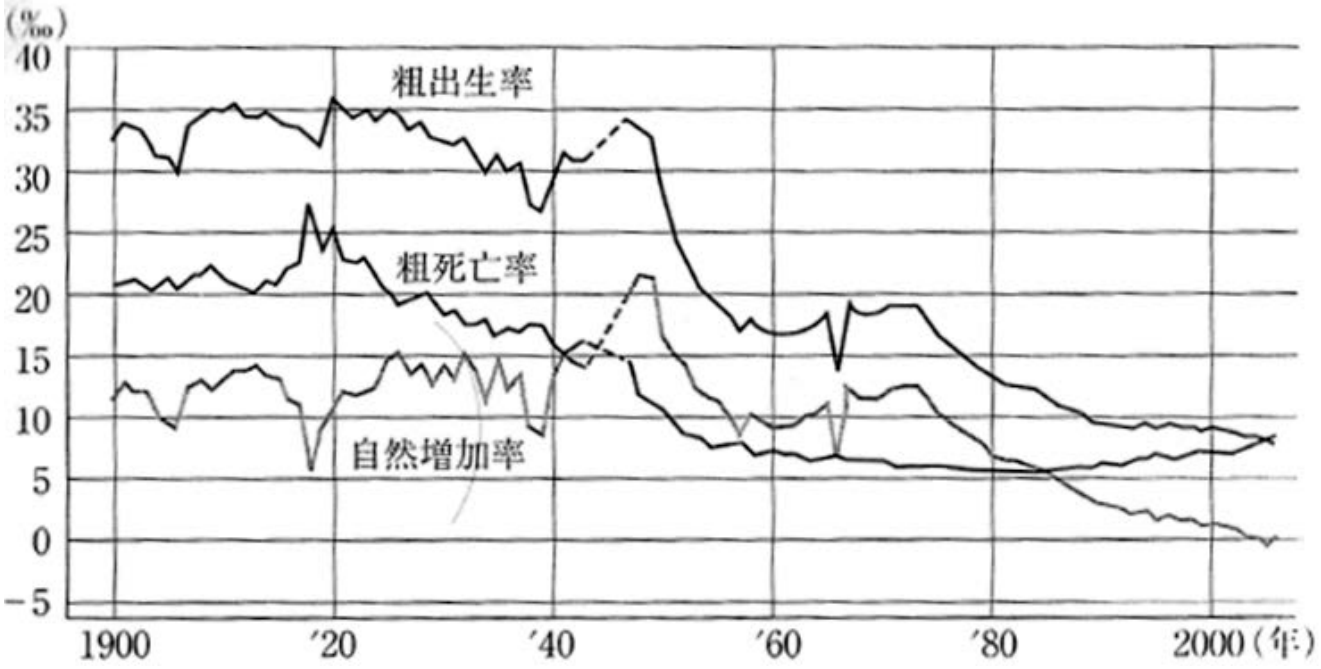

Fig. 4. Changes in crude birth rate, crude death rate and increase rate of Japan, 1895-2005, Source: Miyamoto (2011) p.13.

1.4. Demographic bonus and onus: Japanese population continues to decrease due to very low crude birth rate. Usually 2.1 crude birth rate is necessary to sustain the same level of population. It is very difficult to explain why the crude rate of Japan is too low to replace deaths by births. However, we could explain why Japan had enjoyed the high-speed of economic growth. In phase II of demographic transition framework after mortality transition, dependency ratio (children below 15 years and elderly persons over 65 to working population of 15 to 64 years old) become very low. In Japan, from the 1960s to about 2005, dependency ratio was low at around 50 percent. This means many productive working population feed very few dependency population. Production exceeds easily consumption. Surplus accumulates in a nation in the form of savings. The period is named as a demographic bonus period because a nation has got the potential to grow from a macroeconomic point of view.

To the contrary, we characterize a period when high dependency ratio is observed as demographic onus. Following demographic transition framework, phase III of stagnation or decrease in the total population begin after fertility transition (Fig. 4). In Japan due to the fall in fertility rate, the dependency ratio is increasing in the phase III.

Generally, any countries pass phase II and can utilize demographic bonus. However, the volume and length of bonus period are crucial. Time when mortality transition occurs also determines economic growth.

Fig. 5 shows working population ratio of five countries. After the World War II in Germany, England, French and America the ratio went down. Japan, however, it went up. The people of Japan were encouraged to have more children from the 1910s to the middle of 1920. Though many men were killed in the War, those who had survived got married. This is responsible for the baby boom after the war, particularly from 1947-49 (see Fig. 4). However, from the beginning of the 1950s the effective family control policy was introduced, which had resulted in slowing down the population growth rate (Matutani:14). The slow growth of dependent children kept the working population ratio high for longer than other four countries. It had the end. During the 1990s Japan has entered the demographic onus period.

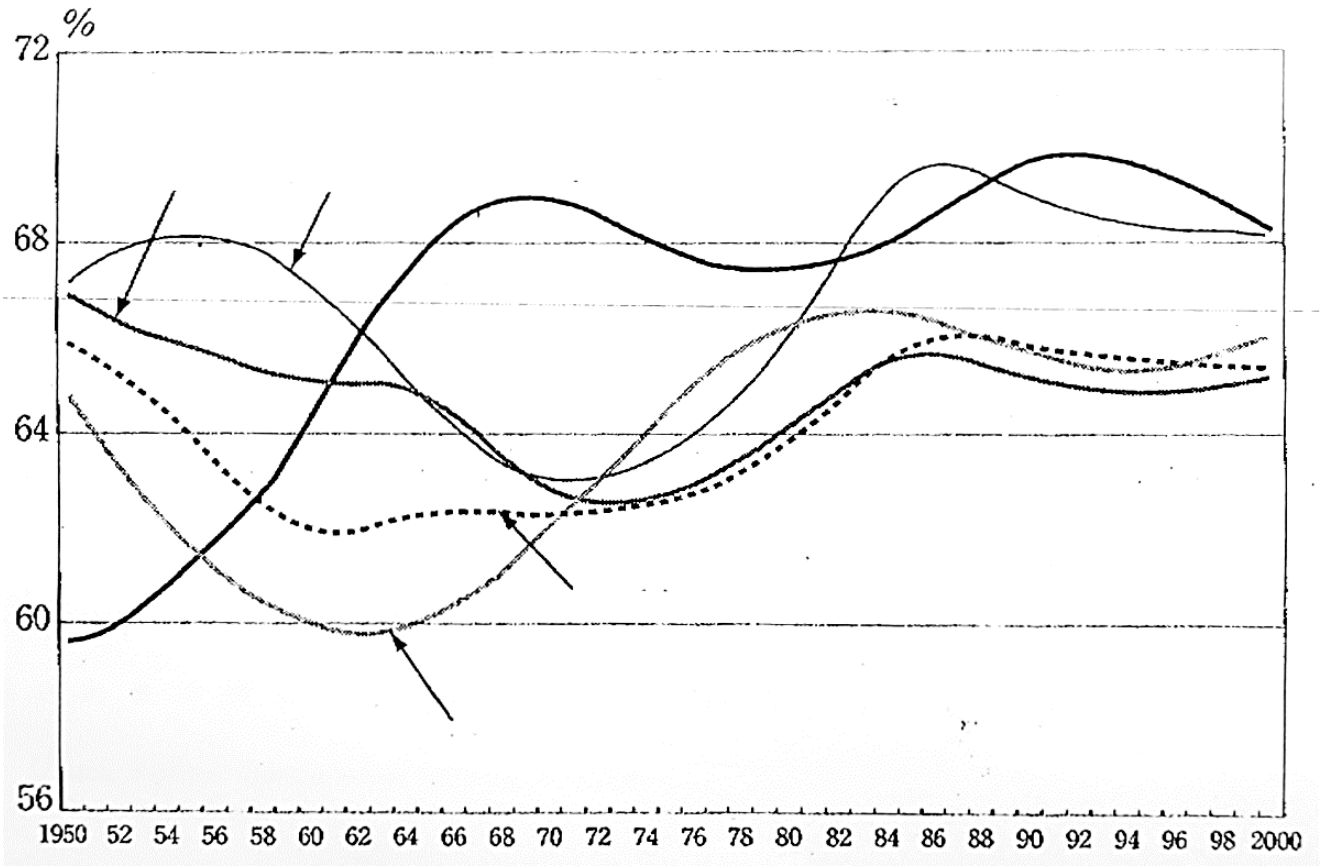

Fig. 5. Ratio of working population to the total, Source: Matutani (2004)

2. Population Projections: Bhutan 2005-2050

2.1 The fertility rate declines below to the replacement level of 2.1

Lucky Wangmo thus writes an article entitled Planning the Demography in *Business Bhutan* dated on August 25 2012: GNH Commission in the process of drafting the national population policy *in light of the decreasing fertility rate in the country* (my italic). The draft policy outlines certain demographic implications that the decreasing fertility rate could give rise to in the long run and has recommended policy measures to avert them. According to the article, demographic planning is one of the key objective of the 11th Five Year Plan.

Three projections were given. (1) A decline in total fertility rate from the current 3.6 births per woman to 2.1 in 2012 and will remain so until 2050. (2) A decline in

total fertility rate from the current 3.6 births per women to 2.1 in 2012 and then stabilizes till 2020. (3) Fertility rate of 3.6 will remain over the period.

As mentioned above the 2.1 births per a woman is the minimum level for replacement. The draft policy states the second is more likely to happen for Bhutan. *Population Projections Bhutan 2005-2030* estimated the fertility ratio will be 2.34 in 2015 (Table 1). The second projection tells that the replacement point comes earlier.

Table 1. Total Fertility Rates, Bhutan, 1911-2030

Year	TFR
1911 (Health Survey)	6.5
1994 (HS)	5.59
2000 (HS)	4.70
2005 (PHCB)	3.59
2010 (estimated)	2.80
2015 (estimated)	2.34
2020 (estimated)	2.09
2025 (estimated)	1.95
2030 (estimated)	1.87

Notes: below the replacement level fertility; 2.1, Source: Population Projections Bhutan 2005-2030, p.7.

The second projection tells that "the population under 15 years will decrease from 33.1% in 2005 to 22.2% in 2050. The working population aged 15 to 64 years will increase from 62.2 % in 2005 to 66.1 % in 2050. The population aged 65 years old and over will increase from 4.7% in 2005 to 11.7 % in 2050".

The dependency ratio (the ratio of children below 15 years of age and elderly population over 65 years to the size of the working population of 15 to 64 years) will decline from 60% in 2005 to 51.3 % in 2050. The ratio of school-going children from five to 14 years will decline from 23.2 % in 2005 to 15% in 2050.

The increase in the aging population "will have emergent social and financial burdens such as financial and social burden on younger generations, fiscal implication, labor force contractions and decline in investment, public health burden and burden on public infrastructure and services".

Therefore, the draft policy recommends "strengthening of social security schemes, promotion of healthy and active ageing and strengthening of healthcare concerned with diagnosis, treatment and *prevention* (my italic) of disease in older people".

The guideline for preparation of the 11th Five Year Plan points that Bhutan could benefit from increase in number of population in productive age group and also be prepared to face the challenging of growing aging population. Because "the declining share of children in the total population would mean a decline in dependency ratio, which would *temporarily* (my italic) increase economic growth rate."

2.2 To challenge growing aging population of Bhutan

It is noted that Wangmo quoted the draft policy in order to show us the point below:

If the current trend in fertility decline over a longer period and the total fertility ratio drops below the replacement level, it is likely that Bhutan will experience much *slower population growth as in most developed countries which would result in more devastating demographic and socio-economic impacts as opposed to positive population growth*"(my italic).

Two points are to be noted here. With comparison to the most developed countries, what factor is responsible for the slower population growth of Bhutan? Isn't it impossible for Bhutan to achieve GNH society with slower population growth?

Figure 4 shows changes in crude birth rate, crude death rate and increase rate of Japan. In Japan, the crude birth rate remained around 3 till the end of the 1950s with the decrease in crude death rate. From this Japanese experience, we could safely say that the demographic bonus for Bhutan may be smaller but at the same time the demographic onus is definitely smaller that of Japan.

3. Changing industrial structure and the role of farming population

3.1 Shift in industrial structure

C. Clark classified industries into three broad categories, namely primary, secondary and tertiary industry. He observed that the shift in industrial structure as the economy of a nation grew up. Industrialization originated changes in the primary sector of industry. Next, the sector of manufacturing and production come as the name of industrialization indicates. Lastly tertiary industry grows up. C. Clark grouped supply of electricity, gas and water into secondary industry. However, today they are usually grouped into tertiary sector of industry. We use this classification.

For many years since the industrial revolution in England, industrialization has been the target of development of a nation, economy and life of the people. Japanese economic growth is the typical case of emphasizing the importance of manufacturing industries. The labour force increased continually during the epoch of high-speed growth from 1955 to 1973. During this period drastic change took place in the configuration of employment.

3.2 The fast aging farming population in the rapidly aging Japan

As for the number of working forces in Japan, the change in three industrial sectors is as follow. The employment in the agriculture, forestry, and fishery industries (primary industries) declined drastically, while employment in the manufacturing sector (secondary industry) increased moderately, and employment in service sector (tertiary industry) increase considerably.

This shift was made possible by a massive relocation of the work force from rural areas to urban cities. This urbanization was the result of a mobile workforce (Hayashi: 39).

In 1.2 section, we outline that where the youth continue to leave villages, the remaining elderly people cannot live an ordinary life particularly in remote areas or islands. This is named the KASO (depopulation) problem, which was for the first time used at the central government policy committee in 1966.

In Japan industrial areas became over populated and certain villages become depopulated. Overpopulation and depopulation are observed at the same time. Fig. 6 illustrates that the farming population is aging at high

speed. This aging caused the decrease in commercial farm households and the continued increase in the number of non-farm household having cultivated land (*1). The change shows that the number of farm households which have stopped cultivation and dropped out from agriculture is increasing. The considerable area of farm land has been abandoned, which resulted in the decrease of food self-sufficiency rate.

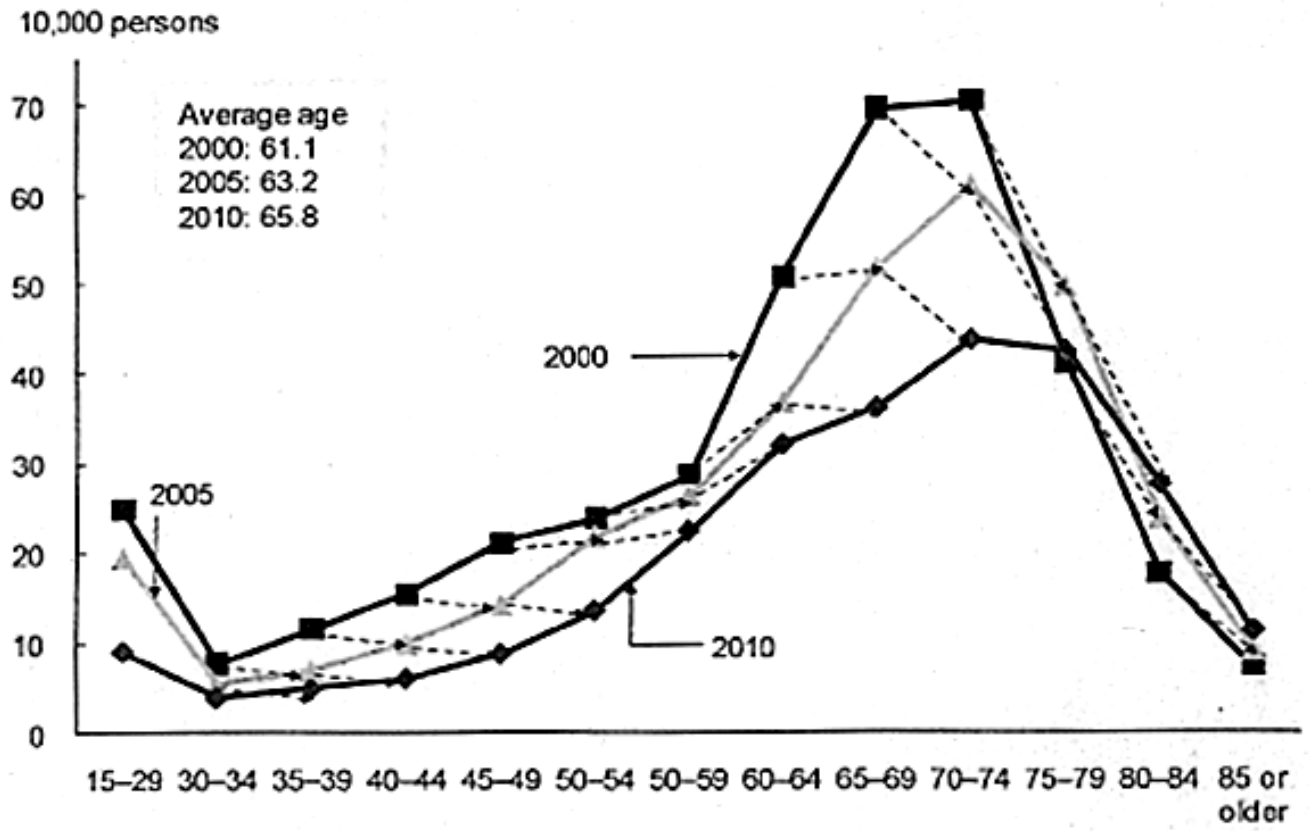

Fig. 6. Declining and aging farming population of Japan, 2000-2010, Source: Ministry of Agriculture, Forestry and Fisheries (2011) p.28.

A few efforts are made to lift up production and preserve agricultural land. Community-based farm cooperatives are encouraged. Also farms are registered as legal persons to introduce firm type management by book keeping and so forth. After the revised Agricultural Land Act took effect, 404 corporations entered agricultural production between December 2009 to March 2011.

3.3 Social ethos for growth (Hayashi: 46-47)

We don't think that there existed an alternative way for Japanese development because we had been long under the strong mind control of the social ethos for growth. I quote again *Political Economy of Japan*, which gives us a vivid picture:

Busy-ness gave the Japanese as a new meaning and confidence for their lives. Companies became sacred temples for workers and management. Men could find peace of mind there. They knew their parents were aging. They knew their children were having a hard time coping with rapidly changing society. They knew their country looked mediocre in the world and felt uneasy about it. But they were too busy to be bothered. Besides, they were doing their fair share to support their families.

People, government and business leaders felts like they were riding on a turnpike. The basic question was: *quo vadis?* A welfare state? An economic superpower? A technology giant? An eternal pacifist nation? However, the final destination was far out in the distance. Moreover, people felt their life was improving for real. Nothing was wrong.

Growth looked fine until the Japanese discovered the fact that people had been dying from eating fish caught in the contaminated sea, from chemically poisoned foods and drugs, and in traffic accidents. The downsides of developmentalism such as environment deterioration, cultural degradation, family transformation, juvenile delinquency, gender disparity, and other social damages should be subtracted from the calculation of GDP. People began to listen to the environmentalist's cry in the distance: "Down with GDP!"(Hayashi: 46-47).

We have come to realize how important the natural environment, seas and ocean surrounding us, sky, farm land, paddy field, village landscape and so on are, when we lost them. Now we face the rapid aging society and decaying paddy field. Then, what will be an alternative way?

4. Summary

4.1 Rural-urban migration not caused by industrialization in Bhutan: Population census Bhutan 2005 provides data on rural-urban migration. Young people leave their villages and get higher education in cities like Thimphu, Punakha, Paro. After education they get employment in cities and got married there. When they

have children they ask their parents for taking good care of the next generation. Their parents leave the homestead and agricultural lands.

We compare Japan and Bhutan from the demographic transition point of view in order to understand rural-urban migration in Bhutan. Fundamental difference between the massive relocation of the Japanese work force from rural areas to urban cities and the Bhutanese rural-urban migration looking for higher education and employment mostly in government services. The pull factor of rural-urban migration in Bhutan is not industrialization.

Fig. 7 shows reasons for migration in Bhutan in 2005. Family move shares 31.5%, employment; 16.5%, education/training; 14.6%, and marriage; 10.5%, and transfer; 9.9%. Employment shares 16.5% only. We need to know factors causing family move. However, these reasons do not indicate the relocation of work force occurred in Bhutan. Manufacturing and industrial productions need workshops, factories, and plants, which are constructed at the strategic places like the seashore in the case of Japan. Production needs materials and a foreign market for factory products. The goods are shipped. The urbanization in Bhutan is not the result of a mobile workforce for production and manufacturing. As employed persons by major sector of economic activity Bhutan 2005 (Fig. 8) shows, Bhutan has wider options for solution of urbanization because her economic growth does not depend upon industrialization to a large extent as Japan did (*2).

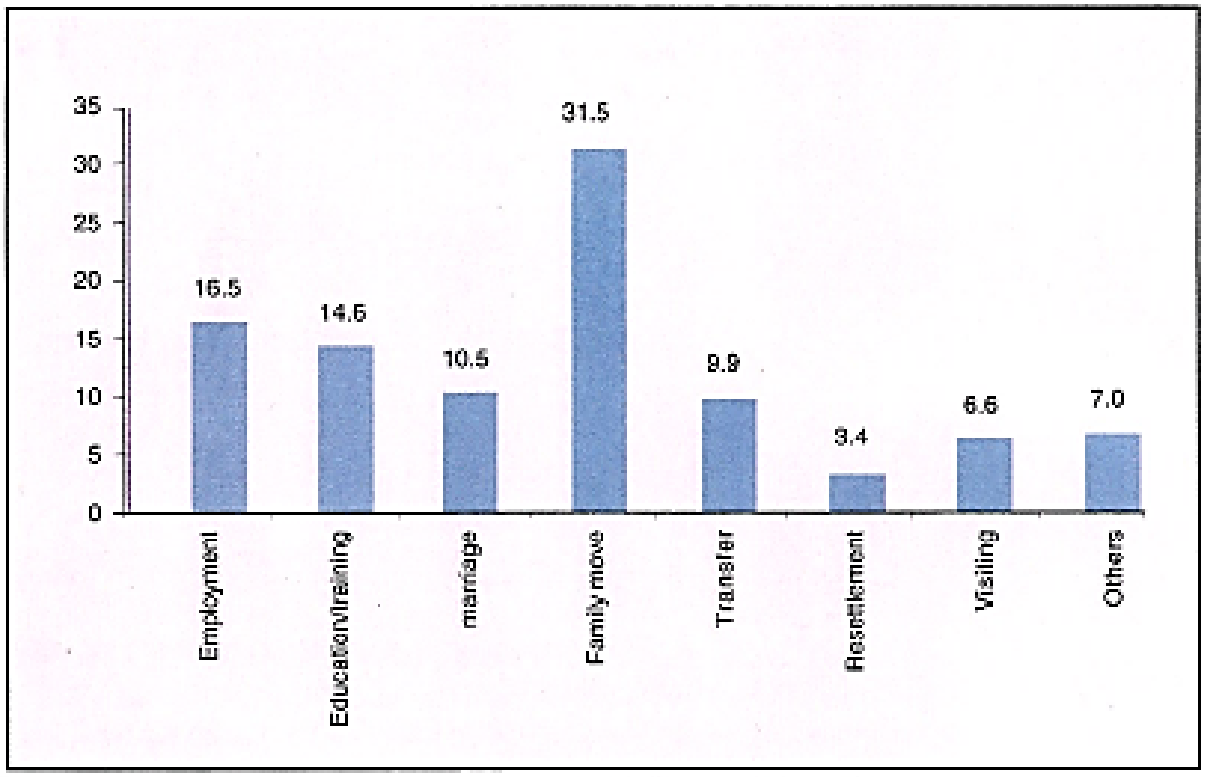

Fig. 7. Reasons for migration in Bhutan, 2005, Source: ROGB, National Statistics Bureau (2008)

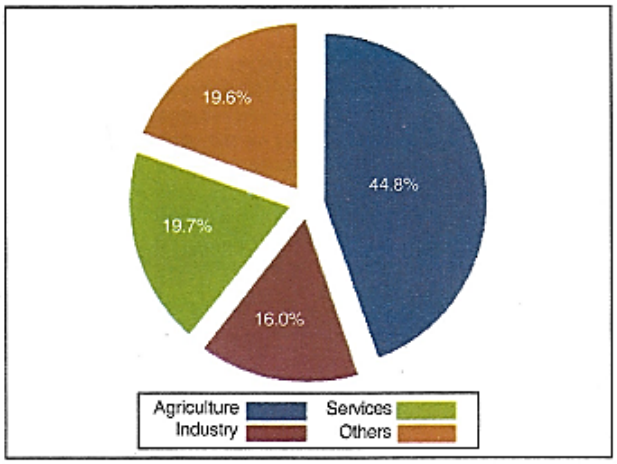

Fig. 8. Employed persons by major sector of economic activity, Bhutan, 2005, Source: ROGB, National Statistics Bureau (2008)

4. 2 Policy implication: For the comparison with the figure of sector of employment, I quote Fig. 9 which shows jobs lost and jobs created by sectors from 2002-2008 in Japan. It is the information and communication and the medical, healthcare and welfare industries alone besides real estate that were responsible for creating the most jobs in 2008 compared to 2002. Other jobs were lost (Hayashi: 290). All increasing sectors are not C. Clark's secondary sector of industry but tertiary industry classification.

New opportunities will accelerate the Bhutan's industrial policy and lead to new innovation in products and services. "If successful, the new opportunity will create new systems, new management, and new networks of service provision, which will contribute to Japan's industrial competitiveness (Hayashi: 290-291). This is true to Bhutan since Bhutan's strategic sectors are tourism,

electricity, and primary sector which is defined as RNR (Renewable Natural Resources) after mining is excluded.
Primary (Agriculture) sector shares almost 50% of the total workforce. Tourism and electricity industries continue to grow and earn foreign currency increasingly. Though 50% share of the total workforce is occupied by primary sector, the contribution of GDP to the total is small. It seems that primary sector (RNR) is the far most important strategic sector to achieve GNH society.

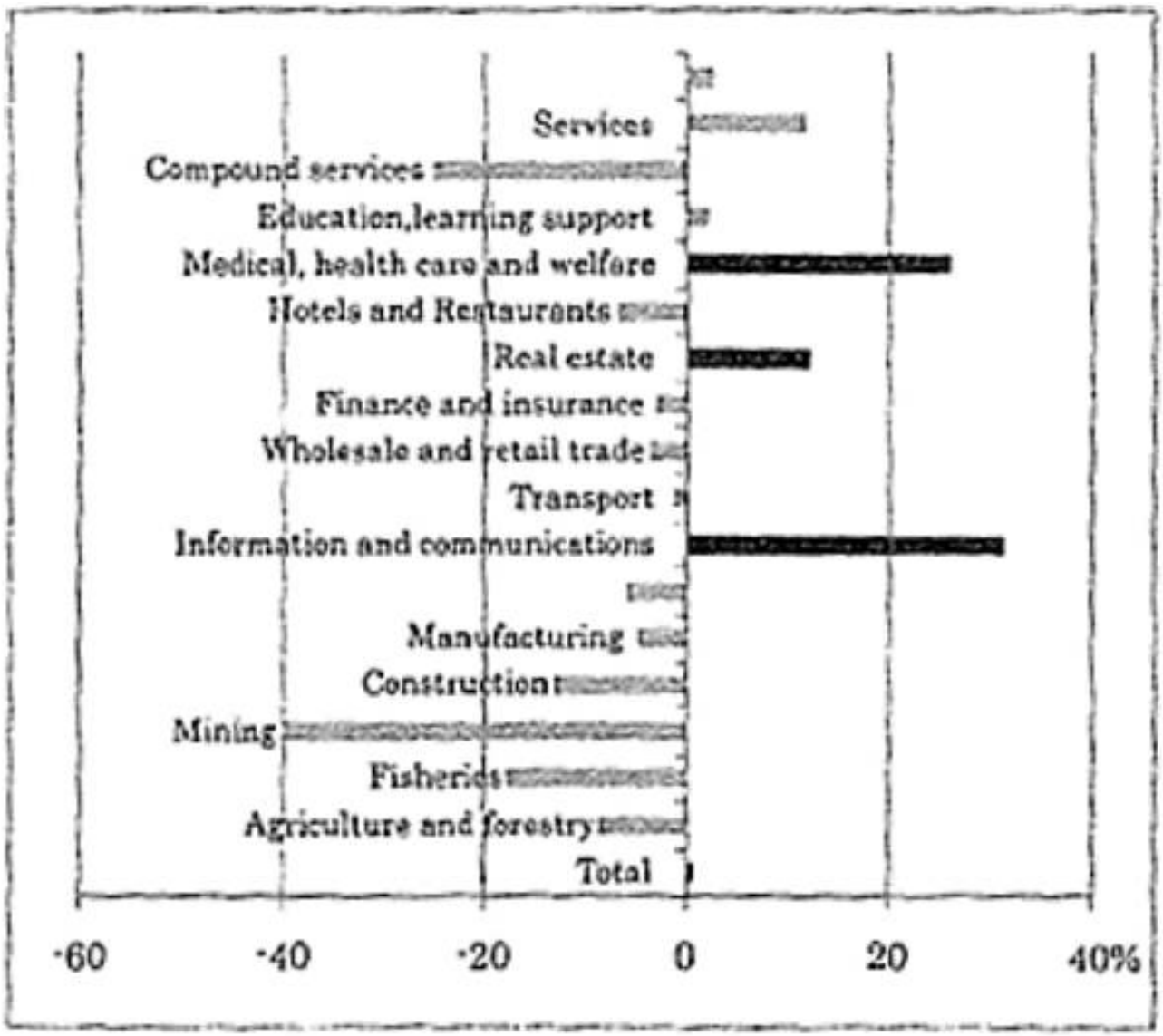

Fig. 9. Jobs lost and jobs created by sectors, Japan, 2002-2008, Source: Hayashi (2010)

In order to stabilize this sector, people's awareness of RNR sector is most needed. Then the idea of cooperatives as an important way to bring people together for production, marketing, security, land management and income for individual farm households is more seriously to be understood.

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Notes:

(*1) Farm households which sold products stopped cultivating land. This is the reason for the decrease in the number of commercial farm household. Farms households who have stopped cultivation is classified as non-farm households having farm land. This is classified as noncommercial households having farm land.

(*2) The classification of secondary sector of industry here includes manufacturing, electricity, gas, water, and construction. After these are excluded the proportion of manufacturing in the secondary sector of industry is small.

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