Population Aging and the Labor Market

: Japanese Experience in the last Quarter of the 20th Century

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1. Introduction

During the last quarter of the 20th Century, Japan has been aging at an unprecedented speed in the modern history of mankind. A society can be termed as an "aging" society if the share of those who are 65 years old or older in the total population exceeds 7%, and as an "aged" society if the share exceeds 14%. To move from an "aging" society to an "aged" society, it took for France 115 years, for Sweden 85 years, for England 47 years, and it for Germany 40 year. Japan reached an aging society in 1970 and moved into an aged society in 1994, taking only 24 years. The aging process has not stopped there for Japan, and now the share of the elderly is around 19 % of the population. Combined rapid declines in birth rate and mortality rate have been driving the aging process for Japan, and no immediate changes in these trends are yet in sight.

In the labor market, several issues related to these demographic changes have been the focus of intensive investigation by Japanese labor economists. Many of them had to do with public pension policies and the changes thereof but there are an equally large number of them on the public intervention programs for the older workers' employment that had expanded significantly in the last two decades.

We can summarize their empirical findings as follows; (1) older Japanese workers, particularly those in early 60's, have much stronger preference for working compared with those of other developed countries, (2) since 1980's, generous public pension benefits for employed workers have reduced the supply of labor of the older workers, (3) mandatory retirement system of individual firms is reducing the supply of labor of older workers, (4) during the so-called "bubble economy" that lasted from the second half of the 1980's to the early 1990's, there has been an increase in the Labor Force Participation Rates of the elderly workers, but it was a temporary phenomenon induced by the higher wages and other better conditions of the period.

As to the public policies of the mid-1980's or later designed to promote the employment of the older workers, (5) the extension of formal retirement age to age 60 and public programs to encourage firms to extend the employment beyond formal retirement age have been found effective in increasing their employment. More recently, we have observed that (6) since the 1990's, the Labor Force Participation Rate has

declined in spite of the upward swing of the economy, and the steep age gradient of the wage profile of Japanese firms, which has been the centerpiece of Japanese lifetime employment system, has been flattening. More recently, Japanese labor economists have been arguing whether or not (7) the labor of older workers and younger workers are substitutes, and the public interventions for the older workers are depriving the employment opportunities of the younger workers.

In this paper, we try to provide a balanced survey of the empirical studies that have analyzed the effects of aging on the labor market. The period we are primarily concerned will be the last quarter of the 20th century, and we will make necessary remarks on the preceding or succeeding periods. In the first section, we offer several stylized facts on the evolution of Japanese labor market. In the second section, we deal with the effects of public pension system and the mandatory retirement system of firms on the labor supply of the older workers. In the third section, we deal with the effects of public intervention programs for the older workers and the demand for their labor, and in the fourth section, we deal with the trade-off theories between older workers and younger workers. Finally in the fifth section, we offer our summary perspectives and policy implications of this paper.

2. Aging Society and Labor Market

Since 1997, the Cabinet Office of the Government of Japan annually publishes White Paper on Aging Society. It is one of the best sources of information on aging process where it is usually presented in proper historical perspectives. According to the White Paper of 2004, of the 127.6million plus population, those who are 65 years old or older account for 24.3 million. Thus if we measure the aging ratio of a country by the proportion of those who are 65 years old or older in its population, it is currently 19%, or about one in five, for Japan. It was in 1970 that the ratio exceeded 7% for the first time, but, in 1994, it surpassed 14 %. With the total population projected to start declining after 2006, due to low birth rates and longer life expectancy, the aging ratio will climb much faster than anticipated previously, to 26 % in 2015, and, to 35.7% in 2050 (Figure 1).

What has happened, and what has been happening, in the labor market of Japan during this period? Let us first take a look at how the age structure of the Japanese labor force has changed during this period (Figure 2). In twenty years, the proportion of the labor force above age 65 (or the share of the elderly) increased from 4.9 % in 1980 to

7.3 % in 2000. Thus the labor force has been aging too, perhaps not as rapidly, as the population has been aging. The White Paper of 2004 projects that this trend will continue to raise the share of the elderly to more than 11% in 2015, where it is expected to remain steady until 2025.

Let us now examine how the labor force participation rates of the older population have changed during this period. Figure 3 shows how the labor force participation rates have changed since the second half of the 1960's for older workers, in particular those of 55-59 years old, the 60-64 years old., 65-69 years old, and 70 years old or older, as well as the overall participation rate. Three distinct trends stand out from this graph;

In the first place, overall labor force participation rate has been declining consistently over time. Japanese labor economists "explained" this trend by two factors. One is the secular decline in the share of the self-employed workers in the total labor force. While employed workers have to resign at the mandatory retirement age set at age 60 (or age 55 prior to 1986 Employment Stabilizing Act for the Older Workers) from the firms they have been employed, most self-employed workers can continue to work until they are ready to retire, and, in fact, they tend to keep on working much later than employed workers. The decline in the share of the self-employed tends to reduce the labor force participation rate of the older workers. The second factor is the generous public pension benefits for the employed workers. A substantial proportion of employed workers stop working altogether at the mandatory retirement age, part of which can be explained by the generous public pension benefits. We will examine this effect in the next chapter when we discuss the labor supply behavior of the older workers.

In the second place, the labor force participation rate of the 55-59 years old has been rising since the second half of the 1980's. In the eyes of labor economists, this most likely reflects the effect of the government's policy to force firms to extend their mandatory retirement age to age 60, instead of age 55.

In the third place, during the second half of 1980's and the first half of the 1990's, in spite of the declining trend, the labor force participation rates of 60-64 years old and 65-69years old have actually shown some upward movements. Yashiro et al (1995) and Ogawa (1998) have attributed this temporary increase to supply responses of the older workers, to improved working conditions such as higher wage rates and abundant employment opportunities, reflecting the Bubble economy of the period.

While the Japanese labor force participation rates of the older workers have been declining, it is nevertheless true that their absolute levels have been, and still are, very

high compared with other developed countries (Figure 4). Furthermore, the situation is not likely to change soon. According to the "Cross-Country Comparison of the Life and Opinions of the Elderly", a survey conducted by Cabinet Office in 2001, the elderly of Japan and Korea set their ideal retirement age at much later ages than their American or European counterparts, revealing their preference to continue to work as long as possible. Seike and Yamada (2004), using date on OECD countries, tried to attribute some of this discrepancy between Japan and other countries to the sizeable difference between "Effective Retirement Age" at which one's actual retirement takes place and "Public Retirement Age" at which one starts to receive public pension benefits. However, they acknowledge that the public pension may have a limited influence on the international differences in LFPR between Japan and other countries, as the Japanese older workers (50-64 years old) show much higher LFPR rates than those of other countries with similar replacement ratios.

There are two other noteworthy developments in the labor market of Japan that are relevant to all workers; in the first place, the steep age profile of Japanese workers wage curves has been flattening for both male college and high school graduates. In Figure 5, we present the relative magnitudes of cash earnings of male college graduates for different age-classes in the last two decades. The base for comparison in each year is the earnings of 20-24 age-class which is set at 100. It is remarkable that in 1980, the 50-54 age class used to earn more than 3.5 times of the 20-24 age class, but, in 2000, the peak is almost 20% lower at less than 3.0, and the adjustment seems to be taking place without any sign of slowing down. It is also very interesting to note that relatively little has been written on this subject by Japanese labor economists.

In the second place, even in the upturn phase of the business cycle, there has been little recovery in the employment rate (Figure 6).

3. Labor Supply Behavior of the Older Workers

We have shown that, in general, the older Japanese workers have a very strong preference for work. Their actual labor supply behavior, however, is influenced by such factors as personal attributes including health status, mandatory retirement age, pension benefits, working conditions and wages, and the labor demand. In this section, we will summarize the findings of empirical researches on the importance of each of these factors.

Public Pensions

Of the three major public pension systems, there seems to be little doubt that the Employees Pension for the salaried workers has most significantly reduced the supply of the older workers. In 1961, Japan completed the universal coverage in its public pension system by introducing the National Pension program for the farmers, fishermen and the self-employed. In 1973, as the fierce inflation made inroads on the lifetime savings of the workers near retirement, the government introduced the wage indexation in the Employees Pension benefits, which literally doubled the costs of its benefits in less than a year. Recipients of the National Pension benefits were given price indexation protection in the same reform. In spite these new measures applied to the existing claims retroactively, the government did not contribute any new subsidies from the general tax revenue to the public pension funds, and, almost immediately, their cash flows started to deteriorate.

The first one to literally run out of money was the National Pension program whose fixed premiums and inflation-indexed benefits had been particularly vulnerable to inflation. The introduction of the Basic Pension program in 1986, which siphoned off the funds of Employees Pension program into National Pension program, saved National Pension program for the moment, but it also signaled the start of the numerous measures designed to shave off the benefits of the public pension programs. For instance, the start of the Employees Pension benefit payment has been moved from age 60 up to age 65 in two separate parts, respectively in small steps, and the benefit factor of the income related benefits has been reduced from 10/1000 to 7.125/1000 as well.

In spite of these cutbacks, the benefits of the Employees Pension program are still very generous, paying 173 thousand yen (or $1,650) per month on the average in 2002, which is about 55% in terms of replacement ratio. To qualify for the full benefits, they have to be fully retired; otherwise they will receive what we call as “partial benefits”.

The standard method to analyze the effect of public pension programs is to estimate a probit or logit equation on the (binary) work decision variable using the pension benefits with the other relevant factors as independent variables. Most of the empirical works by Japanese economists follow this method, but, the actual pension benefits should be considered as an endogenous variable under the partial benefit system. For instance, Seike (1993) and Seike and Yamada (2004) handled this problem by using the qualification variable which is a binary variable instead of the pension benefits, while Abe (1998), Ogawa (1998), Mitani (2001) have estimated the pension benefits if the

workers have chosen not to work from their personal attributes, and used the estimated benefits instead of the actual benefits.

Using the micro-data from such databases as Survey of Older Workers Employment, and National Survey on Family Life, Shimono and Tachibanaki (1994), Seike (1993), Yashiro and others (1995), Abe (1998), and Ogawa (1998) have looked into the ten year period from early 1980's to early 1990's, while Oishi (2000) and Seike-Yamada (2004) have used the late 1990's and 2000 data. In particular, these authors estimated the effects of the pension vesting and pension benefits on the labor force participation rate, wage function, and hours worked, and generally speaking, they have come up with the conclusion that the public pension exerted negative influence on the labor supply of the older workers. The size of this effect, however, differs considerably across these studies; for instance, Abe (1998) and Ogawa (1998) both used identical data set (Survey on Older Worker's Employment 1983, 1988 and 1992), but the effect of estimated full pension benefits is 1.3% in Abe, while it is 2.9 % for Ogawa. On the other hand, using qualification variable, Seike (1993) has found that qualifying for public pension benefits reduces the labor force participation probability by 13%, and subsequent study by Seike and Yamanda (2004) has found a similar negative effect which led them to conclude that the repeated reforms on partial benefits have not changed the older workers labor supply behavior.

Partial Benefits

If a worker already qualified for public pension benefits continues to work, he/she will receive reduced benefits according to the size of the employment income. It is called partial benefits and it is considered to reflect the authoritarian government policy to guarantee a certain level of income from employment and public pensions, taken together. The standard argument of an economist against this measure is that the reduction in pension benefits is a form of income tax on labor, which reduces the older workers incentive to work. At the moment, as the shares of the employed workers are about 40% in 60-64 group and 50% in 65-69 group, this system can be a very important factor in the labor supply of the older workers.

Most of the studies mentioned earlier take explicit account of the partial benefits and finds out that this system too is impeding the labor supply of the older workers. Moreover, in 1989, 1994 and 2004, this system has undergone major reforms to reduce implicit tax rates on labor supply. The analyses of Abe (1998), Iwamoto (2000), and Mitani (2001), however, made it clear that the 1989 reform did not have any noticeable

effect. As to the 1994 reform, while Mitani (2001) has found a significant effect, Seike and Yamada (2004) questioned the conclusion since income distribution of the qualified households are still heavily distributed around the level where the implicit tax of the partial benefits starts to operate.

Effects of Health Status

Another important factor that affects the labor supply of the older workers is their health. The Survey on Employment of Older Workers, fortunately, asks the respondents to evaluate their own health using a standard five choice set. Using this self-evaluation of health, such authors as Seike (1993), Tachibanaki and Shimono (1994), Oishi (2000) and Seike and Yamada (2004) have estimated the effect of health factors on the labor supply. They have found that, in their labor force participation rate, a 305 to 40 % reduction is accounted by the decline in health for 60-64 group, as a 405 to 50 % reduction for 65-69 group. In these studies, 1) health factor is more important than public pension in their effects on labor supply, and 2) the effect of the health factor seems to grow with age, affecting the workers in their late 60's more than the workers in their early 60's.

Effects of the Demand Side Factors

As we pointed earlier, during the second half of the 1980's and the first half of the 1990's, the Labor Force Participation Rates, including those of the workers in their early 60's, had shown an upward turn. This period, however, coincides with the Bubble economy and includes the public pension reform of 1986. As both of these factors could have contributed to the observed upward turn, several studies were carried out to measure and isolate the effects of these two factors. For instance, using 1973 to 1992 data of workers between the ages of 60 to 64, Yashiro and others (1995) have estimated the labor force ratios equation by OLS, and found that, relatively speaking, in the 1980's, the changes in the public pension benefits were more important, while in the 1990's, the demand side factors became more important. Also, Ogawa (1998) concluded from his own estimation, that of the change of 4.06% in the labor force ratio from 1988 to 1992, the changes in public pension can account for 1.86%, or 45.6%, and that increases in wages and the demand side factors have played more significant roles in this temporary recovery.

Regarding the demand side factors, a series of works by Seike (Seike (1993), Seike and Yamada (2004)) have looked into how mandatory retirement and severance pay

system of firms have affected LFPR. They have found that workers who have experienced mandatory retirement have their LFPR lowered by 20% point, but the gap gets narrower for workers in their late 60's. Furthermore, by computing the increase in severance pay as a result of one more year of continued employment, they have found that the marginal gains from employment are positive for workers in the first half of 40's but they turn negative for workers in the second half of 40's and 50's. Thus according to Seike, the severance pay system encourages the continued employment of younger workers, but it encourages the retirement behavior of older workers.

4. Effects of Public Intervention for Older Workers Employment

Since the middle of 1980's, as the government started to adop measures to reduce the public pension benefits, it also introduced policies designed to secure employment opportunities for the older workers to offset their future negative income shocks. Under the Employment Stabilizing Act for the Older Workers (1986), 1) the firms were obligated, to extend mandatory retirement age first to age 60 by 1998, and then to age 65 by 2013, and 2)they were given financial incentives to continue to employ workers after the mandatory retirement by government subsidies. Both of these measures were designed to protect the elderly from the interruption of income flows around the time they retire.

How effective were these measures in expanding the demand for labor of the older workers? Most empirical studies have agreed that they were effective in expanding the demand for labor of the workers between age 55 to 59. They also point out, however, that they have had rather limited effects for workers in their 60's.

First, as to the extension of mandatory retirement age to age 60, it started as an advisory measure in 1986, and, more than 90 percent of the business locations had complied with it voluntarily before it became mandatory in 1998 (Figure 7). From Figure 3, it is clear that the trend in LFPR of age 55-59 has changed from downward to upward since the middle of 1980's. Moreover, the workers inr this particular age group have experienced an increase in employment rate and a decrease in unemployment rate. Aritoshi (1999) have concluded that while some portion of these changes is due to Bubble economy, most of them are due to these public policy measures, as their LFPR continue to show diverging trend from the workers of other age-classes. These measures seem to have contributed to the rapid increase in the number of years employed by the present employer (8.6 years over the last twenty years) observed for the workers in the

55-59 group (Chuma (1997), Aritoshi (1999)).

Let us now turn to the second pillar of the Act, which is the policy to encourage frims to continue to provide employment to workers after their mandatory retirement age. This main target of this policy measure is the workers in their 60's. Kaneko (1997) was the first one to point out that these subsidies have increased the demand for these workers, but, Mitani (2001) concluded that their effect was limited to the period of 1988-1992 when the employment rate of workers in the 60-64 age group increased, but it disappeared in 1992-1996 when their employment rate fell back to the previous level. In contrast, the employment rate of workers in the 55-59 age group remained high in the 1992-1996 period. On the other hand, in the same paper, Mitani has examined the microdata from Survey on the Older Workers Employment (1996) which are collected from employment locations, and he found a strong correlation between the special measure dummy variables for the older workers and the proportion of older workers in their labor force. Special measures for the older workers include adjusting the amount of work, the shortening the working hours, and flexible work hours etc.. He has suggested that subsidies to encourage firms to offer flexible working conditions for the older workers may expand the continued employment of workers in their early sixties. ,

5. Substitution within Labor Market

So far, we have focused our attention on the factors that affect the supply and demand for the labor of older workers and examined the empirical studies dealing with the topics. We should not overlook, however, how they have affected the other workers in the labor market. Recently, the displacement of younger workers by the middle aged or older workers has attracted a lot of public and professional attention. In the prolonged economic slump of the 1990's, increases in the unemployed or under-employed young workers triggered a national concern. A new term "freeter" was especially coined for such under-employed young workers, usually between the age 15 and 34 working on one part-time job or more, but not as regular workers.

According to a White Paper on Labor Economics (2003) of the Ministry of Health Labor and Welfare, their numbers are estimated to be 2.09 million persons, which is not a negligible number in our declining labor force. Such under-employment in the younger period is expected to have such negative effects on our economy as the increased income

inequality and decreased formation and transmission of job skills. Due to the instability of their employment and their economic resources, some suggests that they are accelerating the decline in our fertility rates. At first, this phenomenon was primarily due to the decline in the preference for work among younger generation. But a series of works by Genda (2001, 2004) point to the possibility that it the stability of employment of middle aged or older workers that is depriving the employment opportunity of younger workers.

According to Genda, a) even among the so-called "freeters", most want regular employment, and he pointed out that when the firms were reported to start firing the middle aged or older workers due to their high cost in the economic slump of the 1990's, b) actually, the unemployment rates of the middle aged or older workers did not rise too much, but c) it is the unemployment rates of younger workers that rose sharply during this period (Figure 8). Using the microdata from Survey on Employment, and Sruvey on Employment Management, both collected from business locations, he points out that (1) firms and businesses where the middle aged or older workers have high shares have shown tendency to restrain new hirings, (2) firms that has either extended or planning to extend their mandatory retirement age to 61 also show the same tendency.

We can also point out that Kaneko (1997), and Mitani (2001), have shown that (3) the workers below the age 54 and the workers between the age 55-59 are both substitutes of the workers above age 60. Furthermore, Ohta (2002) and Noda (2002) have confirmed that (4) labor unions have negative effect on the hiring of fresh graduates. The wage profile in Japanese firms tends to be much steeper than other developed countries, even though it is becoming flatter over the years. Thus firms who has high proportions of middle aged or older workers should feel strong upward pressures in their labor costs, which cannot be easily relieved by firing them as the adjustment costs in labor force is prohibitively high in many cases. It may very well be the case where the only realistic way for these firms to control labor costs is by abstaining from hiring fresh graduates out of school. It is also conceivable that these workers are well represented by labor unions that protect their vested interests including their employment.

We should note, however, that comparative analyses on international macro level data have not confirmed such a tradeoff. On the contrary, Seike and Yamada (2004) cited earlier show that there is a negative correlation between the employment rate of older workers and unemployment rate of younger workers (Figure 9) and conclude that

these results need to be examined more carefully. From the latter half of the 1970's and through 1980's, in Europe, policies were introduced to reduce the unemployment of the younger workers by encouraging the older workers to retire earlier (Mitani (2001), Seike and Yamad (2004)). It is well-known that these policies succeeded only in retiring older workers earlier, while failing to make a dent in the unemployment rates of younger workers. In any case, for Japan whose labor force is bound to decline at a rapid rate, we may not have to worry about the unemployment of young workers, as they will eventually be absorbed into the labor market if they are hard-working.

6. Concluding Remarks

On the basis of Japanese empirical researches, we have surveyed the effects of public pension programs and public polices for the older workers employment on the demand and supply of older workers labor, and, how the labor market has been affected by these measures. In summary, we have found that 1) the public pension programs (including partial benefits) have indeed reduced the supply of labor of older workers, 2) extending the mandatory retirement age has worked to increase the demand for the labor of the older workers, but 3) the public policy measures to maintain the older workers employment may be depriving the employment opportunity of younger workers. As the labor force itself has now started to shrink, it is clear that we need a set of policy instruments that are less detrimental to the labor supply of older workers and more neutral to the labor demand for younger workers.

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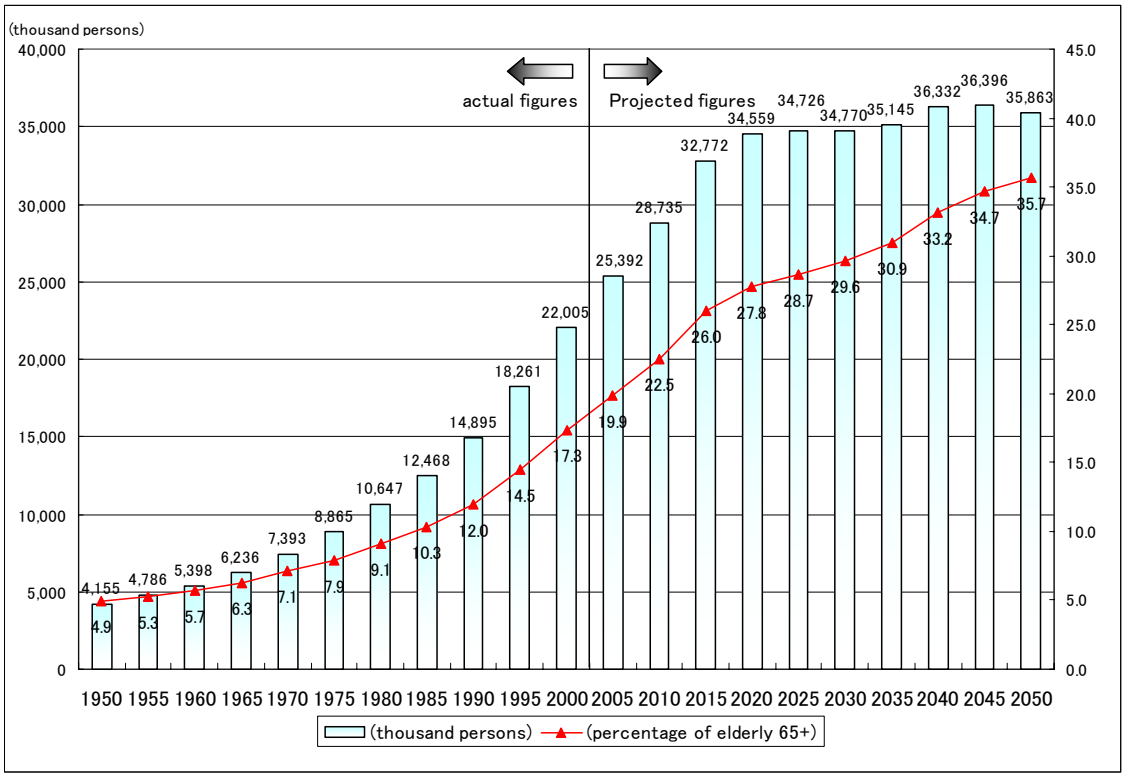
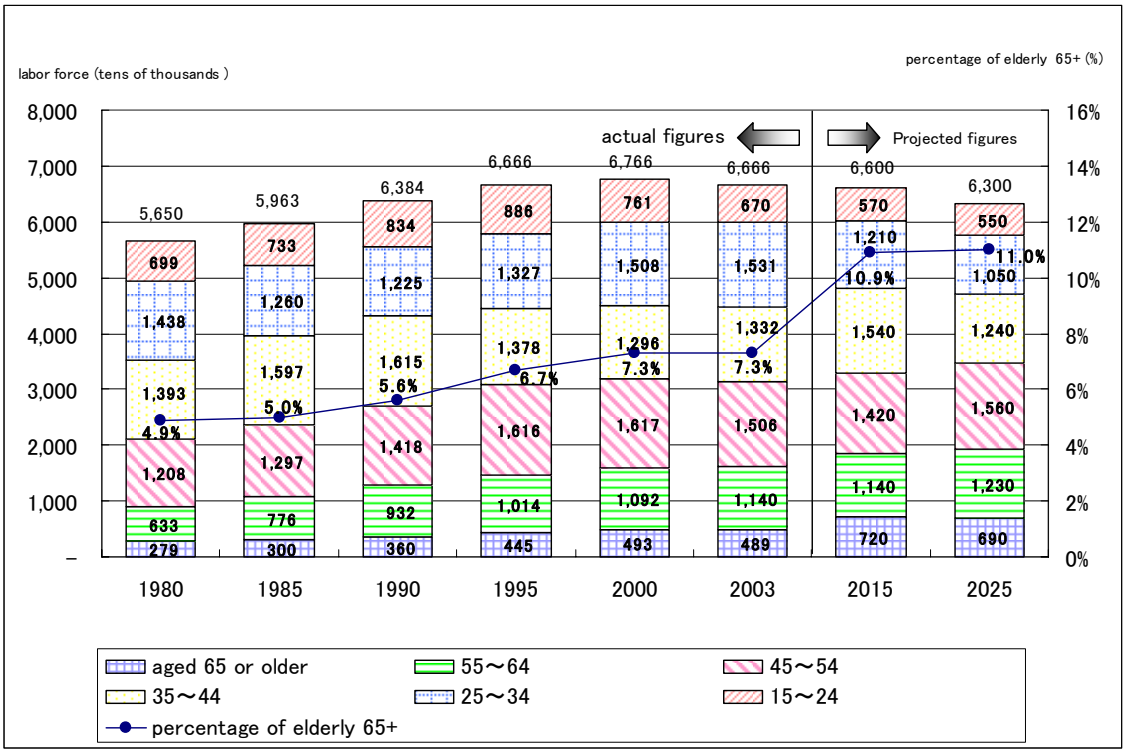
Figure 1. Changes in Aged Population Projections



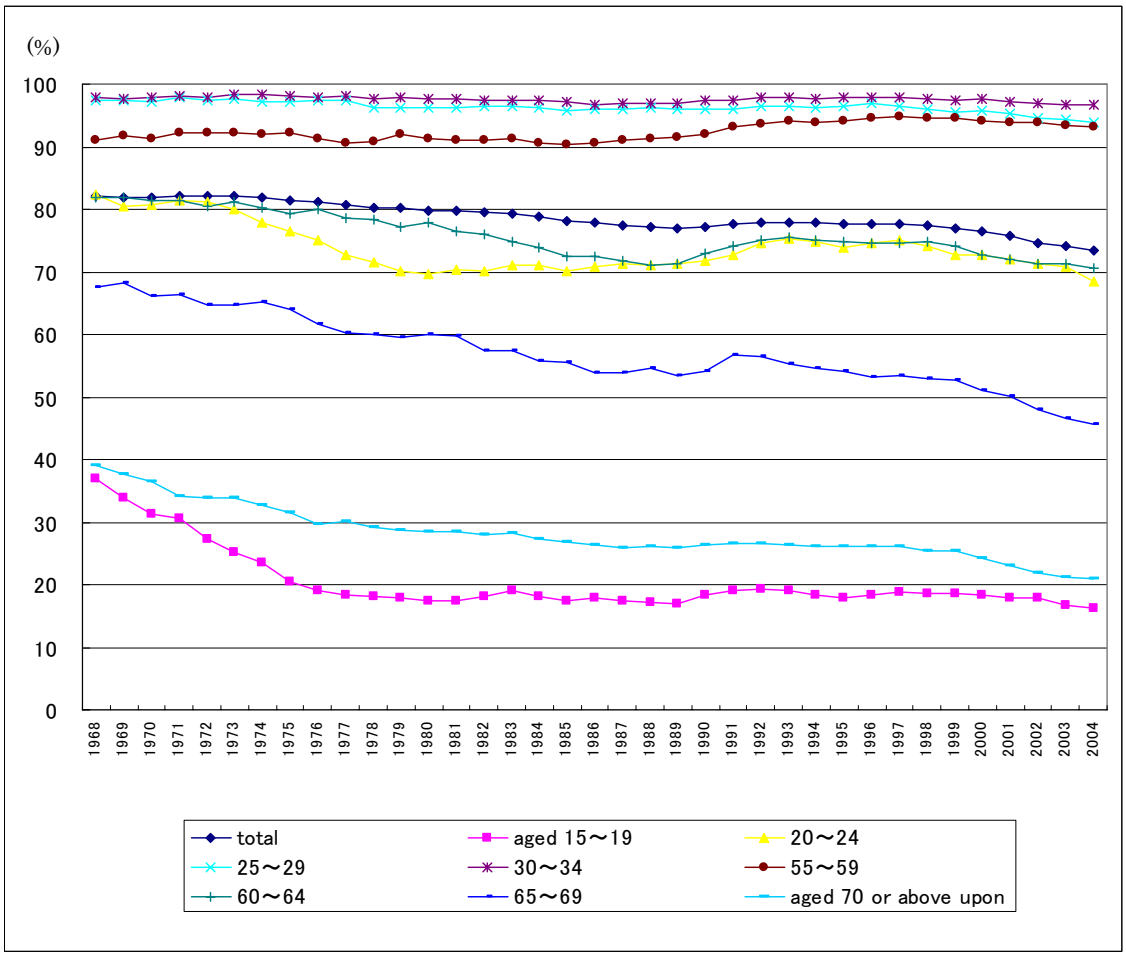
Source : Cabinet Office Japan, “Annual Report on the Ageing Society: 2004”

Figure 2. Trends and Future Prospects of Labour Force Population



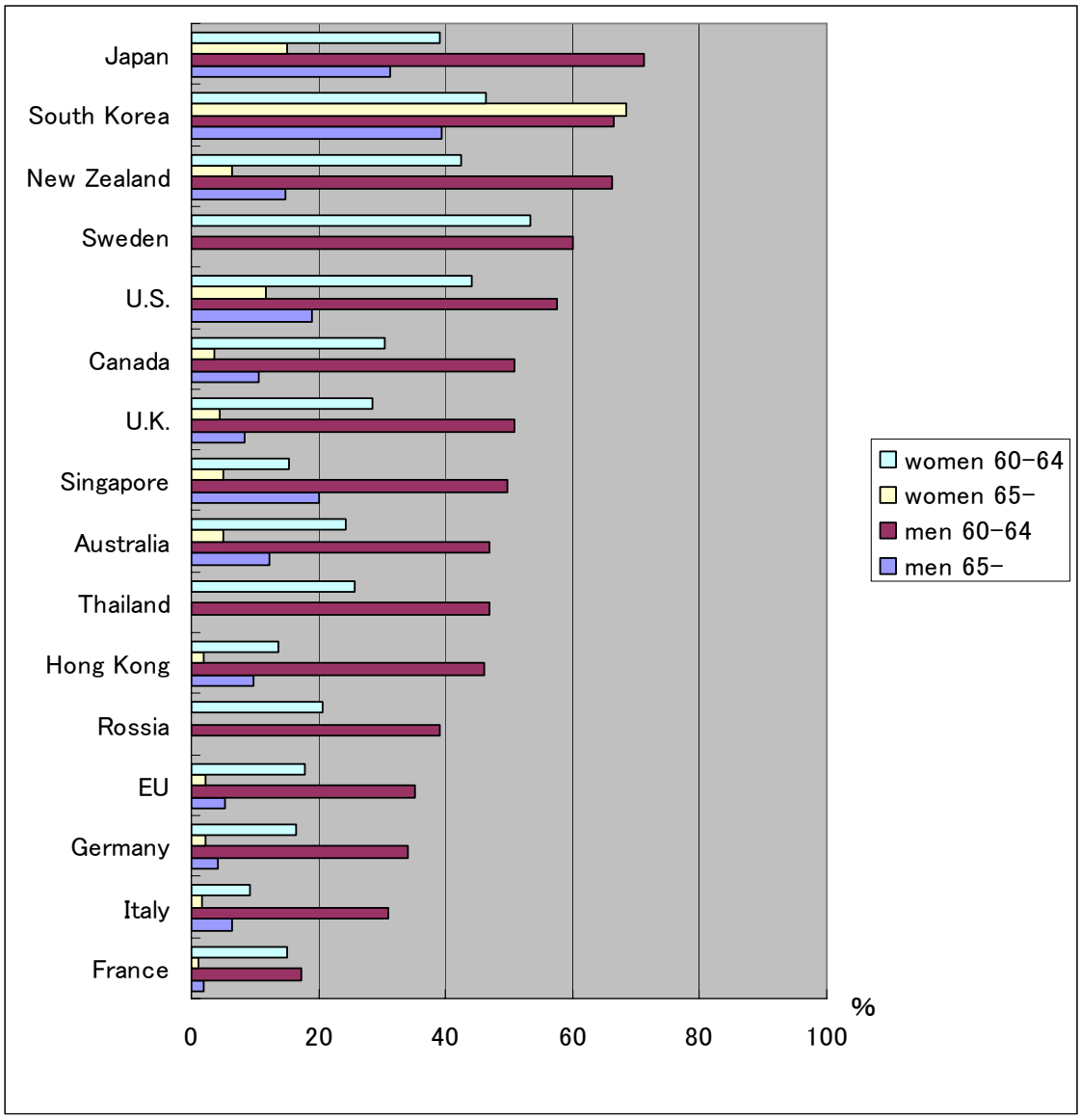
Source : Cabinet Office Japan, “Annual Report on the Ageing Society: 2004”

Figure 3. Labor force participation rate by age group for men



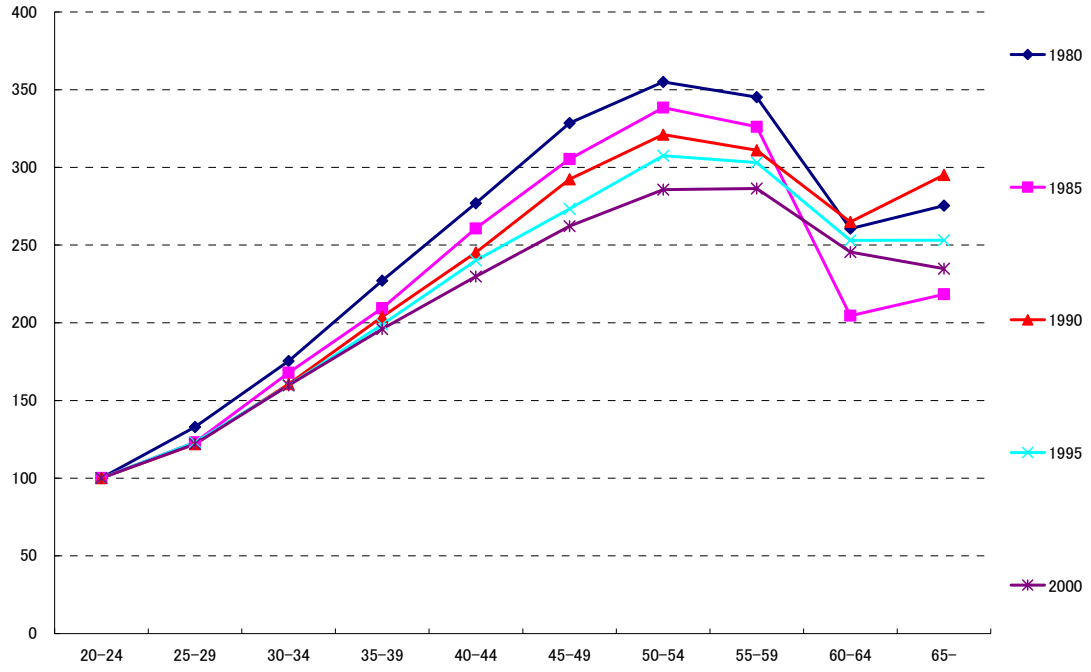
Source : Statistics Bureau, Ministry of Internal Affairs and Communications
"Labour Force Survey"

Figure 4. Labour force participation rate by countries



Source : OECD “Labour Statistics Portal ” and ILO “LABORSTA”

Figure 5. Wage profile for men

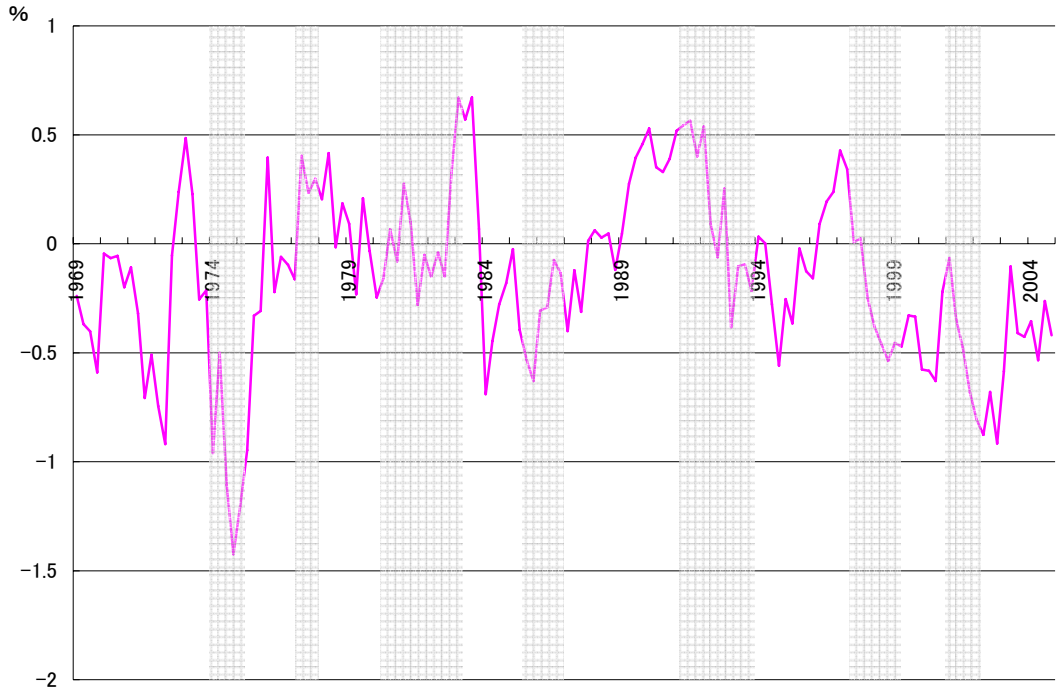


Source : Ministry of Health, Labour and Welfare "Basic survey on wage structure"
Cabinet Office Japan, "National accounts for FY2003"

1) Wage is contractual cash earnings, which includes overtime allowance, of the male workers with college degrees who are working for firms with more than 1000 employees.

2) The cash earnings of 20-24 age class are used as the base for comparison in each year.

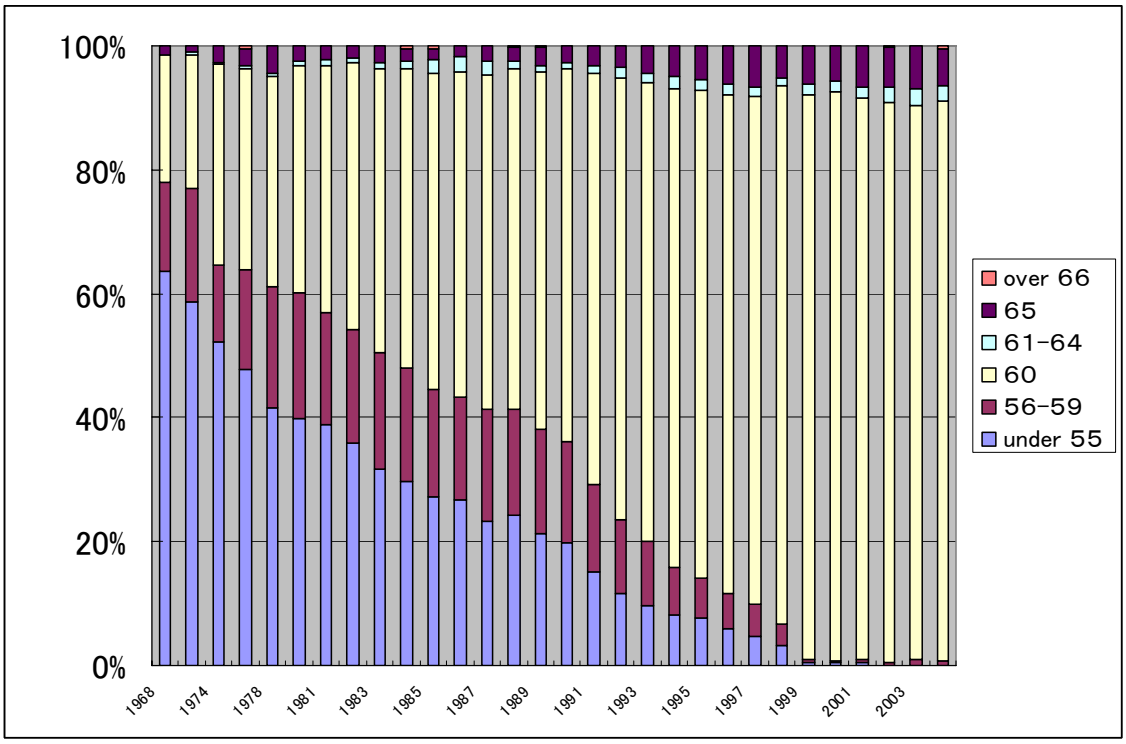
Figure 6. Business Cycles and the Changes in the Labor Force (% Changes from the same period of the previous year)



Source : Statistics Bureau, Ministry of Internal Affairs and Communications
"Labour Force Survey"

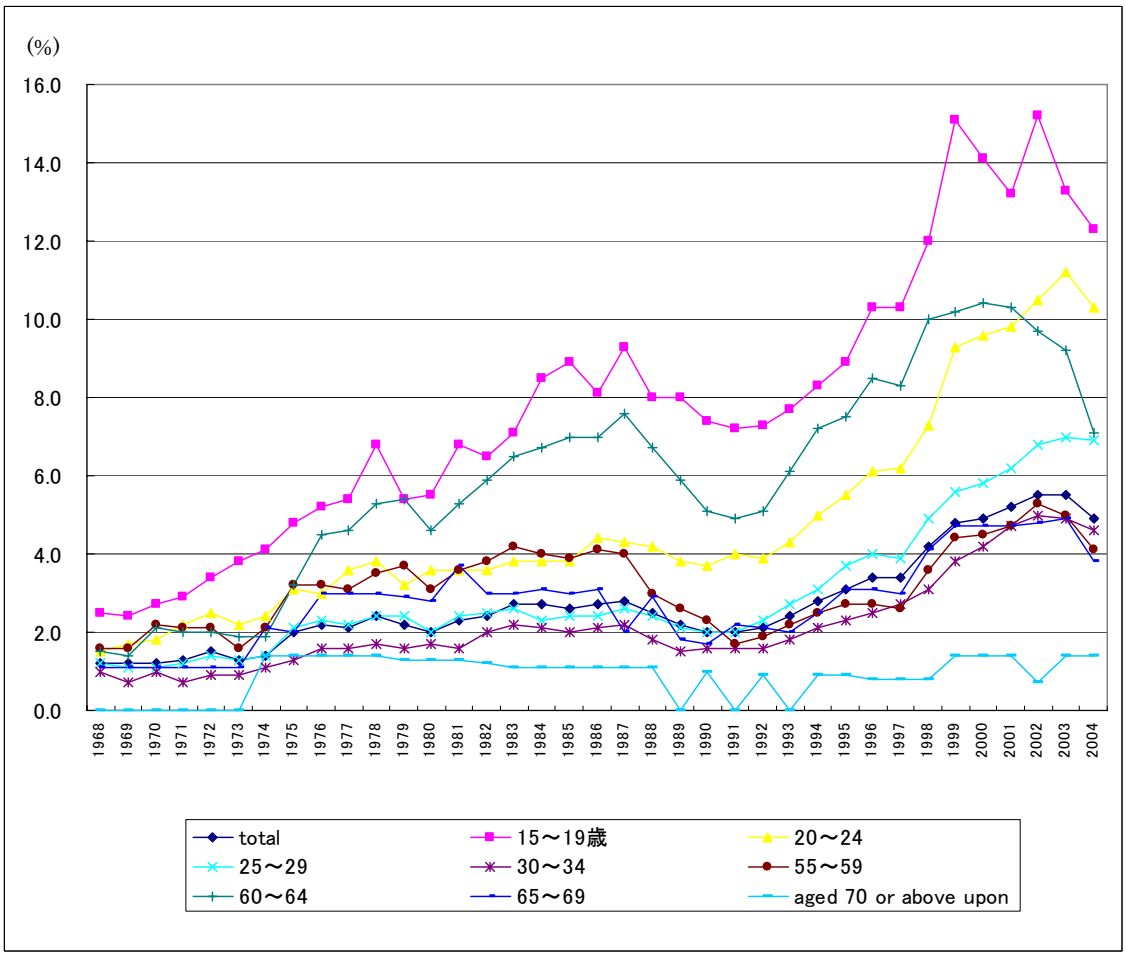
1) The shadowed portions correspond to recession periods.

Figure 7. Distribution of Mandatory Retirement Age (% of employment locations)



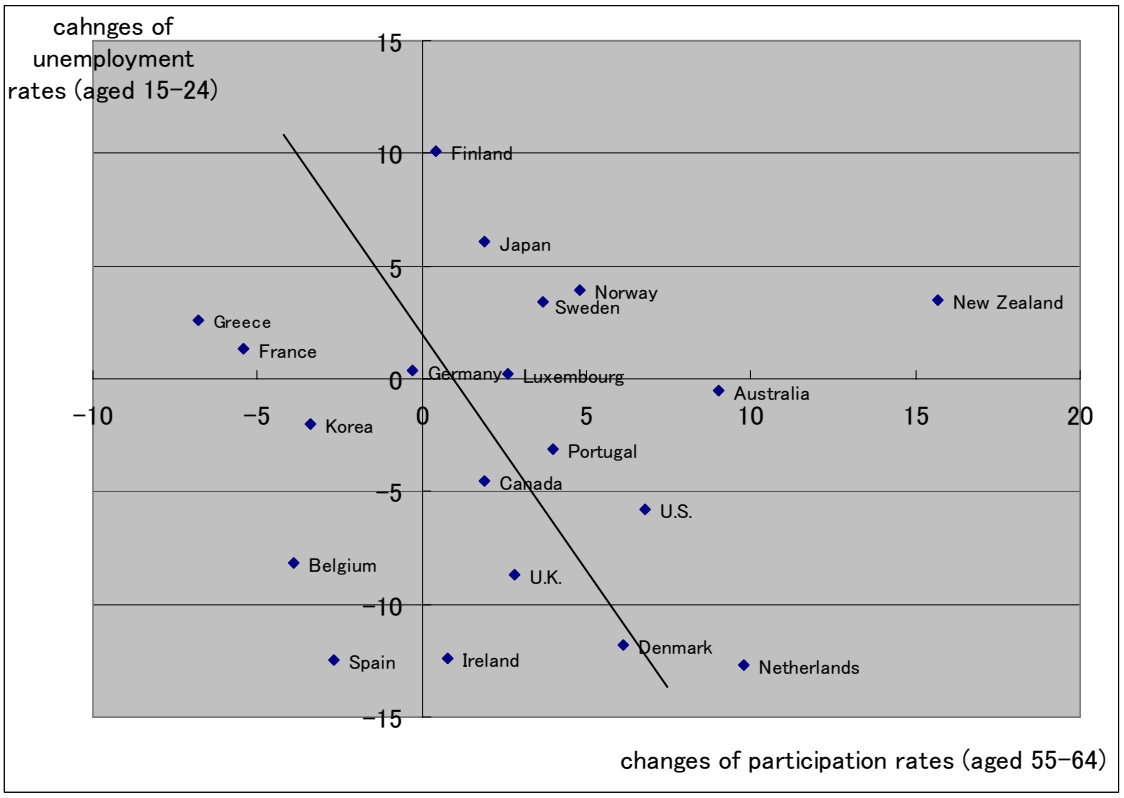
Source：Ministry of Health, Labour and Welfare “koyoukanrityousa”

Figure 8. Ratio of unemployed in Labor force



Source：Statistics Bureau, Ministry of Internal Affairs and Communications
"Labour Force Survey"

Figure 9. Participation rates (aged 55-64) and Unemployment rates
(aged 15-24)/1982-2002



Source : OECD “Labour Force Statistics 1982-2002”