

# Aging and Labor Market of Older Workers in Korea

Kyungsoo Choi

Fellow, Korea Development Institute

## 1. Introduction

One can easily expect that the share of older workers will rise and that of young workers will fall in the labor force, as a consequence of population aging. Accordingly, if the young and the old are not perfect substitutes, one can expect labor shortages in the labor market for the young and unemployment in that of older workers. However, in Europe, whose population is already significantly aged, youth unemployment is still a serious social problem, while early retirement, rather than unemployment, is common among the older workers. In most advanced countries, the research interest is focused on the determinants of early retirement among the elderly since it means pension payment burden for the government and policies to lengthen the working life—so called ‘active aging.’

Such facts indicate that labor market institutions would still be the major determinant of the elderly labor market in an aged society. Labor economists’ researches on the aging issue have also been focused on the labor market of older workers since the market is heavily influenced by policy and institutional settings such as public and private pension and welfare systems, mandatory retirement, and employment contracts.(OECD[1996]) Among the issues in the labor market of older workers, the transition from work to retirement has drawn special attention since the process is especially sensitive to those variables. Figure 1 succinctly explains why the transition has become an interesting research topic in advanced countries. Up to the 1960s and the early 1970s, retirement age of male workers in most OECD countries were above 65.<sup>1</sup> Since the 1970s ‘early retirement’ has become common, and in about a quarter of OECD countries the age dropped to below 60, and became a major cause that aggravated pension balance. Most researches point to the generous pension payment as the major cause that made early retirement affordable.<sup>2</sup> The obvious evidence is that the transition is concentrated at the pension entitlement age. Consequently, pension entitlement age has been adjusted upwards in most

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<sup>1</sup> For example, male retirement age in France was 66.1 in 1951 and 64.5 in 1960, but dropped to 61.3 in 1980 and to 59.6 in 1990. (Brondal and Scarpetta[1999])

<sup>2</sup> For a survey, see Gruber and Wise (1997). In addition to pension payments, availability of unemployment insurance benefit and disability payments before pension entitlement age is also noted as causes for early retirement. Quinn points out the accumulation of wealth by the elderly, which is made possible by the rise in real wage, as the major cause for early retirement in the U.S.

countries.<sup>3</sup>

However, in Korea research on the transition from work to retirement is still at a preliminary stage, data are very scanty. Even the transition is not so clear-cut from the data, either. Among 55 to 59 years old male workers employed in non-farm area, just 33.4% are regular workers, for whom retirement allowances are paid and 'retirement' can be clearly defined. Furthermore, the older workers themselves are rapidly changing in Korea, along with population aging. For this reason, I project the future labor force in the next section to see the changes in educational structure, farm/non-farm composition etc. among the older workers. In the following section,

## **2. Aging of the Labor Force**

In this section, I extend the labor force projection made in Hahn et al. (2002) to the year 2050 and evaluate aging of the labor force in the future. Such a long-term projection is inevitably based upon very strong assumptions, and the results may be far from accurate. But the purpose of such a projection is to evaluate roughly the effect of population aging on the age structure of the labor force.

The simplest way of long-term labor force projection is to assume that the labor participation rates by 5 year age groups do not change in the future.<sup>4</sup> However, this assumption produces too high a share of older workers in the labor force for the following reasons: One is that currently the population share of farming sector among the elderly is very high. Since virtually everyone is counted as employed and farming population is expected to drop quickly especially among the elderly as they pass away, using the current labor participation rate may bias the projection upwards. Other reason is the quick upgrading of educational level. Since the gap in the educational level between the elder and the middle aged is quite large in Korea and LPR among the low-educated is significantly higher, using the current LPR structure would also produce an upward bias.

In the labor force projection in Hahn et al.(2001), I assumed that there is no labor mobility between the farm and non-farm sector. As the farm sector population share is much higher among the elderly than among the middle-aged, the share of farm sector population among the elderly drops quickly under the no mobility assumption as the currently elderly passes away in the future. Table 1 summarizes the results. Among 55 to 64 years old, the farm sector population

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<sup>3</sup> In the U.S., the social security entitlement age has been raised from 65 to 67 in 1983. In Japan, entitlement age for Basic Pension has been adjusted from 60 to 65 in 1994. In Germany, compensation for late pension recipients has been raised, and in France, the contribution period for full pension benefits is lengthened from 37.5 years to 40 years in 1993.

<sup>4</sup> OECD(2004) used this assumption in its 'constant' (medium variant) scenario. Lee and Hong(2000)'s projection invoked the same assumption.

share is 21.0% in 2000, but it is projected to drop to 8.3% in 2010 and further to 4.3% in 2017. The reason for such quick drop is that the current share of elderly is very high among the farm population. As of 2000, roughly 25% of the population is over age 65. Beyond 2017, I assume that the farm / non-farm population share does not change.

Table 1. Farm Sector Population Share: Trend and Projection

(unit : %)

	1990	2000	2010	2017
Both sexes	35.7	21.0	8.3	4.3
Male	38.1	20.0	7.4	3.9
Female	33.7	21.9	9.2	4.6

Note: 1990, 2000 are actual statistics from KNSO, EAPS.

Source: Hahn et al.(2001)

Educational structure of future population is projected in a similar way. As the educational level has quickly upgraded in Korea, the proportion of highly educated is much higher among the young than among the old. As of 2000, the proportion among the population 15 years or older is 19.4%, where as among the 55-64 years old it is just 8.8%. To project the future educational composition, I derive the educational shares in four categories—less than high school, high school graduates, some college (1-3 year college education), and college graduates—by each age group from 2002 EAPS (Economically Active Population Survey) data set. Since the educational level is highest at 30 for men and at 25 for women, I assume that the educational level does not increase for men and women older than this age. For younger generations, I assume that their educational level reaches the highest level at 30 and 25 years old for men and women respectively. Such assumptions produce the following projection as reported in Table 2. In the future, the education level of the Korean population will be greatly upgraded. The proportion of highly educated, which currently stands at 19.4% as of 2000, will reach 30% within 15 years. Among the older population, educational upgrading will be even faster. Highly educated are 8.8% among 55-64 years old as of 2000, but it will reach 24.3% in 15 years and will continue to increase since then.<sup>5</sup>

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<sup>5</sup> The extraordinarily high proportion of highly educated among 55-64 in 2050 (47.6%) is a result of the projection method taken. Since the proportion is highest among men 30 years old and women 25 years old in 2002, and as I assumed that the proportion does not increase for later generations, the proportion is highest among the age group who are 25-30 years old in 2002.

Table 2. Proportion of Highly Educated among Population

A. 15 years or older

	2000	2010	2020	2030	2040	2050
Both sexes	19.4	25.4	30.0	33.0	35.6	38.5
Male	23.7	28.5	32.5	35.1	37.7	39.6
Female	15.5	22.3	27.5	30.9	33.6	37.5

B. 55-64 years old

	2000	2010	2020	2030	2040	2050
Both sexes	8.8	12.4	24.3	37.2	46.1	47.6
Male	15.0	18.3	32.9	42.3	45.6	45.9
Female	2.6	6.7	16.0	32.1	46.6	49.4

Note: 'Highly educated' means those with some college or more education.

To project the future labor force (the employed), I estimate the propensity to be employed by each 5 year age group using logit model. The variables used are constant, dummies for high school graduates, college graduates, farm sector, 'in school,' and age. To roughly summarize the Logit estimation results, dummy for high school graduates has a statistically significant positive sign for men 30-54 age groups, and dummy for college graduates has statistically significant positive sign for 25-29 age group, but in higher age groups the dummy had a negative sign, although the estimates are statistical insignificant. Dummy for farm sector had a positive sign for age groups over 50, and dummy for 'in school' variable had a negative sign. The reason that high school and college graduate dummies have positive signs for under 60 age group but have statistically insignificant values for over 60 age group seems to be that the more educated tend to retire around 60. Compared to middle school graduate group, the employment rate of the middle school graduate group is lower than that of the more highly educated group in the middle age, but as they continue to worker over 60 the employment rate is higher. Two causes can be thought of for such behavior: One is that for the low-educated group the 'retirement' is not clear, and then tend to work in their old age, although it may a low-wage, part-time jobs. The other is that in the farming sector, old workers tend to be counted as employed as they continue to work, where the share of the low-educated is larger.

The following table, Table 3, reports Logit estimates for employment and wage/salaried worker employment among the male, middle to old age groups in non-farm sector. Compared with high school graduates, college graduates tend to remain employed longer. Among the 45~54 years old, estimated coefficients of both high school graduates dummy and college graduate dummy have positive signs, but among the 55~64 years old, high school graduates dummy has negative value, while college graduate dummy still have positive sign—which suggest that employment rate of high school graduates among 55~64 is lower compared to the

reference group, the lowest educated. Such difference is due to differences in wage/salaried job employment. College educated tend to remain employed in those jobs up to 60 but high school graduates tend to leave those jobs in the middle of their 50s. (See Table 3.)

Table 3. Logit estimates for employment among the older workers: Male, non-farm

	Ages	45~54	55~64	55~59	60~64
Employment	College dummy	0.607	0.107	0.330	(-0.074)
	High school dummy	0.517	-0.077	0.067	-0.215
Wage/salary employment	College dummy	0.461	0.079	0.217	(-0.089)
	High school dummy	0.016	-0.228	-0.208	-0.251

Note: In parentheses are statistically insignificant values. Other estimates are statistically significant at 1% significance level.

Source: author's estimation result using KNSO, EAPS(2002) data sets.

For women, dummy for farming sector have positive sign in groups 40 years or older, and 'in-school' dummy have negative sign. Noteworthy are the coefficient estimates for high school graduate and college graduate dummies. Among the twenties, the dummies have positive signs, whereas over 30 years olds they have negative signs—the dummy for college graduates has statistically negative signs in the second half of the 30s to the 40s, and that for high school graduates has negative signs in the 40s and the 50s age groups. Such reversal seems to reflect the change in the female labor market conditions. In the past, employment rate was higher among the female low-educated than among the highly educated, since the latter group had faced low market wage and higher opportunity cost. But recently among the 20s the employment rate is the highest among the highest education groups, as job opportunity and wages for them rise quickly. Hence, it seems that such a reversal of employment rates among different female educational groups reflects the generational differences rather than a specific profile by ages. As the highly educated young women have much more labor market experience than their seniors, employment among the middle-aged female is very likely to increase in the future.

Long-term employment projection is made using the Logit parameter estimates. Logit estimation is conducted using 1987 to 2002 EAPS data sets, and if the estimated parameters have clear trends, it is assumed that such trends will continue in the future up to 2017. Beyond 2017, for which projections are not made in Hahn et al.(2001), the employment rates of all age groups are assumed to be constant until 2050. Up to 2017, employment rates of male under 60 age group is expected to rise as the general educational level among them increase. In above 60 groups, educational upgrading does not affect employment rates, since the variables do not have any significant effect on employment rate. The employment rate is projected to drop as the ratio of farm sector population decreases. For female group, it is assumed that among the 30s and 40s

age group education dummies will have positive signs in the future, unlike the current estimates since the trend of such reversal of signs can be recognized as very strong. As a result, female employment is projected to rise as the educational level rises. Above 60 age groups, employment rate is projected to drop for the same reasons as in men—the drop of farm sector population.

Table 4. Long-term Projection of the Employed

		2000	2010	2020	2030	2040	2050
Employed (thousands)		21,156	23,831	24,178	22,812	20,301	17,696
Growth rate(%)		3.5	1.2	0.1	-0.6	-1.2	-1.4
Composition by age groups (%)	15~24	9.0	6.4	7.7	6.5	6.1	6.6
	25~49	65.8	62.1	56.6	52.6	51.5	48.6
	50~64	19.8	25.2	29.3	30.5	29.6	31.3
	65+	5.0	6.3	6.4	10.4	12.8	13.5

Table 4 summarizes the projection results. The growth rate of employment is projected to turn around during the 2020s to the negative values. The average employment growth rate was 3.5% during 1990 to 2000, but it is projected to drop to 1.2% during 2000 to 2010, and further to 0.1% during 2020 to 2030. From the 2030s, the size of employment is projected to decrease at a faster speed than the population growth rate. The reason is that as the share of older population increase, the size of employment is decreased not only by the reduction in population but also by the increase in inactive population.

In the projection, it is assumed that all workers retire above the age 80. Despite the assumption and reduction in farm sector population, the ratio of 65 years old and above among the employed is expected to increase from 5.0% in 2000 to 10.4% in 2030, and 13.5% in 2050. If the constant labor participation rate assumption is applied, the projected share of the elderly among the labor force is much greater than this. According to OECD(2002), the share of the elderly workers (65+) is projected to rise to 13.4% in 2030, and to 17.8% in 2050.

Not only the share of the elderly workers but those of the older workers (50~64 years old group) is expected to rise quickly. Their employment share was 19.8% in 2000, but it is projected to increase to 30.5% in 2030, and 31.3% in 2050. (Table 4) On the other hand, employment share of the young workers in their ages 25 to 49 was 65.8% in 2000, but expected to drop to 52.6% in 2030, and to 48.6% in 2050.

The projection result is a mere extrapolation result that does not fully consider the labor market condition change. If early retirement becomes common in the future as the national pension system matures, employment rate among the elderly may become much lower than this projection result. But without a large institutional change, it can be predicted that labor supply of the older workers will rise significantly in the future along with the population aging. In

addition to such changes in magnitudes, the projection result implies that labor market of the older workers in the future will be quite different from the current one. The older workers in the future will be much highly educated group compared to the current group, and as a result the share of wage/salaried employment will be much higher.

### **3. Retirement Behavior of the Elderly Workers**

This section reviews retirement behavior of the elderly workers. In advanced countries, as the retirement ages drop since the 1970s and as the pension payment increases, research focus has been on the factors of retirement decision and timing of retirement, and the transition path from work to retirement. The objective has been to find way to extend working life (so called ‘active aging’) so that income security of the elderly and pension balance improvement can be attained simultaneously.

On the other hand, in Korea, research on retirement decision is still in a preliminary stage. Chang(2002) has estimated average retirement age of the Korean workers using labor participation rate statistic by age groups and labor force life table method, and obtained an estimate of 63.8 for men and 58.7 for women as their expected retirement age for workers at age 45. <sup>6</sup>According to her study, the retirement age did not drop and slightly increased during the last 10 years in Korea unlike in advanced countries. The increase in retirement age is due to the extended working in the farm sector, and there has been no significant change in the non-farm sector. In her analysis based upon a special supplementary survey of KLIPS (Korea Labor Institute Panel Survey) data sets, the results were inclusive due to lack of observations.<sup>7</sup> In the supplementary survey, ‘retirement’ is determined by the subjective decision of respondents—specifically those who have answered in the positive to the question ‘Have you retired?’ are construed as ‘retirees.’ According to her view, the question is likely to have been interpreted as the retirement from the major life-time job by the respondents. The supplementary survey data showed that highly educated men have higher tendency to be in a ‘retirement’ state, or to experience a transition that corresponds to ‘retirement.’ But analysis on determinants of retirement decision and timing has not been conducted due to ‘lack of observations’ problem.

In the same study, Chang (2002) also analyzed retirement path using a constructed panel data set produced by matching observations included in the monthly survey data set of EAPS during

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<sup>6</sup> An OECD study (OECD[2004]) reports Korea’s male retirement age as 68.2 during 1997 to 2002, which is higher than all other OECD countries except Mexico, Japan, and Iceland.

<sup>7</sup> The ‘Health and Retirement’ Supplementary Survey of KLIPS, the 4th wave (2001) only 596 among 2,684 has experienced ‘retirement,’ and among them 470 are men and 259 are in their sixties. Hence the survey has a severe ‘lack of observations’ problem.

June 1998 to December 2002. The result suggested that wage/salaried workers tend to choose transition to out of labor force, while the self-employed choose working hour reduction, and regular workers experience spells of out of labor force in their transition to retirement path.

Lee (2002) used the Census data set in analyzing the labor market of the elderly. He shows that the major cause of the rise of old-age labor participation rate in Korea during the last twenty years, contrary to those in advanced countries, is the rise in participation rate among the older workers in the farm sector. The rise is due to reduction in young and middle-aged labor force in the farm sector, which suggests that the old-age participation rate in Korea will drop in the future as the elderly population in the farm sector disappears.

As the existing study shows, 'early retirement' among the elderly is not conspicuous in Korea. Thus, in Korea, research interests have been focused on employment instability of the older workers rather than their early retirement up to now. One of the reasons is that the National Pension Scheme, which is the only public pension scheme that covers all workers, has not been matured yet, and the number of pension recipients and the benefit level is not significant yet. On the other hand, job insecurity among the older workers has been more seriously felt especially after the economic crisis that broke out at the end of 1997. Currently, public attention is more focused upon policies for employment promotion of the older workers, such as extension and regulation of mandatory retirement age, de-regulation of employment contracts, flexible wage schedule, or subsidies for older workers. Yet, not much is known about the retirement behavior of the elderly. Hence, in this section, I review the existing cross-section data sets, and try to see what kind of inference can be made on the retirement decision of the elderly.

The National Pension Scheme, which is the only public pension scheme that covers all workers nationwide, was introduced in 1988. When it was first introduced in 1988, the coverage was limited to private sector employees and the insured was 4.4 million, which is about a quarter of the labor force. Since April 1999 the coverage was extended to include all employees and self-employed. Currently, as of 2004, the number of insured is 17.2 million, representing about three quarters of the labor force. Under the scheme a worker is given a 'full' old-age pension eligibility once they reach age 60 and has a contribution record of at least 20 years. Workers aged 60 and older with less than 20 years' contribution records still eligible for a pension at a lower benefit level. Those with at least 10 years' contribution records are eligible for a 'reduced' old-age pension, and those with at least 5 years' records are entitled to 'special' old-age pension. For those with full eligibility, the replacement rate is currently 60% for those with contribution records of 40 years.

Since the annual pension benefits calculation formula, for the full eligibility, is given as  $P_1 = 1.8(A+B)(1+0.05n)$ , where A is 'average monthly income of all insured,' B is that of the individual and n is the number of years in excess of 20, for those with full eligibility with

average monthly income and with 20 years of contribution, the replacement rate would be 30%. And since the 'reduced' old-age pension annual benefit formula is  $P1=1.8(A+B)(0.475+0.05n)$ , where  $n$  is the number of insured years in excess of 10, the replacement rate would be 7.1% for them. Thus, in the near future the effective replacement rate is not so high, and the work disincentive effect is not expected to be significant.

Figure 2 shows the trend of labor participation rates for men during 1987 to 2002. Up to 54 years old, the change in labor participation rate is not significant, among the 55 to 64 years group, labor participation rate has been increasing steadily until 1997, but dropped significantly in 1998 during the economic crisis period, and has not fully recovered yet. Participation rates among the 70s have increased but the increase is in the farm sector, and not significant change can be observed in the non-farm sector. (Figure 2. Panel B) The largest changes are observed among the 55 to 64 years old group. In this group, labor participation rate rose by the largest margin during the 1990s, and the margin of drop was also largest during the economic crisis period, where the changes are larger in 60 to 64 years old group than in 55 to 59 years old group and in the non-farm sector than in the farm sector. Since this age group is where most of 'retirement' is expected to occur, the evidence can be interpreted as the retirement behavior is strongly affected by labor market conditions.

To see the changes in a greater detail, Figure 3 depicts the changes among the male, non-farm 55 to 64 years old by ages. To simplify the figure, I deleted some of the ages in Figure 3. The figure shows that changes in participation rates are greatest among the 58 to 63 years old. Hence, it can be concluded that the labor participation behavior of the late 50s to the early 60s are particularly sensitive to the labor market conditions. From the figure it can be inferred that labor market conditions are likely to have a large influence on the retirement decisions of the elderly. However, Figure 3 does not show the specific ages of retirement nor the distribution of them.

To see the retirement more directly, one can follow up the participation statistics for each cohort group. Figure 4 shows the participation rates for each cohort group born in 1920 to 1945 constructed from 1987 to 2002 EAPS data sets. In the figure, the participation rates drop the quickest between 55 to 64 years old. For the 1935 birth cohort, for whom participation rates from 55 to 64 years old can be traced, the participation rate is 84.9% at 55, 75.5% at 60, but 51.7% at 64, which suggest that more people retire (to out-of-labor-force) between 60 to 64 than between 55 to 59.

Table 5 enlists the statistics used to plot Figure 4. Read vertically, it can be seen that at the age of 55, the participation rates are higher among the later cohorts. But the participations rates of over age 60 are in decreasing trends. That is, 'retirement' becomes more clearly seen in the elderly labor market. Of course, the effect of economic crisis in 1998 on the elderly labor market can be clearly recognized as can be seen from the blocks marked as shaded areas in

Table 5. For all cohort groups, the participation rate dropped by a large margin in 1998, and on the recovery trend since then but has not fully recovered yet. However, the drop in participation rate in 60 years or older groups seems to be a long-term trend. For 1942 cohorts, who are pretty away from the crisis, the participation rates at 59 and 60 years old is not as high as the previous cohorts. For 1931~33 cohorts participation rate dropped to under 60% around 63~64, but for 1940 cohorts they dropped at 62. The detrimental effects of the economic crisis on the elderly labor can be clearly recognized, but the change in the market—educational upgrading and larger shared of wage workers—also makes the ‘retirement’ more common in the elderly labor market.

Table 5. Male Labor Participation Rates by Cohorts (Non-farm)

age birth year	55	56	57	58	59	60	61	62	63	64
1930			72.5	69.4	69.6	62.9	57.8	54.4	53.3	55.3
1931		75.6	73.2	72.1	69.1	67.9	65.1	61.1	59.1	52.6
1932	78.0	75.3	75.8	74.5	72.9	68.8	64.8	64.1	63.1	57.2
1933	81.8	81.7	79.6	79.0	74.6	66.4	65.7	63.3	62.2	58.6
1934	85.1	84.8	84.5	82.9	76.0	72.4	71.3	67.3	63.6	<b>51.7</b>
1935	84.9	83.0	80.2	79.1	74.9	75.5	70.6	65.5	<b>58.7</b>	51.2
1936	86.6	86.7	82.2	79.8	78.2	73.3	71.3	<b>56.7</b>	50.9	44.4
1937	85.0	83.8	82.3	78.6	76.9	73.8	<b>63.5</b>	56.7	50.1	51.1
1938	86.5	83.6	81.8	79.4	77.4	<b>63.9</b>	59.1	56.0	51.3	50.7
1939	85.9	83.4	80.0	76.2	<b>70.1</b>	64.8	58.1	54.5	55.0	
1940	85.4	80.7	84.0	<b>77.9</b>	70.8	65.3	63.9	59.6		
1941	87.8	86.6	<b>82.1</b>	79.4	70.1	66.7	64.1			
1942	88.2	<b>80.8</b>	78.1	72.0	68.1	66.8				

Note: Shaded areas correspond to 1998 during the economic crisis.

Source: constructed from EAPS data sets, 1987 to 2002.

Another evidence for growing importance of ‘retirement’ in the elderly labor market is the difference in the participation pattern between the highly educated and low educated groups. Figure 5 depicts the participation rates by ages of 1930 and 1940 cohorts of more than high school education group and less than high school education group. As the general educational level of this cohort is not high, I define high education group as those with more than high school education instead of some college education. As can be seen from Figure 5, among the 1940 cohort, high education group have higher participation rates up to 58 years of age, but the difference in participation rates among educational groups becomes smaller beyond this age, which means that the drop at around age of 58 is quicker among the high education group. Among the 1930 cohort, the drop is not so clear since the ages of cohort covered in the data sets are already high enough (older than 57) and the difference is not so large.

Another reason for such clear transition from work to inactivity (retirement) is the rise in wage employment. Figure 6 shows that the difference between male, non-farm employment

rates of 1930, 1935, and 1940 cohorts. The figure shows that the employment rate of 1935 cohort is higher than that of 1930 cohort but drops much quicker around age 63. For the 1940 cohort, the effect of economic crisis makes its employment rate to drop at a much earlier age, around 58. The difference is mostly due to the difference in retirement behavior of the wage workers among them. Figure 7 shows their employment rate by wage employment and non-wage employment. Each employment rate is computed as a ratio of employment to the population. In Figure 7, the employment rates of the three cohorts do not show much difference in their non-wage employment rates. Most of the difference is due to their difference in wage employment rates. Thus, along with educational upgrading, rise of wage employment can be considered as factors that make 'retirement' more important in the labor market of older workers.

The average retirement age of the Korean workers are 56.6 as of 2001 in establishments with 300 or more workers according to a survey by the Ministry of Labor of Korea.<sup>8</sup> The median retirement age is 56, and the mode value is 55.<sup>9</sup> A survey by managers association in 1998 shows a similar result. Average retirement age is 55.2, where retirement at 55 applies to 88.3% of all establishments included in the survey. But the share of employment at establishment with 300 or more workers are only 11.5% of wage workers, or 7.4% of all workers as of 2002.

The analysis in this paper has pointed out that in Korea the retirement age is around the late 50s to the early 60s, but the transition from work to retirement is not clear since the share of wage employment is still small. But as the share rises with labor demand growth and educational upgrading retirement may become more important in determining labor market behavior of older workers in Korea.

In contrast, OECD (2002) emphasized the instability of the employment status of the elderly in Korea. One of the evidences is the patten of wage profile that turns around at the mid 40s. Unlike the pattern in advanced countries, where the wage profile continue to increase up to the early 50s or becomes flat at that age, the wage profile in Korea shows a rather sharp fall beyond the age of the mid-40s. OECD(2002) interprets such a curvature as an evidence of job insecurity of the elderly and middle-aged workers. As the workers in high wage jobs, or in large establishments, lose jobs beyond the mid-40s, the average wage schedule turns around and begins to fall beyond the age. However, such a result is due to the fast upgrading of educational level among the Korean workers, and the evidence can not be directly interpreted as such. Figure 8 shows the hourly wage schedule calculated from the Survey Report of Wage Structure (Ministry of Labor). The wage profile for all workers reaches its peak at the mid-40s, but those for college graduates continue to rise until the mid 50s, and that for less than high school

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<sup>8</sup> The average is taken with respect to the number of workers. By number of establishments, the average retirement age is 56.7.

<sup>9</sup> The retirement of 55 applies to 46.4% of establishments and 45.5% of employees in the survey.

graduates begins to fall in the 50s. The latter result is due to the fact that even among the less than high school graduates group, the older group is much less educated than the younger group. For example, even among the less than high school group, the share of middle school is larger for the older age groups. Hence, in simple comparing the age-average wage profile, one is subject to the fallacy of composition.

To keep the educational level constant and compare the wage-age profile, one needs to review the wage-age profile by cohorts. In Figure 9, I plot the real wage-age profile by cohorts using the Survey Report of Wage Structure data sets from 1982 to 2001. as the figure shows the real wages grow with age for all cohorts. However, the average real wage level of successive cohorts are higher than their seniors. Also, the wage-age profiles are flatter in later cohorts. Although the rise of real wages when they are young seems to be steeper, for example, the wage profile of 1940 cohort becomes flat since their early 50s, but for 1950 cohort it becomes flat in their late 40s. and among the 1955 cohort the rise is much slower even in their 40s. Hence the characteristic shape of the Korea age-wage profile, which begins to decrease after the peak in the mid-40s should be interpreted as an evidence of widely different educational composition among different cohorts and flattening wage profile, rather than direct evidence of job insecurity among the Korean workers.

#### **4. Summary and Conclusion**

Regarding the issue of population aging and labor market, there are some discrepancies between the discussion in advanced countries and in Korea. In advanced countries, the central issue is the 'early retirement' of the elderly. Early retirements of the elderly are common to all countries, probably except for Japan, although there are some different views on the causes: In European countries, generous pension and other social security are pointed to as the major causes, whereas in the U.S., wealth accumulation of the elderly which makes retirement affordable for them are pointed. But in Korea, job insecurity among the middle-aged and elderly and long working life of the elderly draws more social attention. Common are the fact that the labor market of the elderly workers are central in the discussion. Hence, in the advanced countries, researches are focused on the pension scheme design that may reduce the work disincentive effect and lead to 'active aging,' whereas in Korea, policies for job security and employment promotion are called for. Thus, in Korea, the topics that are discussed as policies preparing for aged society in the labor market are whether mandatory retirement age should be extended or regulated, or whether the elderly employment should be subsidized or not, etc.

In this paper, I project the labor market from a longer-run horizon to see the future change and challenges in the labor market. According to the projection results, the labor market in the

future will be quite different from the current one. The share of the elderly among the population and the labor force will be much greater than now. Also, the elderly workers will be much different. The farm sector employment will become much less important, and most of the elderly employment will be in the non-farm sector. The elderly workers in the future will be much higher educated, and wage employment will be much more important than now.

Since the income replacement rate of the National Pension Scheme is set pretty high, that is, at 60% for an average worker with a contribution record of 40 years or more, the work disincentive effect of the pension is expected to be significant, if we refer to foreign countries. However, as the scheme has been introduced as late as in 1988, and its coverage was extended to the self-employment as late as in 1994, some more time span would be needed for the scheme to mature. For example, for those who have been insured since 1988, the replacement rate will be 30% if they become eligible (over 60 years old) for pension after 2008. Thus, the work disincentive caused by pension payment would not be strong in the near future. However, in the longer run, the pension is expected have a significant work incentive effect combined with retirement allowance, which is regulated by law in Korea. The current National Pension Scheme is unsustainable in the long run, having been designed as a low contribution-high benefit system, and will be subject to a parametric reform. But even at a lower replacement rate, some work disincentive can be expected although the magnitude can not be evaluated at the current stage.

Sometimes the shape of the Korean wage-age profile has been suggested as reflecting the job insecurity of the Korean workers. Unlike in advanced countries, where the wage profile remains flat or begins to decrease slightly during the fifties, the Korean wage profile starts to fall at a much earlier stage in life, during the mid- forties. If such pattern is a result of job insecurity among the better paid workers, that is the average wage falls because high wage employees lose their jobs, the wage profile can be interpreted to suggest job insecurity among the employees. However, such results may be due to peculiarity in the Korean labor market. Due to the rapid economic growth the educational level has been upgraded at a pace much faster than those in the advanced countries. As a result, the young and the middle-aged are much highly educated than the elderly, which produces falling average wage profile among the fifties. Age profiles of wages by cohorts do not drop significantly in real terms.

The labor participation rate among the early sixties has significantly dropped since the economic crisis in 1998, while that among the fifties have increased. That is, retirement—the transition from work to economic inactivity—around the late fifties and early sixties are becoming clearer among the elderly workers. A major cause of such change is the growing share of wage workers among the elderly. As they become better educated, more have wage/salaried jobs and their working life is more characterized by retirement. Such change is expected to proceed further in the future as the share of highly educated in non-farm sector increases. Thus,

although early retirement is not observed currently among the elderly workforce, one can not expect that early retirement does not apply to Korea in the future.

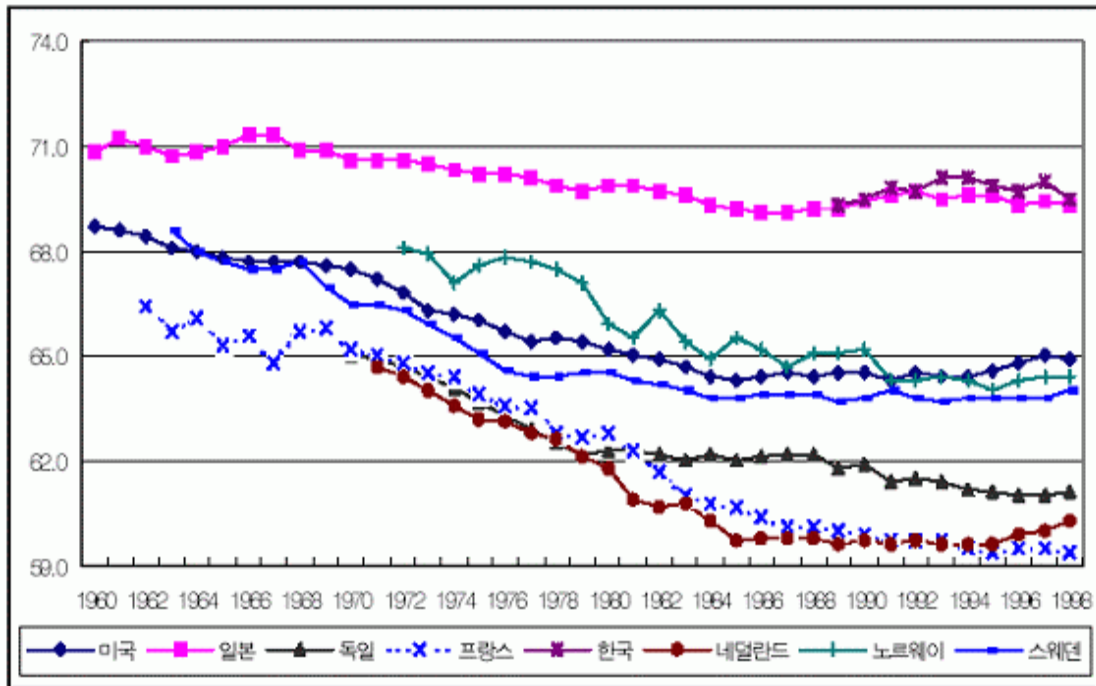
Since the elderly labor market is especially strongly influenced by institutional arrangements, they need to be design and improved very carefully. As the work disincentive is not strong, policies should be focused in strengthening the demand for the elderly labor in the short to medium run. Since the labor market flexibility is the best policy recipe known in increasing the demand for the elderly labor actions for enhancing flexibility should be taken immediately, including flexibility in employment contracts and wage schedule among the elderly. Also, discrimination against the elderly need to be addressed. Many customs formulated in a society of seniority based system are in fact working against increasing the demand for older workers' labor. Thirdly, reforms of social insurance systems, to guard against excessive rise of contributions that may reduce labor demand especially among the wage/salaried workers, should be taken. And extension of mandatory retirement age and strengthening regulation could be considered. However, lessons from abroad are that it is too easy for the firms to evade regulation by designing new compensation system. Thus, regulation policies need to be designed very prudently. Finally, subsidies for the elderly employment should be designed under a framework of overall social welfare, since poverty problem is not unique to the elderly.

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Figure 1. International Comparison of Retirement Age Trend: 1960-99

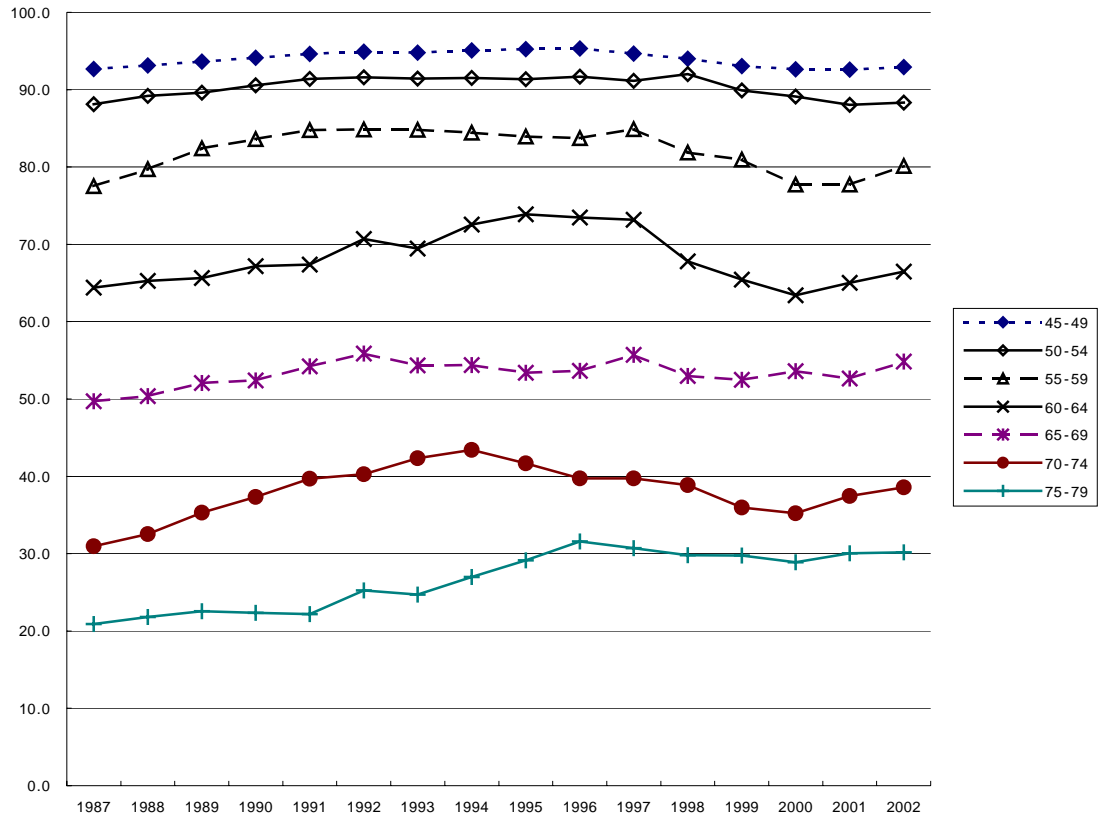


Note: U.S., Japan, Germany, France, Korea, Netherlands, Norway, Sweden

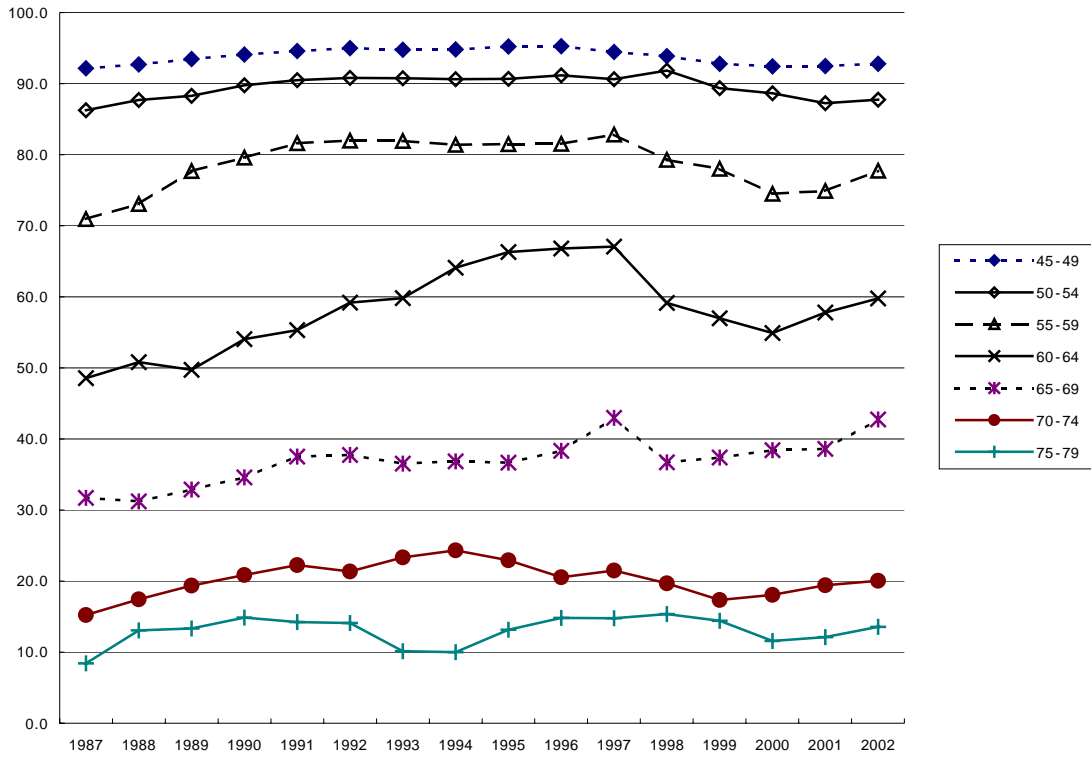
Source: Chang(2002)

Figure 2. Trend of Male Labor Participation Rates by Age Groups

A. All sectors

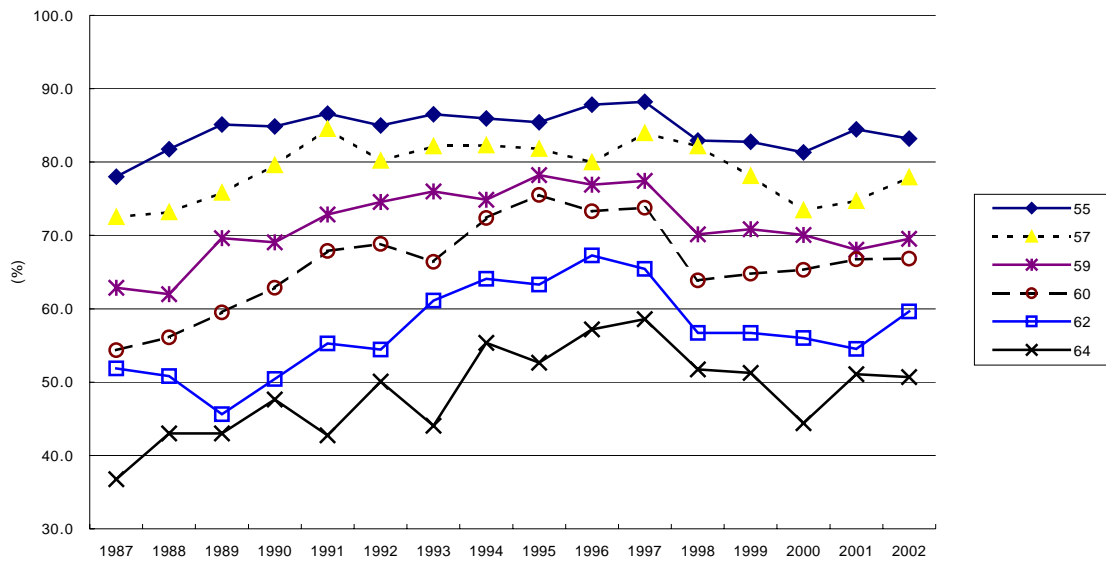


B. Non-farm sector



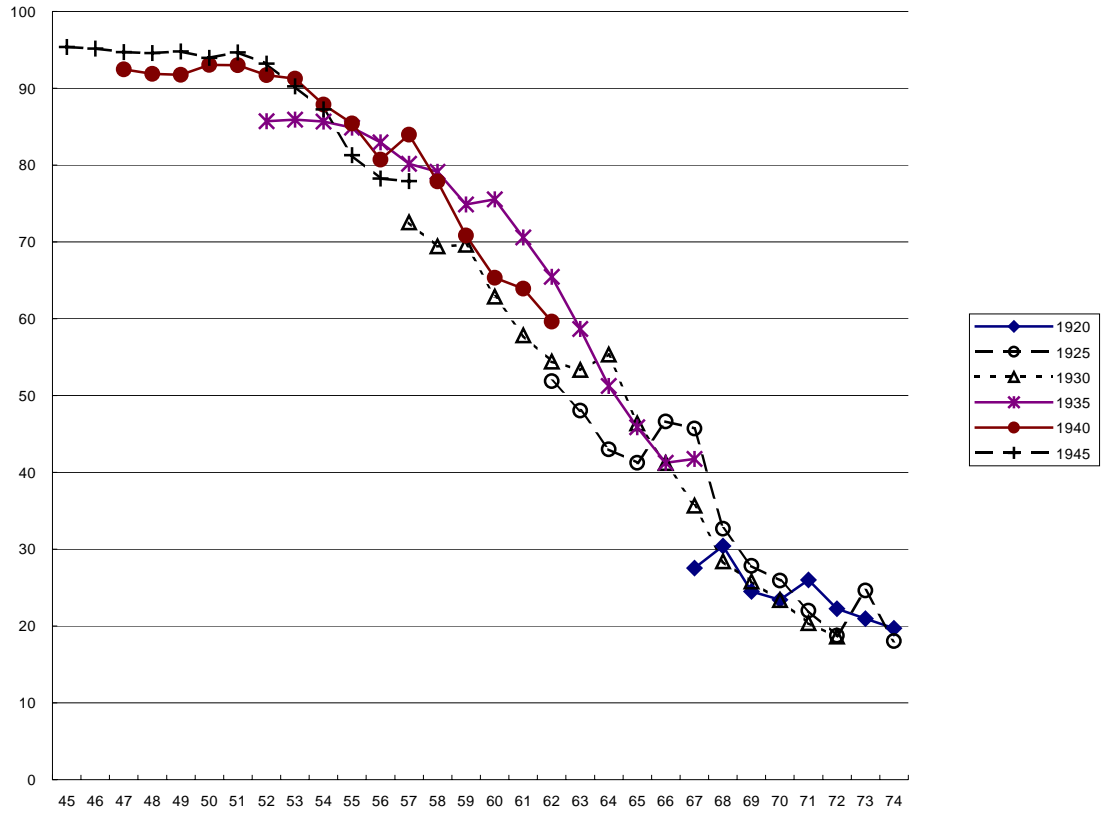
Source: KNSO, EAPS data sets 1987 to 2002

Figure 3. Male Labor Participation Rates by Ages among the Elderly (Non-farm)



Source: KNSO, EAPS data sets 1987 to 2002

Figure 4. Male Labor Participation Rates by Cohorts (Non-farm)



Source: KNSO, EAPS data sets 1987 to 2002

Figure 5. Male Labor Participation Rates by Education, 1930 and 1940 Cohorts  
(Non-farm)

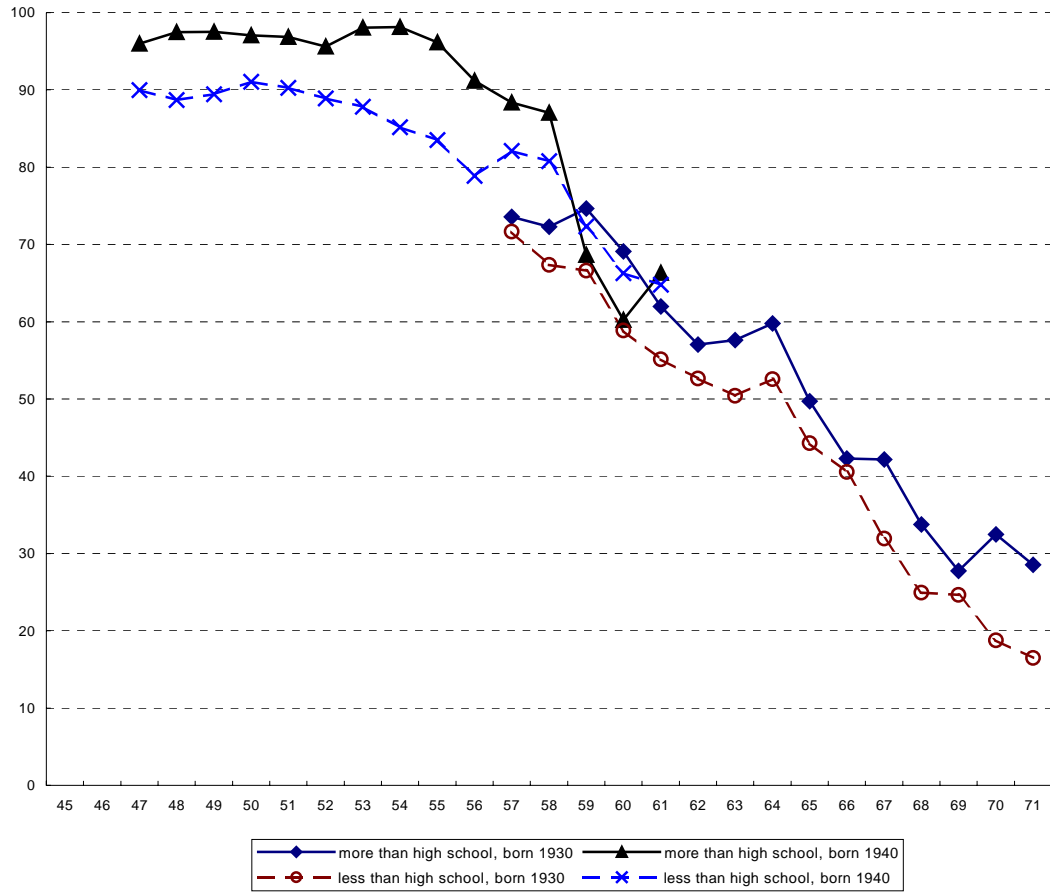


Figure 6. Employment Rates: 1930, 1935, 1940 Cohorts (Male, Non-farm)

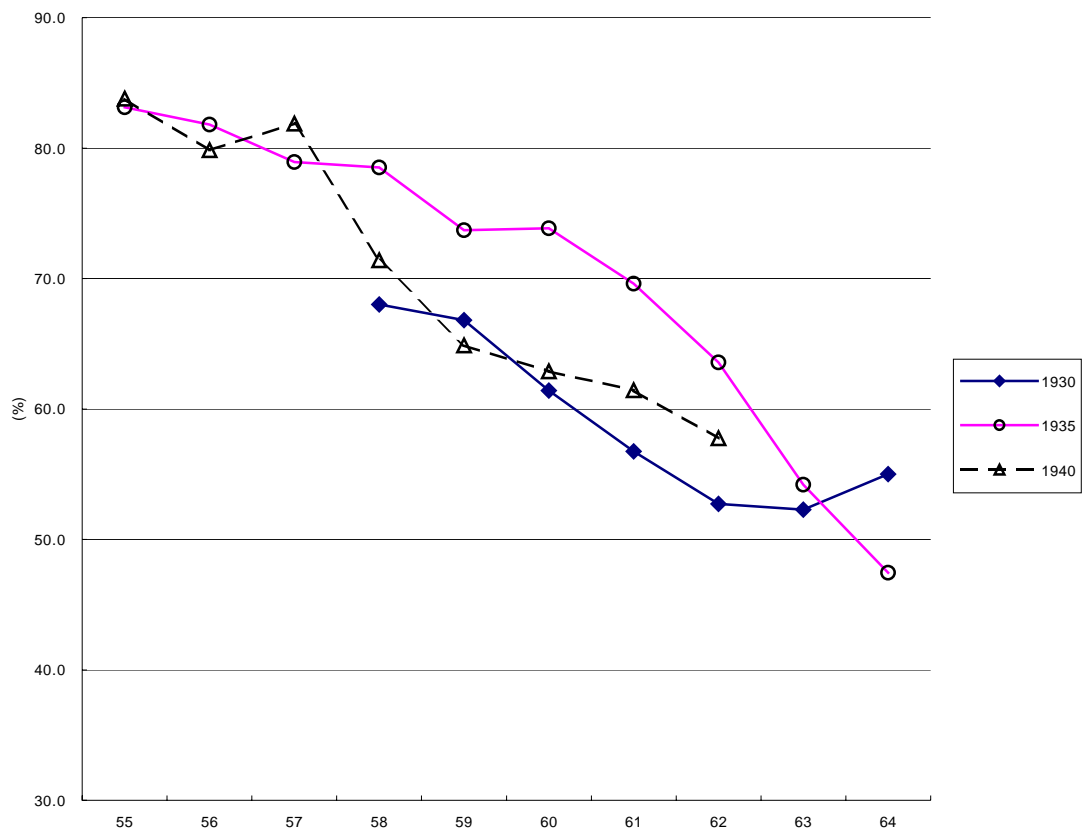


Figure 7. Wage and Non-wage Employment Rates: 1930, 1935, 1940 Cohorts  
(Male, Non-farm)

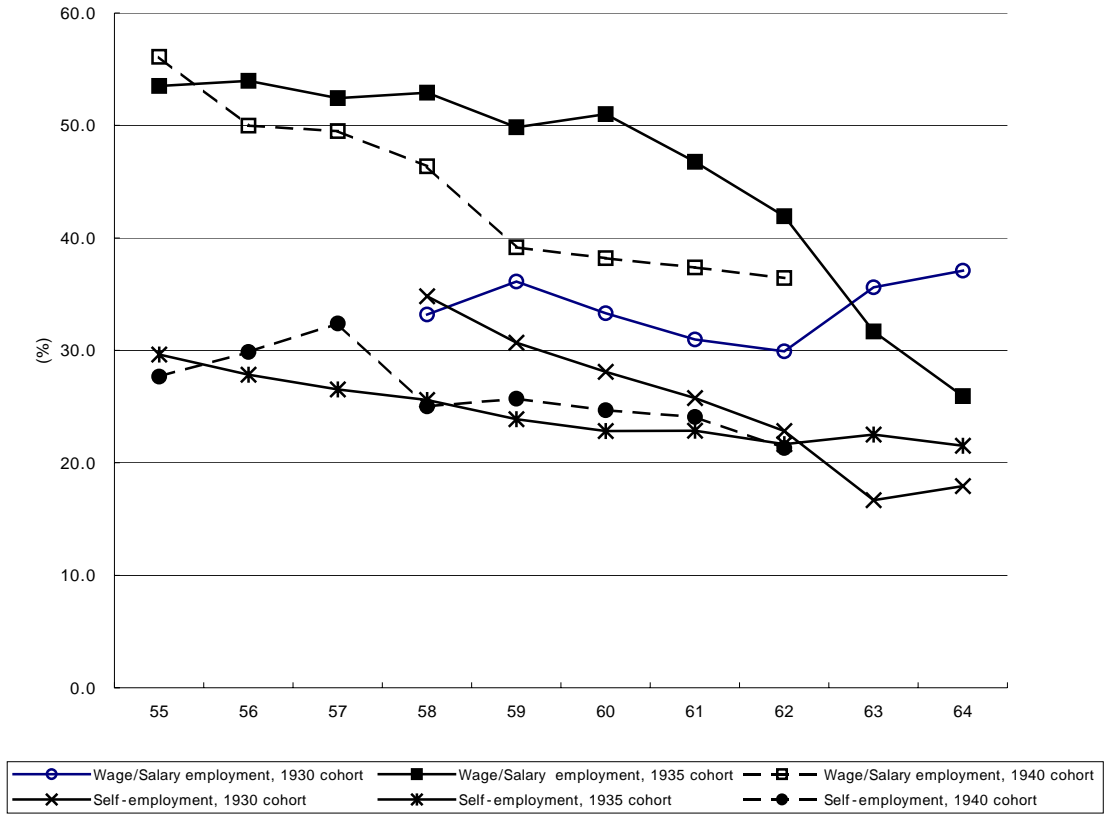
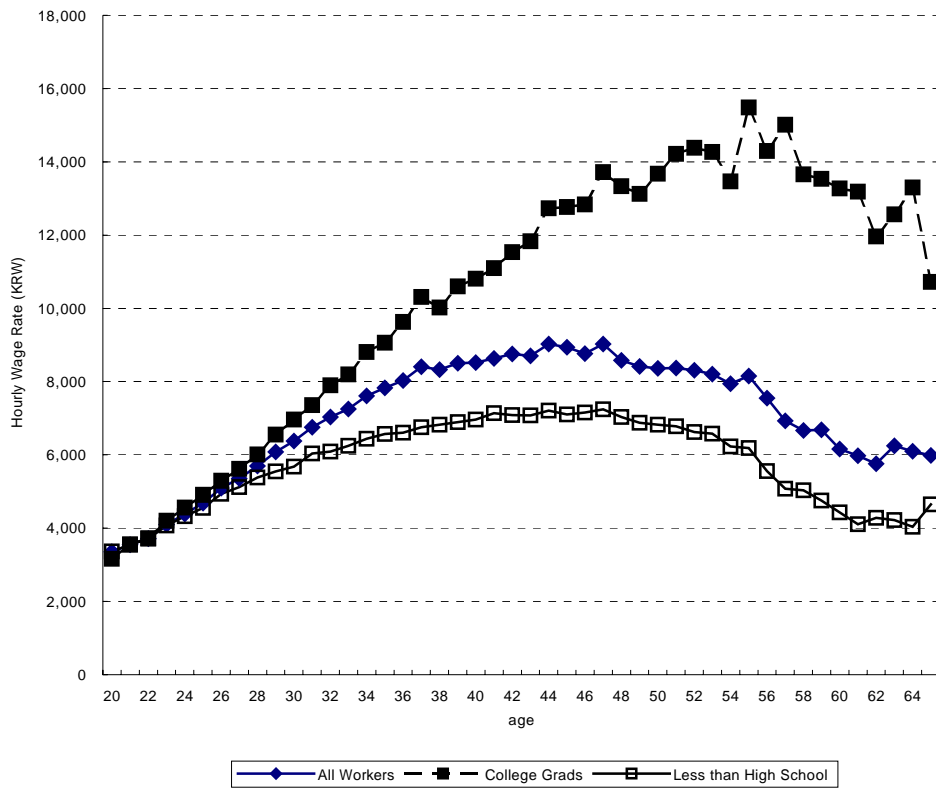
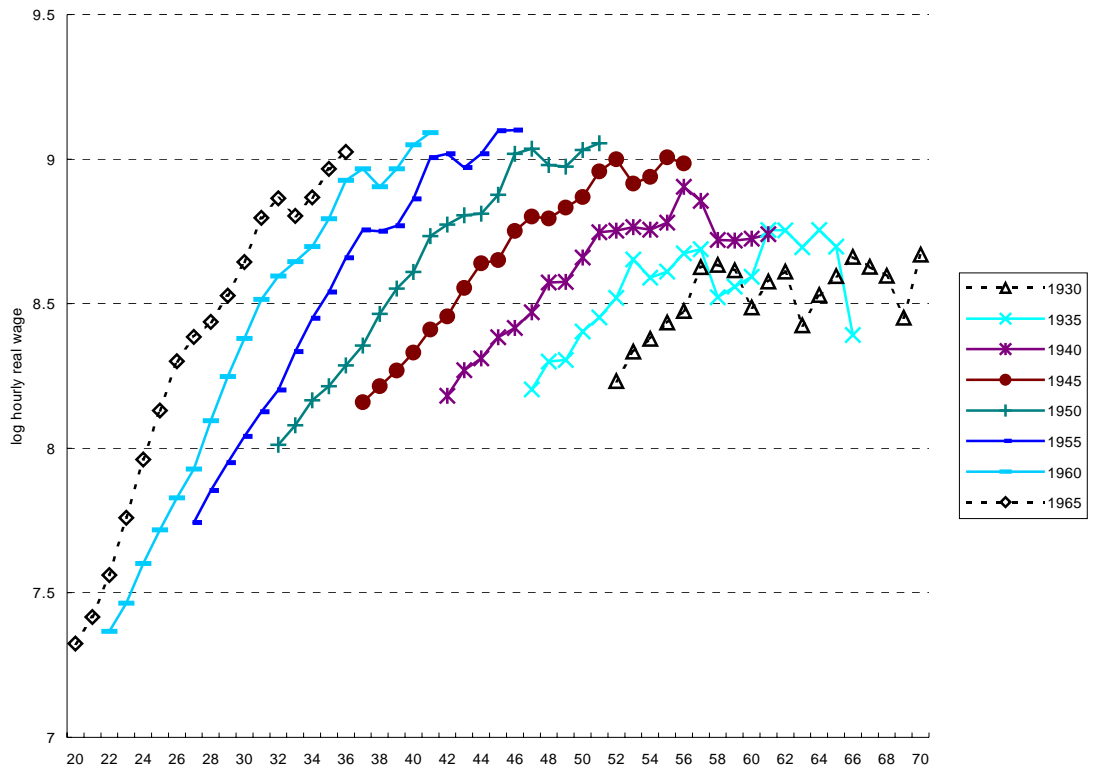


Figure 8. Structure of Hourly Wage Rate by Ages: Male



Source: Ministry of Labor, Survey Report on Wage Structure, 2000.

Figure 9. Hourly Real Wage Rate Profile by Cohorts : Male



Source: Ministry of Labor, Survey Report on Wage Structure, 1982~2001.