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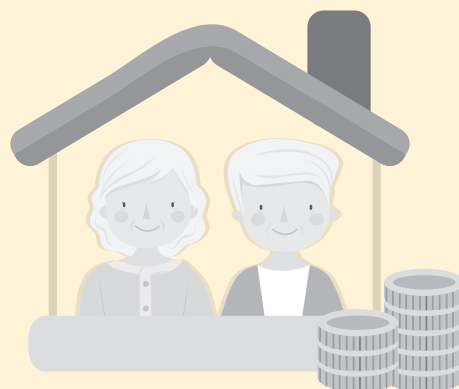
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Population Aging and Economic Growth: Impact and Policy Implications

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Summary

- Korea is aging at a faster pace than any other major country, and the negative impact on the economy is expected to be considerable.
 - In thirty years, the old-age dependency ratio is projected to exceed 70% and GDP growth to mark around the 1% range. This would pose a tremendous threat to sustainability unless the economy makes significant improvements in productivity and the employment structure.
- Korea's population aging is proceeding at an unprecedentedly rapid pace while policy responses and institutional reforms fail to keep pace.
 - Setbacks such as falling labor supply and growth seem to be unredeemable even if Korea's labor force participation rate (by gender and age group) improves to the level of advanced countries.
 - The labor supply policy to boost the economic participation of the working age population may work as a feasible response to the challenges of population aging to a certain extent. However, it is not enough to make a full recovery given the severe imbalance of Korea's demographic profile.
- Policy responses should be focused on reversing the quantitative decline in the labor supply by promoting the participation of the senior labor force while pushing towards the ultimate goal of human capital advancement and higher labor force productivity.
 - Senior labor force participation can be effective in easing not only the fall in economic growth but also the pressure from the rising dependency ratio.
 - At the same time, concerted policy efforts should be made in enhancing the general environment including educational and vocational training programs that could upgrade the productivity of the senior population.

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Issues

- Offsetting the negative impact from population aging is the most important and urgent challenge facing the Korean economy.
 - Korea's population aging is expected to proceed at an unprecedented rate, and there is doubt that the present measures—intended on replenishing the substitute labor force—are effective enough to offset the negative impact on economic growth.
- This study reviews the phenomenon of population aging in Korea from a macro-economic perspective and discusses the policy direction to effectively reduce the repercussions.
 - Responses to population aging are a complex combination of policies on labor, welfare, birth and even migration, but the scope of discussions in this study is limited to the labor supply.

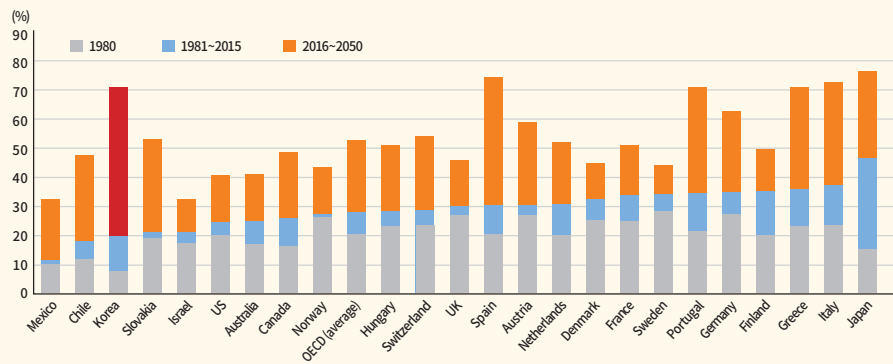
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Korea's Population Aging: Pace and Duration

1 Old-age dependency ratio = (senior (65+) population) / (working age (15-64) population)

- Korea is aging at the fastest pace among OECD members, and by 2050, its old-age dependency ratio¹⁾ is projected to exceed 70%.
 - Korea's old-age dependency ratio rose to 20% in recent years from about 10% in 1980 and will likely surpass 70% by 2050. This is approx. 20%p higher than the OECD average.
 - According to Statistics Korea's Population Projections for Korea (median assumption), the dependency ratio is projected to reach approx. 73% in 2050.
 - The rapid population aging is spurred by increasing life spans and decreasing fertility rate, happening in a relatively short period of time. Furthermore, the speed has been accelerated further by the imbalance in demographic profile, particularly those near the baby boom generation.

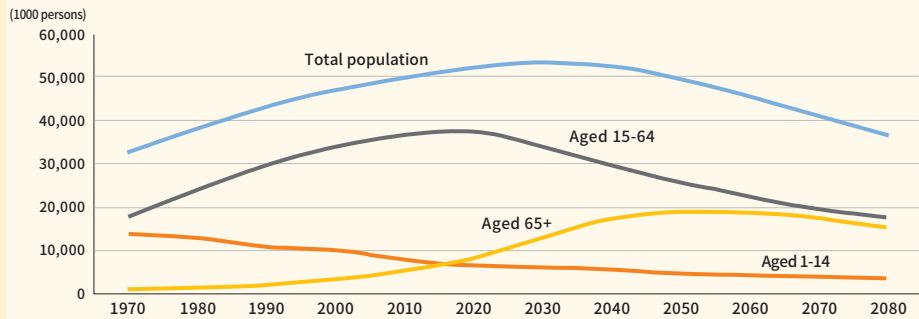
[Figure 1] OECD Old-age Dependency Ratio: Trends and Prospects (1980-2050)



Source: OECD, *Preventing Ageing Unequally*, 2017, p.22.

- Korea's population aging is expected to accelerate over the next three decades until 2050 and gradually stabilize thereafter.
 - The working age population (15-64) grew rapidly from the 1970s and began to slide consistently after peaking in 2016. The senior population (65+) has exhibited accelerating growth from the 2000s and will gradually decline from 2050.

[Figure 2] Population Projections for Korea



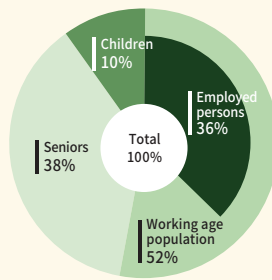
Source: Statistics Korea, *Population Projections for Korea*, 2015.

- Population aging will likely deal a huge shock to Korean society given its pace and duration.
 - In 2050, a mere 36% of the population is estimated to participate in the labor market, producing consumer goods and services for the total population—the employment rate is assumed to stand at 70% (Figure 3).

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Growth Projection with Intensifying Population Aging

[Figure 3] Demographic Profile of an Economy with a 73% Dependency Ratio



- In Statistics Korea's Population Projections, the population in 2050 will consist of 10% children aged 14 and under, 52% working age population and 38% seniors.
- Provided that the average employment rate is 70% in advanced countries, the number of employed persons engaging in production is estimated to be 36% of Korea's total population.

○ This type of economy would experience certain setbacks or deterioration in overall living standards unless productivity improves dramatically. Furthermore, intergenerational resource allocation issues could inflame social and political discord, posing a serious threat to the nation's economic sustainability.

■ This study analyzes the possible impact of intensifying population aging on economic growth over the coming three decades, focusing on the changes in labor supply resulting from the fluctuations in demographic profile and employment conditions.

- Estimations on the long-term outlook for growth are generally calculated based on the growth account which takes into account supply-side factors.
 - Population aging has an economic ripple effect on economic growth via diverse channels such as labor supply and savings/investment decisions (Lee, 2018).
 - The growth account can be used within a variety of analysis methods depending on the purpose—this study analyzes the changes in demographic profile by gender and age group resulting from population aging (Lee, 2018).

■ Assuming that Korea's labor force participation will improve to the level of advanced countries,²⁾ this study estimated how much an additional labor supply would contribute to economic growth.

2 Economic growth can be affected by several elements, such as production skills, labor, capital, systems, customs, culture, etc. These are assumed to remain unchanged in order to trace the changes in labor supply alone. The labor force participation rate by age group is also based on the assumption that it will improve from 2018, which is highly unlikely but was necessary to simplify the comparison of scenario results.

<Table 1> Labor Force Participation by Age Group in Major Countries (2017)

Category		15-24	25-34	35-44	45-54	55-64	65+	15-64
Korea	Men	26.1	84.0	94.8	93.1	82.7	41.5	79.3
	Women	34.3	69.0	61.7	69.4	55.9	24.1	59.0
	Total	30.3	76.9	78.6	81.3	69.1	31.5	69.2
Japan	Men	44.1	94.8	96.1	95.5	87.5	32.5	85.5
	Women	44.9	78.5	75.3	78.8	63.3	16.5	69.4
	Total	44.5	86.8	85.9	87.2	75.3	23.5	77.5
Sweden	Men	53.8	91.0	95.7	94.3	83.3	21.5	84.3
	Women	55.1	85.4	90.5	90.4	77.9	13.3	80.6
	Total	54.4	88.3	93.2	92.4	80.6	17.5	82.5
G7	Men	51.8	90.0	92.8	90.1	73.0	20.0	80.4
	Women	49.3	76.8	77.0	77.6	59.1	11.4	68.7
	Total	50.6	83.4	84.8	83.7	65.9	15.2	74.5

Source: OECD Statistics.

- Comparing Korea's labor participation by age group with the G7 average reveals that:
 - Korea has higher rates than the G7 average in both men and women in the 15-35 group. This is probably due to the fact that a large share of young Koreans stay economically inactive due to studying or preparing for employment.
 - In the prime working age group (35-54), Korean men stand higher than the G7 average but Korean women are much lower.
 - Korea also exhibits higher rates in the 55+ group with a particularly higher rate for those aged 65+.
- Japan and Sweden were additionally compared as a benchmark, taking into account the characteristics of advanced countries' labor force participation rate by age group.
 - The G7 average cannot serve as a suitable benchmark since prime working age men (35-64) in the G7 exhibit a lower participation rate than their counterparts in Korea as of today.
 - Sweden has the smallest gap between men and women in terms of labor force participation and has higher participation than Korea in all working age groups.
 - Japan has several social and economic similarities with Korea, and thus, its experience of population aging (predates Korea) should be examined.

■ Scenario-based projections of economic growth reveal that the Korean economy will unlikely see a significant improvement in growth momentum even if the labor force participation rate rises to the level of advanced countries over the next three decades.

- The base scenario (1) assumes that Korea's labor force participation rate will remain unchanged from 2017.
 - The growth rate will stand at 2.0% on average in 2021-2030 and then slide gradually to 1.0% in 2041-2050.
- Scenario 2 assumes that the labor force participation rate of both men and women will reach the G7 average.
 - Korea will see few improvements in growth and all average growth projections stand below the estimates of the base scenario.
- Scenario 3 assumes that Korea's labor structure will become similar to that of Sweden and Japan, and no significantly meaningful improvements were observed in the growth trend.

<Table 2> Scenario-based Projections of Economic Growth

(%)

Period	Korea's employment structure in 2017	G7-average employment structure	Sweden's employment structure	Japan's employment structure
2021-2030	2.0	1.7	1.8	1.9
2031-2040	1.3	0.9	0.9	1.1
2041-2050	1.0	0.6	0.7	0.8

Source: Lee, Jaejoon, *Population Aging: Macroeconomic Impact and Policy Implications*, Korea Development Institute, 2018 (forthcoming).

■ The shrinking absolute size of the working age population combined with the rapid increase in retiring workers is the reason behind the lack of improvements in growth momentum; even if the labor force participation rate reaches that of advanced countries.

- Characteristics of the employment structure of advanced countries include high participation rate of the working age population; small gender participation gap; and significantly low participation rate of retired seniors (65+).
- Meanwhile, Korea's demographic structure will likely exhibit a consistent decline in the absolute size of the working age population in the coming three decades and a rapid increase in the 65+ population.

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Response: Utilizing the Senior Labor Force

- Thus, unless the labor force participation of the fast-growing senior population aged 65+ rises, the aggregate labor supply will not increase.
- Existing responses that focus on increasing the birth rate and supply of substitute labor may not be sufficient to offset the negative effects from population aging.
 - Encouraging the participation of the working age population—particularly women and young people—to make up for the decline in labor supply is a typical policy response to the challenges of population aging.
 - The aforementioned scenarios imply that given the fast population aging in Korea, such a typical policy to increase the supply of substitute labor force would be insufficient in mitigating the adverse effects unless the nation’s productivity significantly improves.
 - According to the above analysis, without an increase in the labor force participation of seniors, the growth projection (annual average) would be 0.2-0.4%p lower than the base scenario, even if there is an additional labor supply of women and young people.
 - Meanwhile, the low birth rate is a serious social and economic issue, but raising the rate would not serve to directly resolve the pending problems from population aging.
 - Determinants of having children vary significantly between individuals and thus, it is very challenging to find effective policy instruments that could increase the rate.
 - Moreover, even if the pro-birth rate policy is successful, it usually takes about 30 years for children to reach prime working age, meaning that the policy is inadequate in addressing the present challenges of the ongoing population aging.
- Economic participation of the working age population alone is not enough to improve the long-term growth momentum of the Korean economy. More active participation from seniors is necessary.
 - As Korea’s employment structure by age group emulates that of advanced countries, seniors’ labor force participation will likely recede and lead to a continued decline in the total labor supply, even if the labor force participation of the working age population rises to a considerably high level.
 - Sustaining the labor participation rate of seniors aged 65+ at a relatively high level and increasing that of the workable population to the level of advanced countries can create an employment structure that would be most advantageous to the labor supply.
 - For instance, Korea’s long-term growth momentum will only improve if the senior labor force participation rate is sustained at the current level, with the rate of workable men rising to Japan’s level and that of workable women reaching Sweden’s (Table 3).

<Table 3> Growth Projections in Growth Recovery Scenarios: Men (Japan), Women (Sweden), People aged 65+ (Korea)

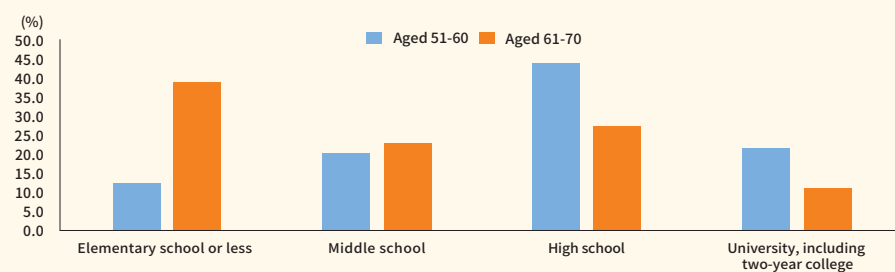
Period	Real GDP (1+2+3)	Employed persons (1)	Physical capital (2)
2021-2030	2.4	0.2	0.9
2031-2040	1.6	-0.3	0.6
2041-2050	1.3	-0.4	0.5

Source: *Ibid.*

- Seniors participating in economic activities can be an effective response tool in coping with population aging as it could soften the blow to the economic growth rate and at the same time, lessen the burden of a rising dependency ratio.
 - Seniors entering retirement age should voluntarily participate in production activities as members of the labor force.

- The continuation of seniors' economic activity could mean higher income and consumption for seniors; larger tax revenue and smaller burden of future public pension payments and; higher growth momentum in the long run.
- Meanwhile, from a quantitative perspective, Korea's senior labor market has maintained a significantly high employment rate. However, in terms of quality, conditions are poor, thus necessitating improvements.
 - Uncertainties over whether there is room for additional increases in the already high participation rate of seniors acts as a deterrent. Besides, given the unfavorable working conditions of seniors, their participation in additional economic activities may not be recommendable.
 - Employment of seniors, in the past, was concentrated within the poor population and it served as a means to make ends meet, mostly consisting of jobs with unstable occupational status in the low value-added sector.
 - Considering the highly advanced education that the current generation receives, it is likely that by the time they enter the senior demographic, the labor market will be far different in form and structure (Figure 4).
 - In the past, most seniors in the labor market were marginally educated with a high school degree or less, and this characteristic serves as a supply-side factor in accounting for the harsh working conditions they are exposed to.
 - Meanwhile, the children of baby boomers are mostly highly educated and thus, they will have more employment opportunities in old age. This, in turn, will also enhance the productivity in the labor market (Lee, 2018).

[Figure 4] Education Level by Age Group (2015)



Source: Statistics Korea, *Economically Active Population Survey*.

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Conclusion and Policy Implications

- Korea's senior population is expected to peak in 2050. This means that they will become increasingly important in economic activities and their economic roles will require attention.
 - If their labor force participation rate decreases to the level of advanced countries, it would be difficult to offset the decline in the labor supply driven by population aging, even if the labor force participation rate of the working age population rises to a significantly high level.
 - The senior labor force participation rate may recede further from the current level if social security systems such as public pensions become fully realized.
 - In this case, even if the labor force participation rate of the working age population rises to the level of advanced countries, it would still be difficult to make a recovery in growth. This is because the rapid increase in the senior population will pull down the number of people employed as a share of the total population.
- Effective measures to prevent the decline in labor supply resulting from population aging include productively using the senior labor force, which means working conditions must improve.

- Senior labor participation can buffer the decrease in the economic growth rate and also reduce the dependency ratio.
 - The existing supply of labor formed of the existing working age population (stimulating the economic participation of women and young people) is not enough to reverse a long-term economic downturn.
 - Meanwhile, although the employment rate of seniors is high in Korea, most are involved in the low value-added sector. Thus, the quality of the labor market for seniors should be enhanced to effectively utilize the senior labor force.
 - In particular, baby boomers now reaching retirement age are far more educated than their parents, which could bring some positive change to the supply-side of the senior labor market.
- **The basic response to population aging should focus on providing seniors with a role and opportunities to make full use of their vast experience and knowledge. To that end, preemptive measures should be taken, including:**
- The retirement age system, which determines the expiry of people's working duration based on age, is becoming so outdated that it no longer contributes to social and economic progress, and thus an overhaul is needed.
 - If highly educated, still workable seniors are denied opportunities to participate in the labor market, that would be an inefficient utilization of the labor force in an aging society.
 - More flexible retirement systems should be considered by rescinding the retirement age or through a phased retirement.
 - Seniors should no longer be viewed as dependents or excess population and hence, past social practices and general systems—built on the belief that those aged 65+ are elderly—should be reconsidered.
 - Population aging entails positive factors, such as better health conditions and longer life spans, which need to be utilized actively.
 - A system should be developed which has a new life cycle for seniors and to find a role for them to sustain their social and economic contribution.
 - It is important that population aging does not drag down the productivity of the overall economy. Policy efforts should prioritize upgrading human capital, particularly in ways that prepare for working in old age.
 - The advanced educational resources being consumed during early adulthood does not seem reasonable considering the recent speed of technological and social progress. In other words, the education system should now be transformed more realistically, taking into account the longer average life expectancy (80 yrs).
 - In particular, a new educational and training model should be developed combining lifelong education (Ministry of Education) and vocational training (Ministry of Employment and Labor) programs, which would provide practical support to middle-aged and senior workers.
 - Overall labor market conditions should be improved to stimulate the senior labor force and prepare for the fallout.
 - The policy approach should be balanced, prohibiting discrimination against older workers and also ensuring that age is not a criterion for determining the level of employment protection.
 - The wage system needs to be improved to be able to better reflect the productivity and capability of employees. It is also necessary to adopt more senior-friendly labor policies, such as active labor market policies (ALMP) for middle-aged and senior workers and improved working environments to enhance safety and work flexibility.