The Challenge of Rapid Ageing and Low Fertility in Korea

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Abstract: South Korea is rapidly moving into an aged society. According to Korea National Statistical Office, 9.5% of Korean population is aged 65 and older (elderly ratio) in 2006. The ratio is expected to rise to 19.9% in 2025, and 37.3% in 2050. The speed of moving into the aged society in Korea is unprecedented among the OECD countries. At the same time, the fertility level has gone down far below the reproduction level of 2.10. In 2005, the total fertility rate decreased to 1.08 from 1.16 from the previous year. Such a rapid aging accompanied with record-low fertility rate would bring about fundamental socio-economic changes in the future Korean society. In addition to the expected growing pressure on government spending in social entitlement programs such as the national pension system, other government-sponsored pension programs and the national health care insurance program, labor market will be strained greatly if the current practice of early mandatory retirement and low participation rate of women. As the ratio of elderly dependents to workers would rise very rapidly, Korea is in urgent need of making suitable labor market adjustments in order to increase fertility rate and participation rate for old age workers and women by creating incentives to work and more flexible labor market for them. Korea needs to adopt policies to increase human capital productivity as quickly as possible. The efficiency and effectiveness of the education sector (secondary as well as tertiary) needs a serious attention. The policies to promote the creation of decent jobs should be also on the top of the agenda.
1. Introduction

South Korea is rapidly moving into an aged society. According to the commonly-used UN definition, any society whose proportion of the population aged 65 and over is greater than 7%, 14%, or 20% is called “ageing society”, “aged society”, and “super-aged society,” respectively. According to Korea National Statistical Office, 9.5% of Korean population was aged 65 and older (elderly ratio) in 2006. The ratio is expected to rise to 15.7% in 2010, 15.7% in 2020, 24.1% in 2030, 32.0% in 2040, and 37.3% in 2050. Korea became an “ageing society” in 2000, and is expected to become an “aged society” in 2018 and a “super-aged society” in 2026. Such rapid aging is rather spectacular among nations (see Table 1). For example, it took 40 years for Germany moving from “ageing society” to “aged society,” and another 40 years from “aged society” to “super-aged society.” Even Japan, the epitome of rapidly aging society in the world, reached 7% point in 1970 (a similar figure for present Korea), and it took 24 years from 7% to 14%, and 12 years from 14% to 20%. The comparable figures for Korea are 18 years and 8 years, respectively. In short, Korea is moving into an aged society in the record speed, faster than any other major countries in the world, during the next decades.

<table>
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<tr>
<th>Country</th>
<th>7%</th>
<th>14%</th>
<th>20%</th>
<th>7% -&gt; 14%</th>
<th>14% -&gt; 20%</th>
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<td>2018</td>
<td>2026</td>
<td>18</td>
<td>8</td>
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<td>1942</td>
<td>2013</td>
<td>2028</td>
<td>71</td>
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<td>1972</td>
<td>2012</td>
<td>40</td>
<td>40</td>
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<tr>
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<td>1929</td>
<td>1976</td>
<td>2021</td>
<td>47</td>
<td>45</td>
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<tr>
<td>France</td>
<td>1864</td>
<td>1979</td>
<td>2020</td>
<td>115</td>
<td>41</td>
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<tr>
<td>Italy</td>
<td>1927</td>
<td>1988</td>
<td>2007</td>
<td>61</td>
<td>19</td>
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<td>Sweden</td>
<td>1887</td>
<td>1972</td>
<td>2012</td>
<td>85</td>
<td>40</td>
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Table 1. International comparison of the years taken to move into the aged society  
(source: National Statistical Office)

Such rapid aging of the society will undoubtedly affect future socio-economic
environment of Korea. Aging will increase the demand for health care, and medical expenses are likely to increase substantially. Combined with low fertility, ageing is likely to decrease future labor supply. Therefore, the dependency ratio (the ratio of the non-working population to the working population) is likely to increase. Although the number of elderly population is growing rapidly in Korea, the ratio of working population to elderly population would remain relatively high for the next decade because the average age of current working population is relatively young. Therefore, serious negative economic impact of aging in Korea will not be fully realized until about fifteen years later. However, if the current super-low fertility rate continues, Korea will be faced with very significant negative consequences of ageing thereafter.

Among such concerns, the newly established National Pension Scheme (NPS) and the National Medical Insurance (NMI) will create tremendous pressure to public finance system. Under the NPS’s current design of defined-benefit system financed by payroll taxes, the national pension trust fund will create a great deal of surplus for the next twenty years. However such surplus will be washed away very quickly with the relatively generous replacement ratio. Also, the burden of medical expense by the NMI is expected to increase very rapidly with ageing. In addition to the expected problem of NPS, other government-sponsored pension programs such as the Government Employee Pension (for teachers in public schools and civil servants), Korea Teachers Pension (for teachers in private schools), and Military Pension System (for military personnel) are severely under-funded. The GEP and MPS have been supplemented from the general revenue for several years already, and amount of the supplement is expected to grow rapidly. The entitlement programs for the retiree and the aged will inevitably put a pressure to raise tax rates for the coming generations. Such movement will result in intergenerational conflicts, and the higher tax rate will diminish the incentive to work. Though the reduction of the level of benefits of the NPS and other pension system may prolong the solvency of the system, its fundamental dynamic structure will not change by simply reducing the level of benefits.

The demographic transition has been quite predictable in most countries, and it is likely that Korea’s case will be no exception. Therefore, it is quite likely that the Korean situation in coming decades will be characterized by growing inter-generational conflicts and political pressures to hike tax rates. Eventually, the situation may become politically and economically very difficult. In the following, I would explore the major socio-economic challenges of the rapid ageing and low fertility in Korea. First, I
would like to explain why such rapid ageing will be occurring in the near future. Then, I would like to discuss major public policy areas that would be most effective in managing the transition to the aged society.

2. Challenges ahead

Although individual person would age at the same speed, some nations may age more quickly than others, simply because the age composition of the society may be different from others. The current population of Korea is about 48 million people. For the next ten years, it is expected to grow at a slow rate, to about 50 million in 2010. After that, it will be stabilized around 50 million for the next 30 to 35 years before it started to decrease. If the past experience of very little international migration (less than .2% per year) continues in the future, Korea’s total population will not change very much for the next forty years (see Figure 1).

![Figure 1](image)

Although the total population will be relatively stable for the coming decades, the age structure of the population will change quite dramatically. The ageing will increase elderly dependency ratio (the ratio of the population of aged 65 and over to the
population aged between 15 and 64). The ratio is expected to rise continuously at a great speed. However, low fertility will decrease the child dependency ratio (the ratio of the population of aged 14 and under to the population aged between 15 and 64) until 2020 so that the total dependency ratio will be stable up until 2020, after which it will increase rapidly (see Figure 2).

There are three major reasons behind this rapid ageing in Korea. First, Korean birth rate has been decreasing very rapidly for the last thirty years, particularly between 1970 and 1985. While the crude birth rate has been dropping steadily from 8 persons per 1,000 in 1970 to about to 5 in 2000, the change in death rates are much smaller than that in birth rates. The total fertility rate (TFR) has precipitously dropped from around 4.5 per 1,000 in 1970 to around 1.5 in mid-1980s. Since then, the speed of its decline has slowed down. It has decreased down to 1.16 in 2004 and 1.08 in 2005 (see Figure 2). For the last twenty years, Korea’s TFR has remained below 1.5. The prolonged low birth in Korea is likely to be continued in the future if the current socio-economic environment of late marriage, very high rate of enrollment in higher education institutions, difficulty of childcare, and high cost of education.
Figure 2. Time trend in total fertility rate (TFR) and life expectancy at birth by gender

The second reason for the rapid ageing in Korea is the increase in life expectancy. In 1950, the life expectancy at birth is below 50. In 2000, male’s life expectancy is close to 72, and the figure for woman is close to 80. The figures are still climbing, and are expected to rise steadily before they peter out. Clearly, the rise of life expectancy at the age of 65 is less dramatic (see Table 2). The increased longevity has been the worldwide phenomenon for the last few centuries. However, Korea is expected to enjoy high rate of increase in longevity due to better nutrition and health care due to rising income.

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<td>66.11</td>
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<td>80.15</td>
<td>81.00</td>
<td>81.00</td>
<td>83.06</td>
<td></td>
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<td>Fertility rate</td>
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<td>5.63</td>
<td>4.28</td>
<td>2.23</td>
<td>1.68</td>
<td>1.51</td>
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<td>Net migration rate</td>
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<td>-0.40</td>
<td>-0.50</td>
<td>-0.27</td>
<td>-0.17</td>
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Table 2. Key demographic variables

The third reason for the rapid ageing in Korea is due to the fact that the demographic
transition, from high-birth-rate-high-death-rate to low-birth-rate-low-death-rate, happens in a relatively short time horizon. Up until 1970, Korea’s population pyramid has a typical shape in a high-birth-rate-high-death-rate society, a big bottom and a small top with a triangular shape (see Figure 3). The large population cohort born in the late 1950s and 1960s, will age through the early twentieth century while the younger cohorts get smaller and smaller. In 2050, the age pyramid will look more like an upside-down trapezoid.

Based on the experience of other OECD countries, it is almost certain that Korea will be faced with a serious problem of ageing in coming decades. Korea will be likely to be
facing with similar problems that are threatening the vitality of many aged society now, such as Germany and Japan. In Korea, the speed of ageing will be particularly fast when the boomers born in the late 1950s and 1960s reach old ages in around 2020. However, Korea’s ageing problem will be more intense than Germany and Japan because the speed of ageing is much faster, while the Korea’s capital output ratio is lower than those countries and its economy still has a substantial portion of low productivity sector.

3. Socio-economic issues related to rapid aging

The ageing of the society will have many profound socio-economic and political consequences. Among them, the following three issues seem to be most important: sectoral shift, rising strain in public finance, and slower economic growth. Figure 4 shows the key channels in which how ageing creates these problems. Fiscal strain will be developed as the public expenditure related to ageing such as public pension and public health care expenditure increases. At the same time, the sources of government tax revenue would decrease as fewer workers supply labor and the growth of the economy slows down.

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**Figure 4. Economic impacts of rapid ageing**
The government’s fiscal demand is expected to rise rapidly in the coming decades due to several reasons. First, as the financial solvency of several pension funds sponsored by the government is threatened, the government is required to fill their operational deficit with general revenue. Second, the government’s fiscal demand would rise as more aged population fall into poverty. Third, the government needs to invest in physical infrastructure to accommodate more aged, disabled and fragile population.

Old age income security has been a critical policy issue in Korea. Old age financial security of Koreans has been mainly through family support. In an 1980 survey on people of aged sixty and over, more than 75% of their income is from family support. Although, the figure has decreased to 56.6% in 1995, the primary financial support for the old aged is through family. On the other hand, public pension accounted only 2.0% in 1980 and 6.6% in 1995. (김경호, 2004) Korea’s reliance on family support is much higher than other OECD countries.

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<td>4.3</td>
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<td>20.7</td>
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<td>Other pub.</td>
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<td>0.1</td>
<td>2.9</td>
<td>0.2</td>
<td>0.1</td>
<td>4.5</td>
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<td>Pr. transfer</td>
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<td>5.4</td>
<td>5.4</td>
<td>9.0</td>
<td>8.5</td>
<td>11.9</td>
<td>9.8</td>
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<td>19.1</td>
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<td>Taxes</td>
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<td>-29.8</td>
<td>-4.8</td>
<td>0.0</td>
<td>-16.6</td>
<td>-27.8</td>
<td>-34.0</td>
<td>-15.1</td>
<td>-16.5</td>
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Source: OECD, DEELSA/ELSA (2001)

Korea relies on more on private transfer, although there has been a trend that the share of public pension is increasing. More on this

With the expansion of government sponsored social safety network, National Pension Scheme (NPS) has been introduced in 1988. Since then, NPS has been extended to cover all employees including self-employed. Currently, the size of the total payment to all qualified participants is relatively small because of the plan’s short history. The
total benefit paid by the NPS was only about .5 % of GDP in Korea in 2005. Compared to the Frances and Germany’s figures of about 10%, it looks quite insignificant. However, the current design of the NPS is such that the payment is relatively generous and the minimum eligibility age for full pension is relatively young (60 years old). Such generous benefit plan was deliberately designed in order to attract more voluntary participation in the beginning of NPS. Consequently, as the program matures, the fiscal responsibility of NPS would rise very rapidly, resulting in 2.2% of GDP in 2020 and 6.7% in 2050. Even though the NPS has accrued over 100 trillion won, the plan will start to run deficit starting around 2035, and the fund will be depleted in 2046 (just in 11 years!) if the current level of contribution rate and benefit plan continued despite the fact that the replacement ratio of the NPS has adjusted downwards from 70% to 60% in 1998.

Auerbach and Chun (2005) estimated that Korea’s NPS expenditure would rise 16% GDP in 2080. If we consider the fact that more aged society in 2000 such as Austria, Italy, Germany and France currently spend 12–14% of GDP, this figure does not seem overly high. Similarly, OECD estimates Korea’s expenditure for all public old-age pension (including occupational pensions) is about 2% in 2000, which is the lowest, and its increase in the next fifty years (about 8 percentage points) would be the highest in OECD nations.

One positive aspects of the current NPS design is that the benefit increases as the length of the participant’s contribution. Also, the benefit, in part, is determined by the worker’s own life-time wage rather than just the wage of the final year of contribution. Therefore the system would not discourage old workers who take up a lower paying job at the end of his/her career.

Besides the NPS, Korea has three more government-sponsored occupational pension schemes: civil servants, military personnel, and private school teachers. They cover almost one million participants of civil servants (including teachers and administrative personnel in public schools and universities), 150,000 soldiers, and 200,000 teachers in private schools and universities.

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1 The current contribution rate of NPS is 9% by the employer and the same rate by the employee. The current replacement ratio is about 60%, and the benefit cost ratio of the participants for the worker who joined the plan at the age of 26 ranges from 1.3 to 2.5 depending on their income level.
The Government Employee Pension (GEP) was established in 1960. Over the years GEP has gone through several major changes. Currently, the system is a partially funded, defined benefit system. It covers, deaths and disabilities due to accidents and illness and old-aged pension for the employees and their dependents. The cost-of-living adjustment was introduced in 2003. Currently, employee contributes 8.5% of their wages and salaries, and the government contributes the same amount to the plan.

The pay structure of these occupations has been primarily based on the length of services. In an attempt to reduce the current government expenditure when it pursued high growth strategy by maximizing the public savings, substantial portion of their pay was back-loaded. So, it is typical that entry level civil servants and public school teachers were paid less than the private counterparts. However, the deficiency was compensated by the job security, higher mandatory retirement age, and generous pensions. As a result, the amount of financial obligation for the occupational pension schemes is expected to rise very rapidly in the near future. Longer life expectancy of the retirees aggravated the situation. At the same time, the government restructuring plans (including the shortening of mandatory retirement age of school teachers from 65 to 62) that encourages early retirement made the number of beneficiaries rise very quickly since 1999. Recently, the GEP started in incur substantial operating deficits. A new reform plan introduced in 2001 required that the government is required to fully supplement the GEP’s deficit with its general revenue.

Under the assumption of current benefits package and contribution rate, the supplementary amount paid by the government is expected to rise rapidly during the next thirty years. In 2006, the amount of government’s supplement is about 0.8 trillion won, but the figure is expected to rise to be 2 trillion won (.22% of GDP) in 2010, 9.3 trillion won (.73% of GDP) in 2020, and 18 trillion won (1.1% of GDP) in 2030 (Choi Jae Sik, 2004). The government’s supplementary contribution is estimated to account for 7.32% of total benefit payment of the GEP in 2010, but it is expected to rise to 28.54% in 2020, and to 51.05% in 2030, before it becomes stabilized. It is estimated that the contribution rates should be around 30% in order to make the plan financially sustainable (Kim Yong Ha, 2003).

The Military Pension System (MPS) has been receiving the supplementary fund from the government since 1973. The annual deficit was 685 billion won in 2003, and expected to rise to 860 billion won in 2009 (Kim Yong Ha, 2003). After 2009, the deficit is expected to decrease slightly.
The Korea Private Teachers Pension (KPTP) was established in 1973 as a part of the government’s effort to reduce the opposition of socializing the private school system. The benefits to the participants are made to be equivalent to those of GEP, and the government contributes a portion to the plan. Currently, 3.5% of total 17% contribution of the salaries are paid by the government (the participant contributes 8.5% and the employer pays 5%). Therefore, KPTP has been regulated as a quasi-public pension fund. The current financial situation of the KPTP is substantially better than GEP and MPS, but it is faced with a similar prospect of insolvency as the rapid ageing and lower fertility creates high dependency ratio between the number of retired teachers and the current teachers. KPTP is expected to start operating deficit starting 2014, and the accrued fund is expected to be depleted in around 2020.

The all three major government-sponsored pension plans are seriously under-funded. The Korea Institute for Social Insurance (2002) estimated that the total amount of under-funded reserve was about 340 trillion won, which was almost 60% of the nation’s GDP.

Although there have been contentious debates on pension funds reform in public policy arena, the progress has not been made because any reform measures highlights the conflicts of interest among various groups.

At the same time, larger proportion of aged population will increase the demand for healthcare services. This will inevitably increase the public spending on health care services. The forecast for the growth in health care expenses is much more difficult than the pension liability, because the health care expense will depend on not only age structure, but also on national health care plan and availability of more expensive treatment methods in the future.

In 2004, the Korean government spends about 0.42% of total government expenditure for the improvement of old age population such as building community centers for the old. It is a great increase from 0.11% in 1995. Currently, the welfare payment to the old in Korea is relatively low. Only about 0.08% of GDP is spent on welfare services to the old, whereas other OECD countries spend 0.18% to 2.49% of their GDP (김경호, 2004). There exists a great deal of social demand and political will to increase cash and in-kind welfare payments to the aged, and it is likely to increase continuously.
The channels for slower growth are more numerous and complex. First, reduced labor supply will be the major contributor for the slower growth. The slowdown of the growth will depend on various factors, such as the productivity of aged workers, their employment rates. For example, Axel Börsh-Supan estimated that one-third of German real GDP per capita growth of 1.4% will be eroded by the decrease in labor supply. The current real GDP growth in Korea is around 4%, which is presumed to be lower than potential growth rates. Though it may be difficult to estimate the potential growth rates accurately, many experts think it would be around 5–5.5%. It is likely that the Korea’s potential growth rates would slow down as it has to rely more on productivity gain via innovation rather than imitation. Therefore, it would be not unreasonable to predict that the growth rate may drop down below 2% when the ageing is underway during the 2020s.

Second channel for the slower growth may be due to the lower savings rate. The life cycle theory and the permanent income hypothesis predict that as the old age people dis-save, the aggregated household savings rate would decline. By using the Auerbach-Kotlikoff-type generational accounting model, Chun Young Jun (2005) estimated that the savings rate would decrease from 25.3% in 2002 to 19.5% in 2020. In addition to the impact of ageing, savings rate may further decline as NPS started to replace private saving for old ages.

The savings behavior turned out to be less predictable. According to the popular theory of life cycle consumption and saving model, one would expect more savings in the earlier part of one’s life and dis-saving in the later part of the life. But, some elderly in some countries exhibit high savings rate. Some conjectured it is due to altruistic motive of bequest to their children, and others think the increased uncertainty of large health care cost have encouraged the old to consume less and save more. Another complicating factor is the expansion of social safety network. Generally, the expansion of public pension will result in a decrease in private savings, because the two are close substitutes.

While the private savings rate may or may not decrease by ageing, the public savings will definitely decrease. By using G–7 and Korean data, Kim and Lee (2006) found that the ageing reduces the national savings rate (private saving plus government saving plus foreign savings), mainly because of the growth in government expenditure driven
by health care cost increase.

The rising demand for public expenditure for old age population will inevitably increase the tax rate (including the premiums for social insurance). Certainly the amount of the tax rate hike would be determined by the future political actions, the higher tax rate would reduce the work incentive.

The rising dependency ratio will make labor relatively more scarce. The scarcity of labor will increase wage rate, and the rising wage will increase the quantity of labor supplied. At the same time, substitution toward capital would occur, making labor productivity increase. Without any policy interventions, the capital deepening will certainly increase the labor productivity, but it would be unlikely that it will completely compensate the decreasing total productivity through less labor supply. With German data, Börsh–Supan (2001) estimated that such labor productivity increase would be in the order of 5%.

Based on an overlapping generation computable general equilibrium (OLCGE) model, Kim (2005) of the Bank of Korea estimated that the annual average growth rate will continuously decline from 4.12% in 2006–10 to 3.43% in 2010–20 to 3.44% in 2020–30 to 2.64% in 2031–40 to 1.45% in 2041–50. Kim asserts also that relaxing international immigration will have very little effect, as the base of international in-migration to Korea is very small, and most of the in-migrants are in unskilled laborers. His analysis concludes that while increased labor participation would boost growth rates substantially, the most important policy intervention is to increase total factor productivity. If the total factor productivity increases by 0.5 percentage point per year, the annual average growth rates would increase by 0.3–0.6 percentage points.

Chung et al. (2003) used growth accounting methodology in order to decompose the contribution of economic growth in Korea. They found that during the period between 1996 and 2001, the growth of the Korean economy slowed down and the contribution by human capital has decreased substantially. They pointed out several reasons for such slowdown. First, there has been a tremendous expansion of education (including higher education) in Korea between 1990 and 2000, but the expansion has slowed down. Second, after the 1997 financial crisis, many 50–65 male workers in their thirties have been displaced, and they were forced take lower paying jobs.
### Table 4. Annual average growth rate and contribution by factors (in percent)

(source: Chung et al., 2003)

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<td>Real growth rate</td>
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<td>6.9(100)</td>
<td>7.1(100)</td>
<td>3.7(100)</td>
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<td>Contribution by capital</td>
<td>4.2(57.1)</td>
<td>3.7(52.9)</td>
<td>1.5(21.3)</td>
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<td>Contribution by labor</td>
<td>2.2(30.1)</td>
<td>1.5(20.5)</td>
<td>1.5(20.5)</td>
<td>0.5(13.8)</td>
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<td>Contribution by human capital</td>
<td>0.5(7.4)</td>
<td>0.7(10.2)</td>
<td>0.8(10.8)</td>
<td>0.4(9.6)</td>
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<td>Contribution by TPF</td>
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<td>1.1(15.6)</td>
<td>1.6(23.0)</td>
<td>1.1(31.0)</td>
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4. **Agenda for policy intervention**

Based on the researches in Korea and other countries, there are several areas in public policies which can reduce the adverse impacts of ageing. The first area would be population policy, more specifically, public policies that encourages higher fertility rate and/or more relaxed immigration policy in order to encourage in-migration. The second area would be the labor market policies. More specifically, the promotion of higher labor force participation and longer working life span would be able to reduce the burden of rising dependency ratio. Third, promotion of the quality and flexibility of human resources and other institutional improvements in order to increase the TFP would be important. Fourth, a more sustainable public pension plan that requires less government supplement is urgently called for. Fifty, a comprehensive approach to deal with old age security to finance and health care needs to be examined for various groups of different socio-economic classes.

In June, 2006, the Korean government announced a preliminary, but comprehensive set of policies, called Saeromaji (새로 마지) Plan 2010, to deal with low fertility and ageing. The announced plan seeks to achieve three objectives: 1) to create favorable environment for child bearing and rearing; 2) to create the infrastructure for the promotion of the quality of life for the aged; 3) to create foundation for the strong future economic growth. In order to achieve the stated goals, the government plans to spend 32 trillion won between 2006 and 2010\(^2\): 19 trillion won to support child births and rearing; 7 trillion won to old-aged welfare; and 6 billion for building economic growth potential. The plan shows the government’s willingness to put the issue on top of its policy agenda.

\(^2\) The total annual budget of the government is about 200 trillion won in 2006.
In order to achieve the first objective, the government plans to subsidize the cost of child bearing and education. It plans to subsidize the cost of child care for low income families, support after-school classes (or private tutoring), tax incentives for families with two or three children, the cost of adoption, establish public nurseries, cost of pre-natal and post-natal care. Also, it plans to regulate more generous child-care leave policies for employment, promote more family-friendly cultural environment, and support family services.

For the second objective of old age welfare, it plans to provide minimum income level for all persons aged 65 and over. It also plans to reform the four major government-sponsored pension plans. The government also wants to vitalize private pensions. It also plans to improve health care services for the elderly and provide more employment and leisure opportunities for them. The government also wants to improve living environment and access to public transportation of the elderly population.

For the third objective, the government wants to improve the utilization of female workers, old workers, and foreign workers. It also plans to improve life-long learning and working environment, and reduce industrial accidents. The government also wants to improve the financial infrastructure for the old workers including long term bond market and the introduction to reverse mortgages for the old homeowners. The government also wants to utilize industries that specializes elder care and ageing as another engine of growth.

The proposed plan is supposed to be implemented soon after incorporating various public responses. The plan contains many sensible policy directions that have been proposed in academic and policy making circles. Also, it is the first major product of the newly formed Presidential Committee on Ageing and Population Policy. The Committee is chaired by the President himself and formed by the twelve cabinet level ministers and twelve outside experts.

However, there are several criticisms about the plan. First, although the plan announced a substantial amount of budget for various policy initiatives, it is not clear where the required revenue would come from. In this regard, the plan may be a wish list rather than an action plan. Second, since the term of the current President expires at the end of 2007, the credibility of the spending plan is questioned, because much of the policy initiatives requires political leadership. Third, it is not clear how much
positive results may happen because of the plan, because many proposed policies do not have evidence based on solid research.

It is quite clear that low fertility and rapid ageing will create a serious socio-economic challenge in the new future. Moreover, the speed of ageing will overwhelm many aspects of Korean economy. All government-sponsored pension plans are likely to face solvency crisis. Labor market situation will be very different compared with the current situation. The growth potential of the economy may be seriously compromised.

However, Korea has about 15 years of relative calm before the serious structural change occurs. The post-Korean War baby-boom generation starts to retire on around 2020. Consequently, the elderly dependency ratio will increase very rapidly since 2020. If the current low fertility rate does not change dramatically before 2020, the consequence of ageing may be devastating.

A. Population policies

Since Korea’s current population is relatively young, a dramatic increase in fertility rate actually will reduce the dependency ratio substantially. In particular, an increase in fertility rate in the near future would be important. Obviously, raising fertility rate is easier said than done in the current environment of high cost of child care, education, and high rate of unemployment for young workers.

Population policies can be cash or in-kind subsidy to child birth or child care. A subsidized (either by a voucher or public provision) child care facilities (including nursery and kindergarten) for working mothers can be provided. Child-care friendly workplace, such as workplace daycare center, or more liberal absence policy or flex-time can be considered not only by an individual employer, but by government mandates.

Will the current low fertility rate continue in the near future? If so, the ballooning elderly population will undoubtedly create a serious imbalance between workers and retirees. Even if the fertility started to bounce back (say, up to 2.0), as labor becomes relatively more scarce, the belated surge of childbearing will not improve the imbalance very much between 2020 and 2040. It the academic consensus that the current low fertility rate is due to a large social change that has been happening for the last two decades in the role of women as well as the rising cost of childbearing and education,
the proposed level of government support is not likely to increase the fertility rate substantially. Although some developed countries, e.g., France, has succeeded to turn around decreasing fertility rate into a more sustainable level, their success in population policies has been limited. Given those not-so-successful experience of the effectiveness of financial incentives in boosting fertility rates in most countries, policies to deal with ageing will have to assume relatively low fertility rate for the next twenty years.

The rising fiscal demand for elder care would be inevitable even if much of the additional expenses of caring the old may be borne by the private sector. The government needs to upgrade and retrofit public facilities to accommodate the need for more elderly population. Given the opposite trend in the number of school-aged children and elderly population, it is natural to move the government fund from the education sector to the elderly care sector. However, such transfer would be slow and small. It would be slow, because there would be lags in planning and budgeting. It would be small because the allocation of funds between the two ministries that are mainly responsible to education and elder care may not be very flexible. Also, the main expense of the education sector, teachers’ salaries would be difficult to reduce because it would be difficult to reduce the number of teachers even though the number of students decreases.

B. Labor market policies

If no population policies can change the fertility behavior substantially in the short run, the most promising area of policies to deal with ageing would be labor market policies. In simple term, increasing labor force participation rate and longer working life may substantially counter the shortage of young workers. In this regard, such policy measure would be of significant importance. Fortunately, Korea has substantial room to increase female and old worker labor force participation rates.

Currently, the actual age of retirement in Korea is quite high among the OECD countries. Labor force participation rates for 65 and older, particularly for men, are close to the highest in the group. Korea’s high participation rate of the old is consistent with the stylized fact that the higher the replacement rate of the old-age pensions the lower the labor participation rate across OECD countries. Since the secure old age pension is relatively not common, a large portion of old aged population is forced to work. Also,
these workers are heavily concentrated in agriculture and self-employment in urban service sector (e.g., real estate brokers, small scale restaurants, and so on). Most non-farming households are typically self-employed or work in small firms whose productivity and wages are substantially lower than large firms in manufacturing, public utilities, and finance. Over the last thirty years, more and more agricultural activities are taken by the older workers as younger workers migrate from rural to urban areas. (장지연, 2003, p. 31) For the age group, 50–64, these rates are below many more aged societies. Their participation rates have dropped substantially since the 1997 financial crisis. The drop is most significant for older men and younger women (see Figure 5).

Therefore, a crucial policy question is how to create meaningful employment for the population aged between 50 and 65. Many of the workers in this age group are forced to work in the second career with lower wage than the previous employment. Much of this phenomenon is related with the prevalent mandatory retirement.

In particular, the female labor force participation in Korea is relatively low even though
it has been increasing for the last decades. The level of female education is very comparable to that of male. The enrollment rate for women is about the same or slightly (one or two percentage points) lower than that of man for all levels of education.

Figure 6 shows the average job tenure of workers by age and sex in major OECD countries. For all age groups, Korea’s average tenure is lower than most countries indicating that job retention rates are lower in Korea. More importantly, Korean men’s pattern shows that the average job tenure starts to decrease after 50, while in all other countries it continues to increase until a later age. For Korean female workers, the average tenure stops increasing after age 35. These findings indicate that many male workers lose long-held jobs around 50 and many female workers lose jobs around 35. It is consistent with the point raised earlier that the structural adjustment since the 1997 financial crisis affected men over 50 and female aged around 35.

![Figure 6. Average number of years at the current job by sex](image)


If we look at the age-earnings profile of Korean workers by age (Figure 7), the earning
of male workers with less than college education peaks at the 45–49 age group. The peak for male workers with college degree happens at the 50–55 group. For women with less than college education, the peak is either 25–29 or 30–34. The relative early peak of the profile is either due to the mandatory retirement system (usually happens around 50–55) or women left high paying regular jobs when she gets married. In general, Korea’s age-earnings profile have earlier peak than other OECD countries.

Figure 7. Age-earnings profile of Korean men and women by education

According to a Korea Labor Institute survey, 70% of companies with employee size of greater than 300 have seniority-based salary system. Also, more than 80% of the firms surveyed have mandatory retirement system. Also, the retirement age for Korean firms are relatively young: it is around 55. The combination of mandatory retirement with seniority-based salary system have been the most common human resources management practice for Korean firms, particularly larger, manufacturing, and high wage firms. Since the 1997 financial crisis, many firms used the mandatory retirement as a way to reduce workforce in the process of structural reform and downsizing (Cho and Kim, 2005). Many of such older workers took less desirable jobs
with lower earnings.

Given the current longevity, it is hard to imagine that workers at the age over 55 lose their productivity so soon. However, because of the prevalence of seniority-based salary system, extending retirement wage would impose a great deal of payroll pressure to the firms. The current situation is exacerbated as the large younger, highly educated cohorts of workers are entering the labor market recently. Therefore, the government mandated higher retirement age without due consideration of the common practice of seniority-based salary will not be viable. It needs to be accompanied either by a radical change in worker evaluation and salary determination rule and/or predetermined wage-peak system.

Whatever the alternative may be, creating a flexible labor market for the aged workers should be the key policy objective. Transferable company pension scheme rather severance pay would be more flexible to most workers. Labor market decisions such as participation, hours work so on, should not be mandated. The new labor market institutions needs to be improved so that individual workers should be able to decide based on their health, marketability of their skills, and the size of their pension wealth.

Similar considerations should be given to the market for female workers. Korea, similar to Japan, has an M-shape age-participation rate profile. Many female workers leave the labor force for marriage of child care. Although younger, more educated workers seem to have more active participation, the labor market institutions are not amenable to their desire.

However, as Mörtvik and Spånt (2005) has suggested, the simple boost of participation rate would not be that effective. A change in attitude or mind set is also needed. It is somewhat paradoxical to observe that the higher the labor force participation rate, the higher fertility rate. Therefore, it is not necessarily true that women who have more children would be less likely to work outside of their home. A country in which more people believe that “A man’s job is to earn money, and a women’s job is to look after the home and the family” (such as Germany, Italy, Japan, Spain) is more likely to have low birth rate than the other countries (such as Canada, Sweden, Norway, Australia, U.S., and Ireland). The latter group of countries have been showing higher rate of economic growth compared to the former group. In other words, promoting gender equality may promote growth.
The need for higher participation by older workers and female gives rise to a need to think about formulating an anti-discrimination legislation. However, given the common practice of seniority-based salary system, any attempts to legislate anti-age discrimination requires careful thinking to balance the interests of employers who needs a flexible labor management and old workers (working and unemployed). For example, a simple extension of the retirement age will help workers and hurt employers. Similar consideration needs to be exerted for the anti-sex discrimination legislation.

C. Pension reform

The severe under-funding of the government-sponsored pension systems and the financing mechanism needs to be dealt with soon. The longer it delays to reform the system, the bigger the problem would be. However, as demonstrated by the experience of the many developed and middle income countries, pension reform is a political hot potato. One advantage in Korean case is that, the NPS is relatively young and have not accumulated a large number of beneficiaries yet. Therefore, it is relatively easier subject for the government to tackle.

The other government-sponsored pension systems are more difficult to deal with. They have more narrowly defined beneficiaries (civil servants, military personnel, or teachers), and they are more capable of organizing an effective lobbying campaign. Also, these pension systems are an integral part of their salary structures which are characterized by lower pay, tenure-based increase, and mandatory retirement system. Therefore, any reduction of the retirement benefits might be regarded as a breach of contract between the government and the workers.

There has been a recent policy debate to consider the reform of the NPS and the other government-sponsored pension systems simultaneously. Although all the pension systems share the common ground that the government ultimately has the unlimited liability to pay the benefits to the participants, they have quite different histories and payment and benefit structure. Also, the change in the numbers of the beneficiaries and participants, amount of the benefits, the salary structure are different across the pension systems. Therefore, it would be very unwise to lump all pension reform into one package.
An important policy option is to consider a transition from the current defined-benefit system to the defined-contribution system of the other government-sponsored pension system. Such change of the benefit scheme would be more amenable than a simple and clear reduction of benefits.

The critical link to the rising entitlement of the pension system and the future higher payroll tax rate is the fact that the system relies exclusively on payroll tax. The Korean government adopted the payroll tax to finance the national pension, as many other developed nations used the similar financing mechanism. Even with much slower aging in those countries, the old-age security becomes a hot political and economic issue. The old voters are adamantly asking for the continuance of high level of benefit. However higher payroll taxes increase the level of total compensation to workers but reduce the after-tax wage of workers. Therefore, the high entitlement will not only reduce labor supply but also labor demand. In Korea, the continuance of the current system is bound to replicate the experience of many aging economies. Moreover, as Korea’s speed of moving into the super-aged societies is much faster than many of the developed nations, it is possible that Korea’s economy may be faced with unmanageable situation in which payroll tax to sustain the pension system may be unbearably high. Japan would be a great benchmark as a rapidly ageing society. According to Japanese scholars (e.g., Kato, Iwamoto, and Okamoto), sales tax or estate tax rather than payroll tax would be a much more robust revenue source to finance the old age pension system, because the former tax bases are less dependent on working age populations.

D. Education reform

Korean education sector needs a serious reform. From an outsider, Korean education system is a marvel. It has achieved a very dramatic expansion of educational provision with modest government expenditures. The educational expansion has successfully fueled the rapid industrialization between 1970 and 1990. However, the current education system is not very effective in meeting the human resource demands for coming knowledge-based economy. There is a serious mismatch between labor demand and the education provided by the system. With the massification of higher education and equalization of secondary schools, Korean education sector produced large number of young workers in the middle range of talents. However, current labor demand is such that there is a serious shortage in the high talent professionals and low skilled workers. Although, most of the college graduates seek professional jobs,
employers find many graduates lack essential skills and training. On the other hand, the graduates do not want to take the jobs in the small and medium enterprises who look for fill less-skilled-and-more-demanding jobs. The consequence is that there is a labor shortage in the high-talent professional jobs and low-skilled jobs, but many young college graduates do not get meaningful jobs. They tend to extend their job search and prolong their education.

![Employment rates of college and junior college graduates](image)

**Figure 8. Employment rates of college and junior college graduates**

*Source: Ministry of Labor, Statistics on Labor and Wages in Korea, 1972 to 2001*

A large blame for this mismatch in the labor market is structural, in the sense that the highly productive sector in the economy does not provide jobs fast enough to absorb the increasingly large number of college graduates (see Figure 8). However, Korea’s educational policy needs to be changed. Because of the tightness of the labor market for college graduates, graduates from top ranking universities are known to have substantial wage premium. However, competition among colleges and universities are very much concentrated to the competition of better students, which has been the norm for long time. Other aspects of competition have been hampered seriously by the
government. In essence, the higher education sector in Korea is low-cost-low-quality-output for the mass.

Much of the public investment in education in Korea is spent on primary and secondary education. Since there is universal education up to middle school (up to 9th grade), and the enrollment rate for the high school (10th -12th grade), there is a substantial expense in private tutoring by households. The demand for private tutoring is driven by two factors: remedial education to supplement school education and the preparation for college examinations. The secondary school equalization policies have increased the demand for private tutoring, because schools do not meet individual students’ demand effectively. The government expenditure for primary and secondary education has increased substantially for the last two decades, and compared to other OECD countries, Korea’s education expenditure is about average among them in terms of the proportion of GDP (around 3%). However, households pay 60–90% more in terms of private tutoring (see Figure 9). The international tests such as PISA or TIMMS indicate that Korean students rank quite high in various subjects indicting that primary and secondary sector in Korea produces high quality output with high costs.

expenses for tertiary education.


But, the international tests also indicated that top performers in Korea do not rank very high indicating that top students in Korea have not been trained very well. For the sake of equalization, Korea uses substantial financial and administrative resources, while sacrifice the quality of top students and the system efficiency.

E. Creation of decent jobs

The demand side of the labor market (creation for decent jobs) needs to get more attention. Although the government has provided significant amount of lip services in deregulation and promoting investment friendly business climate, Korean economy is regarded with heavy regulations. Without the continuous and fast creation of decent jobs, Korean economy will not be able to get out of the perpetual dual economic structure. As seen in Figure 10, the proportion of non-regular workers rises very rapidly in recent years.
Therefore, it is very important to encourage the employment growth in high growth sector firms by providing incentives and reducing unnecessary regulations to locate in Korea rather than China, U.S, and other countries. Although the rise of non-regular workers is partly a reflection of inflexible labor market for regular sector jobs, the weak demand for labor contribute to this phenomenon.

5. Summary

Korea is expected to go through a very rapid process of ageing of population. The speed of ageing is expected to be faster after around in the middle of 2020s. Unlike some European countries that are faced with more imminent ageing problem, Korea has a luxury to have an opportunity to work with population policy. That is to say, increased fertility in the near future (say, up to 2015) will help to mitigate the rapid ageing by decreasing the elderly dependency ratio. However, such population policy will not be effective when it started “too late” (say, after 2020) in addressing the very rapid pace of ageing that starts around 2025.

The generous replacement ratio of National Pension Scheme has to be deal with in the near future. The longer it waits, the more difficult the reform would be because of the political concern. The reform will be more and more difficult as more participants have vested interest as the system matures and the median age of the voters increases. At the same time, the cost would be greater if the reform were to be delayed further in the future. The right balance between the old-age security and long term solvency of the system needs to be achieved.

Policies to promote labor force participation and incentives to work should be adopted. The policies should try to affect two major population segments: 50-65 year old men and women of aged 35 and over. The continuous usage of mandatory retirement system at 50 or 55 combined with payment scheme based on the length of service should be stopped. More child-care friendly workplaces and work rules needs to be adopted in order to encourage mothers to be able to participate in the outside labor market.
Policies to increase the labor productivity should be adopted. The education sector in Korea is in need of great reform. The high social cost of keeping equalization policies needs to be reconsidered. The secondary school system needs to be more diverse in order to accommodate diverse students’ needs. Also, it should be able to provide effective college preparation for the majority of students. The higher education institutions need to be allowed to compete not only for better students, but with variety of academic programs and financing mechanism in order to meet the market demand.

Promotion of the creation of good jobs needs to be on the top of the policy agenda. If the current generation of highly educated workers failed to receive valuable work experience by being adequately nurtured and mentored, the productivity gain through human resources (and total factor productivity). Better business climate and less unnecessary government regulations by encouraging private initiatives are crucial.

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